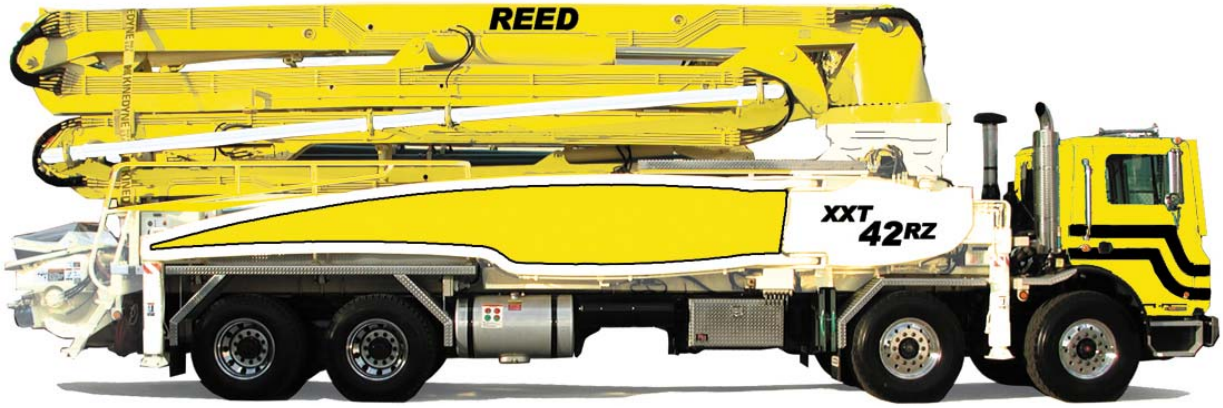
OPERATION, MAINTENANCE AND PARTS MANUAL TRUCK - MOUNTED CONCRETE BOOM PUMP MODEL: *XXT42.5RZ*



***REED*, provides this manual for the guidance of all owners, operators and servicing personnel in order to obtain the longest possible trouble-free service. It contains data, specifications, warranty, schematics, operating instructions, lubrication procedures, maintenance procedures, illustrated parts breakdown, vendor information, service bulletins, and safety rules.

Serial No.:	**05-244-XXT42.5RZ**
Date Delivered:	**JULY 2005**
Customer:	

NOTE: Additional copies of this manual may be obtained through the ***REED*** Parts Department.

FIRST EDITION: JULY 27, 2005
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SERIAL NUMBER: 244

***REED*, *Technical Publications* • A Member of the Shea Family of Companies**
13822 Oaks Avenue • Chino, California 91710 • USA
Phone 909-287-2100 • Fax 909-287-2140

J.F. Shea Co.

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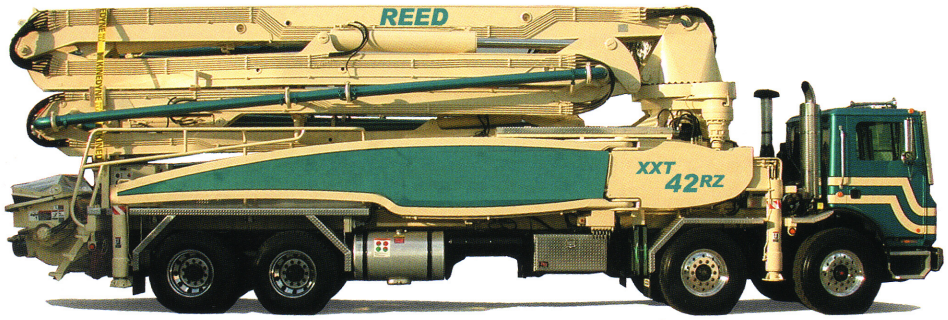
Model XXT42.5RZ

Truck Mounted 42-Meter Concrete Boom Pump



- **137' 10" ft (42 m) Vertical Reach**
- **200 yd³/hr (154 m³/hr)**
- **1300 psi Concrete Pressure**
- **5-Section RZ-Fold Boom with 5" (125 mm) Line**
- **Exclusive, Versatile, *"DRAGONFLY"* XX Outrigger Design**
- **Efficient "POWER-FLO" Rexroth A4V125, Closed-Loop, Over-Center Hydraulics**
- **Exclusively 90° Elbows on Boom**
- **Radiused Boom Design**

Boom: Versatile, compact, fully articulating 5-section RZ-fold boom represents the latest in boom technology. Radiused boom design to improve durability and eliminate stress focal points. Low unfolding height of 28' (8.53 m).

Delivery Line: 5" (125 mm) delivery line with straight pipe sections and 90° elbows. Components are all readily available and bracket mounted for easy delivery line replacement.

Pedestal: Integrated outrigger and boom pedestal with small outrigger footprint. "XX"-structure design eliminates stress or twist in truck frame. Heavy-duty, low friction, double-row ball bearing rotates the 4-section boom assembly through a 364° slewing range. Hydraulic oil tanks and water tank located in pedestal section for improved weight distribution. Two spacious 14' 8" (4.5 m) long decks for convenient storage of pipes and hoses.

Outriggers: ***REED's*** exclusive (patent pending) *"DRAGONFLY"* **XX** design sets new standards in maximum versatility and speed. Fully hydraulic operation. This innovative design allows operation in job site conditions where others can not open up.

Remote Controls: Lightweight fully proportional remote control box with 100 ft (31 m) cable for smooth operation of all boom and pump functions. Fully proportional radio remote controls included as well. Remote and radio controls have identical patterns. Manual boom controls are conveniently located on the RH deck.

Clean-Out: Hydraulically driven, high pressure 360 psi (25 bar) water pump with 295 gal (1120 L) water tank and hose.

Concrete Pump: Efficient, closed-loop hydraulic system using dual Rexroth A4V125 hydraulic pumps for smooth, controllable pumping. Reduced boom bounce even when pumping at maximum output. Hard-chromed concrete cylinders and hard-faced wear parts precision machined for long life and tight sealing. Fully-variable volume control from 0 to 200 yd³/hr (0 to 154 m³/hr). Hinged clean-out door and swing away discharge pipe for quick, effective wash-out. All major system components located for good operator accessibility and ease of service. Harsh-mix hopper combines field proven boom pump experience with the most advanced technology available. Hopper screen and splash guards are standard.

REED **Solid State Black Box:** Reliable technology for smooth, fast cycling. This eliminates the heat-generation problem of hydraulic cycling and the eventual failure of old-style conventional relays.

Model XXT42.5RZ

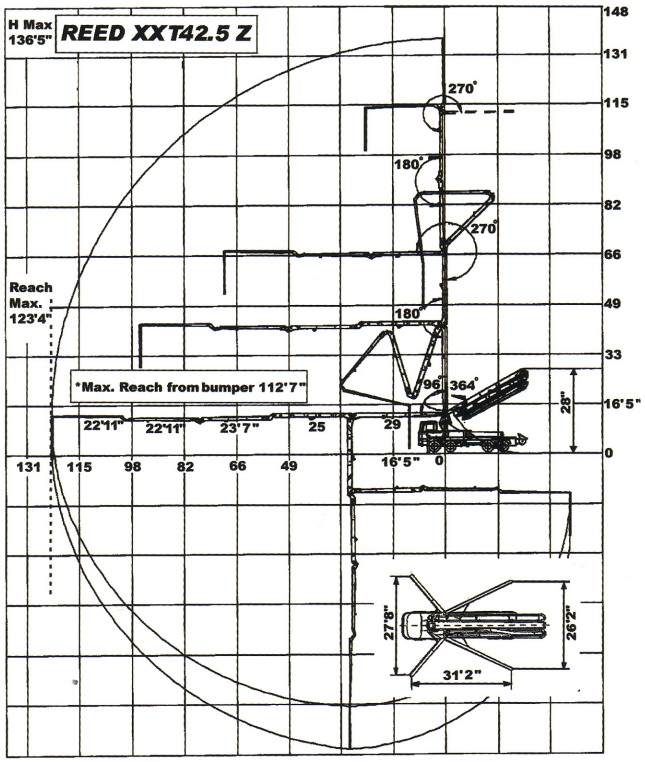
Truck Mounted 42-Meter Concrete Boom Pump

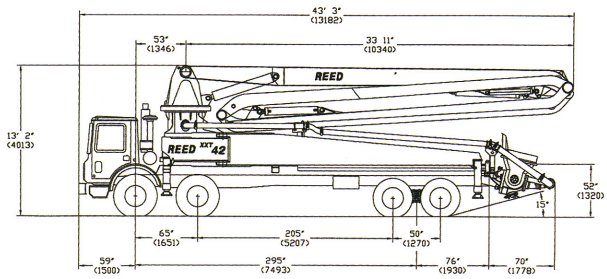
BOOM SPECIFICATIONS	XXT42.5RZ	
Height & Reach		
Vertical Reach	136'5"	41.58 m
Horizontal Reach	123'4"	37.60 m
Reach From Front of Truck	112'7"	34.32 m
Unfolding Height	28"	8.53 m
5-Section Boom		
1st Section Articulation	96°	96°
2nd Section Articulation	180°	180°
3rd Section Articulation	270°	270°
4th Section Articulation	180°	180°
5th Section Articulation	270°	270°
1st Section Length	29'	8.84 m
2nd Section Length	25'	7.62 m
3rd Section Length	23'7"	7.2 m
4th Section Length	22'11"	6.99 m
5th Section Length	22'11"	6.99 m
General Specs		
Pipeline Size (ID) Metric Ends	5.0"	125 mm
With Couplings	5.5"	140 mm
Rotation	370°	370°
End Hose: Length (Heavy-duty)	13'0"	4.00 m
Diameter	5.0"	125 mm
Outrigger Spread L-R-Front	27'8"	8.43 m
Outrigger Spread L-R-Rear	26'2"	7.98 m

PUMP SPECIFICATIONS			
Output:	Rod Side	200 yd³/hr	154 m³/hr
	Piston Side	131 yd³/hr	101 m³/hr
Pressure:	Rod Side	1300 psi	90 bar
	Piston Side	1853 psi	128 bar
Hard-Chromed Concrete Cylinders		Standard	Standard
Concrete Cylinder Diameter		9.0"	230 mm
Stroke Length		79.0"	2000 mm
Maximum Strokes per Minute:	Rod Side	31	31
	Piston Side	18	18
Hopper Capacity		23 ft³	650 L
Volume Control		Zero to Full	Zero to Full
Hopper Grate Vibrator		Standard	Standard
Hydraulic System: RR A4V125		Closed-loop	Closed-loop
Hydraulic System Pressure		5000 psi	345 bar
Hydraulic Tank(s) Capacity	Pump	118 gal	450 L
	Boom	106 gal	400L
Hydraulic Drive Cylinders:	Rod Diameter	3.15"	80 mm
	Piston Diameter	5.51"	140 mm
Water Tank Capacity		295 gal	1120 L
Maximum Aggregate Size		2.5"	63 mm

TRUCK MOUNTED SPECIFICATIONS*	Truck Model: Mack MR 688S	
Horsepower	460	460
Length	43'3"	13.18 m
Width	8'2"	2.49 m
Height	13'2"	4.01 m
Wheelbase	295"	7.99 m
Front Axle Weight (Approx.)	35,860 lbs	16,266 kg
Rear Axle Weight (Approx.)	42,400 lbs	19,233 kg
Total Weight (Approx.)	78,260 lbs	35,499 kg

Maximum theoretical performance shown above. Maximum output and pressure cannot be reached simultaneously. Performance will vary depending on slump, mix design and pipeline diameter. Specifications subject to change without prior notice.
*Dimensions vary with different truck makes, models and specifications.





Distributed By:

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13822 Oaks Avenue • Chino, California 91710 USA • 909-287-2100
Fax: 909-287-2140 • Toll-free: 888-779-7333 • www.reedpumps.com

Baugruppenübersicht construction group survey	Betonpumpe: concrete pump:	Mast: boom:
Typenplan type parts list	**THP 150**	**42M5XXT**

Kunde: / customer:	**REED**	Auftrags.-Nr.: / order no.:	**VL-8714**
Fahrzeug: / vehicle:	**Mack**	Bestellnr.: / purchase no.:	

REED

Waitzinger
Baumaschinen GmbH

Zusammenstellung	assemble cpl.	(B 00 4 107)			
Aufbaurahmen	sub frame	B 01			
Rahmen	base frame	B 02			
Rahmenverbindung kpl.	frame connection cpl.	B 03			
Mastbockverbindung	boom connection cpl.	B 03 2 051 a			
Aufbau	housing	B 04			
Abstützung hinten	outrigger cpl.	B 05			
		B 06			
Podeste / Aufstiege	pedestal / ladder	B 07			
Mastauflagebock	boom support	B 08			
Gegengewicht	counter weight	B 09			
Pumpeneinheit kpl.	pump unit cpl.	B 10			
Pumpenlagerung	pump mounting	B 11 5 005			
Förderzylinder kpl.	conveying cylinder cpl.	B 12 5 010			
Förderkolben kpl.	conveying piston cpl.	B 13 3 020			
Spülkasten kpl.	water box cpl.	B 14 3 000			
Antriebszylinder	drive cylinder	B 15 4 031			
Schiebersystem	s-valve system 1:	B 17 5 200R1	Eigener	Typenplan	
Schwenkantrieb	tilting device cpl.				
Zentral / Schmieranlage	central lubrication unit				
Förderkolbenschmierung	lubrication f. conveying piston	B 18 3 006 b			
Förderleitung Pumpeinheit	conveying pipe pump unit				
Förderleitung 6"	conveying pipe 6"				
Trichteroberteil	Hopper top part				
Trichterzubehör	hopper accessories				
Trichteroberteil	hopper upper part	B 22 5 090			
		B 23			
		B 24			
Rührwerk mit Antrieb	agitator with drive	B 25 5 080	2x Nutring		
		B 26			
		B 27			
Rütteleinrichtung	vibrating equipment	B 28			
		B 29			
Wasseranlage	water system	B 30			
Wassertank kpl.	Water tank cpl.	B 31			
Wasserpumpe mit Antrieb	Water pump with drive	B 32 3 070			
Halter für Wasserschlauch	Holder for water hose	B 33			
Halter für Wasserschlauch	Holder for water hose	B 33 0 020	2x		
Schlauchleitung	Hose line	B 34			
Druckluftanlage	Compressed air unit	B 35			
Hochdruckreiniger	High pressure cleaner	B 36			
Kompressor mit Antrieb	Compressor with drive	B 37			
		B 38			
Schlauchleitung	Hose line	B 39			
Hydraulikanlage BP	Hydraulic system	Wai 106474			
Hydrauliks. Pumpe/Rührwerk	Control block	WAI 108404			
		WAI 108403			
Blasenspeicher		WAI 103616			
Hydraulikpumpe	hydraulik pump	WAI 104777			
		WAI 100 938	4x		
		WAI 101 332	8x		
Hydrauliktank / Zubehör	hydraulic tank / accessories	WAI 101 950	4x		
Ölkühlung	oil cooler	WAI 101 979	4x		
Schläuche / Zubehör	hoses / accessories	WAI 103 207	4x		
Elektroanlage	wiring diagram	WAI 106059	B 51 3 017 d		
Steuerpult	control panel				
Motorabstellung	engine stop	B 52			
Pumpenverstellung elektrisch	pump adjustment electrical	B 53			
Drehzahlverstellung	rpm adjustment	B 54			

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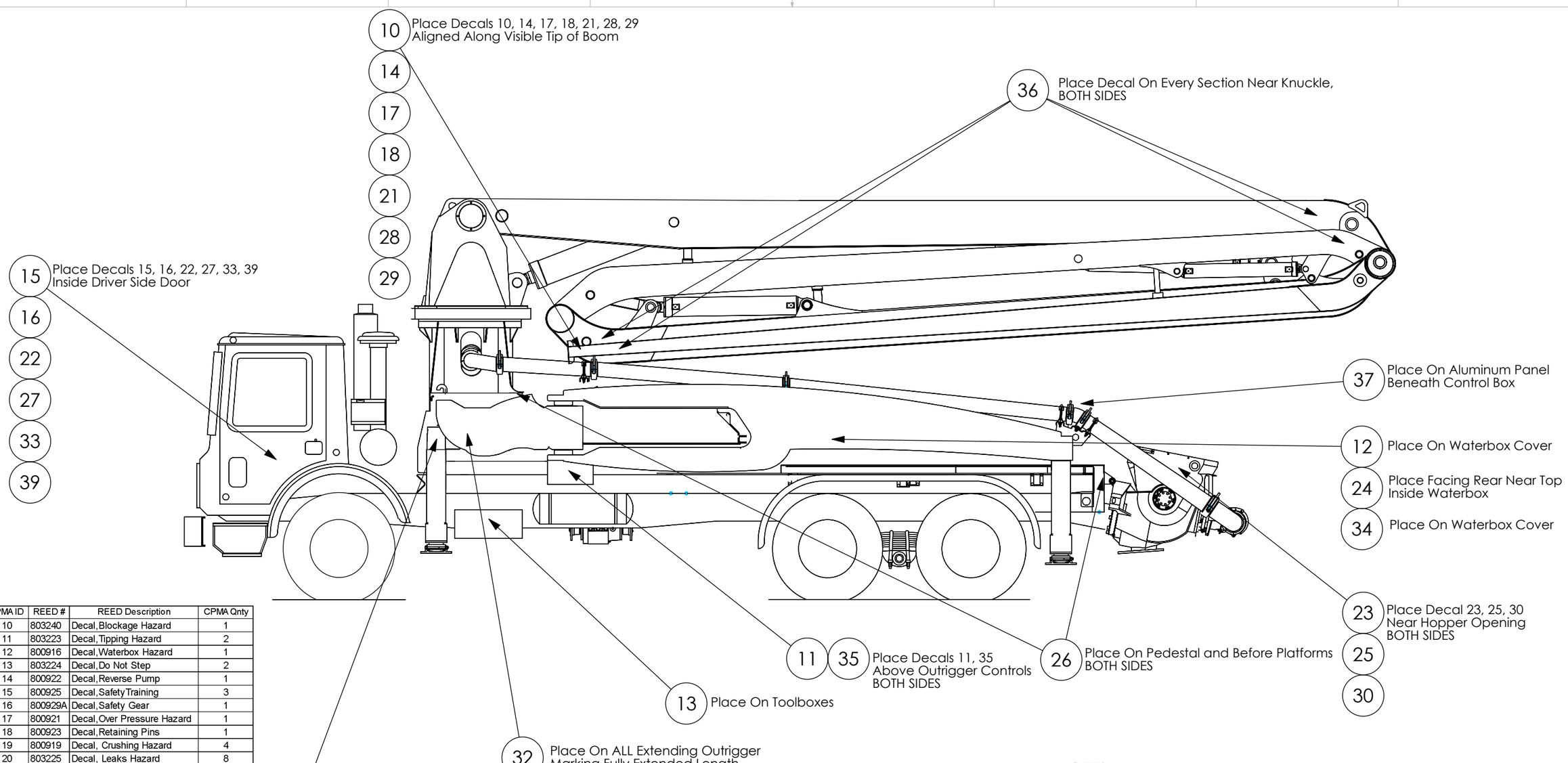
Elektroanlage Mast	wiring diagram boom	B 55			
Kabelbaum / Zubehör	wiring harness / accessories	B 56 1 084 c	B 56 1 085	B 56 1 086 c	
Zubehör	accessories	B 57 0 015			
Mastkabelbaum		B 56 2 066			
Kabelfernsteuerung	cable remote control				
Funkfernsteuerung	radio remote control				
Verteilermast	distributor boom 2:	WAI 107303			
Mastbock	boom support	B 61 2 205 d	WAI 106535		
Drehwerk	rotating unit	B 62 2 010 f	B 62 8 011	B 62 8 012	WAI 106266
Drehwerksschutz	swing gear protection	B 62 2 025			
Abstützung kpl.	outrigger cpl.	B 63 2 340 a			
Abstützung vorne rechts	outrigger front right		B 63 2 330 a	WAI 109673 a	
Abstützung vorne links	outrigger front left		B 63 2 325 a	WAI 109673 a	
Abstützung hinten rechts	outrigger rear right		B 63 2 050 f	B 63 2 036 a	WAI 109673 a
Abstützung hinten links	outrigger rear left		B 63 2 051 f	B 63 2 037 a	WAI 109673 a
Transportsicherung vorne	transportation safety device f.		B 63 9 197 b		
Transportsicherung hinten	transportation safety device r.		B 63 9 207 b		
Förderleitung	delivery line	B 64			
Endschlauchhalter	end hose holder	B 64			
Endschlauch	end hose	WAI			
		B 65			
Arm 1	boom element 1	B 66			
Arm 2	boom element 2	B 66			
Arm 3	boom element 3	B 66			
Arm 4	boom element 4	B 66			
		B 67			
Drehkopf	rotating head	B 68			
Drehwerk Schutz	rotating safety device	B 68			
		B 69			
Hydraulikanlage Mast	hydraulic system boom	WAI 108 266			12Volt
Hydraulikanlage Mast	hydraulic system boom				
Hydraulikanlage Mastbock	hydraulic sys. boom support	B 72 2 010R1			
		B 72 2 015R1			
Hydraulikanlage Pumpeinheit	hydraulic sys. pump unit	B 74 1 031			
		B 75			
		B 76			
Hydrauliktank Mast	hydrauliktank boom	B 77			
		B 78			
		B 79			
Antrieb	drive	B 80			
Verteilergetriebe 4496	distribution gear	B 81 4 088R1	i = 1:1,51		
Antriebsaggregat	engine	B 82			
Wellenstrang	lineshaft	B 83			
Unterfahrschutz	chassis protection	B 84			
Zubehör Beleuchtung	additional parts lightning				
Trichterbeleuchtung	lightning for hopper	B 86			
Beleuchtung	lightning	B 56			
Kotflügel	fender	B 87			
Federblockierung	spring lock	B 56			
Achse kpl.	axle cpl.	B 89			
Zubehör	accessories	B 90			
Standardzubehör	standard accessories	B 91			
Schilder Pumpe	sticker pump	B 92 1 004			
Schilder Mastbock	sticker boom support				
Schilder Mast	sicker boom	Antonelli			
		B 93			
Werkzeugkasten	tool box	B 94			
Zusatzteile Europa	additional parts europe	B 95			
Rohrmagazin	conveying pipe magazine	B 96			



CPMA ID	REED #	REED Description	CPMA Qnty
10	803240	Decal,Blockage Hazard	1
11	803223	Decal,Tipping Hazard	2
12	800916	Decal,Waterbox Hazard	1
13	803224	Decal,Do Not Step	2
14	800922	Decal,Reverse Pump	1
15	800925	Decal,SafetyTraining	3
16	800929A	Decal,Safety Gear	1
17	800921	Decal,Over Pressure Hazard	1
18	800923	Decal,Retaining Pins	1
19	800919	Decal, Crushing Hazard	4
20	803225	Decal, Leaks Hazard	8
21	800928	Decal, Boom Crack Hazard	1
22	803226	Decal, How to Order	1
23	800918	Decal, Agitator Hazard, Foot	2
24	803227	Decal, Missing Guard	1
25	800917	Decal, Agitator Hazard, Hand	2
26	803228	Decal, Off Platform	4
27	803229	Decal, CPMA	1
28	803230	Decal, Starting Discharge	1
29	800927	Decal, Not a Crane	1
30	803231	Decal, Toxic Dust	2
31	800915	Decal, Stay Clear	4
32	803232	Decal, Extending Outrigger	2
33	803233	Decal, Safety Instructions	1
34	800924	Decal, Remote Control	1
35	803234	Decal, Outriggers	2
36	800913	Decal, 17Ft Hazard	8
37	800930	Decal, 1-14 Op Signals	1
38	803235	Decal, 1-7 Op Signals	0
39	803236	Decal, CPMA	1
40	803237	Decal, Pressurized Pipes	25
41	803238	Decal, Pressurized Hoses	25
42	803239	Safety Tags	25

NOTES
1. Place Decals 40, 41 Next To Clamps ON ALL Straight Pipe
2. Place Decal 42 ON ALL Clamps

REV	DATE	DESCRIPTION OF CHANGE	BY
		REVISION	

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL ± 1/16
XX ± .031
XXX ± .010
ANGULAR: MACH ±1 BEND ±1

BREAK ALL SHARP EDGES .010 MAX x 45

ALL MACHINED SURFACES UNLESS OTHERVISE SPECIFIED

DRAWN	CT	0606
CHECKED	CT	0606

REED

CONCRETE PLACING EQUIPMENT
CHINO, CA 91710

TITLE
Decal Legend

MATERIAL
MATERIAL

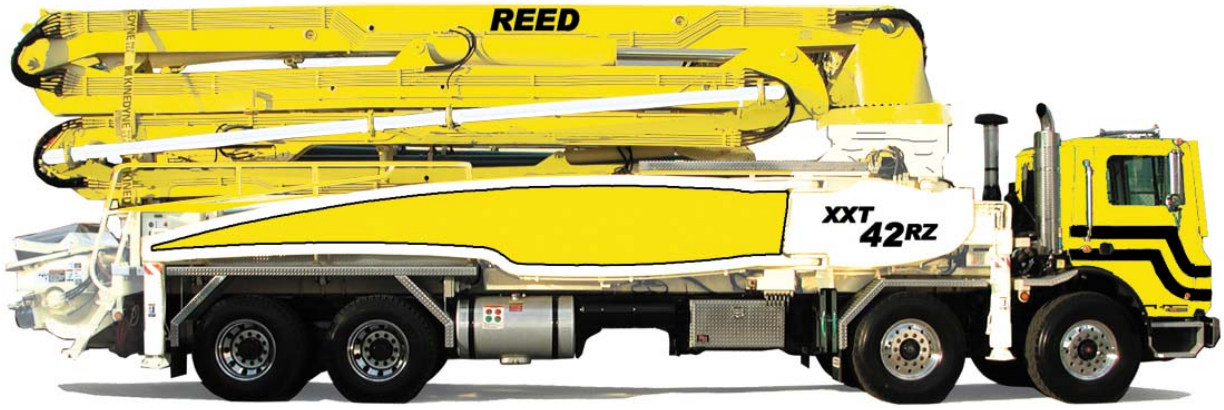
PART NUMBER
803243

REV.

SHEET 1 OF 1

REED

USER MANUAL



MODEL: *XXT42.5RZ (SN05-244)*
TRUCK - MOUNTED
CONCRETE BOOM PUMP

***REED*, LLC** • A Member of the Shea Family of Companies
13822 Oaks Avenue • Chino, California 91710 • USA
Phone 909-287-2100 • Fax 909-287-2140

Waitzinger
Baumaschinen GmbH

User manual

WAITZINGER CONCRETE PUMP

THP 94/42 R 4 XXT
THP 125/42 R 4 XXT
THP 140 H/42 R 4 XXT

Waitzinger
Baumaschinen GmbH

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89231 Neu-Ulm

Phone: +49 (0) 7 31/7 29 05-0
Fax: +49 (0) 7 31/7 29 05-30

e-mail: info@waitzinger.de
Internet: www.waitzinger.de

This user manual is part of the supply of the following concrete pump:

The machine number is shown on the serial plate on the vehicle frame behind the cab:

Your appointed Waitzinger Service Office / Waitzinger Customer Service is:

Issue: July 2005

0. Contents

1. Foreword

Dear customer,

Please read this user manual carefully before first using your truck-mounted concrete pump, so as to ensure that you use it safely and effectively.

We have written this user manual to familiarise you with the design, use, operation and operating conditions, and to list the servicing and maintenance work required, together with information on safe working.

Before starting to use the truck-mounted concrete pump, be sure that all the safety conditions have been satisfied.

This user manual forms part of the total documentation package for the truck-mounted concrete pump. It relates exclusively to the superstructure that is fitted to the truck. For the truck itself see the separate user manual issued by the truck manufacturer. There may be separate user manuals for certain components and options. These user manuals should also be read and complied with.

All repair work should be performed only by authorised skilled staff.

If maintenance work is neglected or improperly performed, we may no longer be liable to perform our warranty obligations under our conditions of supply.

Only original **WAITZINGER** spare parts ensure quality and interchangeability.

NOTE:

- ☞ **Safety instructions should be complied with at all times!**
- ☞ **We reserve the right to make technical changes and improvements to the equipment and its components from the illustrations and data set out in this user manual.**
- ☞ **This user manual is applicable only insofar as the truck-mounted concrete pump corresponds to the version and equipment described.**
- ☞ **In the following sections the truck-mounted concrete pump is also referred to as the “machine” or “equipment”.**

Only qualified and trained personnel over 18 years of age may work on and with the truck-mounted concrete pump.

Our customer service department will be pleased to offer you further information and advice if despite consulting this user manual you encounter any problem with your truck-mounted concrete pump.

We wish you all the best in trouble-free driving and use of your truck-mounted concrete pump.

The management

2. Safety instructions and information

☞ **In addition, please comply with the safety instructions and information for the truck itself!**
☞ **We expressly draw to your attention that we accept no liability for damage and operating failures that arise due to disregard of this user manual!**

☞ This section contains safety instructions which must be complied with at all times when the machine is in operation. These instructions are highlighted in the text by particular symbols.

2.1 Warranty and liability

☞ After the machine has been delivered, check the completeness of the scope of supply against the delivery note.

☞ If anything is missing, or damage has occurred in transport, please report this immediately to **WAITZINGER**.

☞ The machine as delivered is in accordance with current technology and complies with the mandatory safety standards.

☞ The machine should be operated only when it is in good technical condition and in a proper manner (see section 4.2 “Proper use”). Any use other than this or beyond this is deemed to be improper use.

☞ If the machine is used inappropriately or improperly risks to life and limb can arise, and/or damage to the machine or other property. **WAITZINGER** accepts no liability for damage that arises under such circumstances. The risk is borne solely be the user of the machine.

☞ Proper use of the machine also requires compliance by the user with national regulations for accident prevention and environmental protection, with recognised professional rules for good and safe working practice and with this user manual.

☞ No changes, additions or modifications of any sort may be made to the machine without express permission from **WAITZINGER**. Original spare parts and approved accessories from **WAITZINGER** contribute to safety. No liability is accepted for the consequences arising from use of other parts.

☞ Persons working on or with the machine must have read and understood the user manual before starting work and have appropriate physical and mental capabilities.

☞ Disregard of these instructions and information can lead to risks to life and limb, and/or damage to the machine or other property.

☞ If, due to disregard of / failure to comply with the instructions and information in this user manual or the operating and maintenance handbook for the overall system, accidents leading to personal injuries and/or damage to property occur, this circumstance releases **WAITZINGER** from any liability for direct or consequential damages such as personal injuries, damage to property not covered by the contract, loss of profits and interruption to production that comes under the heading

"**Product liability**"

to **WAITZINGER**.

2.2 Safety symbols

DANGER:
This symbol indicates an immediate danger to life and health of personnel! Disregard of this information can lead to serious effects on health, through to life-threatening injuries and even death.

WARNING:
This symbol indicates a possible danger to life and health of personnel! Disregard of this information can lead to serious effects on health, through to life-threatening injuries.

CAUTION:
This symbol indicates a situation that may possibly be dangerous! Disregard of this information can lead to minor injuries or damage to property.

These symbols are placed in front of the text to which they refer, in order to alert the operator to possible hazards before undertaking any activity on the machine / equipment.

NOTE:
This symbol is used to draw the operator's attention to notes and specially useful information for technical requirements and handling the machine / equipment.
These notes assist in making the best use of the functions of the machine / equipment.

This symbol follows the text to which it relates.

2.3 Safety equipment

☞ The safety equipment fitted to the whole system must be given particular attention.

☞ The safety equipment must be continually checked for correct operation.

☞ Safety equipment that operates on the basis of set values must not be reprogrammed without expressed permission from **WAITZINGER**.

☞ If the safety equipment is not operational or is malfunctioning, the truck-mounted concrete pump must not be used.

2.4 Personal safety equipment

In the entire working area of the truck-mounted concrete pump, suitable safety equipment should be worn, particularly when handling mortar additives.

The symbols for the necessary safety equipment are shown in the graphics panel alongside.

The symbols shown are as follows:

1. Hard hat
2. Safety boots
3. Ear defenders
4. Safety gloves
5. Safety glasses
6. Face mask
7. Protective clothing
8. Safety harness

Fig. 2.1 Symbols for personal safety equipment

2.5 Ensuring safe working and safety

The following safety regulations were taken into account when designing the truck-mounted concrete pump:

☞ pr EN 12001 “Conveying, spraying and distribution machines for concrete and mortar”

☞ EN 292 “Safety of machines, equipment and systems”

☞ EN 60204-1 “Safety of machines; electrical equipment for industrial machines”

☞ EMC “Electromagnetic compatibility - Directive 89/336/EWG”

The following instructions for ensuring health and safety at work must be observed by the user, the supervisor and the operator of the equipment at all times:

- ☞ VBG ZH1/653 “Health and safety when operating truck-mounted concrete pumps”
- ☞ VBG ZH1/573 In the German Federal Republic – “Directives for truck-mounted concrete pumps and distributor booms”
- ☞ BGR 182 “Rules for handling truck-mounted concrete pumps and distributor booms”
- ☞ VDM 24119 “Graphical signs”
- ☞ BGG “Basic requirements, selection and qualification of truck-mounted concrete pump operators”
- ☞ VDMA “Safety Handbook”
- ☞ VBG 1 “General instructions”
- ☞ VBG 4 “Electrical systems and equipment”
- ☞ VBG 5 “Power-operated equipment”
- ☞ VBG 8 “Winches, hoists and drawgear”
- ☞ VBG 9 “Cranes”
- ☞ VBG 9a “Load-bearing equipment for use as lifting gear”
- ☞ VBG 12 “Accident prevention regulations (UVV) for vehicles”
- ☞ VBG 37 “Accident prevention regulations (UVV) for building work”
- ☞ VBG 109 “First aid”
- ☞ VBG 121 “Noise”
- ☞ VBG 125 “Safety signage at the workplace”
- ☞ EC directive 89/655/EWG “Minimum machine instructions guidelines”
- ☞ EC directive 98/37 “Essential machine guidelines”
- ☞ EC directive EN 60204-1 “Electrical equipment of machines, part 1”
- ☞ EG directive 73/23 “Insulation of cables”
- ☞ EG directive “Electromagnetic compatibility EMC”
- ☞ EG directive 92/58 “Personal safety equipment”
- ☞ EG directive 89/689 “Waste disposal”

☞ Work on or with the machine may be performed only by suitably instructed reliable personnel and/or technical staff.

☞ Before starting work it should be determined which personnel shall perform the necessary operating and maintenance work.

☞ When operating the machine the legislation and regulations applicable at the place of use should be observed. In the interests of safe working procedures, the user, supervision and equipment operator are responsible for complying with regulations.

☞ Before starting work, all necessary functional checks should be performed on the machine.

☞ Items not required in the immediate working process (tools, lubricants, cleaning materials, etc.) must be stowed only in their proper places, since otherwise they may obstruct safe operation.

☞ During cleaning work, especially with solvents or petrol washes, safety gloves and safety glasses must be worn. No naked lights or smoking when cleaning is being performed! Disposal of consumable materials to TA waste code 524.02 should be to EC directive 91/689/EWG.

☞ Consumables such as lubricants, cleaning materials during maintenance, repair and oil change should be collected in suitable containers and disposed of in accordance with regulations (to EC directive 75/439/EWG and statutory instruments under §§ 5a, 5b AbfG and AltölV).

2.6 Information on risks of injury

Improper use of the truck-mounted concrete pump may lead to the following injuries:

☞ Injuries to the eyes due to splashes of concrete, concrete mixing water or other chemical substances.

☞ Injuries to the eyes and other injuries due to hydraulic oil spurting out if the system is not depressurised.

☞ Injuries due to centrifugal forces of bursting couplings, bursting pipework or plugs blown out of the concrete conveying pipework.

☞ Hazards of touching electrical cables.

☞ Electric shock (which can be fatal) from machines with electrical drives, if electrical connections are not properly made or the connecting cables are defective.

☞ Danger of tipping over due to collapse of the outriggers.

☞ Injuries due to burns if hot parts are touched.

☞ Injuries due to falling pipes.

☞ Injuries to personnel due to inadvertent operation of the machine controls and hence inadvertent operation of the machine.

- ☞ Head and shoulder injuries due to concrete discharging from the discharge hose or concrete conveying pipes.
- ☞ Injuries due to parts falling from the concrete conveying pipes, if these are not properly aligned.
- ☞ Injury to the hose operator from the discharge hose if this was secured in the catch and then suddenly swings out on release.
- ☞ The truck-mounted concrete pump can roll away if the brakes or outriggers are released.
- ☞ Injuries due to opening the conveying pipes when they are under pressure due to a blockage.
- ☞ Injuries due to reaching into the agitator hopper, or falling into it.
- ☞ Injuries due to slipping from or on the oily and slippery walkways on the machine.
- ☞ Injuries during pumping operations due to reaching into the water tank at the same time as the piston is in motion.
- ☞ Amputation of the hand if the arm is trapped in the S-valve when cleaning with the flap elbow open.
- ☞ Injuries due to tripping over cables, hoses or reinforcing rods.
- ☞ Injuries due to being caught in the mixing hopper or its parts (chute).
- ☞ Injuries due to unsecured conveying pipes slipping down or falling down.
- ☞ Risk of crushing at the complete outriggers.
- ☞ Injuries due to unintended movement of the distributor boom following inadvertent operation of the controls.

2.7 Safety information for setting up

DANGER:

- ☞ **The distributor boom should not be moved before all the outriggers have been fully extended and all support cylinders correctly set!**
- ☞ **The truck-mounted concrete pump must not be driven with the distributor boom deployed!**
- ☞ **The safety regulations for the country in which the truck-mounted concrete pump is being operated must be complied with!**

2.7.1 Set-up location

When selecting the set-up location, the following aspects should be considered:

☞ Check the route to the set-up location, if necessary have someone guide the driver to the location.

☞ Keep a safe distance from obstacles such as site cranes, buildings and equipment.

☞ Check there is sufficient room to extend the outriggers.

☞ Check there is sufficient room to deploy the distributor boom.

☞ Check there is sufficient ventilation to clear the vehicle exhaust gases.

2.7.2 Hazard area

The hazard area is the area around the truck-mounted concrete pump within which a person could encounter movements of the distributor boom, the truck and the outriggers, and thus be at risk.

DANGER:

- ☞ **The is a risk of crushing when slewing and extending the outriggers and when extending the support cylinders!**
- ☞ **The operator must continually monitor the hazard area!**

☞ The outriggers must not be extended when personnel are in their area of movement. Interlock the outriggers hydraulically or mechanically.

☞ Press the Emergency Stop button immediately if anyone approaches the hazard area.

☞ Extending the outriggers on only one side may be performed only of the manufacturer has approved this after consideration of the stability of the arrangement, and the distributor boom is restricted so that it can only move within the slewing arc specified for the situation.

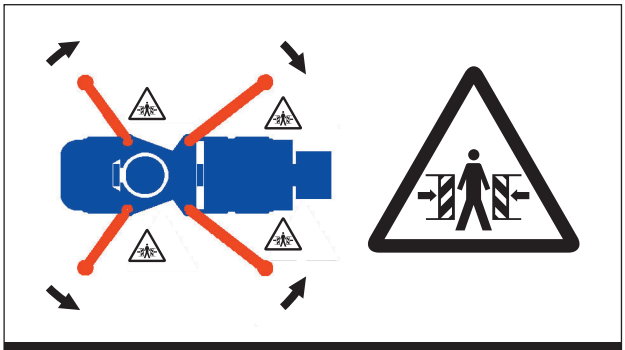


Fig. 2.2 Crush hazard in the slewing area of the support feet

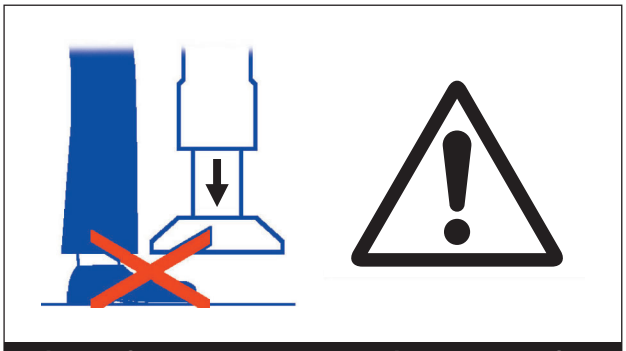


Fig. 2.3 Crush hazard when extending the support feet

2.7.3 Setting up

2.7.3.1 General

- Set up the truck-mounted concrete pump so that stability is assured.
- It must be at a sufficient distance from embankments, pits, excavations and other holes so that the pressure of the outriggers on the ground does not cause it to break into the hole.

2.7.3.2 Safety distances to the edges of excavation pits

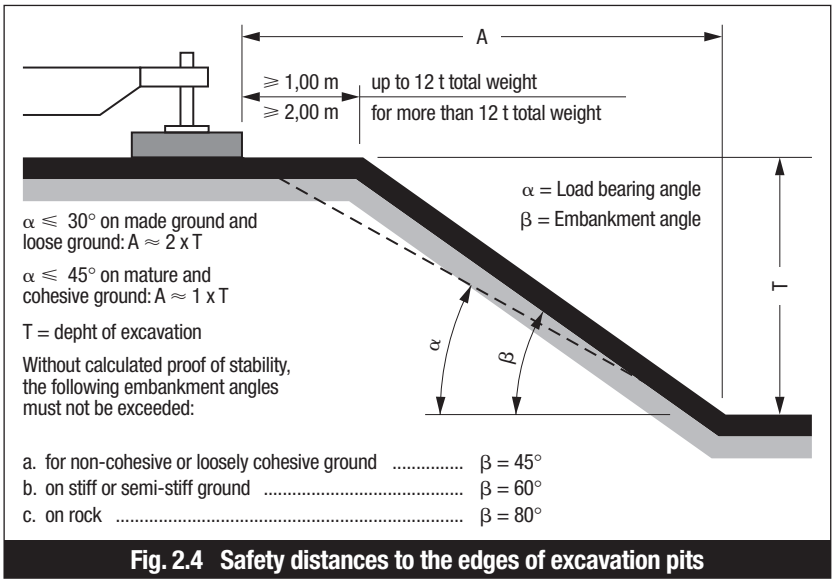


Fig. 2.4 Safety distances to the edges of excavation pits

2.7.3.3 Underground

The ground must be flat, horizontal and without voids.

On sloping ground the outriggers can slip from timber baulks.

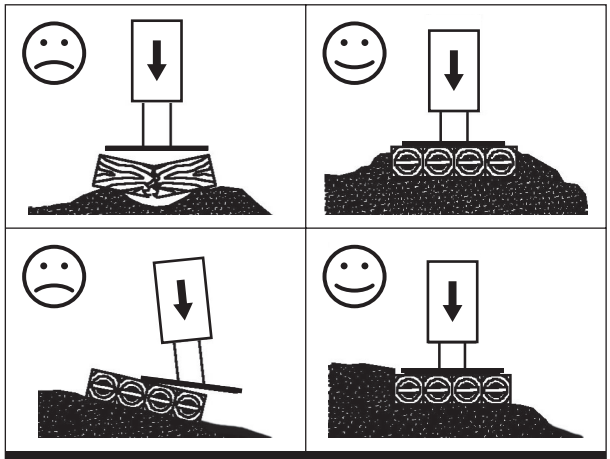


Fig. 2.5 Ground

2.7.3.4 Quality of ground

The ground must be of a quality sufficient to ensure the stability of the machine and the distributor boom. The outriggers exert a surface pressure up to 260 N/cm^2 (26 kg/cm^2). If the ground quality is insufficient to accept this the bearing area should be enlarged with two crossed layers of support plates. See DIN 1054 for recommended values.

Types of ground	Premissible ground pressure N/cm^2 (kg/m^2)
A. Backfilled ground, not artificially consolidated	0-10 (0-1)
B. Mature, obviously undisturbed ground:	
1. Silt, marsh, topsoil	0
2. Non-cohesive, sufficiently firm ground:	
fine to medium sand	15 (1,5)
Coarse sand to gravel	20 (2,0)
3. Cohesive ground:	
Mushy	0
Soft	4 (0,4)
Stiff	10 (1,0)
Semi-hard	20 (2,0)
Hard	30 (3,0)
4. Rock, unweathered with little fissuring and in a good position	150-300 (15-30)

Fig. 2.6 Premissible ground pressures for various types of ground

2.8 Safety instructions for remote control

☞ The remote control is active when the connecting cable is plugged into the machine.

☞ When remote control is in operation, the pendant must not be put down unless the Emergency Stop button has been pressed. To restart the machine (also after rectifying a fault), the Emergency Stop button must be released (twist it in the direction of the arrow, or pull it outwards).

☞ Before starting up the remote control, press the Emergency Stop button, so that all control and regulation devices for remote control are set to “0”.

☞ During interruptions, pauses whilst pumping takes place, also during maintenance and repair work, secure the remote control against unauthorised use e.g. by locking it in the cab or in a tool box etc.

2.9 Safety instructions for the working area

☞ During operation of the truck-mounted concrete pump, the machine operator is responsible for the entire working area. The working area must be fully within his field of view, otherwise an assistant is necessary. When leaving the machine, secure it against unauthorised use and self-acting movement.

☞ Barrier off the working area to other traffic in accordance with instructions.

☞ Personal protective clothing (hard hat, safety glasses, face mask, safety gloves, etc.) must be worn within the entire working area, in particular when working with cement or with chemical mortar additives.

☞ Unauthorised access to the hazard area of the machine is prohibited. If anyone is in the hazard area, first warn them, then if they still do not leave the hazard area, shut down the machine.

☞ Never, irrespective of whether the machine is running or not, reach with the hand into the transfer mechanism, pre-compression system, water tank, transfer tube or other moving part of the machine.
Always first switch the engine off and depressurise the system.

☞ When climbing on to and off the machine, use the handrails and the steps.
Keep steps, platforms, controls and regulation devices etc. free of dirt, oil, snow and ice.

☞ Whilst the machine is running never remove any guards (e.g. water tank cover), nor disable or bypass any safety devices (e.g. limit switches or mechanical catches for the grill interlocks).

☞ Whilst the pump is running, keep off the machine. All operation should be by remote control only.

DANGER

DANGER:

- ☞ **Under the slewing area of the distributor boom there is a risk of injury due to falling parts.**
- ☞ **At the discharge hose there is a there is a risk of injury due to falling concrete.**
- ☞ **Unauthorised persons must leave the hazard area immediately. If necessary, stop the machine immediately.**

2.9.1 Distributor boom

☞ The operator must ensure that no unauthorised person is in the hazard area.

☞ The distributor boom should not be moved before the outriggers have been fully extended and all support cylinders correctly set. The truck-mounted concrete pump must not be driven with the distributor boom deployed.

☞ Do not use the distributor boom as a crane jib or as a lever to push aside obstacles (such as trees).

☞ The distributor boom should be not be deployed beyond the lengths stated in the user manual.

☞ Add extensions to the conveying pipe to the distributor boom only if they do not place any additional load on the boom.

☞ When the wind reaches the critical speed, retract the distributor boom and secure it. Retract the boom and secure it also at the end of the day's work.

☞ If hazard areas are out of the operator's field of view, employ an assistant. Such hazard areas can be those within the slewing area of the distributor boom or the discharge hose.

☞ When the wind reaches the critical speed, retract the distributor boom and secure it. Retract the boom and secure it also at the end of the day's work. The machine operator must ensure that when moving the distributor boom the clearances to overhead electric cables are maintained as set out in the table.

2.9.2 Conveying pipes

☞ The machine operator must securely fasten the conveying pipes, particularly riser pipes, that are not incorporated in the distributor boom and ensure that the forces arising in the components and other parts of the design are appropriately taken up. The conveying pipes must be aligned so as to avoid kinks, sharp bends and damage in operation.

☞ If worn or defective components (high pressure hoses etc.) are not immediately replaced, **WAITZINGER** will not accept product liability. Conveying pipes are not under stress when the distributor boom is stowed, and can thus be replaced without problems at that time. If conveying pipes are replaced when the distributor boom is deployed, stresses may be introduced during assembly.

☞ To ensure a long working life for the conveying pipes, after delivering approx. 6,000 m^3, rotate all conveying pipes 120° clockwise, and rotate the elbows 180°. Check the minimum wall thicknesses and operating pressure.

WARNING

WARNING:

If you use compressed air for cleaning the conveying pipes, this is at your own risk! WAITZINGER accepts no liability for the risks involved. If nevertheless you do use compressed air for cleaning, information can be found in an additional sheet which can be requested from WAITZINGER as required.

2.9.2.1 Locking the conveying pipe connections

- All conveyor pipe couplings must be secured with spring clips (arrowed) against bursting open.

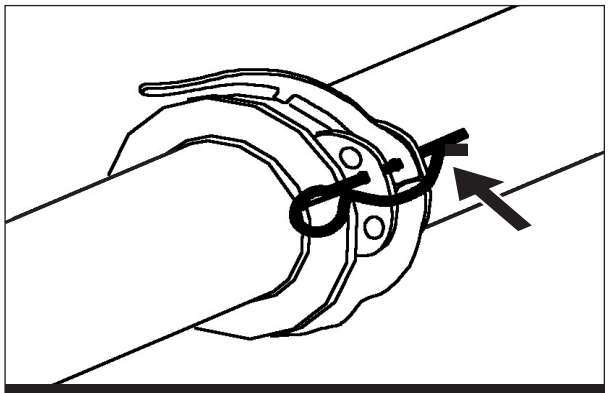


Fig. 2.7 Conveyor pipe coupling locking

2.9.2.2 Opening the conveying pipe connections

- Conveying pipe connections must be knocked apart and opened only in the depressurised state.
- Always pump backwards 1-2 piston strokes.

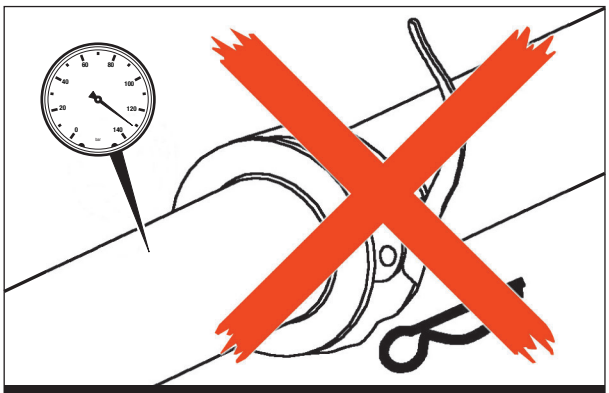


Fig. 2.8 Conveyor pipe coupling opening

2.9.3 Discharge hose

DANGER:
When pumping, after interruptions, after undoing a plug or when cleaning the conveying pipes, the discharge hose can swing out.

- ☞ The hazard area around the discharge hose has a diameter twice the length of the discharge hose.
- ☞ If anyone is within this hazard area, stop the machine immediately and press the Emergency Stop button.
- ☞ If the discharge hose becomes snagged, never use the distributor boom to pull it free. This might put the stability of the machine at risk or overload the steel structure!
- ☞ The freely suspended discharge hose must not be extended with additional couplings, discharge pieces or other hazardous discharge arrangements.
- ☞ The discharge hose must not be extended beyond the length supplied by the manufacturer.
- ☞ If the machine operator connects another discharge piece in place of the discharge hose, this must not be guided manually.
- ☞ The machine operator must use only the end hose approved by the manufacturer for delivering concrete into high places.

2.9.3.1 Hazard area for the discharge hose

- ☞ When the pump is started or a blockage occurs, the end hose must hang freely.
- ☞ There is an injury risk of being struck by the discharge hose or by stones shooting out of it.

Hazard area = 2 x discharge hose length

Fig. 2.9 Hazard area for the discharge hose

2.9.3.2 Kinks in the discharge hose

- Never kink the discharge hose whilst the pump is running. Blockages increase the risk of accidents.

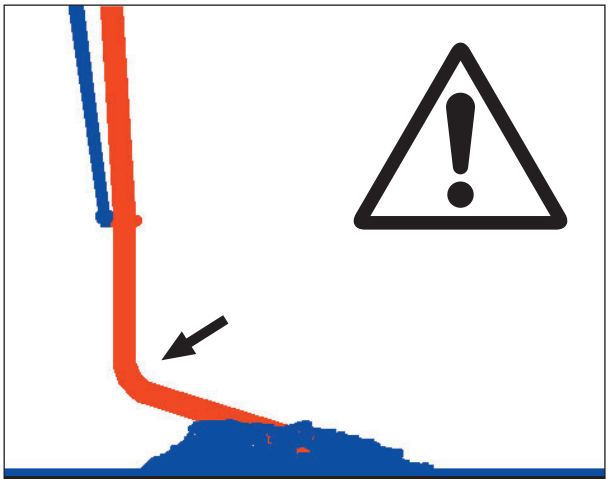


Fig. 2.10 Kink in the discharge hose

2.9.3.3 Use the guide rod to hold the discharge hose

- Do not hold the discharge hose by hand; if necessary to guide it use the guide rod as shown here.

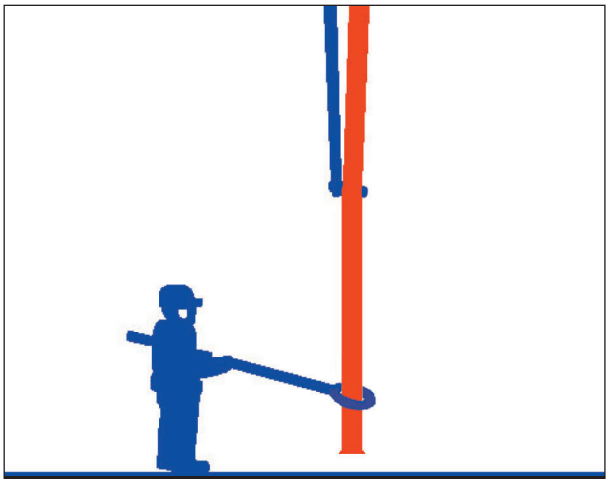


Fig. 2.11 Use the guide rod to hold the discharge hose

2.9.3.4 Securing the discharge hose with the catch

- Always secure the discharge hose with the catch

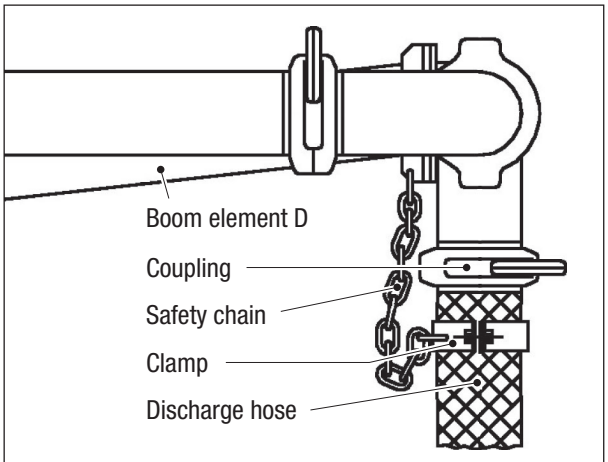


Fig. 2.12 Securing the discharge hose with the catch

2.9.4 Agitator

☞ To avoid air being sucked into the system, leading to spurting concrete, the hopper must be kept filled with concrete up to the level of the agitator shaft.

☞ Keep the safety grill closed in order to avoid injuries due to reaching into the agitator hopper, or falling into it. Do not place anything on the safety grill. Do not step on the safety grill.

☞ Never operate the machine unless the safety grill is closed and bolted into place or otherwise secured.

2.10 Safety instructions at concrete pressures in excess of 85 bar

If concrete is to be pumped at pressures in excess of 85 bar, the discharge must only be through the side outlet, not through the distributor boom. The machine operator must take the following safety precautions and perform the following tests:

a. Use only pipework supplied by the concrete pump manufacturer. At concrete pressures between 85 bar and 130 bar, high-pressure pipework is necessary.

b. Perform a water pressure test on pipes and couplings no later than after pumping 2000 m^3, at a pressure 30 % greater than the anticipated operating pressure.

c. All couplings, seals and pipe elbows that are less than 3 m from operating personnel should be regularly replaced. (e.g. after pumping each 1,000 m^3 of concrete)

2.11 Safety instructions for maintenance and repair

WARNING

WARNING:

Rectifying faults, repairs and maintenance work may be performed only when the main drive engine is switched off, hydraulic units are depressurised and conveying pipework is also depressurised. Take out the ignition key.

☞ Factory-set chokes and pressure limiting devices may not be adjusted except by trained technical staff.

☞ Removing the seals from safety valves is prohibited.

WARNING

WARNING:

Before performing any electric arc welding, always unplug the cables from the control cabinet and disconnect the battery.
To disconnect the battery, undo the positive and negative terminal connections or switch off the Nato switch at the battery if this is fitted.

☞ Disconnect machines with electrical equipment such as radio remote control (receiver), controls etc. before performing electric arc welding.

☞ Modifications, welding and repair work on the distributor boom and all assemblies associated with it, load-bearing elements, securing points, outriggers, on the mounting frame and any part of the pump or pressure-bearing components may only be performed by persons appointed by the manufacturer. Special care must be taken in respect of boom mountings and outriggers used as hydraulic or diesel tanks.

☞ When replacing electrical, pneumatic or hydraulic components (valves, pumps etc.), the required data (pressure, voltage etc.) should be checked from the machine data sheet, test sheet or circuit diagram and adjusted as necessary.

☞ Maintenance and repair work may be carried out only after fluids have been depressurised. No changes of any sort to the hydraulics are permissible. We emphatically warn against improper repairs to hydraulics. Test certificates supplied with hydraulic components should be carefully filed away for reference.

☞ If any component is removed, carefully note how it was fitted and replace it correctly referring to the spare parts data sheet / service information.

2.12 High-tension overhead electric cables

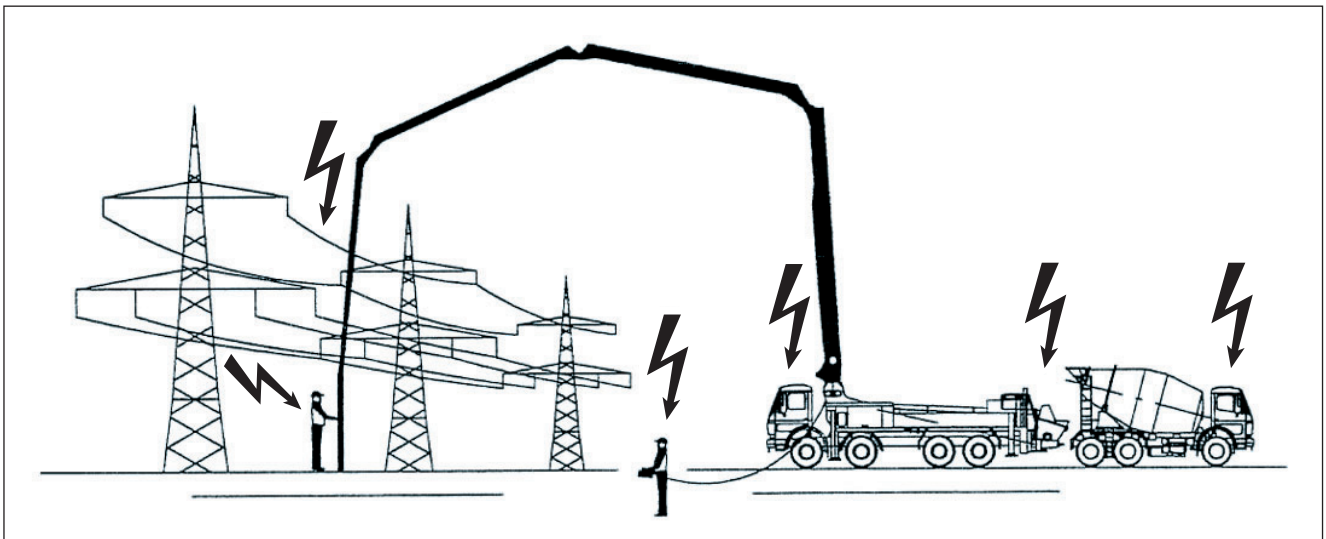


Fig. 2.13 Safety distances to high-tension overhead electric cables

DANGER:

☞ **Direct contact with high-tension cables can cause fatalities.**

☞ **Even coming close to high-tension overhead electric cables can cause the machine and the surrounding ground to become live due to a flashover.**

☞ **Always maintain the stated safety distance.**

2.12.1 Safety distance

☞ The machine operator must ensure that when moving the distributor boom the clearances to overhead electric cables are maintained as set out in the table. The following minimum safety distances are those specified for the German Federal Republic in VDE 0105:

Nominal voltage	Minimum safety distance
up to 1.000 Volt	1,0 metre
over 1 kV bis 110 kV	3,0 metre
over 110 kV bis 220 kV	4,0 metre
over 220 kV bis 380 kV	5,0 metre
if the voltage is not known	5,0 metre

Fig. 2.14 Minimum safety distance from overhead electric cables

☞ If the minimum safety distance from overhead electric cables shown in the table cannot be maintained, the machine operator must ensure that they are

- switched off for the duration of the work, or
- they are shrouded or insulated in the vicinity of the concrete pump and distribution boom.

☞ The same minimum safe distances apply to driving underneath overhead electric cables. Make allowance for the swing of the cables and the distributor boom in the wind.
High ambient humidities require safety distances greater than those listed.
Refer to the regulations for the country where the machine is in use.

☞ If the minimum distance cannot be maintained for all possible working positions, it is essential to contact the electricity supply company.
It may be necessary to forgo the use of the distributor boom altogether and use a separate conveyor pipe.

2.12.2 High-tension contacts

☞ High-tension contacts bring the risk of fatal injury for all persons who are on the machine and in its vicinity or are in any way connected to it (remote control, discharge hose etc.).

☞ High-tension contacts form a “Voltage funnel” underneath the equipment and in a circle around it. The voltage decreases as the radius increases.

☞ Every step within the voltage funnel is hazardous.
A step can span two different potentials (step voltage), so that the current flows through the body in proportion to the potential difference.

☞ If a high-tension contact occurs, keep calm, stand still (step voltage), and don’t touch anything.

☞ No-one else should enter the hazard area. Immediately have the high-tension cable switched off.

☞ After the high-tension cable has been switched off, move the machine away, help the injured and perform first aid.

☞ Using remote control protects the machine operator only if he is standing outside the voltage funnel.
In all other cases all personnel risk fatal injury.

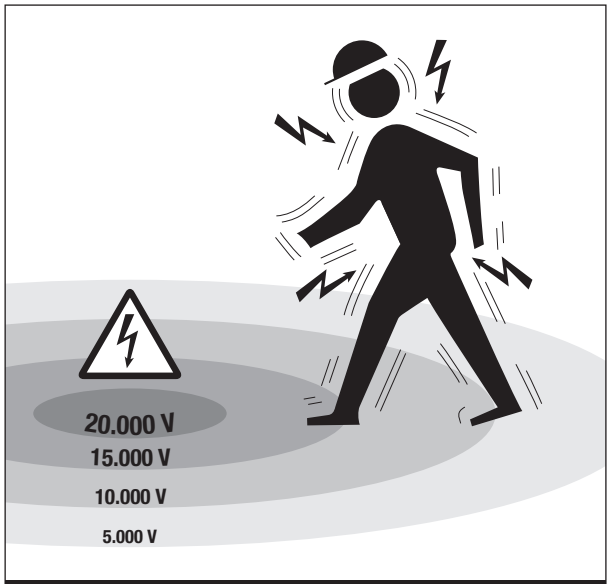


Fig. 2.15 Step voltage

☞ When working close to high-tension overhead cables, have these switched off by competent electricians.

2.12.2.1 Automatic reconnection

☞ Electrical supply systems are equipped with automatic reconnection.

☞ After the switchgear has tripped, the short-circuited cable is automatically reconnected after a brief interval.

☞ It is therefore necessary to arrange permanent disconnection.

2.12.3 Static discharge

☞ At close range to transmitting stations there can arise interference to radio and TV transmissions and hazardous static electrical discharges from the machine.

☞ Persons touching a statically charged machine will receive an electric shock.

☞ Machines close to transmitting stations should be earthed. Connect the earthing cable to a clean unpainted metal part of the machine, and anchor it in the ground with a conductive metal rod.

2.12.4 Immediate measures

☞ If an accident involving electric power occurs, immediately institute first aid measures.

☞ If despite all precautions a high-tension cable contact occurs, keep calm, stand still (step voltage), and don't touch anything.

☞ Tell those around to keep their distance (step voltage) and have the high-tension cable switched off.

☞ Only then can the machine be moved and the injured be assisted.

2.12.4.1 Actions after contacting a high-tension overhead cable

☞ Stay in the machine

☞ Drive the machine out of the hazard area

☞ Warn those standing around to keep away and not to touch the machine

☞ Have the high-tension cable switched off

☞ Do not leave the machine until the high-tension cable that was contacted / damaged has been switched off

2.13 Operation in winter

When operating in winter, take care:

☞ Increased danger of slipping, especial when cleaning

☞ Keep steps and platforms free of snow and ice

☞ Risk of blockages due to ice in the conveying pipe

2.14 Storms and thunderstorms

☞ From wind force 7 (wind speed 50 km/h), stop work and move the distributor boom to the transport position.

☞ During thunderstorms there is a risk of lightning strikes.

2.15 Noise emission measurement

The noise emission measurement to EN/ISO 3744 and EN/ISO 4871 have yielded a value of L_{Aeq} = 81.4 dB(A).

2.16 Environmental protection

☞ Use should be found around the building site for surplus concrete, or it should be disposed of as building waste according to the statutory requirements.

☞ Consumables such as lubricants, cleaning materials during maintenance, repair and oil change should be collected in suitable containers and disposed of in accordance with regulations (to EC directive 75/439/EWG and statutory instruments under §§ 5a, 5b AbfG and Altöl).

2.17 First aid

☞ Information should be sought for treatment of injuries that may arise when working with the truck-mounted concrete pump.

☞ Injuries must be reported to the supervisor.

2.18 Responsible persons

2.18.1 Personnel

The user must ensure that only personnel who have been properly trained and instructed work on or with the machine. The persons responsible for operation and maintenance must be clearly established. Furthermore he must ensure that only authorised persons use the machine.

2.18.2 Requirements

The following requirements apply to all personnel concerned with operation and maintenance of the machine:

☞ They must be at least 18 years of age

☞ They must have appropriate physical and mental capabilities

☞ They must be in good health (calm and not under the influence of alcohol, drugs or medicines)

☞ They must have been trained in the operation and maintenance of the machine

☞ They must have proved their capability to the user

☞ They must be expected to fulfil their duties reliably

Personnel must not wear any loose clothing or jewellery, including rings.
Free long hair must be secured using a hair net. This is an injury hazard since it may get caught or pulled in.

2.18.3 Skills

Personnel who are being trained, taught, instructed or educated on the machine may use it only under continuous supervision of an experienced operator.

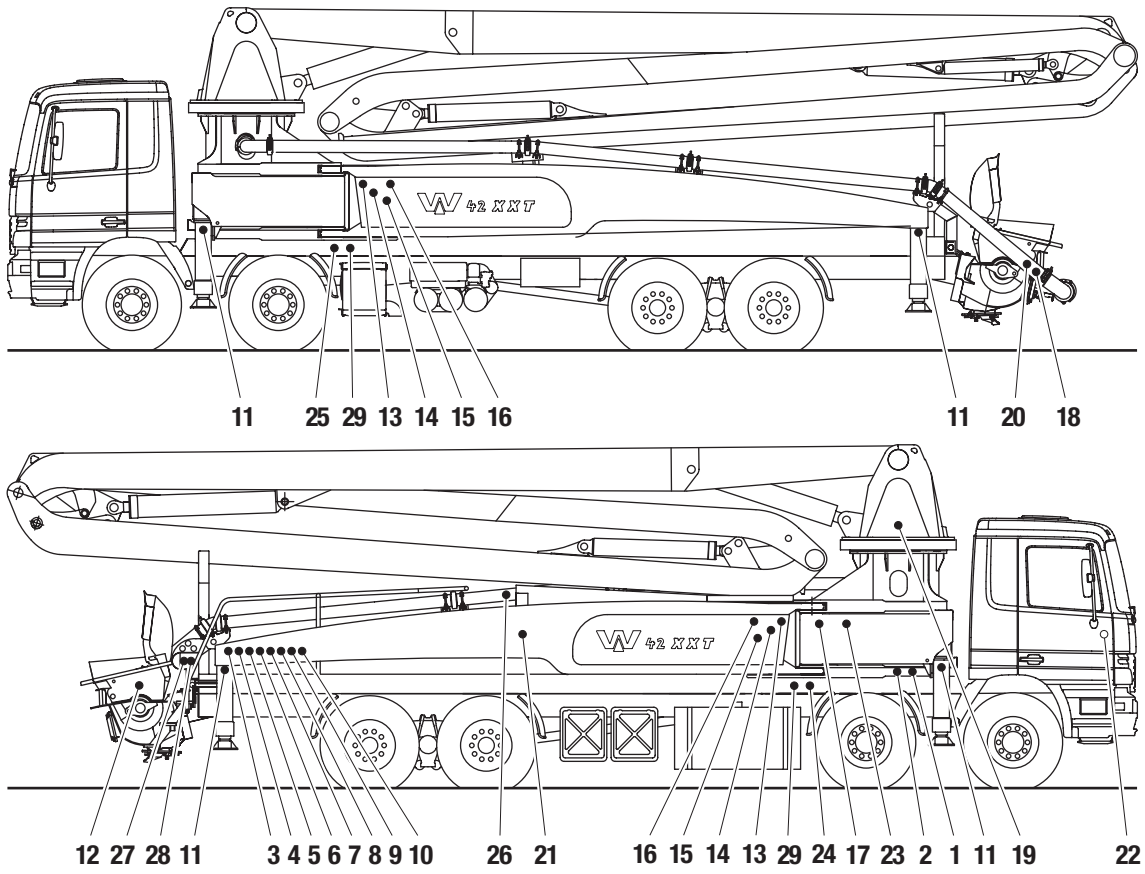
If no skilled personnel or workshop equipment etc. are available, apply to **WAITZINGER** Customer Service for maintenance of your machine.

2.18.4 Machine operator's responsibilities

The user must make clear the machine operator's responsibilities (including national regulations for driving on public roads) and enable him to refuse instructions from third parties to commit unsafe actions. The machine operator must be permitted to refuse to work at a location when there are technical safety problems.

2.19 Safety and warning notices

Safety and warning notices are attached to the truck-mounted concrete pump as listed below.
All safety and warning notices are depicted below in more detail.



1	WAI106179	Serial plate
2	WAI106032	Matching pipe lenghts / Conveying pipes
3	WAI105932	General instructions (GB)
	WAI105933	General instructions (D)
4	WAI105944	Safety equipment
5	WAI105934	High-tension overhead electric cables
6	WAI105974	Keep away
7	WAI105938	Remotely controlled machine
8	WAI105937	Boom is not a crane
9	WAI105975	Total weight of discharge hose
10	WAI105940	Slewing range of boom
11	WAI105941	Extending the support feet
12	WAI105939	Do not reach into the hopper
13	WAI106369	Grease point
14	WAI106370	Fully extend the outrigger
15	WAI106366	max. inclination 3°
16	WAI106367	Crush hazard
17	WAI105976	Distributor boom range
18	WAI105942	Spring plug
19	WAI106769	Distributor boom serial plate
20	WAI105935	Coupling pipe wall thickness
21	WAI105936	Keep hands out of water box
22	WAI105943	Desengage the clutch
23	WAI106478	Safety instructions (GB)
	WAI106477	Safety instructions (D)
24	WAI106348	Operating panel right hand outrigger
25	WAI106349	Operating panel left hand outrigger
26	WAI106519	Operating panel dustributor boom
27	WAI106030	Operating panel agitator
28	WAI106031	Operating panel water pump
29	WAI104770	supports

Fig. 2.16 Overview of safety and warning notices

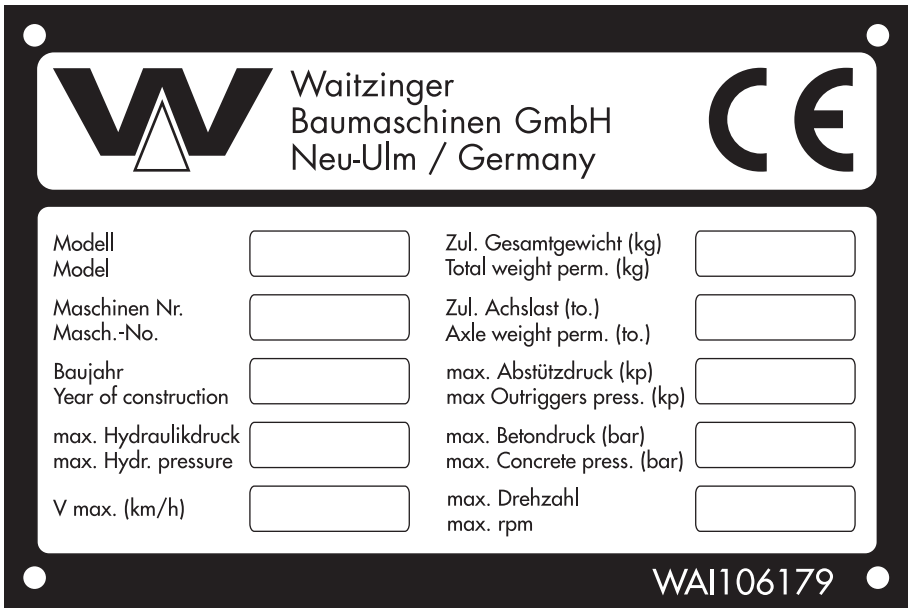


Fig. 2.17 Item 1 - WAI106179 - Serial plate

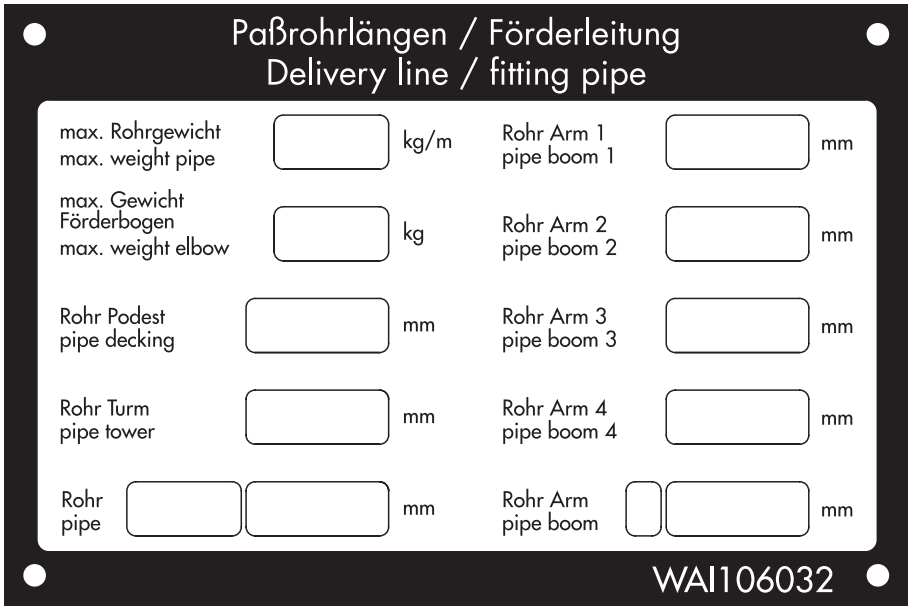
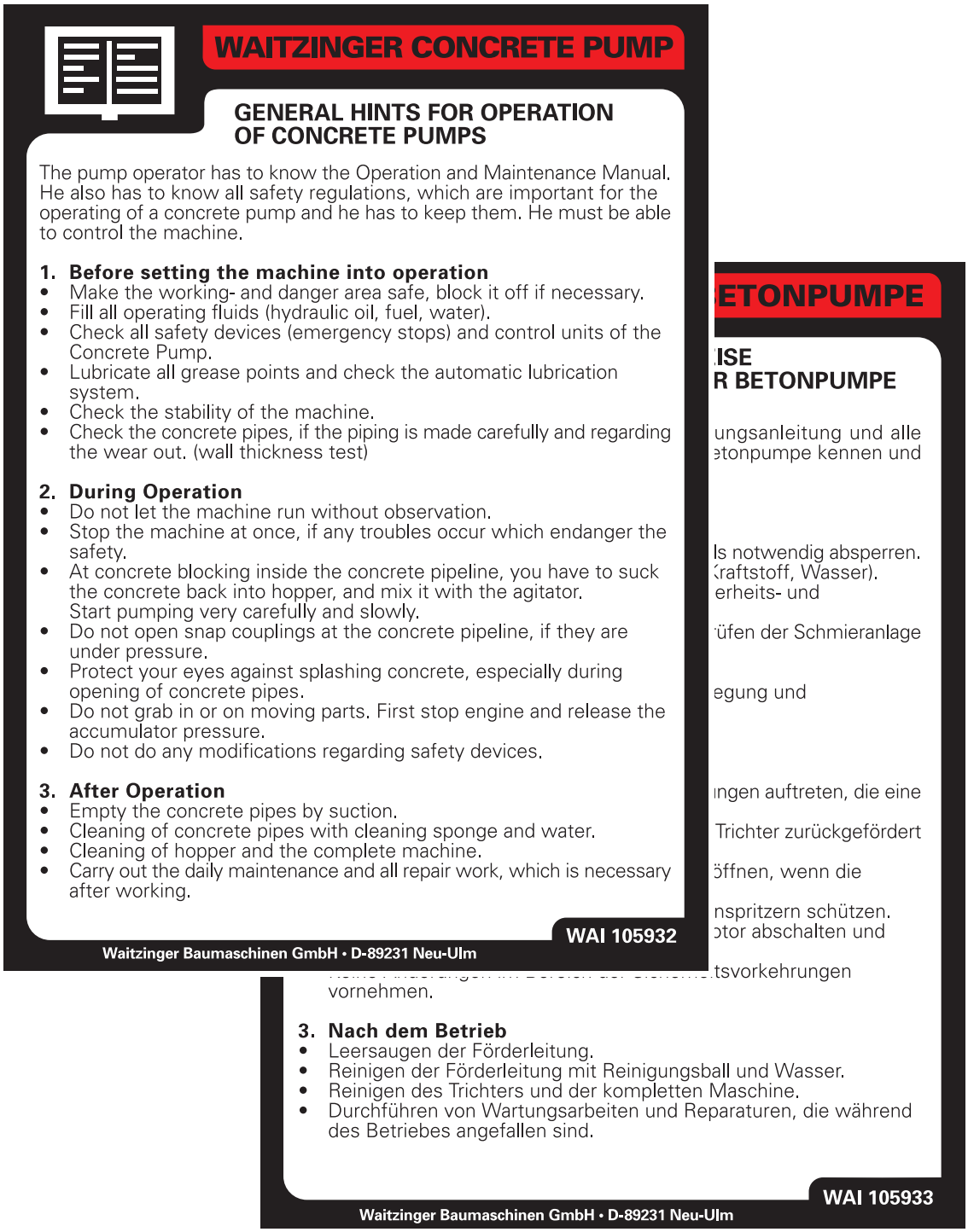


Fig. 2.18 Item 2 - WAI106032 - Matching pipe lenghts / Conveying pipes



WAITZINGER CONCRETE PUMP

GENERAL HINTS FOR OPERATION OF CONCRETE PUMPS

The pump operator has to know the Operation and Maintenance Manual. He also has to know all safety regulations, which are important for the operating of a concrete pump and he has to keep them. He must be able to control the machine.

1. Before setting the machine into operation
- Make the working- and danger area safe, block it off if necessary.
- Fill all operating fluids (hydraulic oil, fuel, water).
- Check all safety devices (emergency stops) and control units of the Concrete Pump.
- Lubricate all grease points and check the automatic lubrication system.
- Check the stability of the machine.
- Check the concrete pipes, if the piping is made carefully and regarding the wear out. (wall thickness test)

2. During Operation
- Do not let the machine run without observation.
- Stop the machine at once, if any troubles occur which endanger the safety.
- At concrete blocking inside the concrete pipeline, you have to suck the concrete back into hopper, and mix it with the agitator. Start pumping very carefully and slowly.
- Do not open snap couplings at the concrete pipeline, if they are under pressure.
- Protect your eyes against splashing concrete, especially during opening of concrete pipes.
- Do not grab in or on moving parts. First stop engine and release the accumulator pressure.
- Do not do any modifications regarding safety devices.

3. After Operation
- Empty the concrete pipes by suction.
- Cleaning of concrete pipes with cleaning sponge and water.
- Cleaning of hopper and the complete machine.
- Carry out the daily maintenance and all repair work, which is necessary after working.

WAI 105932

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vornehmen.

3. Nach dem Betrieb
- Leersaugen der Förderleitung.
- Reinigen der Förderleitung mit Reinigungsball und Wasser.
- Reinigen des Trichters und der kompletten Maschine.
- Durchführen von Wartungsarbeiten und Reparaturen, die während des Betriebes angefallen sind.

WAI 105933

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Fig. 2.19 Item 3 - WAI105933/WAI105932 - General instructions (GB/D)

Fig. 2.20 Item 4 - WAI105944 - Safety equipment

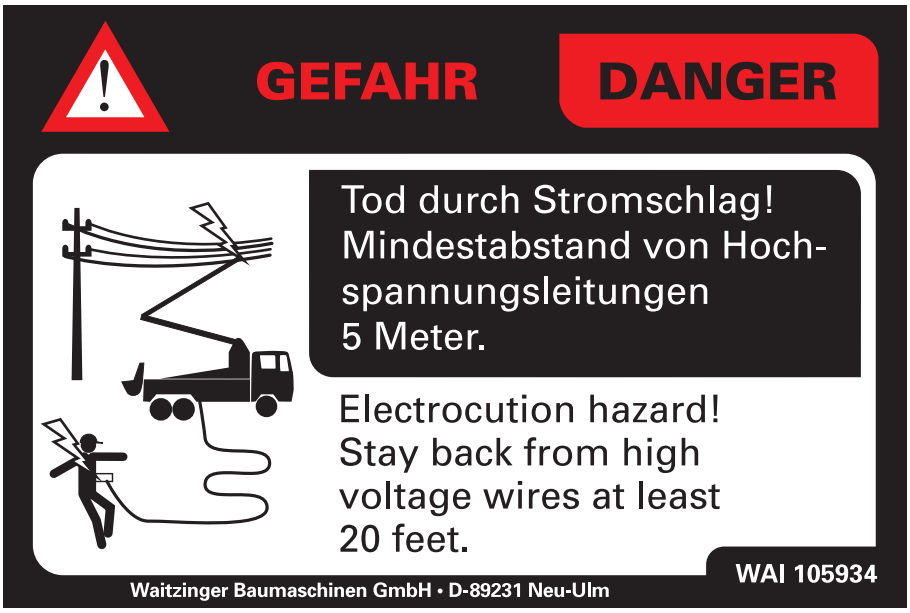


Fig. 2.21 Item 5 - WAI105934 - High-tension overhead electric cables

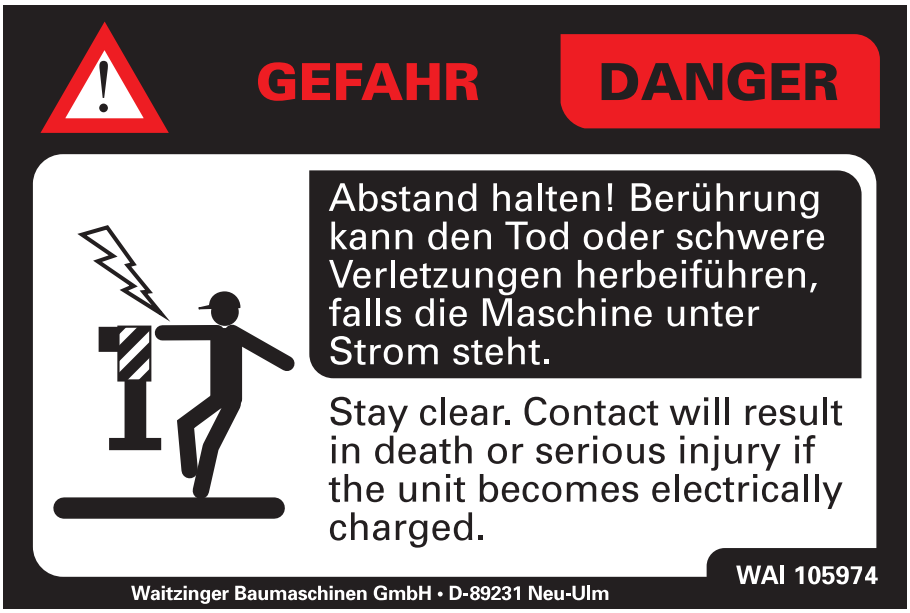


Fig. 2.22 Item 6 - WAI105974 - Keep away

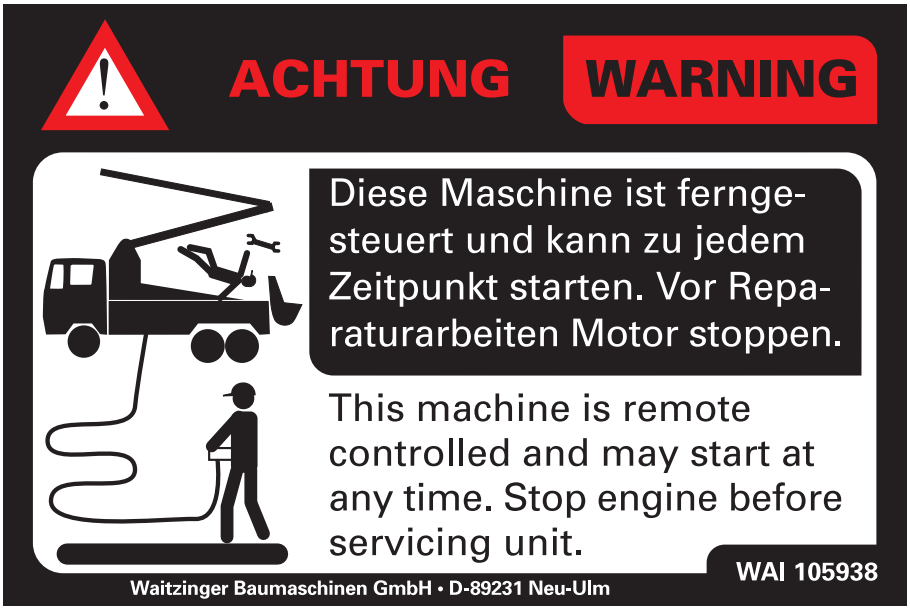


Abb. 2.23 Item 7 - WAI105938 - Remotely controlled machine

Fig. 2.24 Item 8 - WAI105937 - Boom is not a crane

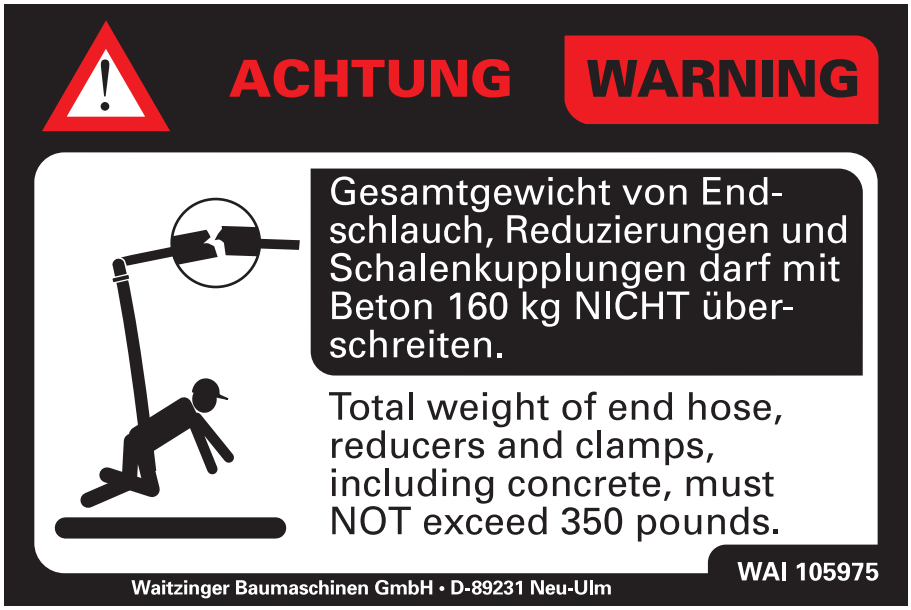


Fig. 2.25 Item 9 - WAI105975 - Total weight of discharge hose

Fig. 2.26 Item 10 - WAI105940 - Slewing range of boom

Fig. 2.27 Item 11 - WAI105941 - Extending the support feet

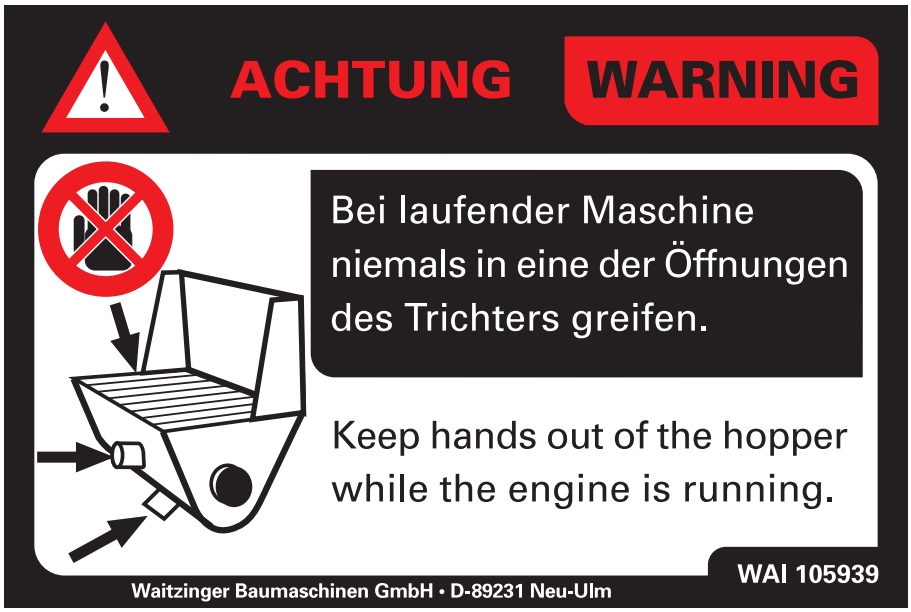


Fig. 2.28 Item 12 - WAI105939 - Do not reach into the hopper

Fig. 2.29 Item 13 - WAI106369 - Grease point

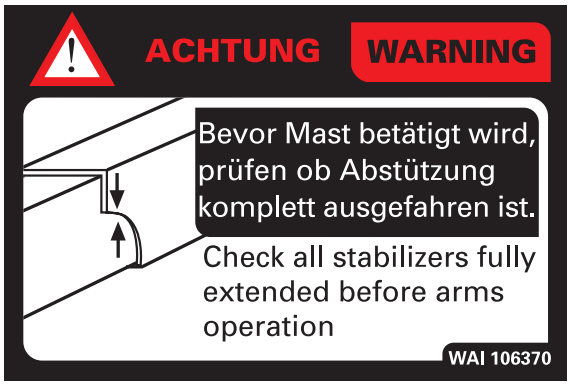


Fig. 2.30 Item 14 - WAI106370 - Fully extend the outrigger

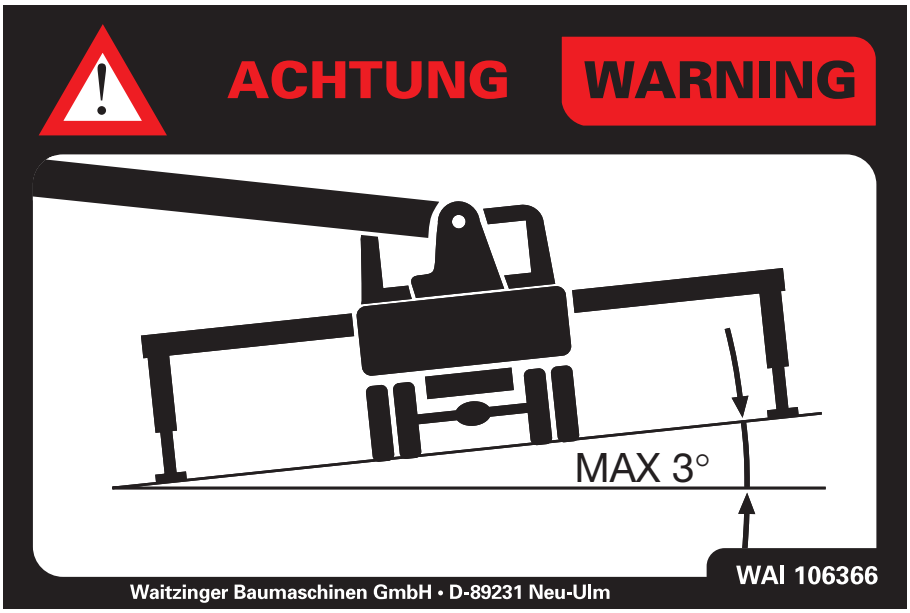


Fig. 2.31 Item 15 - WAI106366 - Max. inclination 3°

Fig. 2.32 Item 16 - WAI106367 - Crush hazard

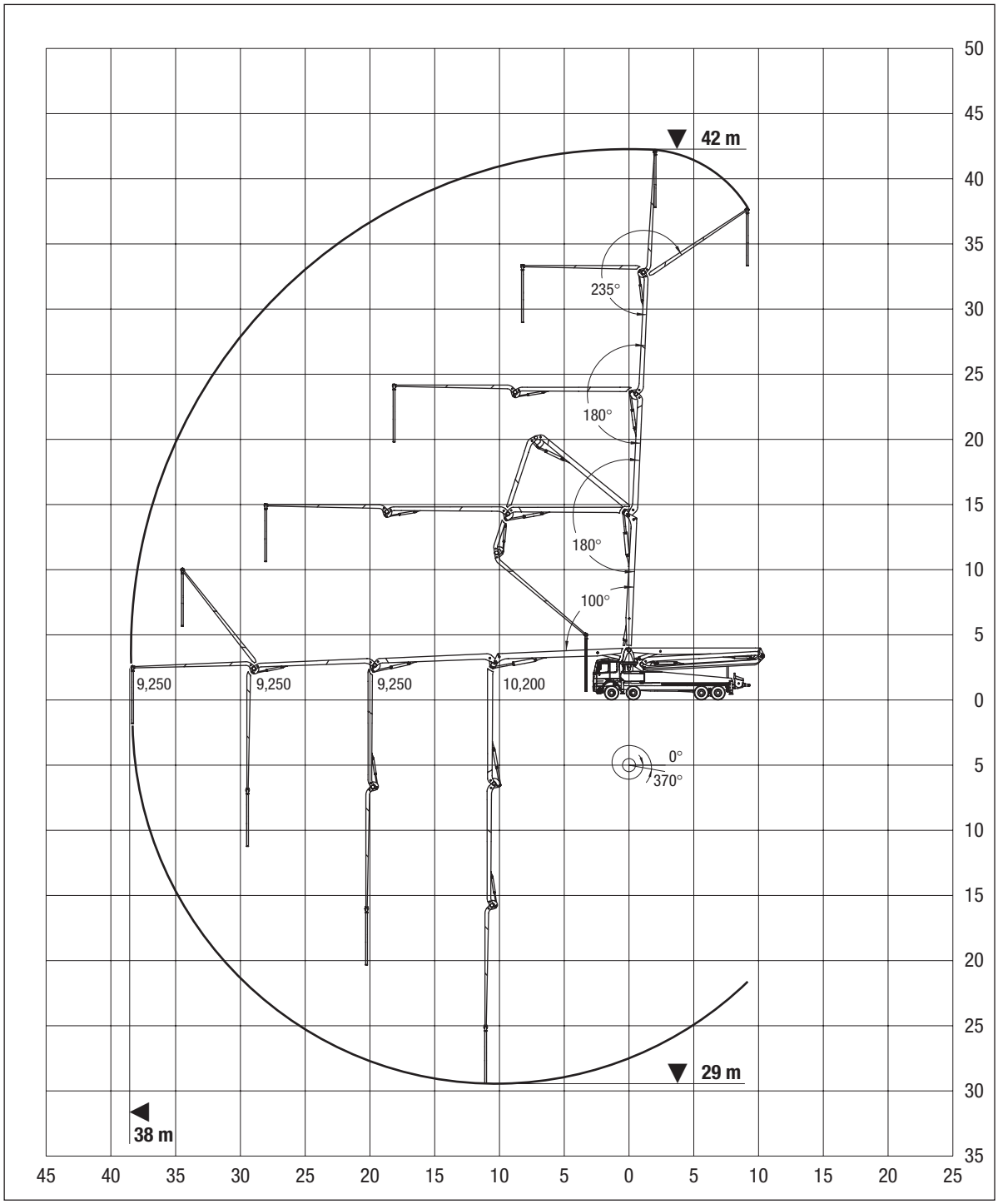


Fig. 2.33 Item 17 - WAI105976 - Distributor boom range

Fig. 2.34 Item 18 - WAI105942 - Spring plug

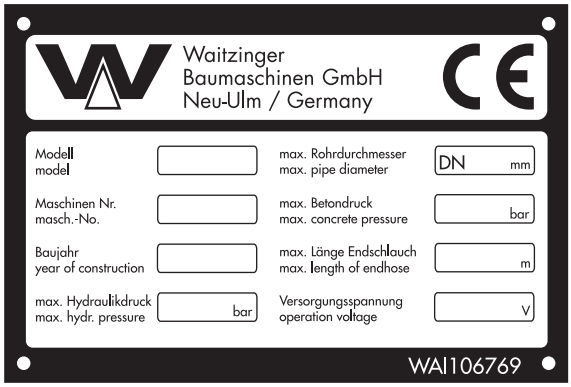


Fig. 2.35 Item 19 - WAI106769 - Distributor boom serial plate

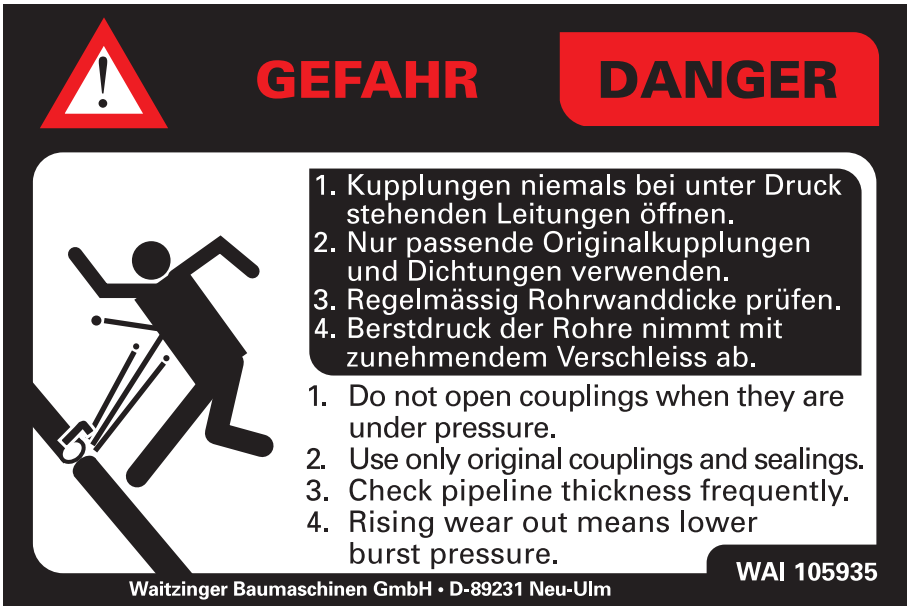
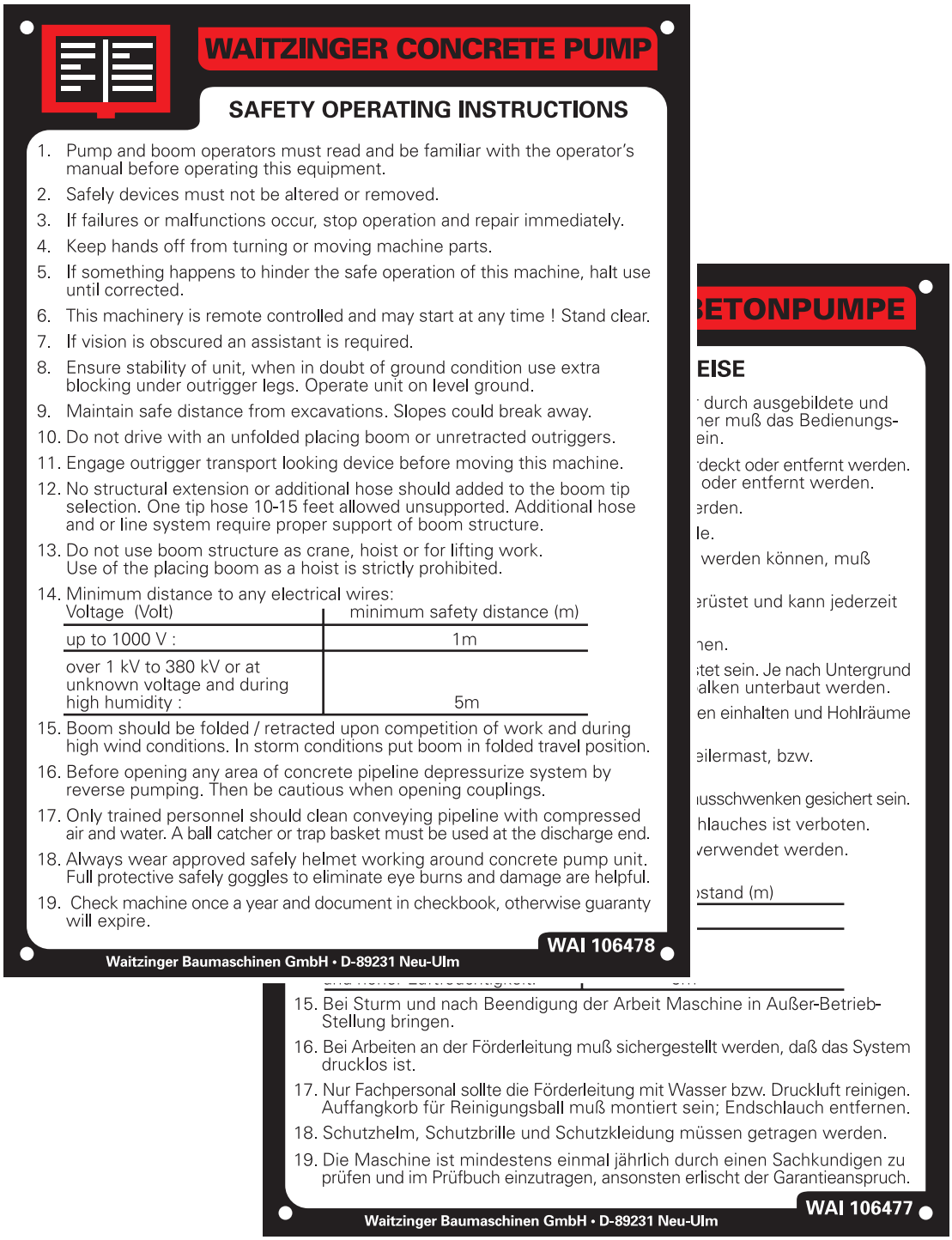


Fig. 2.36 Item 20 - WAI105935 - Coupling pipe wall thickness

Fig. 2.37 Item 21 - WAI105936 - Keep hands out of water box

Fig. 2.38 Item 22 - WAI105943 - Disengage the clutch



WAITZINGER CONCRETE PUMP

SAFETY OPERATING INSTRUCTIONS

1. Pump and boom operators must read and be familiar with the operator's manual before operating this equipment.
2. Safely devices must not be altered or removed.
3. If failures or malfunctions occur, stop operation and repair immediately.
4. Keep hands off from turning or moving machine parts.
5. If something happens to hinder the safe operation of this machine, halt use until corrected.
6. This machinery is remote controlled and may start at any time ! Stand clear.
7. If vision is obscured an assistant is required.
8. Ensure stability of unit, when in doubt of ground condition use extra blocking under outrigger legs. Operate unit on level ground.
9. Maintain safe distance from excavations. Slopes could break away.
10. Do not drive with an unfolded placing boom or unretracted outriggers.
11. Engage outrigger transport looking device before moving this machine.
12. No structural extension or additional hose should added to the boom tip selection. One tip hose 10-15 feet allowed unsupported. Additional hose and or line system require proper support of boom structure.
13. Do not use boom structure as crane, hoist or for lifting work. Use of the placing boom as a hoist is strictly prohibited.
14. Minimum distance to any electrical wires:

Voltage (Volt)	minimum safety distance (m)
up to 1000 V :	1m
over 1 kV to 380 kV or at unknown voltage and during high humidity :	5m

15. Boom should be folded / retracted upon competition of work and during high wind conditions. In storm conditions put boom in folded travel position.
16. Before opening any area of concrete pipeline depressurize system by reverse pumping. Then be cautious when opening couplings.
17. Only trained personnel should clean conveying pipeline with compressed air and water. A ball catcher or trap basket must be used at the discharge end.
18. Always wear approved safely helmet working around concrete pump unit. Full protective safely goggles to eliminate eye burns and damage are helpful.
19. Check machine once a year and document in checkbook, otherwise guaranty will expire.

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15. Bei Sturm und nach Beendigung der Arbeit Maschine in Außer-Betrieb-Stellung bringen.
16. Bei Arbeiten an der Förderleitung muß sichergestellt werden, daß das System drucklos ist.
17. Nur Fachpersonal sollte die Förderleitung mit Wasser bzw. Druckluft reinigen. Auffangkorb für Reinigungsball muß montiert sein; Endschlauch entfernen.
18. Schutzhelm, Schutzbrille und Schutzkleidung müssen getragen werden.
19. Die Maschine ist mindestens einmal jährlich durch einen Sachkundigen zu prüfen und im Prüfbuch einzutragen, ansonsten erlischt der Garantieanspruch.

WAI 106477

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Fig. 2.39 Item 23 - WAI106477/WAI106478 - Safety instructions (GB/D)

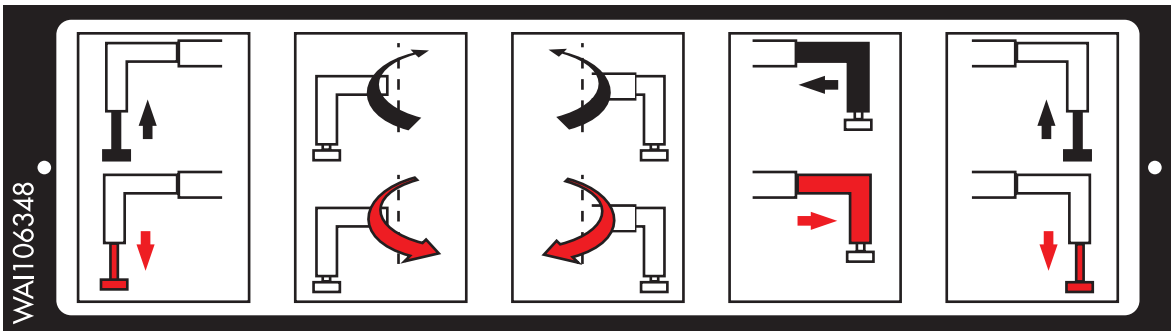


Fig. 2.40 Item 24 - WAI106348 - Operating panel right hand outrigger

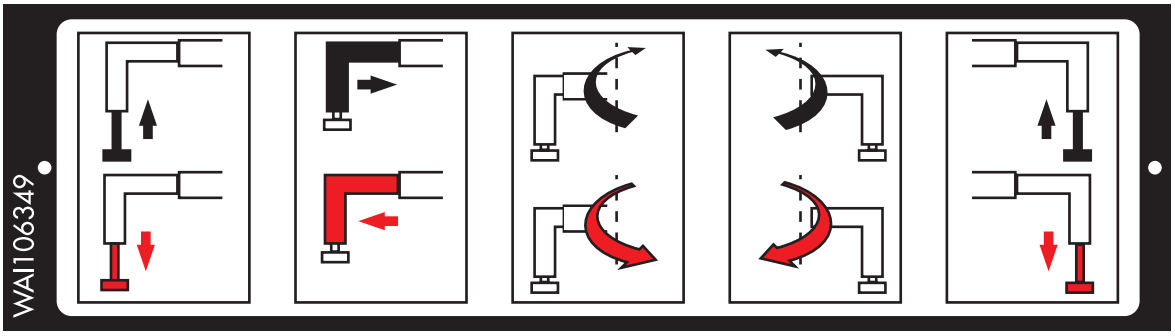


Fig. 2.41 Item 25 - WAI106349 - Operating panel left hand outrigger

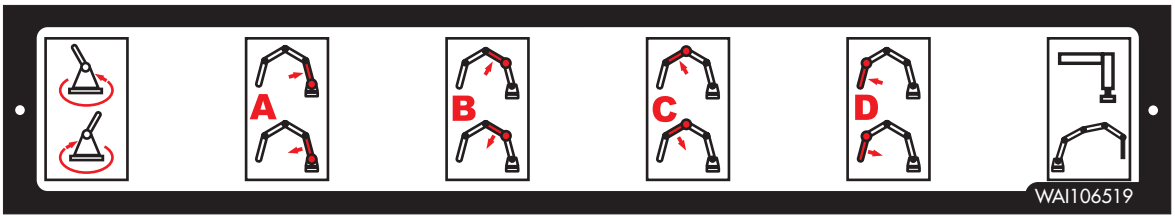


Fig. 2.42 Item 26 - WAI106519 - Operating panel distributor boom

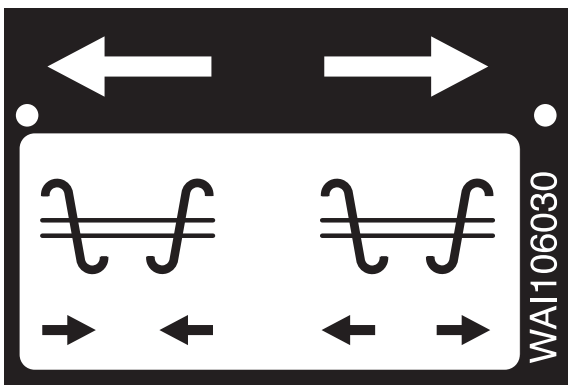


Fig. 2.43 Item 27 - WAI106030 - Operating panel agitator

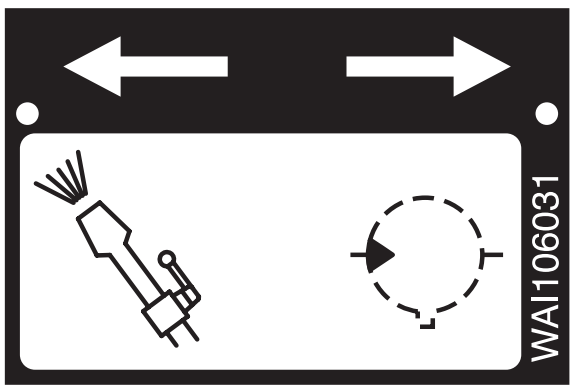


Fig. 2.44 Item 28 - WAI106031 - Operating panel water pump

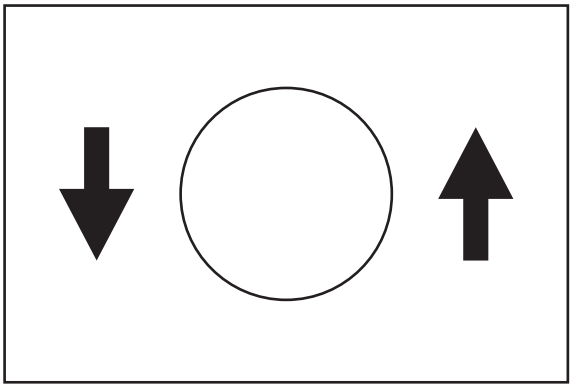


Fig. 2.45 Item 29 - WAI104770 - Operating panel supports

3. Technical data

3.1 Leading dimensions of the truck-mounted concrete pump,

Vehicle dimensions (Length x Width x Height)	approx. 13,070 mm x 2,500 mm x 3,980 mm
Weight (in full working order)	approx. 31,900 kg

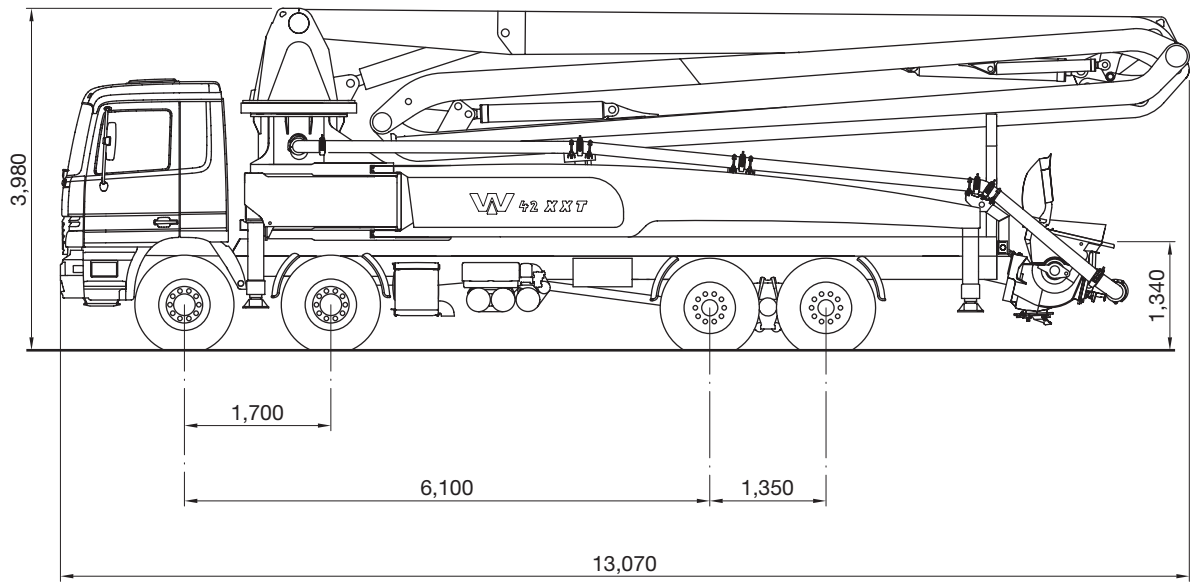


Fig. 3.1 Leading dimensions of the truck-mounted concrete pump

3.2 Truck

Information regarding the truck can be found in the separate user manual supplied by the truck manufacturer.

3.3 Distributor boom 42 R 4 XXT

Horizontal reach	[mm]	38,000
Vertical reach	[mm]	42,000
Slewing range	[degrees °]	370
1 / A element rotation	[degrees °]	100
2 / B element rotation	[degrees °]	180
3 / C element rotation	[degrees °]	180
4 / D element rotation	[degrees °]	235
Concrete pipeline diameter	[mm]	125
Front outrigger setup	[mm]	8,500
Rear outrigger setup	[mm]	8,000
Length of discharge hose	[mm]	4,000
Voltage	[V]	12/24
Max. slope of ground	[degrees °]	3
Front outrigger pressure	[kN]	220
Rear outrigger pressure	[kN]	220
Max. concrete pressure	[bar]	85
Max. weight of pipework	[kg/m]	12
Max. weight of elbow	[kg]	13
Max. density of concrete	[kg/m^3]	2,4
Hydraulic pressure for distributor boom	[bar]	330
Hydraulic pressure for outriggers	[bar]	200
Secondary settings		
Element 1 up	[bar]	300
Element 2 up	[bar]	320
Element 3 up	[bar]	280
Element 4 up	[bar]	280
Rotate	[bar]	160
Telescopic extension	[bar]	100/100
Slew out front outrigger	[bar]	50
Slew in front outrigger	[bar]	80
Time element 1 up/down 100 °	[sec]	90
Time element 2 up/down 180 °	[sec]	115
Time element 3 up/down 180 °	[sec]	76
Time element 4 up/down 235 °	[sec]	51
Rotate left/right 370 °	[sec]	160

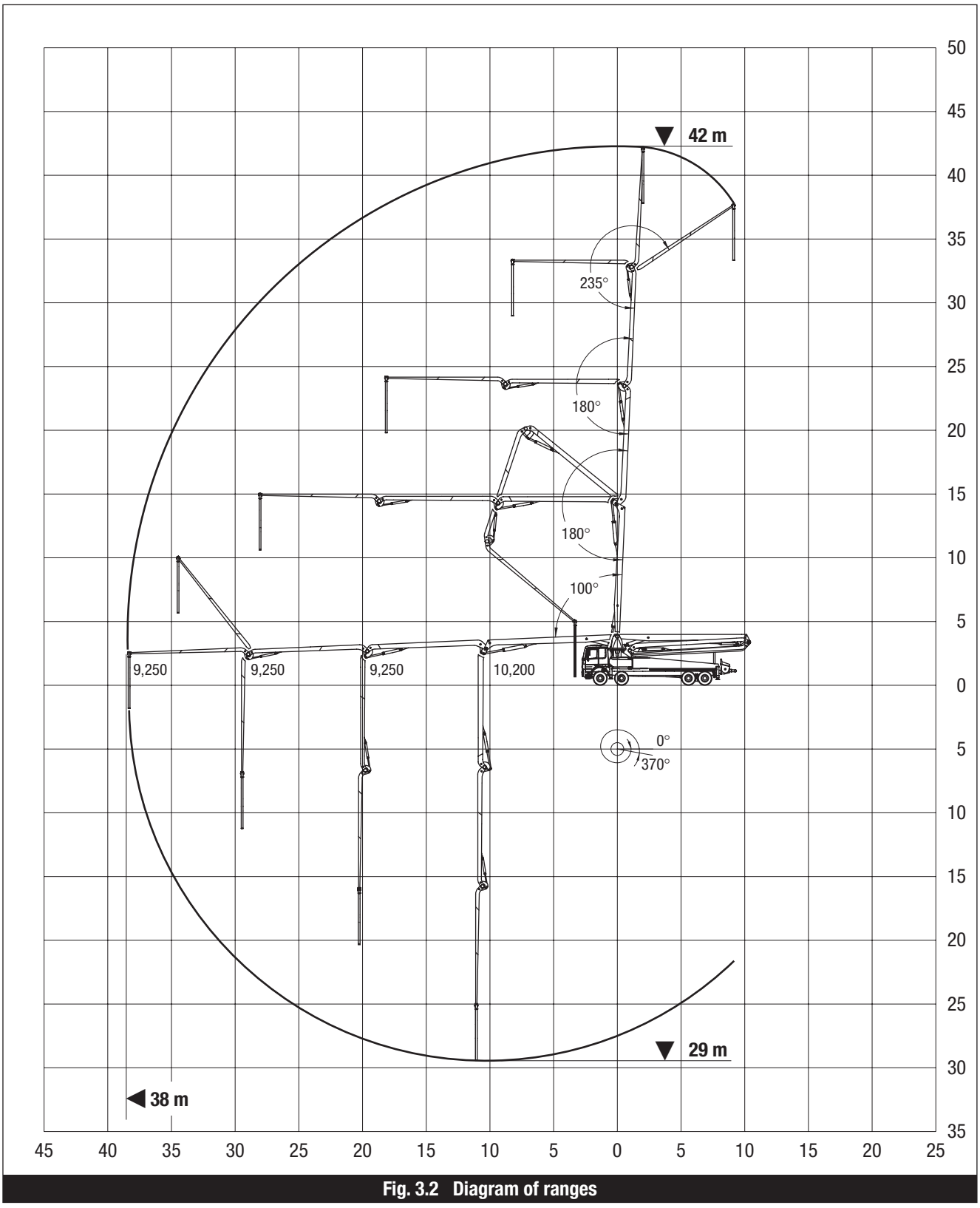


Fig. 3.2 Diagram of ranges

3.4 Concrete pump

		94/42 R 4 XXT	125/42 R 4 XXT	140 H/42 R 4 XXT
Max. concrete output, rod side	[m^3/h]	94	125	140
Max. concrete output, piston side	[m^3/h]	57	75	96
Max. concrete pressure, rod side	[bar]	75	55	80
Max. concrete pressure, piston side	[bar]	125	95	119
Pump cycles/min, rod side		25	25	28
Pump cycles/min, piston side		15	15	19
Conveying cylinder, D_{inner} x stroke	[mm]	200 x 2,000	230 x 2,000	230 x 2,000
Stroke volume / double stroke	[litre]	125	166	166
Hydraulic drive cylinder, D_{piston} /D_{rod} x stroke	[mm]	125/80 x 2,000	125/80 x 2,000	140/80 x 2,000
Oil tank volume	[litre]	600	600	600
Water tank volume	[litre]	600	600	600
Hopper capacity	[litre]	600	600	600
Water pump pressure	[bar]	20	20	20
Max. hydraulic pressure, concrete pump	[bar]	320	320	320
Max. hydraulic pressure, agitator	[bar]	250	250	250
Max. hydraulic pressure, water pump	[bar]	250	250	250
Max. speed of cardan shaft	[rpm]	1.650	1.650	1.650

WARNING:
Note transmission ratio from vehicle gearbox!

4. Description

4.1 Proper use

The truck-mounted concrete pump is a working machine and is exclusively intended for conveying concrete up a density in the pipe of 2,400 kg/m^3.

The machine is not to be used for transport of goods other than transporting accessories such as pipes and hoses etc.
The maximum permissible total weight must not be exceeded.

Any use that is not covered by proper use is deemed to be improper use or misuse.
WAITZINGER accepts no liability for damage that arises under such circumstances.

The truck-mounted concrete pump as delivered is in accordance with current technology and complies with recognised safety standards for construction and use.

The truck-mounted concrete pump should be operated only when it is in good technical condition and for its proper purpose.

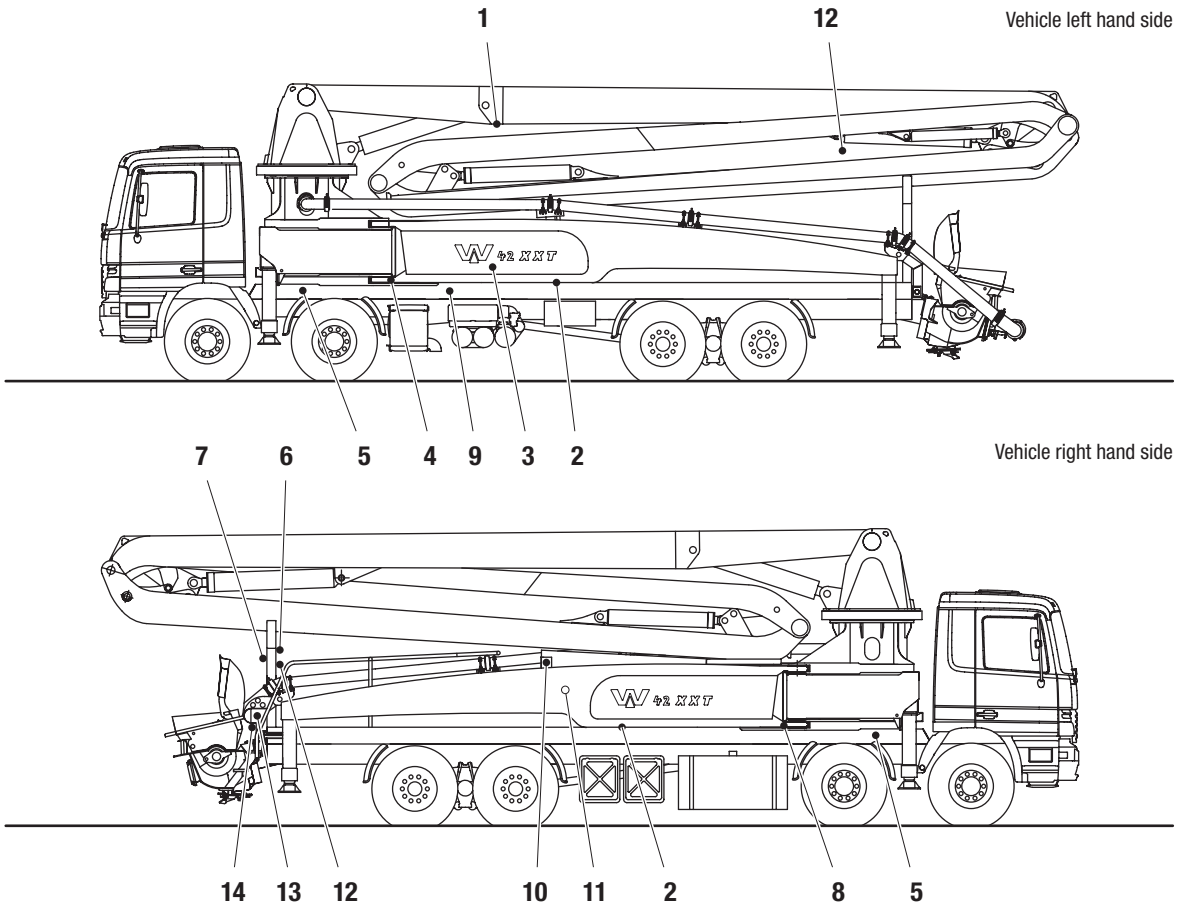
The mandatory regulations for accident prevention applicable in the country and location of operation, and the recognised technical safety rules for safe and proper working practices, together with the instructions for operation and maintenance, must all be complied with.

4.2 Structure and function of the truck-mounted concrete pump

4.2.1 Structure of the truck-mounted concrete pump

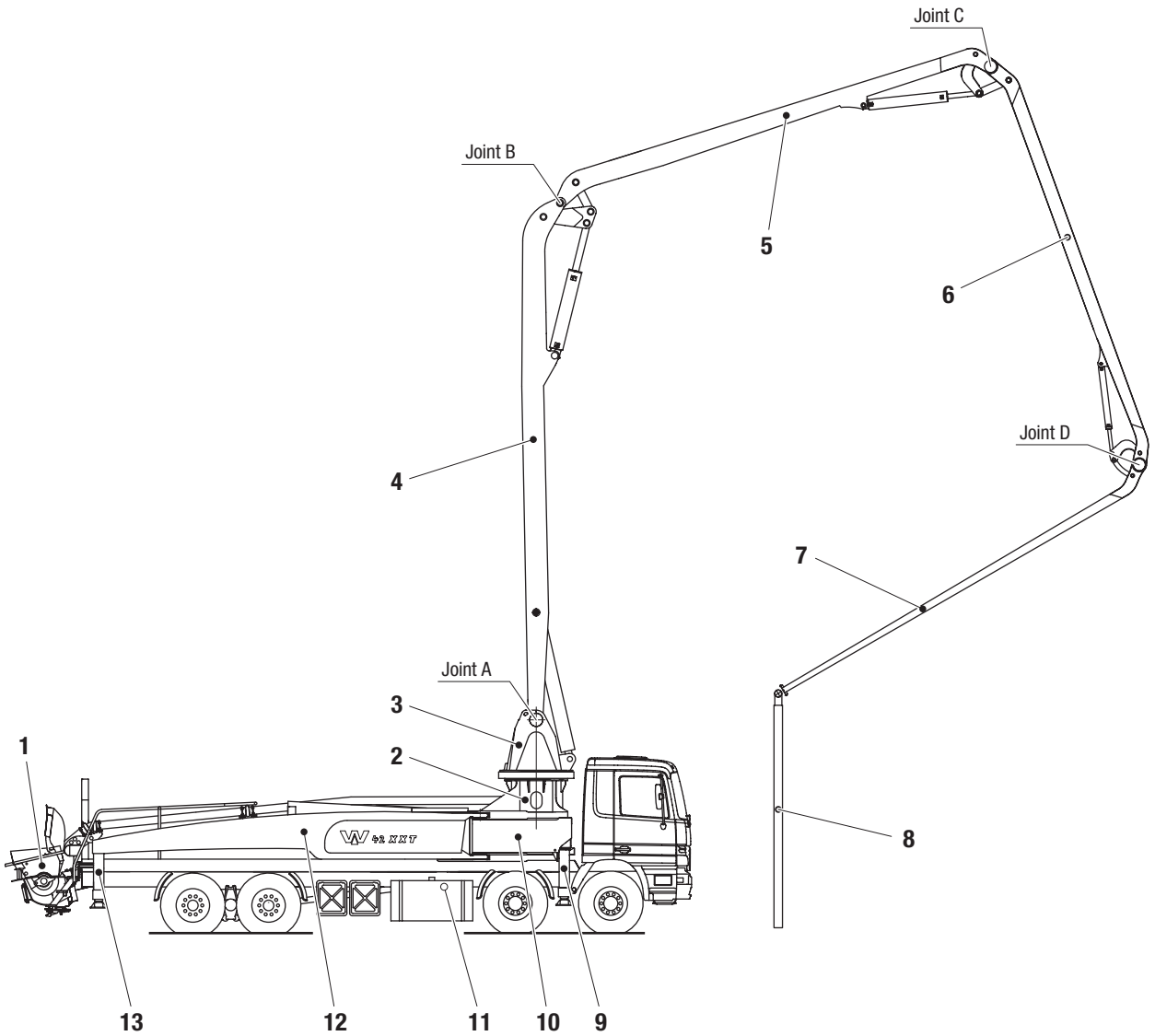
The truck-mounted concrete pump comprises a concrete pump conveying unit mounted on a truck chassis.

The concrete pump conveying unit comprises the following major subassemblies:



1 Catch hook
2 Rear outrigger catches in transport position
3 Water tank, filling and drain cock
4 Outrigger control block, left
5 Telescope limit of travel catch, front
6 Control
7 Lubrication system
8 Outrigger control block, right
9 Gearbox changeover valve
10 Boom control block
11 Concrete pump control block
12 Horn
13 Control panel
14 Control panel water pump / agitator

Fig. 4.1 Main components of the truck-mounted concrete pump - sheet 1



1	Pump group	**8**	Discharge hose
2	Boom block	**9**	Front outrigger cylinder
3	Slewing head	**10**	Front telescopic section
4	Boom element A	**11**	Transfer shift gearbox
5	Boom element B	**12**	Rear outrigge
6	Boom element C	**13**	Rear outrigger cylinder
7	Boom element D		

Fig. 4.2 Main components of the truck-mounted concrete pump - sheet 2

4.2.2 Function of the truck-mounted concrete pump

The concrete is delivered into the hopper and is pumped by the concrete pump through the S-valve and the conveying pipework to the discharge hose.

4.2.2.1 Distributor boom

All distributor boom functions are hydraulically actuated.
The conveying and riser pipes comprise pipes and pipe elbows.
Snap couplings allow the pipes to be joined together and the joints to be rotated.

4.2.2.2 Outriggers

The rear outriggers are swung out hydraulically. The telescopic front outriggers are hydraulically swung out and extended. The hydraulic support cylinders ensure the necessary stability of the truck-mounted concrete pump. The rear outriggers contain the water tanks with a capacity of 400 litres each.

4.2.2.3 Control

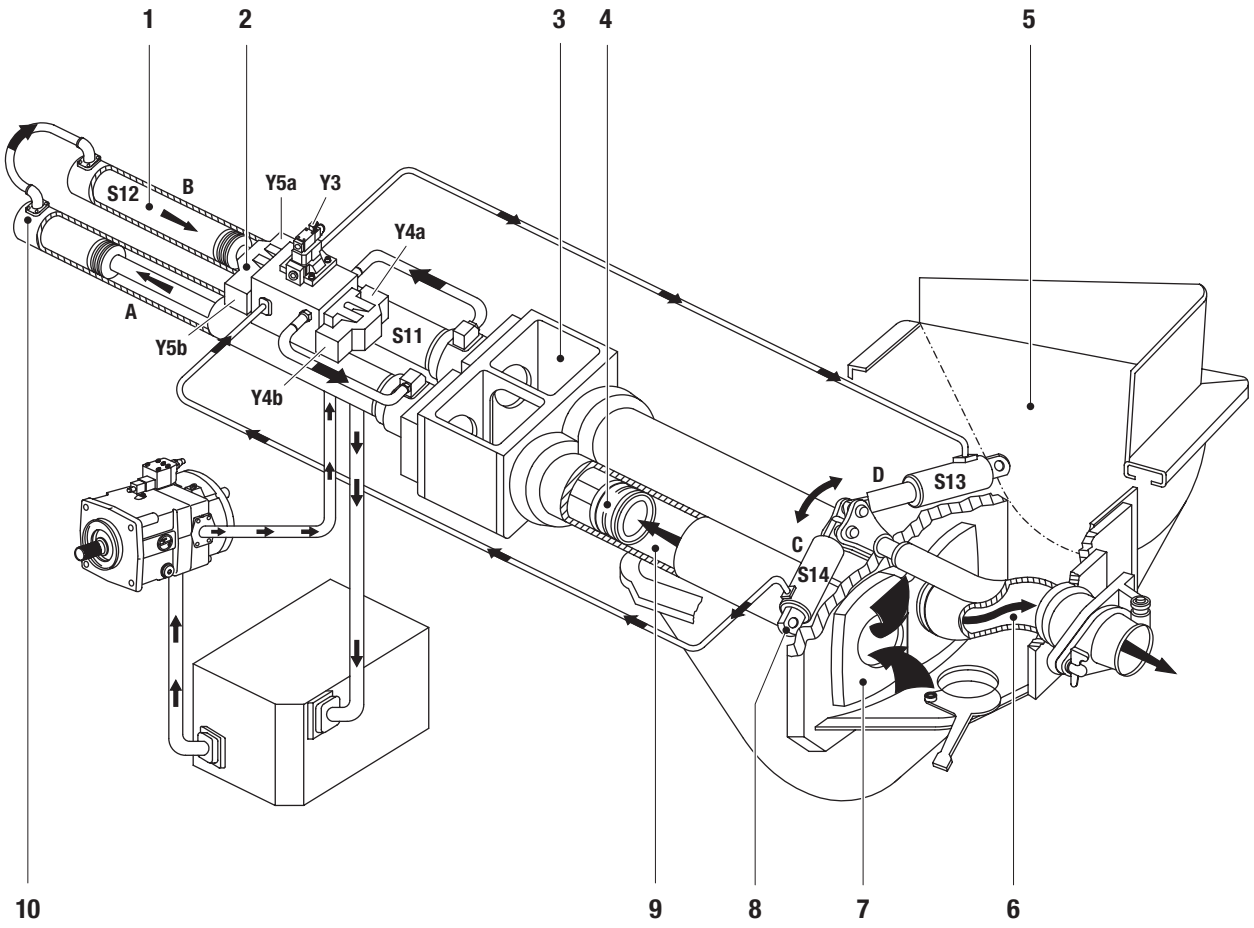
The controls actuate the hydraulic systems for the concrete pump and distributor boom. The operator can use the controls either at the control panel or at the remote control pendant.

4.2.2.4 Central lubrication

The central lubrication system is operated by compressed air from the pressure accumulator on the vehicle chassis. It supplies all lubrication points on the truck-mounted concrete pump (apart from the conveying piston). An optional central lubrication system is available for the conveying piston and/or distributor boom.

4.2.2.5 Function of the concrete pump

The concrete pump is hydraulically driven by the vehicle engine through a transfer shift gearbox and hydraulic pump.
The controls are electric and fully automatic. In addition a back-up function can be engaged by a selection switch; this allows the concrete pump to continue to be run at a reduced speed should the control system or the sensors fail. The stroke rate can be varied between minimum and maximum.
The drive cylinders (**1**) are fitted with an automatic leakage compensation. The S-valve automatically compensates for wear at the wear plate and wear ring.



1 Right drive cylinder
2 Control block
3 Wash-out tank
4 Conveying piston
5 Slide housing with agitator
6 S-valve
7 Wear plate
8 Slewing drive
9 Conveying cylinder II
10 Left drive cylinder

Fig. 4.3 Operation of the concrete pump

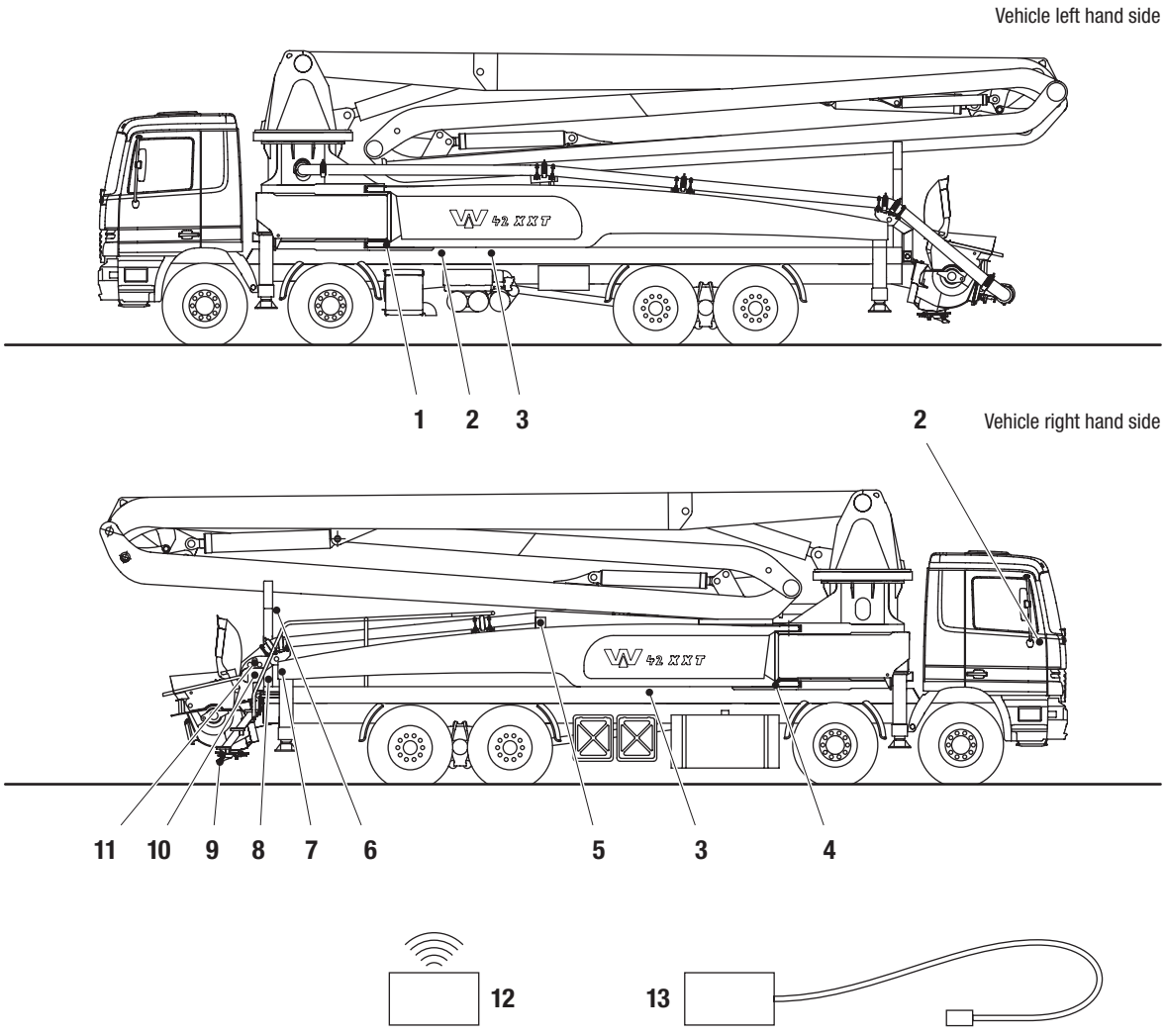
4.2.2.6 Method of operation of the concrete pump

The concrete pump operates as follows:

The oscillation cylinders are in position S13. On pumping the pressure relief valve Y3 is electrically actuated and closes, and Y4b is started. The drive cylinders move in direction “A”. The concrete in the left hand conveying cylinder is pushed into the S-valve into the conveying pipe.
Concrete is sucked into the right hand conveying cylinder through the free opening in the hopper. As soon as sensor S12 trips, valves Y4b and Y5b are started. The drive cylinders remain stationary and the oscillation cylinders start to move in direction “C”. The S-valve is now in line with the right hand conveying cylinder. Sensor S14 starts Y4a (and Y5b stops), and the drive cylinders move in direction “B”. The right hand conveying piston now pushes concrete through the S-valve and the left cylinder sucks concrete in from the slide housing. Sensor S11 stops Y4a and Y5a swings the S-valve back in direction “D”. A full cycle is now complete.

5. Controls and displays

5.1 Controls and displays for the truck-mounted concrete pump



1 Outrigger control block, left
2 Changeover to transfer shift gearbox
3 Water tank, drain cock
4 Outrigger control block, right
5 Boom control block
6 Control elements on the control cabinet
7 Control panel desk
8 Control panel agitator / water pump
9 Surplus concrete discharge opening
10 Manometer agitator / water pump
11 Manometer concrete pump
12 Radio remote control
13 Cable remote control

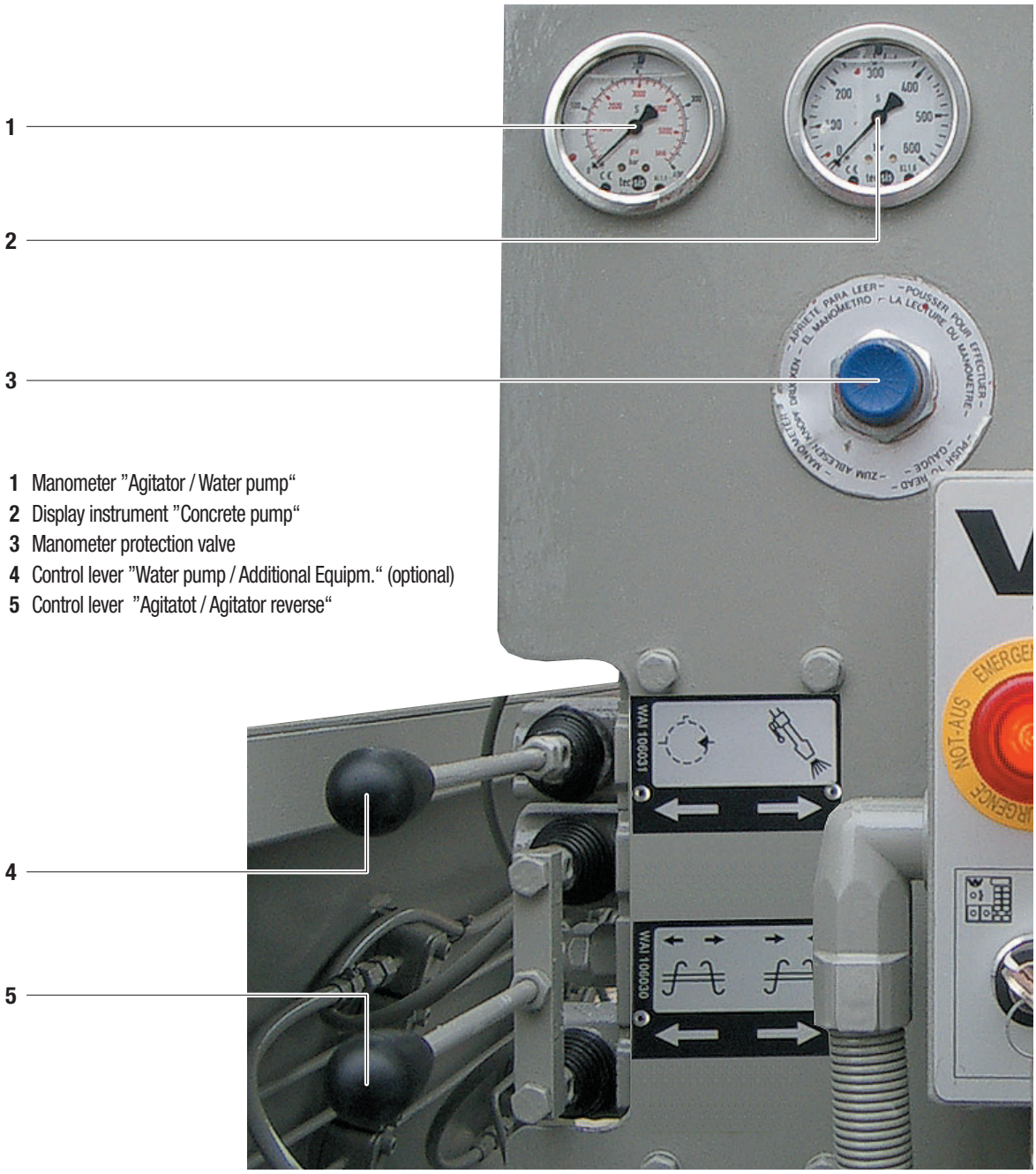
Fig. 5.1 Controls and displays for the truck-mounted concrete pump

5.2 Control panel desk

1 Emergency Stop button
2 Indicator lamp "Emergency Stop"
3 Indicator lamp "Controls on"
4 Indicator lamp "Hydraulic oil temperature"
5 Control panel lighting
6 Rocker switch "Horn-Reset/Lubrication"
7 Rocker switch "Light"
8 Rocker switch "Vibrator Auto/Manual"
9 Rocker switch "Engine speed +/–"
10 Indicator lamp "Pumps"
11 Rocker switch "Pump/Suck"
12 Indicator lamp "Suck"
13 Stroke rate potentiometer
14 Key switch "Desk/Remote control"

Fig. 5.2 Control panel desk

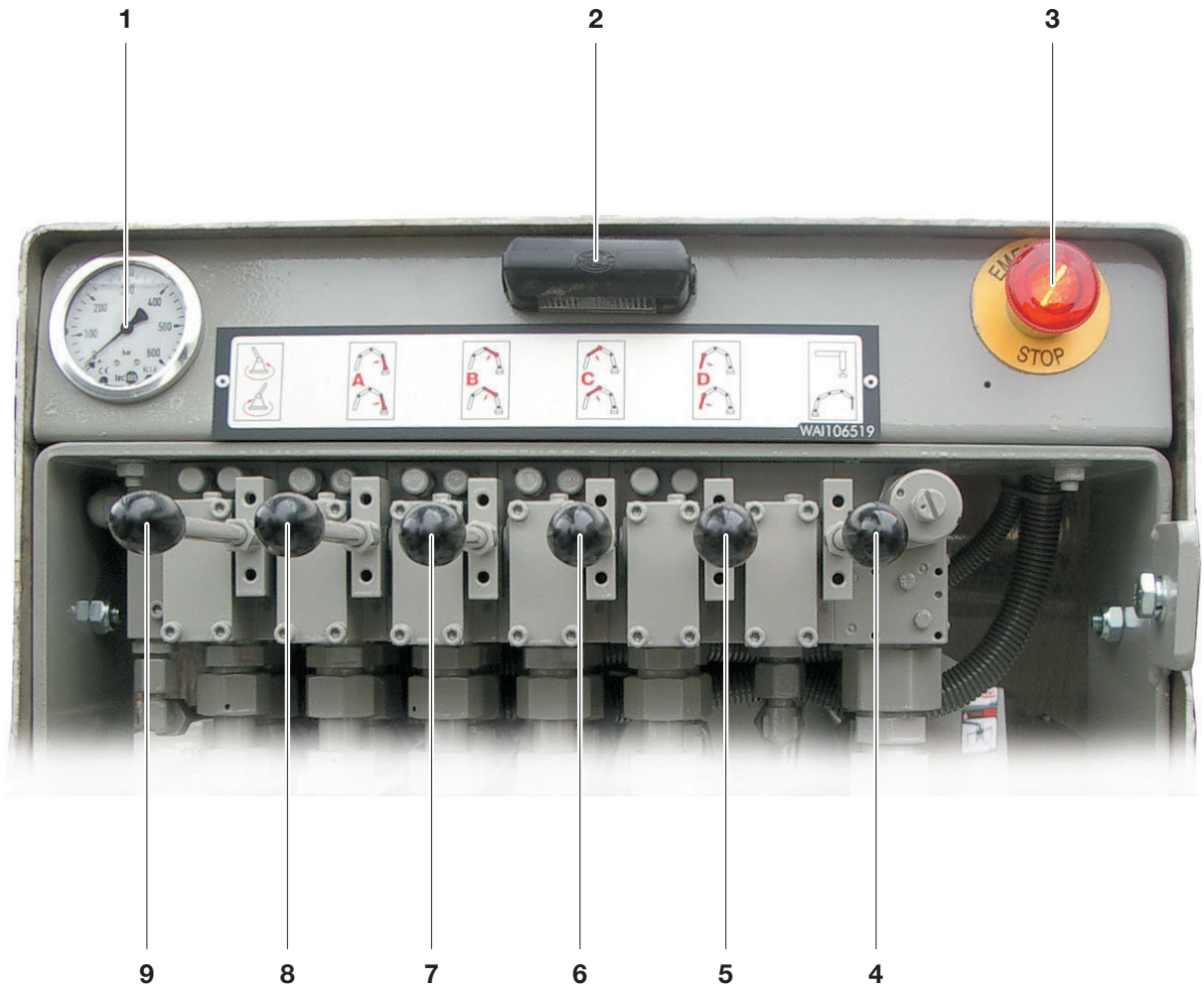
5.3 Control panel agitator / water pump



1 Manometer "Agitator / Water pump"
2 Display instrument "Concrete pump"
3 Manometer protection valve
4 Control lever "Water pump / Additional Equipm." (optional)
5 Control lever "Agitatot / Agitator reverse"

Fig. 5.3 Control panel Agitator / Water pump

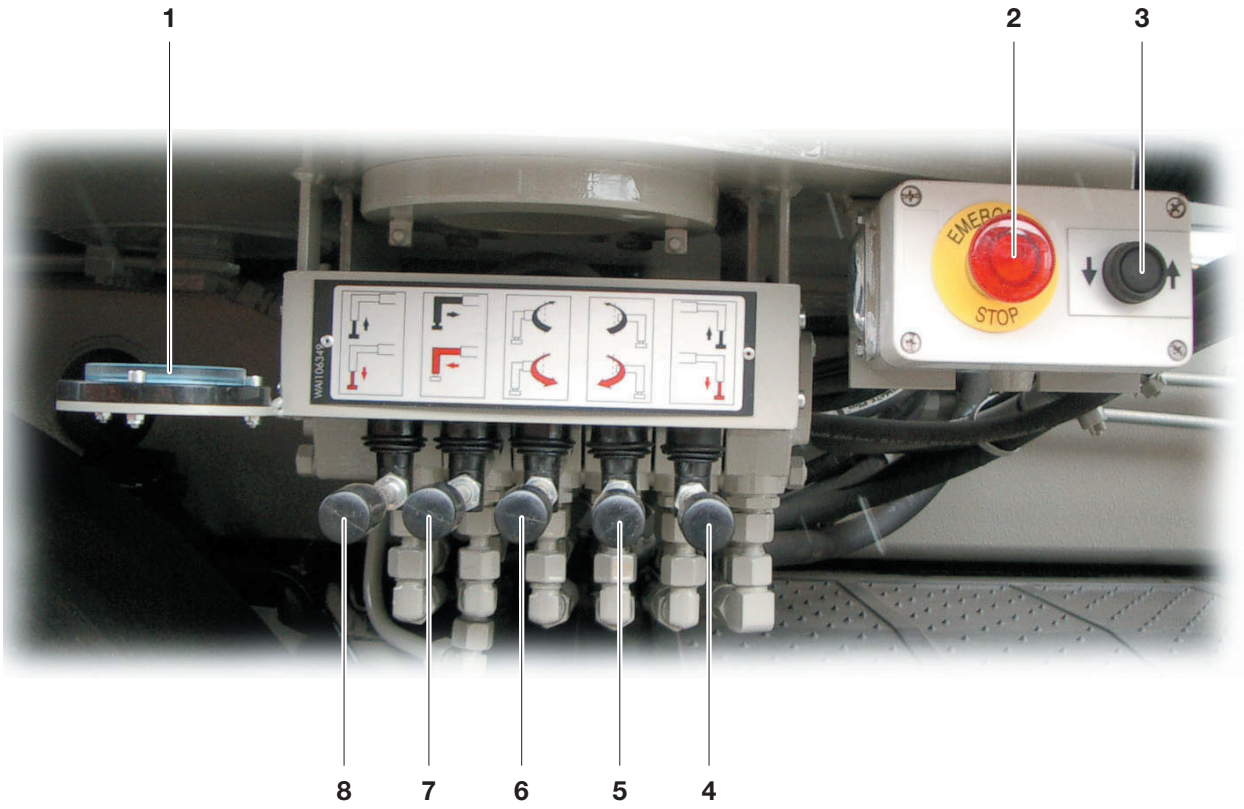
5.4 Boom control block



1 Manometer "Boom and outrigger"
2 Lighting for control panel
3 Emergency Stop button
4 Control lever "Outrigger / Boom"
5 Control lever "Deploy and retract boom element D"
6 Control lever "Deploy and retract boom element C"
7 Control lever "Deploy and retract boom element B"
8 Control lever "Deploy and retract boom element A"
9 Control lever "Boom slew left / right"

Fig. 5.4 Boom control panel

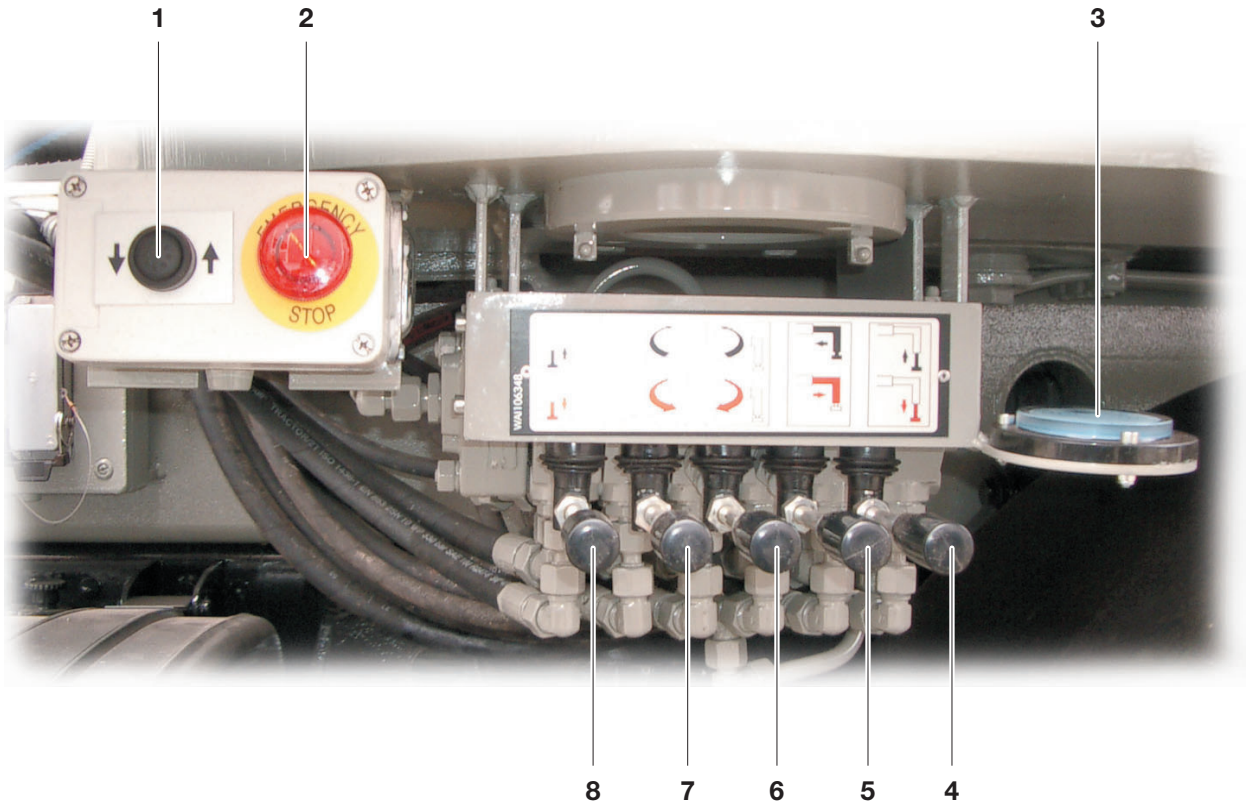
5.5 Outrigger control block, left



1 Circular level
2 Emergency Stop button
3 Outrigger safety button
4 Control lever "Extending / retracting the rear outrigger cylinder"
5 Control lever "Slewing the rear outrigger out / in"
6 Control lever "Slewing the front outrigger out / in"
7 Control lever "Extending / retracting the front outrigger telescope"
8 Control lever "Extending / retracting the front outrigger cylinder"

Fig. 5.5 Left outrigger control panel

5.6 Outrigger control block, right



1 Outrigger safety button
2 Emergency Stop button
3 Circular level
4 Control lever "Extending / retracting the front outrigger cylinder"
5 Control lever "Extending / retracting the front outrigger telescope"
6 Control lever "Slewing the front outrigger out / in"
7 Control lever "Slewing the rear outrigger out / in"
8 Control lever "Extending / retracting the rear outrigger cylinder"

Fig. 5.6 Right outrigger control panel

5.7 Control cabinet

1 Display instrument "Operating hours"
2 Rotary switch "Back-up function A-0-B"
3 Indicator lamp "Fault"
4 Indicator lamp "Lubrication system"

Fig. 5.7 Control cabinet control panel

5.8 Changeover to transfer shift gearbox (in the cab)

1 Indicator lamp “Transfer shift gearbox on”

2 Key switch “Transfer shift gearbox on/off”

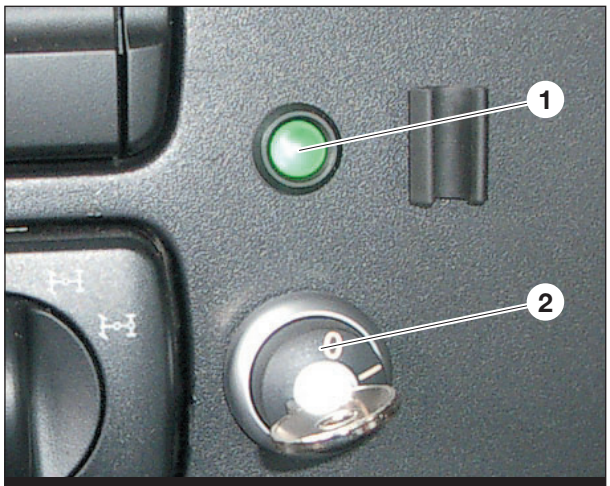


Fig. 5.8 Changing over the transfer shift gearbox

5.9 Surplus concrete discharge opening

1 Lever “Surplus concrete discharge opening”

2 Adjusting screws

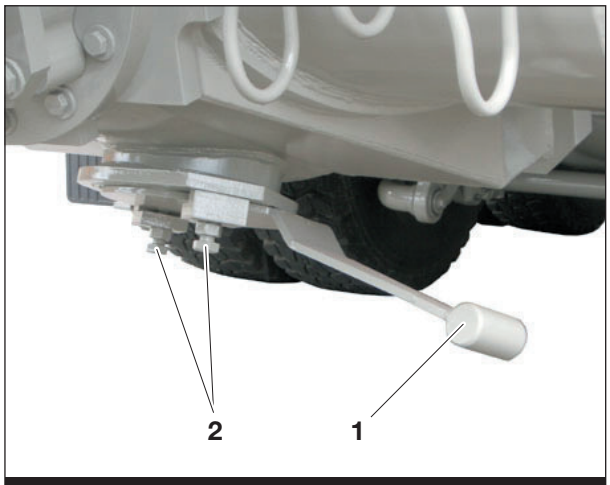


Fig. 5.9 Surplus concrete discharge opening

5.10 Water tank shut-off valve

1 Ball valve “Water tank filling / emptying”

2 Filling and emptying connection

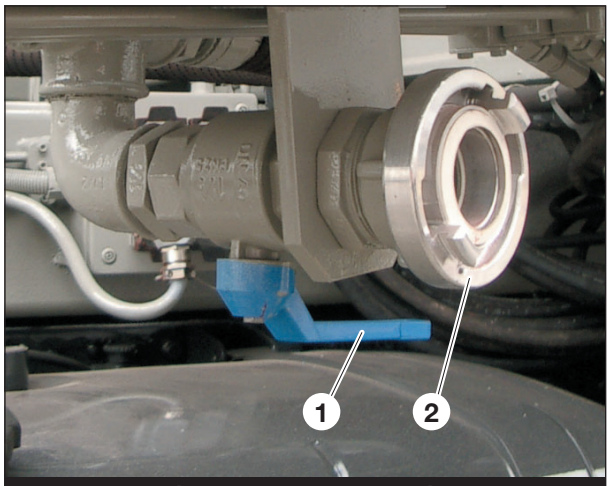


Fig. 5.10 Water tank drain

5.11 Water connection, rear

1 Geka connection for water hose

2 Ball valve for retaining or draining the water up to the water pump

3 Ball valve fro filling wash-out tank (optional)

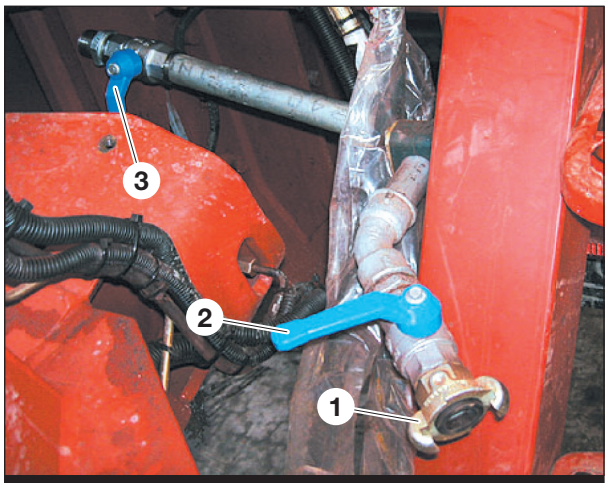
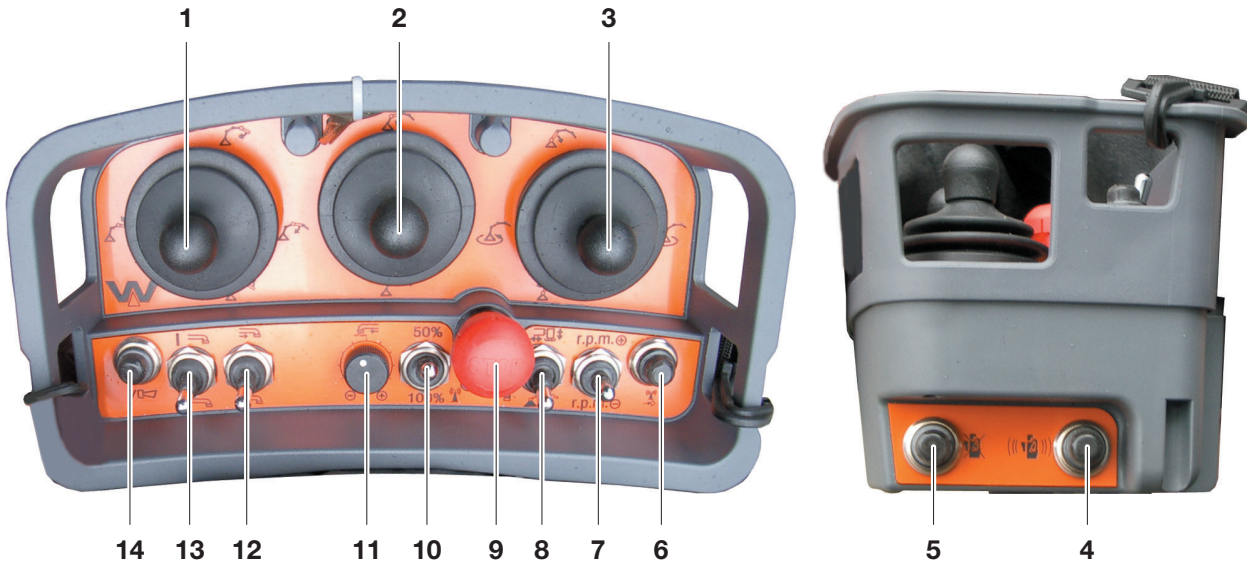


Fig. 5.11 Water connection, rear

5.12 Radio remote control / cable remote control



1 Joystick "Deploy and retract boom elements C and D"
2 Joystick "Deploy and retract boom element B"
3 Joystick "Deploy, retract and slew boom element A"
4 Push button "Start engine"
5 Push button "Stop engine"
6 Push button "Frequency changeover"
7 Rocker switch "Engine speed +/–"
8 Rocker switch "Outrigger / Boom"
9 Emergency Stop button – selector switch "Outrigger / Boom"
10 Rocker switch "Boom speed 50/100%"
11 Rotary switch "Stroke rate potentiometer"
12 Rocker switch " Pump / Suck"
13 Rocker switch "Pump On/Off"
14 Push button "Horn+Reset"

Fig. 5.12 Radio remote control / Cable remote control

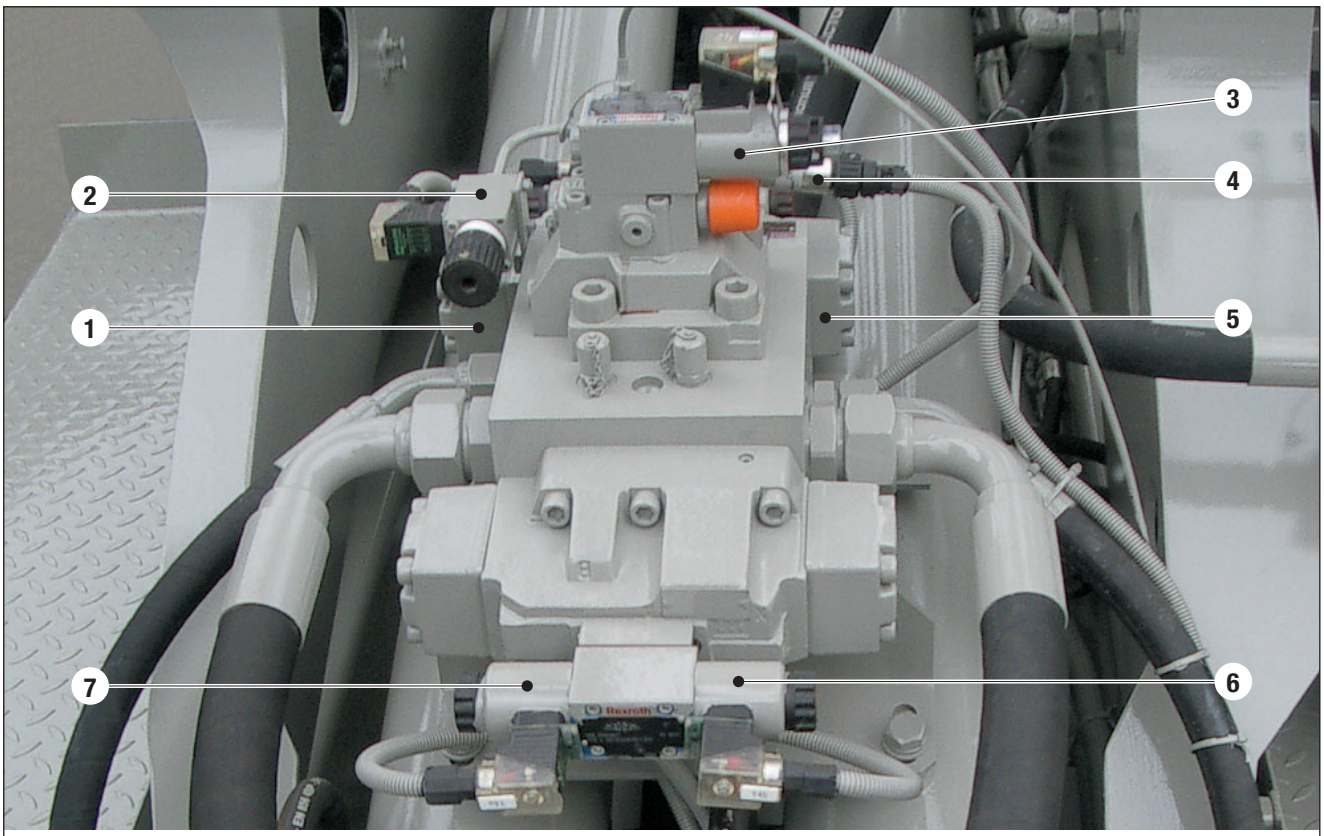
5.13 Emergency Stop button

Fig. 5.13 Emergency Stop button

Emergency Stop buttons are fitted to the truck-mounted concrete pump at the following places:

- ☞ Control panel desk
- ☞ Boom control block
- ☞ Outrigger control block, left
- ☞ Outrigger control block, right
- ☞ Radio remote control
- ☞ Cable remote control

5.14 Control elements on the hydraulic block



1 Valve Y5b
2 Push button
3 Valve Y3
4 Pressure sensor
5 Valve Y5a
6 Valve Y4a
7 Valve Y4b

Fig. 5.14 Hydraulic block

6. Driving, towing, loading

6.1 Driving

DANGER:
The centre of gravity of the truck-mounted concrete pump is very high, due to the nature of the design. Take extreme care when negotiating curves!

The truck-mounted concrete pump may be driven on public roads only in accordance with the applicable legislation and regulations of the country concerned. The driver must have a valid driving licence for this truck-mounted concrete pump.

6.1.1 Before a journey

The following actions must be taken before a journey:

- take all actions as described in the vehicle manufacturer's user manual
- check all components and transport restraints on the truck-mounted concrete pump to ensure they are in good condition
- check the outrigger catches to ensure they are properly engaged
- check that all components are secured against free movement
- check that the boom is in the transport position (height)

6.1.2 During the journey

Always drive the truck-mounted concrete pump having regard to the dimensions of the vehicle and its weight. Further information on driving can be found in the separate vehicle manufacturer's user manual.

6.2 Towing

The truck-mounted concrete pump should be towed only in accordance with the instructions of the vehicle manufacturer, and only using the attachment points provided for the purpose. For towing the truck-mounted concrete pump, the front towing ring should be used; for towing other vehicles by the truck-mounted concrete pump, the rear towing plate.
Further information on towing can be found in the separate vehicle manufacturer's user manual.

6.3 Loading

CAUTION:
Not all the identified lifting points are suitable for lifting the complete machine. Always check before lifting!

The attachment points for lifting the truck-mounted concrete pump are specifically identified.
A transport company should be entrusted with loading and transporting by crane if necessary.

7. Starting up and operating

This chapter contains all the important information for the operator to safety start up and operate the truck-mounted concrete pump.

WARNING:

Before first starting up the truck-mounted concrete pump, the operator must carefully read through this Chapter 7 “Starting up and operating” and perform all checks in accordance with the information set out in this chapter. Only when the operating safety has been assured in this way may the truck-mounted concrete pump be started up.

NOTE:

During start-up and operation, comply with the safety instructions set out in Chapter 2!

a. Personal safety equipment

In the entire working area of the truck-mounted concrete pump, suitable safety equipment should be worn, particularly when handling mortar additives.

The symbols for the necessary safety equipment are shown in the graphics panel alongside.

The symbols shown are as follows:

1. Hard hat
2. Safety boots
3. Ear defenders
4. Safety gloves
5. Safety glasses
6. Face mask
7. Protective clothing
8. Safety harness

Fig. 7.1 Symbols for personal safety equipment

b. General information for operating the truck-mounted concrete pump

The operator must be familiar with and comply with the user manual and all safety measures for operating the truck-mounted concrete pump. He must be able to control the machine.

b.1 Before starting up

☞ Secure the working- and hazard area and barrier it off if necessary
☞ Top up the fluids (hydraulic oil, fuel, water)
☞ Check the functioning of all safety devices - and controls
☞ Lubricate all grease points and check that the lubrication system is functioning
☞ Check the stability of the machine
☞ Check the conveying pipes for alignment and degree of wear (wall thickness measurement)

b.2 During operation

☞ Never allow the machine to operate unattended
☞ Stop the machine immediately if any fault occurs that might create a safety hazard
☞ In the event of blockages the material must be return to the hopper immediately. Start up again slowly!
☞ Open the snap couplings on the conveying pipes only when the conveying system has been depressurised
☞ When opening pipe joints, wear safety glasses to protect the eyes from spurting concrete
☞ Never reach into or on to moving parts, first switch the engine off or depressurise the accumulator
☞ Do not modify any safety device

b.3 At the end of operations

☞ Empty the conveying pipes
☞ Clean the conveying pipes using a cleaning ball and water
☞ Clean the hopper and the complete machine
☞ Perform routine maintenance, and repair any faults that have developed whilst the machine was running

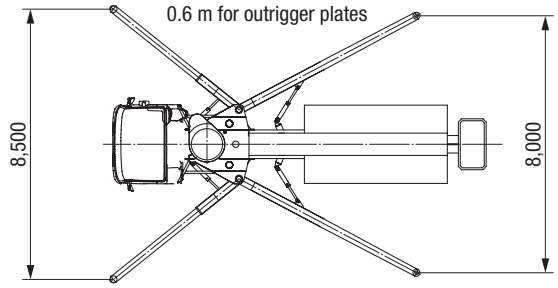
7.1 Setting up the truck-mounted concrete pump

Select the location having regard to the safety instructions in section 2.7, and drive the machine to the location.

NOTE:
Be sure to allow sufficient space for setting up truck-mounted concrete pump! Allow additional space for the mixer truck also!

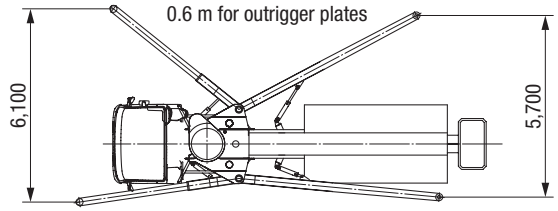
Fully deployed outriggers right:

Space requirement at the front: 8,5 m + 0, 6 m = 9,1 m
Space requirement at the rear: 8,0 m + 0, 6 m = 8,6 m
Slewing range: 0° - 360°



Narrow outriggers one side:

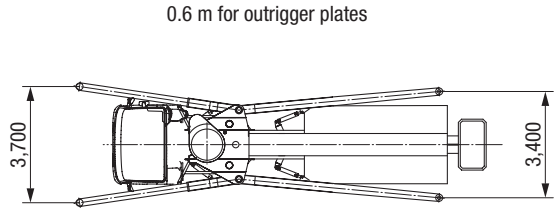
Space requirement at the front: 6,1 m + 0, 6 m = 6,7 m
Space requirement at the rear: 5,7 m + 0, 6 m = 6,3 m
Slewing range: 0° - 200° oder 360° - 160°



CAUTION: Narrow outriggers may only be used when XXA controls are installed and in use!

Narrow outriggers on both sides:

Space requirement at the front: 3,7 m + 0, 6 m = 4,3 m
Space requirement at the rear: 3,4 m + 0, 6 m = 4,0 m
Slewing range: 160° - 200°



CAUTION: Narrow outriggers may only be used when XXA controls are installed and in use!

Fig. 7.2 Space requirement for outriggers for the truck-mounted concrete pump

On sloping ground put chocks behind the wheels, release the brakes and allow the truck-mounted concrete pump to roll back on to the chocks. Then apply the handbrake and extend the outriggers.

The ground must be checked for its load-bearing capability.

7.2 Adjustments and actions before starting up

7.2.1 Changing over the transfer shift gearbox

Use the key switch (**2**) in the cab to change over the transfer shift gearbox in the drive train from travel drive "**O**" to pump drive "**I**".

For the changeover the ignition switch must be in the "ON" position (vehicle engine can run, but need not be running), the pneumatic pressure must be more than 5 bar and the clutch fully disengaged.

The indicator lamp (**1**) lights up when the gearbox is switched to pump drive.

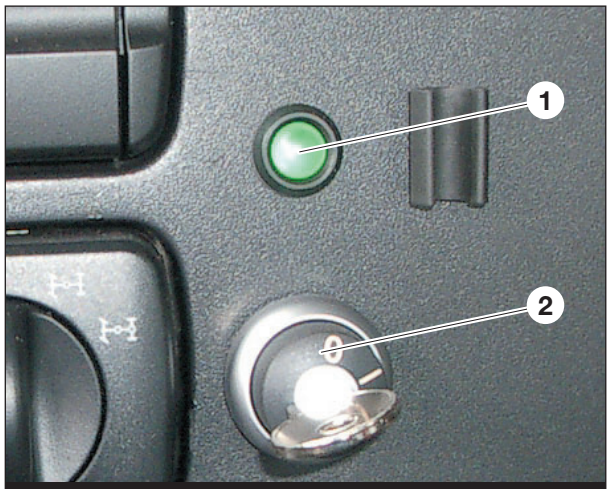


Fig. 7.3 Changing over the transfer shift gearbox

To drive the hydraulics a definite gear must be selected as shown in the information plate.

Example: 8 high

Fig. 7.4 Selecting a gear

WARNING

WARNING:

- ☞ **Selecting the wrong gear can lead to overspeeding and damage to the hydraulic pumps!**
- ☞ **Engine braking must be disengaged!**
- ☞ **The handbrake must be applied!**

The “Controls ON” indicator lamp (**3**) remains on as long as the ignition is on and the gearbox is set for pump drive. This function is independent of any Emergency Stop indication.

The vehicle engine must be running.

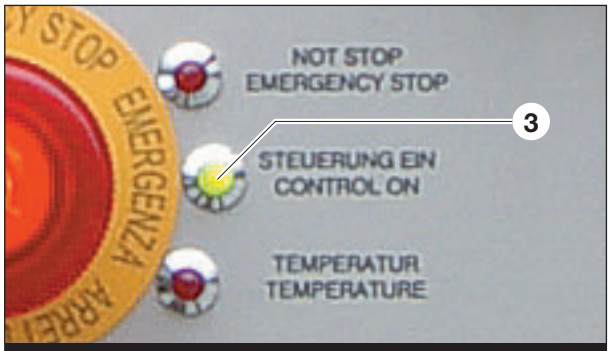


Fig. 7.5 Indicator lamp "Controls On"

7.2.2 Emergency Stop

The machine is fitted with 4 illuminated Emergency Stop buttons, plus an Emergency Stop button on each remote control pendant.

Each Emergency Stop button immediately switches off all functions and movements (optionally the engine can be switched off by an Emergency Stop).

The Emergency Stop buttons are located as follows:

- Control panel desk (Item 1, Fig. 5.2)
- Boom control block (Item 3, Fig. 5.4)
- Left hand outrigger controls (Item 2, Fig. 5.5)
- Right hand outrigger controls (Item 2, Fig. 5.6)
- Radio remote control (Item 9, Fig. 5.12)
- Cable remote control (Item 9, Fig. 5.12)

The activated Emergency Stop button is indicated n the control panel by the flashing Emergency Stop indicator lamp (Item 12, Fig. 5.2) and at the activated Emergency Stop button itself (except for remote control).

After the reason the activating the Emergency Stop button has been rectified, the activated Emergency Stop button can be released by pulling or twisting.

NOTE:

The controls must be reset after an Emergency Stop by pressing the “Horn/Reset” rocker switch (Item 6, Fig. 5.2) on the control panel desk.

All functions that were in operation when the Emergency Stop button was pressed must be restarted.

When the Emergency Stop button is pressed, the following conditions are set on the truck-mounted concrete pump:

- **Truck**
  Engine is switched to idling (or optionally switched off)
- **Truck-mounted concrete pump**
  Pumping / sucking is immediately switched off
- **Distributor boom**
  The distributor boom is halted at its current position

7.2.3 Selecting the operating mode

The control panel is at the right rear of the vehicle.

The functions on the control panel desk “Pump/Suck (**11**)” and “Stroke rate (**13**)” are disabled if the remote control is activated.

The key switch (**14**) allows switching between “Control Desk” and “Remote control”.

If the cable for remote control is plugged in, remote control is activated automatically.

In the setting “Remote control” the respective remote control pendant must be switched on, otherwise the controls are switched off in an Emergency Stop.

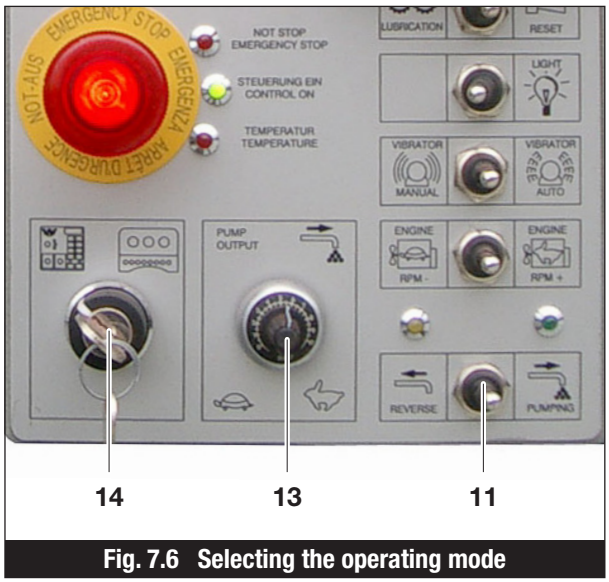


Fig. 7.6 Selecting the operating mode

NOTE:
The key should be withdrawn when the machine is in operation, so that no unauthorised person can tamper with the outriggers.

7.3 Operating the outriggers

DANGER:
When the outriggers are being slewed in/out or extended there is high crush risk hazard.

☞ The operator must continuously monitor the hazard area.

☞ The outrigger slew in/out and extension areas must be kept clear of all persons and objects.

☞ All instructions set out in Chapter 2 “Safety instructions” must be strictly complied with.

7.3.1 Stability checking

If the option “Stability checking” is installed, refer to the separate user manual.

7.3.2 Extending / retracting the outriggers

DANGER

DANGER:

☞ For safety reasons the operator must always face towards the outrigger that is being extended / retracted and have an unimpeded view of the entire hazard area!

☞ When activating the functions with the respective operating lever, for safety reasons the other hand should always be keeping the safety button (Item 3, Fig. 5.5 / Item 1, Fig. 5.6) pressed!

- Moving the operating lever on the outrigger control block **downwards**, means for all functions “**Extend**“.
- Moving the operating lever on the outrigger control block **upwards**, means for all functions “**Retract**“.
- The functions “Slew out” and “Telescopic extension” can be performed concurrently for the front outriggers. This causes the front outriggers to extend automatically to their full extent.
- The outriggers are secured in the stowed position for vehicle travel by hydraulically locked catches.

WARNING

WARNING:

Before moving the vehicle and before starting work make absolutely sure that the hydraulically locked catches are engaged!

NOTE:
If the operating mode selector switch (Item 14, Fig. 5.2) is in the remote control position, the remote control must be switched from the Boom control mode to the Outrigger control mode, using rocker switch (Item 8, Fig. 5.12).

7.3.2.1 Back-up operation

If the control system fails, the outriggers can be operated manually from the master control block. To do this a send person must stand at the “Outrigger/Boom” control panel and hold the control lever (Item 4, Fig. 7.11) in the UP position.

7.3.3 Functions at outrigger control block, left

Move the operating lever as shown to perform the respective functions on the outrigger.

1 Circular level
2 Emergency Stop button
3 Outrigger safety button
4 Extending / retracting the rear outrigger cylinder
5 Slewing the rear outrigger cylinder out / in
6 Slewing the front outrigger cylinder out / in
7 Extending / retracting the front telescopic outrigger
8 Extending / retracting the front outrigger cylinder

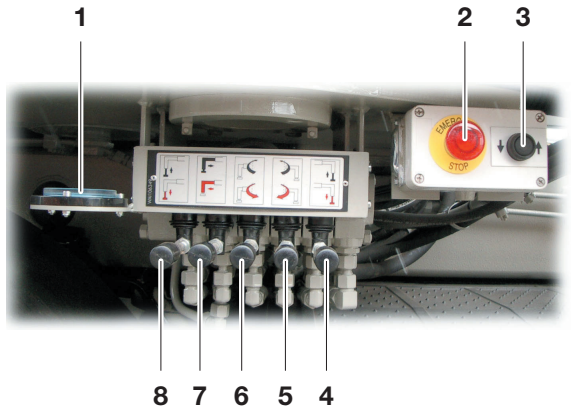


Fig. 7.7 Outrigger control block, left

7.3.4 Functions at outrigger control block, right

Move the operating lever as shown to perform the respective functions on the outrigger.

1 Outrigger safety button
2 Emergency Stop button
3 Circular level
4 Extending / retracting the front outrigger cylinder
5 Extending / retracting the front telescopic outrigger
6 Slewing the front outrigger cylinder out / in
7 Slewing the rear outrigger cylinder out / in
8 Extending / retracting the rear outrigger cylinder

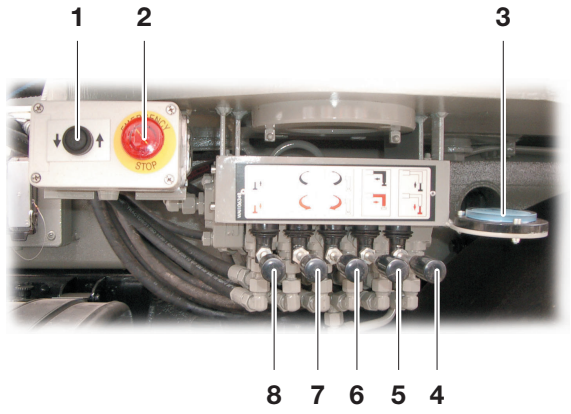


Fig. 7.8 Outrigger control block, right

7.3.5 Building up the outrigger

- Fully extend the outrigger and fully extend the telescopic sections.
- Extend the front telescopic outriggers until it clicks into a second registration point at the working setting (see detail, left).
- Check that the arrows match (see detail, right), indicating the that the outrigger is fully extended.
- Extend the front outrigger cylinder so far that the front wheels are lifted clear of the ground.
- The rear wheels must remain gently touching the ground (braking and stability).

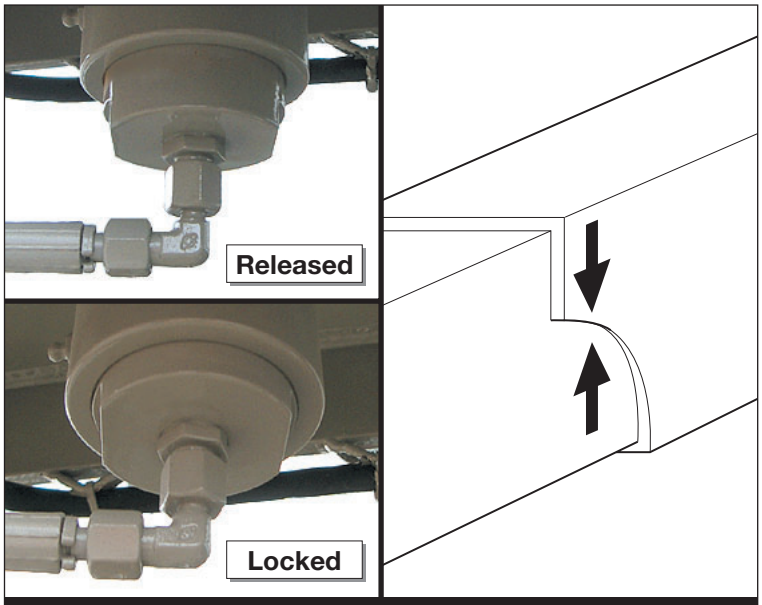


Fig. 7.9 Telescopic outrigger extended and locked

- The truck-mounted concrete pump may not stand more than 3° from level. Check the circular levels

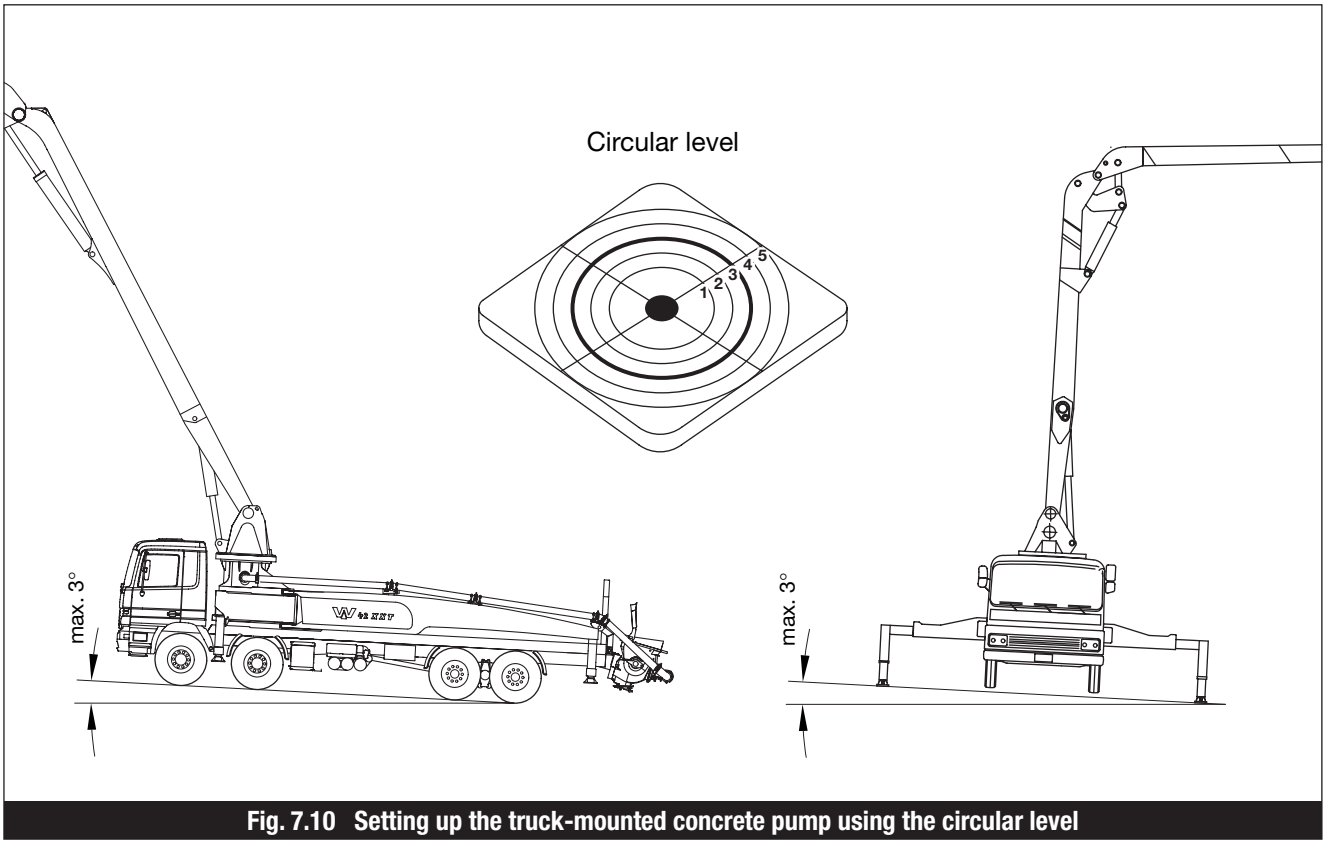


Fig. 7.10 Setting up the truck-mounted concrete pump using the circular level

7.4 Distributor boom operation

WARNING:

☞ **Do not deploy the distributor boom until the truck-mounted concrete pump outriggers are fully extended!**

☞ **Never drive the truck when the distributor boom is deployed!**

☞ **When deploying and stowing the distributor boom there are many points against which the boom can foul and cause damage. Therefore be sure to follow the correct sequence of operations for deploying the boom!**

NOTE:

Normally the distributor boom is controlled using the radio/cable remote control pendant. All boom functions are performed proportionally.

7.4.1 Distributor boom operation using the master control block

NOTE:

Distributor boom operation using the master control block should only be used as back-up. Whenever possible control the boom using the radio/cable remote control pendant.

- Set the operating mode selection switch (Item 14, Fig. 7.6) to “Control panel desk”.
- Control each boom element individually by moving the respective control levers Element A (**8**), Element B (**7**) , Element C (**6**) and Element D (**5**) in desired direction.

  Moving a control lever downwards moves the element inwards, moving a control lever downwards moves the element outwards.
- The boom rotation lever (**9**) controls the rotation of the boom.
  Pressing the control lever downwards rotates the boom clockwise, pressing the control lever upwards rotates the boom anticlockwise.

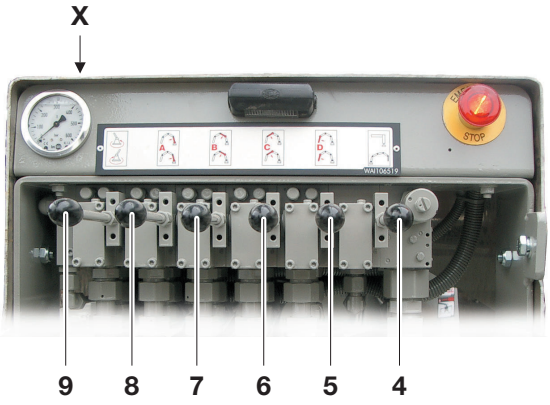


Fig. 7.11 Controll. the distrib. boom from the boom control block

- Press control lever boom A (Item 8, Fig. 7.11) and deploy the boom package until the catch hook releases.

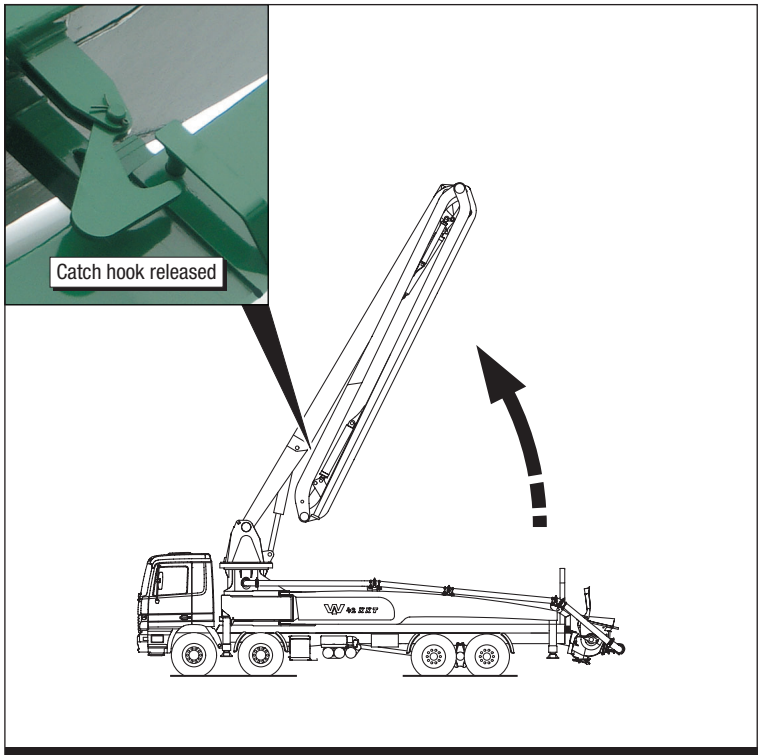


Fig. 7.12 Deploy the boom package, the catch hook releases

- Press the boom rotation control lever (Item 9, Fig. 7.11) to rotate the boom package into the working position.

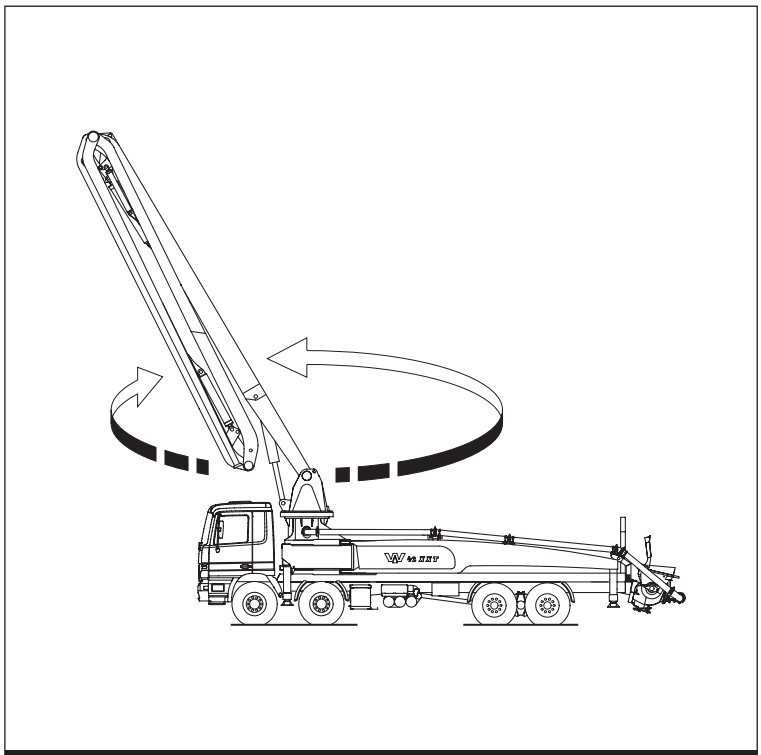


Fig. 7.13 Slew the boom package into the working position

- Press control lever B (Item 7, Fig. 7.11) and deploy boom element B at 120° to boom element A.

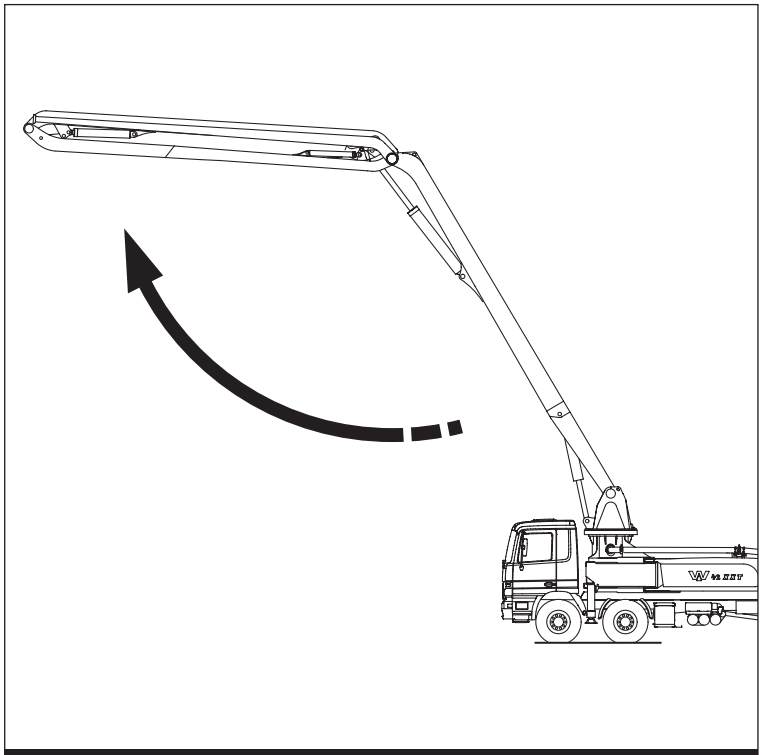


Fig. 7.14 Deploy boom element B

- Press control lever C (Item 6, Fig. 7.11) and deploy boom element C at 90° to boom element B.

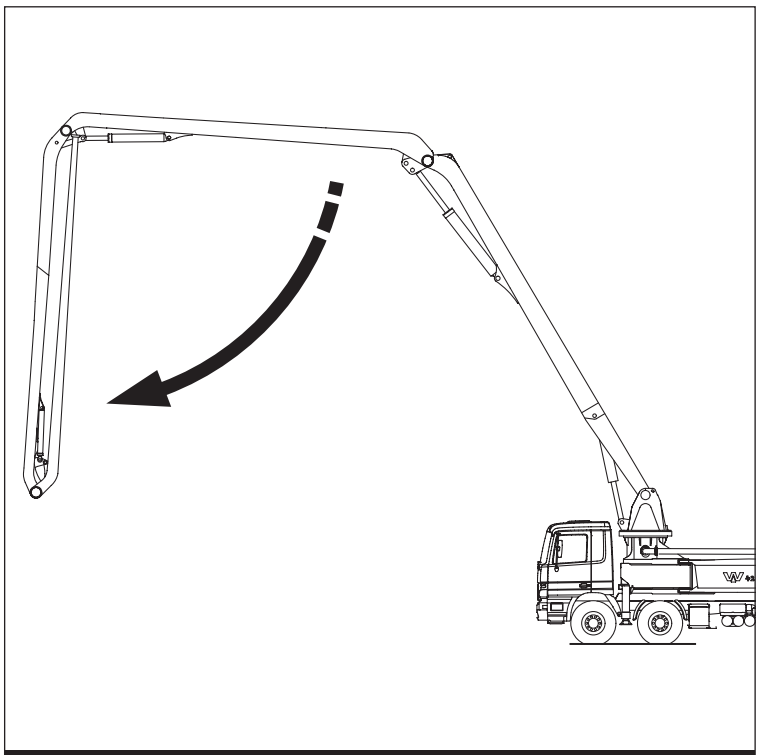


Fig. 7.15 Deploy boom element C

- Press control lever D (Item 5, Fig. 7.11) and deploy boom element D at 90° to boom element B.
- Position boom element D horizontally approx. 1 m above the ground.

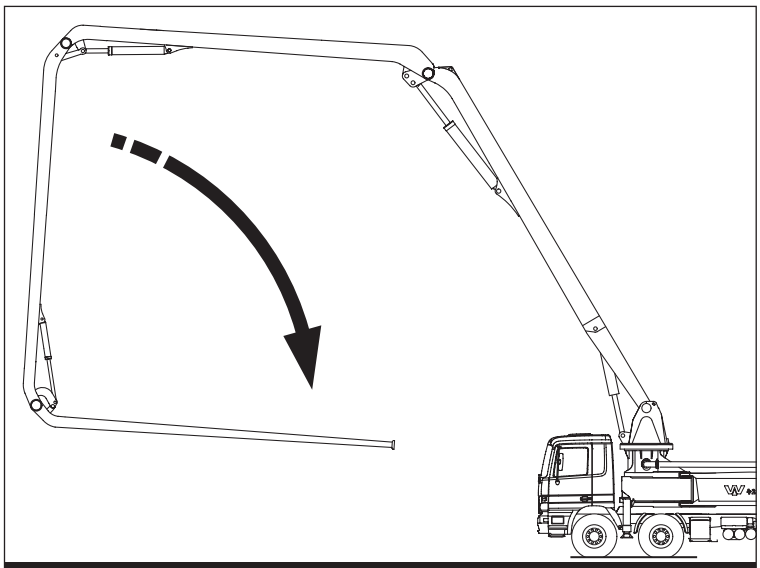


Fig. 7.16 Deploy boom element D

- Open the discharge hose retainer (arrowed) and release the discharge hose.
- Use the control levers (Items 5 to 9, Fig. 7.11) on the boom control block to move the distributor boom into the desired working position.

Fig. 7.17 Release the discharge hose

WARNING:

When using manual control at the boom control block all safety circuits including Emergency Stop are disabled.

7.4.1.1 Back-up slewing function

If the controls system fails, slewing the boom must be enabled by engaging the additional back-up controls (Item X, Fig. 7.11) by inserting a suitable screwdriver (4 mm) into the holes in the cover and pushing.

7.4.2 Controlling the distributor boom using the radio remote control pendant

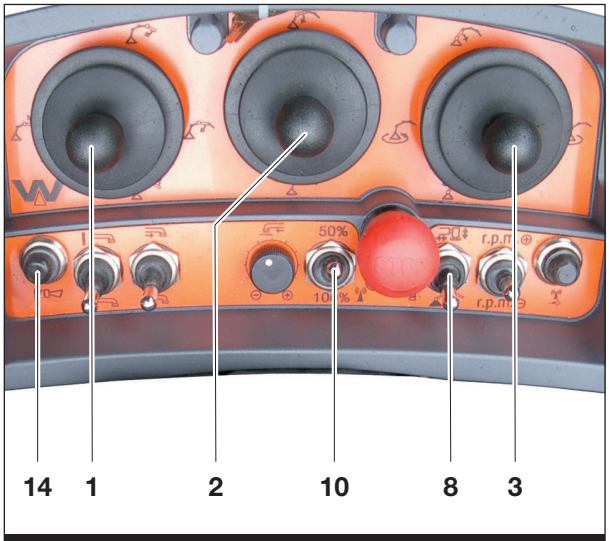


Fig. 7.18 Controll. the distrib. boom from the radio remote control pendant

- Set the operating mode selection switch (Item 14, Fig. 7.6) to “Remote control”.
- Activate the remote control pendant. See information in the separate user manual supplied by the manufacturer.
- Release the Emergency Stop by pressing the Horn/ Reset (**14**). The horn will sound.
- Switch the selector switch “Outrigger/Boom” (**8**) to “Boom” and uncap the Emergency Stop button.
- The 50%/100% switch (**10**) controls the boom speed, 50% when pumping, 100% when deploying / stowing.
- Press the master switch “Deploy boom element A / Slew boom” (**3**) and deploy boom element A until the catch hook releases and the boom element B can be deployed (see Fig. 7.12).
- Press the master switch “Deploy boom element A / Slew boom” (**3**) to move the distributor boom into the position where the discharge hose retainer can be opened.
- Press the master switch “Deploy boom element B” (**2**) and deploy boom element B until it is approx. 120° to boom element A (see Fig. 7.14).
- Use the joystick “Deploy boom element C and D” (**1**) to deploy boom element C to 90° to boom element B (see Fig. 7.15).
- Use the joystick “Deploy boom element C and D” (**1**) to deploy boom element D to 90° to boom element C (see Fig. 7.15).
- Position boom element D horizontally approx. 1 m above the ground.
- Open the catch and release the discharge hose (see Fig. 7.17).
- Use the joystick s(**1** to **3**) on the radio remote control to move the distributor boom to the desired working position.

7.4.3 Controlling the distributor boom using the cable remote control pendant

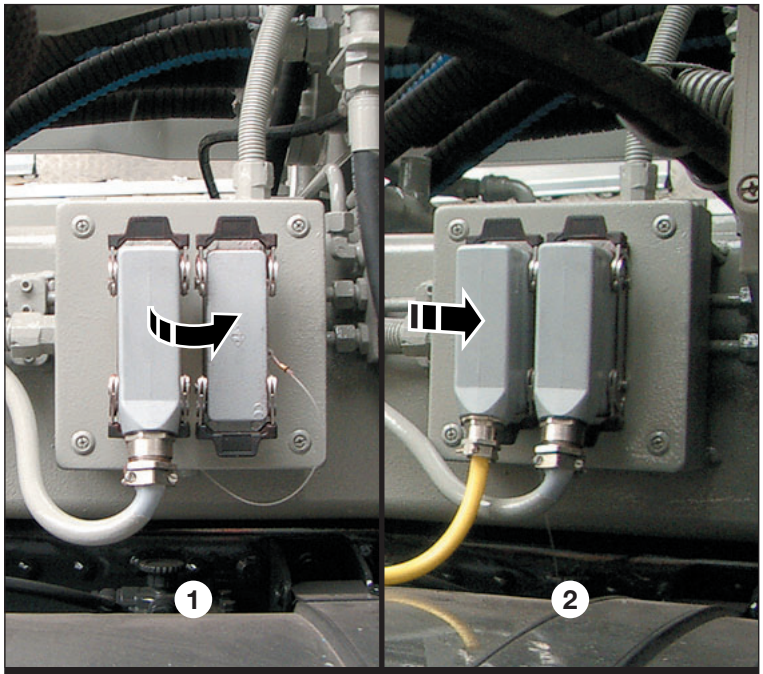


Fig. 7.19 Plug the extension cable for the cable remote control

- Remove the right hand protective cap.
- Unplug the “Radio” plug from the left hand socket and plug it into the free right hand socket ❶. Lock the plug in place.
- Plug the extension cable for the cable remote control into the left hand socket ❷. Lock the plug in place. Radio remote control is now deactivated.
- Set the operating mode selection switch (Item 14, Fig. 7.6) to “Remote control”.
- Release the Emergency Stop by pressing the Horn/Reset (Item 14, Fig. 7.18). The horn will sound.
- Switch the selector switch “Outrigger/ Boom” (Item 8, Fig. 7.18) to “Boom” and uncap the Emergency Stop button.
- The 50%/100% switch (Item 10, Fig. 7.18) controls the boom speed, 50% when pumping, 100% when deploying / stowing.
- Press the master switch “Deploy boom element A / Slew boom” (Item 3, Fig. 7.18) and deploy boom element A until the catch hook releases and the boom element B can be deployed (see Fig. 7.12).
- Press the master switch “Deploy boom element A / Slew boom” (Item 3, Fig. 7.18) to move the distributor boom into the position where the discharge hose retainer can be opened.
- Press the master switch “Deploy boom element B” (Item 2, Fig. 7.18) and deploy boom element B until it is approx. 120° to boom element A (see Fig. 7.14).
- Use the joystick “Deploy boom element C and D” (Item 1, Fig. 7.18) to deploy boom element C to 90° to boom element B (see Fig. 7.15).
- Use the joystick “Deploy boom element C and D” (Item 1, Fig. 7.18) to deploy boom element D to 90° to boom element C (see Fig. 7.16).
- Position boom element D horizontally approx. 1 m above the ground.
- Open the catch and release the discharge hose (see Fig. 7.17).
- Use the joystick s(**1** to **3**) on the radio remote control to move the distributor boom to the desired working position.

7.5 Pump operation

7.5.1 Motor Start/Stop, Speed control

The vehicle engine can be started from the remote control pendant using the push button (Item 4, Fig. 7.20). This can only be done if the key switch (Item 14, Fig. 7.6) on the control panel desk is set to “Remote Control”.
Pressing the push button (Item 5, Fig. 7.20) stops the vehicle engine, and inhibits its restart for approx. 10 sec.
Pressing the rocker switch (Item 7, Fig. 7.20 or Item 9, Fig. 7.21) brings the vehicle engine from idling to full speed within 10 sec.

Fig. 7.20 Operation "Motor Start/Stop"

7.5.2 “Pump/Suck” control at the control panel desk

The operating mode selection switch (Item 14, Fig. 7.21) must be set to “Desk”. The rocker switch (Item 11, Fig. 7.21) selects “Pump” or “Suck”. For confirmation one of the two indicator lamps (Item 10 or 12, Fig. 7.21) will light.

The stroke rate depends on the setting of the stroke rate potentiometer (Item 13, Fig. 7.21) and the engine speed.

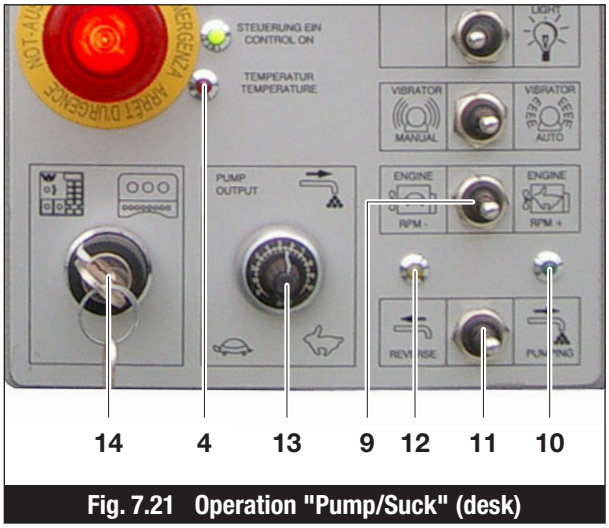


Fig. 7.21 Operation "Pump/Suck" (desk)

NOTE:
Opening the safety grill or pressing an Emergency Stop button (whilst the “Pump/Suck” switch is activated), will deactivate the “Pump/Suck” function.

NOTE:
If the hydraulic oil temperature exceeds 80 °C, the pump function is stopped and the indicator lamp (Item 4, Fig. 7.21) on the control panel desk will light. Sucking the concrete back remains available. The hydraulic system must be cooled down as quickly as possible by appropriate means (see section 7.6.4).

7.5.3 "Pump/Suck" control by radio remote control / cable remote control

The operating mode selection switch (Item 14, Fig. 7.6) must be set to "Radio remote control".

The rocker switch (Item 12, Fig. 7.21) on the remote control pendant is pre-set to "Pump" or "Suck". Select "Pump" or "Suck" using the rocker switch (Item 13, Fig. 7.21).

The stroke rate depends on the setting of the stroke rate potentiometer (Item 11, Fig. 7.22) and the engine speed.

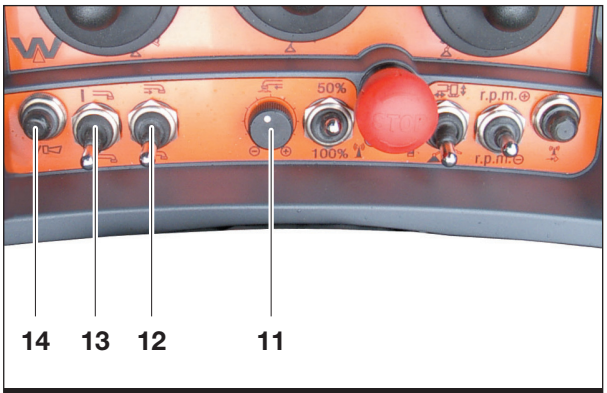


Fig. 7.22 Operation "Pump/Suck" (radio remote control)

NOTE:
Opening the safety grill or pressing an Emergency Stop button (whilst the "Pump/Suck" switch is activated), will deactivate the "Pump/Suck" function, which must then be restarted by switching the rocker switch (Item 13, Fig. 7.22) off and on again.

7.5.4 Back-up function for "Pump/Suck"

NOTE:
This function should only be switched on if the normal "Pump/Suck" controls are not operational!

7.5.4.1 Pumping with the control panel desk or via radio remote control/cable remote control

- Set the Back-up Pump control selector switch (Item 2, Fig. 5.7) to position "A or B"
  If the pump does not start (see trouble-shooting), back-up operation may be necessary in two possible fault situations:

Fault possibility 1: Defective sensors in the drive cylinder or oscillation cylinder

- Set the Back-up Pump control selector switch (Item 2, Fig. 5.7) to position “B”
- Set the pressure switch (Item 2, Fig. 7.23) to the anticipated pumping pressure (min. 60 bar, max. 280 bar)
- Set the key switch (Item 14, Fig. 7.21) to position “Desk” or “Remote Control”
- Switch on the “Pump/Suck” function using rocker switch (Item 11, Fig. 7.6) or rocker switch (Item 13, Fig. 7.22)

NOTE:

☞ **If the pressure at the pressure switch is set too low, the stroke will be short and the S-valve may not swing over fully.**

☞ **If the pressure at the pressure switch is set too high, the pump can stop at the end of its travel.**

Fault possibility 2: Controller failure

- Set the Back-up Pump control selector switch (Item 2, Fig. 5.7) to position “B”
- Set the key switch (Item 14, Fig. 7.21) to position “Desk” or “Remote control”
- Switch on the “Pump/Suck” function using rocker switch (Item 11, Fig. 7.21) or rocker switch (Item 13, Fig. 7.22)

NOTE:

☞ **The stroke rate, the power control and switching speed do not function in setting “A”.**

☞ **The concrete delivery can only be changed via engine speed.**

☞ **A lower gear should generally be engaged on the vehicle gearbox.**

7.5.4.2 Pump control at the hydraulic control block

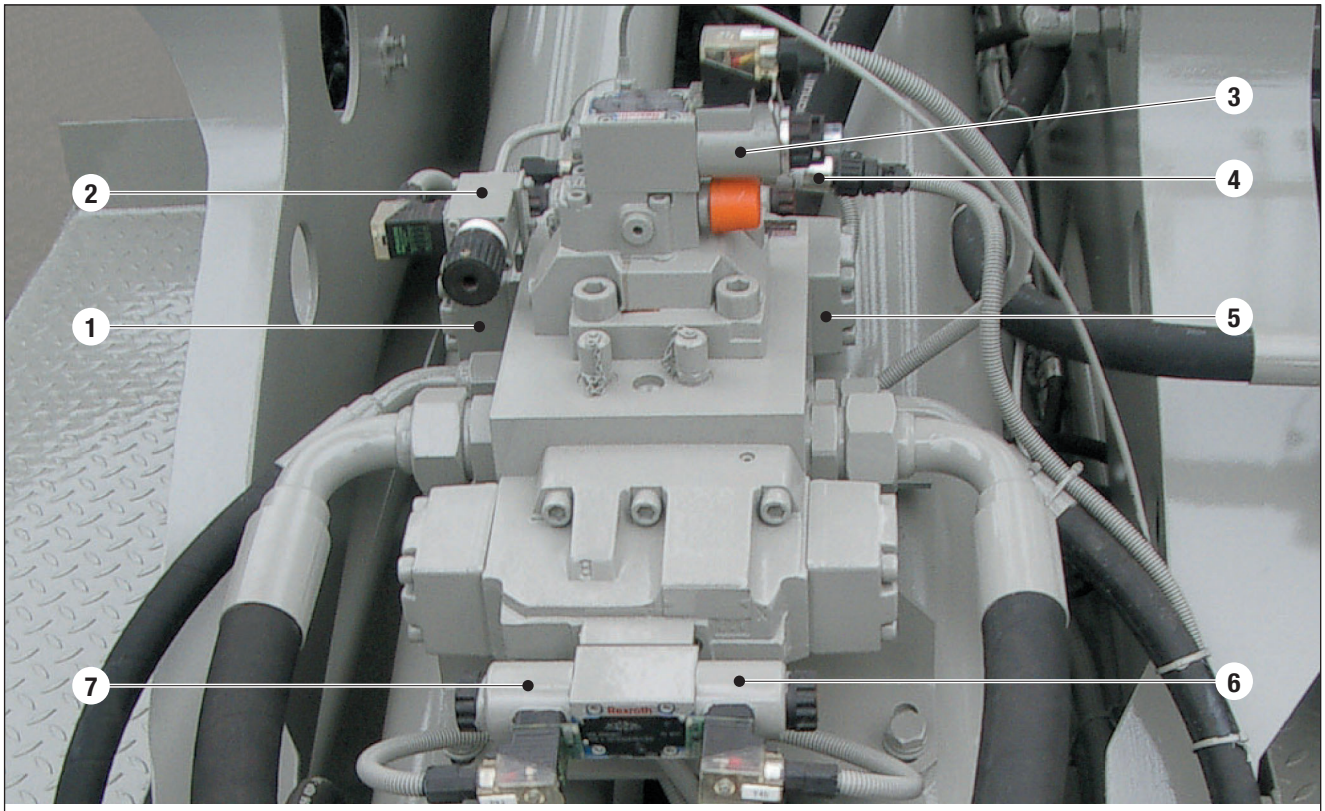
When controlling the valves manually, never run the engine at full speed.

WARNUNG

WARNING:
Valves and solenoids can be up to 100 °C temperature, risk of burns!

- Moving the drive cylinder
  Actuate Y4 a or b using a screwdriver (4 mm) or similar tool. Then press Y3 manually and move the drive cylinder to the desired position. Simultaneously releasing Y3 and Y4 will bring the cylinder to a halt.

- Moving the oscillation cylinder
  Actuate Y5 a or b using a screwdriver (4 mm) or similar tool. Then press Y3 manually and move the drive cylinder to the desired position. Simultaneously releasing Y3 and Y4 will bring the cylinder to a halt.



1 Valve Y5b
2 Push button
3 Valve Y3
4 Pressure sensor
5 Valve Y5a
6 Valve Y4a
7 Valve Y4b

Fig. 7.23 Pump hydraulic control block

7.5.5 Agitator

DANGER:

☞ **During cleaning work the control lever (Item 5, Fig. 7.24) must always be in the 0 position and must on no account be moved during the cleaning work!**

☞ **When working in the hopper, keep the vehicle engine switched off at all times!**

The control lever “Agitator” (Item 5, Fig. 7.24) switches the agitator on (even when the Emergency Stop button has been pressed).
The agitator should always be set to move the concrete inwards to the centre – push the control lever to the right. Setting the agitator to move the concrete outwards (control lever to the left) should be done only for brief periods to relieve a blockage or the remix the concrete.

Opening the safety grill automatically stops the agitator.

The manometer Item 1, Fig. 7.24) shows the actual pressure at the agitator / water pump (optionally: high pressure water pump and compressor). The maximum pressure that can be set is 210 bar.

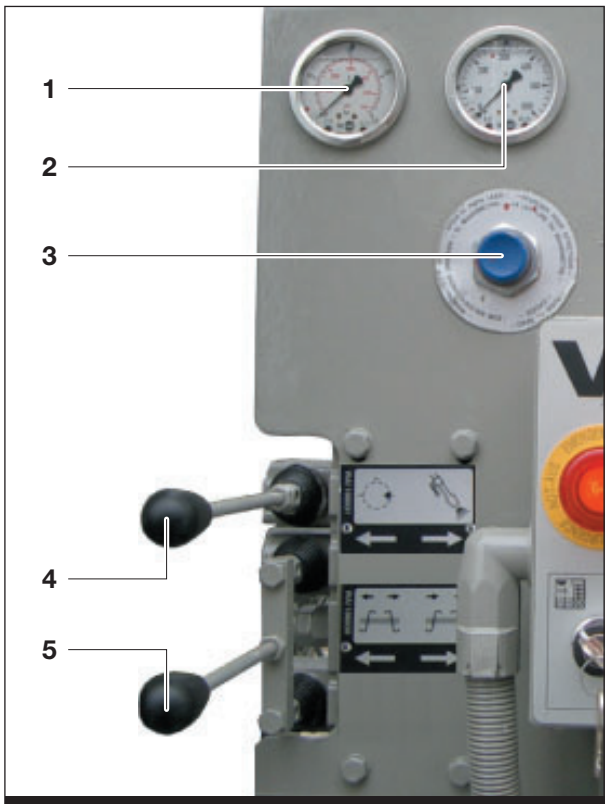


Fig. 7.24 Control panel Agitator / Water pump

7.5.6 Water pump

The control lever “Water pump” (Item 4, Fig. 7.24) switches the water pump on.

The manometer Item 1, Fig. 7.24) shows the actual pressure at the agitator / water pump (optionally: high pressure water pump and compressor). The maximum pressure that can be set is 210 bar.

NOTE:
When the agitator is switched on, the power of the water pump is reduced.

Option:
High pressure water pump or compressor, available as an option, are controlled by the same control lever (Item 4, Fig. 7.24).

7.5.7 Vibrator

The control lever “Vibrator” (Item 8, Fig. 7.24) switches the vibrator on.

Two operating modes are available:

MANUAL	=	Continuous operation
AUTO	=	The vibrator runs only when the pump is switched on.

Fig. 7.25 Control panel desk

7.5.8 Horn/Reset

Irrespective of the operating mode setting “Desk” or “Remote control” the horn can be sounded from any control panel using the rocker switch “Horn/Reset/Lubrication” (Item 6, Fig. 7.25).

If the Emergency Stop button has been pressed, provided all Emergency Stop buttons has been released, the controls will be switched on again (reset).

NOTE:
If the operating mode selector switch (Item 14, Fig. 7.25) is set to “Remote control”, the Emergency Stop button on the Remotecontrol pendant(radio or cable)must be released.

7.5.9 Light

The light switch (Item 7, Fig. 7.25) switches all operating lights on, including the outrigger feet lighting (optional) and working area floodlights.
The lighting around the outrigger feet is permanently switched on. It needs only be plugged into the appropriate socket on the outrigger foot.

7.5.10 Concrete pump manometer

By-passing or blocking the manometer protection valve (Item 3, Fig. 7.24) the actual pump pressure is shown at the manometer (Item 2, Fig. 7.24). At 320 bar the hydraulic pump has switched to “0”. The probable cause is a blockage in the conveying pipe.

7.5.10.1 Distributor boom manometer

The manometer (Item 1, Fig. 7.26) shows the actual pressure at the distributor boom.

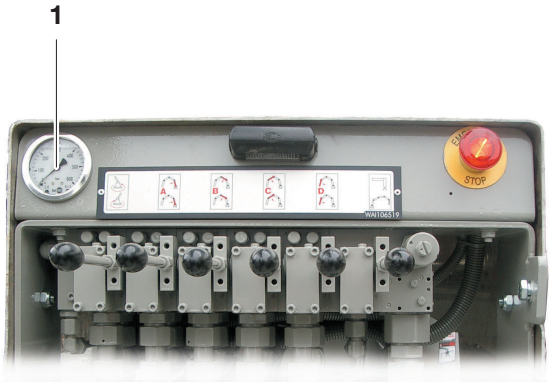


Fig. 7.26 Boom control block

7.5.10.2 Filter clogging display

The display instrument (Item 1, Fig. 7.27) shows the degree of clogging of the return flow filter. If when the hydraulic oil is at operating temperature the needle is in the red zone, the filter element must be changed immediately.

The display instrument (Item 2, Fig. 7.27) shows the degree of clogging of the in-line filter. If the needle indicates 3 bar, the filter cartridge must be changed.

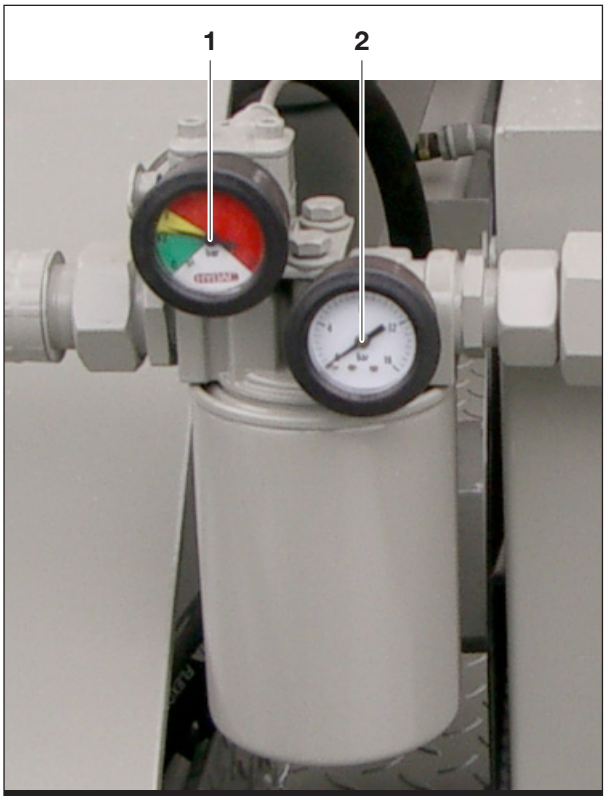


Fig. 7.27 Filter clogging indicator

7.5.10.3 Manometer for transfer shift gearbox

VORSICHT

CAUTION:

- ☞ **If the pressure is set too low, the transfer shift gearbox cannot change gear.**
- ☞ **If the pressure is set too low, the gearbox will be damaged.**

Maximum pressure 5 bar, see manometer (Item 1, Fig. 7.28).

Pull and twist the rotary controller (Item 2, Fig. 7.28) to adjust the pressure.

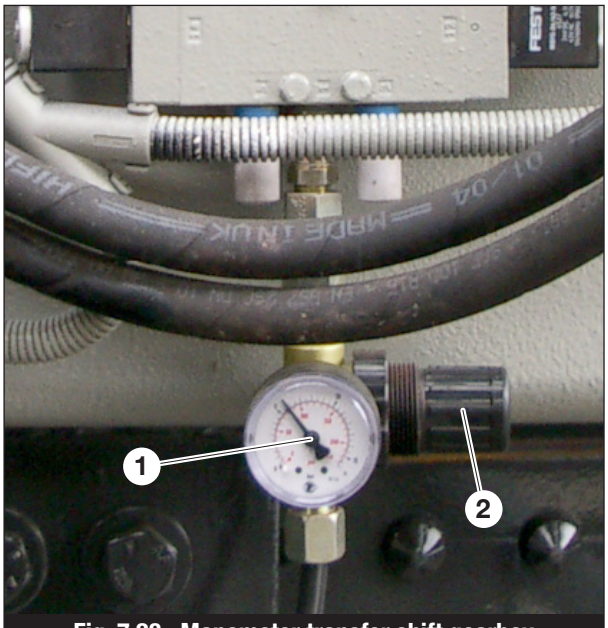


Fig. 7.28 Manometer transfer shift gearbox

7.6 Instructions for pump operation

NOTE:
The maximum conveying pressure must not exceed the pressure listed on the serial plate or in the test book.

- Mix the concrete in the mixer truck at full power and the highest speed, and check that the concrete is evenly mixed. After addition of concrete additives (accelerant, retardant) continue to mix for a further 4 minutes on site.

7.6.1 Instructions for pumping

- Immediately before starting pumping, with the agitator running, fill the hopper with several buckets of thin watery concrete, and send through two sponge balls in advance. Pump slowly, until a full stream of concrete emerges from the discharge hose.
- If the conveying pipework is short and clean, immediately before starting pumping, with the agitator running, fill the hopper with several buckets of laitance (cement-water mixture), and send through two sponge balls in advance, so that the laitance wets the whole periphery of the pipework. Pump slowly, until a full stream of concrete emerges from the discharge hose.
- For newer and longer conveying pipework the frictional resistance is greater, so make sure you pump sufficient laitance through.
- Fill the hopper with concrete from the silo or the mixer truck and keep pumping with the concrete pump.

NOTE:
If the pipework is rusted on the inside (high conveying resistance), do not increase the conveying quantity until you have pumped several m^3 continuously.

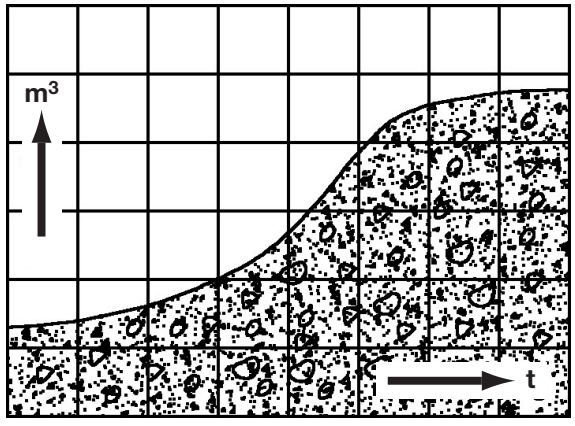


Fig. 7.29 Conveying quantity diagram

- If a blockage occurs, immediately pump the concrete back into the hopper and mix it. Only switch over to forward conveying when the conveying cylinder and transfer tube are correctly switching over automatically. Carefully start pumping through again.

7.6.1.1 Causes of blockages

- Laitance too thin or with insufficient cement
- Insufficient laitance used
- S-valve leaking (wear plate worn and ring too large: replace the parts)
- Leaking pipework (concrete bleeds out)
- Set concrete residues in the transfer tube or conveying pipes
- Unsuitable concrete composition

7.6.2 General instructions for pumping

- Whilst pumping, be sure not to draw any air in, since compressed air can emerge violently at the discharge hose, causing concrete to spray out. Therefore keep the hopper filled at least up to the level of the agitator shaft.
- When pumping, keep the agitator running.
- Avoid long pauses during which no concrete is pumped.

During pauses in pumping the concrete, observe the following points:

- Do not leave the conveying pipework under pressure
- Depressurise the conveying pipework by briefly reversing the pump
- Keep the concrete moving by briefly pumping through and back
- If there is a long pause in pumping, pump the concrete back into the hopper and mix it again before pumping it through the conveying pipework.

If the distributor boom whips around, determine the cause of this.

The following causes may lead to this:

- The outriggers may have moved – repeat the outrigger set-up procedure, see section 7.3.4

WARNING: Before restarting, determine the reason why the outriggers had moved.

- The pump speed is too high, reduce the pump speed
- The distribution boom is badly positioned, move the distribution boom to a better position
  Example of a badly positioned distribution boom: Boom fully extended, element 4 vertical

7.6.3 Instructions for pumping (depending on the material to be pumped)

NOTE:
☞ **Only ever use pumpable concrete!**
☞ **If you are unsure, contact the concrete manufacturer.**

- If pumping concrete that is hard to pump, the agitator shaft should be visible at all times!
  Difficult concrete (extremely stiff, low-sand mixtures, light-weight concrete etc.) will pump better when the hopper is filled only to the lower edge of the agitator shaft. This procedure means that air will be drawn by the concrete pump into the conveying cylinder and the concrete will be conveyed in air plug mode. Caution, blockages may occur!
- The pressure should be relieved in the conveying pipework by brief reversal of the pump (2-3 strokes) during pauses in conveying. Frequently pump back and forwards. Never allow the conveying pipework to stand under pressure.
- If the concrete is very fluid, with a high proportion of large gravel, and tends to bleed from the conveying pipework, always pump out into the hopper during pauses in pumping.
- During longer pauses pump the concrete back into the hopper, mix it and pump it through again.
- During longer pauses in pumping, switch off the drive engine, so that its vibrations do not cause the concrete to separate out. At intervals of 10-15 minutes, pump the concrete back and forth.
- Never force concrete that has separated out, or concrete that is lumpy because it is beginning to set, through the conveying pipework.
- Especially with concrete that has a low capacity for retaining water (tendency to bleed) avoid pauses when working at high throughputs, and when restarting conveying be sure to let the pump run long enough for the transfer tubes on both sides to be filled. Only then switch over to forwards conveying again.
- Air inclusions in the conveying pipework can be hazardous, since compressed air can emerge violently at the discharge hose, causing concrete to spray out explosively.
  Air inclusions occur particular when pumping through by sucking in air when the hopper is insufficiently filled with concrete and when the conveying pipework has been extended.
- The characteristics of the concrete must not be changed in any way.

7.6.4 Instructions for pumping (depending on the machine)

- The max. running speed of the diesel engine must under no circumstances be exceeded, since otherwise the hydraulic pump will overspeed. The permissible speeds can be found on the machine data sheet.

- Pay attention if the piston strokes are shortened and if necessary take action to counteract this (see Chapter 8 “Trouble-shooting”).

- If during continuous operation under heavy loading the oil temperature exceeds 80 °C, the indicator lamp will light (Item 4, Fig. 5.2). Immediately top up the water tank with cold water.

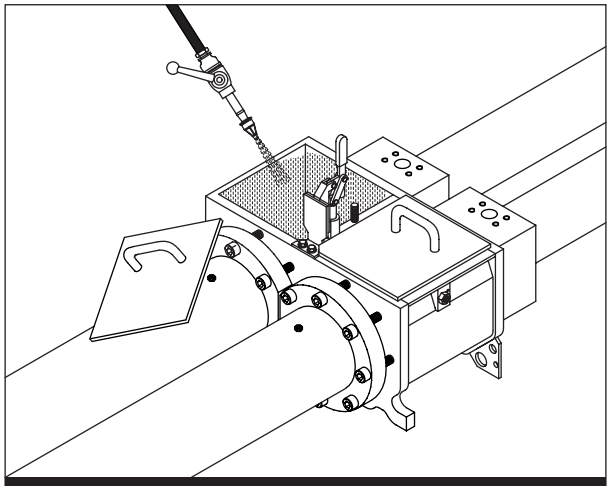


Fig. 7.30 Water in the wash-out tank

- After periods of heavy loading of the engine, never just switch it off, allow it to idle and cool down, at a diesel engine speed of approx. 1,000 rpm. This is particularly important for turbo diesel engines.

- Set the engine speed to more than the minimum speed (500-700 rpm).

- Damage due to operator error is not covered by the **WAITZINGER** warranty.

- If the temperature continues to rise, change the water continuously. Discover the cause of the overheating and rectify it. If the oil temperature rises above 40 °C the thermostatically controlled fan under the master control block will cut in.

- Under no circumstances spray the oil tank with water. This usually leads to a build-up of condensate water and damage to the hydraulic pump.
  If the cooling measures are insufficient, direct a water jet on to the drive cylinder (hydraulic cylinder) as shown here.

All pumps have a thermo-electric cut-out. If the oil temperature exceeds 80 °C the pump will be switched off automatically and the red indicator lamp on the control cabinet or control desk (Item 4, Fig. 5.2) will light up.

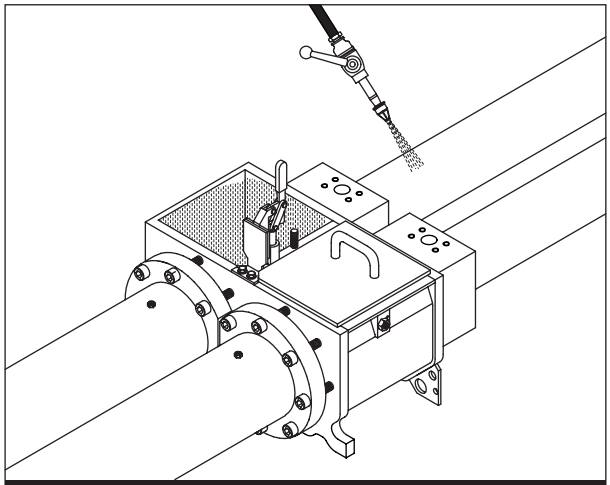


Fig. 7.31 Water on the drive cylinder

7.6.4.1 Measures to reduce the oil temperature

- Switch the pump to the “OFF” (**11**) position. The indicator lamp “Control System ON” (**3**) on the control panel will go out.
- Do not switch the engine off, the oil cooler must remain in operation.
- Renew the water in the water tank.
- When the red indicator lamp “Temperature” (**4**) has gone out, switch the pump on again. Continue to pump but at a lower power.
- When pumping is complete, establish the cause for the oil overheating and rectify it.
- The temperature sensor for the thermo-electric cutout is located in the hydraulic oil tank.

Fig. 7.32 Control panel desk

7.7 Cleaning the conveying pipework

7.7.1 General

- Do not use any aggressive cleaning additives for cleaning the conveying pipework
- Put the remote control pendants in a dry place.
- Follow the directions of the vehicle manufacturer
- Dispose of the cleaning materials according to regulations

7.7.2 Suction cleaning

- Pump out the agitator hopper down to the upper edge of the agitator shaft, then switch the pump off.
- Push a wetted cleaning sponge (cube) into the outlet of the discharge hose.
- Pull the cleaning sponge back through the boom by operating the pump in “reverse feed”; strike the conveying pipework with light hammer blows until the cleaning sponge has passed that point (the hollow ring is recognisable).

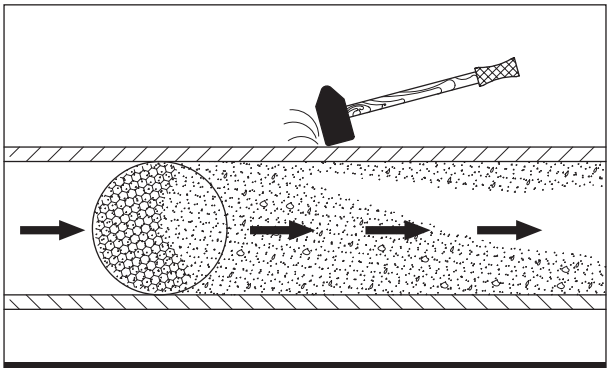


Fig. 7.33 cleaning sponge in suction cleaning

- Switch off the pump.
- Open the hinged base and retrieve the sponge.
- On long conveying pipework runs, repeat the cleaning process. One back suction run is not enough!
- If the protective grill has a safety cut-out, agitator and S-valve come to a halt as soon as the protective grill is opened. When cleaning, briefly shut the protective grill, let the pump run through one cycle, open the protective grill again. A protective grill that is bolted in position remains in position throughout cleaning.
- Remove any remaining material by opening the cleaning valve. Carefully spray the S-valve, hopper, conveying cylinder and water tank until they are clean. Clean the rest of the machine and spray it with formwork release oil.
- If there is a risk of frost, drain the wash-out tank, water tank and water pump. The wash-out tank should also be drained at normal temperatures during long pauses in pumping, overnight and at weekends.

7.7.3 Cleaning with pressurised water.

Cleaning the machine with pressurised water is a method well proven in practice.

- Empty the hopper as far as possible.
- Switch the pump to “Suck” mode using rocker switch (Item 11, Fig. 7.32) and pump 1 or 2 strokes to depressurise the conveying pipework.
- Switch off the pump.
- Drain out the remaining material by opening the cleaning valve, see section 7.7.4. When conveying upwards, close the blocking slide and open the cleaning port in the rising pipe.
- Switch the pump on again, in “Suck” mode, and carefully wash down the conveying pipe with the spray jet, working through the cleaning port. Take care that the hose is not cut through when the S-valve operates. Keep spraying the conveyor pipework until clear water emerges from the conveying cylinders.
- Switch off the pump.
- Clean the hopper and all the parts that come in contact with the material with the spray hose also.
- Push 2 or 3 cleaning sponges soaked with water into the cleaning port and the seal the cleaning port tightly.

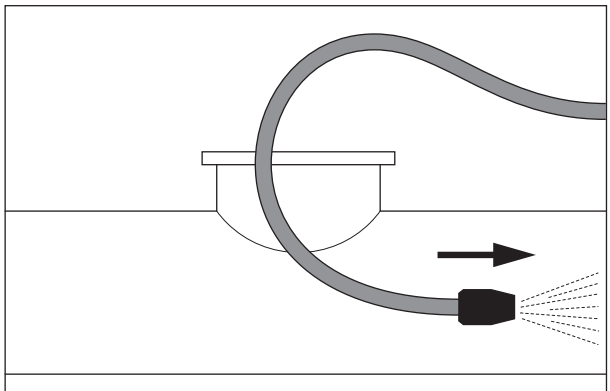


Fig. 7.34 Cleaning with water hose

- Close the cleaning valve and fill the hopper with water.
- Switch the pump on again, in “Suck” mode. Push the material in the conveying pipework forwards to the discharge.
  If a single filling of the hopper is insufficient for a long pipe run, switch the pump off before air is drawn in, and fill the hopper again with water. Then continue with the discharge of the material until the cleaning sponges emerge from the discharge hose.
- Take care that the water flowing from the discharge hose does not flow into the formwork.
- Suck the water back into the hopper by reversing the pump.

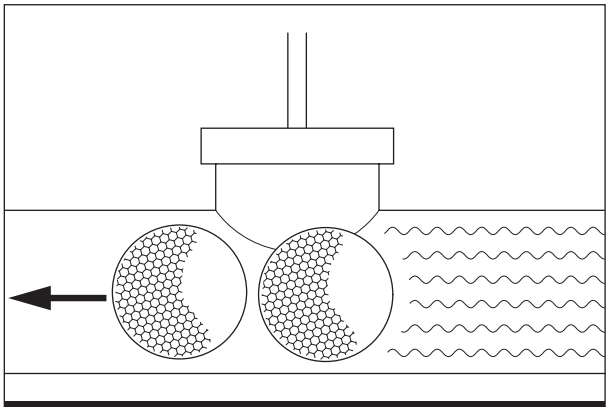


Fig. 7.35 Cleaning with sponges

- If the protective grill has a safety cut-out, agitator and S-valve come to a halt as soon as the protective grill is opened. When cleaning, briefly shut the protective grill, let the pump run through one cycle, open the protective grill again. A protective grill that is bolted in position remains in position throughout cleaning.
- Remove the remaining water by opening the cleaning valve. Carefully spray the S-valve, hopper, conveying cylinder and wash-out tank until they are clean.
- Clean the rest of the machine also, and spray it with formwork release oil.

See further information in the separate documentation supplied by the manufacturer.

NOTE:

If there is a risk of frost, drain the wash-out tank, water tank and water pump. The wash-out tank should also be drained at normal temperatures during long pauses in pumping, overnight and at weekends.

7.7.4 Draining the remaining concrete

The remaining concrete can be drained through the drain valve under the hopper.

- Strike the cover (Item 1, Fig. 7.36) of the drain valve lightly with a hammer to open it. If the cover is too slack or too stiff, adjust the clamping screws (Item 2, Fig. 7.36).
- Collect the remaining concrete in a suitable container or on plastic sheeting, for reprocessing or disposal.
- Observe the safety instructions set out the Chapter 2 “Safety instructions”.

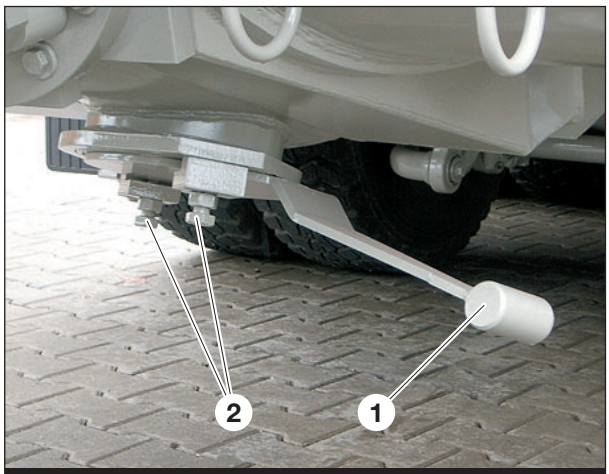


Fig. 7.36 Surplus concrete discharge opening

7.8 Water tank

7.8.1 Filling up / topping up with water by removing the cover

- Close all ball valves.
- Unscrew the cover (**1**) on the rear outrigger.
- Fill with water of a suitable quality (clean water without foreign bodies such as sand).
- Watch the water level indicator (**2**).
- Screw the cover back in place.

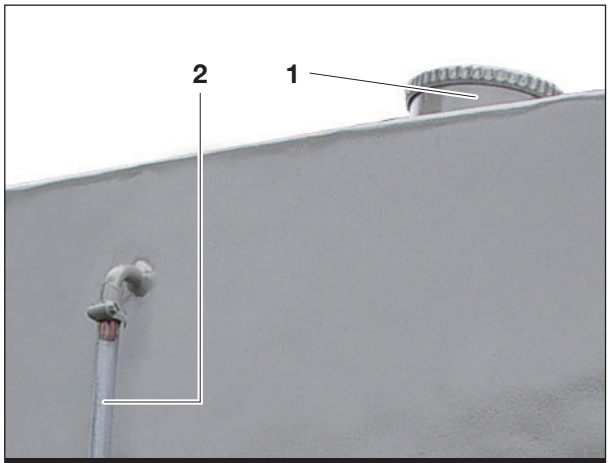


Fig. 7.37 Fill up with water by removing the cover

7.8.2 Filling with water using the C-coupling

- Connect the water hose to the C-coupling (Item 1, Fig. 7.38).
- Open the ball valve (Item 2, Fig. 7.38)
- Start filling with water; watch the water sight hose (Item 2, Fig. 7.37).
- Keep filling with water until water emerges from the filler opening.

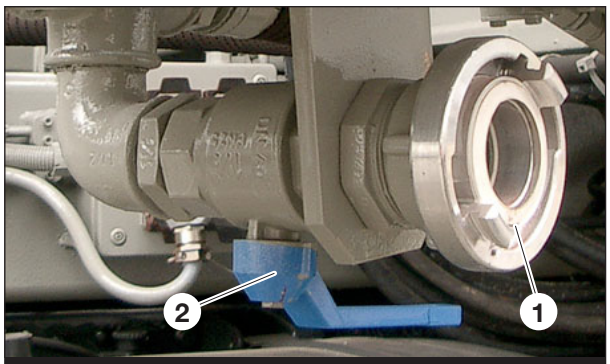


Fig. 7.38 Fill with water using the C-coupling

7.8.3 Filling with water from the mixer truck

- Connect the water hose to the Geka-coupling (Item 1, Fig. 7.39).
- Open the ball valve (Item 2, Fig. 7.39)
- Start filling with water; watch the water sight hose (Item 2, Fig. 7.37).
- Keep filling with water until water emerges from the filler opening.

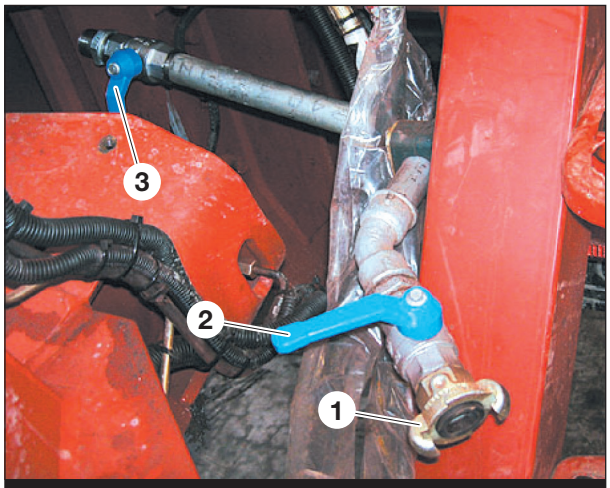


Fig. 7.39 Fill with water from the mixer truck

7.8.4 Operation in winter

- The machine must be standing level; level the machine using the circular levels (Item 1, Fig. 5.5 and Item 3, Fig. 5.6).
- Completely drain all water by opening all ball valves (Item 2, Fig. 7.38 and Item 2, Fig. 7.39).
- Drain the wash-out tank

8. Trouble-shooting

8.1 General information

The actions described in this chapter for trouble-shooting should be employed if during operation deviations from normal performance are found.
Trouble-shooting should be performed based on the following table.
Only skilled technical staff should investigate the causes of faults and implement measures to rectify the fault.

If the fault cannot be rectified, contact **WAITZINGER** customer service.

8.2 Tracing faults

Fault	Cause	Remedy
Gearbox does not shift to “Pump position”.	Vehicle ignition not switched on.	Switch on the ignition.
	Clutch was not disengaged.	Disengage the clutch and engage the required gear.
	Pressure in vehicle compressed air system too low.	Allow the engine to run until It has built up sufficient pressure.
	Pneumatic valve iced up.	De-ice the muffler on the pneumatic valve.
	Solenoid on pneumatic valve defective.	Check solenoids and wiring. The valve can also be actuated with a screwdriver.
	Fuse in vehicle blown.	Establish cause and rectify it. Replace fuse.
No indicator lamps lit on the controls (green LED on desk, and Emergency Stop not illuminated).	Vehicle ignition not switched on.	Switch on the ignition.
	Gearbox in driving position.	Change the gearbox over.
	Gearbox limit switch defective.	Replace gearbox limit switch. (Short-term remedy: Bridge the two contacts on the plug).
	Main fuse (battery) or fuse F1/F2 blown.	Establish cause and rectify it. Replace fuses.

Fault	Cause	Remedy
Emergency Stop indicator lamp flashing.	Emergency Stop button has been pressed.	Establish why the Emergency Stop button was pressed and remedy the cause. Release the Emergency Stop and restart the controls with the horn, see section 7.2.2.
	Selector switch set to remote control.	Release remote control Emergency Stop, or change over the selector switch on the desk, and start the controls with the horn.
	Broken cable or defective Emergency Stop switch.	Have fault rectified by **WAITZINGER** customer service.
Pumping or sucking does not start, no pressure available.	Selector switch in position “Desk”.	Move selector switch to position “Remote control”, operate horn.
	Grill open.	Close grill. Check limit switch.
	“Pump ON” was selected when the controls were switched on using the horn.	Switch the pump off and restart it.
	Engine not running.	Start the engine.
	Vehicle gearbox in neutral.	Select a gear, see section 7.2.1.
	Stroke rate potentiometer at “0”.	Set a higher value, see section 7.2.1.
	Emergency Stop button has been pressed.	Establish why the Emergency Stop button was pressed and remedy the cause. Release the Emergency Stop and restart the controls with the horn, see section 7.2.2.
	Hydraulic oil too hot.	Let the hydraulic system cool down, see section 7.6.4.
	Spool valve defective.	Check valve and solenoid, and have part replaced if necessary by **WAITZINGER** customer service.

Fault	Cause	Remedy
	Pressure relief valve defective.	Check valve and solenoid, and have part replaced if necessary by **WAITZINGER** customer service.
	Controls defective.	Check fuses F9 to F12. and replace if necessary. Set back-up function to position “A”.
		Immediately on finishing work have the fault rectified by **WAITZINGER** customer service.
Pumping or sucking does not at maximum pressure.	Blockage in the conveying pipework.	Suck back and establish the cause of the blockage, see section 7.6.1.1.
	Defective sensor on drive cylinder.	Set back-up function to position “B”. Replace the defective sensor at the earliest opportunity.
	Spool valve defective.	Check valve and solenoid, and have fault rectified if necessary by **WAITZINGER** customer service.
Concrete delivery from the pump is too little or is irregular.	Incorrect gear or stage engaged in the vehicle gearbox.	Engage the correct gear.
	Vehicle engine speed too low.	Increase the speed. Check the settings.
	Concrete pump sucking in air.	Inform the mixer truck driver that the hopper must always be filled to the agitator shaft at least, see section 7.6.2. Check the conveying piston for wear.
	Concrete mixture unsuitable for pumping.	Use only “pumping concrete”, see section 7.6.3.

Fault	Cause	Remedy
	Incorrect settings in the controls.	Have the settings checked by **WAITZINGER** customer service.
	S-valve stiff.	Check S-valve settings, check wear plate and ring for heavy wear or fracture, and check the S-valve bearings.
Concrete pump short strokes.	Back-up function B switched on.	Switch offrotary switch (Item 2, Fig. 5.7). Switch on the pressure switch, see section 7.5.4.
	Piston rings in drive cylinder worn.	Have piston rings replaced by **WAITZINGER** customer service.
Outrigger does not extend.	Incorrect switch setting.	Set selector switch (Item 14, Fig. 5.2) to position “Desk” or set remote control (Item 8, Fig. 5.12) to position “Outriggers”.
	Safety switch on the outrigger has not been pressed.	Set safety switch (Item 3, Fig. 5.5) or Item 1, Fig. 5.6).
	Engine not running.	Start the engine.
	Vehicle gearbox in neutral.	Select a gear, see section 7.2.1.
	Pre-selector valve not actuated.	Check solenoid and wiring. Actuate the pre-selector valve “Outrigger” manually. Seek advice from **WAITZINGER** customer service on this point.
	Pressure setting too low at the outrigger valve.	Check pressure setting shown on the data sheet, adjust it if necessary. Clean the pressure relief valve. Seek advice from **WAITZINGER** customer service on this point.
	Outrigger catch does not open.	Lubricate the outrigger catch, if necessary disassemble it and clean it, replace the seals and d burr the edges. Seek advice from **WAITZINGER** customer service on this point.

Fault	Cause	Remedy
The outrigger moves of its own accord.	Releasable non-return valve dirty.	Have valve cleaned or replaced by **WAITZINGER** customer service.
	Cylinder seal worn.	Have seal replaced by **WAITZINGER** customer service.
	Cylinder distorted by over-pressure.	Check valves for operation. Replace the cylinder. Seek advice from **WAITZINGER** customer service on this point.
The boom will not move.	Incorrect switch setting.	Set selector switch (Item 14, Fig. 5.2) to position “Remote control” or set remote control (Item 8, Fig. 5.12) to position “Boom”.
	Engine not running.	Start the engine.
	Vehicle gearbox in neutral.	Select a gear, see section 7.2.1.
	Emergency Stop button has been pressed.	Establish why the Emergency Stop button was pressed and remedy the cause. Release the Emergency Stop and restart the controls with the horn, see section 7.2.2.
	Radio remote control not operational.	Check transmitter battery charge. Restart the radio remote control (horn). Change the frequency. Use cable remote control instead.
	Pre-selector valve not actuated.	Check solenoid and wiring. Operate pre-selector valve manually. Seek advice from **WAITZINGER** customer service on this point.
	Insufficient hydraulic oil.	Stop engine immediately and top up with hydraulic oil.
		WARNING: The boom cylinder must be bled. Seek advice from **WAITZINGER** customer services on this point.

Fault	Cause	Remedy
	Dirt in the hydraulic system.	Change the filter and have **WAITZINGER** customer service clean out the entire system.
	Nozzle in “Load sensing pipe” closed (from 42 m boom).	Have nozzle cleaned by **WAITZINGER** customer service.
The boom will moves only slowly.	The “50/100%” switch is in the “50%” position.	Set the switch (Item 10, Fig. 5.12) to the “100%” position.
	Incorrect valves settings.	Have the settings checked by **WAITZINGER** customer service.
	Incorrect gear or stage engaged in the vehicle gearbox.	Engage the correct gear, see section 7.2.1.
	Check pressure setting at the boom block is too low.	Check pressure setting shown on the data sheet, adjust as necessary. Clean the pressure relief valve. Seek advice **WAITZINGER** customer service on this point.
	Hydraulic pump defective.	Have pump replaced by **WAITZINGER** customer service.
Individual boom movements do not operate.	Solenoids in the boom control block defective.	Have solenoids and wiring checked or replaced by **WAITZINGER** customer service.
Element A does not rise.	Sensor on the boom mount is activated.	Have sensor replaced by WAITZINGER customer service.
Slewing not operational.	Boom is at the limit of travel.	Slew it in the opposite direction.
	Boom “Slew” limit switch or solenoid at the boom control block defective (from 42 m boom).	Have the limit switch or solenoid replaced by **WAITZINGER** customer service.
The boom moves although no no element is activated.	Dirt in the load retention valve.	Clean the load retention valve at the boom cylinder. Set the pressures to the data sheet values. If necessary, replace the valves. Seek advice from **WAITZINGER** customer service on this point.

Fault	Cause	Remedy
	Seal in boom cylinder worn.	Have seal replaced by **WAITZINGER** customer service.
	Book cylinder distorted by excessive pressure.	Rectify the cause and replace the cylinder. Seek advice from **WAITZINGER** customer service on this point.
”Slew” operation too slow, or or does not move.	Pressure setting too low.	Check pressure setting to data sheet, and adjust. Clean the pressure relief valve. Seek advice from **WAITZINGER** customer service on this point.
	Machine inclination too great.	Reduce the inclination, see section 7.3.4.
	Ball bearing slewing rim insufficiently lubricated.	Lubricate the ball bearing slewing rim.
	Slewing motor worn.	Have motor replaced by **WAITZINGER** customer service.
The boom slews although “Slew” not activated.	Brake in slewing drive worn.	Have the brake linings replaced by **WAITZINGER** customer service.
Agitator does not operate.	Grill open.	Close grill.
	Water pump also running.	Switch off the water pump.
	Concrete too stiff, or setting in the hopper.	Empty the hopper and clean it.
	Pressure setting at the agitator control block is too low.	Check pressure setting to data sheet, adjust as necessary. Clean the pressure relief valve. Seek advice from **WAITZINGER** customer service on this point.
Water pump does not operate.	Water tank empty.	Fill up with water.
	Agitator switched on.	Switch the agitator off using the control lever (Item 5, Fig. 5.3).

Fault	Cause	Remedy
	Pressure setting at the agitator control block is too low.	Check pressure setting to data sheet, adjust as necessary. Clean the pressure relief valve. Seek advice from **WAITZINGER** customer service on this point.
	Dirt in the water pump.	Disassemble the water pump and clean it. See separate user manual from the manufacturer.
	Axial play in the pump shaft incorrect.	Undo the coupling and adjust to the mid value.
Lubrication system does not operate.	Fuse blown.	Replace fuse.
	Pump switched off.	Switch the pump on.
	Grease too stiff.	Replace grease with suitable grease, see Figure 9.5.
	Lubrication point blocked.	Clear the blockage at the lubrication point.
	Lubrication distributor blocked.	Replace the grease up to the lubrication distributor and replace the lubrication distributor.
	Pump impeller defective.	replace pump impeller.

9. Maintenance & Inspection

9.1 General information

The truck-mounted concrete pump must be thoroughly cleaned, maintained and inspected at regular intervals. All parts of the machine should be checked that they are in good condition and safe working order. The maintenance actions are listed in the Maintenance Schedule, section 9.4.

WARNING:

☞ **Maintenance and inspection work must always be carried out when the truck-mounted concrete pump is stopped and switched off.**

☞ **The adjacent notice must be placed in a suitable place where it is easily visible.**

DANGER:

Work on the hydraulics, pneumatics, electrics and electronics must only be performed by suitably trained skilled staff.

Further information on the truck part of the vehicle can be found in the separate vehicle manufacturer's user manual.

9.2 Safety instructions for maintenance and inspection

☞ Maintenance and inspection of the truck-mounted concrete pump must only be carried out by authorised staff.

☞ Repair work must only be carried out by authorised skilled staff of the manufacturer.

☞ Maintenance and inspection work must be carried out precisely in accordance with the specifications and instructions in this maintenance section.

☞ Make sure that the user manual for the truck-mounted concrete pump, the maintenance and special tools and fixtures for it, the oilcans and grease guns for lubrication and the cleaning and lubrication media are always kept in the places provided for them.

☞ Used cleaning materials must be removed from the truck-mounted concrete pump and placed in a specially designated container (fire hazard!). The use of highly flammable materials (e.g. petrol) is prohibited - VBG 1 § 43 and 44!

NOTE:

Consumables such as gearbox oil used during maintenance, repair and oil change should be collected in suitable containers and disposed of in accordance with regulations (to EC directive 75/439/EWG and statutory instruments under §§ 5a, 5b AbfG and AltölV).

☞ Electrical control equipment, resistors and contactors should be kept clean and cleaned as required.

☞ Check electrical cables for damage to the insulation.

☞ Check mechanical components for wear, deformation, crushing, cracks, breakage, corrosion and secure mounting.

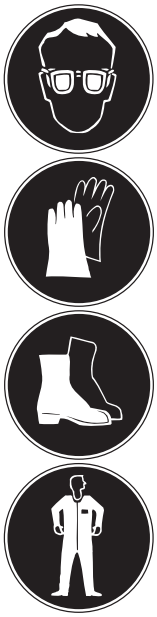
☞ Regularly check all pipes, hoses and screwed connections for leaktightness and for externally evident damage.

☞ Fluids which emerge at high pressure can be hazardous.

9.2.1 Lubricants and solvents

WARNING:

- ☞ **As far as possible, avoid allowing lubricants and solvents to contact the skin.**
- ☞ **Store fluids, especially hydraulic oils and also engine oils, lubricants and liquefied or compressed gaseous products, only in the containers legally prescribed for them.**
- ☞ **These should carry appropriate warning notices identifying their contents.**
- ☞ **Comply with all warning notices.**
- ☞ **When handling these materials wear protective clothing at all times (skin, eyes, hand and foot protection).**
- ☞ **Used protective clothing must be placed in sealed plastic sacks after wearing.**



9.2.2 Sealing rings (containing fluorine)

WARNING:

- ☞ Always wear protective clothing when removing the remains of sealing rings.
- ☞ Fluorine is contained in Viton sealing rings, O-rings and flat gaskets.
- ☞ Under normal conditions of use, Viton seals and O-rings are safe to use. However at temperatures in excess of 400 °C they decompose, e.g. if equipment catches fire.
- ☞ The remains of such seals are then extremely aggressive and generally cannot be removed from the skin.

9.2.3 Oils and greases

WARNING:

- ☞ Allergic reactions can arise when handling oils and greases.
- ☞ Use barrier creams and avoid all contact with the skin.
- ☞ Never wash your hands in oil.
- ☞ Hydraulic oil emerging at high pressure can penetrate the skin and cause severe injuries.
- ☞ To avoid severe infections, call a doctor immediately.
- ☞ Dispose of oils and filters in accordance with statutory regulations.
- ☞ Never pour lubricating oil down the public drains.

9.2.4 Paints, varnishes and thinners

☞ These materials are highly inflammable when applied as sprays and mists.

☞ Thinners vapours are heavier than air and create an extremely high explosion hazard.

WARNING:

☞ Materials soaked in paint, varnish or thinners can ignite spontaneously if they are carelessly thrown into a rubbish bin.
☞ Do not breathe in paint or thinners mists.
☞ When painting, ensure good ventilation and never smoke.
☞ When spraying paint always wear a close-fitting face mask.
☞ Never allow petrol or paraffin to come into contact with rubber components. Contamination of rubber components with these materials causes them to swell and soften, leading to failure.
☞ When working with paraffin or petrol, naked flames and smoking are prohibited.

9.2.5 Glues, adhesives and solvents

☞ Some vapours from these materials are flammable and/or poisonous if breathed in.

☞ Even gases which are not themselves flammable can decompose at high temperatures and release poisonous gases, e.g. when drawn through the glowing tip of a cigarette.

☞ Thus the same safety instructions apply as for paraffin and petrol.

9.2.6 Battery acid

WARNING:

- ☞ **Battery fluid contains aggressive sulphuric acid. Always wear protective clothing and protective gloves. Handle batteries with care.**
- ☞ **If any battery acid splashes on to the skin, wash it off immediately with clean water.**
- ☞ **If any battery acid splashes on to the eye, wash it out immediately with clean water. Then immediately summon a doctor.**
- ☞ **Because of the risk of an explosion, keep sparks and naked flames away from batteries. Battery acid can catch fire.**

9.2.7 Safety precautions when charging batteries

WARNING:

- ☞ Around batteries there is an explosion hazard due to short circuits, sparks or naked flames.
- ☞ Batteries on charge release explosive gas.
- ☞ Switch off the charging power before disconnecting the charging lead plug.
- ☞ When charging in enclosed spaces, ensure good ventilation.
- ☞ Continue to ventilate the room up until an hour after completing the charge.
- ☞ No smoking!
- ☞ Do not place tools on the battery.
- ☞ Disconnect the battery terminals before working on the electrical system.
- ☞ Electric arcs can be life- threatening and cause fires!
- ☞ Do not place anything metallic on the battery.
- ☞ Sulphuric acid is corrosive.
- ☞ When working on the battery always wear safety glasses and protective gloves!
- ☞ Battery fluid contains sulphuric acid.
- ☞ Remove splashes from the skin immediately with soap and water.
- ☞ Immediately summon a doctor is acid splashes the eyes or mucous membranes.

9.2.8 Safety instructions for welding work

CAUTION:

- ☞ Whenever carrying out welding work on the truck-mounted concrete pump, disconnect the battery and unplug all electrical control equipment!
- ☞ Attach the earth connection immediately adjacent to the welding location!

In addition, observe all safety instructions set out in Chapter 2 Safety Instructions!

9.3 Tightening torques for screw connections

The following values apply to tightening torques for machine screws to DIN 912, 931 and 934 based on a friction factor of μ = 1.25 (lightly oiled).

Thread Ø	Tightening torque M_D [Nm] 8.8	Tightening torque M_D [Nm] 10.9
M8	23	32
M10	46	64
M12	80	110
M14	125	180
M16	195	275
M18	270	390
M20	385	540
M22	510	720
M24	660	930
M27	980	1.400

Fig. 9.1 Tightening torque for screw connections

9.4 Maintenance schedule

Certain maintenance work must be carried out on the machine at specified intervals. These intervals are expressed either as numbers of operating hours or as periods of time such as **semi-annually** or **annually**, whichever interval **is reached** earlier.

Before performing the work for any maintenance interval, the maintenance work for all previous maintenance intervals must have been completed.

Maintenance work	Maintenance intervals				
	Daily	After the first 50 operating hours	Weekly	Every 500 operating hours	Every 1,000 operating hours or annually
Check all components for wear, deformation, corrosion and secure mounting.	X				
Check oil, fuel, grease and water levels, top up as necessary. The machine must be standing on level ground at this time.	X				
Check all filter clogging indicators.	X				
Check components that come in contact with concrete, replace worn parts.	X				
Check the wear condition of the conveying pipework by knocking it or by using a wall thickness gauge (see section 9.8) and replace worn parts. The minimum wall thicknesses can be found in the diagram in section 9.8.2.	X				
Check lubrication system for operation.	X				
Lubricate the conveying piston with grease (unless the automatic piston lubrication option is fitted).	X				
Visually check all hydraulic lines and screwed joints for leak-tightness.	X				

Maintenance work	Maintenance intervals				
	Daily	After the first 50 operating hours	Weekly	Every 500 operating hours	Every 1,000 operating hours or annually
Check the attachment of the discharge hose and the security of all snap couplings.	X				
Perform all necessary maintenance work on the truck in accordance with the separate user manual supplied by the manufacturer.		X			
Clean all filters and replace as necessary, see section 9.6.		X			
Check all screw connections against the tightening torque table in section 9.3.		X			
Check the screw connections on the cardan shaft joints.		X			
Change the oil in the boom slewing gearbox and transfer shift gearbox, see sections 9.7.1 and 9.7.2.		X			
Lubricate all grease points on the boom, boom mounting, pump and ball bearing slewing rim, see section 9.5.			X		
Check the oil level in the slewing gearbox.			X		
Make a thorough visual check for damage of all seals on the S-valve and agitator.			X		
Check the adjustment of the S-valve and adjust it as necessary.			X		
After at least 24 hours settling time check the condensation water in the hydraulic oil tank; drain it through the ball valve until hydraulic oil comes out.			X		

Maintenance work	Maintenance intervals				
	Daily	After the first 50 operating hours	Weekly	Every 500 operating hours	Every 1,000 operating hours or annually
Check the operation of all safety equipment such as Emergency Stop, grill and guards.			X		
Check the structural steelwork of the boom, boom mounting and outriggers for cracks.			X		
Completely drain the hydraulic oil, flush out the hydraulic oil tank and fill with the necessary quantity of hydraulic oil, see section 9.7.3.				X	
Replace the filter cartridges in the hydraulic oil tanks for the boom and concrete pump. Clean the magnetic rod.				X	
Check the oil level in the transfer shift gearbox.				X	
Perform a wear check on the S-valve, verify 8 mm wall thickness.				X	
Perform a wear check on the conveying cylinders.				X	
Clean the diesel pre-filter on the vehicle.				X	
Check the pressure setting of the pump and distributor boom against the data sheet, see sections 3.3 and 3.4.				X	
Check engine speed and operation of the pump together with stroke rate against the data sheet, see sections 3.3 and 3.4.				X	
Check that the conveying piston fastenings are tight.				X	

Maintenance work	Maintenance intervals				
	Daily	After the first 50 operating hours	Weekly	Every 500 operating hours	Every 1,000 operating hours or annually
Check all screw connections on the ball bearing slewing rim against the tightening torque table in section 9.3.				X	
Check that the conveying pipework fastenings on the distributor boom are tight.				X	
Clean the air filter casing.				X	
Change the breather filter on the hydraulic oil tank.				X	
Have all mechanical and hydraulic components examined by an expert.					X
Check all safety equipment that is fitted for good condition.					X
Check distributor boom play between the pinion and the ball bearing slewing rim, see section 9.8.5.					X
Check play within the ball bearing slewing rim, see section 9.8.6.					X
Change the oil in the slewing gearbox, see section 9.7.1.					X
Change the oil in the transfer shift gearbox, see section 9.7.2.					X

9.5 Lubrication

9.5.1 Central lubrication system

Use only greases of NLGL classes 0 to 2. See documentation for the central lubrication system.

9.5.1.1 Checking the central lubrication system

The operation of the central lubrication system must be checked daily. To do this, all grease points should be lubricated once manually.

1. Starting the lubrication system manually

The ignition must be switched on and all Emergency Stop switches released. Set the concrete pump to the setting “Pump”. Actuate the lubrication system for approx. 2 sec.

CAUTION

CAUTION:

- ☞ **Check whether the rotor vane on the lubrication pump rotates and sufficient grease is fed in.**
- ☞ **If grease emerges from the safety valve, no grease points are being lubricated. This fault must be rectified immediately!**

2. Checking the grease points on the hopper (Fig. 9.2)

At the bearings of the S-valve no. 2 and no. 3 and agitator no. 4 and no. 5 grease must emerge into the hopper; at S-valve no. 1 grease must emerge into the conveying pipe (the flap elbow must be open).

3. Checking the operation of the lubrication distributor

After waiting no more than 4 minutes the control pin in the lubrication distributor must be seen to move in and out.

4. Checking the lubrication pipes

CAUTION

CAUTION:

Immediately replace any defective lubrication pipes!

Check the lubrication pipes for damage and leak-tightness. All lubrication pipes must be securely connected.

5. Checking the grease nipples for manual lubrication

No grease must be leaking from the grease nipples. Either replace the defective grease nipple and non-return valve immediately (or close it off).

6. Lubricating "manually"

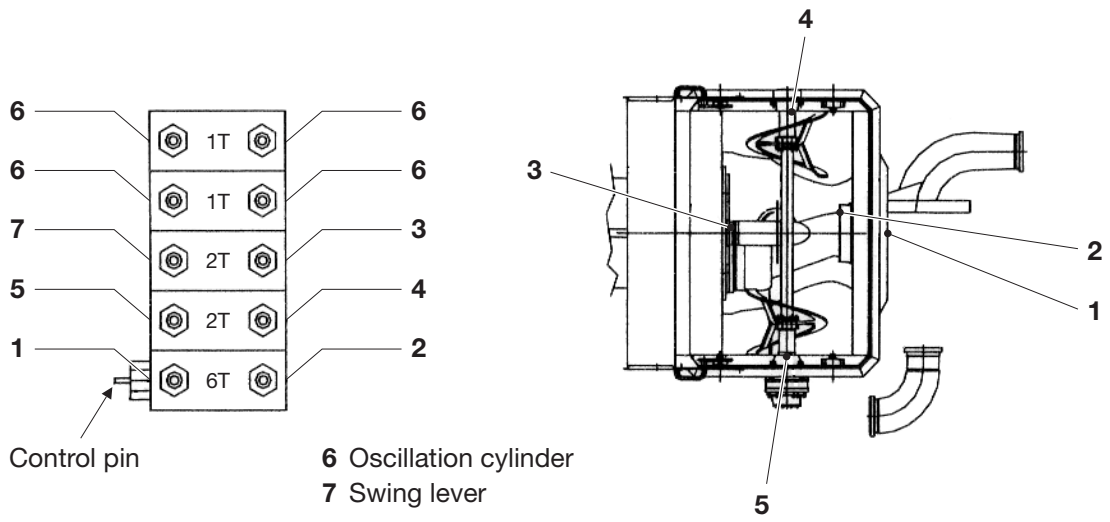
CAUTION

CAUTION:
Before starting work, check that grease is issuing at all grease points, see point 2.

If the central lubrication system is defective, all grease points can be lubricated manually, using a grease gun. This should be performed no less frequently than every 2 hours of operation.

7. Blocked grease points

If no grease can be injected into a lubrication point, this problem must be rectified as soon as possible by a **WAITZINGER** customer service fitter.



6 Oscillation cylinder
7 Swing lever

Fig. 9.2 Lubrication system

9.5.2 Manual lubrication

An acid-free multi-purpose grease should be used for manual lubrication, see Figure 9.5.

9.5.3 Sliding surfaces

Use graphite grease for sliding surfaces, see Figure 9.5.

9.5.4 Overview of grease points

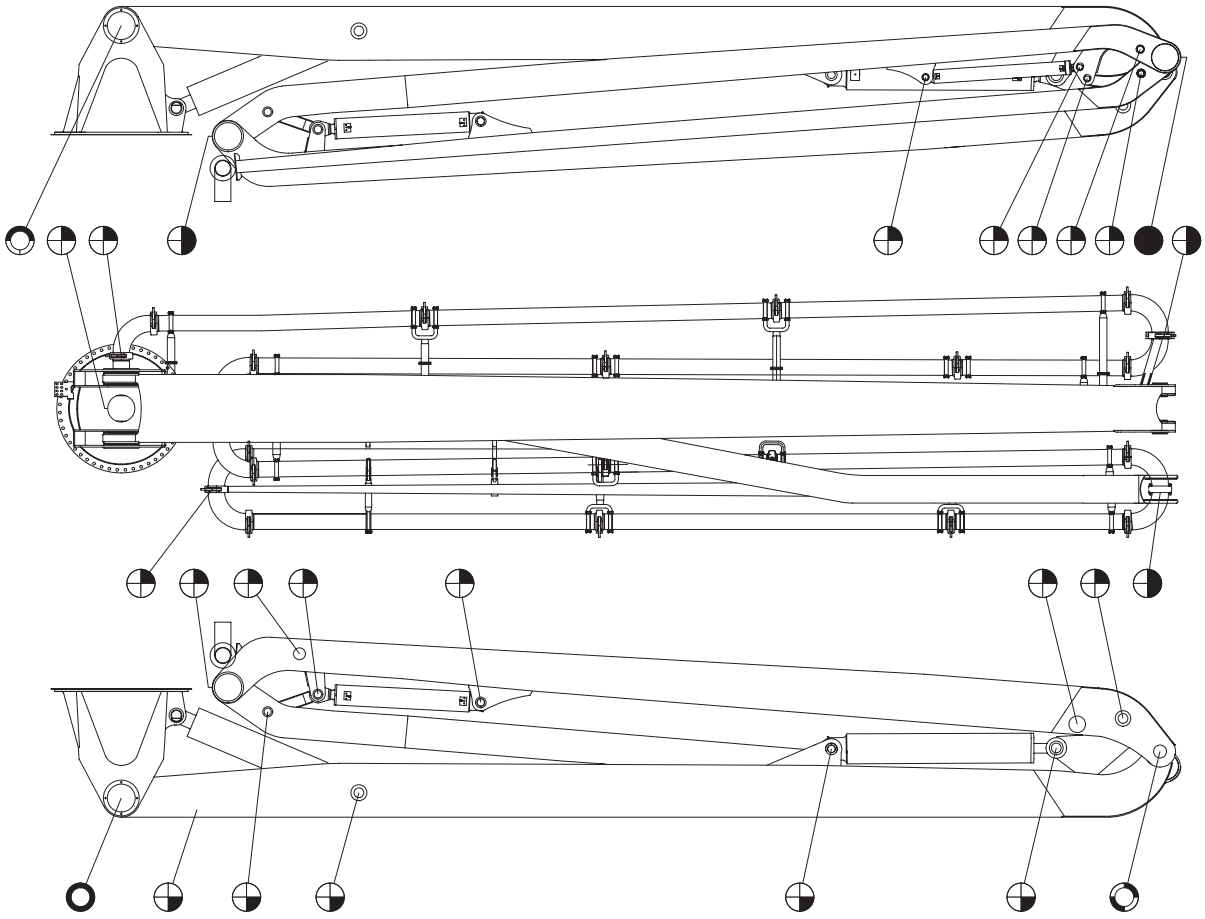
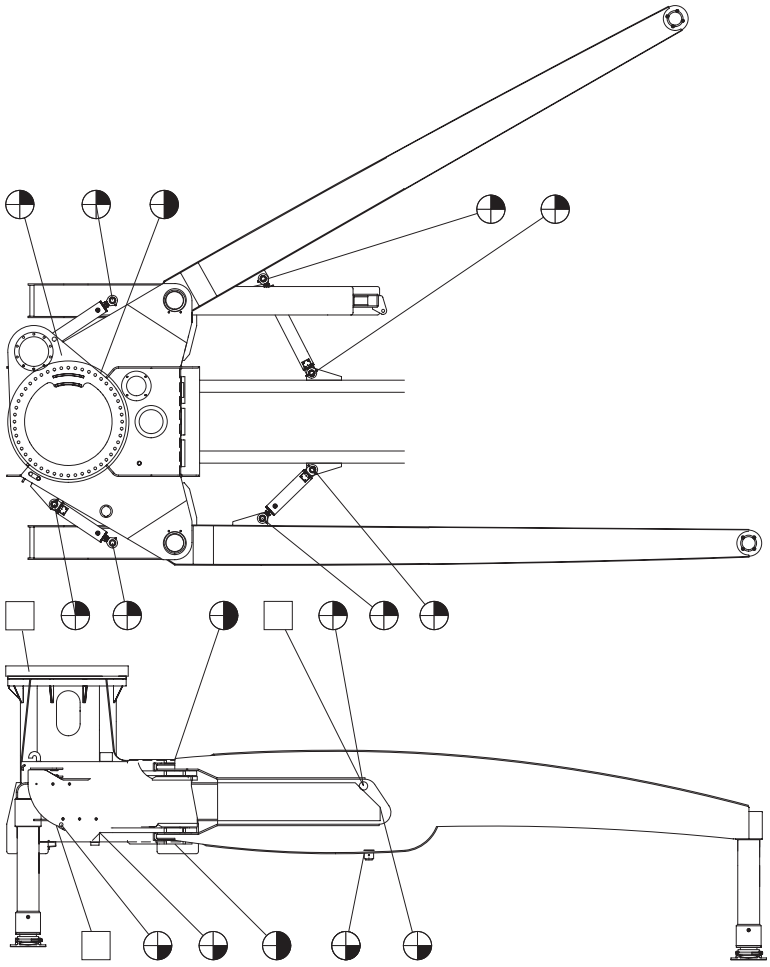


Fig. 9.3 Grease points overview



= 1 Schmiernippel

= 2 Schmiernippel

= 2 Schmiernippel, gegenüberliegend

= 2+2 Schmiernippel, gegenüberliegend

= 2 Schmiernippel auf der Innenseite

= 2 Schmiernippel auf der Innenseite, gegenüberliegend

= 2+2 Schmiernippel auf der Innenseite, gegenüberliegend

= Flächenschmierung

Fig. 9.3 Grease points overview Boom control block

9.5.5 Reference tables for hydraulic oils, greases and gear oils

Lubricants suitable for the truck-mounted concrete pump are listed in table below. **WAITZINGER** Takes no responsibility for the quality of the lubricants that are listed, nor for variations in their quality.

CAUTION

CAUTION:

☞ **Hydraulic oils with different characteristics – biologically degradable / mineral-based hydraulic oils – must on no account be mixed!**

☞ **Engine oil data can be found in the separate user manual issued by the vehicle manufacturer.**

Manufacturer	Standard » HLP 46 «	Tropic » HLP 100 «
AGIP	Arnica 46 L-HV/46	Blasia S 220
ARAL	Vitam CF 46	Vitam CF 100
BP	Energol HLP 46	Energol HL P10
ELF	Olna 46	Olna 100
ESSO	Nuto H 46	Nuto H 100
FANAL	Salvo MWS 46	Salvo MWS 100
FUCHS	Renolin B 15	Renolin B 30
MOBIL	DTE 25	DTE 27
SHELL	Tellus Öl 46	Tellus Öl 100

Fig. 9.4 Hydraulic oils reference table

The automatic lubrication system can convey greases only up to NLGI class 2 or mineral oils which have at least 40 mm^2/s (cST) at 40 °C.
IMPORTANT: When handling greases be scrupulous about cleanliness. Contaminants remain in suspension in the grease, they do not settle out. They can lead to blockages in the delivery pipes, causing damage to bearings.

	Manufacturer	Designation	Type of saponification	Min. conveying temperature
Conventional greases	AGIP	F1 Grease 24	Ca	–
	ARAL	Mehrzweckfett ZS 1/2	Ca/Li	-20 °C
	AUTOL	Top 2000	Ca	-10 °C
		Top 8000 W	Ca	-20 °C
	BP	Abschmierfett	Ca	–
		C1 Abschmierfett	Ca	-20 °C
	CASTROL	CLS - Grease	Ca/Li	–
	ESSO	Cazar K2	Ca	–
		High pressure grease	Ca	–
	FIAT LUBRIFICANTI	Comar 2	Li	-25 °C
	FINA	Ceran LT	Ca	-20 °C
		Ceran WR2	Ca	–
	FUCHS	FN 745	Ca	-25 °C
		Renocal FN3	Ca	-20 °C
		Renolit HLT 2	Li	-25 °C
	KLÜBER	Centoplex 2 EP	Li	–
	MOBIL	Mobilgrease	Li	-30 °C
	MOLYKOTE	TTF 52	inorg. thinner	-30 °C
	OPTIMOL	Longtime PD 2	Li	-20 °C
		OLIT CLS	Li/Ca	-15 °C
	SHELL	Retinax C	Ca	–
	WESTFALEN	Gresalit ZSA 2	Li	-15 °C
	ZELLER & GMELIN	ZG 450	Li	–
		ZG 736	Li	–
Biologically degradable greases	ARAL	BAB EP 2	Li/Ca	–
	AUTOL	Top 2000 Bio	Ca	-25 °C
	AVIA	Biogrease 1	Li	bis 0 °C
	DEA	Dolon E 2	Li	-15 °C
	FUCHS	Plantogel S2	Li/Ca	–
	KLÜBER	Klüberbio M32 - 82	Ca	-20 °C

Fig. 9.5 Greases reference table

As-sembly	Transfer gearbox / Slewing gearbox														Lubrication system											
Type of lubricanr	Mineral									Synthetic					Low-viscosity grease			Roller bearing							
	ÖI – CLP DIN 51517									ÖI – PGLP DIN 51502					Low-viscosity grease			Grease							
Kinematic viscosity in cSt at 40 °C	460			320			220 (standard)		100	460			220		100	–		–	(standard)			–			–	
Ambient temperature in °C	+5	–	+46	0	–	+40	-5	–	+35	-15	–	+25	-15	–	+100	-25	–	+80	-35	–	+60	-20	–	+50	-30	–	+60
ARAL	Degol BG 460			Degol BG 320			Degol BG 220			Degol BG 100			–			Degol GS 460			Degol GS 220			–			Aralub FDP 00			–			Multi-purpose grease Aralub I IL 2		
BP	Energol GR-XP 460			Energol GR-XP 320			Energol GR-XP 220			Energol GR-XP 100			Bartran HV 15			Energol SG-XP 460			Energol SG-XP 220			–			Energrease HT 00-EP			Energrease FG 00-EP			Energrease GSF			Multi-purpose grease L 2			Energrease LS 2			–		
CALYPSOL	UK-Ecubsol Öl 8140			UK-Ecubsol Öl 8060			UK-Ecubsol Öl 8050			UK-Ecubsol Öl 8030			–			UK-Ecubsynth Öl PG 460			UK-Ecubsynth Öl PG 220			–			Calypsol D 6024			Calypsol D 8024			–			Calypsol H 441			Multi-purpose grease Calypsol 20			Calypsol H 729		
CASTROL	Alpha SP 460			Alpha SP 320			Alpha SP 220			Alpha SP 100			Alphasyn T 15			Alphasyn T 460			Alphasyn T 220			–			CLS-Grease			–			CLS-Grease			Spheeröl AP 2			–			LZV-EP		
CHEVRON	NL-Gear Compound 460			NL-Gear Compound 320			NL-Gear Compound 220			NL-Gear Compound 100			Mechanism LPS 15			–			–			–			Dura-Lith. EP Grase 00			–			–			Dura-Lith. EP Grase 2			–			–		
DEA	Falcon CLP 460			Falcon CLP 320			Falcon CLP 220			Falcon CLP 150			Astron Z HLP 15			Polydea CLP 460			Polydea CLP 220			–			Glissando 283 EP 00			Orona DR 00			–			Glissando R EP 2			Glissando 20			–		
ESSO	Spartan EP 460			Spartan EP 320			Spartan EP 220			Spartan EP 100			Univis N 15			–			Circulation oil S 220			Circulation oil EZL 502			Fibrax EP 370			Fibrax 370			Low-viscosity grease S 420			Beacon 2			Unirex N 2			–		
KLÜBER	Klüberoil GEM 1-460			Klüberoil GEM 1-320			Klüberoil GEM 1-220			Klüberoil GEM 1-100			Isoflex MT 30 ROT			Klübersynth GH 6-460			Klübersynth GH 6-220			Klübersynth GH 6-100			Microlube GB 00			–			Klübersynth GE 46-1200			Centoplex 2 EP			Centoplex			Isoflex Topas NCA 52		
MOBIL	Mobilgear 634			Mobilgear 632			Mobilgear 630			Mobilgear 627			Mobil DTE 11			Mobil Glygoyle 80			Mobil Glygoyle 30			Mobil Glygoyle 11			Gargoyle Fett 1200 W			–			–			Mobilgrease MP			Mobilux 2			Mobiltemp SHC 100		
SHELL	Shell Omala Öl 460			Shell Omala Öl 320			Shell Omala Öl 220			Shell Omala Öl 100			Shell Tellus Öl T 15			Shell Tivela Oil SD			Shell Tivela Oil WB			Shell Tivela Oil WA			Shell Spezial Gear box grease H			Shell Tivela Compound A			Shell Tivela Compound A			Shell Alvania Fett G 2			Shell Alvania Fett R 2			Aeroshell Grease 7		

Fig. 9.6 Gearbox oils reference table

9.6 Changing filters

9.6.1 General

DANGER:

☞ **Filters may be changed only when the engine is switched off and the hydraulic system is depressurised (accumulator pressure or hydraulic pressure generated by static pressure in the conveying pipework).**

☞ **The distributor boom must be stowed for transport or propped.**

- Changing a filer always involves some loss of hydraulic oil. Therefore be sure always to have a container or oil barrel to hand.
- Filters should be changed in a short a time as possible, so that there is the least opportunity for contamination to enter the hydraulic system. Therefore before starting work have the replacement filter element, O-rings, lint-free wipe cloths and petrol for washing down ready to hand.
- After changing the filter, always check the oil level and top up with oil as necessary.

NOTE:

Do not let hydraulic oil drain into the ground, always use a sufficiently large bowl or container and dispose of it in accordance with the applicable regulations.

9.6.2 High-pressure filters for the boom and hydraulic pumps

If the red ring in the clogging indicator (Item 1, Fig. 9.7) is visible, the filter element must be changed:

1. Unscrew the filter casing (**2**) anti-clockwise.
2. Pull the filter element (**3**) downwards from the casing (**4**).
3. Clean the filter casing, replace the O-ring, and grease the thread and O-ring.
4. Fill the filter casing with clean oil.
5. Plug in the filter element.
6. Fit the filter casing and tighten it to approx. 150 Nm.

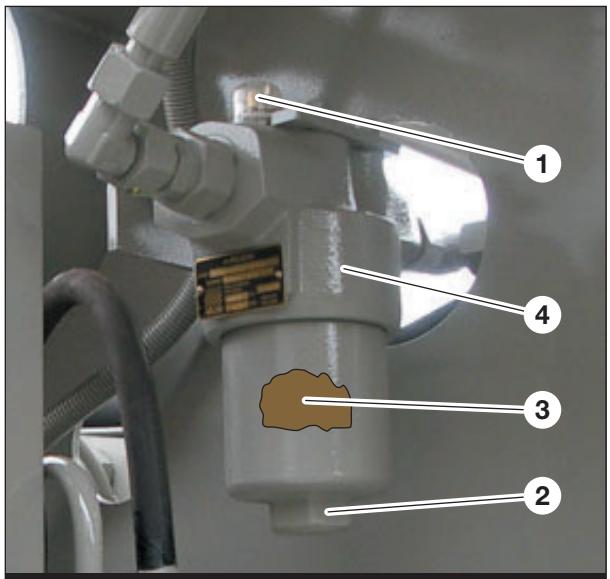


Fig. 9.7 Changing the high pressure filter

9.6.3 Return flow filter

If the clogging indicator (Item 1, Fig. 9.8) is in the red zone when the oil is at operating temperature, the filter element must be changed:

1. Have a suitable container ready for the oil filter element, and clean the outside of the filter casing.
2. Undo the 4 screws (**3**) and place the cover (**2**) on a clean surface.
3. Take out the filter element (**4**) with spring and dirt sleeve (**5**).
4. Twist the dirt sleeve anti-clockwise and pull it off, then thoroughly clean it and fit it to the new filter element.
5. Fit the new filter element into the return flow filter.
6. Fit the spring and cover, secure with 4 screws.
7. Check filter for leak-tightness.

NOTE: When changing the return-flow filter, always change the air filter (6) also!

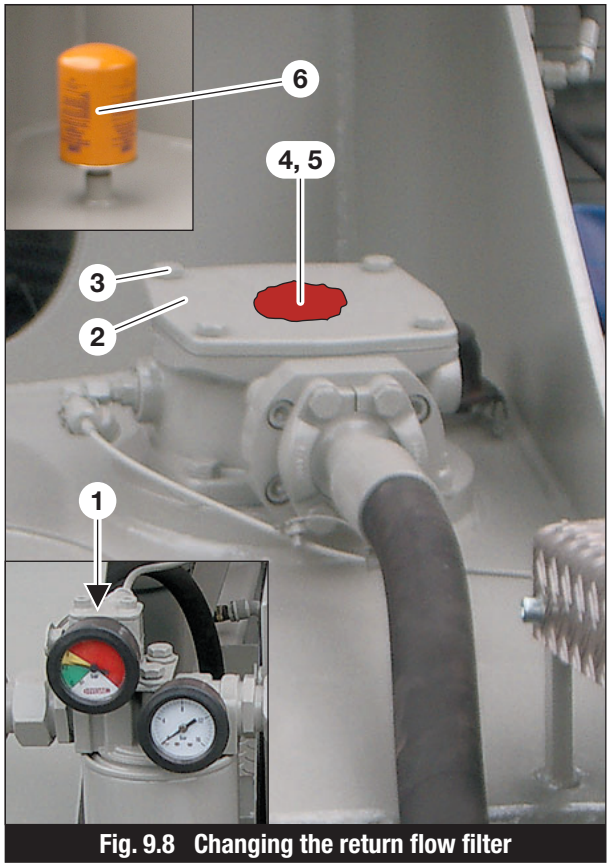


Fig. 9.8 Changing the return flow filter

9.6.4 In-line filter cartridge

If the manometer (Item 1, Fig. 9.9) shows a value in excess of 3 bar when the oil is at operating temperature, the filter element must be changed:

1. Turn the filter cartridge (**2**) anti-clockwise by hand to undo it, and dispose of it correctly.
2. Wet the sealing ring of the new filter cartridge with oil and screw it in clockwise by hand.
3. Check the in-line filter for leak-tightness.

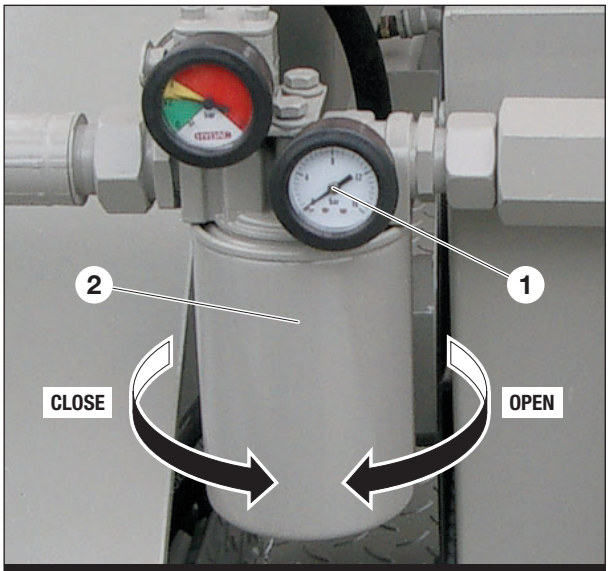


Fig. 9.9 Changing the in-line filter

9.7 Changing the oil

9.7.1 Changing the oil in the slewing gearbox

NOTE:
☞ **The slewing gearbox has only one oil circuit (oil circuit A).**
☞ **Use only gear oil as shown in the gear oil reference table Fig. 9.6.**

Use oil grades / alternative grades as shown in the gear oil reference table Fig. 9.6. Oil capacity 10 litres.

To change the oil in the slewing gearbox, proceed as follows:

1. Remove the breather screw (**1**) and fully remove the drain plug (**2**).
2. If the oil was very dirty, it is essential to fill the gearbox completely with flushing oil, and slew the distributor boom for several rotations. This ensures that any deposits of dirt in the gearbox are fully mixed into the oil; after this, repeat point 1.
3. Reinsert the drain plug.
4. Open the air bleed screw (**3**). Use a funnel to fill the gearbox with oil through the breather screw opening until the oil reaches level **A**.
5. Screw in the air bleed screw and the breather screw.

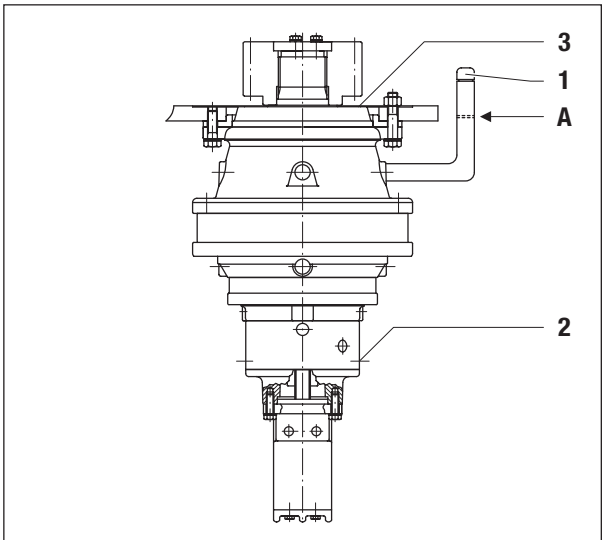


Fig. 9.10 Slewing gearbox

9.7.2 Changing the oil in the transfer shift gearbox

Use oil grades / alternative grades as shown in the gear oil reference table Fig. 9.6. Oil capacity 7.3 litres.

To change the oil in the transfer shift gearbox , proceed as follows:

1. Remove the oil level screw (**1**) and drain plug (**2**) and let the oil drain into a tray.
2. If the oil was very dirty, it is essential to fill the gearbox completely with flushing oil, and run the hydraulic system for a short period. This ensures that any deposits of dirt in the gearbox are fully mixed into the oil; after this, repeat point 1.
3. Reinsert the drain plug.
4. Use a funnel to fill the gearbox slowly with oil through the breather screw opening (**3**) until the oil comes out of the oil level screw hole.
5. Screw in the oil level screw.

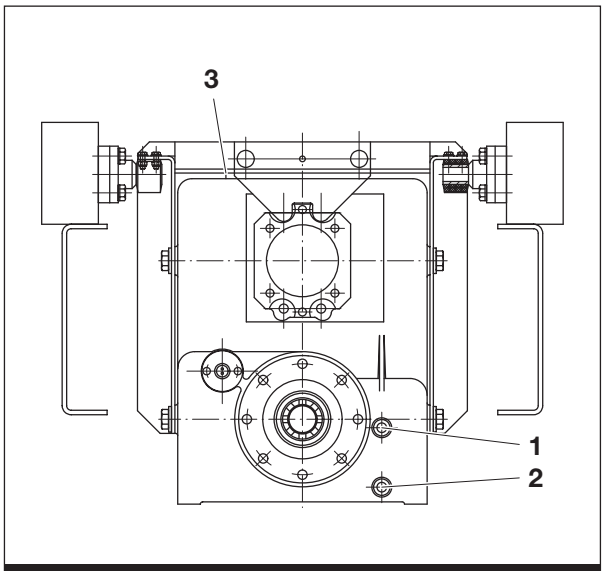


Fig. 9.11 Transfer shift gearbox

9.7.3 Changing the oil in the hydraulic system

Use oil grades / alternative grades as shown in the hydraulic oil reference table Fig. 9.4. Oil capacity 600 litres.

CAUTION

CAUTION:

Always refill with the same grade as was used previously. Before changing over to a biologically degradable oil the entire hydraulic system must be rendered totally oil-free. This procedure can only be performed by an authorised specialist company.

1. Remove the drain plug from the drain cock (Item 1, Fig. 9.12).
2. Connect a ∫" hose from the drain cock to the container.

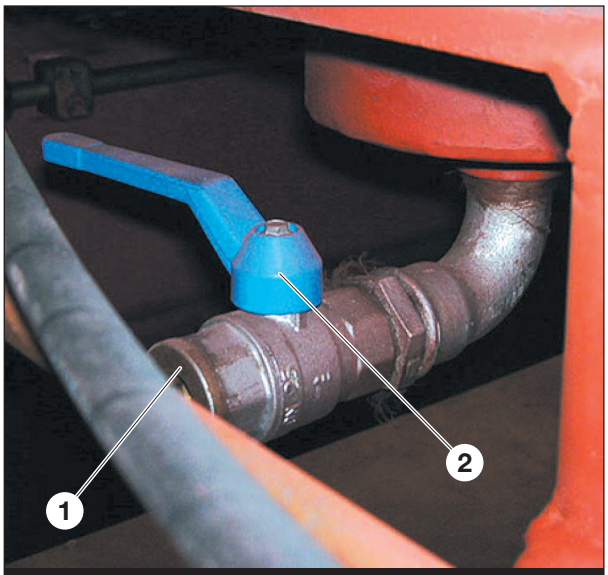


Fig. 9.12 Oil drain pipe

3. Open the filler neck cap (Item 3, Fig. 9.13).

4. Open the ball valve (Item. 2, Fig. 9.12) and allow oil to drain into the container.

5. If the old oil is very dirty or has significant water content, flush the oil tank with suitable flushing oil.

6. Close the ball valve (Item 2, Fig. 9.12) and watch the oil emerging from the drain hole.

7. Pour hydraulic oil into the hydraulic tank through the return flow filter element, or pump it in using a pump with a fine filter.

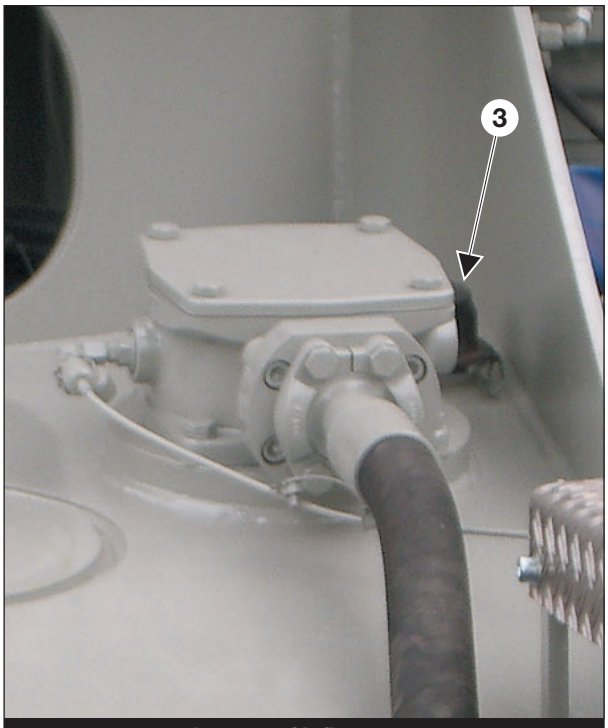


Fig. 9.13 Oil filter neck

CAUTION

CAUTION:
Never pour hydraulic oil into the tank directly from the barrel without filtration!

8. Keep feeding hydraulic oil until the maximum oil level of 2 cm below the upper edge of the sight glass.

9. Close the filler neck cap (Item 3, Fig. 9.13) or the return flow filter.

10. Perform a trial run to check for leak-tightness.

NOTE:
Before operating the hydraulics, first run the system at idling for 15 minutes.

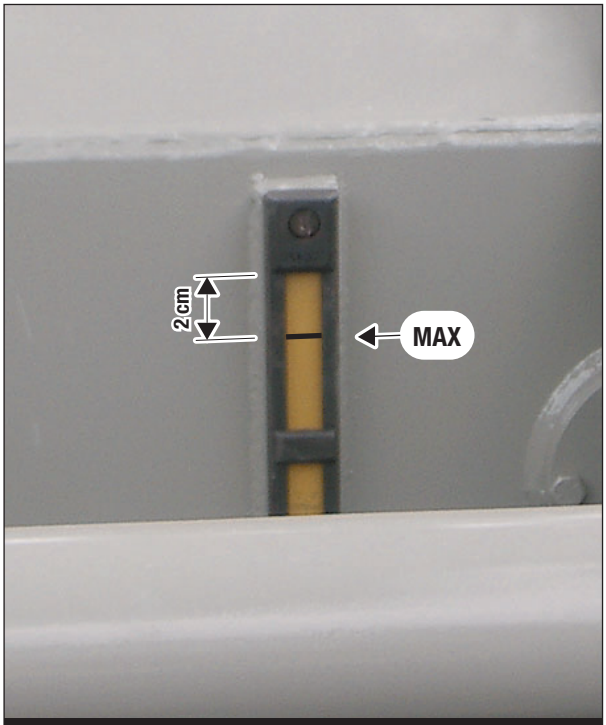


Fig. 9.14 Hydraulic oil tank sight glass

9.8 Performing tests

9.8.1 Measuring the wall thickness of the conveying pipework

DANGER

DANGER:

☞ **Only knock the conveying pipes apart and open them when they have been depressurised.**

☞ **Always pump backwards 1-2 piston strokes.**

- Check the wear condition of the conveying pipework by knocking it, or better by using a wall thickness gauge. Replace worn parts.
- The wall thickness can also be measured using a special wall thickness gauge.

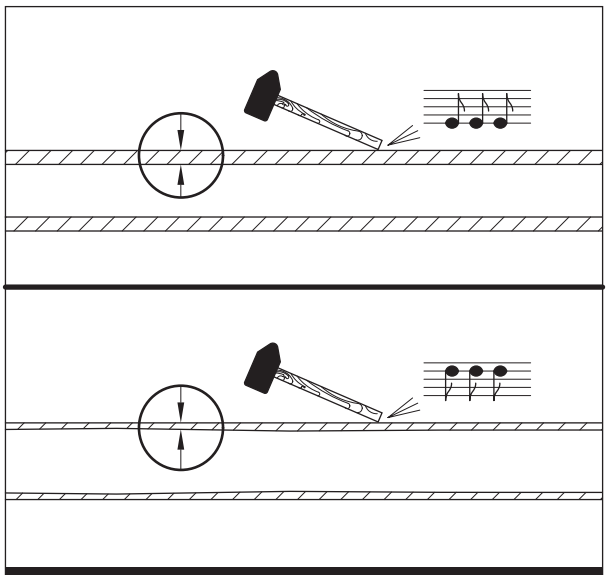


Fig. 9.15 Measuring the wall thickness of the conveying pipework

9.8.2 Minimum wall thicknesses and conveying pipework operating pressures

Always comply with the maximum pipe weight of the conveying pipework.
Unless stated otherwise on the serial plate:
Pipe 12.8 kg/m
Elbows
Y = Concrete pressure in bar
X = Minimum wall thickness in mm to DIN 2413 part 3
DN = Nominal diameter
Conveying pipework designation: Standard size
Maximum pressure
Code

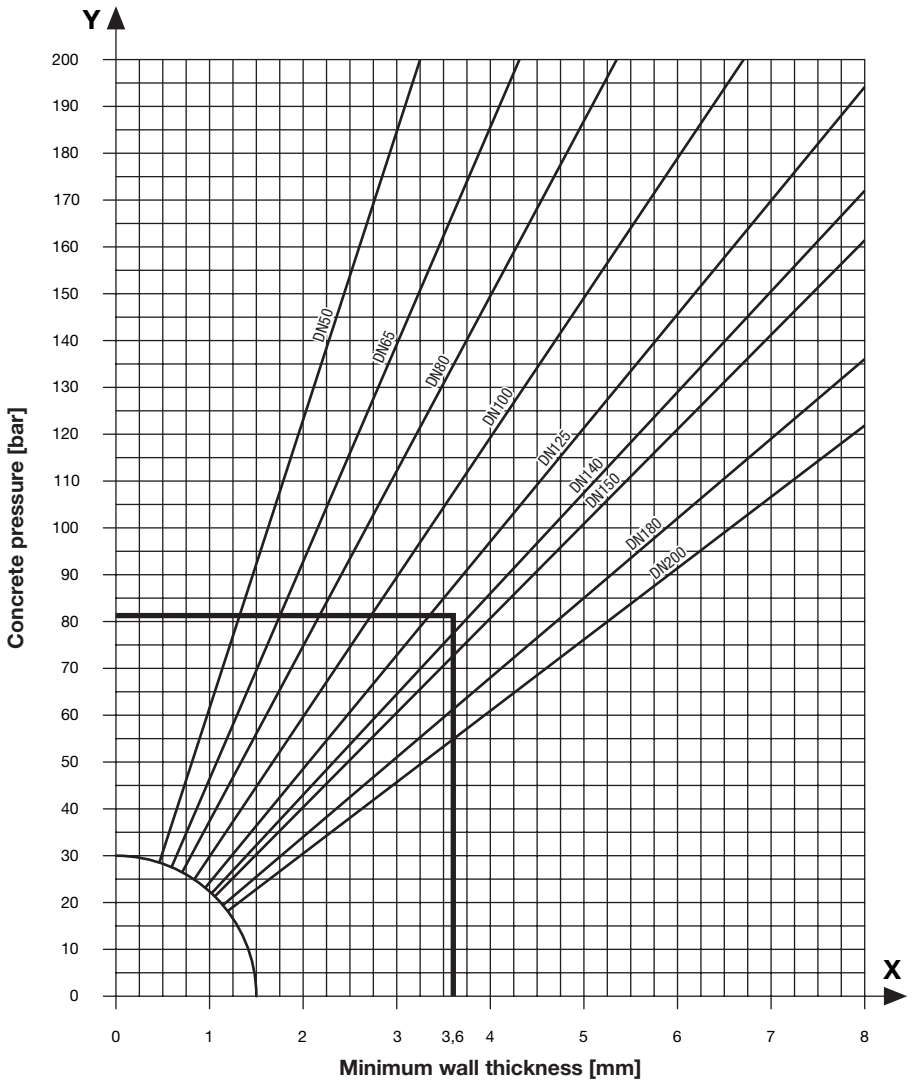


Fig. 9.16 Minimum wall thickness diagram

9.8.3 Adjusting the S-valve

Perform the following steps to adjust the S-valve:

1. Remove the locking plate (**1**) from the swing lever.
2. Tighten the screw (**2**) to approx. 100 Nm, then back off by 30%.
3. Refit the locking plate.
4. Perform a trial run of the concrete pump.

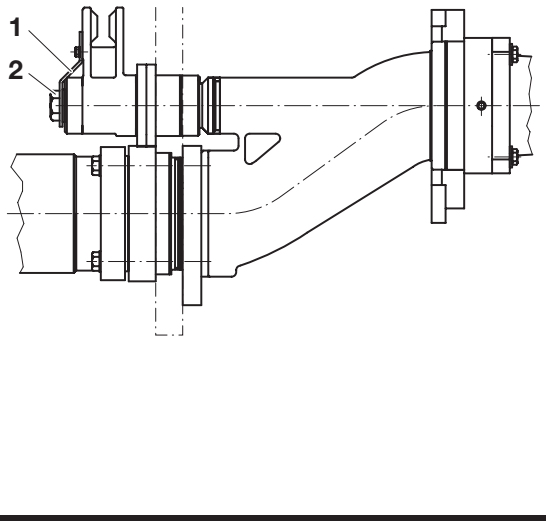


Fig. 9.17 Adjusting the S-valve

9.8.4 Checking the chain tension on the outrigger feet

When the chain tension is correctly set, the chin should sag no more than 30 mm. If the chain tension reduces, it must be tightened.

To do this, proceed as follows:

- Use the adjustment nut (**1**) to tighten the chain until the correct sag of 30 mm is achieved.

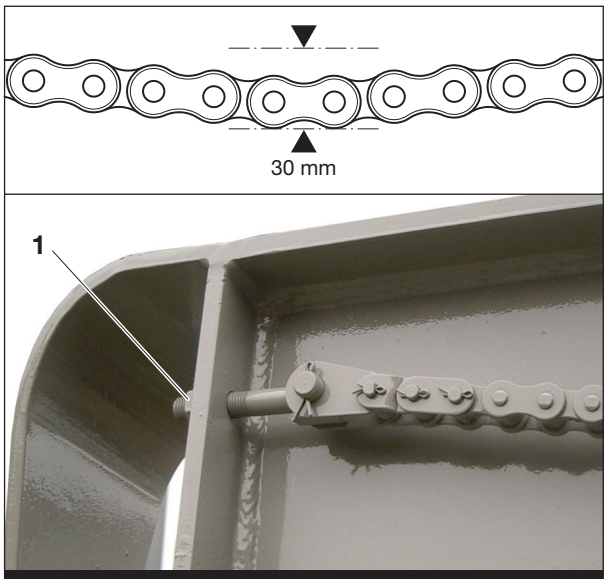


Fig. 9.18 Checking the chain tension

9.8.5 Checking the backlash in the slewing gearbox

The backlash is checked as follows:

1. Remove the pinion gear cover.
2. With the boom in the horizontal position, slew it slightly until a tooth is engaged without play.
3. Insert a feeler gauge to measure the engagement clearance as shown in the adjoining diagram.
4. If the backlash is excessive, the gearbox and the ball bearing slewing rim must be adjusted by a skilled fitter.

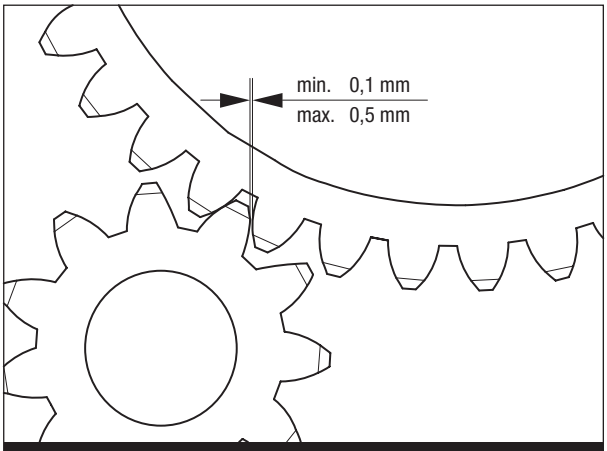


Fig. 9.19 Checking the backlash in the slewing gearbox

9.8.6 Checking the boom backlash (ball bearing slewing rim in the slewing gearbox)

Boom backlash means the increased play between outer ring and inner ring of the ball bearing slewing rim in the slewing gearbox.

- The calculation of boom backlash may only be performed by a specialist authorised workshop.

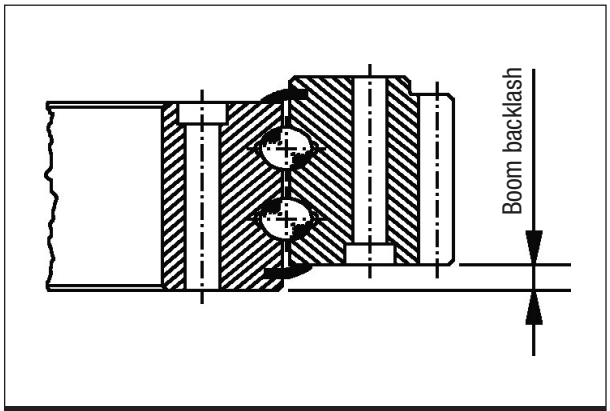


Fig. 9.20 Checking the boom backlash

- The measurement must be performed at 2 points (loaded side and unloaded side) as shown in the diagram alongside.

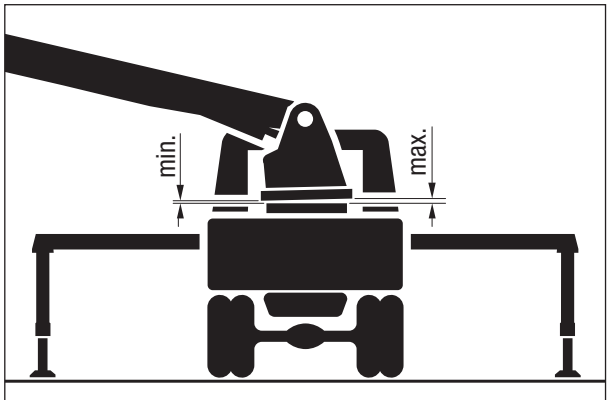


Fig. 9.21 Measurement points for checking the boom backlash

- The difference between the two values is the exact value for the measured backlash. This value must be entered in the boom test book every time the boom is tested. The maximum permissible value shown in the adjoining table must not be exceeded.

Rolling diameter [mm]	Ball diameter [mm]				
	20	22	25	30	40
1.000	1,8	1,9	1,9	2,0	2,5
1.250	1,9	2,0	2,0	2,1	2,6
1.500	2,0	2,1	2,1	2,2	2,7
1.750		2,2	2,2	2,3	2,8
2.000			2,3	2,4	2,9
2.250				2,5	3,0
2.500					3,1

Fig. 9.22 Maximum values for the boom backlash

9.8.7 Checking the operation of the sensors

The operation of the sensors is checked as follows:

There are two ways of checking the condition of the sensors.

1. Directly in the sensor or in its plug there are one or two LEDs.

One LED	Green =	Switch activated
Two LEDs	Green =	Power on
	Yellow =	Switch activated

2. On the 4-fold distributor there are

Two green LEDs	Power for the sensors
Each with a yellow LED	Switch activated

   Drive cylinder sensors: Move the drive cylinder (**1**) to the end of its travel to check the operation of the sensor (**2**).

   Oscillation cylinder sensors: Move the oscillation cylinder (**3**) to the end of its travel to check the operation of the sensor (**4**).

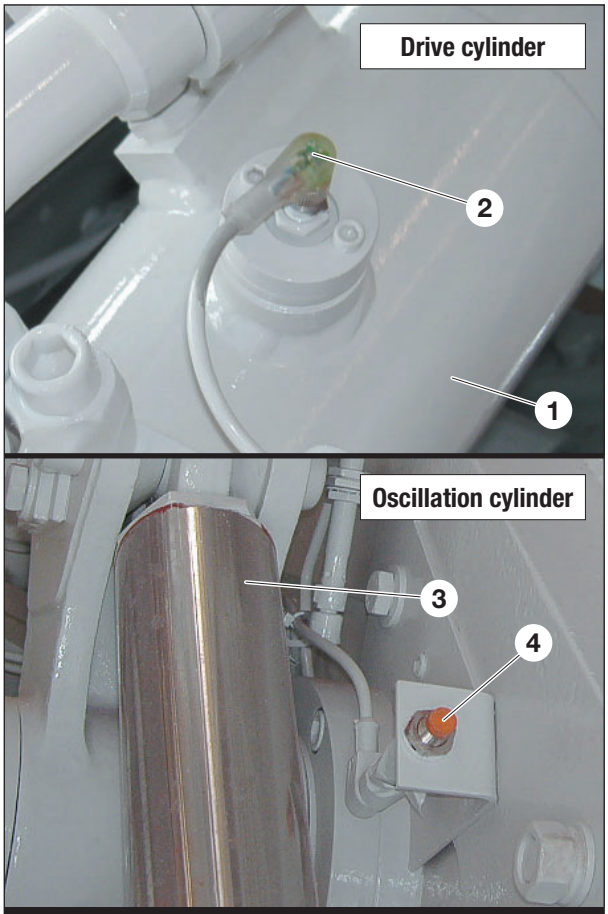


Fig. 9.23 Checking the operation of the sensors

9.9 Replacing worn parts

9.9.1 Exchanging the wear plate and wear ring

DANGER:
When working in the hopper and in the area of the oscillation cylinder, always switch the engine off and remove the ignition key.

1. Remove the locking plate (**1**) from the swing lever. Undo the screws (**2** and **3**) to relieve the load on the S-valve by 15 mm.
2. Exchange the free wear plate (**4**) by removing the first 2 screws (**6**) and tighten the screws.
3. Swing the S-valve over to the other side.
4. Remove the second wear plate by removing the other two screws (**6**).
5. Swing the S-valve back to the other side and exchange the wear ring (**5**).
6. Swing the S-valve on to the wear plate already fitted and fit the second wear plate.
7. Restore the S-valve pre-load by tightening the 4 screws (**3**).
8. Tighten the screw (**2**) by hand until the gap is closed. Back off the screw by at least 1/6 of a turn and refit the locking plate.

NOTE:
Tighten the screws (3 and 4) to the torque set out in the table in section 9.3.

9. Perform a trial run.

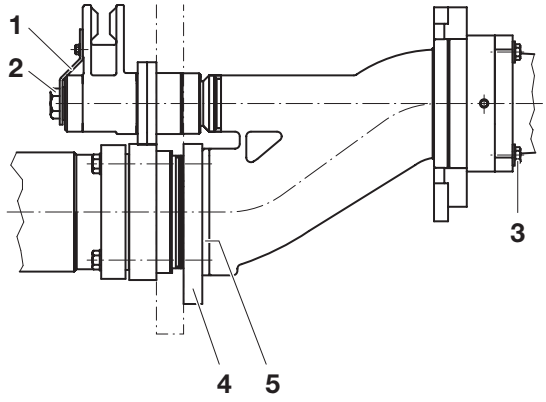


Fig. 9.24 Changing the wear plate and wear ring 1

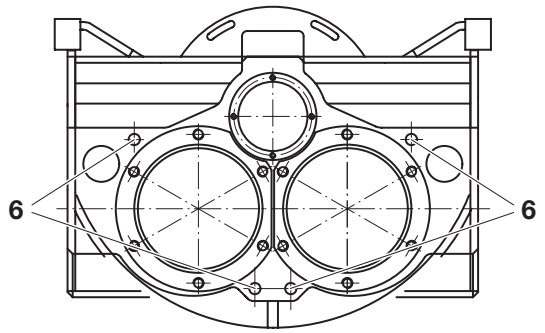


Fig. 9.25 Changing the wear plate and wear ring 2

9.9.2 Changing the conveying piston

- Turn a hardened conveying piston by 180° after 2 mm wear (4 mm on the diameter); turn a chromium plated conveying piston by 180° when the chromium plate layer is 30 µm.

DANGER

DANGER:

☞ **When working in the wash-out tank always switch off the engine and take out the ignition key.**

☞ **Never reach your hands into the wash-out tank when the engine is running.**

☞ **Always actuate the hydraulic cylinder by actually actuating the valves (see section 7.5.4.3) at a low engine speed and reduced stroke rate.**

1. Drain the water tank and remove the protective grill.
2. Actuate valves Y3 and Y4 to move one drive cylinder to the end of its travel.
3. Remove hose clip (**2**) and snap coupling (**4**).

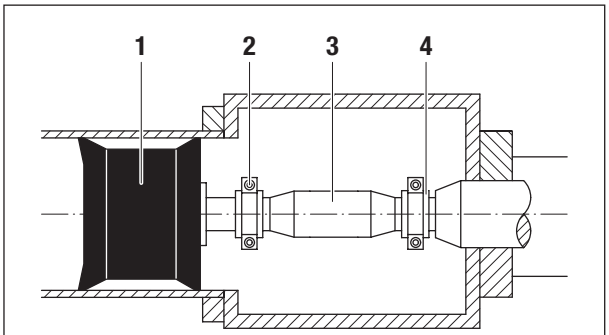


Fig. 9.26 Changing the conveying piston 1

4. Push the conveying piston (**1**) about 5 mm towards the conveying cylinder by levering with a pry bar, and remove the spacer (**3**).

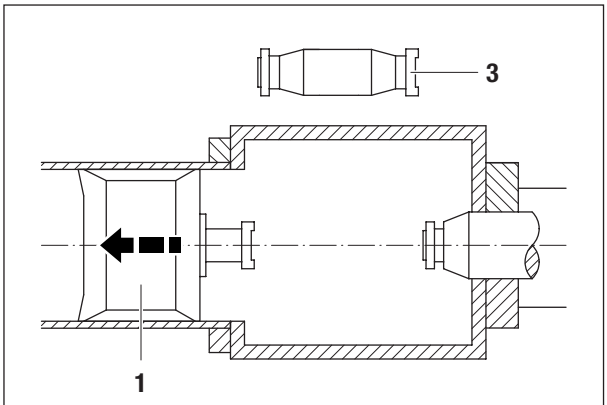


Fig. 9.27 Changing the conveying piston 2

5. Carefully move the drive cylinder out until it touches the flange. Fit a snap coupling (**4**).

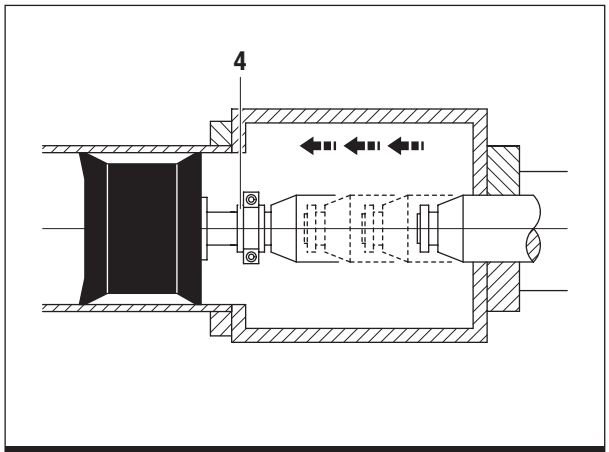


Fig. 9.28 Changing the conveying piston 3

6. Move the drive cylinder back in, and remove the snap coupling (**4**) and the conveying piston (**1**).

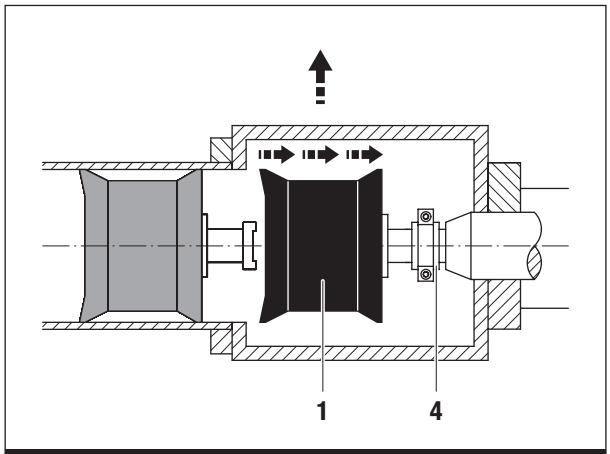


Fig. 9.29 Changing the conveying piston 4

7. Liberally lubricate the new conveying piston (**1**), attach a shell coupling (**4**) and fit it.

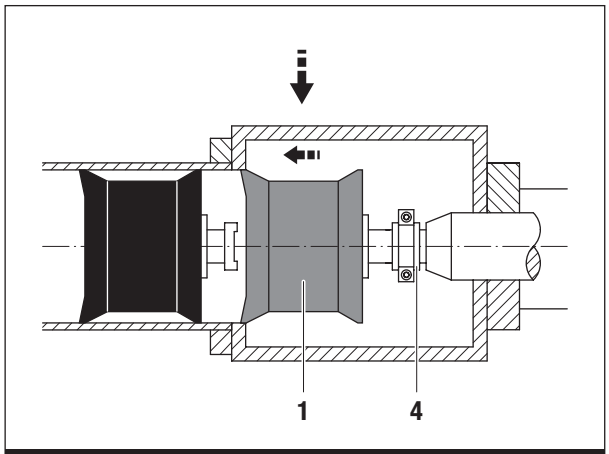


Fig. 9.30 Changing the conveying piston 5

8. Use the drive cylinder to move the conveying piston far enough for there to be room to fit the spacer (**3**).

9. Remove the snap coupling (**4**) and back off the drive cylinder to the end of its travel.

10. Fit the spacer (**3**) to the drive cylinder with the snap coupling (**4**).

11. Push the conveying piston (**1**) on to the spacer (**3**) by levering with a pry bar and fit the snap coupling (**4**).

12. Fit the hose clip (**2**).

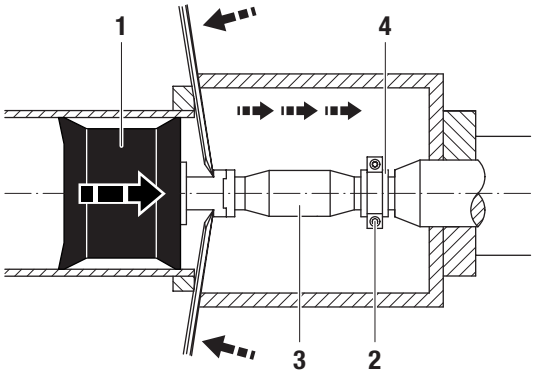


Fig. 9.31 Changing the conveying piston 6

9.9.3 Changing / turning the conveying cylinder

1. Remove the conveying cylinder as described in section 9.9.2.

2. Move both drive cylinders to the limit of their travel: Disconnect the oscillation pipe from a retracted drive cylinder and hang it over a container. Slowly move the drive cylinder to limit of its travel by actuating valves Y5 + Y6 manually.

3. Disconnect the shaft, support the wash-out tank.

4. Remove the 26 screws (**1**) and support the conveying cylinder, e.g. with a fork lift truck.

5. Lift the slide housing with a crane.

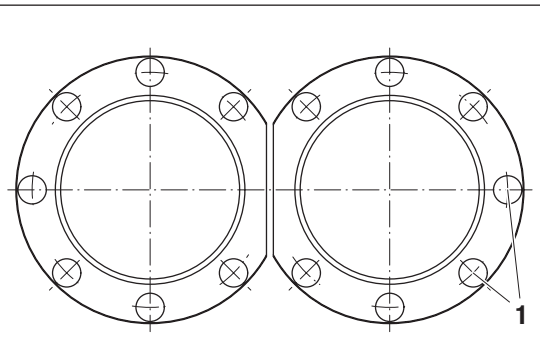


Fig. 9.32 Changing / turning the conveying cylinder

NOTE:
When lifting, take care that no hoses or cables are trapped!

6. Remove or turn the conveying cylinder.

NOTE:

To increase the working life of the conveying cylinders, these can be turned by 180°. Be sure to turn the conveying cylinders at the right tim.
If the wear has already passed the point of no return, the conveying cylinders must be replaced.

7. Refit the conveying cylinders in the reverse sequence to removal.
8. Fit the conveying pistons and oscillation pipe as described in section 9.9.2.
9. Manually activate valves Y3 and Y4 or the rocker switch (Item 11, Fig. 5.2) to slowly extend the right hand drive cylinder.
10. Bleed air from the drive cylinder.
11. Perform a trial run.

9.9.4 Changing the agitator blades

1. Remove the screws (**2**).
2. Change the agitator blades (**1**). Check that the seating faces are clean. The right hand agitator blades must be 90° out of phase with the left hand blades.
3. Fit the screws (**2**) and tighten them to the torque set out in the table in section 9.3. Always replace these screws.

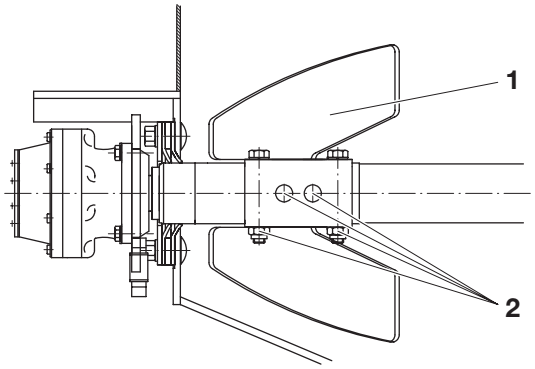


Fig. 9.33 Changing the agitator blades

9.9.5 Changing the agitator seals

1. Remove the agitator blades.
2. Pull the right hand motor (**4**) out approx. 10 mm and put the agitator shaft (**3**) to one side.
3. Remove the retaining ring (**5**), pull the left and right hand motors (**4**) out and put them to one side. Take care not to kink the hydraulic hoses.
4. Remove the screws (**6**) and take out the spacer plates with the seals (**7**).
5. Exchange the seals (**7**) and refit them. The gap between the seals must be completely filled with grease.
6. Reassemble the motors (**4**) and shafts (**3**) together with the agitator blades in the reverse sequence to removal (see Fig. 9.24).

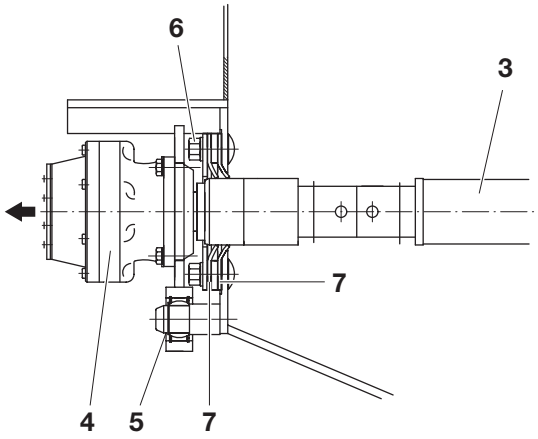


Fig. 9.34 Changing the agitator seals

9.9.6 Changing the agitator wear sleeves

1. Remove the motors (Item 4, Fig. 9.34) and put them in a safe place.
2. Knock the securing pin (**8**) fully inwards, remove the washer (**9**) and unscrew the nut (**10**).
3. Lever out the shaft (**11**) using pry bars.
4. Split the wear sleeves (**12**) off the shaft (**11**) and remove them.
5. Clean the shaft and evenly spread it with Loctite. Warm the new wear sleeves up to 200 °C and quickly slide them into place.
6. Refit the agitators in the reverse sequence to removal. A new hole must be drilled for the securing pin (**8**).

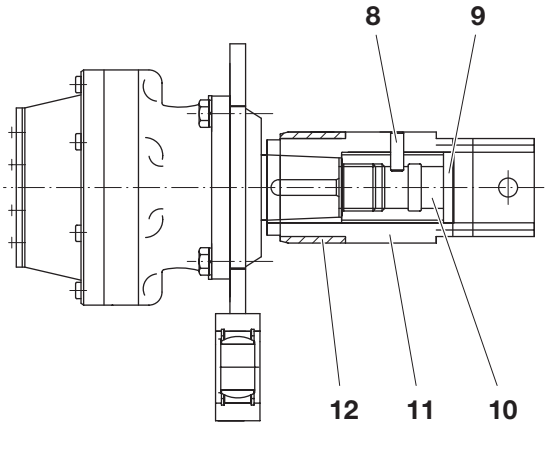


Fig. 9.35 Changing the agitator wear sleeves

9.10 Changing the conveying pipework

CAUTION

CAUTION:

The maximum weight of the conveying pipework and the conveying elbows on the boom, and the maximum pressure of 85 bar in the conveying pipework must be observed!

When the distributor boom is in the stowed position for transport it is not under stress; elements can thus easily be exchanged when it is in this configuration. If conveying pipes are replaced when the distributor boom is deployed, stresses may be introduced during assembly.

CAUTION

CAUTION:

A distance of 3 mm must be maintained between the flanges!

- Arrange the “Matching pipe lengths / Conveying pipes” as shown in the safety notice in Figure 2.16.

9.11 Crack-checking on the steelwork

CAUTION

CAUTION:

☞ **Cracks on the distributor boom, on the boom mounting and the outriggers must be rectified immediately they are noticed! To do this, request the WAITZINGER repair guide without delay!**

☞ **Repairs must only be performed by an authorised specialist company!**

- For crack checking the machine must be clean. Excess grease on the joints must be removed.
- Patches of rust and cracks in the paintwork can indicate underlying structural cracks.
- If there is doubt, have the steelwork checked by an authorised skilled operator using the “Dye penetrant crack detection method”.

9.12 Checking the hoses

DANGER:
If a hose splits suddenly under pressure, personnel can be seriously injured!
WAITZINGER takes no responsibility for damages that result from the use of worn or defective components.

Regular checking of hoses is part of the technical safety checks to be performed on the machine.

Do not repair damaged hydraulic or conveying pipes; instead replace them immediately. Damaged or weeping hydraulic hoses must also be replaced immediately.

All hydraulic hoses must be renewed after a life of 6 years (including a shelf life of 2 years), even if they exhibit no evident damage. The period of time can be calculated from the identification mark on the connection fitting (date of manufacture of the hose).

9.13 Cleaning the machine

- If the truck-mounted concrete pump is to be moved to another location for cleaning, move all parts of the machine to their transport positions.
- The truck-mounted concrete pump must not be driven with the distributor boom deployed or the outriggers extended, even for short distances.

DANGER:
☞ **No highly flammable materials (e.g. petrol) may be used for cleaning!**
☞ **Never direct a water jet or steam jet towards electrical components, this can occasion a flashover with fatal consequences!**

- Protect electrical components by covering them or sealing them shut to prevent ingress of water. After completion of cleaning, remove the covers and seals, leaving no residues.
- Never use seawater or other saline water for cleaning.
- Never use compressed air for cleaning.

- After completion of cleaning, check all pipework for leaktightness and loose connections, and check the machine for chafing points.
- Check all components for any sort of damage. If faults are found, rectify them immediately.
- If there is a risk of frost, completely drain the conveyor pipework, water tank and water pump. Leave all water drain points open.

9.14 Disposal of the machine

NOTE:
Observe national and regional legislative regulations and guidelines when disposing of the machine.

10. Repair work

WARNING:

- ☞ **Repair work must only be performed by trained personnel or service personnel who have been authorised by WAITZINGER!**
- ☞ **The user is not permitted to carry out repair work on his own account. Any work on the machine in breach of this provision will render the warranty void and relieve the manufacturer of all liability!**

WARNING:

- ☞ **Only skilled specialists or trained personnel may perform repair work on electrical systems!**
- ☞ **Before carrying out electrical repair work the system must be electrically de-energised and this state must be secured for the duration of the work!**
  The VDE regulations and the VBG 4 regulations must be complied with!
- ☞ **When fitting fuses, fit only fuses of the same type and rating as were originally fitted!**
- ☞ **It is absolutely prohibited to repair fuses!**

11. List of operators of the equipment

- Each operator of the equipment confirms here by his signature that he has received, read and understood this user manual.
- He agrees to comply with all instructions conscientiously.
- If he does not do so, the manufacturer's warranty will become void.

Operator name	Accepted on	Operator signature

Make further copies if required

Operator name	Accepted on	Operator signature

12. Maintenance and modifications list

- Each operator should enter here in a clear manner all maintenance and modification work performed and present the list to the supervisor for confirmatory signature.
- This maintenance and modifications list should be made available on request to the “Employers’ Liability Insurance Association” or the “TÜV” properly filled in and signed.

Maintenance on	Modification on	Date	Operator signature	Confirmed by person responsible

Make further copies if required

Maintenance on	Modification on	Date	Operator signature	Confirmed by person responsible

Make further copies if required

Maintenance on	Modification on	Date	Operator signature	Confirmed by person responsible

NOTES

NOTES

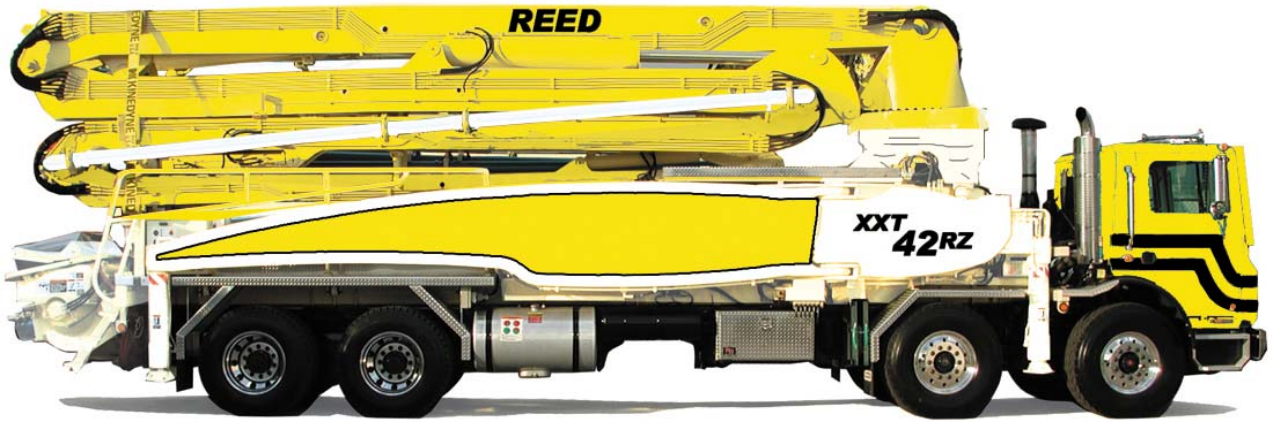
Concept + Layout: G & S - DOKUMENTATION • 85521 Ottobrunn

REED

Waitzinger
Baumaschinen GmbH

MODEL *XXT42.5RZ*

PARTS LIST



SN05-244

(VL-8714)

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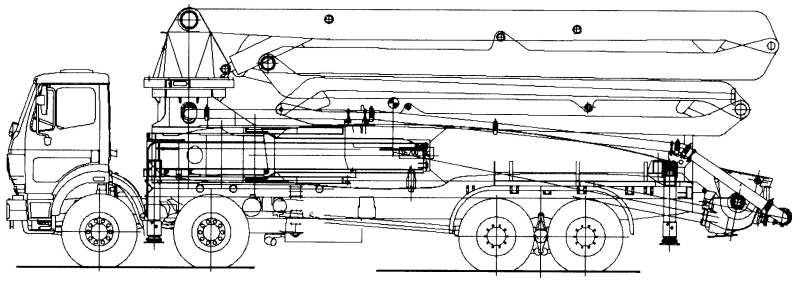
spare part list



42 M5 XXT

JOB #VL-8714

Übersicht B 00 - B 09

over view B 00 - B 09

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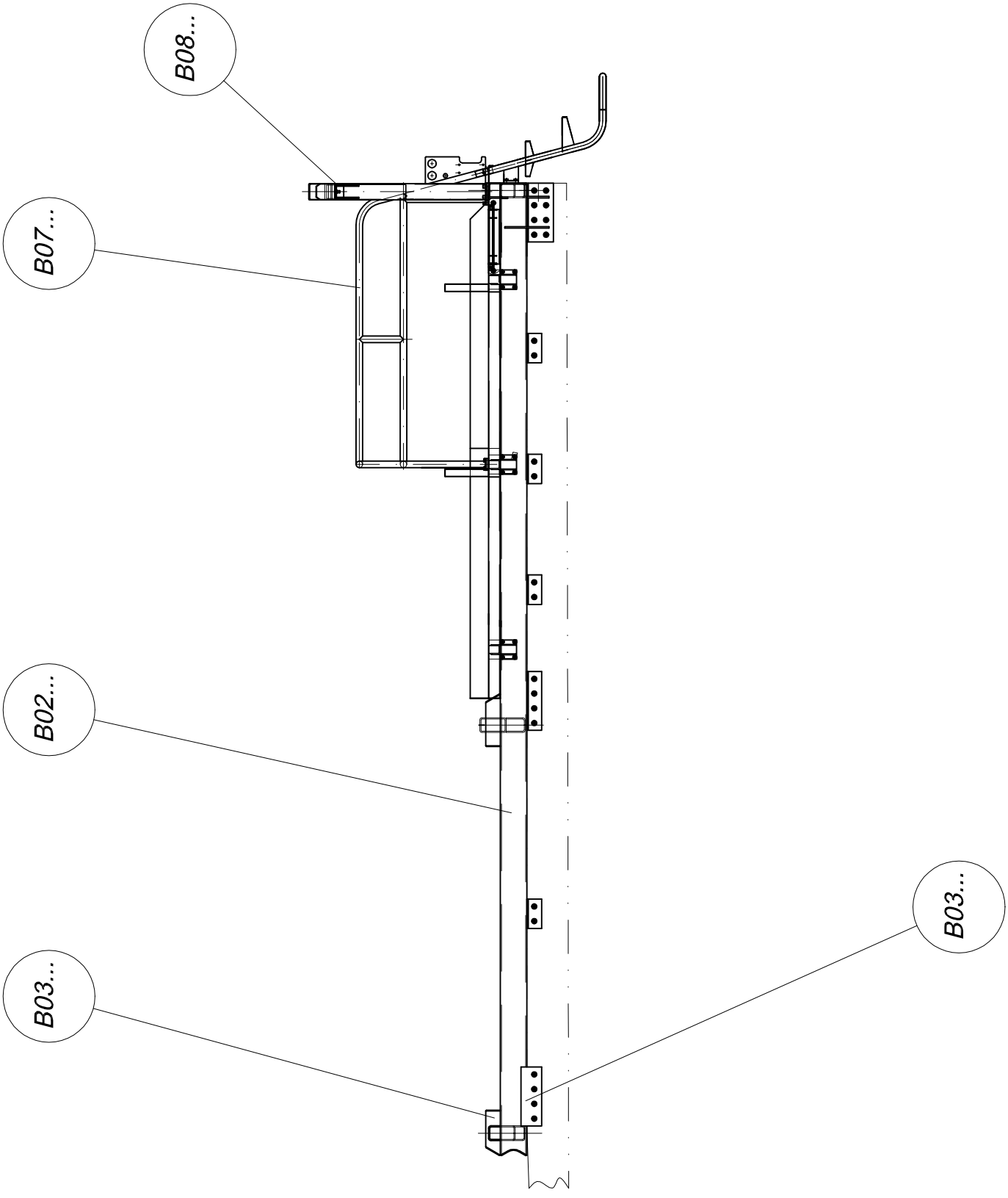

22.07.2002

Mastbockverbindung kpl.

connection for boom cpl.

B 03 2 051a

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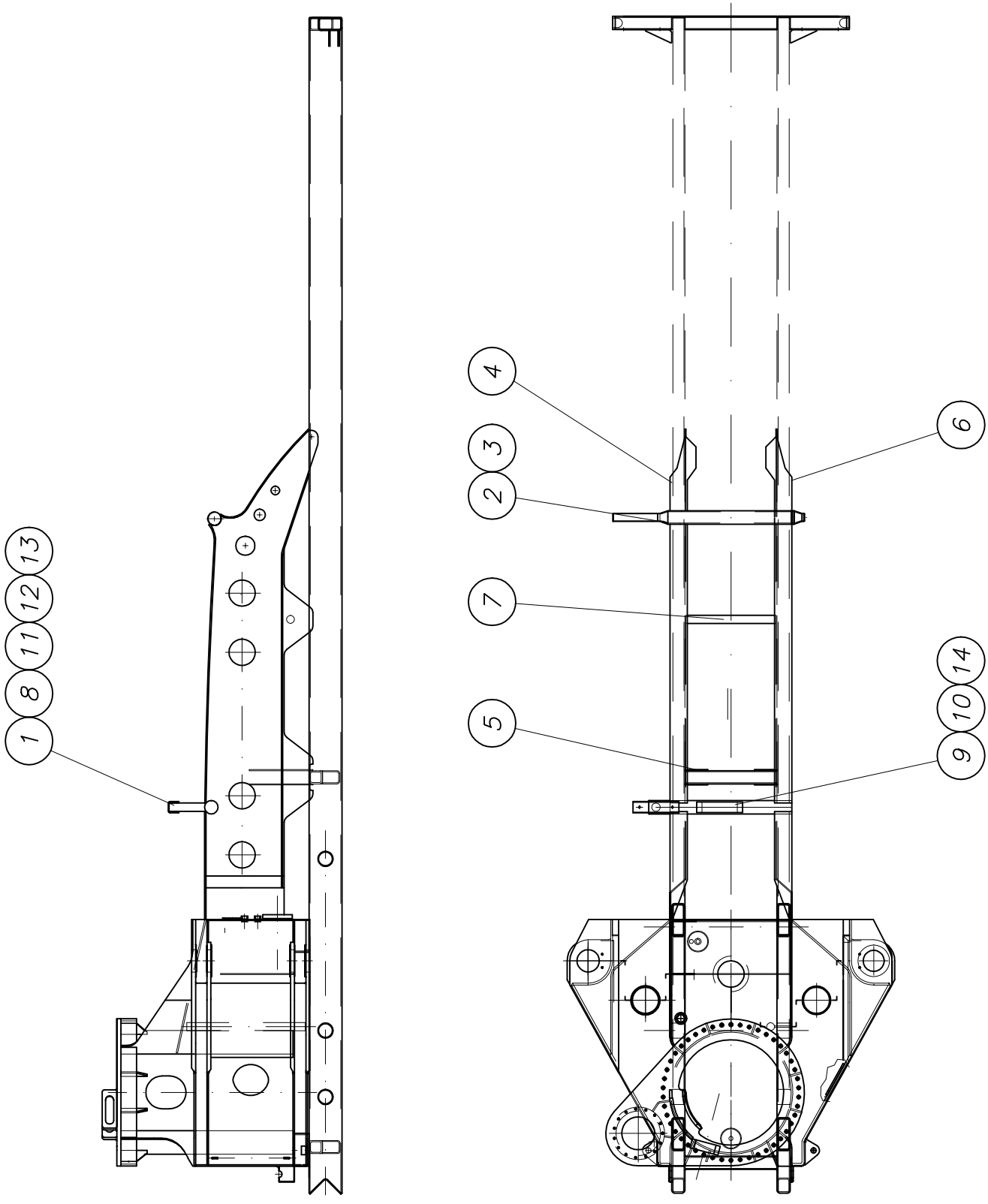

PARTS LIST

06.03.06 09:02:13

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B032051	connection for boom 42xxt	03.08.04 HF	a	07.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	boom support section4 own parts list	B032032		a 09.09.04	5,00	1,00 Stk
2	pipe (welding group) own parts list	B033161			20,00	1,00 Stk
3	pipe	B039042 Rohr 60.3x4x336	2448 S355J2G3		2,00	1,00 Stk
4	connection for boom own parts list	B032040			174,00	1,00 Stk
5	rib	B039036 Bl 10x172x435	1543 S355J2G3		3,08	4,00 Stk
6	connection for boom own parts list	B032035			174,00	1,00 Stk
7	pipe	B032031 4xd60,3x683	2448 S355J2G3		3,80	1,00 Stk
8	plate	B084239 30x85x350	Polyamid			1,00 Stk
9	plate	B084237 Bl 25x80x350	1543/EN10029 S355J2G3		5,50	1,00 Stk
10	plate	B084238 12x80x350	Polyamid			1,00 Stk
11	zylinder head screw M10 x 30	WAI103826				2,00 Stk
12	spring washer A10	WAI103079			0,00	2,00 Stk
13	hex. nut M10 DIN985 8.	WAI102125			0,01	2,00 Stk
14	sunk screw M 12 x 25	WAI107333				2,00 Stk

Übersicht B 10 - B 29

over view B 10 - B 29

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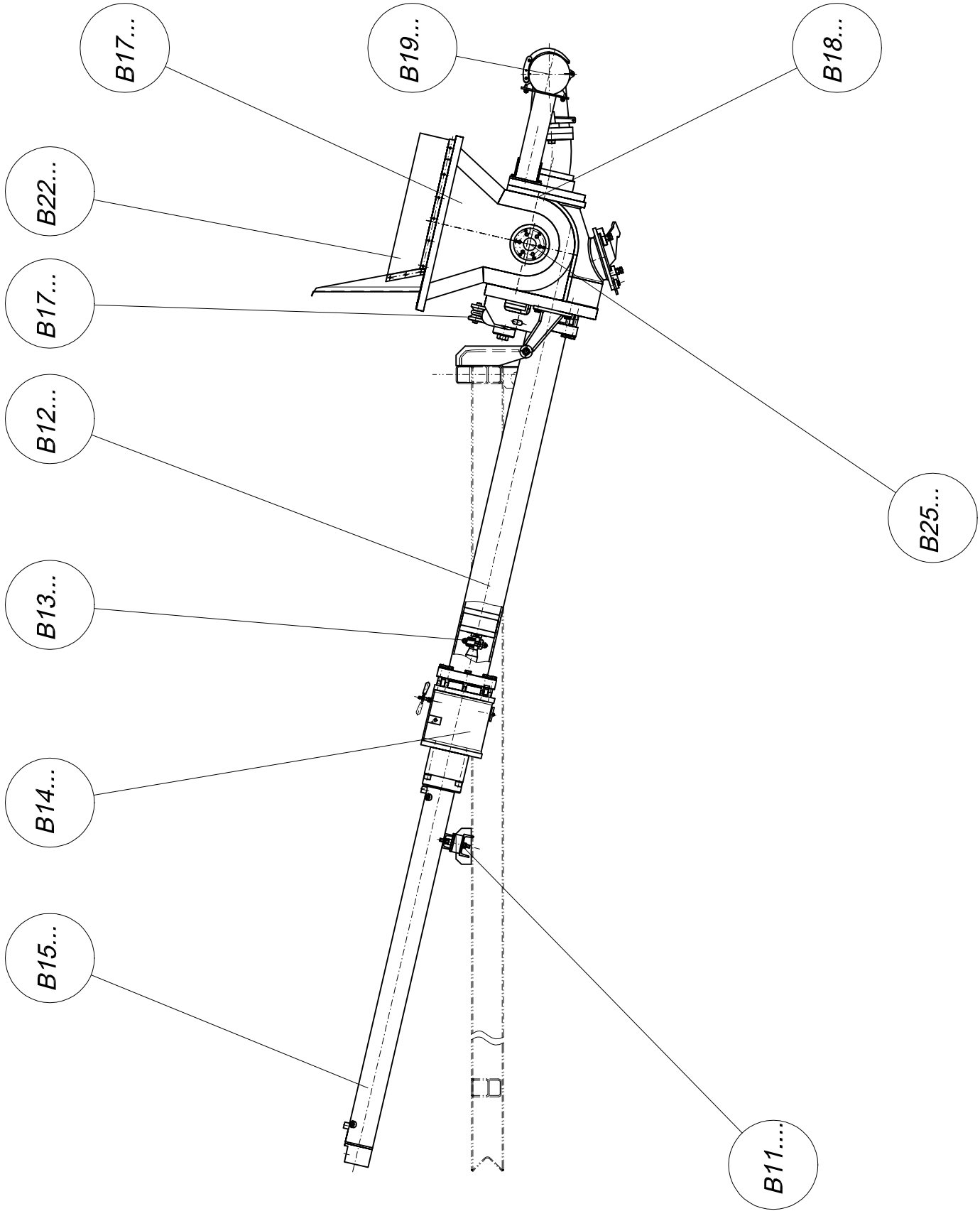

22.07.2002

Pumpenlagerung kpl.

pump support cpl.

B 11 5 005

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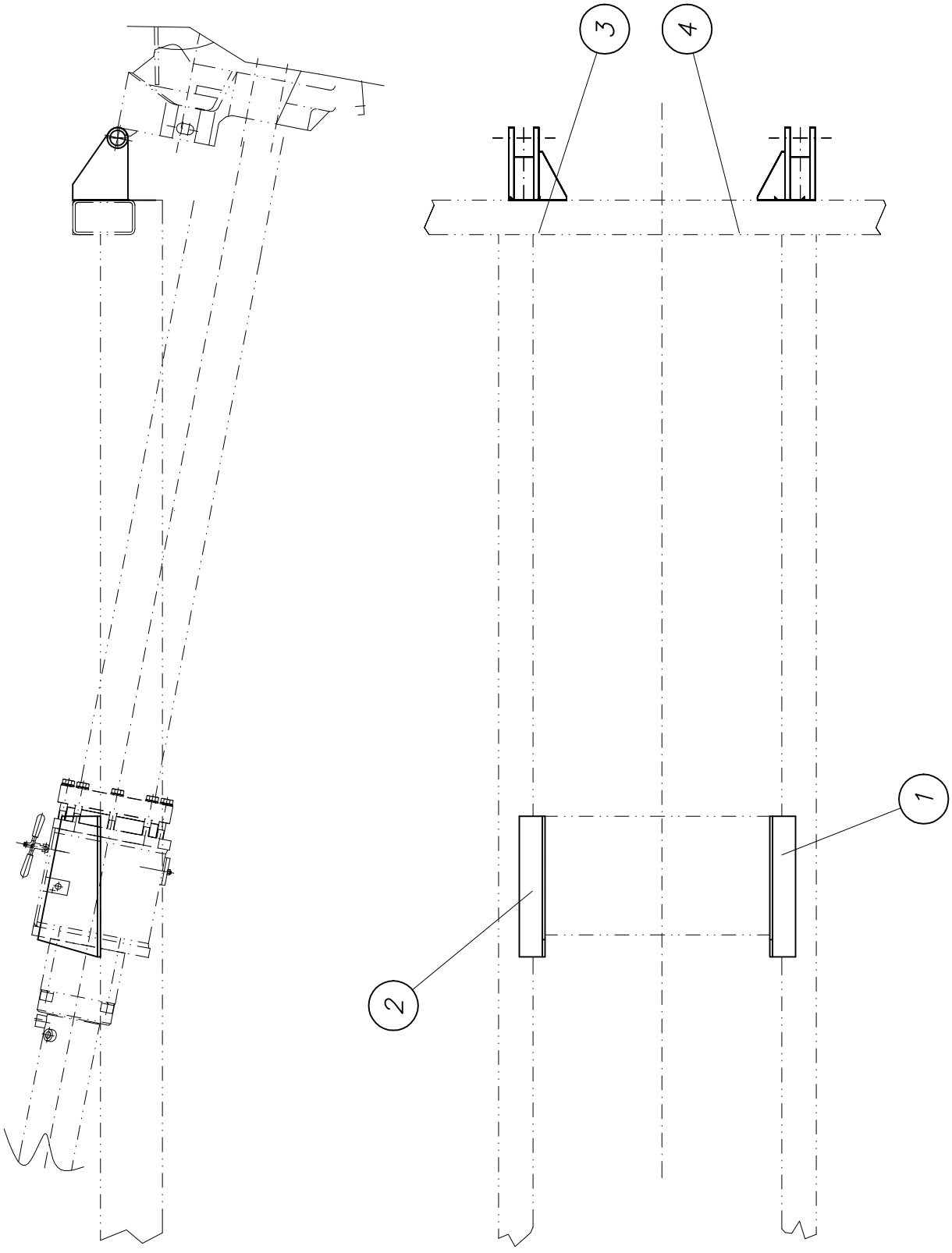

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B115005	pump support funnel	22.01.04 HF			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	holder for water box left	B114166 Bl 8x237x407	1543/EN10029 St37-2		5,00	1,00 Stk
2	holder for water box right	B114167 Bl 8x237x407	1543/EN10029 St37-2		5,00	1,00 Stk
3	bracket right cpl. -N own parts list	B113024		a 20.02.04	6,60	1,00 Stk
4	bracket left cpl. -N own parts list	B113025		a 20.02.04	6,60	1,00 Stk

Förderzylinder kpl.

conveying cylinder cpl.

B 12 5 010

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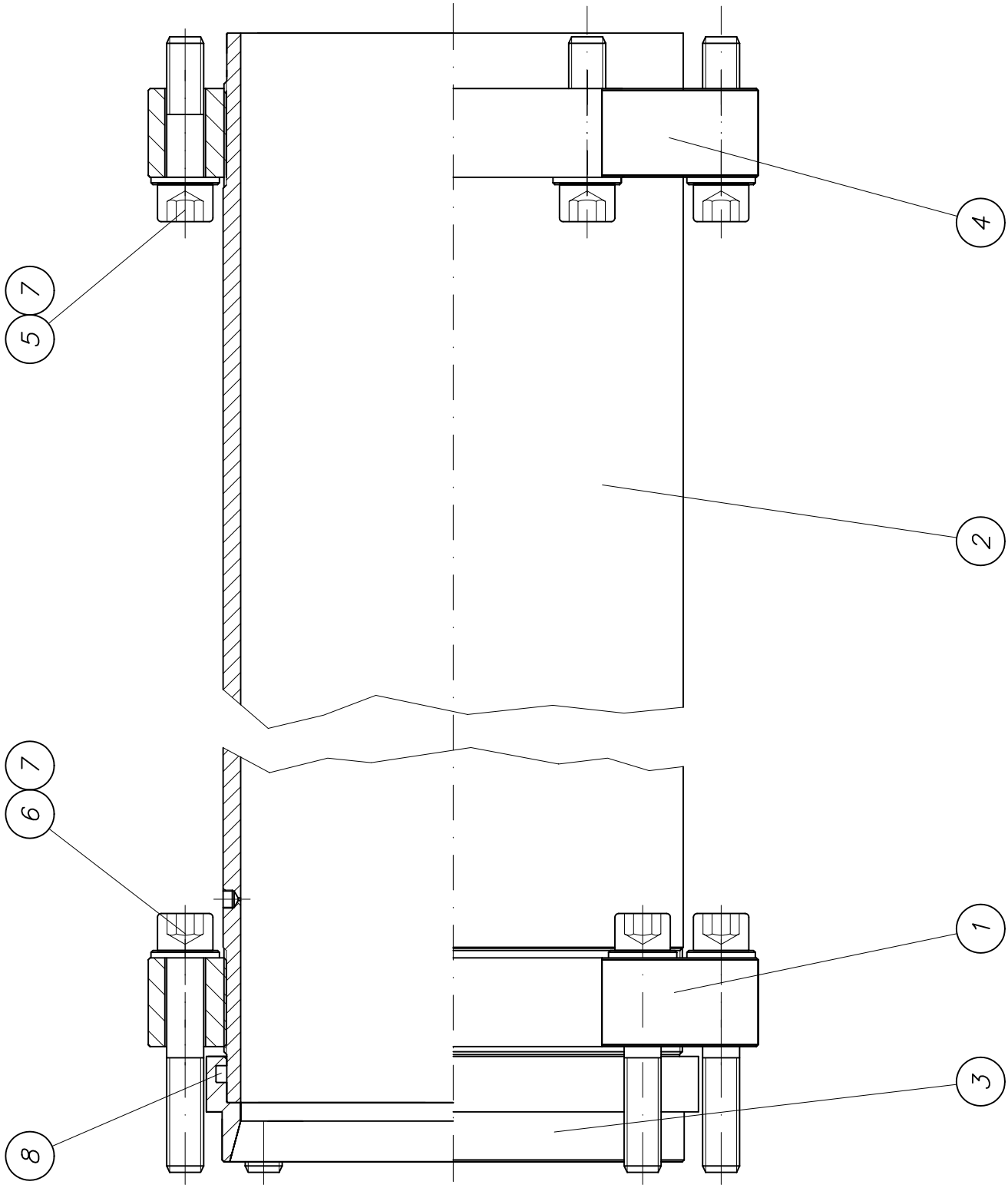

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B125010	conveyor cylinder cpl. DN230/215x2000 w.	15.03.01 Mi			

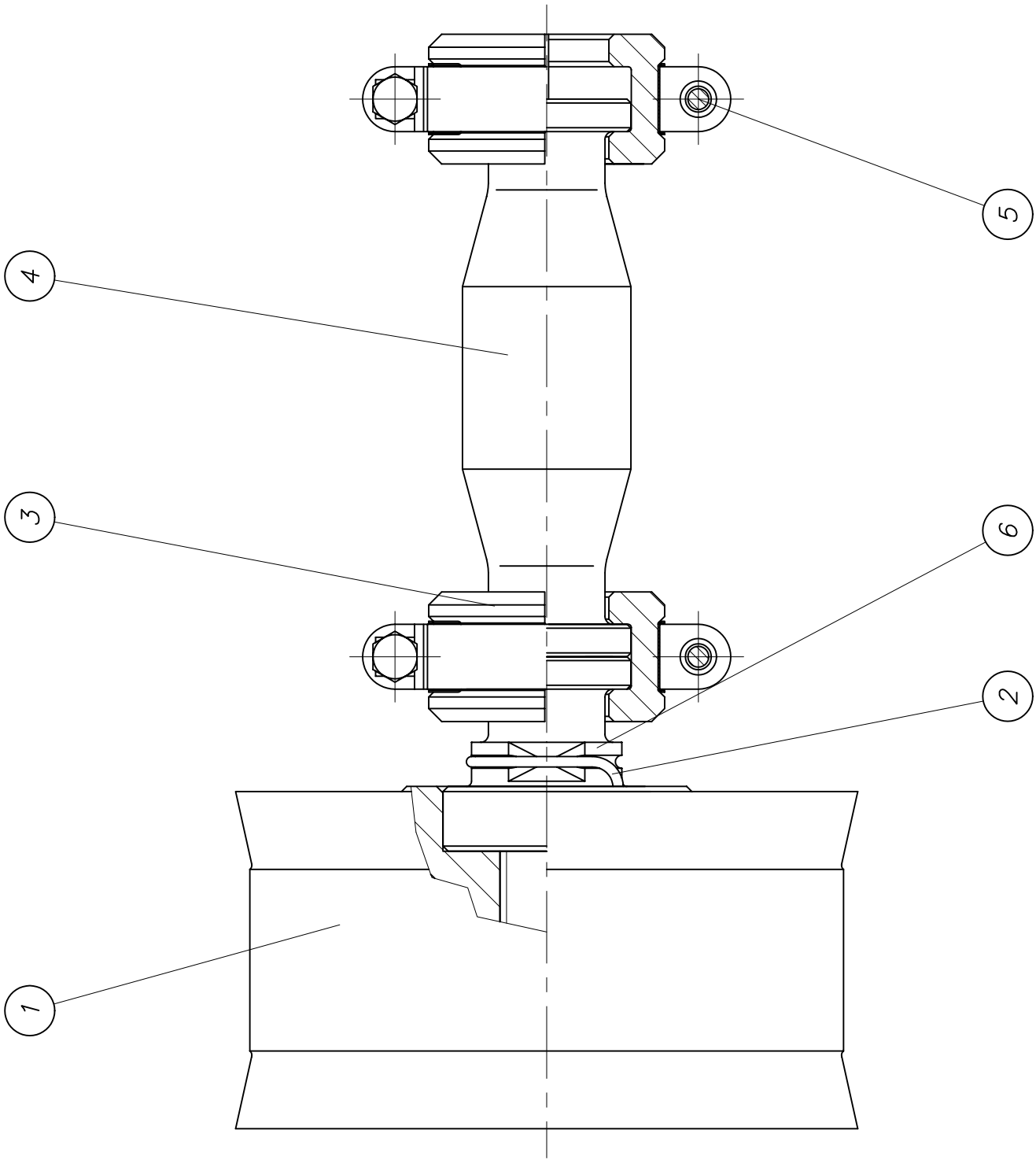
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	flange ring DN 230 threaded	B124021 Bl 55xd330	1543/EN10029 St52-3		12,20	2,00 Stk
2	conveyor cylinder DN230x2000 chromized	B124019 Rohr 250x12.5x2	2448 St52.0		150,00	2,00 Stk
3	fitting ring DN 230 water box	B123012 Rohr 267x36x65	2448 St52.0		6,00	2,00 Stk
4	flange ring DN 230 threaded	B125014 Bl 55xd330	1543/EN10029 St52-3		12,20	2,00 Stk
5	cheese head screw M20 x 80	WAI106754				12,00 Stk
6	cheese head screw M20 x 120	WAI103970				14,00 Stk
7	washer HV	WAI100691			0,01	26,00 Stk
8	O-ring 244 x 7, NBR70	WAI102868				4,00 Stk

Förderkolben kpl.

conveying piston cpl.

B 13 3 020

Waitzinger
Baumaschinen GmbH



15.03.2001

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B133020	piston ram cpl. DN 230	08.07.98 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	piston ram DN 230	WAI100175			19,90	2,00 Stk
2	protection ring	B133019 Federst. 4	17223			2,00 Stk
3	clamp coupling	B131004 Rd 95x50	1013 42CrMo4V			4,00 Stk
4	distance piece	B133003 Rd 70x225	1013 42CrMo4V			2,00 Stk
5	hose clamp S86/25	WAI101381			0,22	4,00 Stk
6	coupling bolt	B133018 Rd 82x120	1013 42CrMo4V		2,20	2,00 Stk

Spülkasten kpl.

water box cpl.

B 14 3 000

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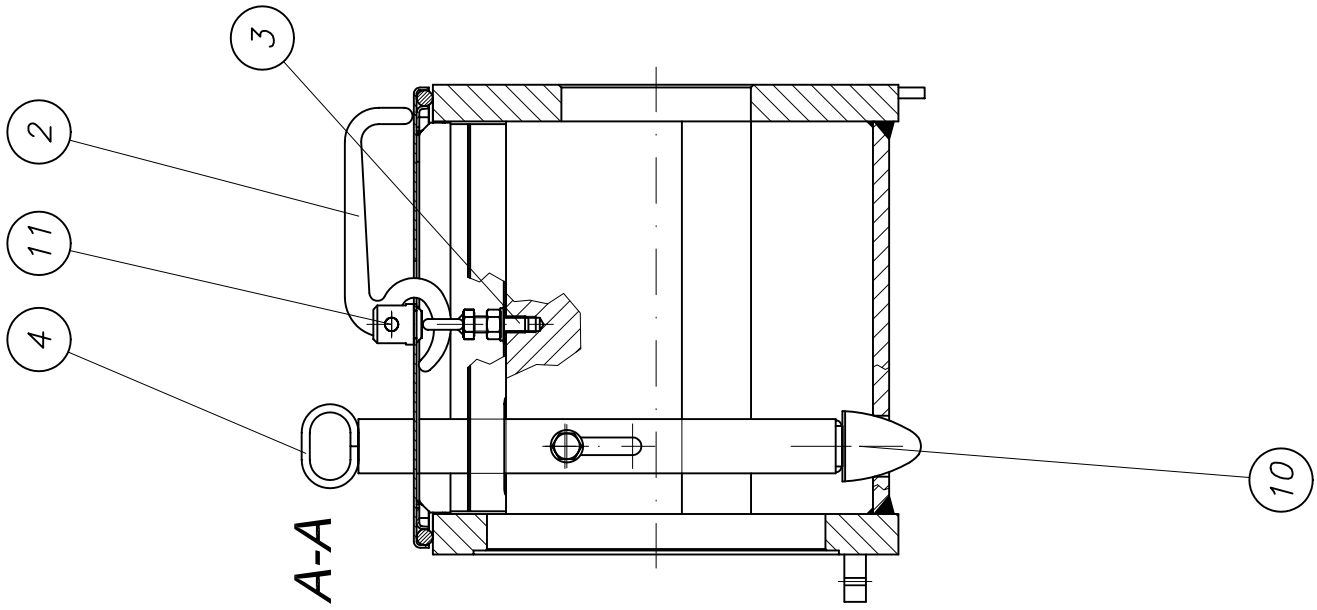

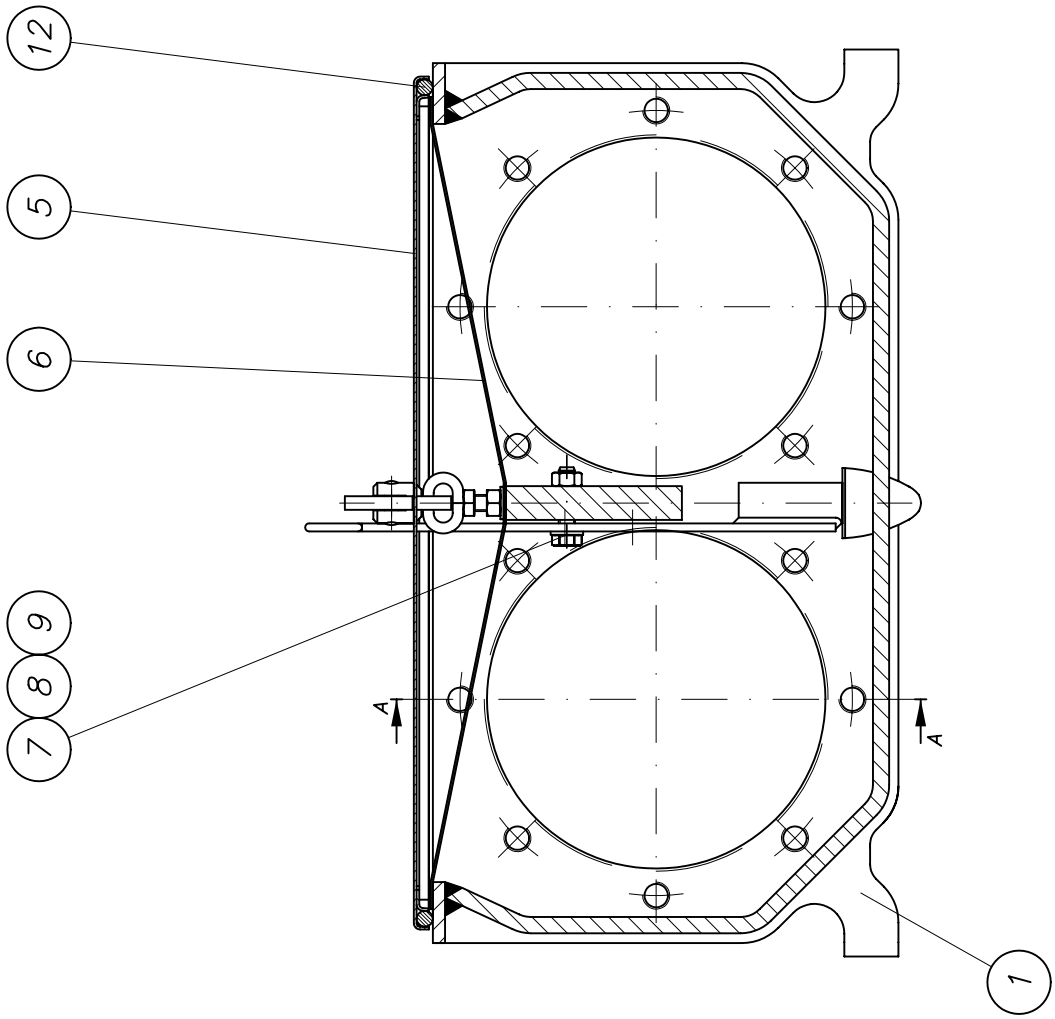

PARTS LIST

27.06.05 08:46:41

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B143000	waterbox cpl. DN 200/230 plug	19.06.97 HG			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	waterbox cpl. DN 200/230 (processing) own parts list	B143001		b 02.05.00		1,00 Stk
2	lever	B143007 Bl 10x195x78.5	1543/EN10029 St52-3			1,00 Stk
3	loop bolt cpl. own parts list	B143009			0,09	1,00 Stk
4	drain pin own parts list	B143011			1,14	1,00 Stk
5	cover for waterbox cpl. own parts list	B143015			4,55	1,00 Stk
6	savety lattice	B143020 Lochbl. 1.5x610	Rostfrei	a 28.05.03		1,00 Stk
7	hex. screw M12	WAI103688				1,00 Stk
8	nut M12 DIN 934	WAI101557			0,02	2,00 Stk
9	washer	WAI100504				2,00 Stk
10	rubber buffer 50 x 58	WAI102712				1,00 Stk
11	pin	WAI103387				1,00 Stk
12	O-ring cord 12mm	WAI101831				1,95 Mtr

Antriebszylinder kpl.

drive cylinder cpl.

B 15 4 031

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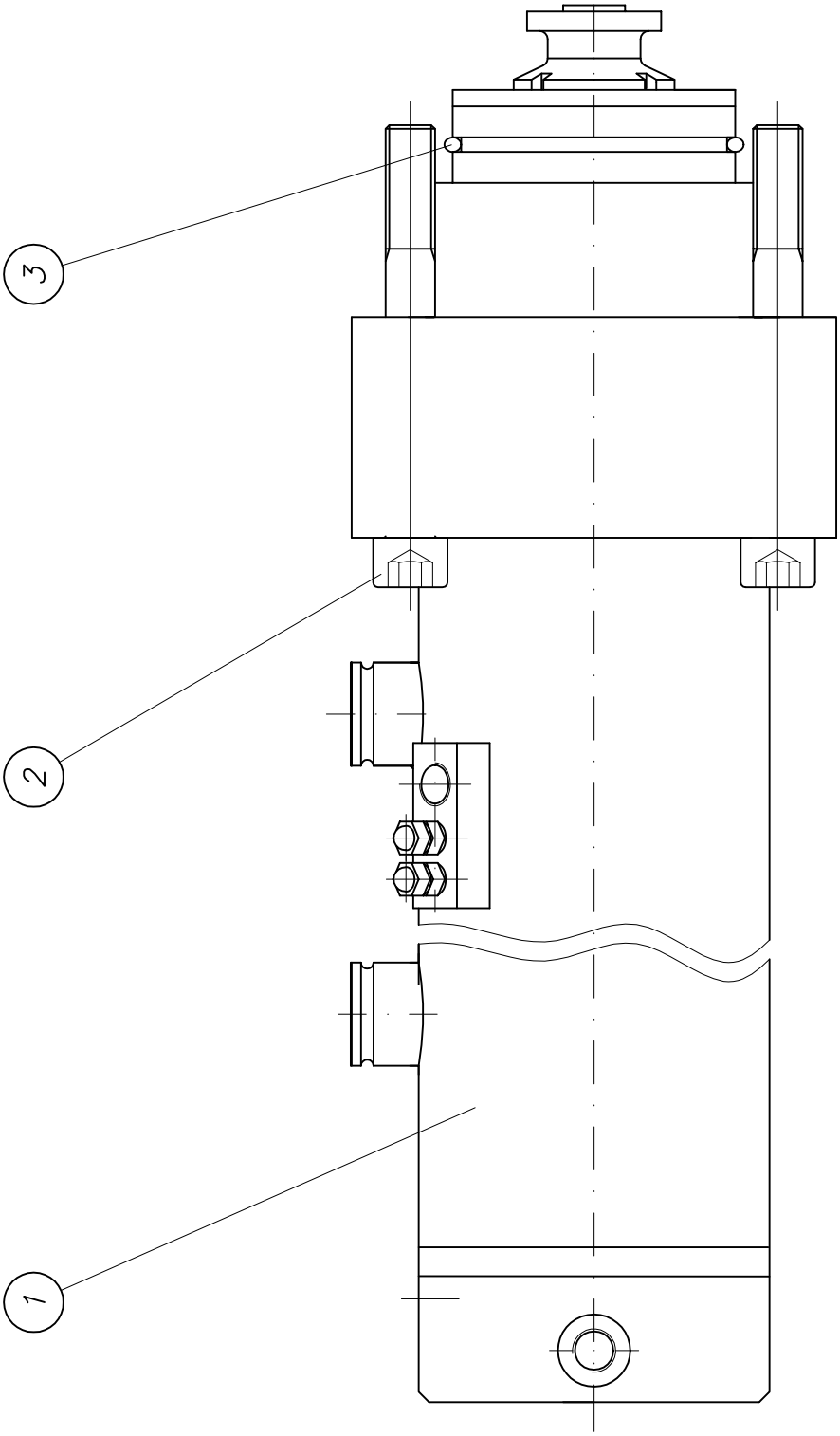

PARTS LIST

27.06.05 08:26:11

part list	description	created	index	valid from	valid to
B154031	drive cylinder cpl. 140/80-2000	20.09.00 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	drive cylinder 140/80-2000 REED own parts list	WAI106154		a 30.10.03	295,00	2,00 Stk
2	cylinder head screw M 24 x 200	WAI103828				8,00 Stk
3	O-ring 129,2 x 5,7	WAI101441				2,00 Stk

Antriebszylinder

drive cylinder

WAI 106154a

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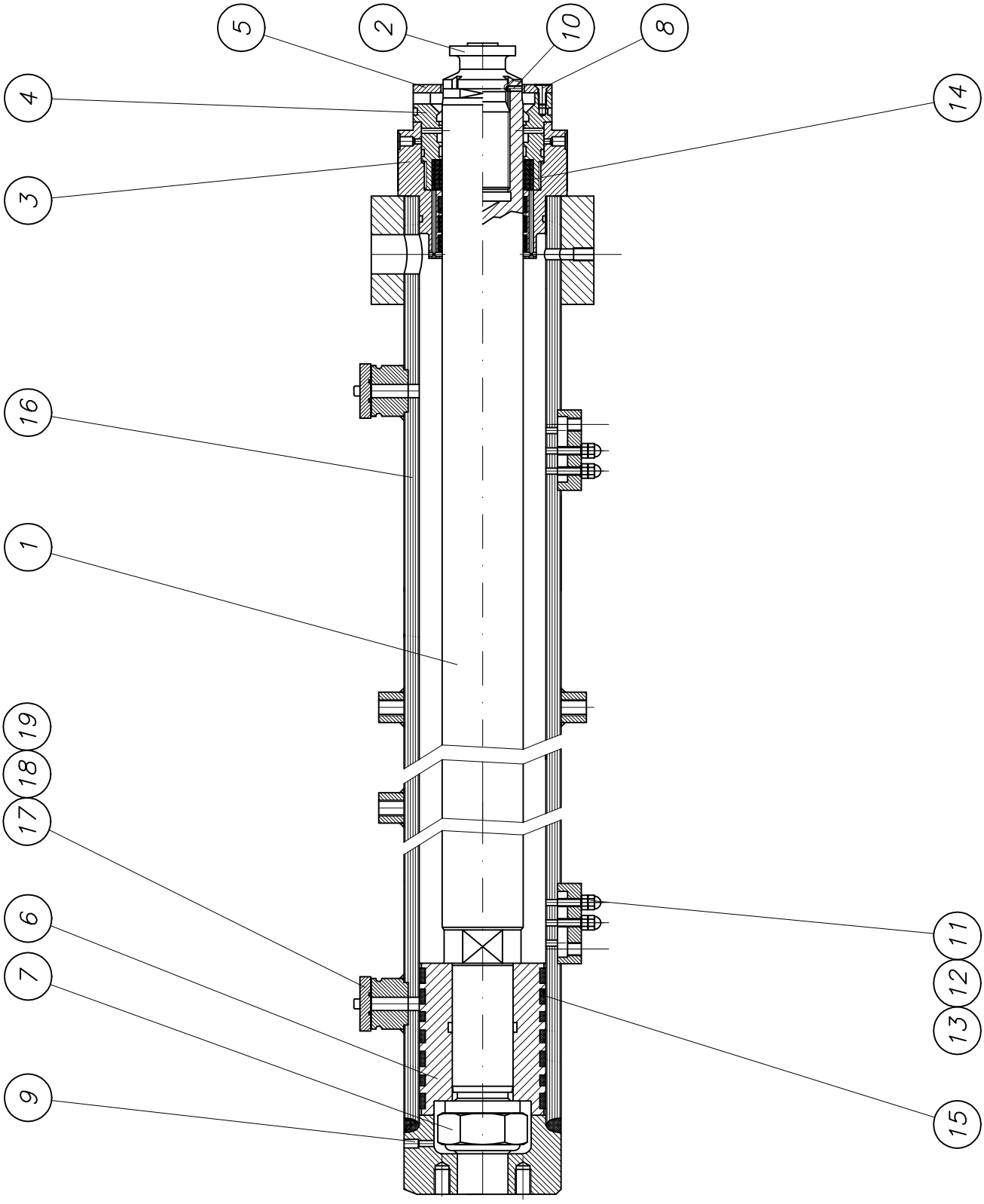


01.12.2003

PARTS LIST

27.06.05 08:28:07

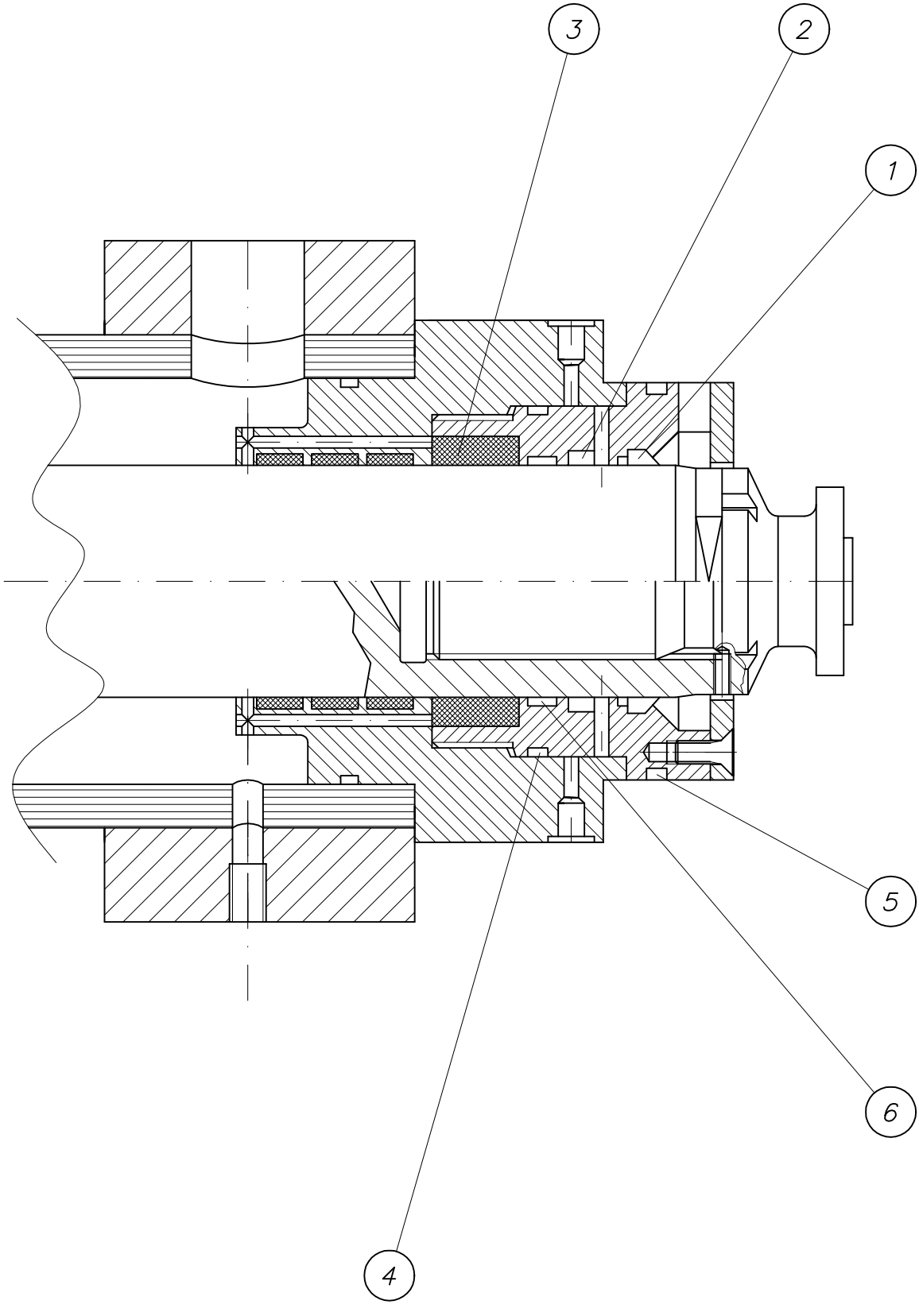
part list	description	created	index	valid from	valid to
WAI106154	drive cylinder 140/80-2000 REED	15.05.00 Mi	a	30.10.03	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	piston rod for drive cylinder	WAI105724 Rd 90x2173	1013 Ck45			1,00 Stk
2	piston joint	WAI104146 Rd 80x131	1013 42CrMo4V		1,87	1,00 Stk
3	guide piece for drive cylinder 140	WAI105725 Rd 180x142	1013 St52	a 30.07.03		1,00 Stk
4	sealing carrier for drive cylinder	WAI104890	GGG 40	a 29.07.03		1,00 Stk
5	aperture for drive cylinder	WAI105726 8x d137	Polyamid			1,00 Stk
6	piston 140 REED	WAI106305		b 30.07.03		1,00 Stk
7	piston nut for drive cylinder	WAI105728				1,00 Stk
8	sunk screw M 8 x 20	WAI103397				3,00 Stk
9	locking screw G 1/8	WAI100528				3,00 Stk
10	set screw	WAI105739				1,00 Stk
11	hex. nut M8 DIN 934 8. VERZ.	WAI102880				4,00 Stk
12	cap nut M8	WAI104933				4,00 Stk
13	set screw	WAI105740				4,00 Stk
14	sealing set for drive cylinder 125/80 own parts list	WAI104690				1,00 Stk
15	sealing set for drive cylinder 140/80 own parts list	WAI106156				1,00 Stk
16	cylinder pipe cpl. 140 REED	WAI106153		a 30.07.03		1,00 Stk
17	cover for sensor connection	B154017 Rd 11x55	1013 S235J2G3		0,20	2,00 Stk
18	o-ring	WAI108533				2,00 Stk
19	alien bolt M 6x25	WAI103673				4,00 Stk

Stangendichtsatz
rod sealing set

WAI 104690

Waitzinger
Baumaschinen GmbH



15.03.2001

PARTS LIST

27.06.05 08:29:29

part list	description	created	index	valid from	valid to
WAI104690	sealing set for drive cylinder 125/80	30.08.99 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	wiper	WAI100259			0,00	1,00 Stk
2	wiper	WAI105729				1,00 Stk
3	v-packing 80 x 100 x 30	WAI102584				1,00 Stk
4	sealing for drive cylinder	WAI105732				1,00 Stk
5	o-ring	WAI105731				1,00 Stk
6	rod support for drive cylinder	WAI105738				1,00 Stk

Dichtsatz für Antriebszylinder
sealing set for drive cylinder

WAI 106156

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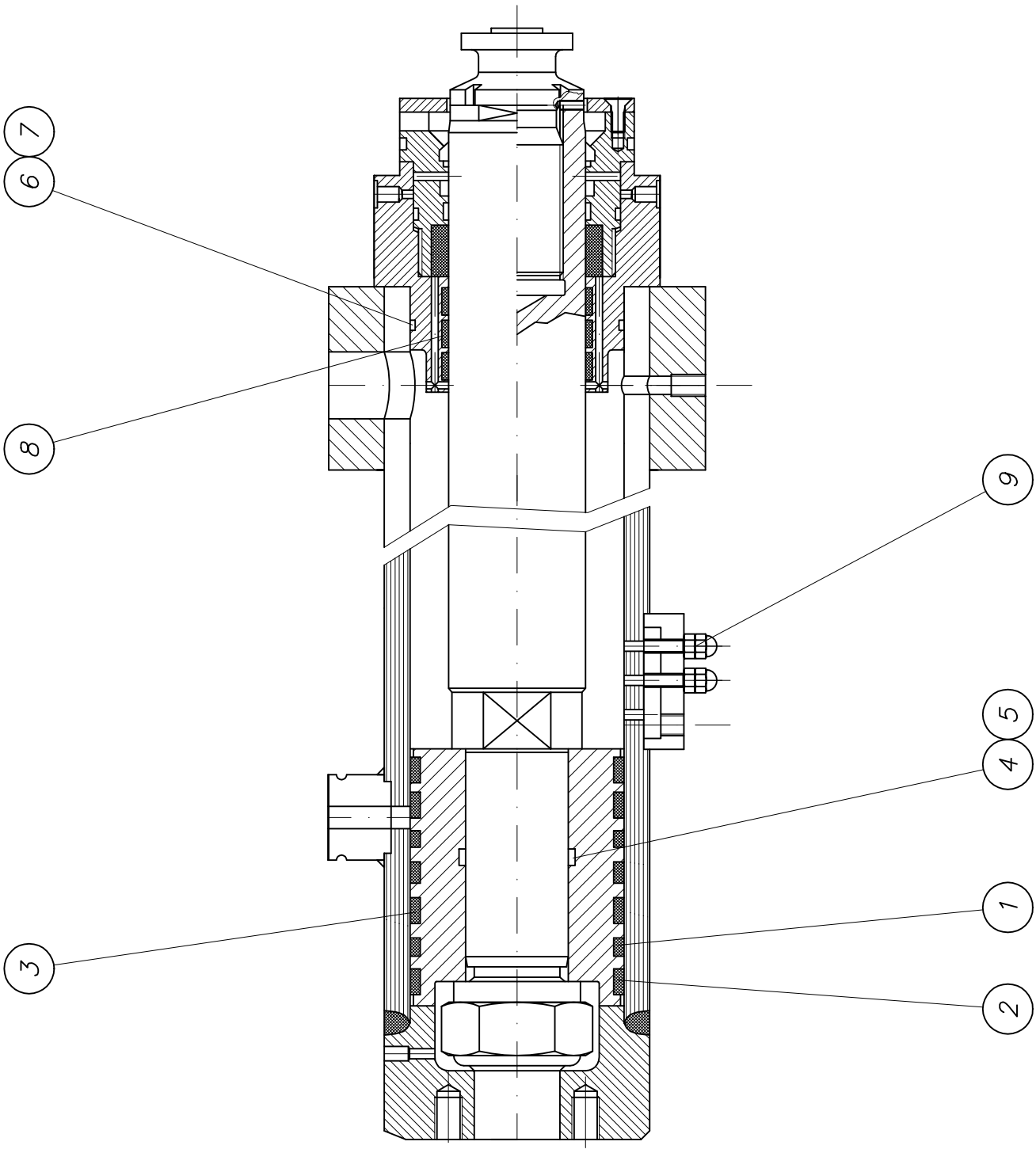


12.11.2002

PARTS LIST

27.06.05 08:31:02

part list	description	created	index	valid from	valid to
WAI106156	sealing set for drive cylinder 140/80	03.08.00 hbk			

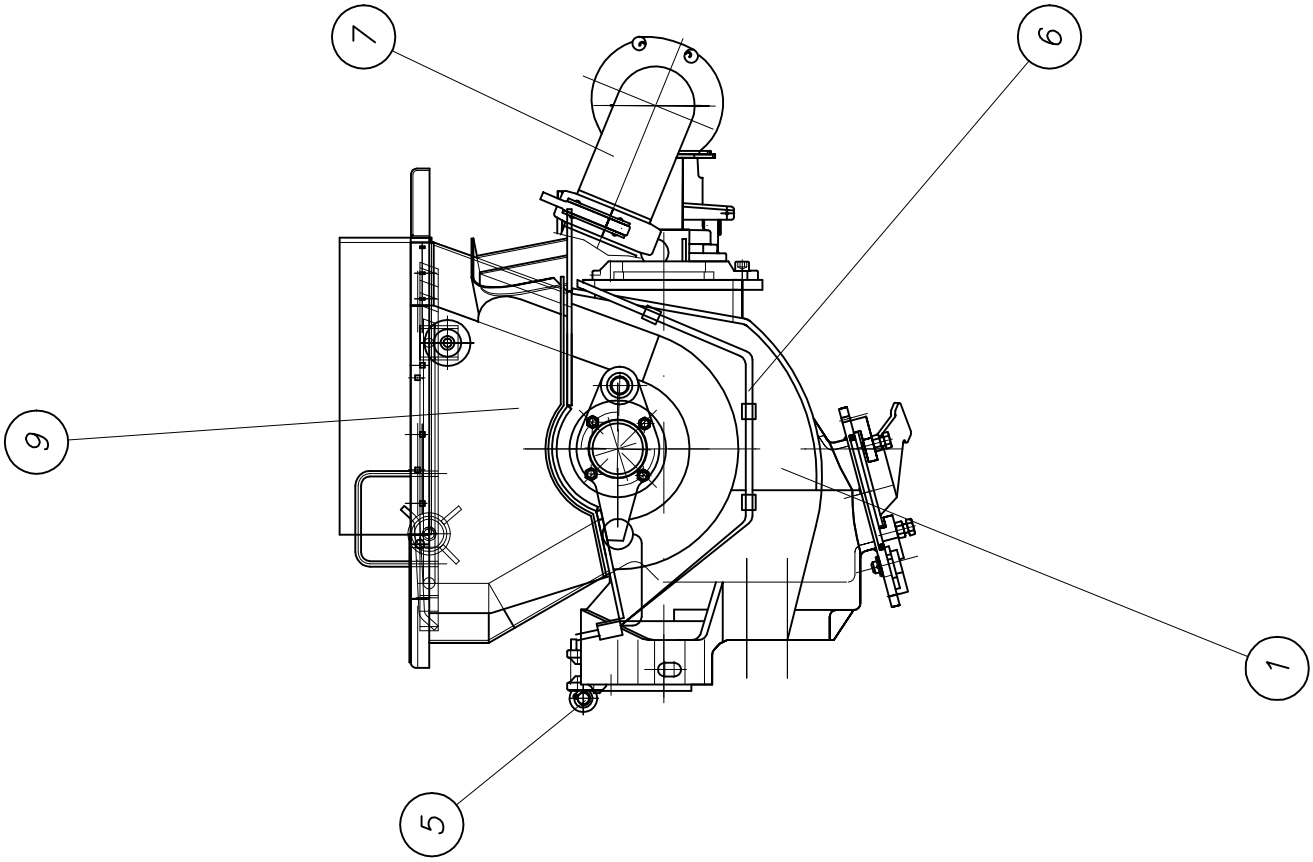
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	piston guide	WAI105735				3,00 Stk
2	piston ring permasel DN140	WAI105049			0,05	2,00 Stk
3	piston ring DN 140	WAI106313				2,00 Stk
4	back-up ring	WAI105736				2,00 Stk
5	o-ring	WAI105734				1,00 Stk
6	O-ring 134 x 4	WAI106314				1,00 Stk
7	back-up ring	WAI106315				1,00 Stk
8	piston guide	WAI106316			5,00	3,00 Stk
9	usit-ring 8.7-14-1	WAI101269				8,00 Stk

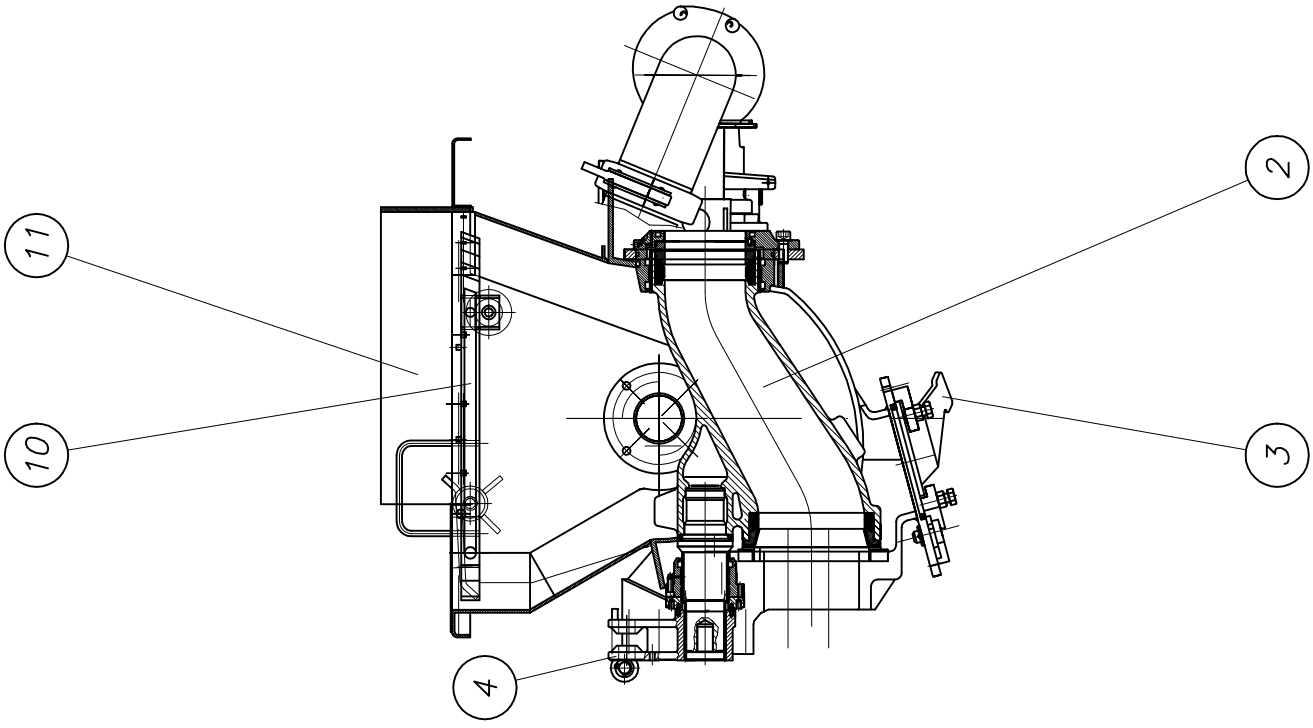
Schiebersystem kpl.

s-valve system cpl.

B 17 5 200R1

Waitzinger
Baumaschinen GmbH





28.09.2005

PARTS LIST

09.02.06 11:12:27

part list	description	created	index	valid from	valid to
B175200R1	s-valve system w/o	20.07.05 TECHNIK			

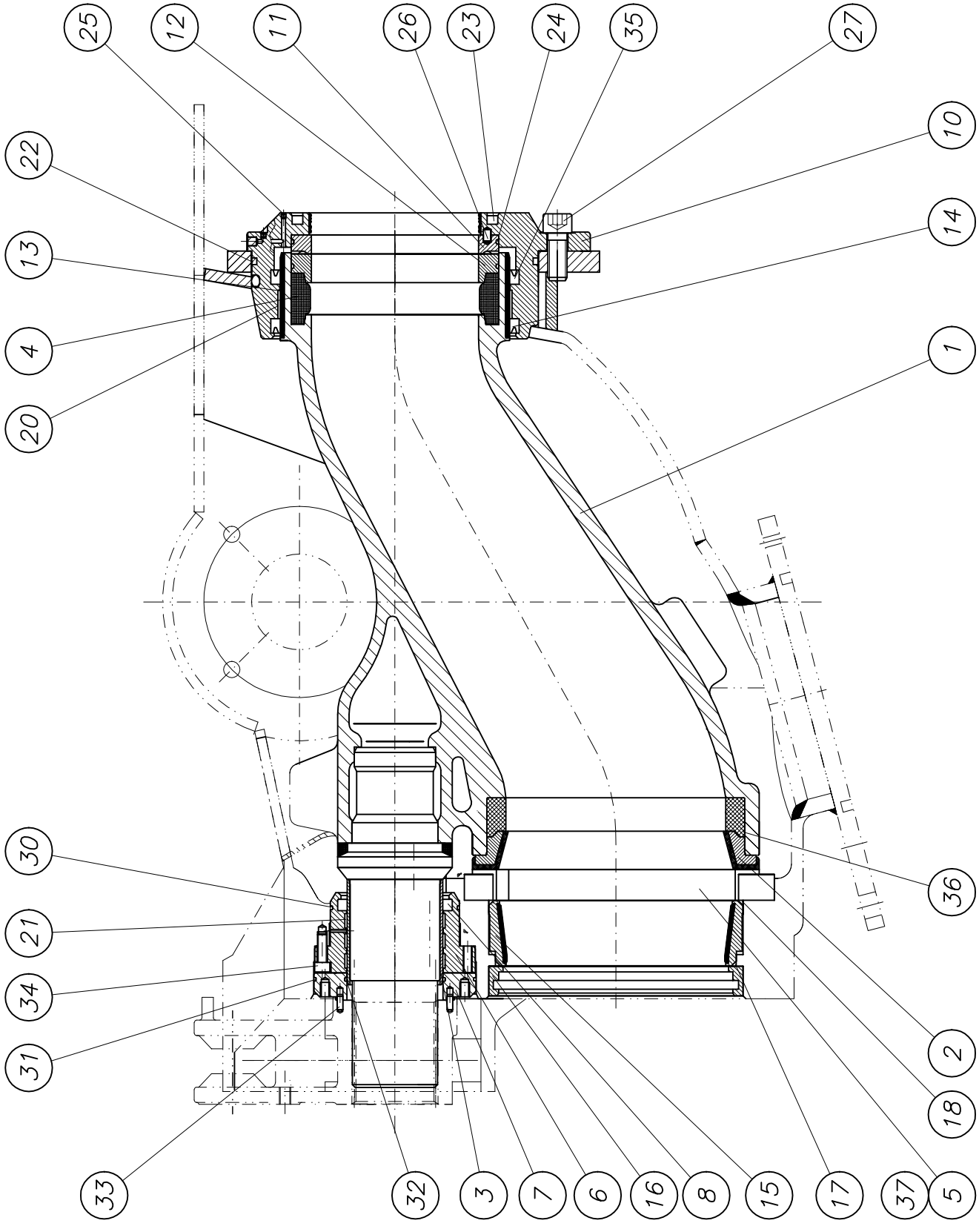
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	s-valve housing cpl. (processing) DN 230 own parts list	B175025		e 25.05.05	572,00	1,00 Stk
2	s-valve system complete own parts list	B175006		d 07.12.05		1,00 Stk
3	cleaning hole assembly own parts list	B175050		a 21.03.03		1,00 Stk
4	shift drive system cpl. own parts list	B175020		b 02.08.05		1,00 Stk
5	pump support funnel own parts list	B115001				1,00 Stk
6	lubrication system complete own parts list	B185003		a 29.07.04		1,00 Stk
7	conveying pipe line 6" own parts list	B195065R1				1,00 Stk
9	hopper upper part own parts list	B225055				1,00 Stk
10	grid cpl. own parts list	B225040		c 19.12.05		1,00 Stk
11	rubber apron cpl own parts list	B225045		a 04.04.03		1,00 Stk

Schiebersystem kpl.

s-valve system cpl.

B 17 5 006d

Waitzinger
Baumaschinen GmbH



PARTS LIST

08.12.05 09:56:44

part list	description	created	index	valid from	valid to
B175006	s-valve system complete	21.01.04 ek	d	07.12.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	s-valve cpl. own parts list	B175080			98,00	1,00 Stk
2	wear ring DN230	B175210 Bl 40xD300	1543/EN10029 S355J2G3		4,00	1,00 Stk
3	wear bushing small	B175175 Rohr 108x10x115	2448 StE690		1,70	1,00 Stk
4	tension ring DN217x64 / 70 shore	B175202 217x64	70 Shore			1,00 Stk
5	wear plate DN 250	B175177 Bl 30x400x644	1543/EN10029 St52-3	a 02.12.03	23,00	1,00 Stk
6	bearing housing small	B175178 Rd 180x90	1013 St52-3	c 24.07.03	4,70	1,00 Stk
7	axial bearing washer	B175179 Rd 180x35	1013 CuSn8P (2.18	b 07.12.05	3,30	1,00 Stk
8	groove ring 100x120x12 own parts list	B175181			0,04	1,00 Stk
10	bearing housing big (processing) megahop own parts list	B175009		b 23.05.05		1,00 Stk
11	slide ring DN 217 x 20	B173013 d217x20				1,00 Stk
12	slide ring DN 217 x 30	B173014				1,00 Stk
13	wear bushing big	B173073 Rohr 244.5x12.5	2458 StE690	a 01.08.03	2,00	1,00 Stk
14	groove ring 240x260x15 own parts list	B173078			0,04	1,00 Stk
15	fitting ring with hardened surface own parts list	B175071			7,60	2,00 Stk
16	fitting ring	B175072 Bl 40xd275	DIN EN 10029 S235J2G3	a 01.07.04	2,90	2,00 Stk
17	O-Ring 243 x 4	WAI108633				2,00 Stk
18	O-Ring 258 x 4	WAI108634				2,00 Stk
20	rod wear-ring 240 x 245 x 15 mm	WAI102487			0,03	2,00 Stk
21	rod wear-ring 105 x100 x 15 mm	WAI106096			0,01	3,00 Stk
22	O-ring 290 x 5	WAI102539			0,02	1,00 Stk

PARTS LIST

08.12.05 09:56:44

part list	description	created	index	valid from	valid to
B175006	s-valve system complete	21.01.04 ek	d	07.12.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
23	O-ring 193 x 10	WAI103563			0,05	1,00 Stk
24	O-ring	WAI101808				2,00 Stk
25	set screw M 8 x 8	WAI106824				4,00 Stk
26	straight pin	WAI103717				2,00 Stk
27	cheese head screw M20 x 50	WAI102854				4,00 Stk
30	O-ring 129,5 x 3 SH90	WAI102448				1,00 Stk
31	sealing ring 165 x 3	WAI103580				1,00 Stk
32	O-ring	WAI105771				1,00 Stk
33	clamping sleeve 6 x 18	WAI103106				8,00 Stk
34	cheese head screw M 10 x 25	WAI109528				4,00 Stk
35	groove ring 240x260x15	WAI100479				1,00 Stk
36	tension ring	B175201 270x45	50 Shore		0,60	1,00 Stk
37	cheese head screw M20 x 130	WAI104885				4,00 Stk

Reinigungsklappe kpl.

cleaning cover cpl.

B 17 5 050a

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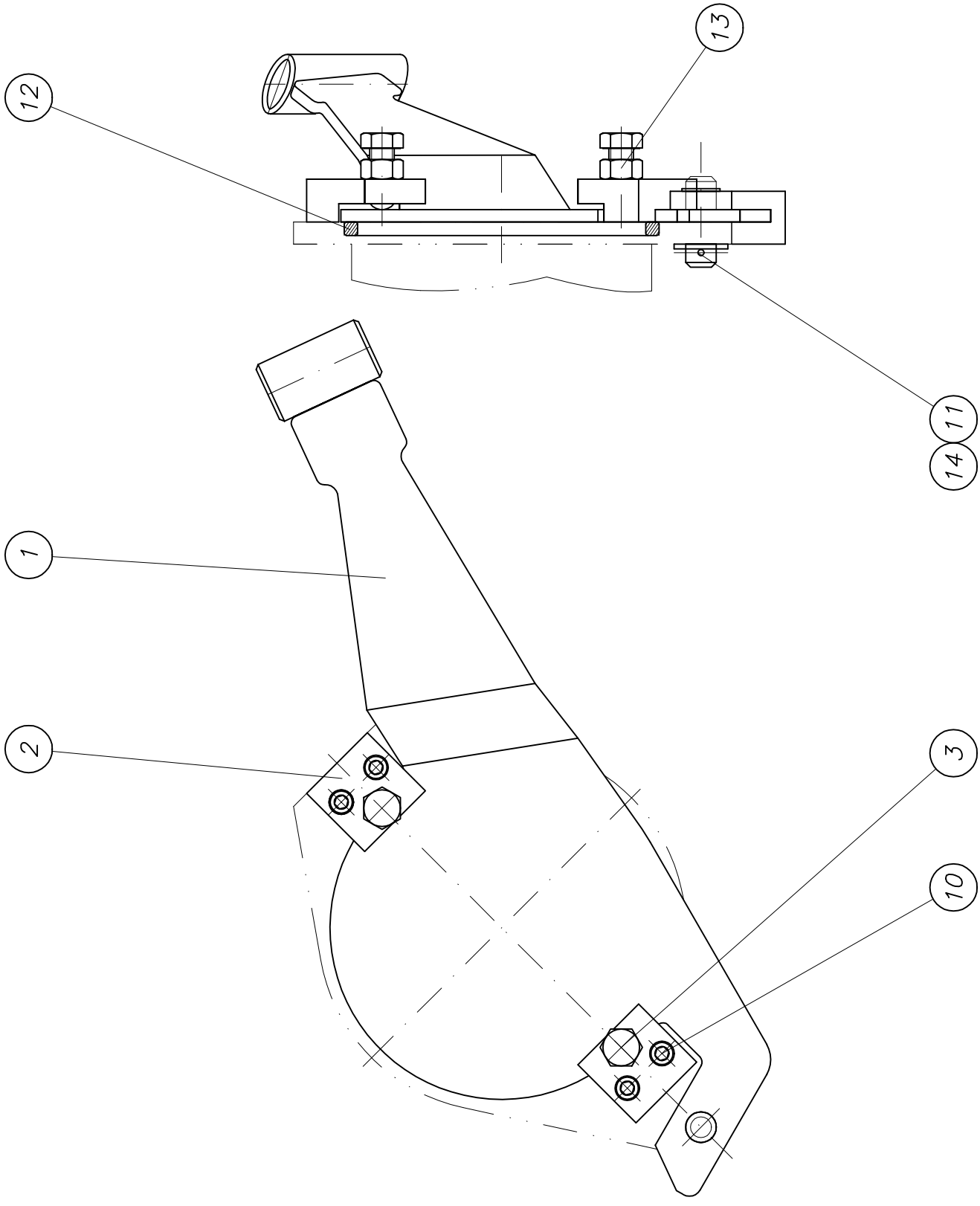


PARTS LIST

22.06.05 10:11:47

part list	description	created	index	valid from	valid to
B175050	cleaning hole assembly	03.03.00 Mi	a	21.03.03	

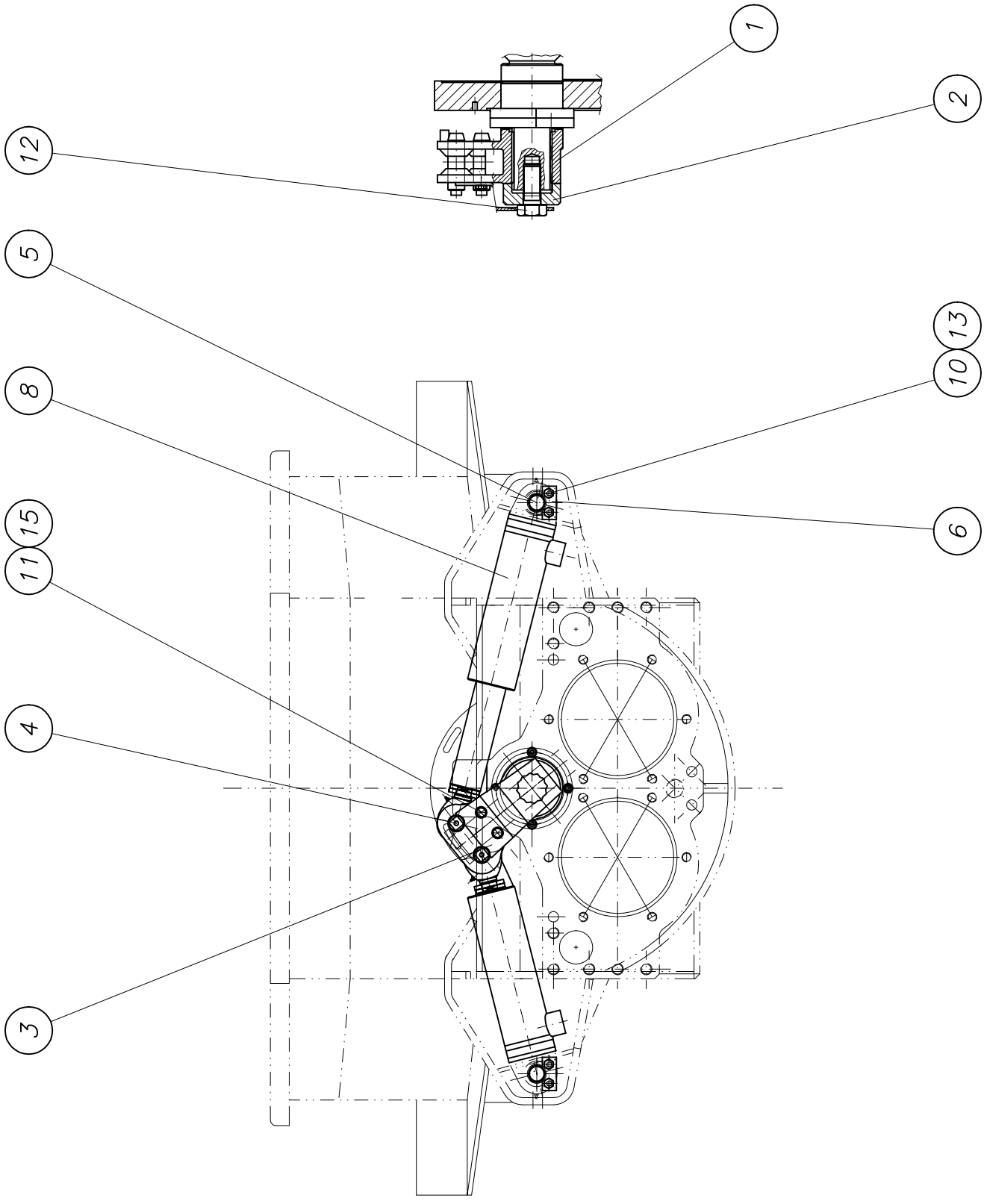
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	cover cpl. for cleaning cover own parts list	B175051		b 15.06.04	9,00	1,00 Stk
2	plate	B172126 Bl 40x67x70	1543/EN10029 St52-3		0,89	2,00 Stk
3	screw M 20 (processing) own parts list	B172128 6-Kt.Schraube M	933-8.8		0,18	2,00 Stk
10	cheese head screw M 12 x 40	WAI102855				4,00 Stk
11	washer 25, DIN 125	WAI103298				1,00 Stk
12	O-ring cord 12mm	WAI102908				0,78 Mtr
13	nut M20 DIN 934	WAI102891				2,00 Stk
14	split pin	WAI105194				1,00 Stk

Schwenkantrieb kpl.

tilting device cpl.

B 17 5 020b

Waitzinger
Baumaschinen GmbH



PARTS LIST

25.08.05 09:50:12

part list	description	created	index	valid from	valid to
B175020	shift drive system cpl.	11.07.01 Mi	b	02.08.05	

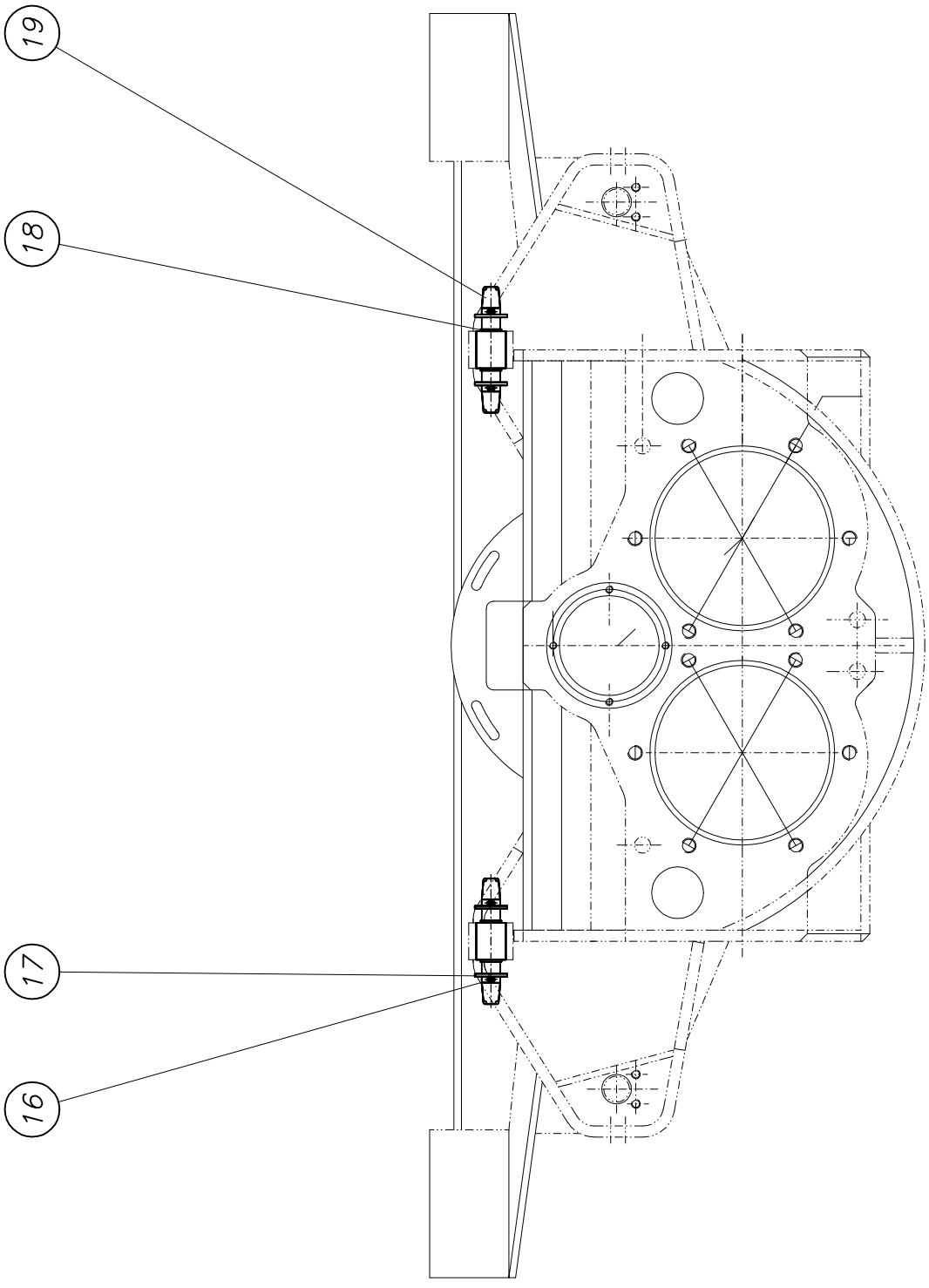
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	tilting lever (processing) own parts list	B175180			13,00	1,00 Stk
2	pressure disc	B174103 Rd125x50	1013 42CrMo4V		2,70	1,00 Stk
3	locking plate	B174104 Bl 6x220x120	1543/EN10029 St52-3		1,00	1,00 Stk
4	bolt	B173019 Rd 40x125	1013 42CrMo4V		0,83	2,00 Stk
5	bolt	B173066 Rd 40x115	1013 42CrMo4V	a 06.04.00	0,80	2,00 Stk
6	axle retainer	B173067 Fl 30x6x70	1017 St52-3		0,13	2,00 Stk
8	tilting cylinder D 65x220	WAI109491			23,00	2,00 Stk
10	hex. bolt M12 x 25 DIN 933 8.8	WAI101001			0,04	4,00 Stk
11	hex. bolt M12x30 DIN 933 8.8	WAI102107			0,04	2,00 Stk
12	hex.screw M 36 x 3 x 85	WAI103327		a 01.08.05		1,00 Stk
13	conical spring washer 12 mm	WAI102877				4,00 Stk
15	spring washer A12 DIN 127 VERZ.	WAI102896				2,00 Stk

Pumpenlagerung Trichter kpl.

pump support hopper cpl.

B 11 5 001

Waitzinger
Baumaschinen GmbH



PARTS LIST

22.06.05 10:12:42

part list	description	created	index	valid from	valid to
B115001	pump support funnel	13.10.03 ute			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
16	pin	WAI100940				4,00 Stk
17	washer 26, DIN 126	WAI103411				4,00 Stk
18	rubber buffer 40 x 25 x 50	WAI102489			0,21	2,00 Stk
19	bolt	B113021 Rd 30x175	1013 42CrMo4V	a 13.02.02	0,65	2,00 Stk

Schmieranlage kpl.
lubrication system cpl.

B 18 5 003a **1**

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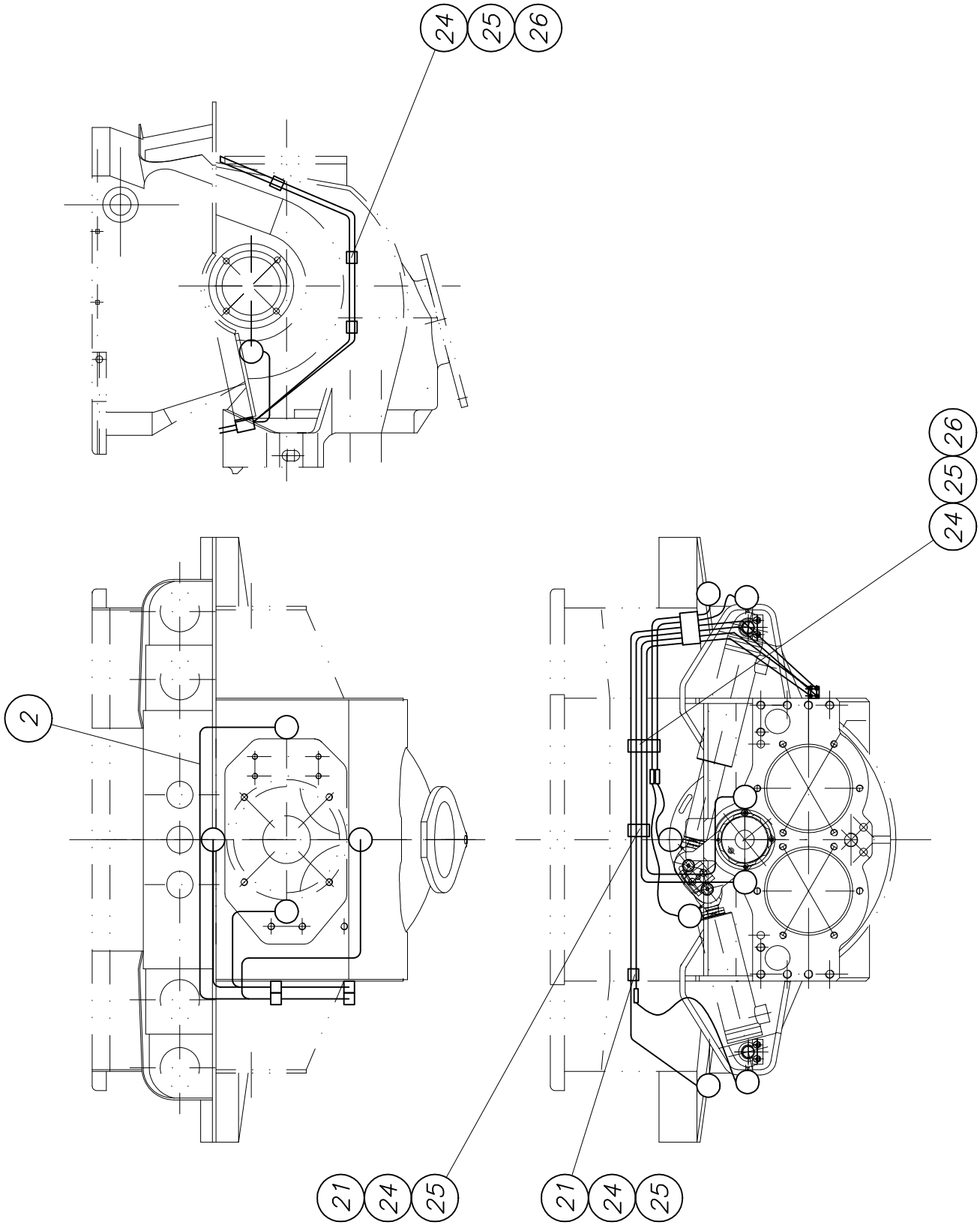
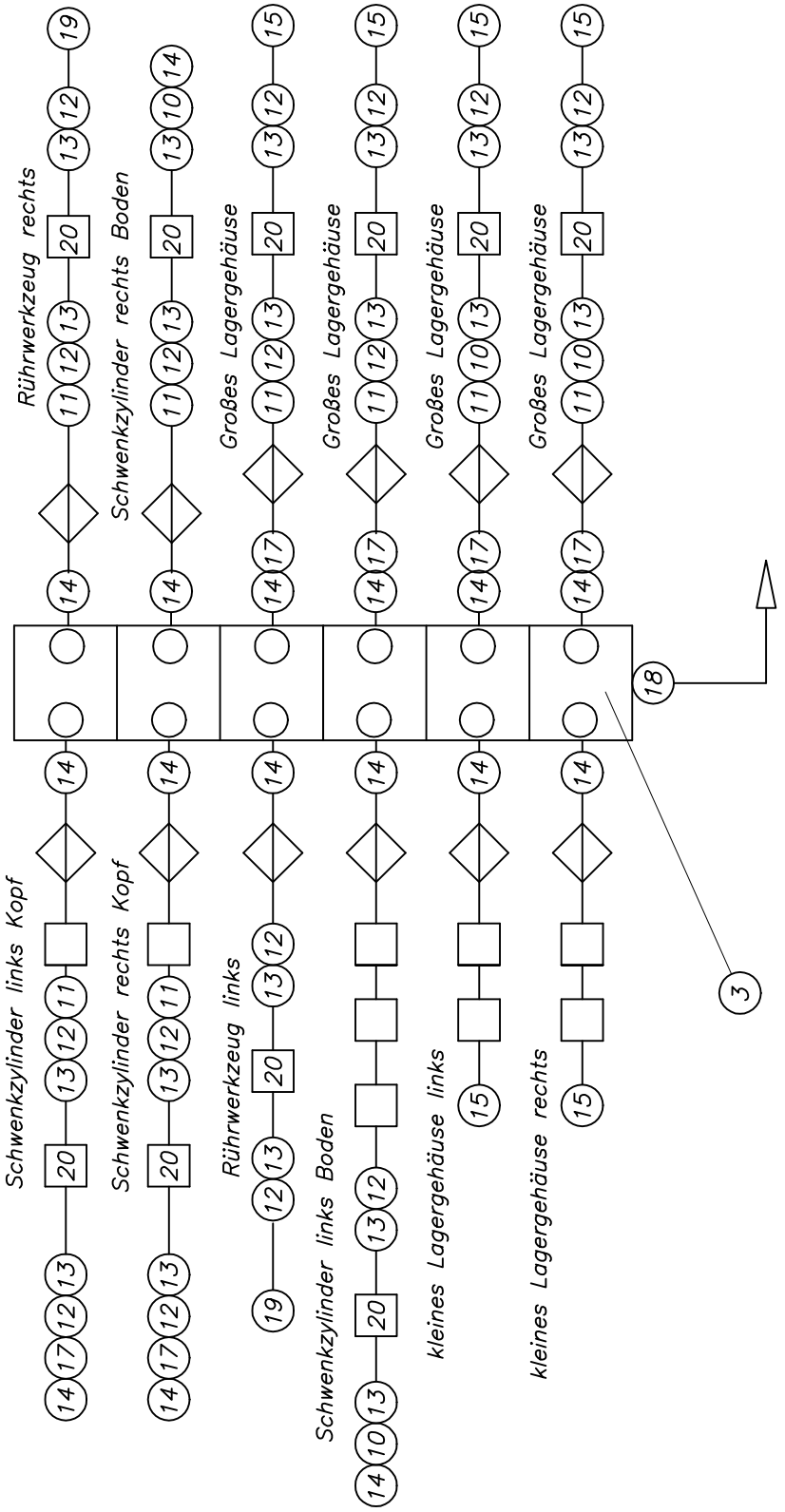
Baumaschinen GmbH



Schmieranlage kpl.
lubrication system cpl.

B 18 5 003a **2**

Waitzinger
Baumaschinen GmbH



PARTS LIST

22.06.05 10:13:14

part list	description	created	index	valid from	valid to
B185003	lubrication system complete	15.10.03 ek	a	29.07.04	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
2	set of pipes for greasing system	WAI106760				1,00 Stk
3	lubrication distributor complete (12) own parts list	WAI105657			0,01	1,00 Stk
10	threaded sleeve, 90 degrees	WAI102643			0,02	4,00 Stk
11	straight couplings L6	WAI105282				8,00 Stk
12	hose connecting piece, DN6, short	WAI100253			0,01	16,00 Stk
13	threaded sleeve	WAI100254			0,01	20,00 Stk
14	straight male stud couplings L6M	WAI100546			0,03	16,00 Stk
15	throttlefree banjo elbows L6M	WAI102284				6,00 Stk
17	adjustable elbow bodies L6	WAI102664			0,02	8,00 Stk
18	straight male stud couplings L6M14 x 1,5	WAI102665			0,04	1,00 Stk
19	male stud LL6M 6 x 1	WAI102603				2,00 Stk
20	plastic pipe 8.4 x 2.1	WAI100255			0,05	6,00 Mtr
21	hexagon screw	WAI102109			0,01	2,00 Stk
24	pipe clip 6 mm (double)	WAI105281				8,00 Stk
25	welding plate for pipe clip	WAI105422			0,03	2,00 Stk
26	hexagon screw M 6 x 60 DIN 931 8.8	WAI104065				3,00 Stk
27	cable tie 200x3.6, black	WAI103137				10,00 Stk

PARTS LIST

28.09.05 09:49:46

part list	description	created	index	valid from	valid to
b195065R1	conveying pipe line 6"	20.07.05 TECHNIK			

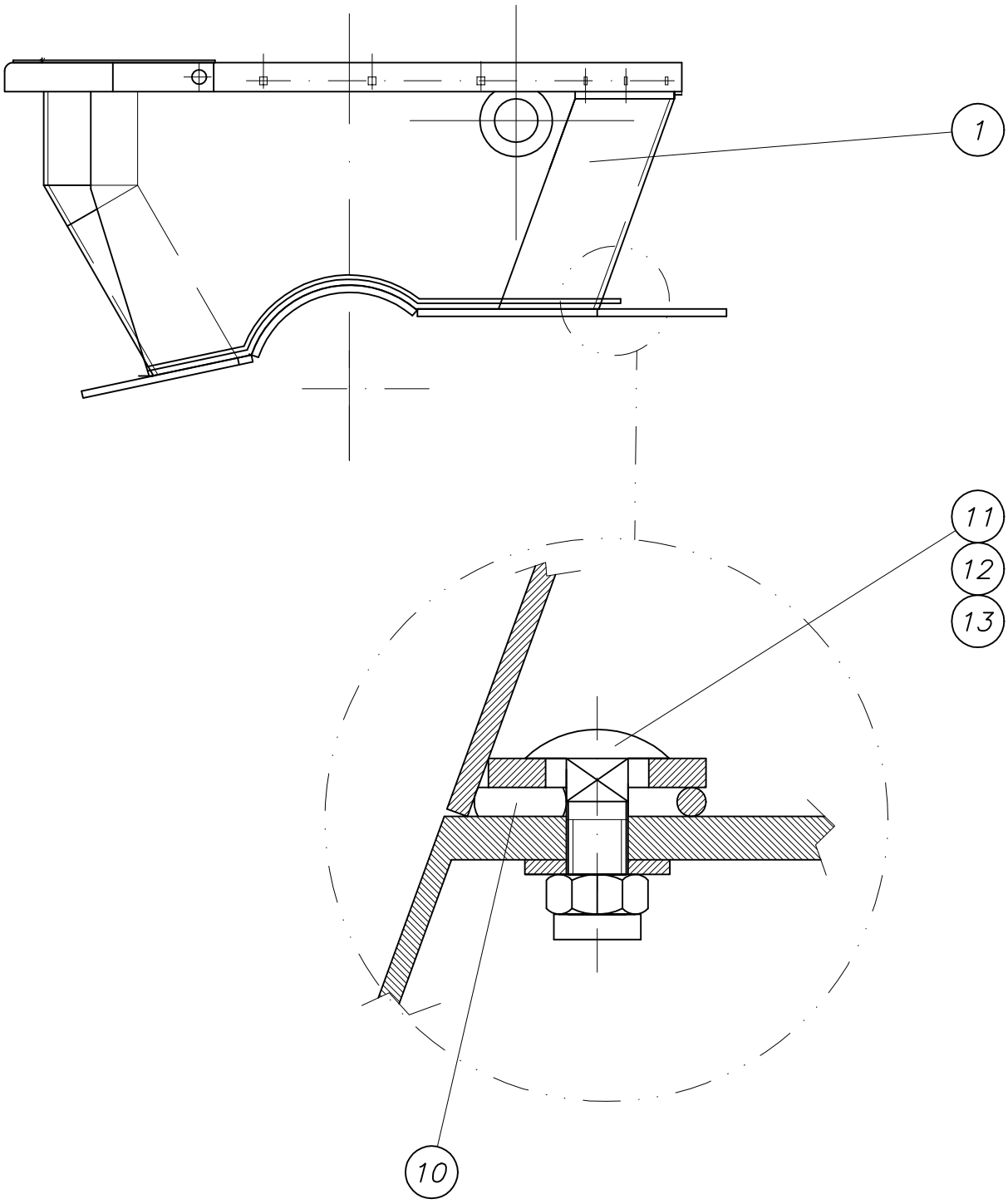
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	hinge own parts list	B190004			6,00	1,00 Stk
2	pin	B190008 Rd 40x315	1543 669		3,00	1,00 Stk
3	locking pin complete own parts list	B193008		a	3,00	1,00 Stk
4	locking wedge complete own parts list	B194046			1,85	1,00 Stk
10	cheese head screw M 16 x 40	WAI102859				4,00 Stk
11	spring washer A16	WAI103489			0,01	4,00 Stk
12	O-ring 193 x 10	WAI103563			0,05	1,00 Stk
13	cheese head screw M20 x 50	WAI102854				2,00 Stk
22	locking ring	WAI102865				2,00 Stk
23	key ring	WAI104636				2,00 Stk
24	chain 4mm	WAI103732				1,00 mtr

Trichteroberteil kpl.

hopper upper part cpl.

B 22 5 055

Waitzinger
Baumaschinen GmbH



PARTS LIST

22.06.05 10:14:34

part list	description	created	index	valid from	valid to
B225055	hopper upper part	11.11.02 Mi			

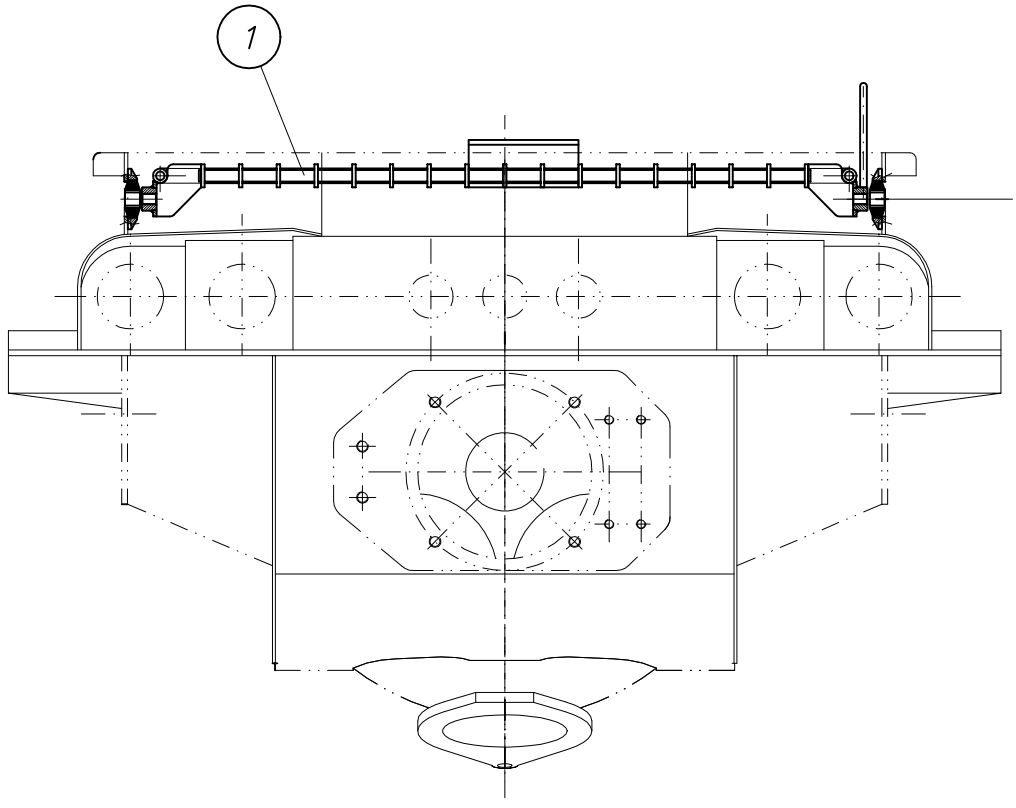
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	kopper upper part own parts list	B175011		a 30.05.05	86,00	1,00 Stk
10	expanded rubber	WAI103309				4,00 Mtr
11	cup square neck bolt M 16 x 50	WAI105131				4,00 Stk
12	nut M16 DIN 985	WAI102330				4,00 Stk
13	washer DIN 6916 17	WAI101558			0,02	4,00 Stk

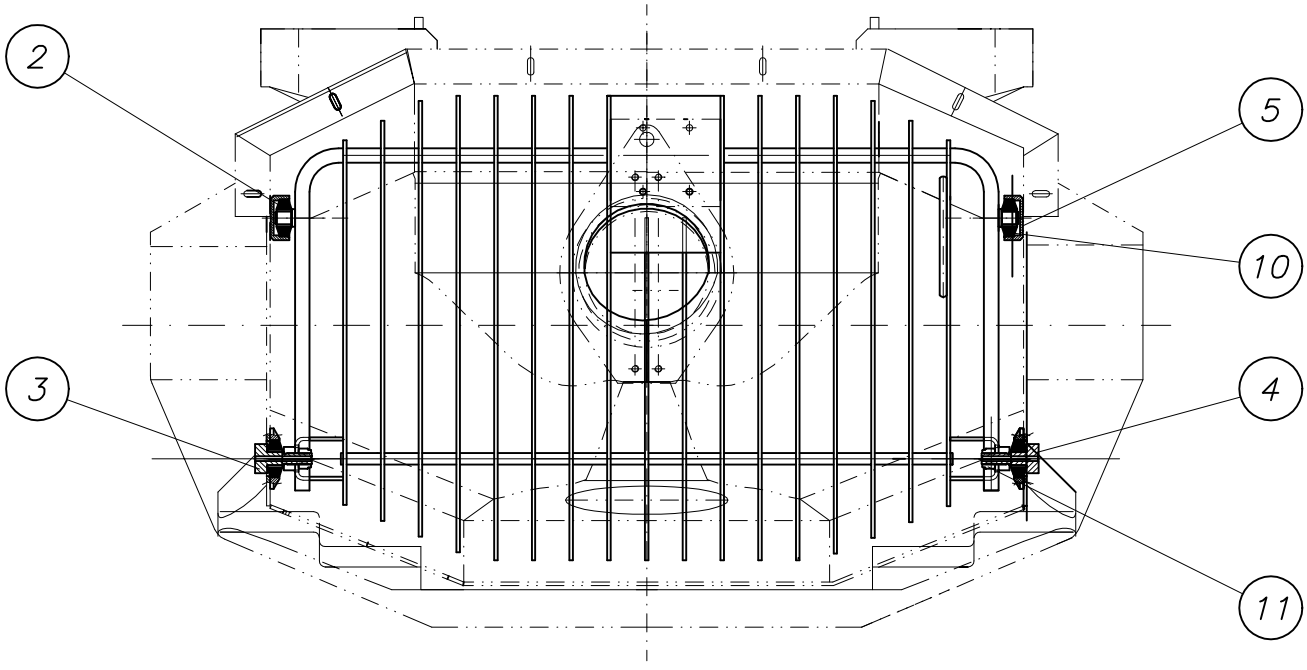
Gitterrost kpl.

grid cpl.

B 22 5 040c

Waitzinger
Baumaschinen GmbH





PARTS LIST

09.02.06 10:31:00

part list	description	created	index	valid from	valid to
B225040	grid cpl.	29.01.01 Mi	c	19.12.05	

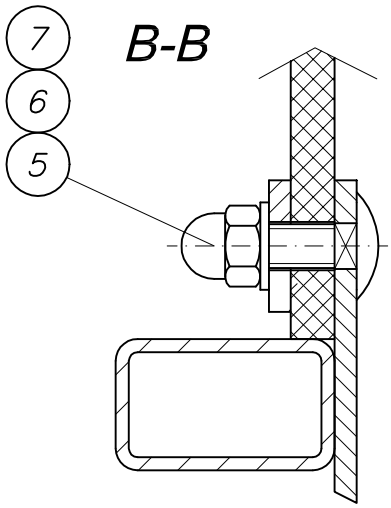
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	grate own parts list	B225010		d 21.12.05	33,42	1,00 Stk
2	housing for grating	B223061 Rd 80x20	1013 S355J2G3		0,50	1,00 Stk
3	bolt	B225041 Rd 50x104	1013 St52-3	b 05.04.05	0,20	1,00 Stk
4	bolt	B225085 Rd 50x109	1013 St52-3	a 05.04.05	0,20	1,00 Stk
5	handle for grating own parts list	B225094		a 02.02.06	0,95	1,00 Stk
10	rubber buffer 65 x 22,5 x 26	WAI102490			0,17	4,00 Stk
11	nut M20 DIN 985	WAI106610				2,00 Stk

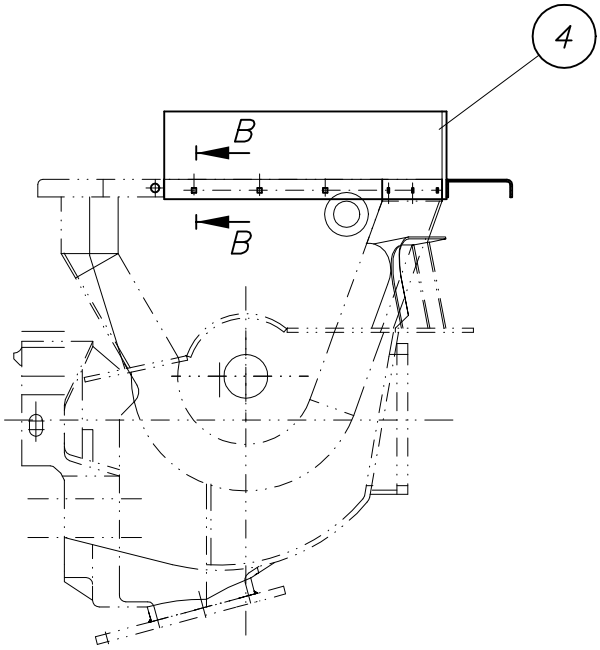
Gummischürze kpl.

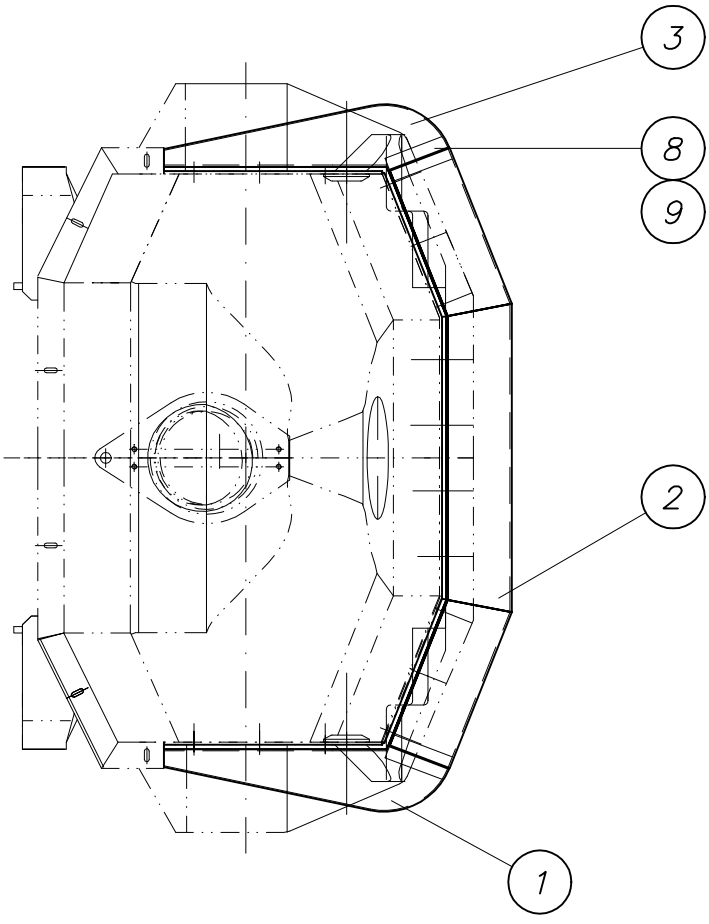
rubber apron cpl.

B 22 5 045a

Waitzinger
Baumaschinen GmbH







PARTS LIST

22.06.05 10:15:29

part list	description	created	index	valid from	valid to
B225045	rubber apron cpl	07.03.01 Mi	a	04.04.03	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	strip	B225042 Bl 4x220x701	1543/EN10029 St37-2	a 04.04.03	2,60	1,00 Stk
2	strip cpl. own parts list	B225053		b 02.03.04	10,00	1,00 Stk
3	strip	B225054 Bl 4x220x701	1543/EN10029 St37-2	b 30.11.04	2,60	1,00 Stk
4	rubber apron	B224013 Gummi 10x200x31		a 25.02.00		1,00 Stk
5	cup square neck bolt M 10 x 30	WAI103972				12,00 Stk
6	washer 10.5	WAI101559			0,00	12,00 Stk
7	cap nut M10	WAI101847				12,00 Stk
8	countersunk screw	WAI103176				4,00 Stk
9	hex. nut M6	WAI102998				4,00 Stk

Förderkolbenschmierung kpl.

conveying cyl. lubrication cpl.

B 18 3 006b

Waitzinger
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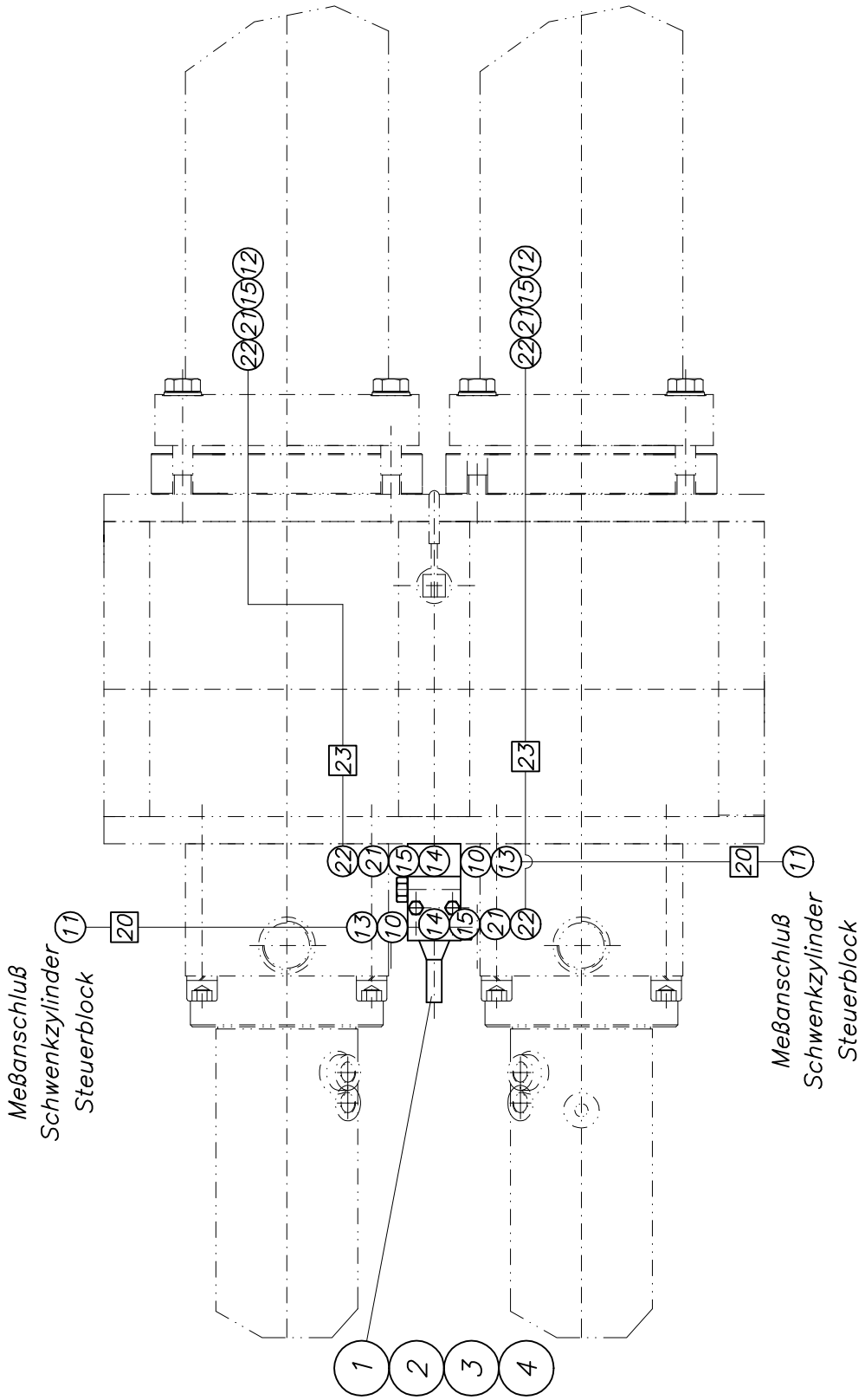

PARTS LIST

27.06.05 08:51:45

part list	description	created	index	valid from	valid to
B183006	conveyor cyl. autom. cpl.	15.01.99 Mi	b	01.03.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	holder for distributor	B183008 Bl 8x52x95	1543/EN10029 St37-2		0,30	1,00 Stk
2	distributor VSKH 2-D	WAI104402				1,00 Stk
3	hexagon bolt M 8 x 70	WAI105277				2,00 Stk
4	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	2,00 Stk
10	straight male stud couplings L8R 1/4"	WAI105202				2,00 Stk
11	swivel barrel tee L8	WAI100556			0,08	2,00 Stk
12	straight male stud couplings L6M	WAI103737				2,00 Stk
13	adjustable elbow bodies L8	WAI100589				2,00 Stk
14	male stud couplings L6 R 1/4" WD	WAI105434				2,00 Stk
15	adjustable elbow bodies L6	WAI102664			0,02	4,00 Stk
20	hydraulic hose DN 6 x 1000	WAI103234				2,00 Stk
21	hose connecting piece, DN6, short	WAI100253			0,01	2,00 Stk
22	threaded sleeve	WAI100254			0,01	2,00 Stk
23	plastic pipe 8.4 x 2.1	WAI100255			0,05	3,00 Mtr

Trichterabdeckung kpl.

cover for hopper cpl.

B 22 5 090a

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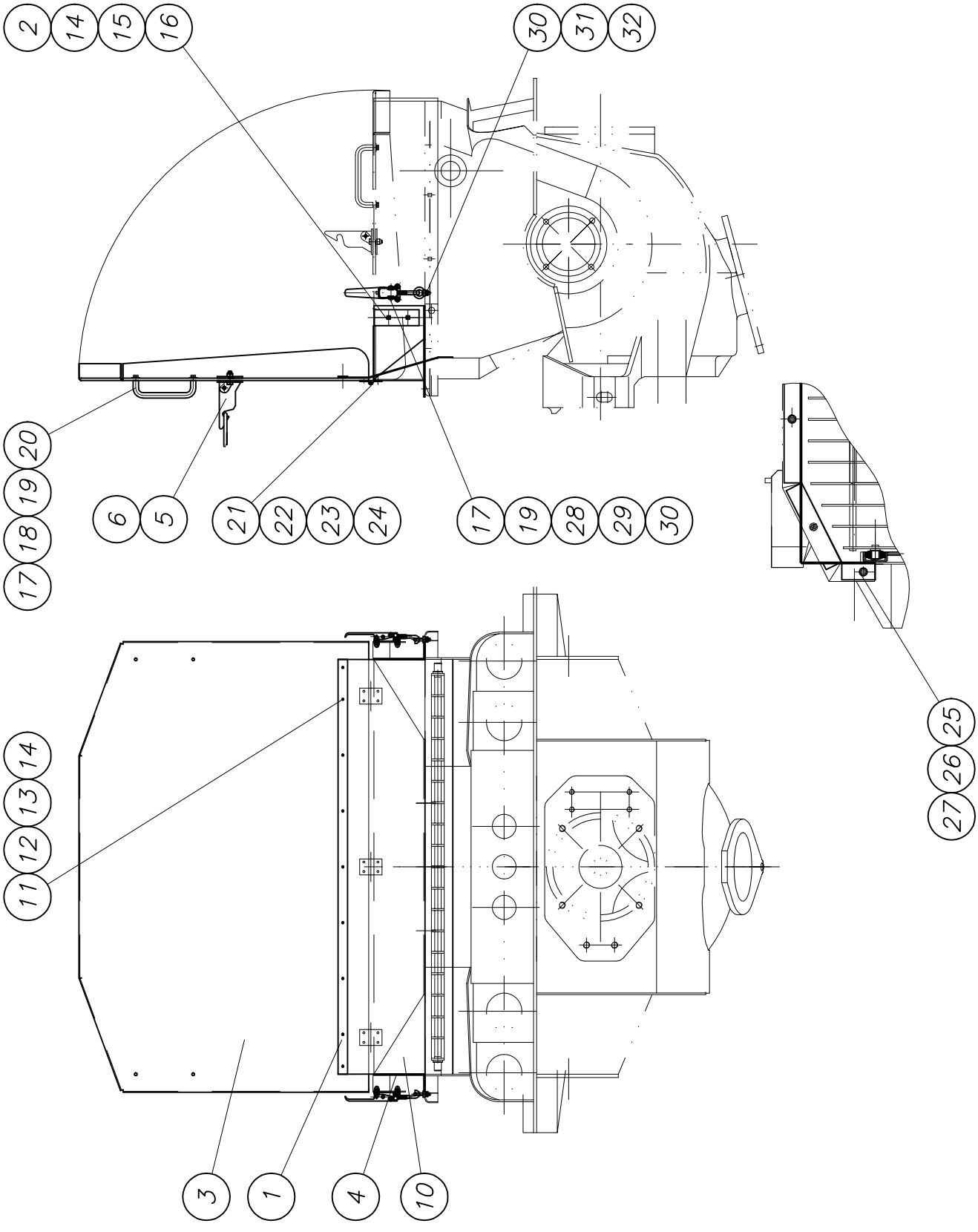

PARTS LIST

part list	description	created	index	valid from	valid to
B225090	cover for hopper cpl.	18.05.05 hbk	a	26.10.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	plate	B255063 Bl4x30x1280	10029 S235J2G3	a 19.07.05	1,20	1,00 Stk
2	plate	B255064 Bl5x50x140	10029 S235J2G3		0,27	2,00 Stk
3	splash board own parts list	B255065	 Alu	c 27.07.05	12,00	1,00 Stk
4	splash board own parts list	B255075			15,00	1,00 Stk
5	hook cpl. own parts list	B224025		a 06.09.05	0,90	1,00 Stk
6	holder	B224021 Rd 10x1060	1013 S355J2G3	a 23.05.05	0,65	1,00 Stk
10	rubber apron	WAI107190				1,00 Stk
11	countersunk head screw M6x20	WAI103153				9,00 Stk
12	washer 6 mm	WAI106432				9,00 Stk
13	spring washer A6	WAI103000				9,00 Stk
14	cup square neck bolt M 10 x 30	WAI103972				4,00 Stk
15	washer 10.5	WAI101559			0,20	4,00 Stk
16	cap nut M10	WAI101847				4,00 Stk
17	hexagon bolt M 8 x 20	WAI101837				10,00 Stk
18	washer 8.4 DIN9021	WAI102882				4,00 Stk
19	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	10,00 Stk
20	bow grip	WAI104441				2,00 Stk
21	hinge	WAI103237			0,10	3,00 Stk
22	countersunk screw	WAI103176				12,00 Stk
23	washer	WAI103572				12,00 Stk

PARTS LIST

04.11.05 08:41:55

part list	description	created	index	valid from	valid to
B225090	cover for hopper cpl.	18.05.05 hbk	a	26.10.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
24	hex. nut M6	WAI101624				12,00 Stk
25	cup square neck bolt M 10 x 25	WAI103971				6,00 Stk
26	hex. nut M10 DIN985 8.	WAI102125			0,01	6,00 Stk
27	washer 10.5	WAI101559			0,20	6,00 Stk
28	excentric lever, TUB043050	WAI109856				2,00 Stk
29	cap nut M8	WAI104933				6,00 Stk
30	washer 8.4	WAI101625				8,00 Stk
31	ring screw M 08	WAI109871			0,10	2,00 Stk
32	stop nut M8 DIN985 8. VERZ.	WAI102111			0,05	2,00 Stk

Rührwerk mit Antrieb kpl.

agitator with drive cpl.

B 25 5 080

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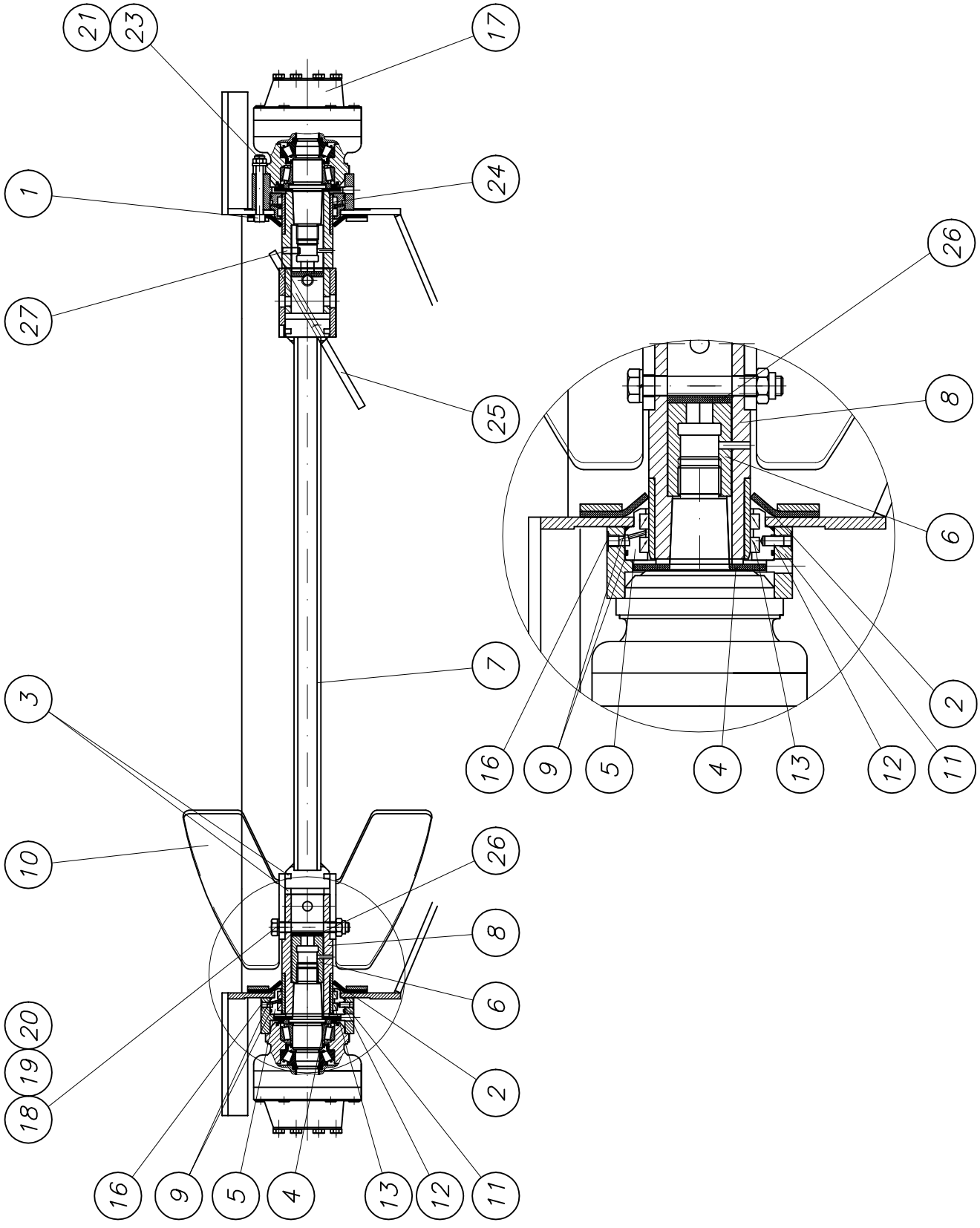

06.07.2005

PARTS LIST

28.09.05 09:53:53

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B255080	agitator with drive	13.06.05 TECHNIK			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	washer cpl. own parts list	B255092			1,00	2,00 Stk
2	seal disc	B255044 5xd 240	Gummi 70 Shore	a 31.03.04		2,00 Stk
3	sealing	B255083 Gummi 8x 76x 76	Gummi 60Shore			4,00 Stk
4	seal disc	B254109 5xDurchm.110	Gummi 60 Sho			2,00 Stk
5	sealing carrier	B255078 Rd 140x 50	DIN 1013 S355J2G3		0,31	2,00 Stk
6	shell	B255025 Rd 50x84	1013 S355J2G3	a 17.09.03	0,70	2,00 Stk
7	agitat shaft complete own parts list	B255079				1,00 Stk
8	shaft	B255028 Rd 85x208	1013 S355J2G3	c 01.07.05	5,00	2,00 Stk
9	O-ring 120 x 3	WAI108298				4,00 Stk
10	agitator cpl. left own parts list	B255085			4,50	1,00 Stk
11	motor support	B255076 Bl. 70x 155x 15	DIN EN10029 S235J2G3		4,80	2,00 Stk
12	set screw M 10x1x 20	WAI109709				2,00 Stk
13	groove ring 85-100-11.5	WAI102544			0,02	4,00 Stk
16	male stud LL6M 6 x 1	WAI102603				2,00 Stk
17	hydraulic motor MCR 3D 280 own parts list	WAI101240			28,00	2,00 Stk
18	washer DIN 6916 17	WAI101558			0,02	4,00 Stk
19	nut M16 DIN 985	WAI102330				4,00 Stk
20	hexagon bolt	WAI107513			0,21	4,00 Stk
21	hex. nut M12 DIN 985 8. VERZ.	WAI101626				2,00 Stk
23	washer	WAI102962			0,01	8,00 Stk

PARTS LIST

28.09.05 09:53:53

part list	description	created	index	valid from	valid to
B255080	agitator with drive	13.06.05 TECHNIK			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
24	wear sleeve	B253020 Rohr 101.6x13.5	2448 StE690	b 30.03.99	0,34	2,00 Stk
25	agitator cpl. right own parts list	B255088		a 28.07.05	4,50	1,00 Stk
26	seal disc	B255057 8xD53	Gummi 70 Shore			2,00 Stk
27	straight pin 10 H 6 x 30	WAI103065				2,00 Stk

Hydraulikmotor

hydraulic engine

WAI 101240

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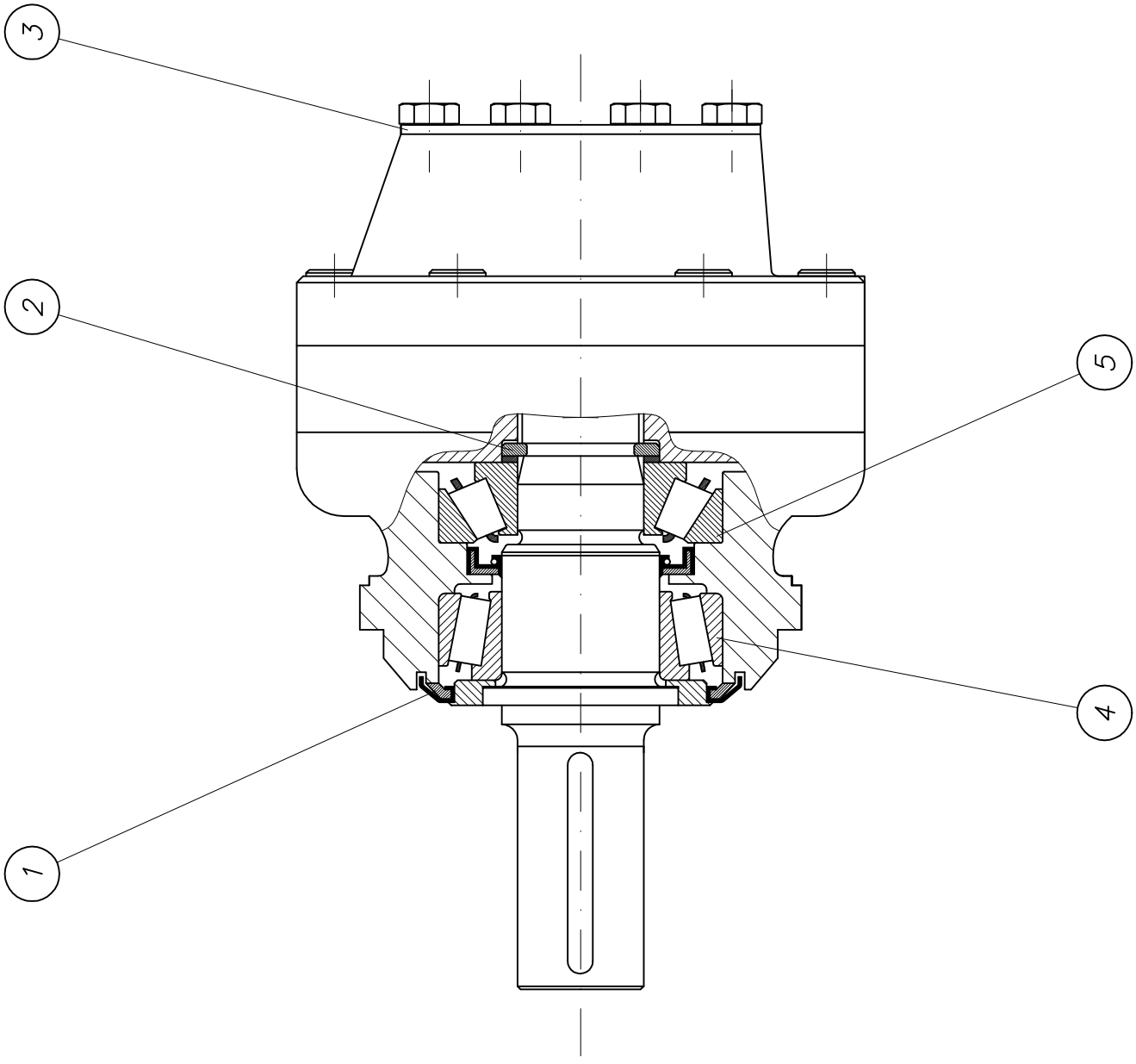

02.08.2001

PARTS LIST

22.06.05 10:16:57

part list	description	created	index	valid from	valid to
WAI101240	hydraulic motor MCR 3D 280	27.08.99 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	sealing set own parts list	WAI101241			0,10	1,00 Stk
2	split ring	WAI104395				1,00 Stk
3	cover f. mcr3 hydraulic motor	WAI104755				1,00 Stk
4	roller bearing 850717	WAI105715			0,70	1,00 Stk
5	roller bearing no. 851416	WAI105716			0,80	1,00 Stk

Übersicht B 30 - B 39

over view B 30 - B 39

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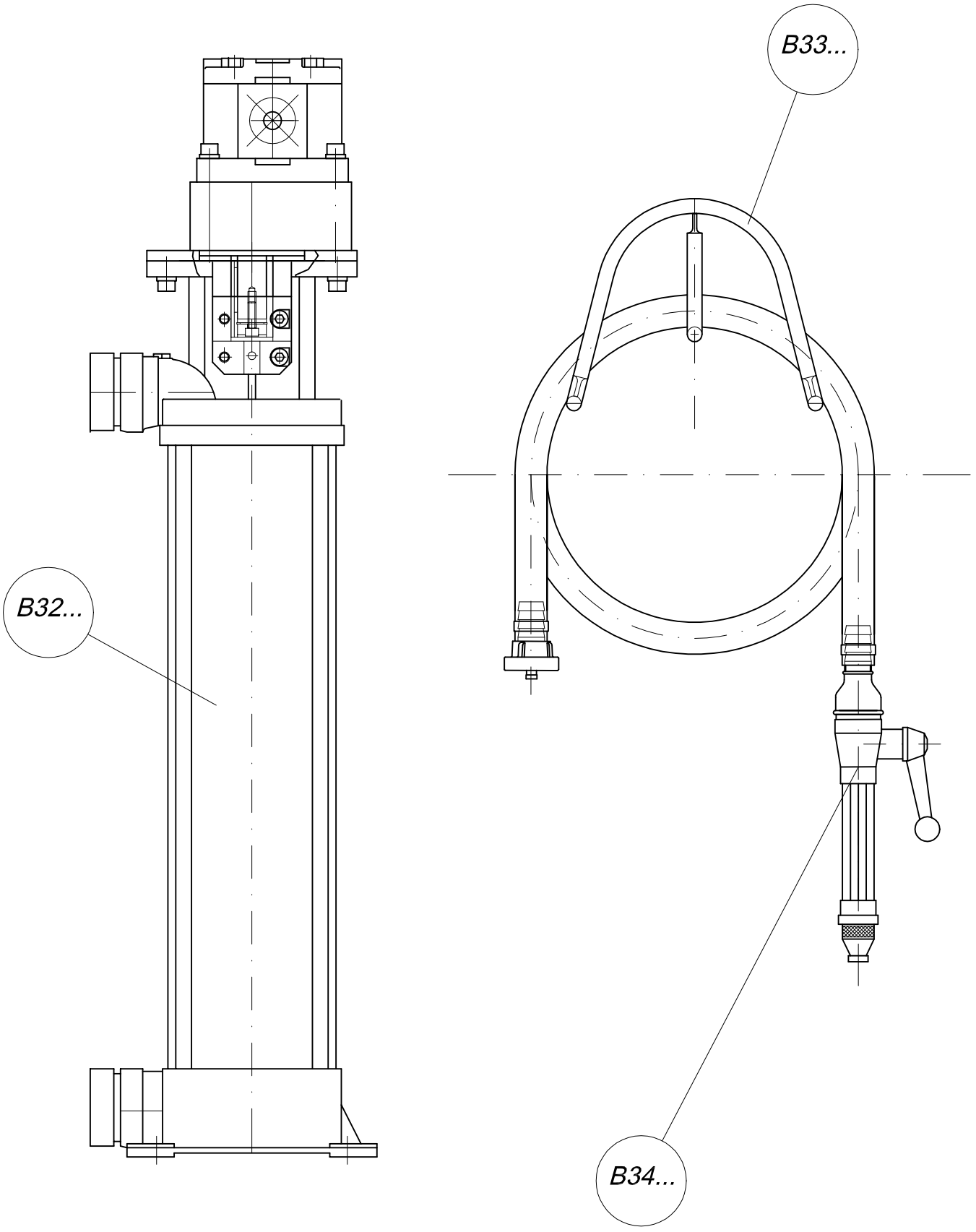

22.07.2002

Wasserpumpe kpl.

water pump cpl.

B 32 3 070

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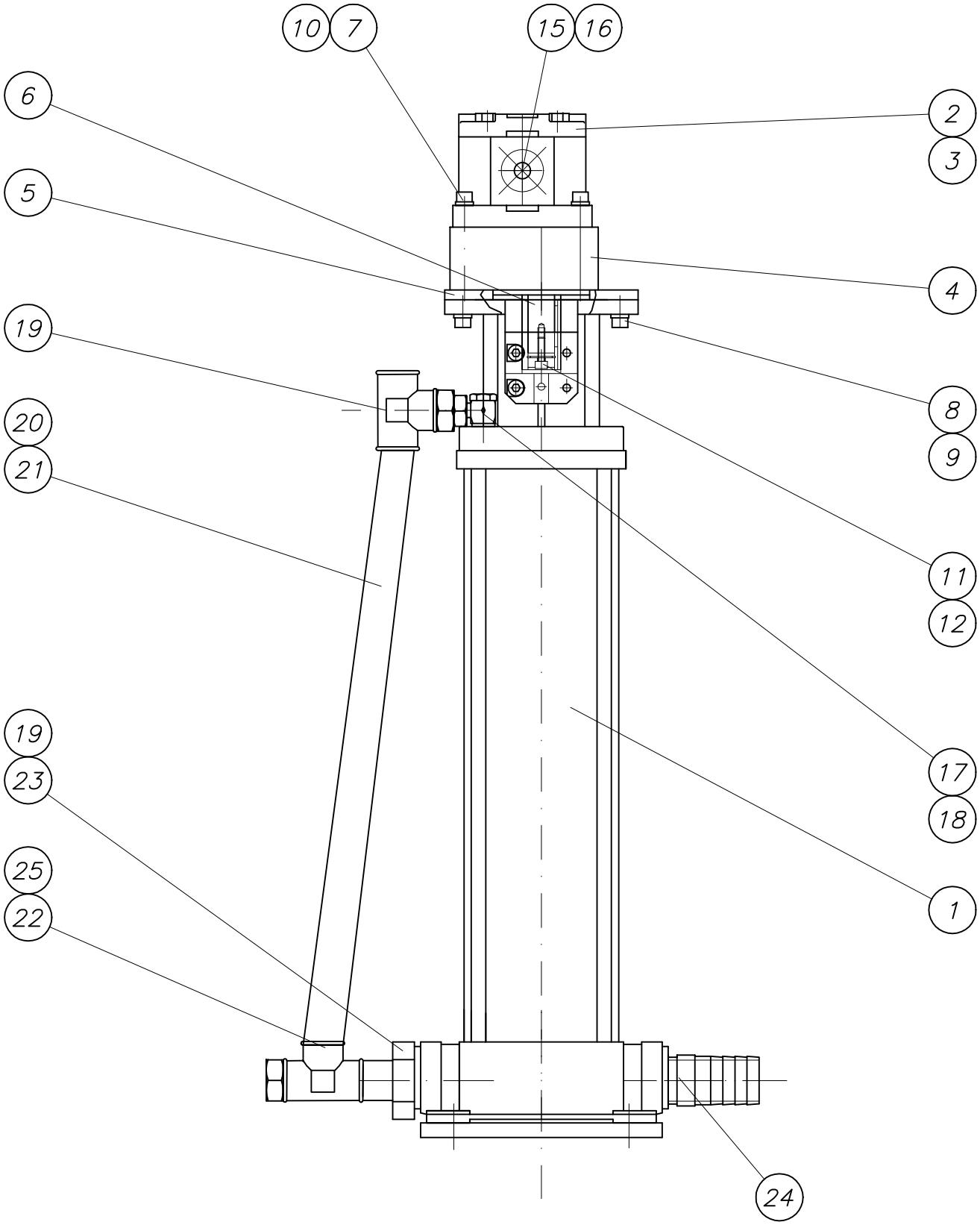
Baumaschinen GmbH



PARTS LIST

27.06.05 10:56:48

part list	description	created	index	valid from	valid to
B323070	water pump with drive	02.04.03 rhbk			

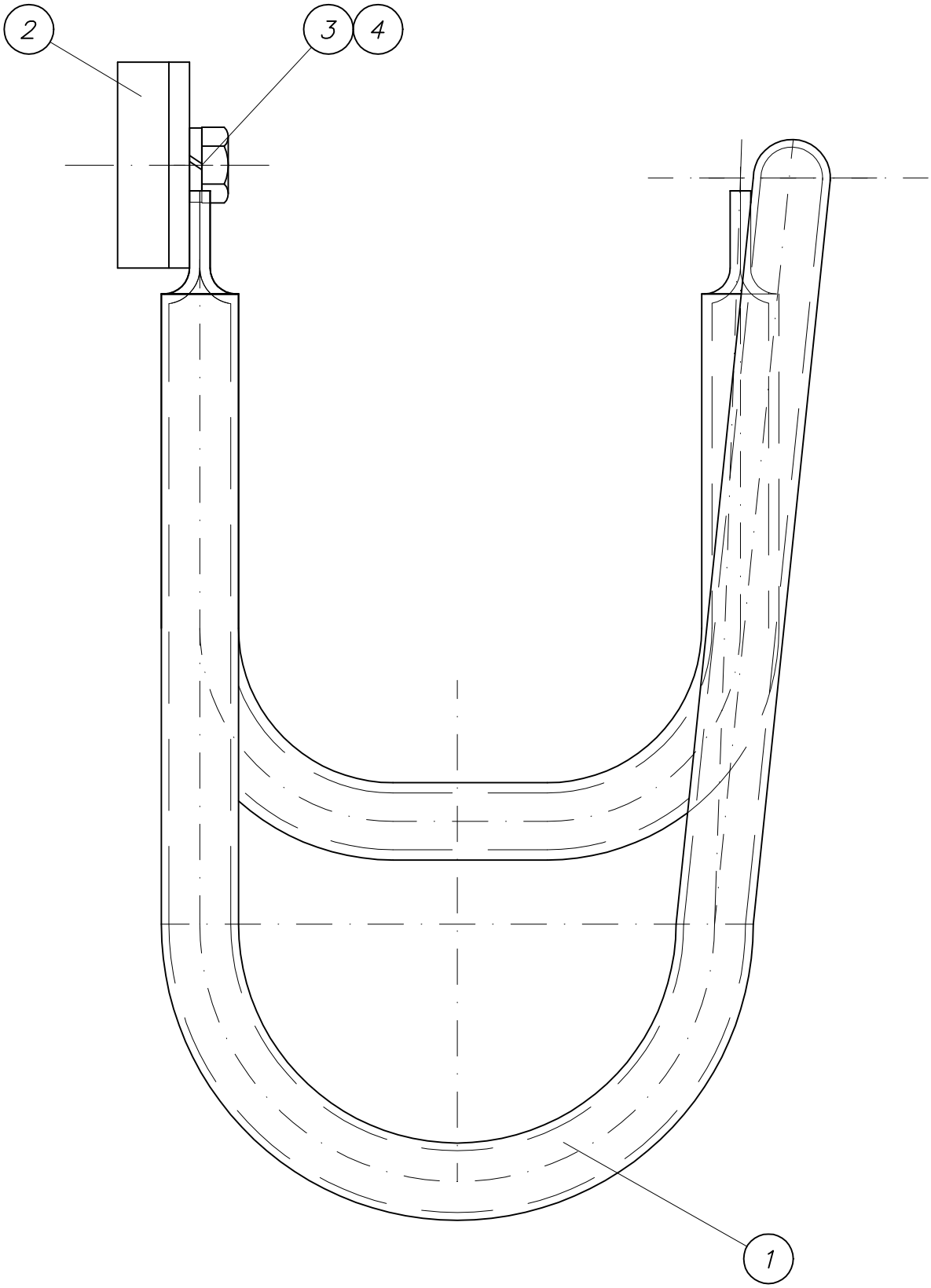
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	water pump INV	WAI108082				1,00 Stk
2	gear motor own parts list	WAI105922				1,00 Stk
3	splined coupling	WAI102916				1,00 Stk
4	belt pulley support	WAI102915				1,00 Stk
5	flange	B323061 Rd 170 x12	1013 S235J2G3		1,35	1,00 Stk
6	coupling piece	B323019 Rd 38x58	670 ST50-k			1,00 Stk
7	alien bolt M 8x70	WAI105929				4,00 Stk
8	alien bolt M 8x25	WAI105930				5,00 Stk
10	spring washer	WAI100235			0,00	8,00 Stk
11	locking ring	WAI105931				1,00 Stk
12	washer	B323023 Rd 22x6	670 St50-2k		0,05	1,00 Stk
15	elbow flange coupling L15-40	WAI102678			0,23	1,00 Stk
16	elbow flange coupling L12-35	WAI105921			0,23	1,00 Stk
17	bow	WAI104163				1,00 Stk
18	thread red.adaptors"3/4-3/8"	WAI100347			0,09	1,00 Stk
19	t-piece	WAI103590				2,00 Stk
20	hose	WAI102117				0,50 Mtr
21	hose clamp 25-28 mm	WAI108309				4,00 Stk
22	hose socket	WAI105993				1,00 Stk
23	double nipple 3/4"	WAI103566				1,00 Stk
24	nipple	B323059 Rohr 42.4x4.5x9	2448 S235J2G3		0,30	1,00 Stk
25	connecting piece waterpump	B323062 Rohr 42,2x4.5x6	2448 S235J2G3		0,30	1,00 Stk

Halter für Wasserschlauch kpl.

holder for water pipe cpl.

B 33 0 020

Waitzinger
Baumaschinen GmbH



29.07.2002

PARTS LIST

27.06.05 10:58:29

part list	description	created	index	valid from	valid to
B330020	holder for water hose	06.06.02 ek			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	holder for water hose own parts list	B330015			1,00	1,00 Stk
2	flat bar	B330018 Bl 10x40x260	1543 St 37-2	a 27.09.02	0,30	1,00 Stk
3	hexagon bolt M 8 x 12 DIN 933 8.8	WAI103274				2,00 Stk
4	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	2,00 Stk

Übersicht B 40 - B 49

over view B 40 - B 49

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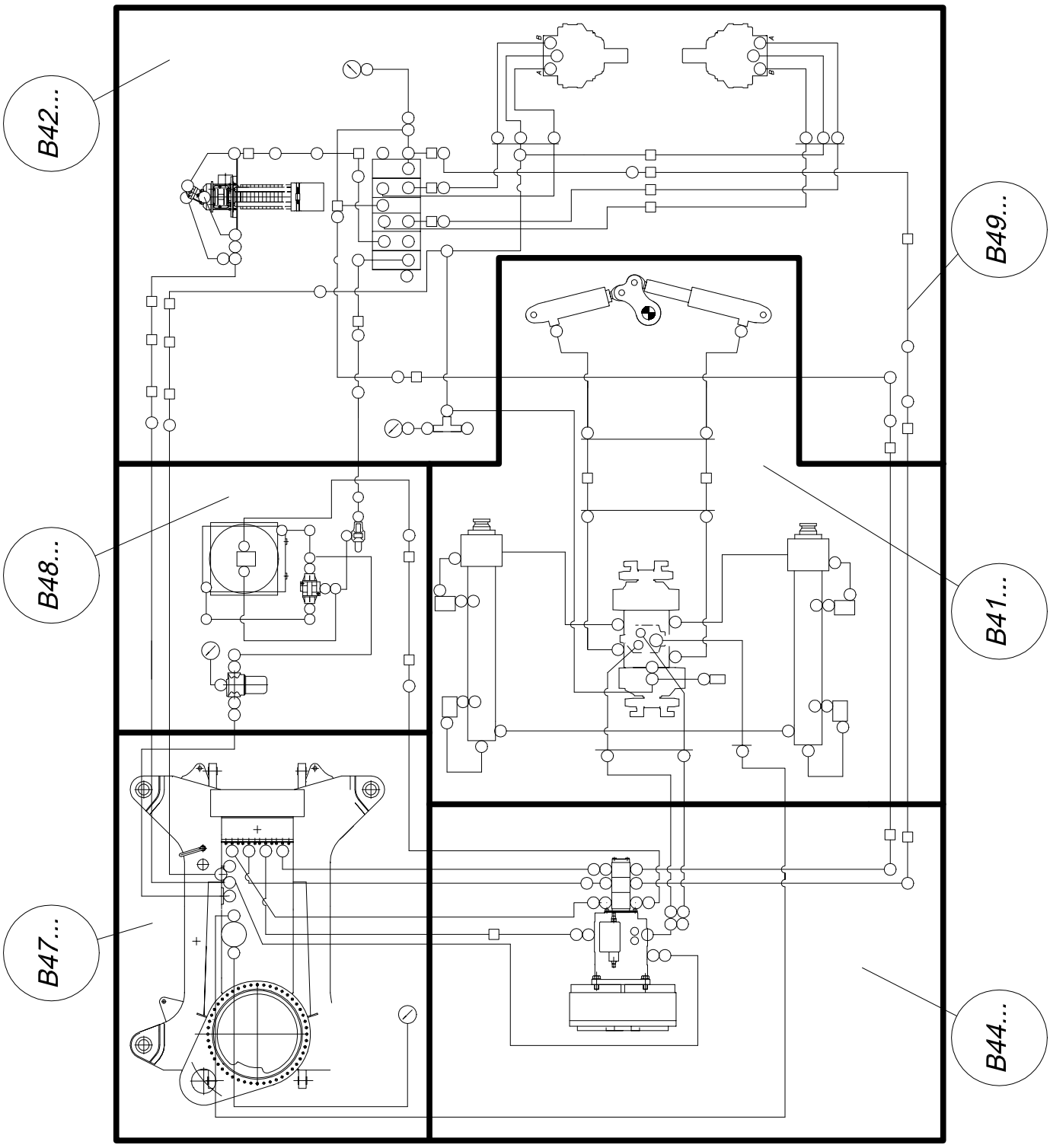

Blasenspeicher
hydraulic accumulator

WAI 103616

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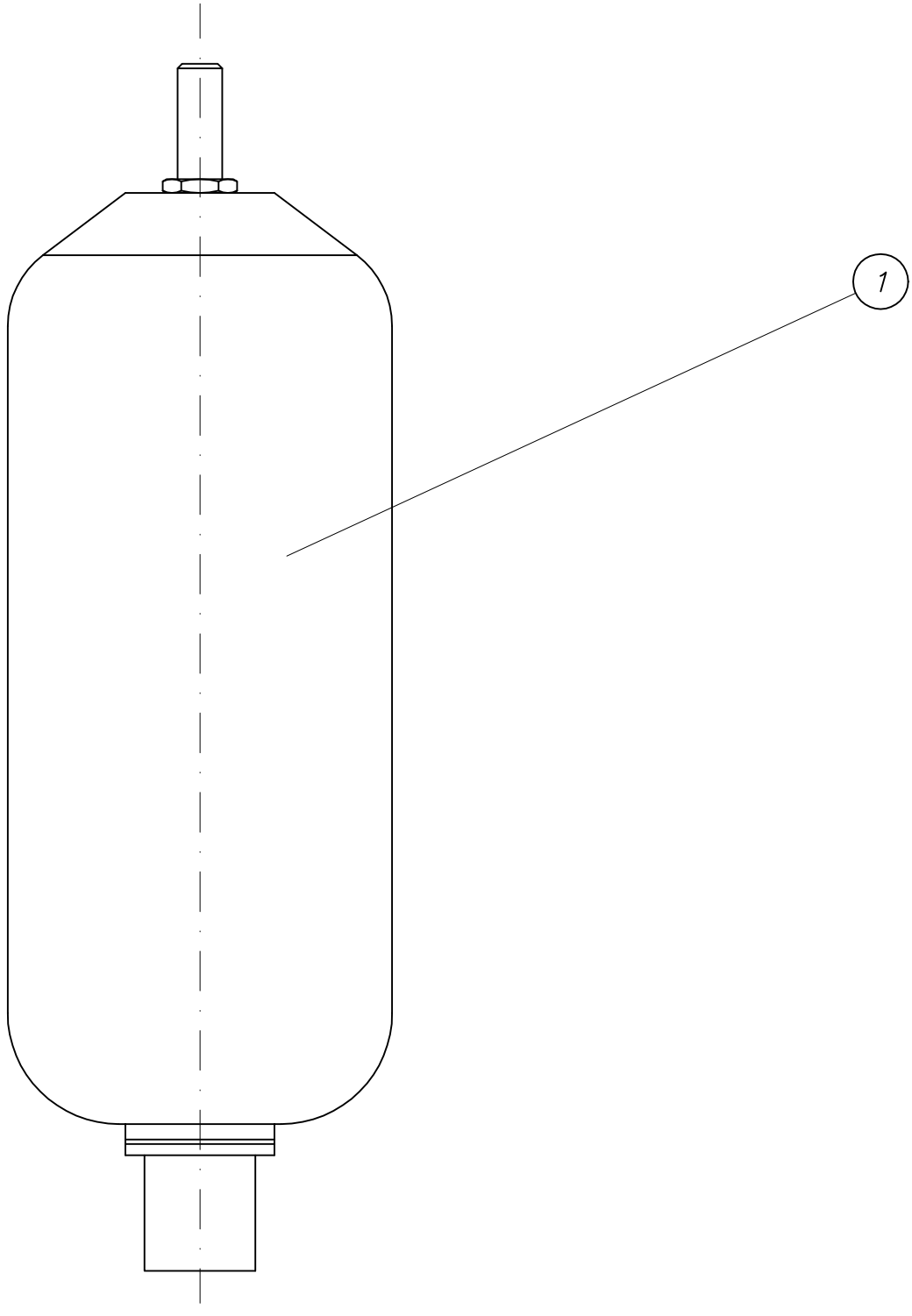
Baumaschinen GmbH



PARTS LIST

28.09.05 11:17:13

part list	description	created	index	valid from	valid to
WAI103616	hydraulic accumulator 6 liter	01.09.99 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	spare bubble for hydraulic accumulator	WAI105555				1,00 Stk

Übersicht B 50 - B 59

over view B 50 - 59

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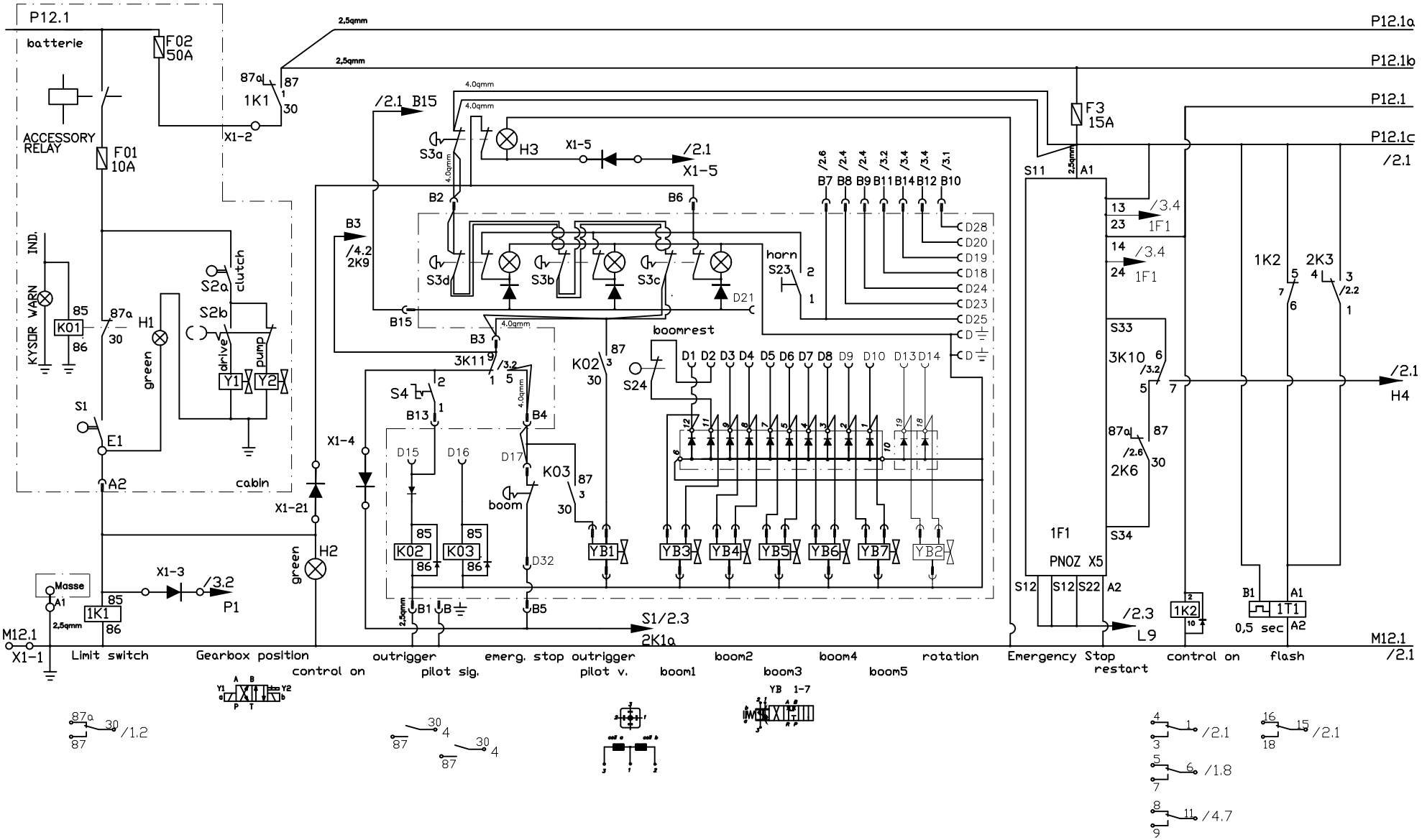

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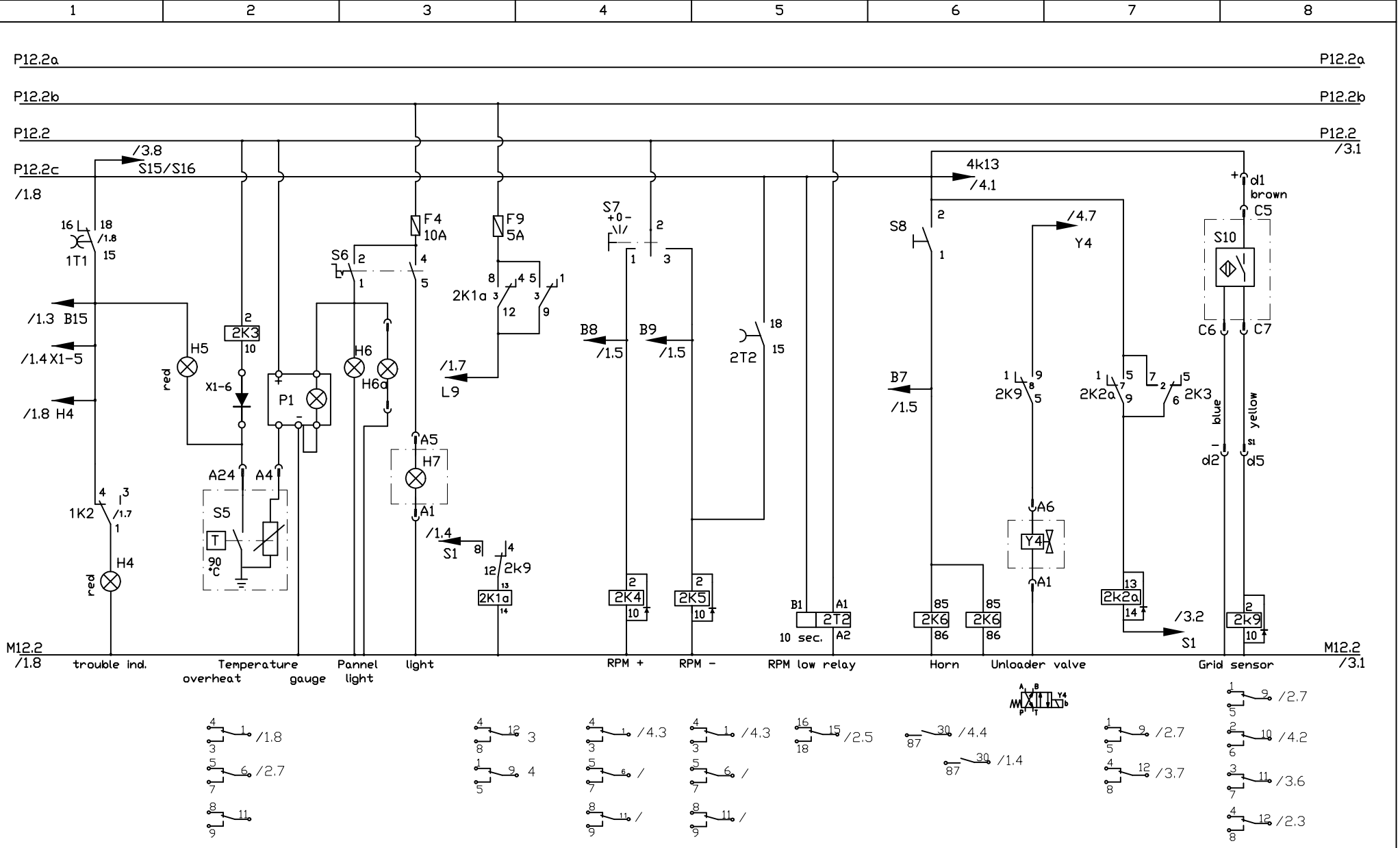
				DRAWN	2000/03/27	Fetzer	control panel V4 Page 1	
				CHKD.				
				APPD.				
d	siehe B_513017.doc	19.07.05	Körner					
c	siehe B_513017.doc	24.02.05	Körner					
b	siehe B_513017.doc	02.02.04	Körner	CHANGE ONLY WITH CAD			B 51 3 017	SHEET
a	siehe B_513017.doc	15.01.04	Körner					OF
ISSUE	MODIFICATION	DATE	NAME	ORIGINAL			REPLACEMENT FOR	REPLACEMENT BY



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				CHKD.			
				APPD.			
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b	siehe B_513017.doc	02.02.04	Körner				SHEET / OF
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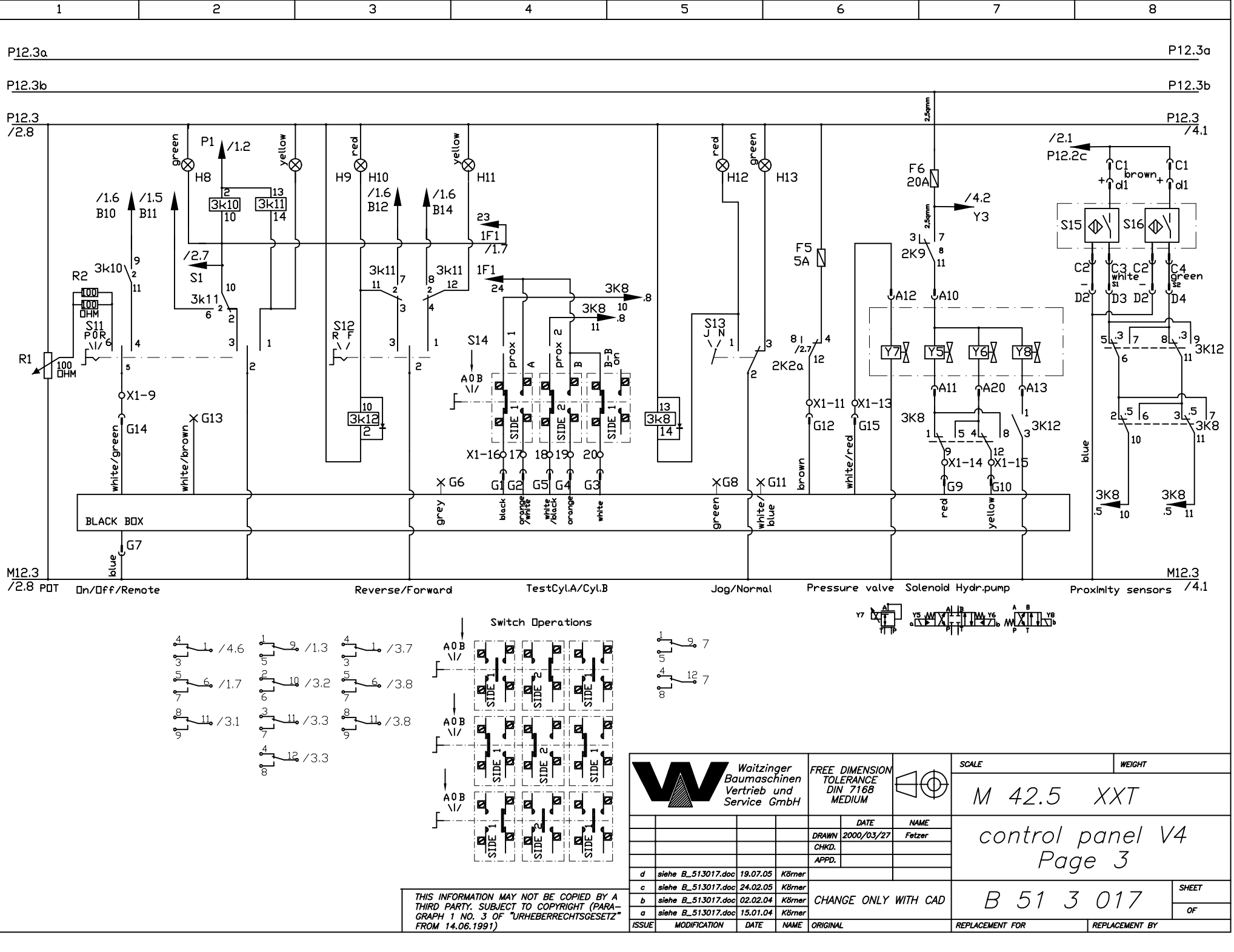

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Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2000/03/27	Fetzer
CHKD.		
APPD.		

ISSUE	MODIFICATION	DATE	NAME
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c	siehe B_513017.doc	24.02.05	Körner
b	siehe B_513017.doc	02.02.04	Körner
a	siehe B_513017.doc	15.01.04	Körner
ORIGINAL			

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SCALE

WEIGHT

M 42.5 XXT

control panel V4
Page 3

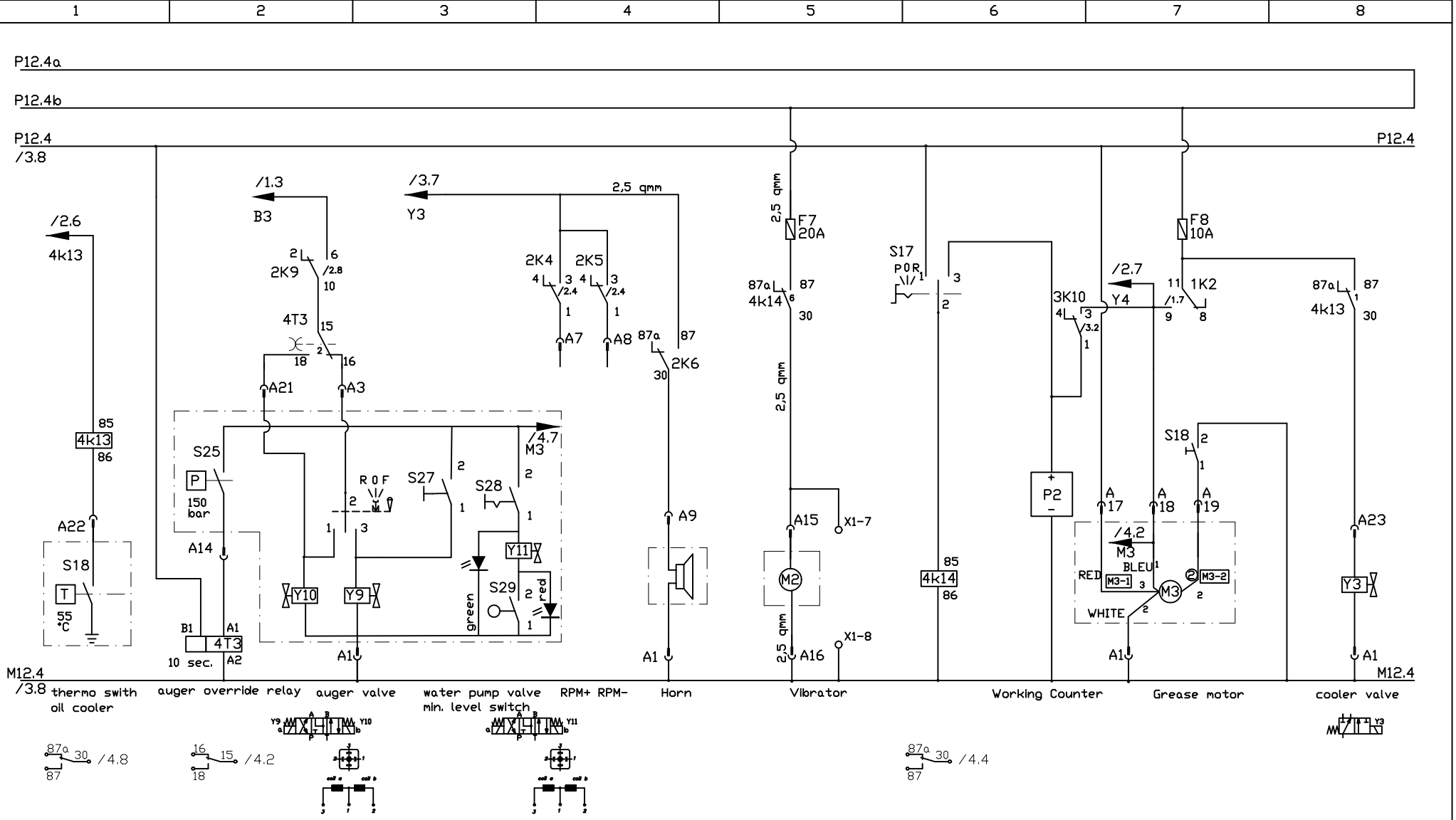
B 51 3 017

SHEET

OF

REPLACEMENT FOR

REPLACEMENT BY



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				APPD.			
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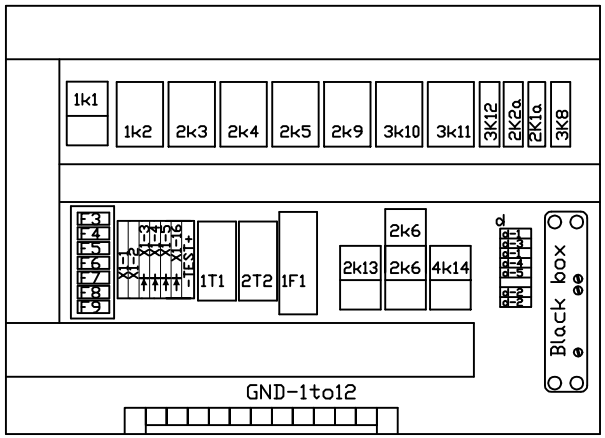

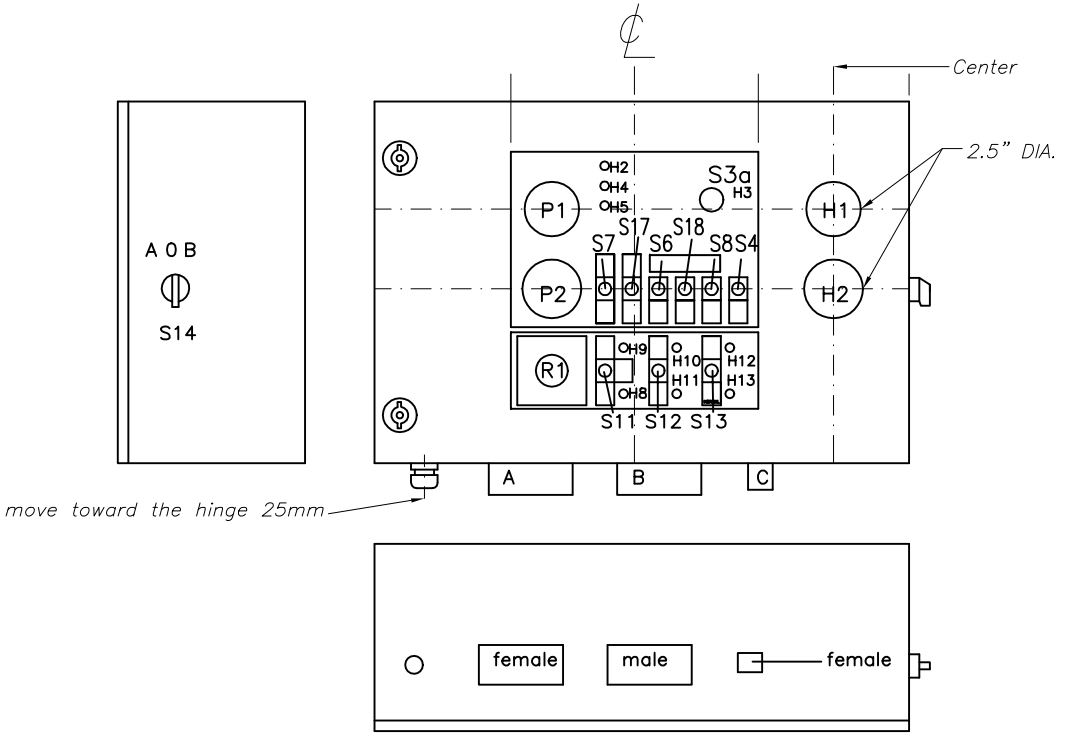

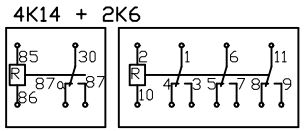

ISSUE	MODIFICATION	DATE	NAME
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a	siehe B_513017.doc	15.01.04	Körner

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

CHANGE ONLY WITH CAD

ORIGINAL

	DATE	NAME
DRAWN	2000/03/27	Fetzer
CHKD.		
APPD.		

SCALE

WEIGHT

M 42.5 XXT

control panel V4
Page 5

B 51 3 017

SHEET

OF

REPLACEMENT FOR

REPLACEMENT BY

STÜCKLISTEN-DRUCK

Stückliste	Benennung	Anlage	Änderungsindex	gültig ab	gültig bis
B513017	SCHALTPULT WAI 106059 VERSION 4	07.02.01 Mi	c	24.02.05	

Pos	Bezeichnung Rohmaterial	Sach-Nr. Abmessung	DIN Werkstoff	Index	Gewicht Kg	Anzahl Einheit
1	Not-Stop Schalter	WAI105094				1,00 Stk
2	Kontaktblock m. Lampenfassung	WAI105095				1,00 Stk
3	Schild "emergency - stop" ZB2-BY9330	WAI102278				1,00 Stk
4	Lampe 12V-2W BA 9S	WAI104083			0,10	1,00 Stk
5	LED-Signalleuchte 12 VDC 14 mm, rot	WAI105811				4,00 Stk
6	LED-Signalleuchte 12 VDC 14 mm, gelb	WAI105812				2,00 Stk
7	LED-Signalleuchte 12 VDC 14 mm, grün	WAI105813				3,00 Stk
8	Hebelschalter - abged. MOM-OFF-MOM 2	WAI103976				1,00 Stk
9	Hebelschalter - abgedichtet ON-OFF-ON	WAI104090				2,00 Stk
10	Hebelschalter - abgedichtet MON-ON	WAI104091				2,00 Stk
11	Hebelschalter - abgedichtet ON-OFF	WAI104089				2,00 Stk
12	Hebelschalter - abgedichtet ON-ON	WAI104092			0,10	2,00 Stk
13	Relais - Industrie 3W, 12VDC	WAI104093				7,00 Stk
14	Relaissockel 11-pol. ohne Diode	WAI104859				2,00 Stk
15	Relaissockel 10A, 380V, 11 Pins	WAI100178				5,00 Stk
16	Haltebügel f. Industrierelais	WAI104094				7,00 Stk
17	Sicherungskasten	WAI101577				1,00 Stk
18	Stecksicherung 5 A	WAI101922				1,00 Stk
19	Stecksicherung 10 A	WAI101921				3,00 Stk
20	Stecksicherung 20 A	WAI104096				2,00 Stk

STÜCKLISTEN-DRUCK

Stückliste	Benennung	Anlage	Änderungsindex	gültig ab	gültig bis
B513017	SCHALTPULT WAI 106059 VERSION 4	07.02.01 Mi	c	24.02.05	

Pos	Bezeichnung Rohmaterial	Sach-Nr. Abmessung	DIN Werkstoff	Index	Gewicht Kg	Anzahl Einheit
21	Betriebsstundenzähler	WAI100900				1,00 Stk
22	Anbaugehäuse CNI 16	WAI104097				1,00 Stk
23	Steckereinsatz 1-16 pol.	WAI104022				1,00 Stk
24	Anbaugehäuse 24-pol. Gr. 8	WAI101533				1,00 Stk
25	Steckdoseneinsatz 24-pol.	WAI100710				1,00 Stk
26	Erdungsschiene für Steuerpult WAI100251	WAI102577				1,00 Stk
27	Schaltplantasche	WAI104099				1,00 Stk
28	Gummipuffer 25 x 20 2 Bolzen	WAI104100				4,00 Stk
29	Verteilersystem 4-fach MVP 12	WAI105998				1,00 Stk
30	Lampe 12V-5W	WAI104101			0,10	3,00 Stk
31	Potentiometer 100 Ohm	WAI104103				1,00 Stk
32	Potentiometer - Antrieb schwarz	WAI104104				1,00 Stk
33	Kabelverschraubung PG21	WAI104109				1,00 Stk
34	Kabelverschraubung PG11	WAI104110				1,00 Stk
35	Gegenmutter PG21	WAI104114				1,00 Stk
36	Stecker für UK 4-TG leer ST-BE	WAI106395				1,00 Stk
37	Relais 12 VDC, 1W	WAI104117				4,00 Stk
38	Relaissockel für Bosch Relais	WAI100986				4,00 Stk
39	Gegenmutter PG11	WAI104112				1,00 Stk
40	Relais - Hochl. 12VDC, 70A, 1S	WAI104122				1,00 Stk

STÜCKLISTEN-DRUCK

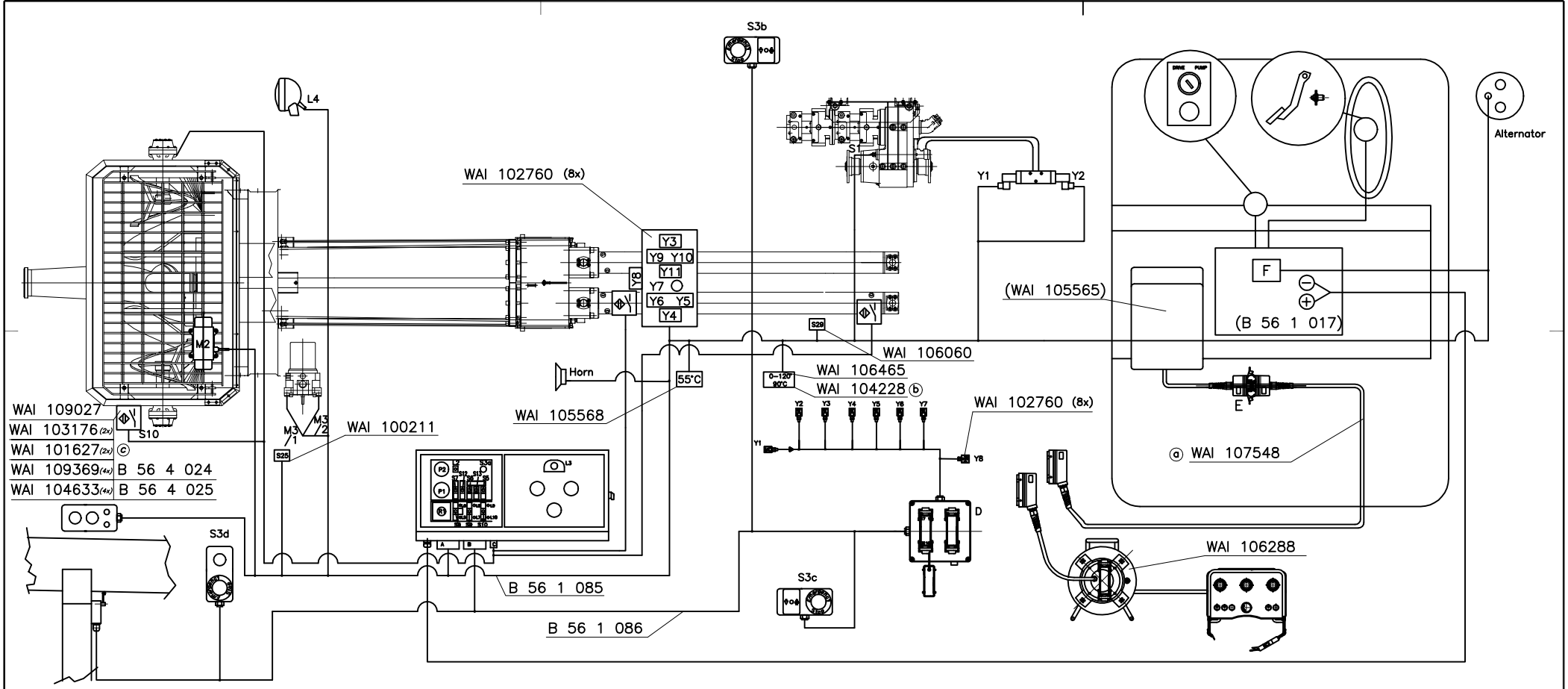
Stückliste	Benennung	Anlage	Änderungsindex	gültig ab	gültig bis
B513017	SCHALTPULT WAI 106059 VERSION 4	07.02.01 Mi	c	24.02.05	

Pos	Bezeichnung Rohmaterial	Sach-Nr. Abmessung	DIN Werkstoff	Index	Gewicht Kg	Anzahl Einheit
41	Relaissockel	WAI105619				1,00 Stk
42	Kabelverschraubung PG16 vernickelt	WAI102933				1,00 Stk
43	Widerstand 100 Ohm, 4,5W	WAI104118				2,00 Stk
47	Durchgangsklemme grau 2-Leiter 6qmm	WAI105817				2,00 Stk
48	Abschluß- und Zwischenplatte orange	WAI105818				1,00 Stk
49	Knebel	WAI100968				1,00 Stk
50	Halter	WAI100287				1,00 Stk
51	Schaltelement	WAI100969				3,00 Stk
52	Schalter - Brücke 3SB1S12OAN	WAI103735				2,00 Stk
53	Relais - Miniatur DC 12V 4 Wechsler	WAI105046				4,00 Stk
54	Kondensatablauf	WAI104669				1,00 Stk
55	Klemme UK 4-TG	WAI104186				7,00 Stk
56	Stecker m. Diode, ST-1N4007	WAI104185				6,00 Stk
57	Crimpkontakt - Stift 0,75 - 1 qmm	WAI103695				2,00 Stk
59	Relais - Zeit blinkend RZ12Ti-01	WAI105331				1,00 Stk
60	Relais - Ausschalt-Wisch EZ12RV-001	WAI105815				1,00 Stk
61	Not-Aus-Schaltgerät PNOZ X5	WAI105814				1,00 Stk
62	Alu-Klebeschild m. Bohr. für WAI105542	WAI105819				1,00 Stk
63	Klemme UK 5 N f. Hutschiene	WAI104671				2,00 Stk
64	Fassung 14-pol. m. Freilaufdiode	WAI103974			0,02	4,00 Stk

STÜCKLISTEN-DRUCK

Stückliste	Benennung	Anlage	Änderungsindex	gültig ab	gültig bis
B513017	SCHALTPULT WAI 106059 VERSION 4	07.02.01 Mi	c	24.02.05	

Pos	Bezeichnung Rohmaterial	Sach-Nr. Abmessung	DIN Werkstoff	Index	Gewicht Kg	Anzahl Einheit
65	Haltebügel f. Miniaturrelais	WAI104860			0,02	4,00 Stk
66	Fernthermometer 12 Volt	WAI105823				1,00 Stk
67	Black box	WAI104442				1,00 Stk
68	Gegenmutter CE16 PA 6	WAI104519				1,00 Stk
69	Leuchte innen 2JA 001 330-001	WAI106402				1,00 Stk
71	Relais - Zeit 12V, Multifunktion	WAI106393				1,00 Stk
72	Kennzeichenleuchte klein 2KA 001 389-10	WAI106182				1,00 Stk



PLUG A

1	Y3+L4+M3/1+ Y4+Y7+FAN	brn
2	S1>F1	blk/whi
3	Y3−1	red/yel
4	temp. switch	yel/whi
5	L4	grn/whi
6	Y4−1	blu/whi
7	F3	blu
8	F2	blk
9	Horn	blk
10	Y5−1/hopper Y6/Y8/Y9	blk/grn
11	Y5− 2	blk/red
12	Y7	gry/red
13	Y8	whi/brn
14	Y9	vio
15	M2	blk
16	M2	blu
17	M3/1 −1	gry
18	M3/1−3	grn
19	M3/2 −2	yel
20	Y6	whi
21	temp switch	whi
22	temp switch	whi
23	Y10	grn
24	free	free
	F5	red
	F6	gry/blk

PLUG B

1	D10−|||	brn	ground
2	S3b	gry	emergency stop
3	S3c	blk	emergency stop
4	D13	blu	emergency stop
5	D 22	gry/red	emergency stop
6	S3b−d	white	emergency stop
7	D 20	whi/grn	horn
8	D 15	grn	RPM +
9	D 16	blk/whi	RPM −
10	D 24	vio	Pot
11	D 17	blk/grn	pumping on
12	D 19	gry/blk	reverse
13	free	free	free
14	D 18	blu/whi	pumping
15	D 21	blk/red	flashing light
16	free	free	free

PLUG C

pin No.	wire No.	function
1	brown	+
2	blue	−
3	black	Sensor 1
4	black	Sensor 2
5		
6		
7		
8		

PLUG D

⏚	A 1	brn	ground
1	Y3/3	brn/whi	boom 1 up
2	Y3/2	blu	boom 1 down
3	Y4/3	grn/whi	boom 2 up
4	Y4/2	blk/grn	boom 2 down
5	Y5/3	gry/blk	boom 3 up
6	Y5/2	blk/whi	boom 3 down
7	Y6/3	blk/red	boom 4 up
8	Y6/2	gry/red	boom 4 down
9	free	free	free
10	−|||	brn	ground
11	Y2/2	vio	turn clockwise
12	Y2/3	blu/whi	turn anticlockw.
13	B4	red	plus
14	Y1/2/3 Y7	gry	pilot valve
15	B 8	grn	RPM +
16	B 9	blk/whi	RPM −
17	B 11	blk/grn	pumping on
18	B 14	blu/whi	pumping
19	B 12	gry/blk	reverse
20	B 7	whi/grn	horn
21	B 15	blk/red	free
22	B 5	gry/red	emergency stop
23	Y7	brn/whi	free
24	B 10	vio	POT

PLUG E

pin No.	wire No.	function	pin No.	wire No.	function
1	1	power supply 12V	17	34	boom 4 up
2	3	emergency stop	18	31	boom 3 down
3	4	12 V+	19	32	boom 3 up
4	5	RPM−	20	29	turn clockwise
5	6	free	21	30	turn anticlockw.
6	8	horn	22	28	boom 1 down
7	11	RPM+	23	27	boom 1 up
8	13	pump on	24	39	boom 2 down
9	9	GND	25	40	boom 2 up
10	14	reverse	26	–	free
11	25	pilot valve	27	–	free
12	–	free	28	35	pump speed pot
13	–	free	29	–	free
14	–	free	30	–	free
15	–	free	31	–	free
16	33	boom 4 down	32	–	free

TERMINAL F

blk/whi	A2
whi	S1
grn	Y1
gry/whi	Y2
blu	A7
blk	A8
vio	Lima D
brn	⊖
red	reserve
gry/blk	reserve

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

SCALE without | WEIGHT

own parts list

	DATE	NAME
DRAWN	2003/06/30	MI
CHKD.		
APPD.		

c	siehe B_561084.doc	07.11.05	Körner	CHANGE ONLY WITH CAD
b	siehe B_561084.doc	29.08.05	Körner	
a	siehe B_561084.doc	23.07.04	Körner	
	MODIFICATION	DATE	NAME	ORIGINAL

Cable harness / accessories REED 42XXT

B 56 1 084

SHEET | OF

REPLACEMENT FOR | REPLACEMENT BY

PARTS LIST

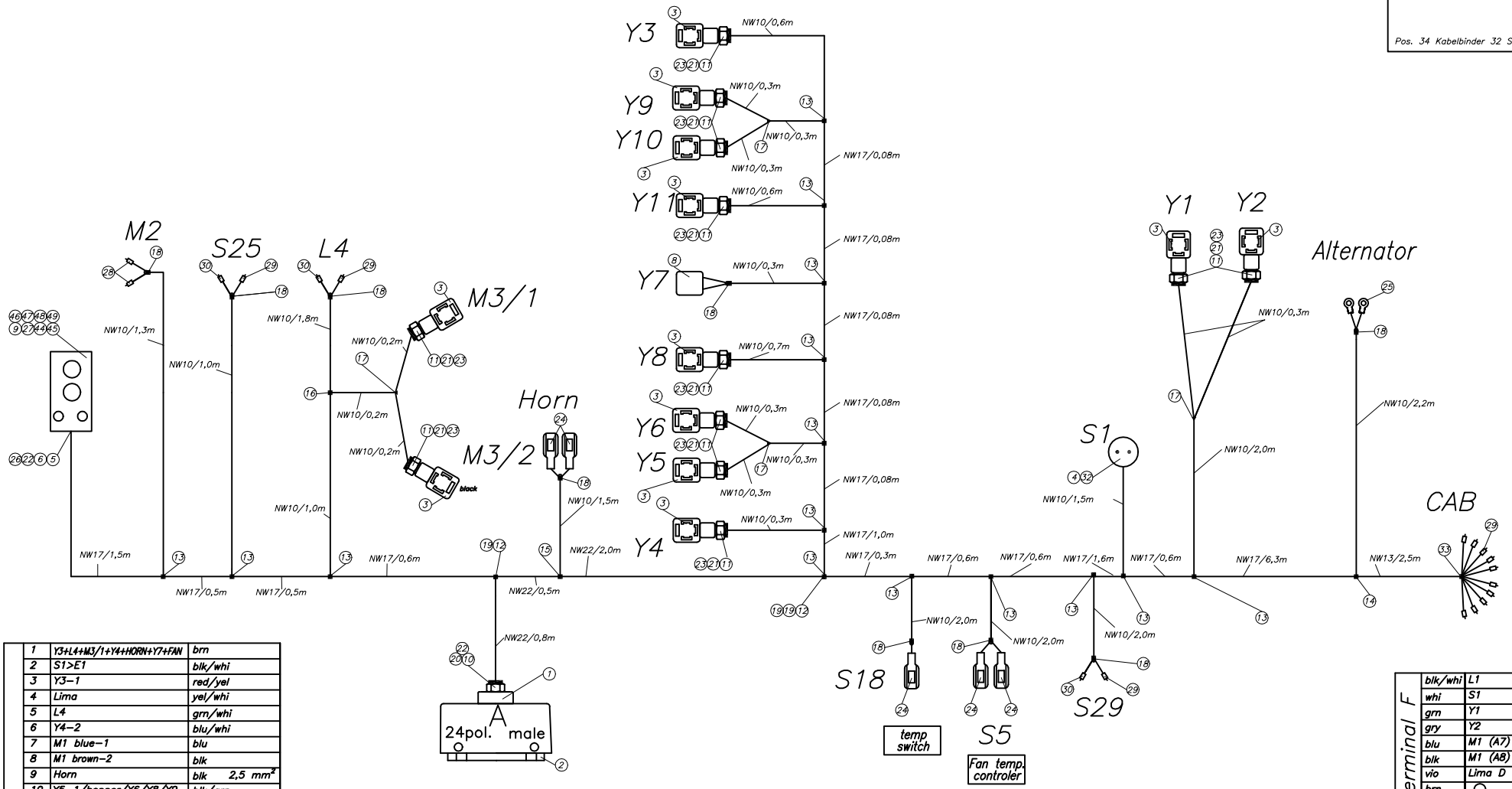
16.11.05 10:22:09

part list	description	created	index	valid from	valid to
B561084	cable harness closed loop 42XXT	30.06.03 Mi	c	07.11.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	cable harness pump REED CL 42XXT own parts list	B561085				1,00 Stk
2	cable harness boom REED 42XXT own parts list	B561086		c 09.11.05		1,00 Stk
3	cable for remote control own parts list	WAI107548		a 23.07.04		1,00 Stk
4	cable drum + 35m cable (34 x 0,5) own parts list	WAI106288				1,00 Stk
5	anti-interference device	WAI102760				16,00 Stk
6	thermo sensor	WAI104228				1,00 Stk
7	thermo sensor 55 degrees C	WAI105568			0,10	1,00 Stk
8	pressure switch	WAI100211			0,87	1,00 Stk
9	switch swimmer	WAI106060				1,00 Stk
10	sealing ring 14x18x2	WAI106465				1,00 Stk
11	switch	WAI109027				1,00 Stk
12	countersunk screw	WAI103176				2,00 Stk
13	washer 6.4	WAI101627				2,00 Stk
14	cheese head screw M 4 x 30	WAI109369				4,00 Stk
15	washer 4	WAI104633				4,00 Stk
16	plate	B564024 Bl 6x45x80	1543/EN10029 S235J2G3		0,16	1,00 Stk
17	plate	B564025 Bl 3x180x183	1543/EN10029 S235J2G3		0,16	1,00 Stk

Lose Teile:

Pos. 34 Kabelbinder 32 Stück



PLUG A			
	1	Y3+L4+M3/1+Y4+HORN+Y7+FAN	brn
	2	S1>E1	blk/whi
	3	Y3–1	red/yel
	4	Lima	yel/whi
	5	L4	grn/whi
	6	Y4–2	blu/whi
	7	M1 blue–1	blu
	8	M1 brown–2	blk
	9	Horn	blk 2,5 mm²
	10	Y5–1/hopper/Y6/Y8/Y9	blk/grn
	11	Y5–2	blk/red
	12	Y7	gry/red
	13	Y8	whi/brn
	14	Y9	vio
	15	M2	blk 2,5 mm²
	16	M2	blu 2,5 mm²
	17	M3/1 –1	gry
	18	M3/1–3	grn
	19	M3/2 –2	yel
	20	Y6	whi
	21		
	22		
	23	Fan	grn
	24	S5	yel/whi
		Res. F	red
		Res. F	gry/blk

Terminal F		
	blk/whi	L1
	whi	S1
	grn	Y1
	gry	Y2
	blu	M1 (A7)
	blk	M1 (A8)
	vio	Lima D
	brn	⊖
	red	reserve
	gry/blk	reserve

Waitzinger Baumaschinen Vertrieb und Service GmbH

free dimension tolerance DIN 7168 medium

		date	name
drawn		2003/06/30	Mi
chkd.			
appd.			

change only with CAD

issue	MODIFICATION	date	name
original			

scale | weight

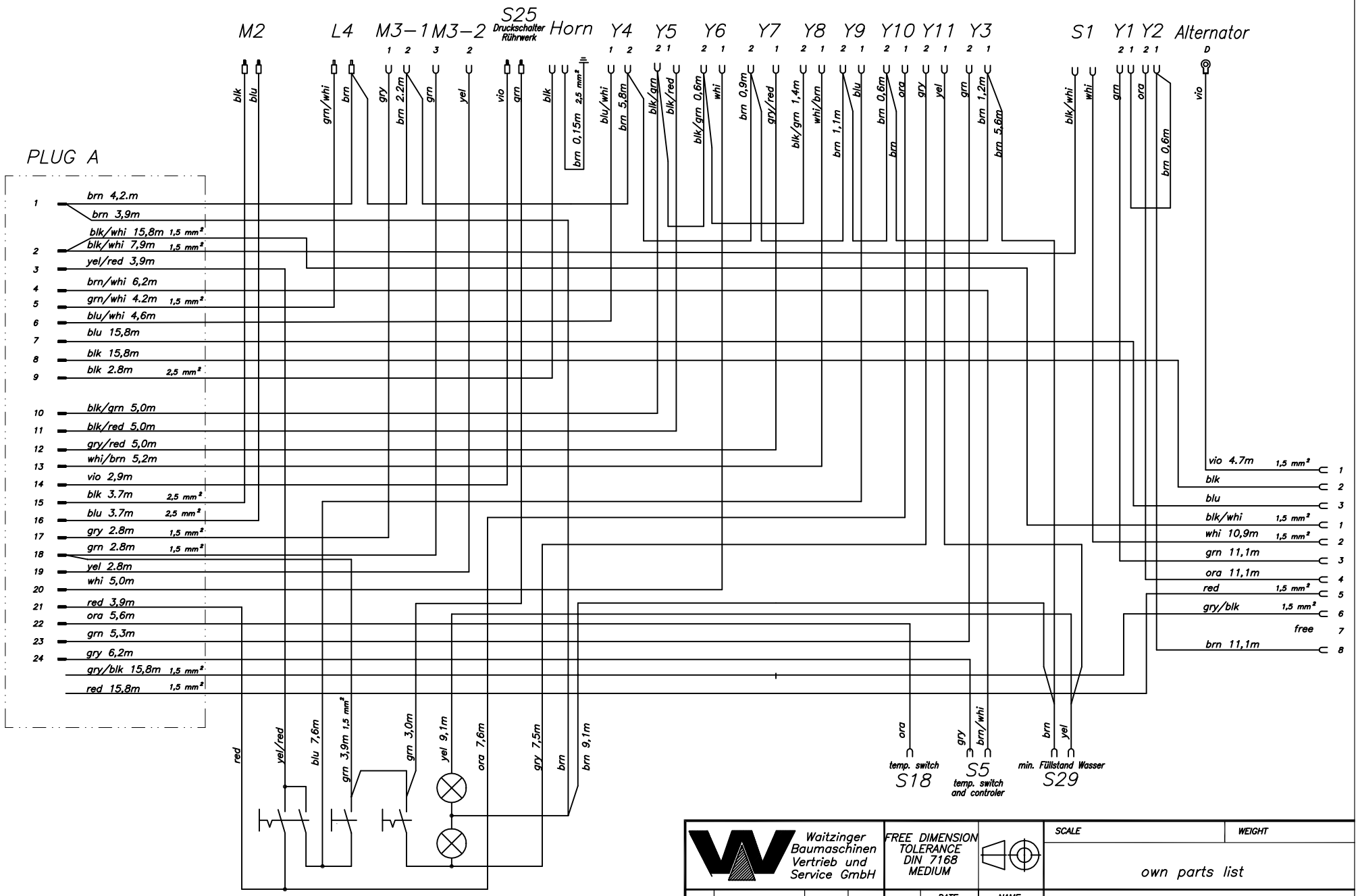
own parts list

cable loop pump REED cl 42XXT

B 56 1 085

sheet 1 of 2

replacement for | replacement by



Alle nicht bezeichneten Kabel sind 1mm²
Kabel um 10% länger als angegeben zuschneiden

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Fetzer
CHKD.		
APPD.		

CHANGE ONLY WITH CAD

ORIGINAL

ISSUE	MODIFICATION	DATE	NAME

SCALE

WEIGHT

own parts list

cable loop pump REED cl 42XXT

B 56 1 085

SHEET 2 OF 2

REPLACEMENT FOR

REPLACEMENT BY

PARTS LIST

part list	description	created	index	valid from	valid to
B561085	cable harness pump REED CL 42XXT	30.06.03 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	housing upper part, 24-pol	WAI101542				1,00 Stk
2	plug insertion 24-pol.	WAI100714				1,00 Stk
3	plug	WAI104691				12,00 Stk
4	coupling	WAI104523				1,00 Stk
5	fitting PG16	WAI104510				1,00 Stk
6	sealing for cable fitting PG16	WAI104696				1,00 Stk
7	plate	WAI104735				12,00 Stk
8	plug 2-poles, AMP junior timer	WAI106058				1,00 Stk
9	housing agitator own parts list	B561072				1,00 Stk
10	fitting PG21	WAI104507				1,00 Stk
11	fitting PG9	WAI104506				12,00 Stk
12	t - piece 22-22-22	WAI104515				2,00 Stk
13	t - piece 17-10-17	WAI104332				14,00 Stk
14	t - piece	WAI104511				1,00 Stk
15	t - piece 22-10-22	WAI105263				1,00 Stk
16	t - piece 10-10-10	WAI104514				1,00 Stk
17	y - piece	WAI104539				4,00 Stk
18	cap	WAI104513				9,00 Stk
19	reducer 22/17	WAI104509				3,00 Stk
20	sealing for cable fitting PG21	WAI104697				1,00 Stk

PARTS LIST

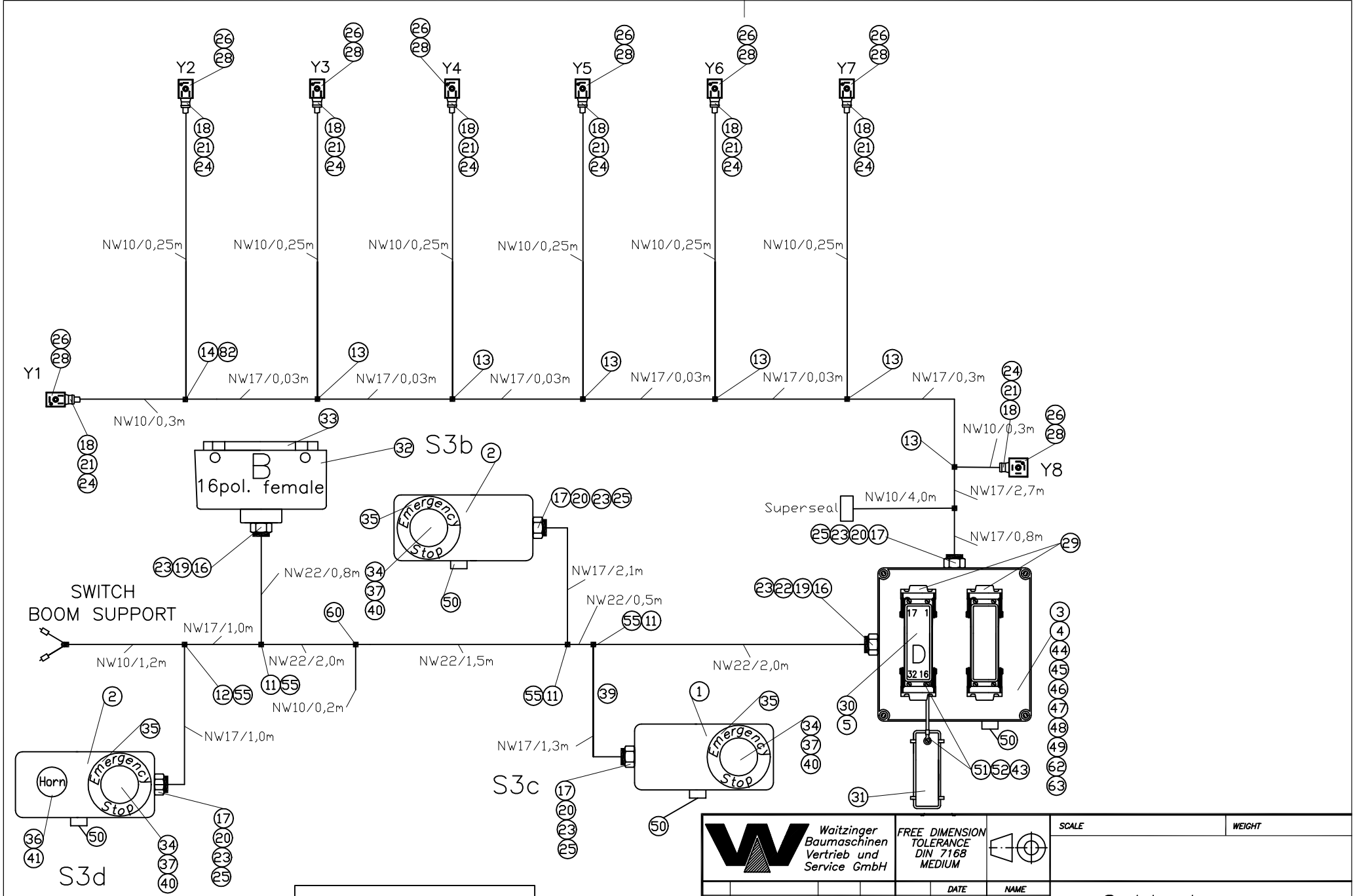
part list	description	created	index	valid from	valid to
B561085	cable harness pump REED CL 42XXT	30.06.03 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
21	sealing for cable fitting PG9	WAI104695				12,00 Stk
22	O-ring 15 x 1,5	WAI104701				2,00 Stk
23	O-ring 8.9 x 1.25	WAI104700				12,00 Stk
24	flat plug sleeve 2,5mm	WAI104785				15,00 Stk
25	thimble 2,5 qmm M6	WAI104693			0,02	5,00 Stk
26	nut CE 16	WAI104519				1,00 Stk
27	push button	WAI100569				1,00 Stk
28	cove end sleeve 2.5mm	WAI101997				4,00 Stk
29	cove end sleeve 1.5mm	WAI101996				36,00 Stk
30	cove end sleeve 1.5mm	WAI104692				6,00 Stk
31	shrink hose	WAI104677				0,10 Mtr
32	shrink hose	WAI104505				0,05 Mtr
33	cable tie 200x3.6, black	WAI103137				32,00 Stk
40	cable pipe	WAI104520				3,30 Mtr
41	cable pipe	WAI104216				10,50 Mtr
42	cable pipe	WAI104215				2,50 Mtr
43	cable pipe	WAI104213				23,80 Mtr
44	sign AL agitator	WAI106030				1,00 Stk
45	sign AL water pump	WAI106031				1,00 Stk
46	lever switch ON-OFF-ON	WAI104090				1,00 Stk

PARTS LIST

part list	description	created	index	valid from	valid to
B561085	cable harness pump REED CL 42XXT	30.06.03 Mi			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
47	lever switch ON-OFF	WAI104089				1,00 Stk
48	led-signal lamp, red	WAI105811				1,00 Stk
49	led-signal lamp, green	WAI105813				1,00 Stk
50	cable	WAI108059				350,00 Mtr



Lose Teile:
Pos. 59 Kabelbinder 10 Stück

ISSUE	MODIFICATION	DATE	NAME
c	siehe b_561086.doc	09.11.05	Körner
b	siehe b_561086.doc	02.06.05	Körner
a	siehe b_561086.doc	02.02.04	Körner

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Mi
CHKD.		
APPD.		

CHANGE ONLY WITH CAD

ORIGINAL

SCALE

WEIGHT

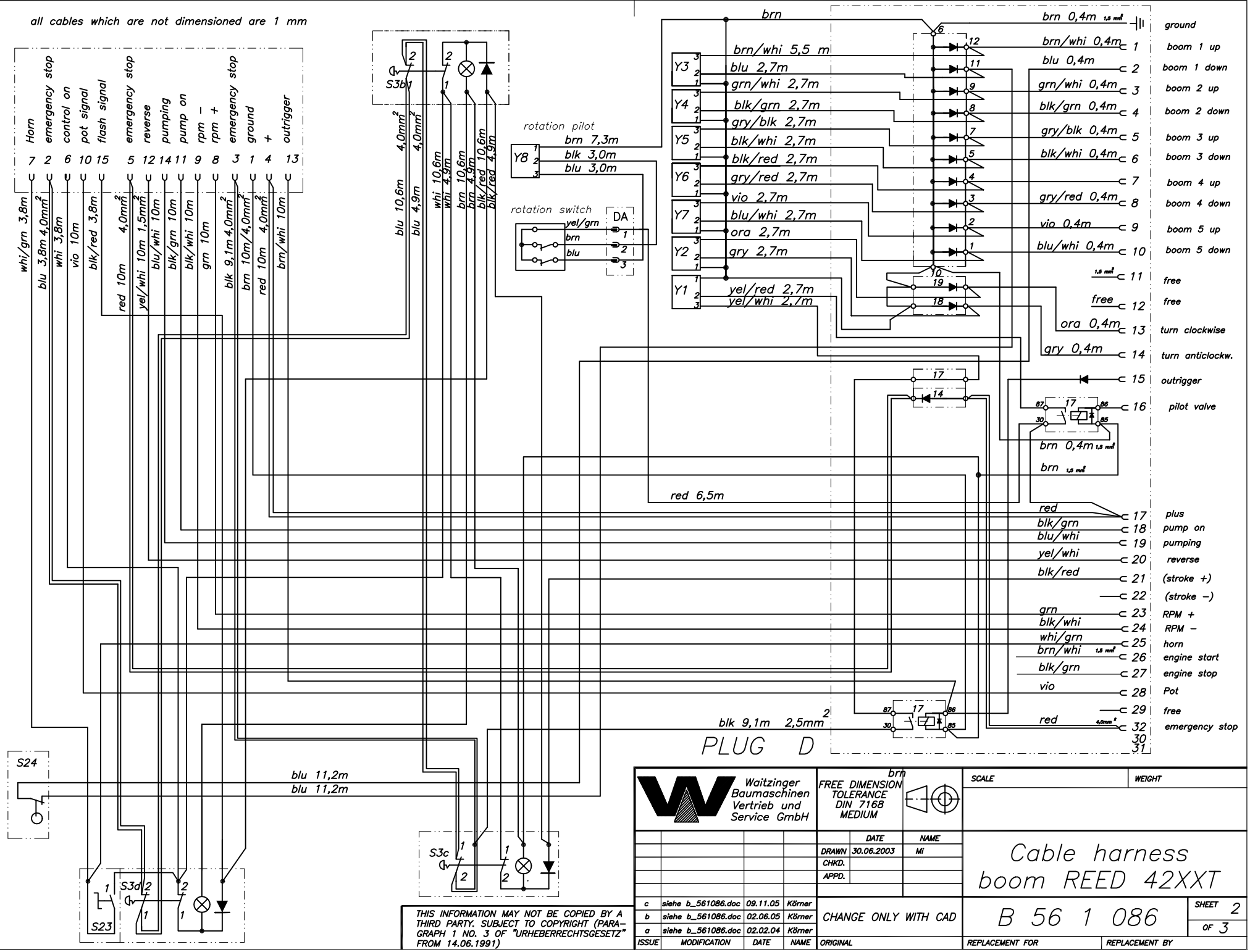
Cable harness boom REED 42XXT

B 56 1 086

SHEET 1 OF 3

REPLACEMENT FOR

REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH	FREE DIMENSION TOLERANCE DIN 7168 MEDIUM	brn	SCALE / WEIGHT

	DATE	NAME
DRAWN	30.06.2003	Mi
CHKD.		
APPD.		

Cable harness boom REED 42XXT

B 56 1 086

SHEET 2 OF 3

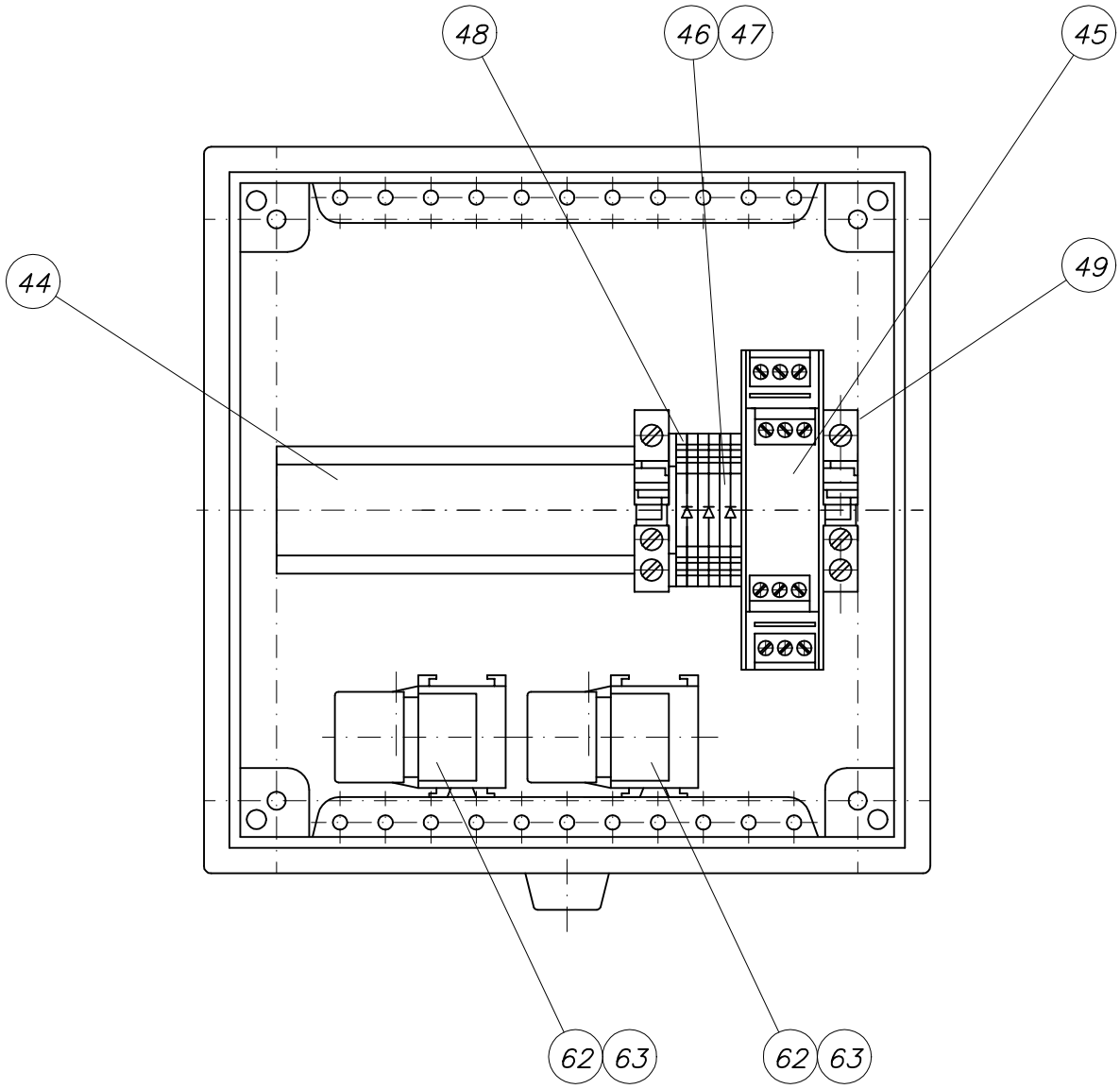
ISSUE	MODIFICATION	DATE	NAME
c	siehe b_561086.doc	09.11.05	Körner
b	siehe b_561086.doc	02.06.05	Körner
a	siehe b_561086.doc	02.02.04	Körner

CHANGE ONLY WITH CAD

ORIGINAL

REPLACEMENT FOR

REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Mi
CHKD.		
APPD.		

SCALE | WEIGHT

Cable harness boom REED 42XXT

B 56 1 086

SHEET 3 OF 3

ISSUE	MODIFICATION	DATE	NAME
c	siehe B_561086.doc	09.11.05	Körner
b	siehe B_561086.doc	02.06.05	Körner
a	siehe B_561086.doc	02.02.04	Körner

CHANGE ONLY WITH CAD

ORIGINAL | REPLACEMENT FOR | REPLACEMENT BY

PARTS LIST

16.11.05 10:23:39

part list	description	created	index	valid from	valid to
B561086	cable harness boom REED 42XXT	30.06.03 Mi	c	09.11.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	housing right own parts list	B561068		a 20.01.04		1,00 Stk
2	housing left own parts list	B561043		a 25.02.02		2,00 Stk
3	Clamp box for boom own parts list	B561083		a 16.05.03		1,00 Stk
4	clamp	WAI104671				2,00 Stk
5	plugbox insert 17-32 pol.	WAI102157				1,00 Stk
11	t - piece 22-22-22	WAI104515				3,00 Stk
12	t - piece	WAI104508				1,00 Stk
13	t - piece 17-10-17	WAI104332				5,00 Stk
14	t - piece	WAI104511				1,00 Stk
16	fitting PG21	WAI104507				2,00 Stk
17	fitting PG16	WAI104510				4,00 Stk
18	fitting PG9	WAI104506				8,00 Stk
19	sealing for cable fitting PG21	WAI104697				2,00 Stk
20	sealing for cable fitting PG16	WAI104696				4,00 Stk
21	sealing for cable fitting PG9	WAI104695				8,00 Stk
22	lock nut PG21	WAI104114				1,00 Stk
23	O-ring 15 x 1,5	WAI104701				6,00 Stk
24	O-ring 8.9 x 1.25	WAI104700				8,00 Stk
25	nut CE 16	WAI104519				4,00 Stk
26	plate	WAI104735				8,00 Stk

PARTS LIST

part list	description	created	index	valid from	valid to
B561086	cable harness boom REED 42XXT	30.06.03 Mi	c	09.11.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
28	plug	WAI104691				8,00 Stk
29	housing-body, lower part	WAI107232				2,00 Stk
30	plugbox insert 1-16 pol.	WAI102593				1,00 Stk
31	protective cap	WAI107231				1,00 Stk
32	housing upper part 16-pol.	WAI104023				1,00 Stk
33	plugbox insert 1-16 pol.	WAI104121				1,00 Stk
34	emergency stop switch	WAI109803				3,00 Stk
35	label ZB2-BY9330	WAI102278				3,00 Stk
36	push button	WAI100569				3,00 Stk
37	contact block	WAI109804				3,00 Stk
38	sign plate for outrigger	WAI104770				1,00 Stk
39	sign plate for outrigger + key switch	WAI104771				1,00 Stk
40	led-signal lamp, red 12V	WAI109906				3,00 Stk
41	plate "horn"	WAI105415				1,00 Stk
42	diode, 1A	WAI105337				3,00 Stk
43	washer 4	WAI104633				9,00 Stk
44	rail	WAI104772				0,20 Mtr
45	diode, MKS-D10	WAI104541				1,00 Stk
46	clamp	WAI104186				3,00 Stk
47	plug with diode	WAI104185				3,00 Stk

PARTS LIST

part list	description	created	index	valid from	valid to
B561086	cable harness boom REED 42XXT	30.06.03 Mi	c	09.11.05	

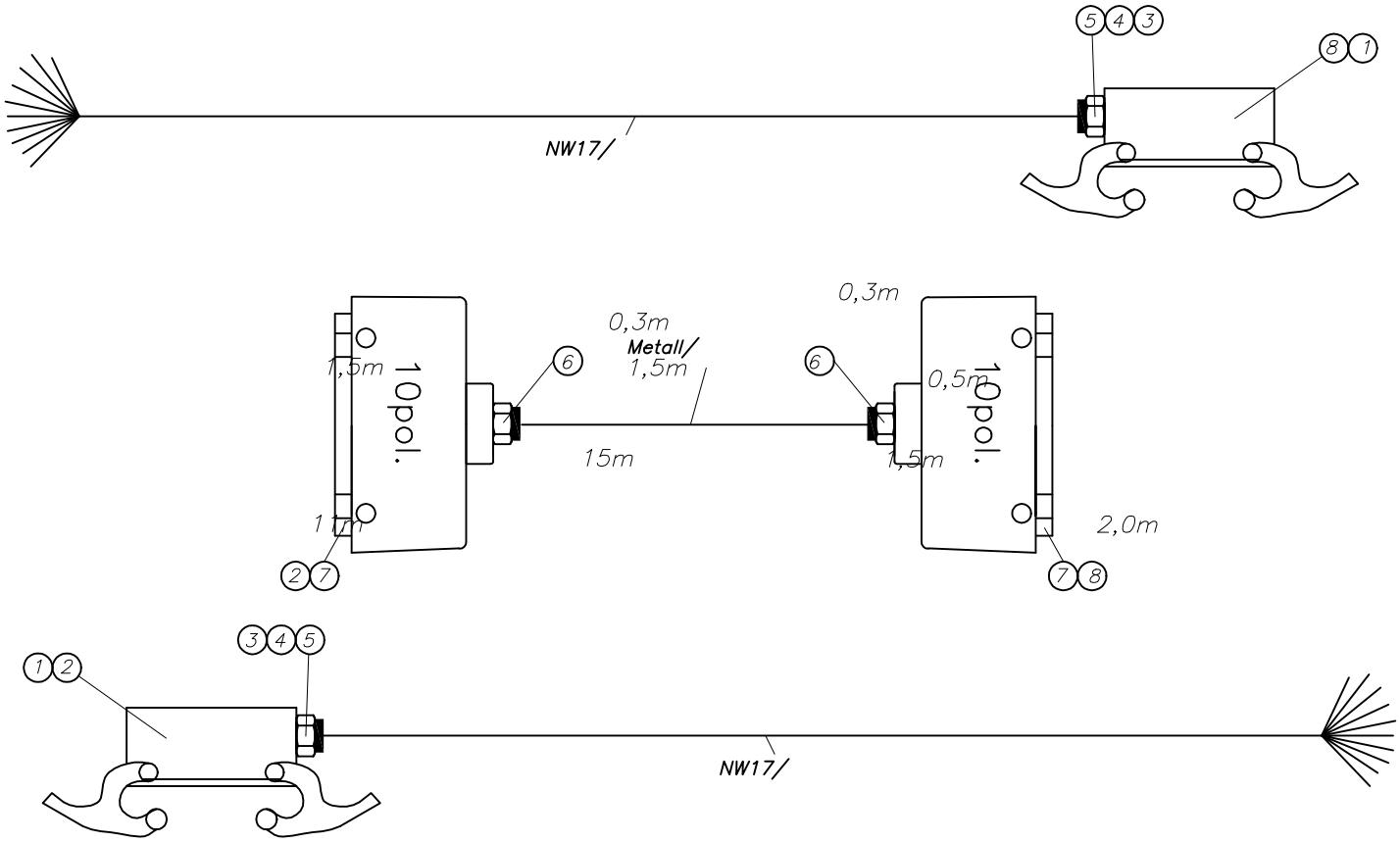
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
48	end plate	WAI104833				1,00 Stk
49	clamp	WAI104672				2,00 Stk
50	condenser	WAI104669				4,00 Stk
51	hexagon bolt M 4 x 12	WAI104632				9,00 Stk
52	hex. nut M4	WAI104634				9,00 Stk
53	cove end sleeve 1.5mm	WAI101996				60,00 Stk
54	cove end sleeve 1.5mm	WAI104692				35,00 Stk
55	reducer 22/17	WAI104509				4,00 Stk
56	cable pipe	WAI104520				7,00 Mtr
57	cable pipe	WAI104216				8,80 Mtr
58	cable pipe	WAI104213				3,40 Mtr
59	cable tie 200x3.6, black	WAI103137				28,00 Stk
60	t - piece 22-10-22	WAI105263				1,00 Stk
62	relay socket	WAI100986				2,00 Stk
63	relay DC 12V, 30 A	WAI104845				2,00 Stk
64	reel band	WAI104832				1,00 Mtr
81	flat plug sleeve 2,5mm	WAI104785				14,00 Stk
82	reducer	WAI104512				1,00 Stk
90	thimble 1,5 - 2,5 qmm	WAI102458				3,00 Stk
91	cove end sleeve 2.5mm	WAI101997				20,00 Stk

PARTS LIST

16.11.05 10:23:39

part list	description	created	index	valid from	valid to
B561086	cable harness boom REED 42XXT	30.06.03 Mi	c	09.11.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
92	cove end sleeve 1.0mm	WAI101995				20,00 Stk
93	plate	WAI106435				10,00 Stk
94	cable	WAI108059				350,00 Mtr



Waitzinger Baumaschinen Vertrieb und Service GmbH				Freimaßtoleranz DIN 7168 mittel		Maßstab	Gewicht
						eigene Stückliste	
					Datum / Name		
				Bearb.	06.09.2004 Körner	Kabelbaum Mast 37m REED	
				Gepr.			
				Norm			
				Änderung nur auf CAD		B 56 2 066	Blatt 2 von 2 Bl.
Zust.	Änderung	Datum	Name	Urspr.		Ers. für	Ers. durch

PARTS LIST

28.09.05 10:36:06

part list	description	created	index	valid from	valid to
b562066	cable loop boom REED	06.10.04 ALEXAND			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	housing 10 poles	WAI106688				2,00 Stk
2	plug insert 1-10 pin	WAI106687				2,00 Stk
3	fitting PG16	WAI104510				2,00 Stk
4	sealing for cable fitting PG16	WAI104696				2,00 Stk
5	O-ring 15 x 1,5	WAI104701				2,00 Stk
6	reduc. ring PG16 - 13,5	WAI107524				2,00 Stk
7	coupling housing 10-pole	WAI106689				2,00 Stk
8	plugbox insert 1-10 pol.	WAI106686				2,00 Stk
21	cable pipe	WAI104216				25,50 Mtr
22	cable	WAI108059				280,00 Mtr

Drehwerksabschaltung
switch limit advice

B 57 0 015a

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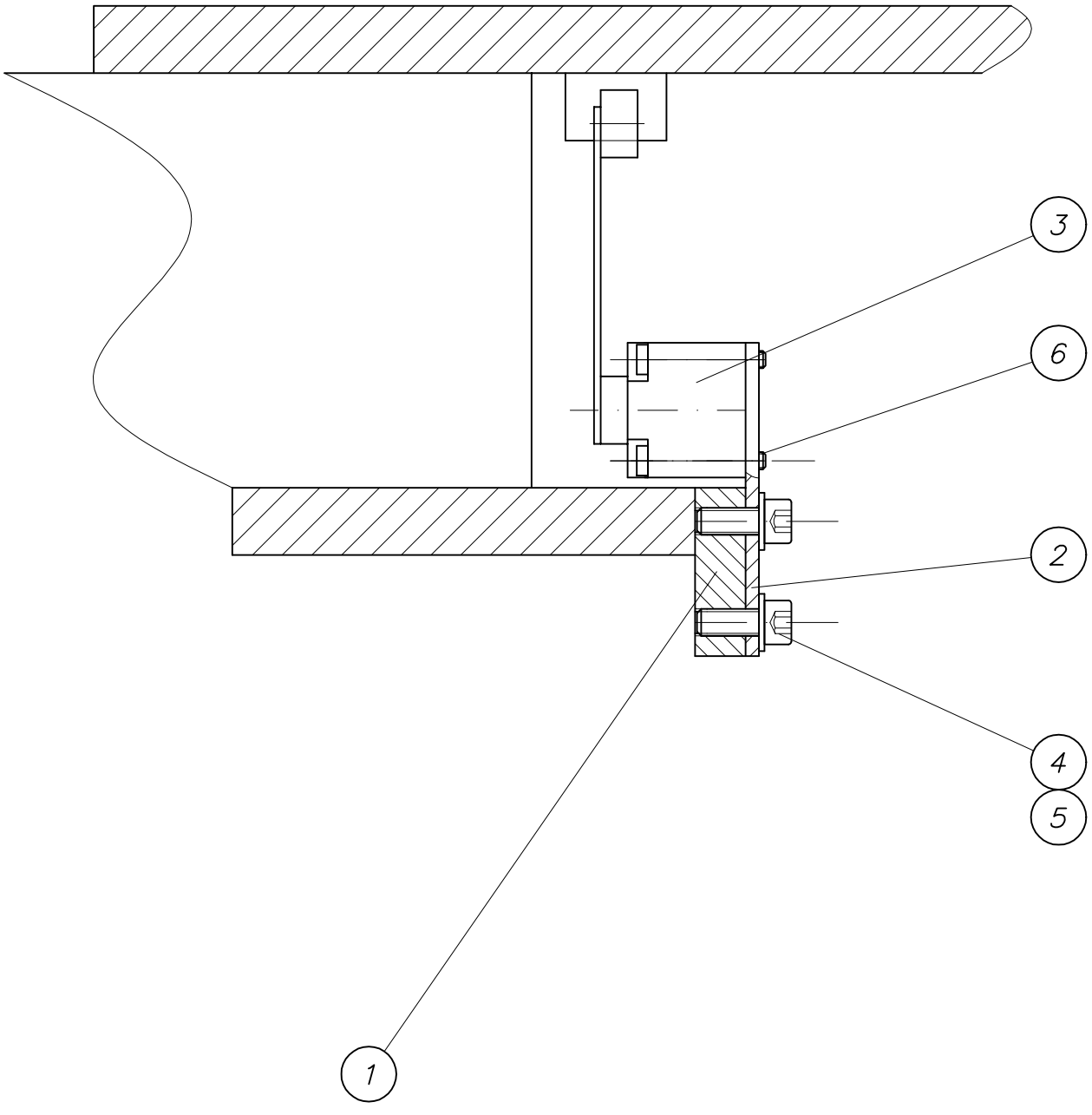

PARTS LIST

11.07.05 09:46:15

part list	description	created	index	valid from	valid to
B570015	turning stop unit	04.03.03 Mi	a	16.02.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	plate	B570016 Bl 15x50x60	1543/EN10029 S235J2G3		0,30	1,00 Stk
2	plate	B570017 Bl 4x75x93	1543/EN10029 S235J2G3		0,20	1,00 Stk
3	position switch own parts list	WAI107186				1,00 Stk
4	cheese head screw M 8 x 20	WAI103273				4,00 Stk
5	washer 8.4	WAI101625				4,00 Stk
6	cheese head screw M5x35	WAI109456				4,00 Stk

Übersicht B 60 - B 69

over view B 60 - B 69

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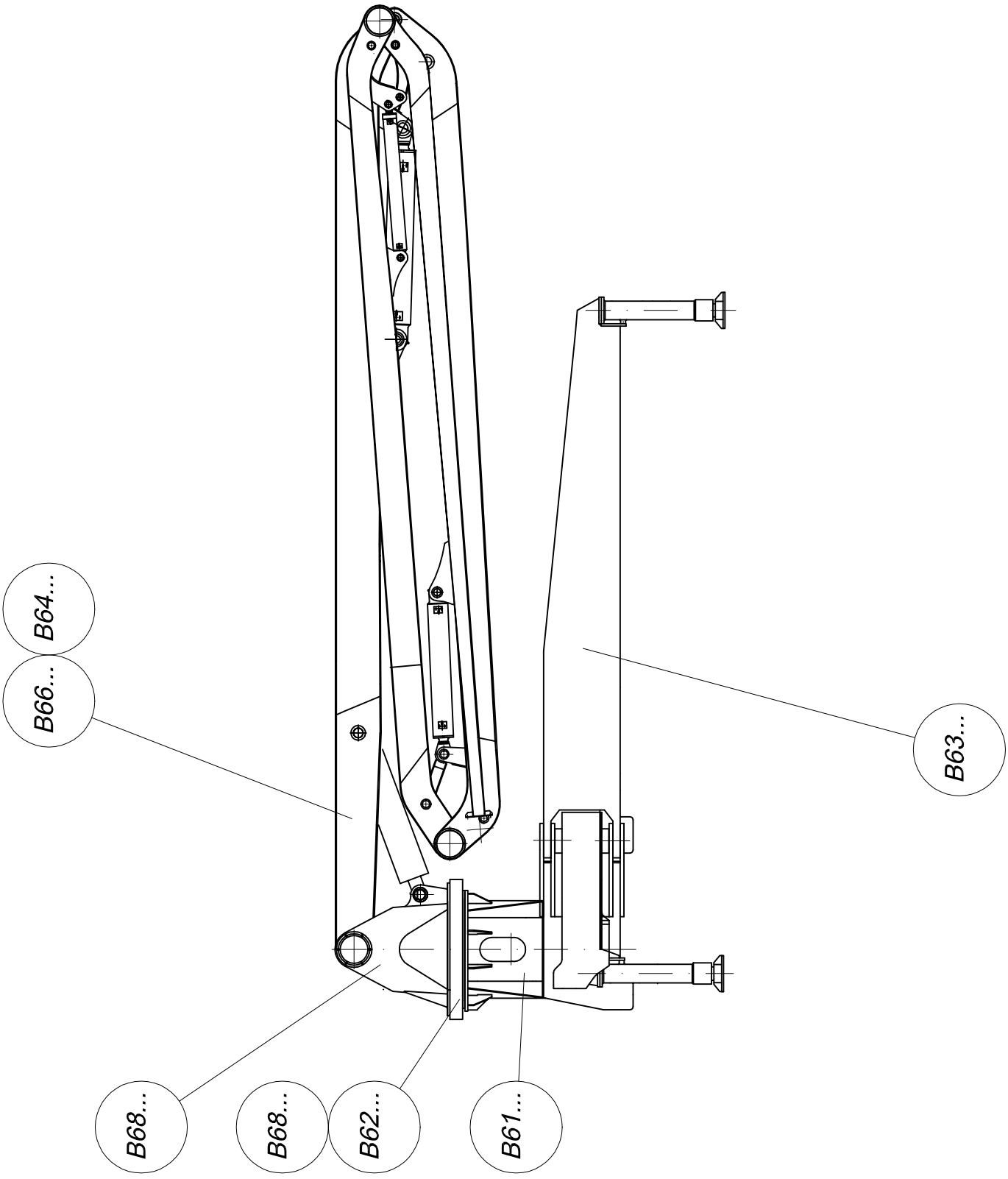

23.07.2002

Mastbock kpl.

boom base cpl.

B 61 2 205d

Waitzinger
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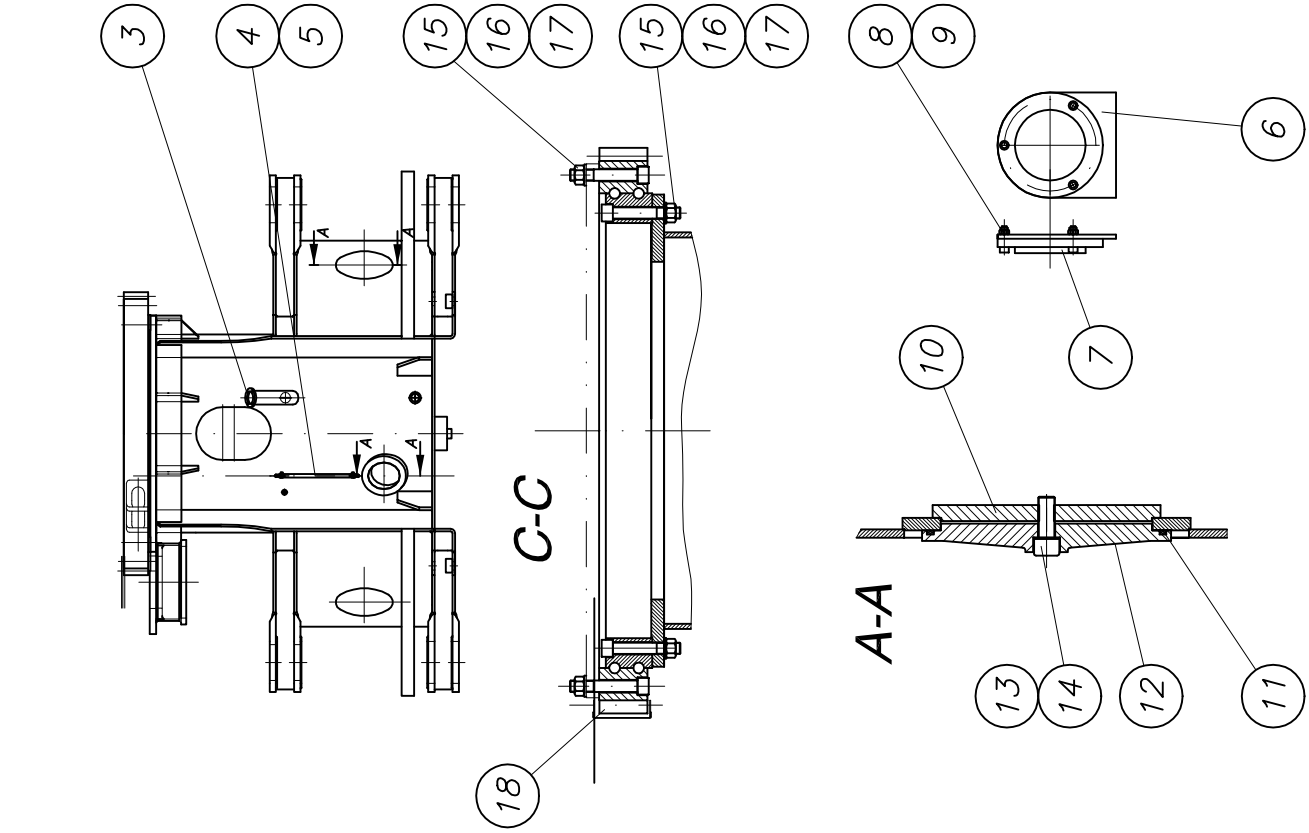

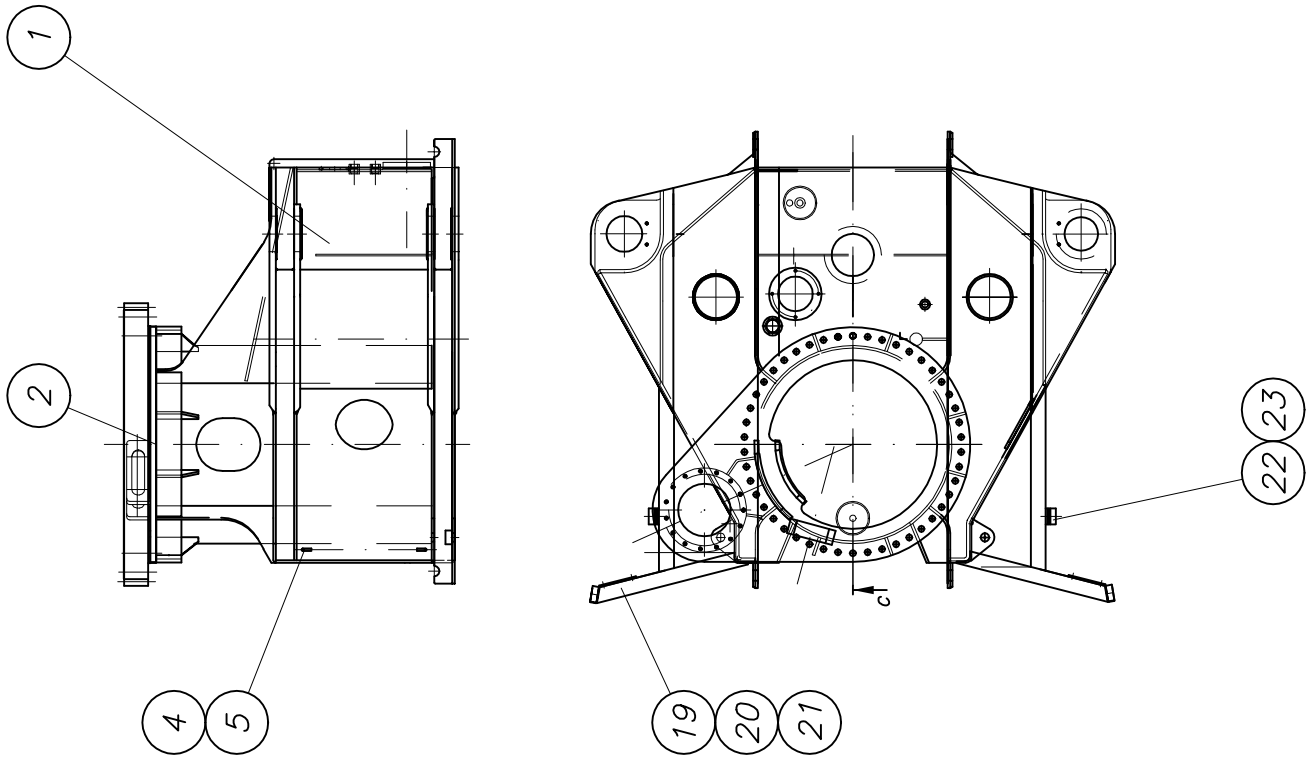

PARTS LIST

22.06.05 11:37:45

part list	description	created	index	valid from	valid to
B612205	pedestal 42 m xxt SHORT	05.12.03 HBK	d	27.10.04	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	boom base 42XXT cpl. short own parts list	B612200				1,00 Stk
2	lubrication kit for rotation bearing cpl own parts list	WAI108646			3,00	1,00 Stk
3	filling and air filter	WAI106163				2,00 Stk
4	fuel hose DN 12	WAI103104				1,00 Mtr
5	hose clamp 15mm	WAI103103				4,00 Stk
6	holder for can drag and fly	B619093 Bl 5x100x112.5	1543/EN10029 S235J2G3	a 13.02.03	0,22	2,00 Stk
7	box level d80	WAI106237				2,00 Stk
8	cheese head screw M5x20 DIN 912 8.8	WAI103389				6,00 Stk
9	locking nut DIN 980	WAI102068				6,00 Stk
10	star for oilcover FL 15X 220X 220	B610034 Fl 220x220x15	1017 S235JR	a 12.02.03	2,00	5,00 Stk
11	O-ring 217x5, No. A0120.371	WAI106011				5,00 Stk
12	cover for oiltank D236 X 27 36XT	B610033 RD 240x30	1747 Al99		1,80	5,00 Stk
13	cheese head screw M 16 x 55	WAI104550				5,00 Stk
14	u-seal 16,7 x 24 x 1,5T	WAI101572				5,00 Stk
15	cheese head screw M27 x 160	WAI107371				92,00 Stk
16	nut M27 DIN 934	WAI107372				92,00 Stk
17	washer 28	WAI107373				92,00 Stk
18	rotation bearing	WAI107158			440,00	1,00 Stk
19	bracket own parts list	B612110				2,00 Stk
20	stop	B619111 30x60x75	Polyamid			2,00 Stk
21	cylinder head screw M 10 x 25	WAI106654				2,00 Stk
22	washer	B612115 Bl 8xd75	1543/EN10029 S235J2G3		0,27	6,00 Stk

PARTS LIST

22.06.05 11:37:45

part list	description	created	index	valid from	valid to
B612205	pedestal 42 m xxt SHORT	05.12.03 HBK	d	27.10.04	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
23	rubber cushion	WAI107199			0,50	2,00 Stk

Schmieranlage kpl.

lubrication system cpl.

WAI 108646

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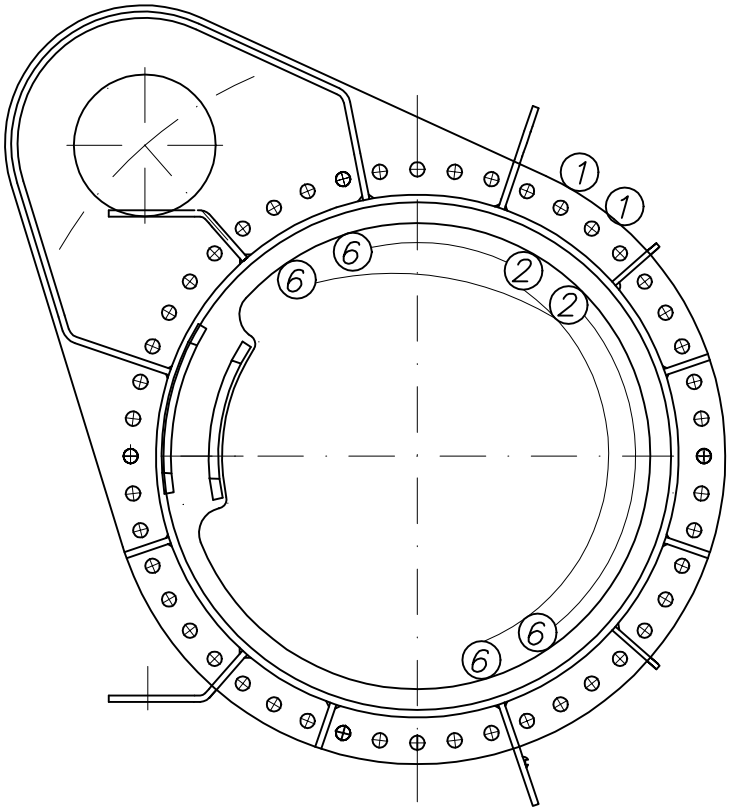

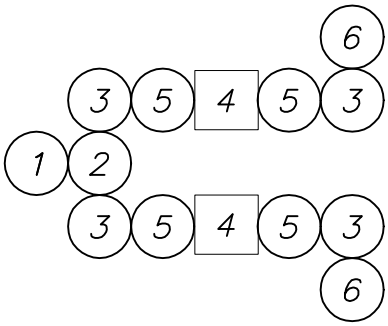

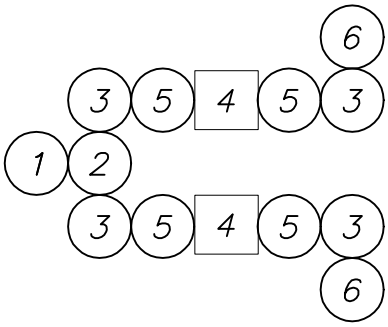

27.02.2004

S T Ü C K L I S T E N - D R U C K

22.06.05 11:39:27

Stückliste	Benennung	Anlage	Änderungsindex	gültig ab	gültig bis
WAI108646	SCHMIERANLAGE FÜR DREHKRANZ KP	29.01.04 a			

Pos	Bezeichnung Rohmaterial	Sach-Nr. Abmessung	DIN Werkstoff	Index	Gewicht Kg	Anzahl Einheit
1	Kegelschmiernippel	WAI100805			0,01	2,00 Stk
2	T-Einschraubverschraubung LL6	WAI106534				2,00 Stk
3	Schlauchstutzen, 90 Grd., lang	WAI102643			0,02	8,00 Stk
4	Kunststoffrohr 8.4x2.1	WAI100255			0,05	5,00 Mtr
5	Schraubhülse für Schlauchstutzen	WAI100254			0,01	8,00 Stk
6	Gerade Einschraubverschraubung LL6 M8x	WAI108723				4,00 Stk

Drehwerkseinheit kpl.

turning unit cpl.

B 62 2 010f

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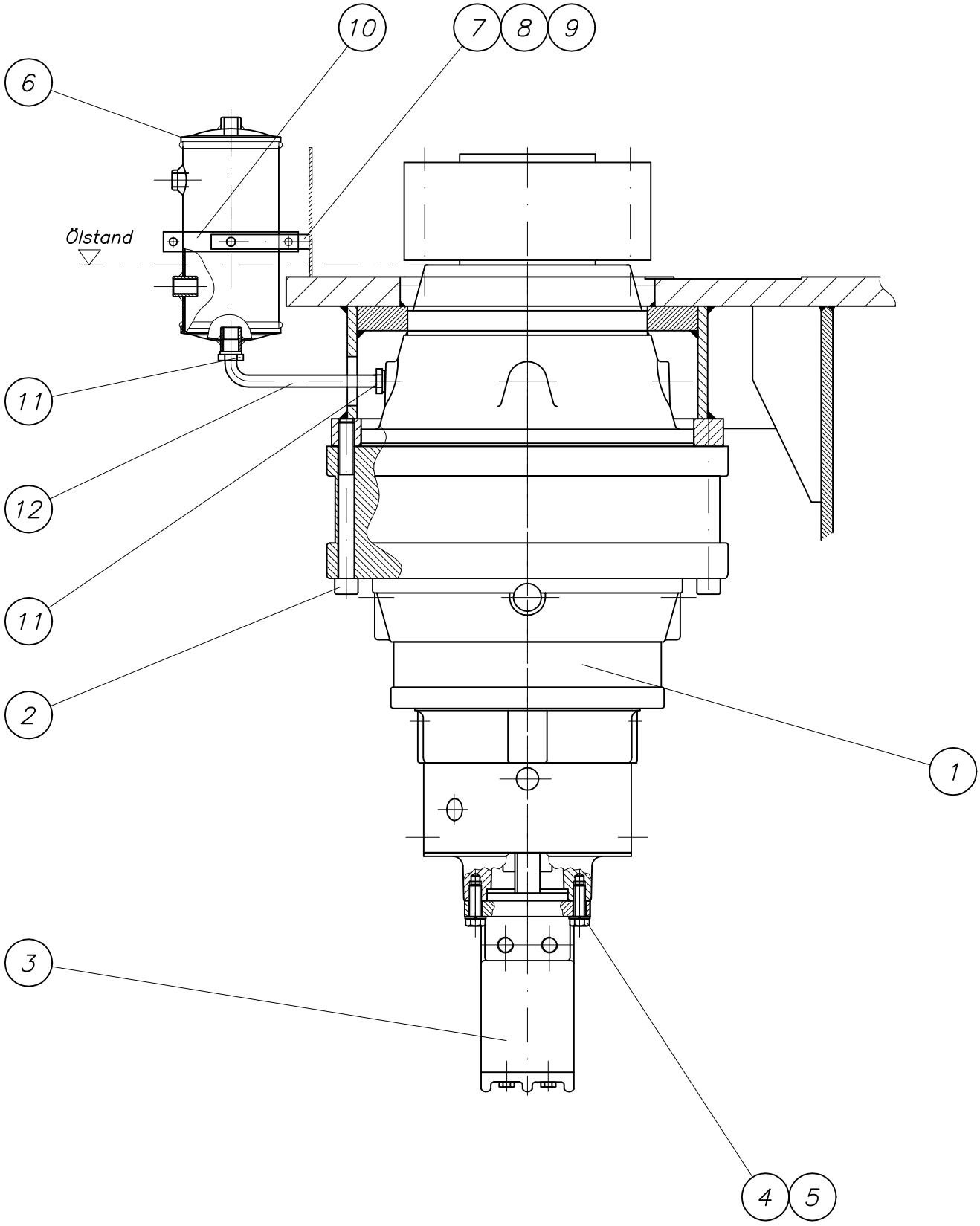


PARTS LIST

22.06.05 11:43:16

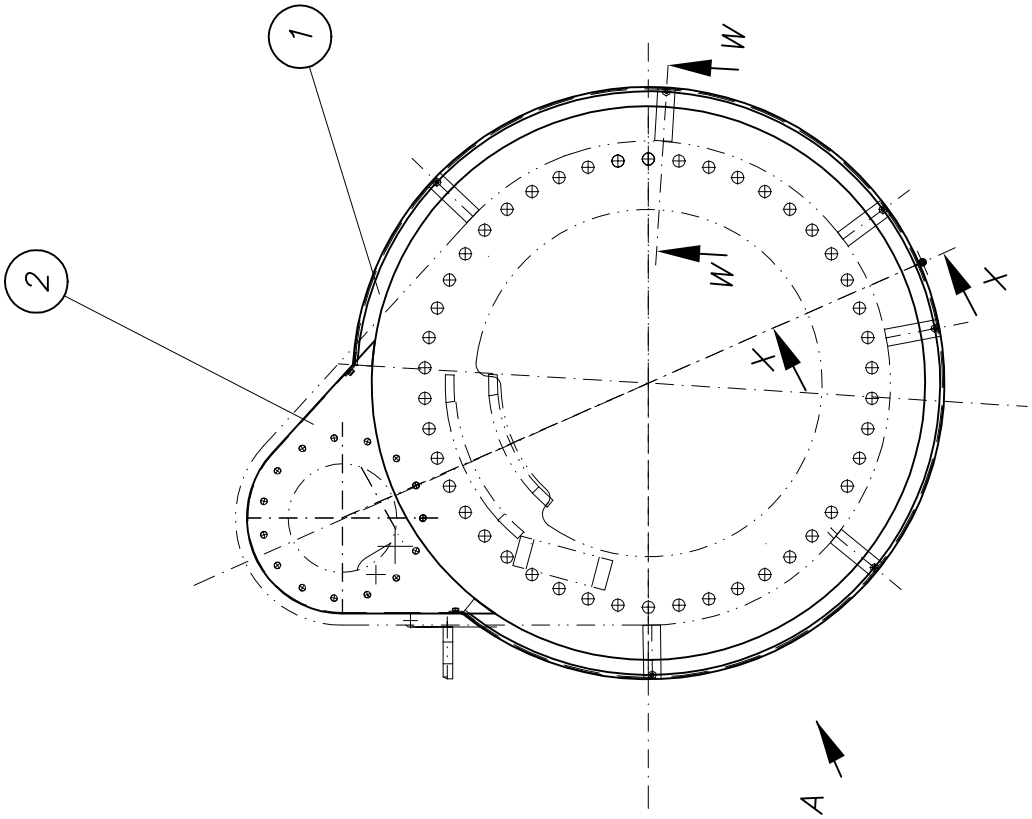
part list	description	created	index	valid from	valid to
B622010	turning unit 42 XXT	24.05.02 Mi	f	02.06.05	

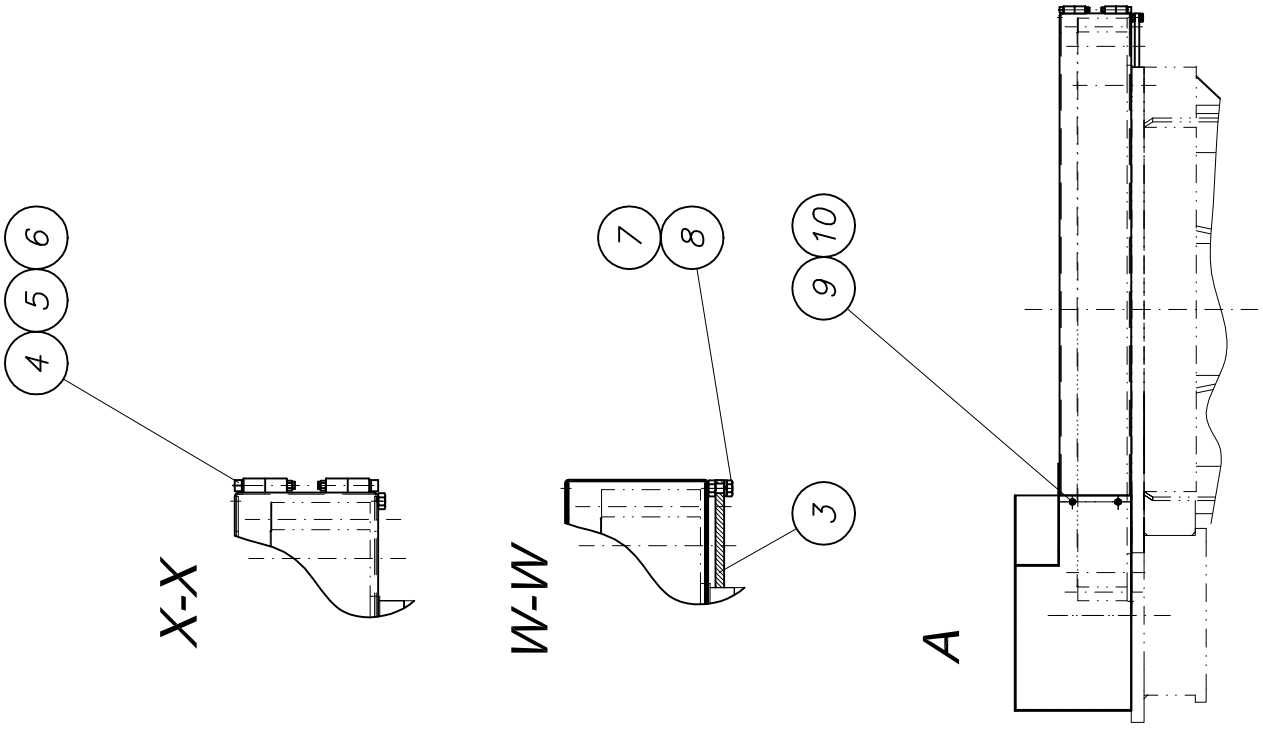
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	gearbox PG2503-Pr r 106.2 own parts list	WAI107335			252,00	1,00 Stk
2	cheese head screw M16x160	WAI101255				15,00 Stk
3	hydraulic motor Char Lynn	WAI107338				1,00 Stk
4	hexagon bolt M12 x 35	WAI102122			0,04	2,00 Stk
5	spring washer A12 DIN 127 VERZ.	WAI102896				2,00 Stk
6	expansion tank	WAI109422			2,20	1,00 Stk
7	plate	B622013 Bl 5x15x100	1543/EN 10029 S235J2G3		0,06	1,00 Stk
8	hexagon bolt M 8 x 20	WAI101837				1,00 Stk
9	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	1,00 Stk
10	pipe clamp 100 mm	WAI109545				1,00 Stk
11	straight male stud couplings L12D	WAI100548				2,00 Stk
12	hydr. pipe 12 x 2	WAI102022			0,49	0,40 Mtr

Drehwerksschutzeinrichtung
turning protection cpl.

B 62 2 025

Waitzinger
Baumaschinen GmbH





09.09.2004

PARTS LIST

23.06.05 09:07:07

part list	description	created	index	valid from	valid to
B622025	turning unit protection parts 42 XXT	26.06.02 Mi			

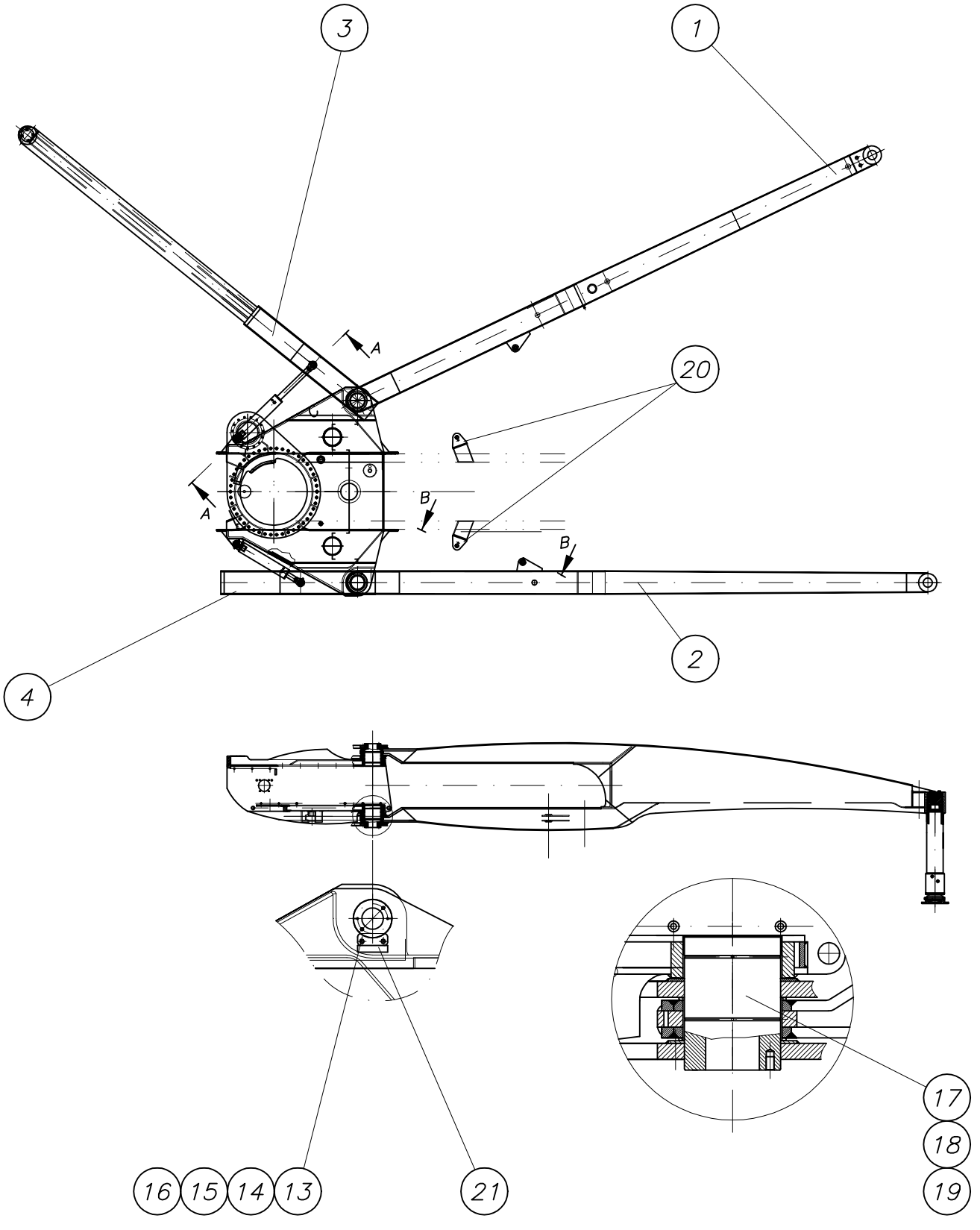
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	cover cpl. own parts list	B622015			15,00	1,00 Stk
2	cover cpl. own parts list	B622020			5,50	1,00 Stk
3	holder	B622023 FL 40x10x114	1017 S235J2G3		0,40	6,00 Stk
4	alien bolt M 8x70	WAI105929				2,00 Stk
5	spring washer	WAI100235			0,00	2,00 Stk
6	stop nut M8 DIN985 8. VERZ.	WAI102111			5,00	2,00 Stk
7	hexagon bolt	WAI102244				6,00 Stk
8	spring washer A10	WAI102070			0,00	6,00 Stk
9	hexagon bolt M 8 x 20	WAI101837				4,00 Stk
10	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	4,00 Stk

Abstützung kpl.

outrigger cpl.

B 63 2 340a **1**

Waitzinger
Baumaschinen GmbH



Abstützung kpl.

outrigger cpl.

B 63 2 340a 2

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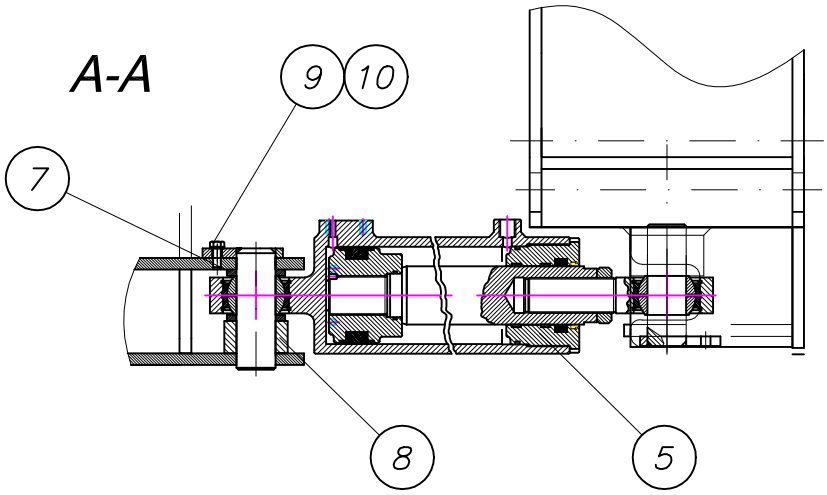
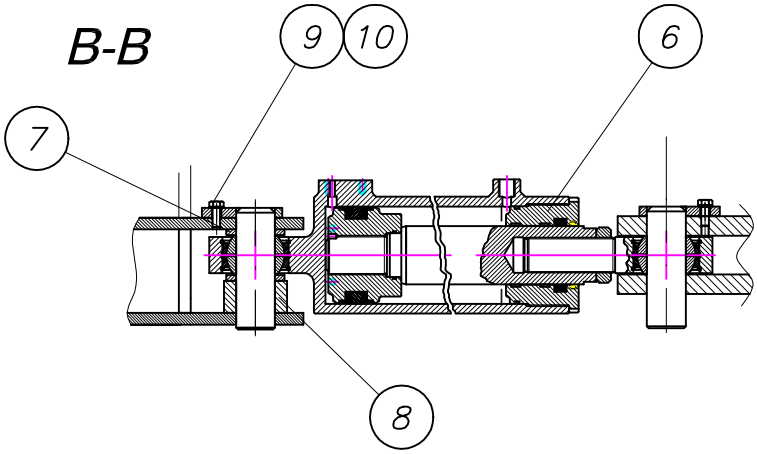
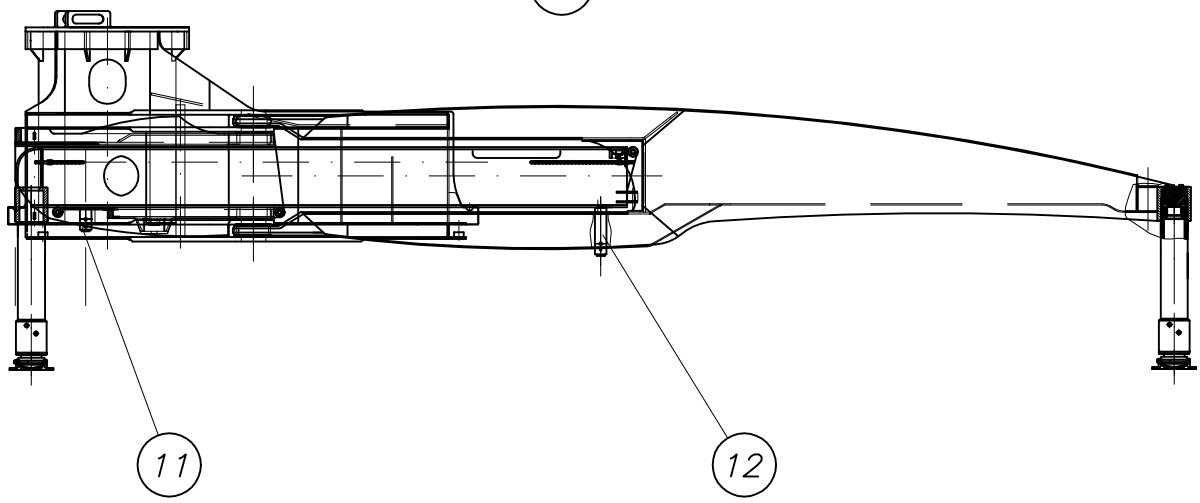
Baumaschinen GmbH

A-A



B-B





PARTS LIST

14.07.05 07:23:35

part list	description	created	index	valid from	valid to
B632340	outrigger 42 xxt cpl	27.02.04 ek	a	13.07.04	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	rear right stabilizer 42XXT cpl. own parts list	B632330		a 03.06.05	1021,00	1,00 Stk
2	rear left stabilizer 42XXT cpl. own parts list	B632325		a 03.06.05	1021,00	1,00 Stk
3	front outrigger 42 meter own parts list	B632050		f 12.07.05		1,00 Stk
4	front left stabilizer 42XXT cpl. own parts list	B632051		f 12.07.05		1,00 Stk
5	swing cylinder cpl. own parts list	B632036		a 02.06.05		2,00 Stk
6	swing cylinder cpl. own parts list	B632037		a 02.06.05		2,00 Stk
7	washer	B632038 Bl 6x d60	1543/EN10029 S355J2G3		0,07	4,00 Stk
8	pin cpl. own parts list	B632047		b 18.10.04	1,06	8,00 Stk
9	alien bolt M 8x25	WAI105930				8,00 Stk
10	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	8,00 Stk
11	transport savety device own parts list	B639197		b 14.10.03		2,00 Stk
12	transport savety device own parts list	B639207		b 20.10.04		2,00 Stk
13	pin holder	B632054 Bl 12x55x140	1543/EN10029 S235J2G3		0,70	4,00 Stk
14	hex. bolt M12x30 DIN 933 8.8	WAI102107			0,04	8,00 Stk
15	spring washer A12 DIN 127 VERZ.	WAI102896				8,00 Stk
16	hexagon bolt M16 x 25	WAI103401				8,00 Stk
17	pin 180 x 251	B632064 Rd 190x225	1013 42 CrMo4V		30,00	4,00 Stk
18	grease nipple H1 M10 X 1 DIN 71412	WAI100805			0,01	8,00 Stk
19	sleeve DU 180x185x80	WAI107324				8,00 Stk
20	bracket for cylinder 42 XXT own parts list	B632175			3,00	2,00 stk
21	flat bar	B630013 Fl 30x10x140	1017 S235J2G3		0,30	4,00 Stk

Abstützung hinten rechts kpl.
outrigger right stabilizer cpl.

B 63 2 330a

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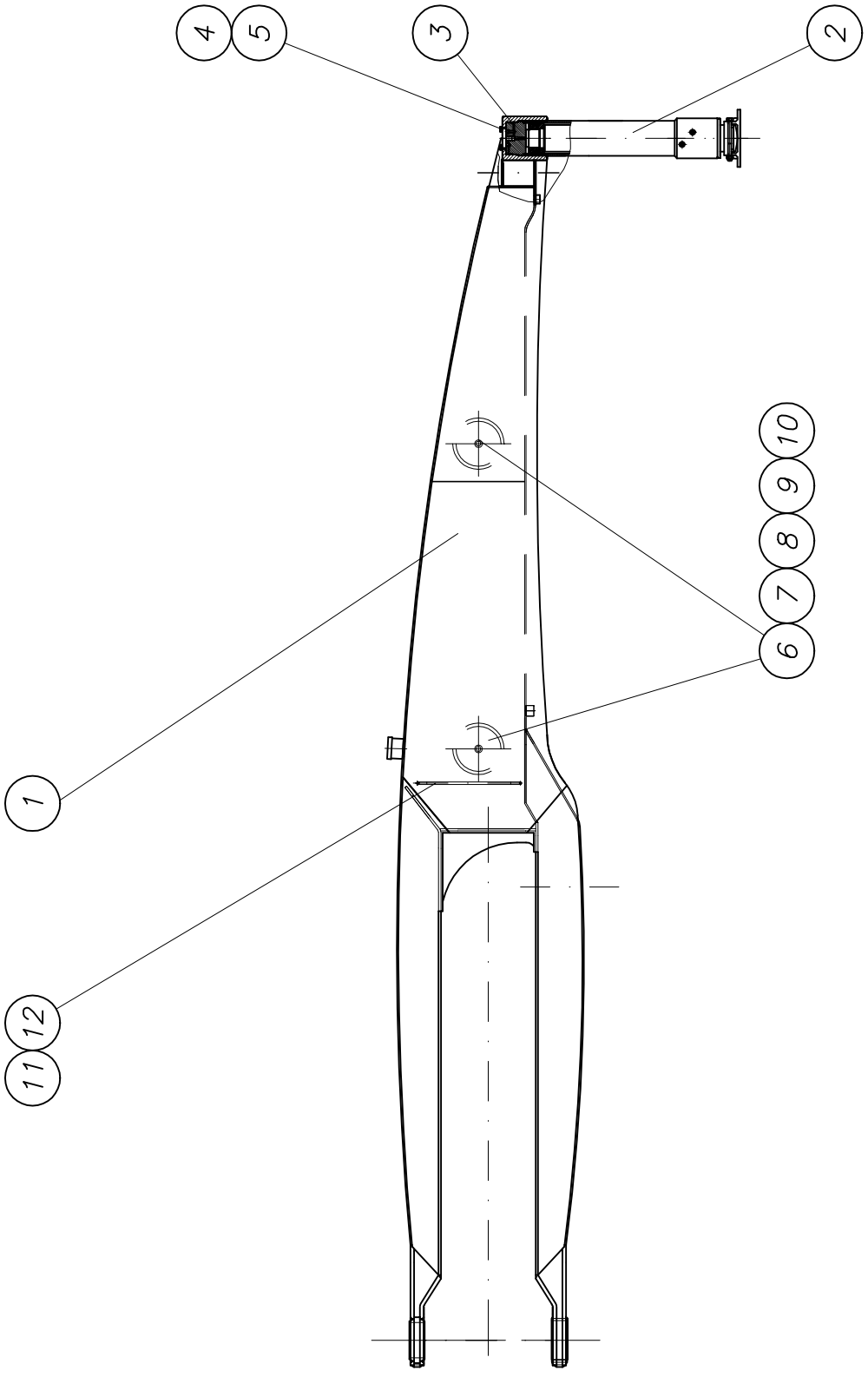


PARTS LIST

01.12.05 08:44:31

part list	description	created	index	valid from	valid to
B632330	rear right stabilizer 42XXT cpl.	27.02.04 ek	a	03.06.05	

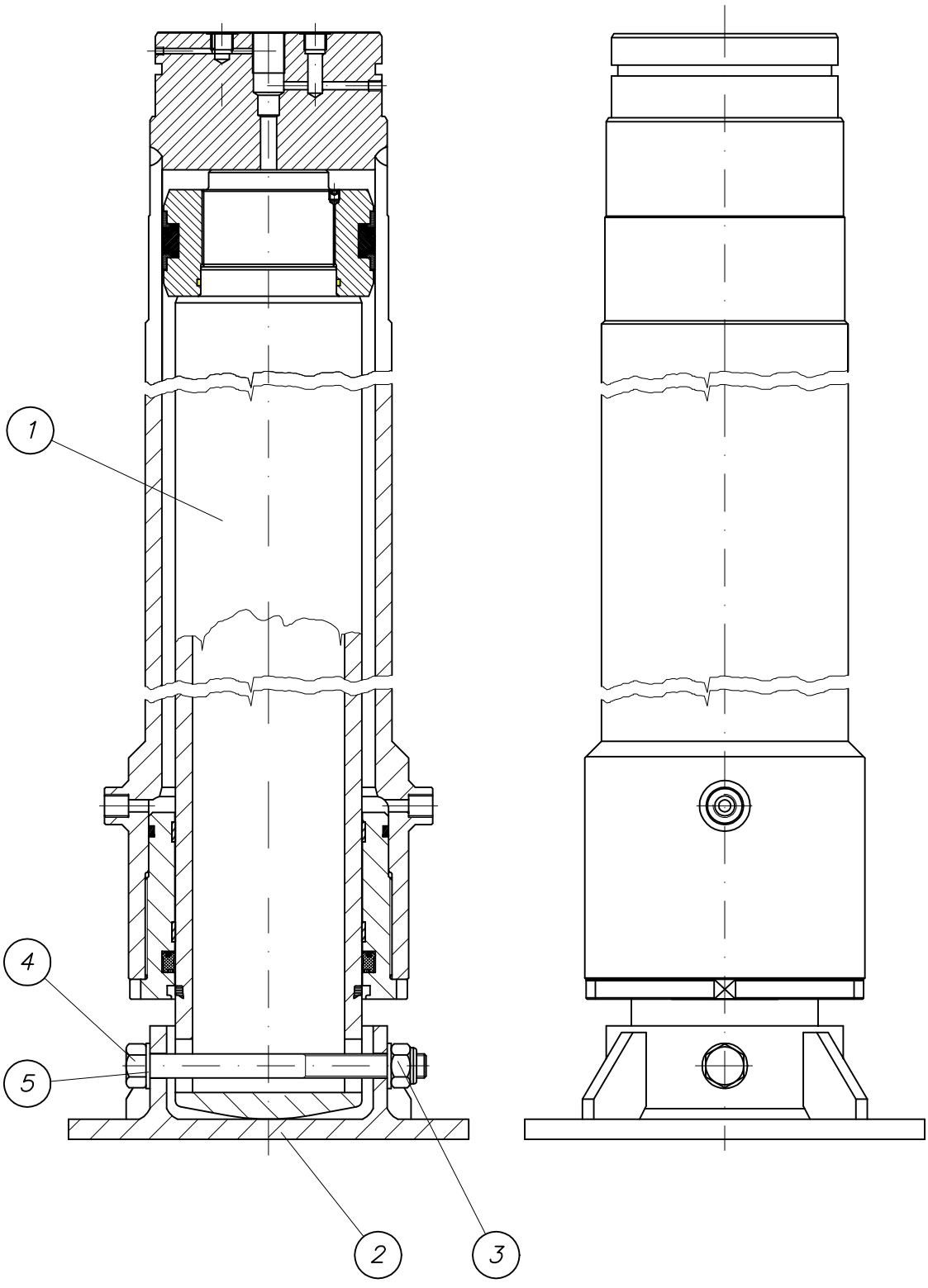
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	rear outrigger XXT 42 right process own parts list	B632315				1,00 Stk
2	jack cylinder own parts list	WAI109673		a 25.07.05		1,00 Stk
3	O-ring 129,2 x 5,7	WAI101441				1,00 Stk
4	hexagon bolt M16 x 50	WAI106269			0,17	4,00 Stk
5	spring washer A16	WAI102072			0,01	4,00 Stk
6	cover for oiltank D236 X 27 36XT	B610033 RD 240x30	1747 Al99		1,80	2,00 Stk
7	star for oilcover FL 15X 220X 220	B610034 Fl 220x220x15	1017 S235JR	a 12.02.03	2,00	2,00 Stk
8	O-ring 217x5, No. A0120.371	WAI106011				2,00 Stk
9	cheese head screw M 16 x 65	WAI103388				2,00 Stk
10	u-seal 16,7 x 24 x 1,5T	WAI101572				2,00 Stk
11	fuel hose DN 12	WAI103104				1,00 Mtr
12	hose clamp 15mm	WAI103103				2,00 Stk

Abstützzylinder

jack cylinder

WAI 109673a

Waitzinger
Baumaschinen GmbH



24.08.2005

PARTS LIST

29.11.05 11:59:44

part list	description	created	index	valid from	valid to
WAI109673	jack cylinder	31.05.05 RAINER	a	25.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	jack cylinder	WAI109755			140,70	1,00 Stk
2	foot	WAI106778				1,00 Stk
3	hex. nut M18 DIN 985 8. VERZ.	WAI109671				1,00 Stk
4	washer 19	WAI109672				1,00 Stk
5	hexagon screw M 18 x 220	WAI109670				1,00 Stk

Abstützung hinten links kpl.

outrigger left stabilizer cpl.

B 63 2 325a

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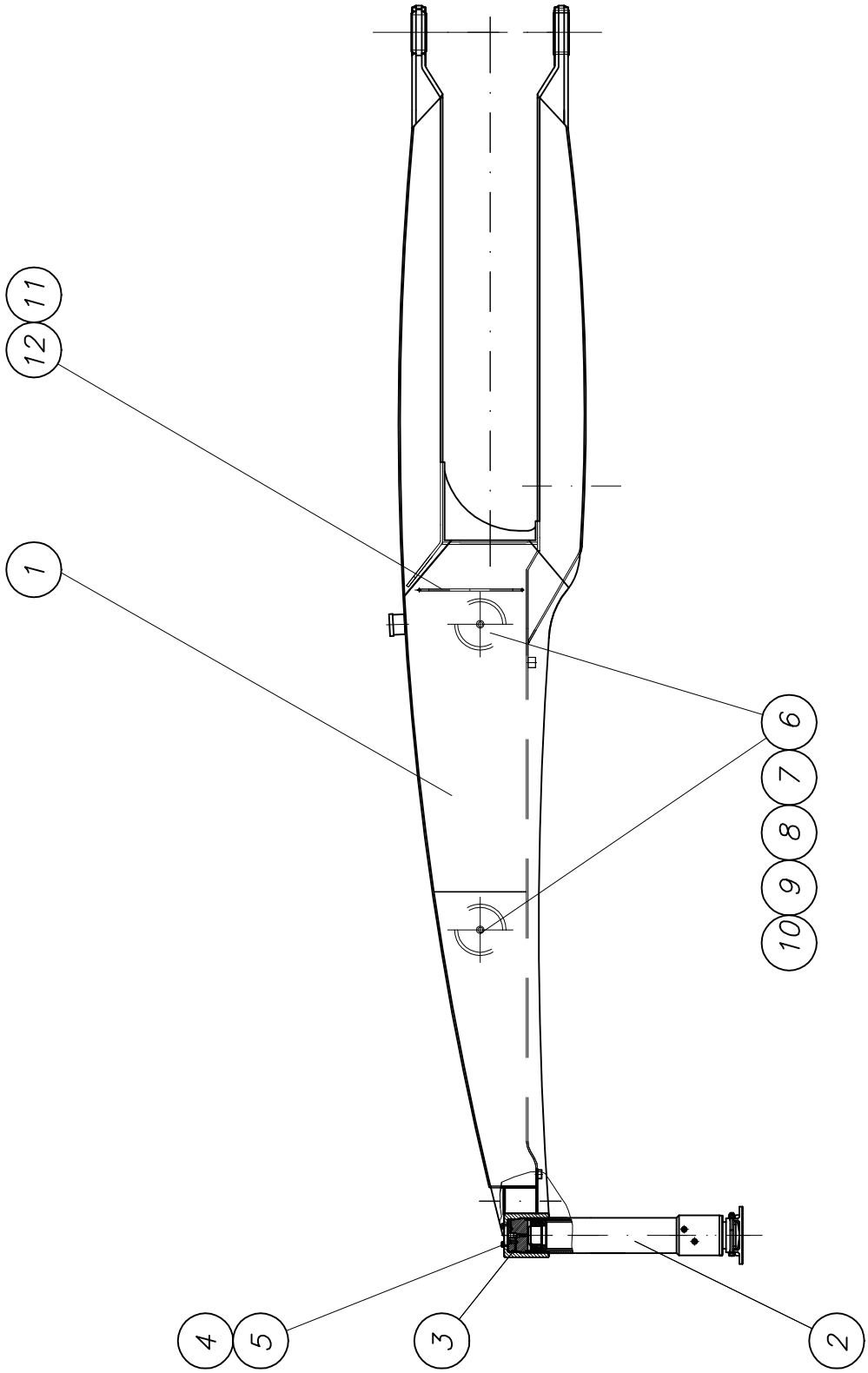

06.06.2005

PARTS LIST

01.12.05 08:45:32

part list	description	created	index	valid from	valid to
B632325	rear left stabilizer 42XXT cpl.	27.02.04 ek	a	03.06.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	rear outrigger XXT 42 left process own parts list	B632320				1,00 Stk
2	jack cylinder own parts list	WAI109673		a 25.07.05		1,00 Stk
3	O-ring 129,2 x 5,7	WAI101441				1,00 Stk
4	hexagon bolt M16 x 50	WAI106269			0,17	4,00 Stk
5	spring washer A16	WAI102072			0,01	4,00 Stk
6	cover for oiltank D236 X 27 36XT	B610033 RD 240x30	1747 Al99		1,80	2,00 Stk
7	star for oilcover FL 15X 220X 220	B610034 Fl 220x220x15	1017 S235JR	a 12.02.03	2,00	2,00 Stk
8	O-ring 217x5, No. A0120.371	WAI106011				2,00 Stk
9	cheese head screw M 16 x 65	WAI103388				2,00 Stk
10	u-seal 16,7 x 24 x 1,5T	WAI101572				2,00 Stk
11	fuel hose DN 12	WAI103104				1,00 Mtr
12	hose clamp 15mm	WAI103103				2,00 Stk

Abstützung vorne rechts kpl.
outrigger front right cpl.

B 63 2 050f **1**

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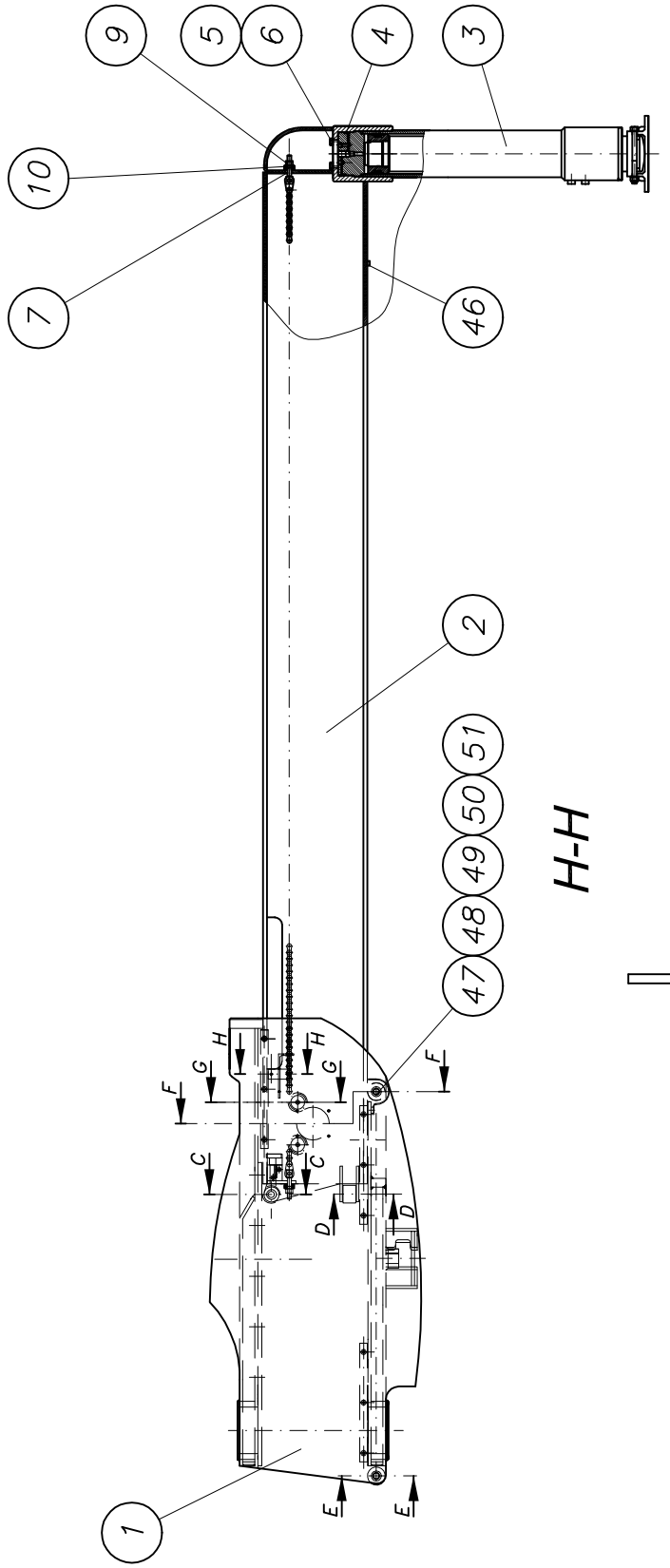

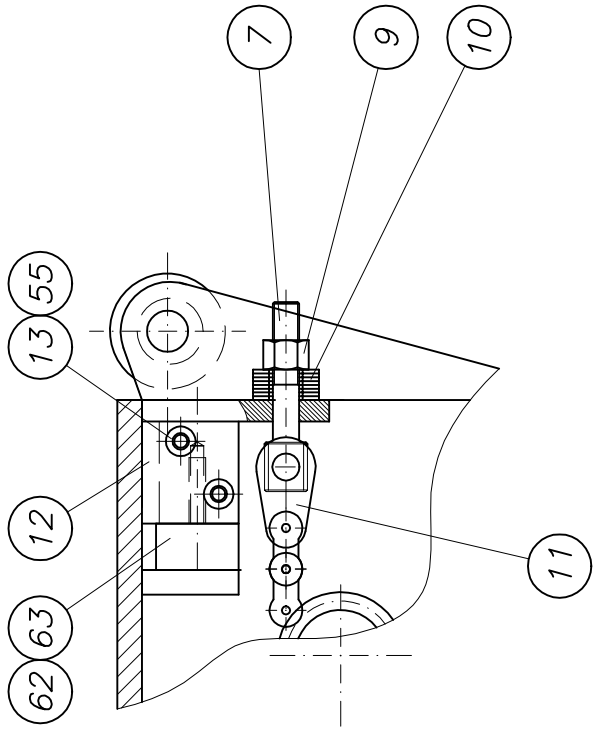

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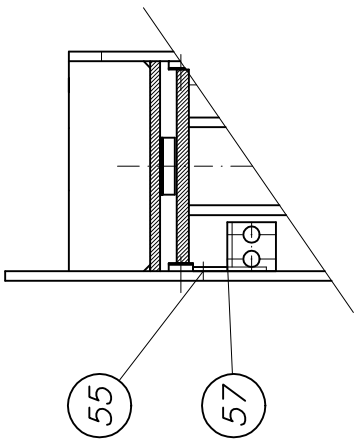
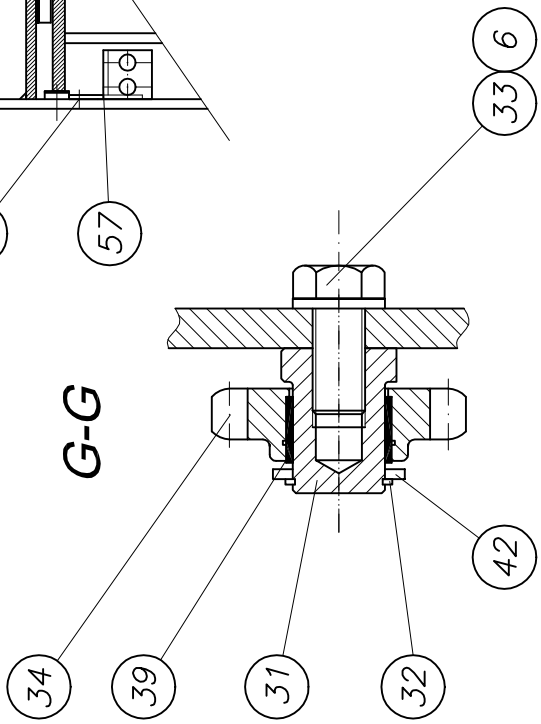


G-G



Abstützung vorne rechts kpl.
outrigger front right cpl.

B 63 2 050f 2

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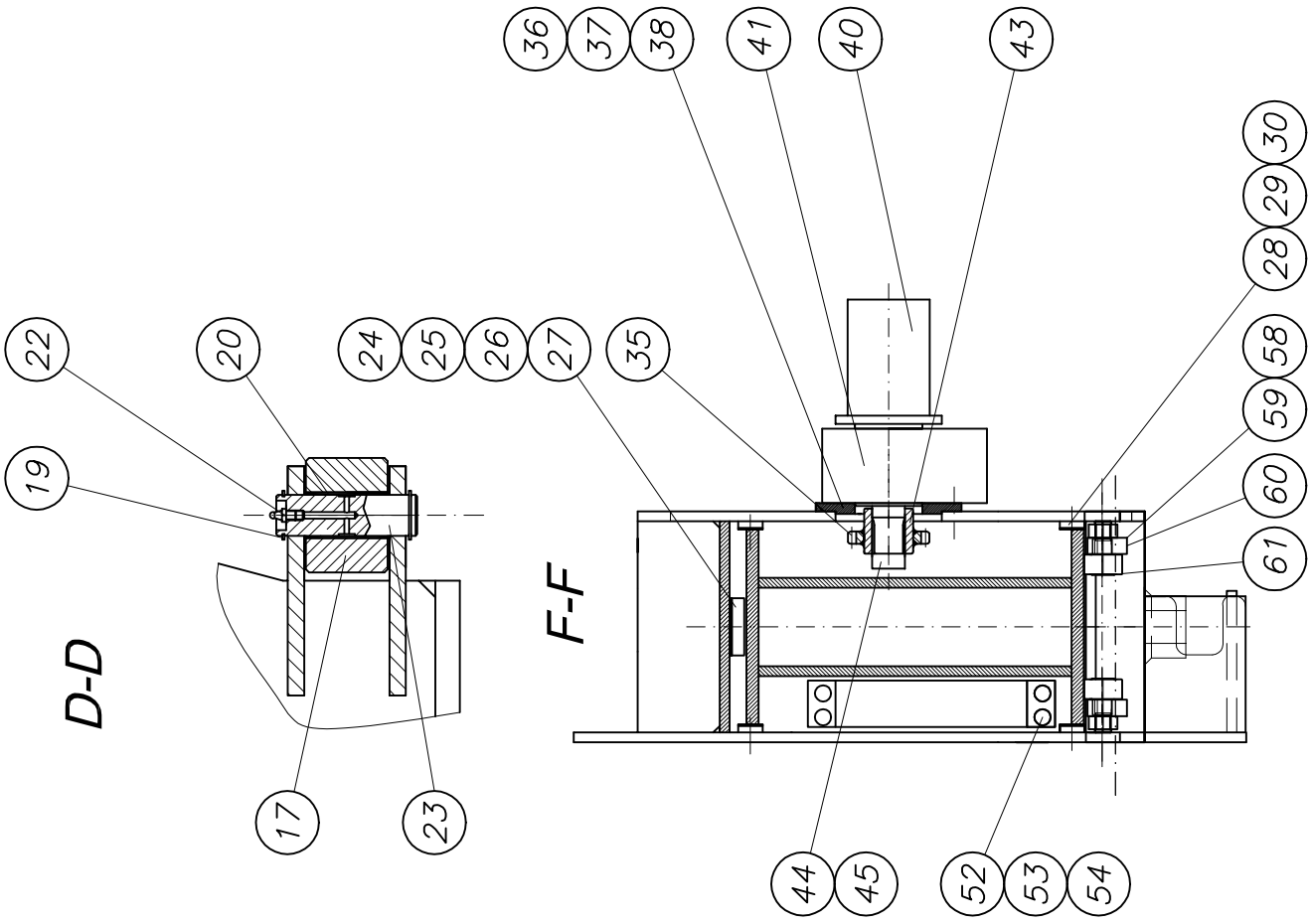

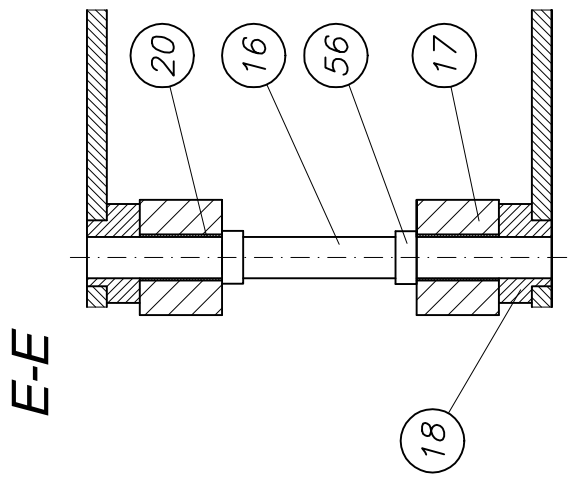

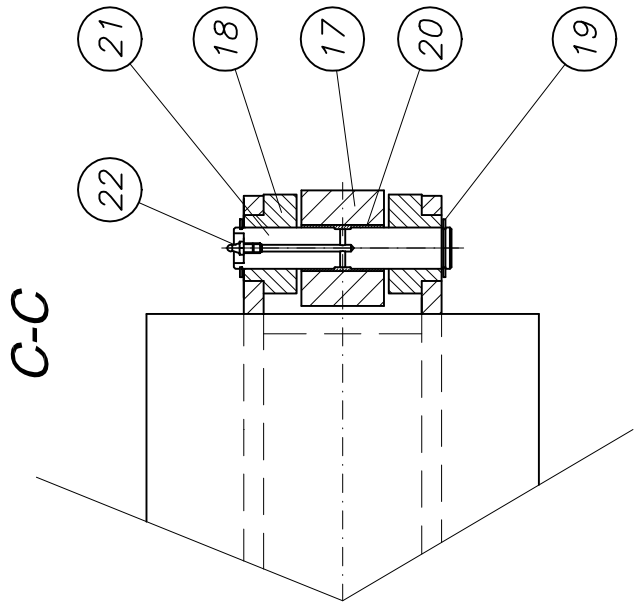

PARTS LIST

14.07.05 07:13:13

part list	description	created	index	valid from	valid to
B632050	front outrigger 42 meter	21.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	outrigger 42XXT front right processed own parts list	B632230			345,00	1,00 Stk
2	telecopic 42 XXT tooling own parts list	B632200		a 02.07.04	625,00	1,00 Stk
3	jack cylinder own parts list	WAI109673				1,00 Stk
4	O-ring 129,2 x 5,7	WAI101441				1,00 Stk
5	cheese head screw M 16 x 50	WAI102856				4,00 Stk
6	spring washer A16	WAI102072			0,01	6,00 Stk
7	bolt	B632053 Rd 36x115	1013 S355J2G3		0,20	2,00 Stk
9	nut M16 DIN 934	WAI101555				2,00 Stk
10	conical spring washer	WAI100506				16,00 Stk
11	chain own parts list	WAI107322				1,00 Stk
12	holder for chain cpl. right own parts list	B632068			2,20	1,00 Stk
13	alien bolt M 10 x 55	WAI105285			0,01	2,00 Stk
16	shaft	B639233 Rd 25x 290	669 S235J2G3	c 26.04.05	1,00	1,00 Stk
17	bolt	B632061 Rd 70x50	Lamigamid 320		1,00	4,00 Stk
18	eccenter	B632063 Rd 45x40	1013 S235J2G3		0,20	4,00 Stk
19	locking ring A 25 X 1.2 DIN 471	WAI103006				4,00 Stk
20	bushing DU 25 X 28 X 50	WAI106236				4,00 Stk
21	pin 25 x 136, 3P206	B610023 Rd 25 x 140	669 St50-2K		0,50	1,00 Stk
22	grease nipple M6 DIN 71412	WAI103355				2,00 Stk
23	pin 25 x 085 4P201	B610026 Rd 25 x 90	669 St50-2K		0,32	1,00 Stk
24	strip	B632093 Fl 70x15x1200	1017 S355J2G3		9,50	1,00 Stk

PARTS LIST

part list	description	created	index	valid from	valid to
B632050	front outrigger 42 meter	21.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
25	PLATE	B632094 Bl 1X15X1200	1623/EN10131 ST02Z	a 15.02.05	0,10	3,00 Stk
26	cylinder head screw M 12 x 25	WAI103698				1,00 Stk
27	sunk screw M 12 x 25	WAI107333				4,00 Stk
28	guide profil	B632059 30x8x470	PEUHMW 1000		0,12	4,00 Stk
29	PLATE	B632096 Bl 1x30x470	1623/EN10131 ST02Z	a 15.02.05	0,10	8,00 Stk
30	sunk screw M 10 x 20	WAI104689				12,00 Stk
31	bolt	B632043 Rd 35x47	1013 S355J2G3			2,00 Stk
32	locking ring	WAI107339				2,00 Stk
33	hexagon bolt M12 x 35	WAI102122			0,04	2,00 Stk
34	free pinion 9K115	WAI106040				2,00 Stk
35	gear 9K116	WAI106041				1,00 Stk
36	flange	B632044 Bl 15xd180	1543/EN10029 S235J2G3		2,00	1,00 Stk
37	zylinder head screw M10 x 30	WAI103826				8,00 Stk
38	spring washer A10	WAI102070			0,00	8,00 Stk
39	bushing 28x32x20	WAI107340				2,00 Stk
40	hydraulic motor 250ccm	WAI107377			7,25	1,00 Stk
41	gearbox ODR 70	WAI107378				1,00 Stk
42	washer	B632042 Bl 3xd40	1543/EN10029 S355J2G3			2,00 Stk
43	conection piece	B632067 Rd 60x55	668 S355J2G3	a 23.02.04	1,50	1,00 Stk
44	cover f. telescop motor	WAI108739			0,20	1,00 Stk
45	countersunk screw	WAI103176				3,00 Stk

PARTS LIST

14.07.05 07:13:13

part list	description	created	index	valid from	valid to
B632050	front outrigger 42 meter	21.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
46	fixing sheet	B632104 FL 10x20x60	174 S355J2G3		0,10	1,00 Stk
47	housing	B951044 Bl 3x250x232	 Alu	b 11.07.05	0,50	1,00 Stk
48	strip	B632108 Fl 12x25x150	174 S355J2G3	b 11.07.05	0,29	1,00 Stk
49	cheese head screw M 8 x 10	WAI108302				2,00 Stk
50	washer 8.4	WAI101625				2,00 Stk
51	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	2,00 Stk
52	energie chain	WAI108645			0,01	1,00 Stk
53	cheese head screw M 6x16	WAI101658				4,00 Stk
54	spring washer A6	WAI103000				4,00 Stk
55	sunk screw M 10 x 20	WAI104689				4,00 Stk
56	fixing ring	WAI108884 Di25 Da40 B16	DIN 705		0,05	2,00 Stk
57	bolt right own parts list	B632117		b 30.03.05		1,00 Stk
58	bracket	B632179 Bl 20x48x133	1543/EN10029 S355J2G3	a 11.07.05	0,70	2,00 Stk
59	spacer plate	B632181 Bl 1x75x20	1623/EN10131 S235J2G3		0,01	4,00 Stk
60	hexagon bolt M 8 x 50 DIN 931 8.8	wai108743				4,00 Stk
61	roller	wai109571 Rd 60 x 30	 Polyamid		0,02	2,00 Stk
62	stop	B632182 50x28	 Polyamid		0,10	1,00 Stk
63	cheese head screw	wai101567			0,01	1,00 Stk

Abstützung vorne links kpl.

outrigger front left cpl.

B 63 2 051f 1

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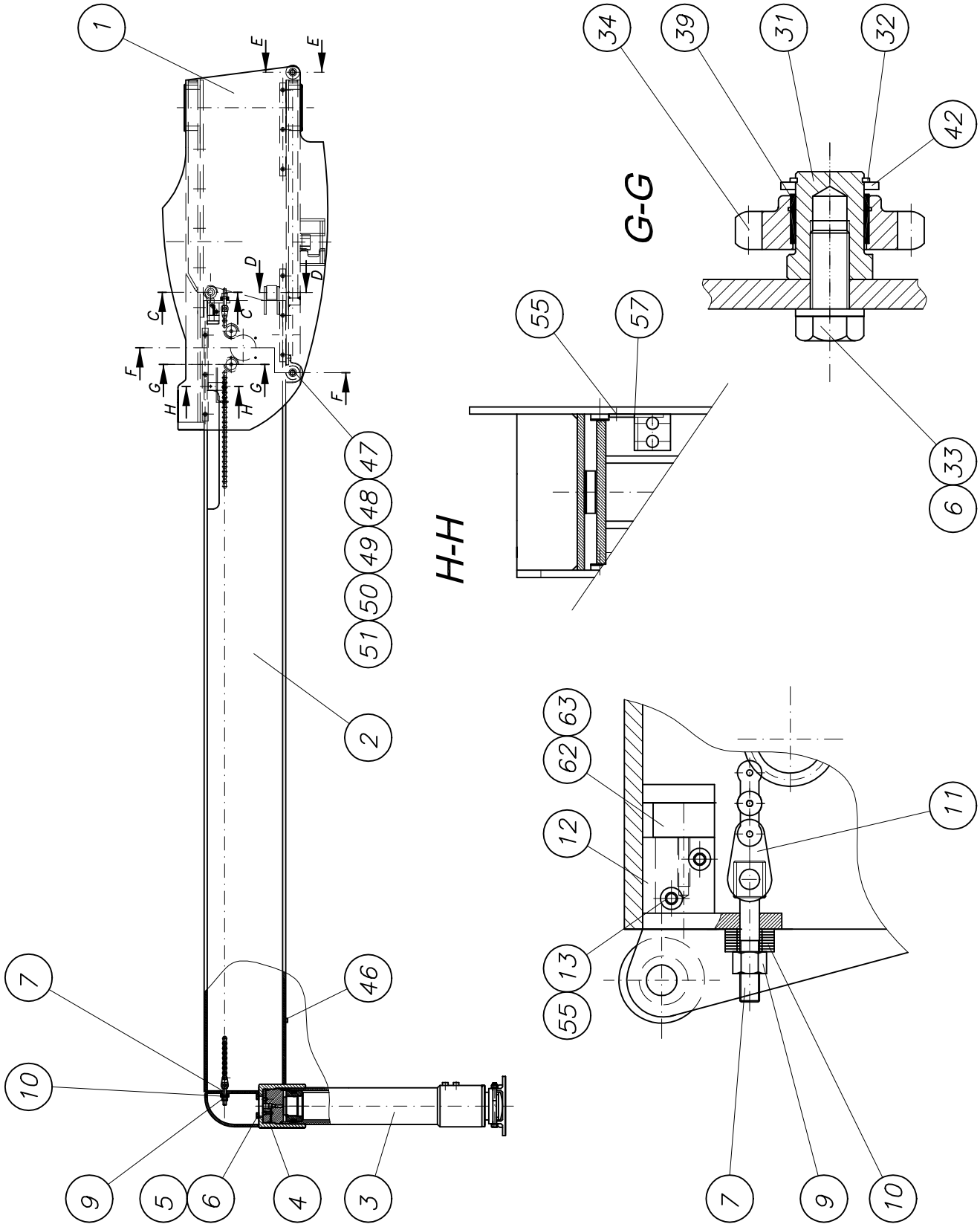
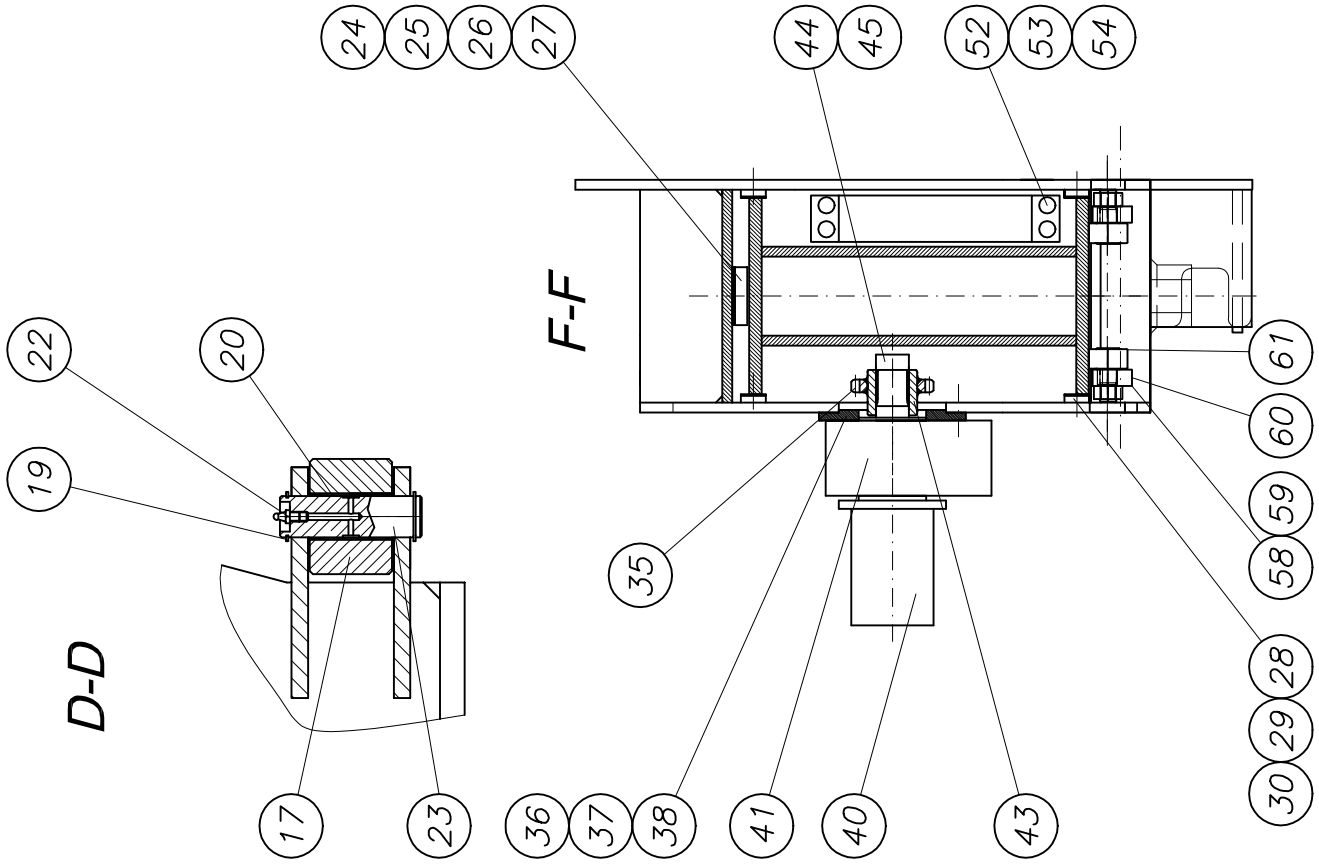


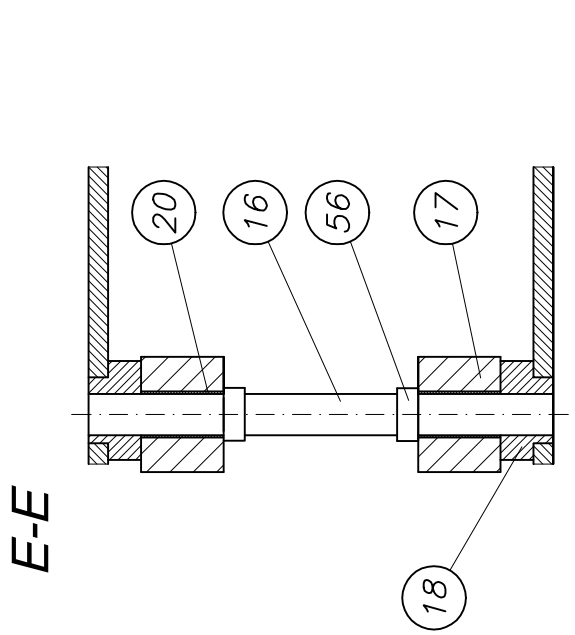
13.07.2005

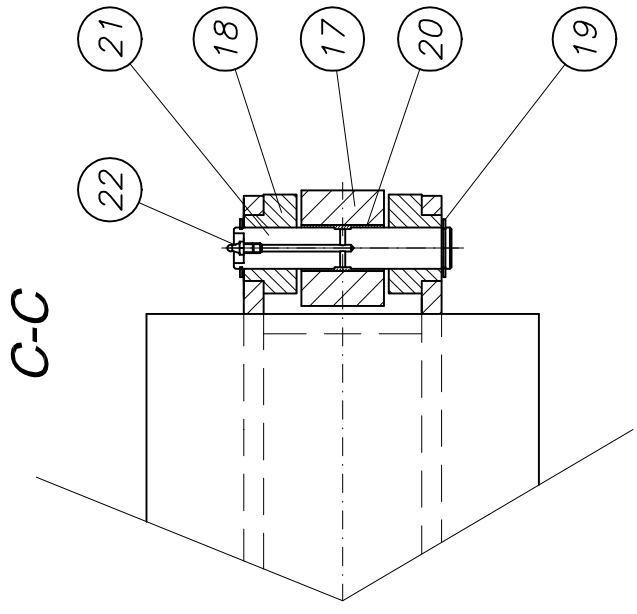
Abstützung vorne links kpl.
outrigger front left cpl.

B 63 2 051f **2**

Waitzinger
Baumaschinen GmbH







PARTS LIST

14.07.05 07:13:55

part list	description	created	index	valid from	valid to
B632051	front left stabilizer 42XXT cpl.	22.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	outrigger 42XXT front left processed own parts list	B632235			345,00	1,00 Stk
2	telecopic 42 XXT tooling own parts list	B632202		a 02.07.04	625,00	1,00 Stk
3	jack cylinder own parts list	WAI109673				1,00 Stk
4	O-ring 129,2 x 5,7	WAI101441				1,00 Stk
5	cheese head screw M 16 x 50	WAI102856				4,00 Stk
6	spring washer A16	WAI102072			0,01	6,00 Stk
7	bolt	B632053 Rd 36x115	1013 S355J2G3		0,20	2,00 Stk
9	nut M16 DIN 934	WAI101555				2,00 Stk
10	conical spring washer	WAI100506				16,00 Stk
11	chain own parts list	WAI107322				1,00 Stk
12	holder for chain cpl. left own parts list	B632048		a 02.07.04	2,20	1,00 Stk
13	alien bolt M 10 x 55	WAI105285			0,01	2,00 Stk
16	shaft	B639233 Rd 25x 290	669 S235J2G3	c 26.04.05	1,00	1,00 Stk
17	bolt	B632061 Rd 70x50	Lamigamid 320		1,00	4,00 Stk
18	eccenter	B632063 Rd 45x40	1013 S235J2G3		0,20	4,00 Stk
19	locking ring A 25 X 1.2 DIN 471	WAI103006				4,00 Stk
20	bushing DU 25 X 28 X 50	WAI106236				4,00 Stk
21	pin 25 x 136, 3P206	B610023 Rd 25 x 140	669 St50-2K		0,50	1,00 Stk
22	grease nipple M6 DIN 71412	WAI103355				2,00 Stk
23	pin 25 x 085 4P201	B610026 Rd 25 x 90	669 St50-2K		0,32	1,00 Stk
24	strip	B632093 Fl 70x15x1200	1017 S355J2G3		9,50	1,00 Stk

PARTS LIST

14.07.05 07:13:55

part list	description	created	index	valid from	valid to
B632051	front left stabilizer 42XXT cpl.	22.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
25	PLATE	B632094 Bl 1X15X1200	1623/EN10131 ST02Z	a 15.02.05	0,10	3,00 Stk
26	cylinder head screw M 12 x 25	WAI103698				1,00 Stk
27	sunk screw M 12 x 25	WAI107333				4,00 Stk
28	guide profil	B632059 30x8x470	PEUHMW 1000		0,12	4,00 Stk
29	PLATE	B632096 Bl 1x30x470	1623/EN10131 ST02Z	a 15.02.05	0,10	8,00 Stk
30	sunk screw M 10 x 20	WAI104689				12,00 Stk
31	bolt	B632043 Rd 35x47	1013 S355J2G3			2,00 Stk
32	locking ring	WAI107339				2,00 Stk
33	hexagon bolt M12 x 35	WAI102122			0,04	2,00 Stk
34	free pinion 9K115	WAI106040				2,00 Stk
35	gear 9K116	WAI106041				1,00 Stk
36	flange	B632044 Bl 15xd180	1543/EN10029 S235J2G3		2,00	1,00 Stk
37	zylinder head screw M10 x 30	WAI103826				8,00 Stk
38	spring washer A10	WAI102070			0,00	8,00 Stk
39	bushing 28x32x20	WAI107340				2,00 Stk
40	hydraulic motor 250ccm	WAI107377			7,25	1,00 Stk
41	gearbox ODR 70	WAI107378				1,00 Stk
42	washer	B632042 Bl 3xd40	1543/EN10029 S355J2G3			2,00 Stk
43	conection piece	B632067 Rd 60x55	668 S355J2G3	a 23.02.04	1,50	1,00 Stk
44	cover f. telescop motor	WAI108739			0,20	1,00 Stk
45	countersunk screw	WAI103176				3,00 Stk

PARTS LIST

14.07.05 07:13:55

part list	description	created	index	valid from	valid to
B632051	front left stabilizer 42XXT cpl.	22.05.02 Mi	f	12.07.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
46	fixing sheet	B632104 FL 10x20x60	174 S355J2G3		0,10	1,00 Stk
47	housing	B951044 Bl 3x250x232	 Alu	b 11.07.05	0,50	1,00 Stk
48	strip	B632108 Fl 12x25x150	174 S355J2G3	b 11.07.05	0,29	1,00 Stk
49	cheese head screw M 8 x 10	WAI108302				2,00 Stk
50	washer 8.4	WAI101625				2,00 Stk
51	spring washer A8 DIN 127 VERZ.	WAI102205			0,00	2,00 Stk
52	energie chain	WAI108645			0,01	1,00 Stk
53	cheese head screw M 6x16	WAI101658				4,00 Stk
54	spring washer A6	WAI103000				4,00 Stk
55	sunk screw M 10 x 20	WAI104689				4,00 Stk
56	fixing ring	WAI108884 Di25 Da40 B16	DIN 705		0,05	2,00 Stk
57	bolt left own parts list	B632114		b 30.03.05		1,00 Stk
58	bracket	B632179 Bl 20x48x133	1543/EN10029 S355J2G3	a 11.07.05	0,70	2,00 Stk
59	spacer plate	B632181 Bl 1x75x20	1623/EN10131 S235J2G3		0,01	4,00 Stk
60	hexagon bolt M 8 x 50 DIN 931 8.8	wai108743				4,00 Stk
61	roller	WAI109571 Rd 60 x 30	 Polyamid		0,02	2,00 Stk
62	stop	B632182 50x28	 Polyamid		0,10	1,00 Stk
63	cheese head screw	WAI101567			0,01	1,00 Stk

Ausschwenkzylinder vorne kpl.

swing cylinder front cpl.

B 63 2 036a

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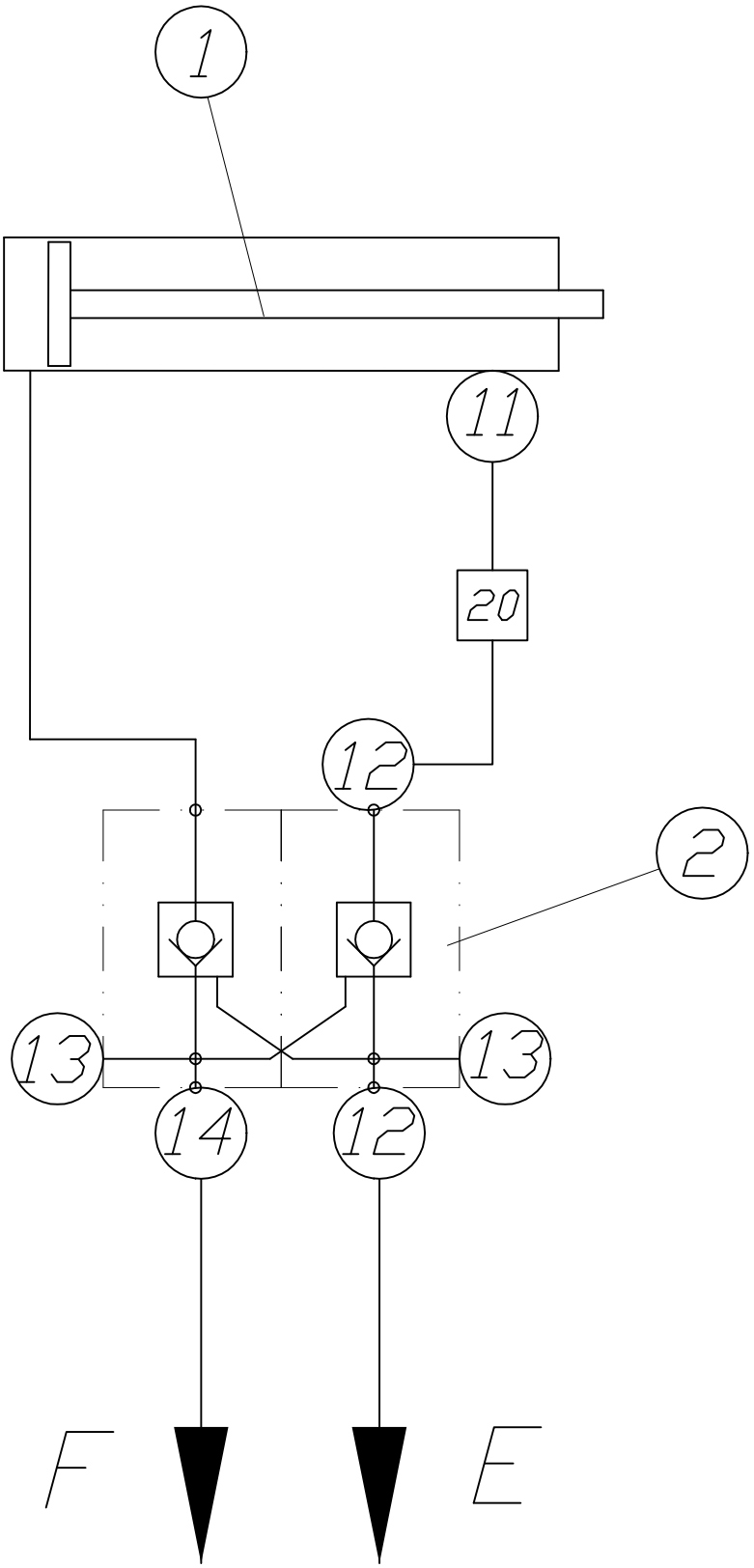

PARTS LIST

23.06.05 08:14:50

part list	description	created	index	valid from	valid to
B632036	swing cylinder cpl.	11.11.03 Mi	a	02.06.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	swing cylinder 100x 60 x 475 42XXT own parts list	WAI107364				1,00 Stk
2	pilot operated twin check valve	WAI106410				1,00 Stk
11	banjo coupling L12 RD	WAI103684				1,00 Stk
12	straight male stud couplings L12D	WAI100548				2,00 Stk
13	locking screw G 3/8	WAI100521				2,00 Stk
14	straight male stud couplings L12R 1.5 own parts list	WAI106427			0,13	1,00 Stk
20	hydr. pipe 12 x 2	WAI102022			0,49	0,30 Mtr

Ausschwenkzylinder kpl.

swing cylinder cpl.

WAI 107364

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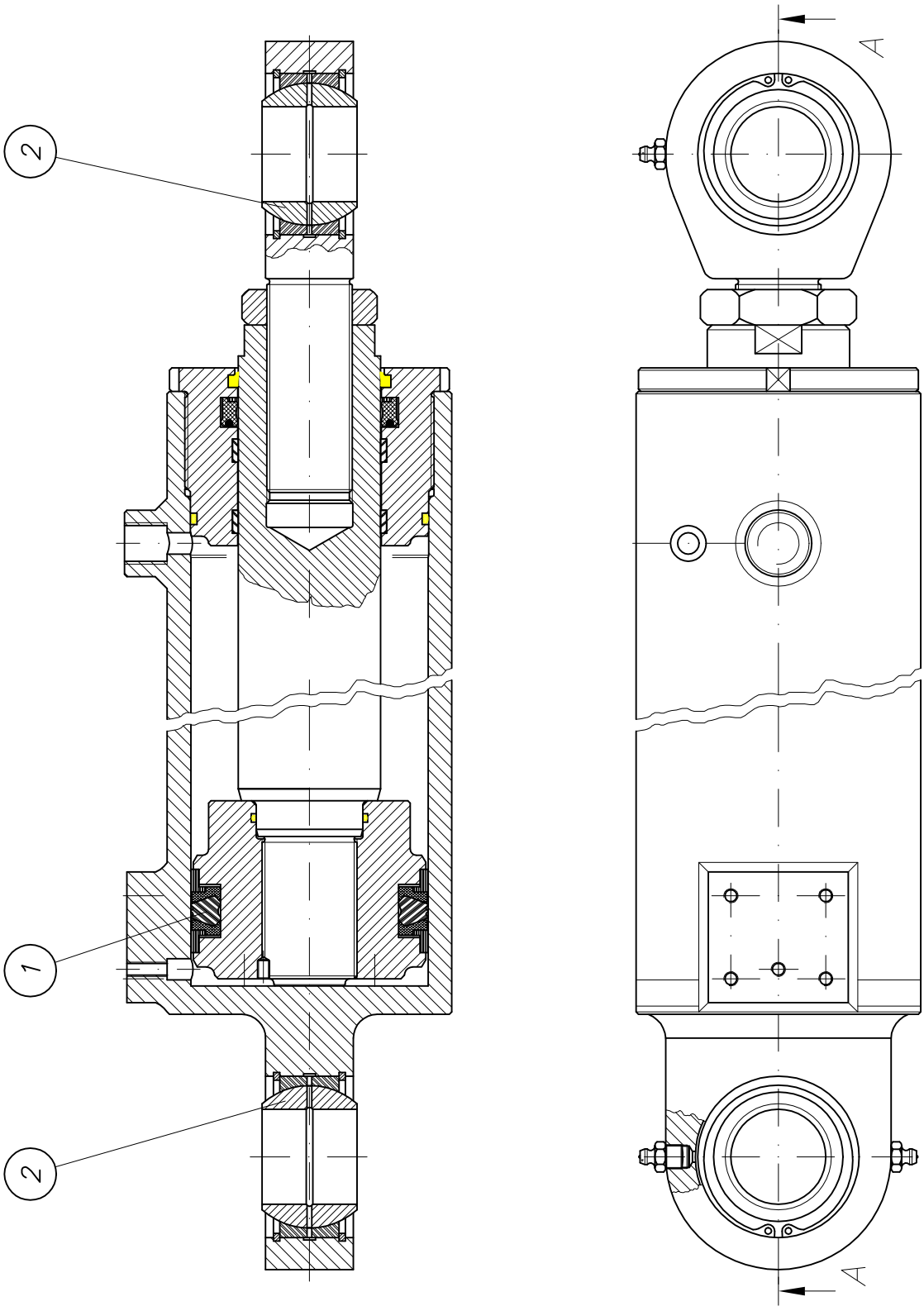
Baumaschinen GmbH



27.11.2003

PARTS LIST

23.06.05 08:18:04

part list	description	created	index	valid from	valid to
WAI107364	swing cylinder 100x 60 x 475 42XXT	24.10.03 HG			

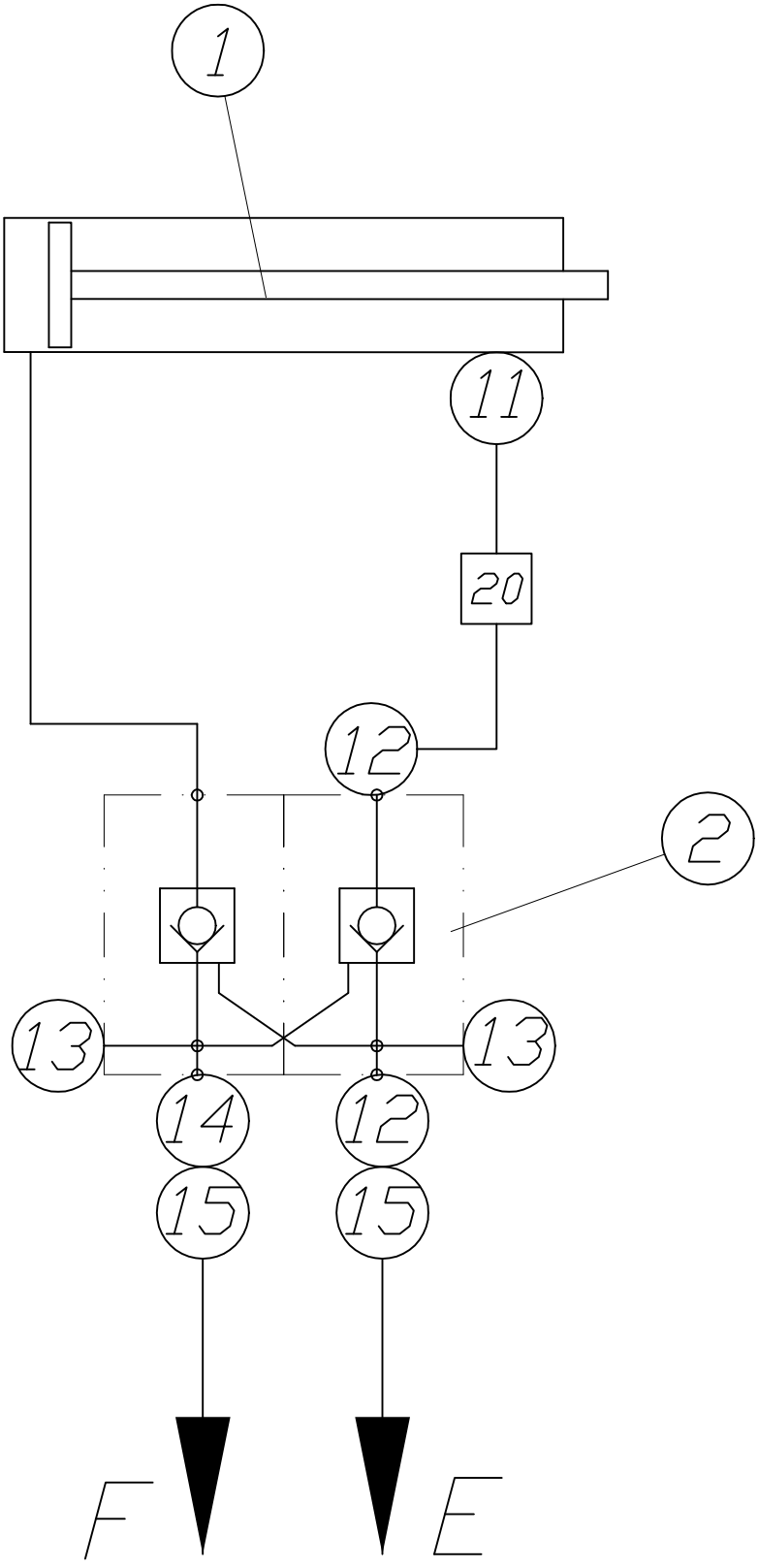
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	sealing kit for swing cylinder 42XXT	WAI108535				1,00 Stk
2	joint bearing	WAI100233			0,60	2,00 Stk

Ausschwenkzylinder hinten kpl.

swing cylinder cpl.

B 63 2 037a

Waitzinger
Baumaschinen GmbH



PARTS LIST

23.06.05 08:16:14

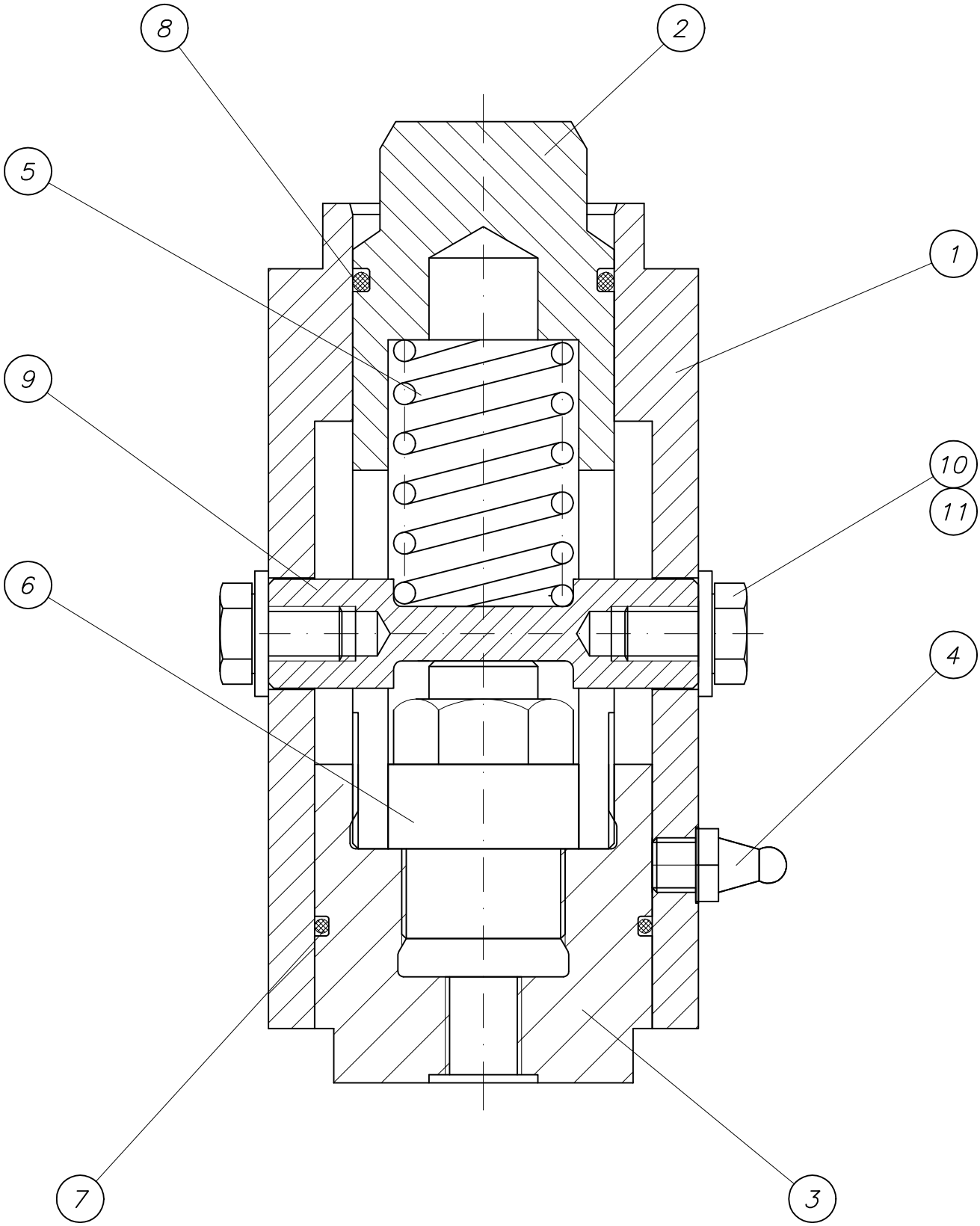
part list	description	created	index	valid from	valid to
B632037	swing cylinder cpl.	11.11.03 Mi	a	02.06.05	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	swing cylinder 100x 60 x 475 42XXT own parts list	WAI107364				1,00 Stk
2	pilot operated twin check valve	WAI106410				1,00 Stk
11	banjo coupling L12 RD	wai103684				1,00 Stk
12	straight male stud couplings L12D	WAI100548				2,00 Stk
13	locking screw G 3/8	WAI100521				2,00 Stk
14	straight male stud couplings L12R 1.2 own parts list	WAI107456			0,13	1,00 Stk
15	swivel elbow L12	WAI103794				2,00 Stk
20	hydr. pipe 12 x 2	WAI102022			0,49	0,30 Mtr

Transportsicherung vorne
transport safety device front

B 63 9 197b

Waitzinger
Baumaschinen GmbH



17.10.2003

PARTS LIST

23.06.05 08:21:11

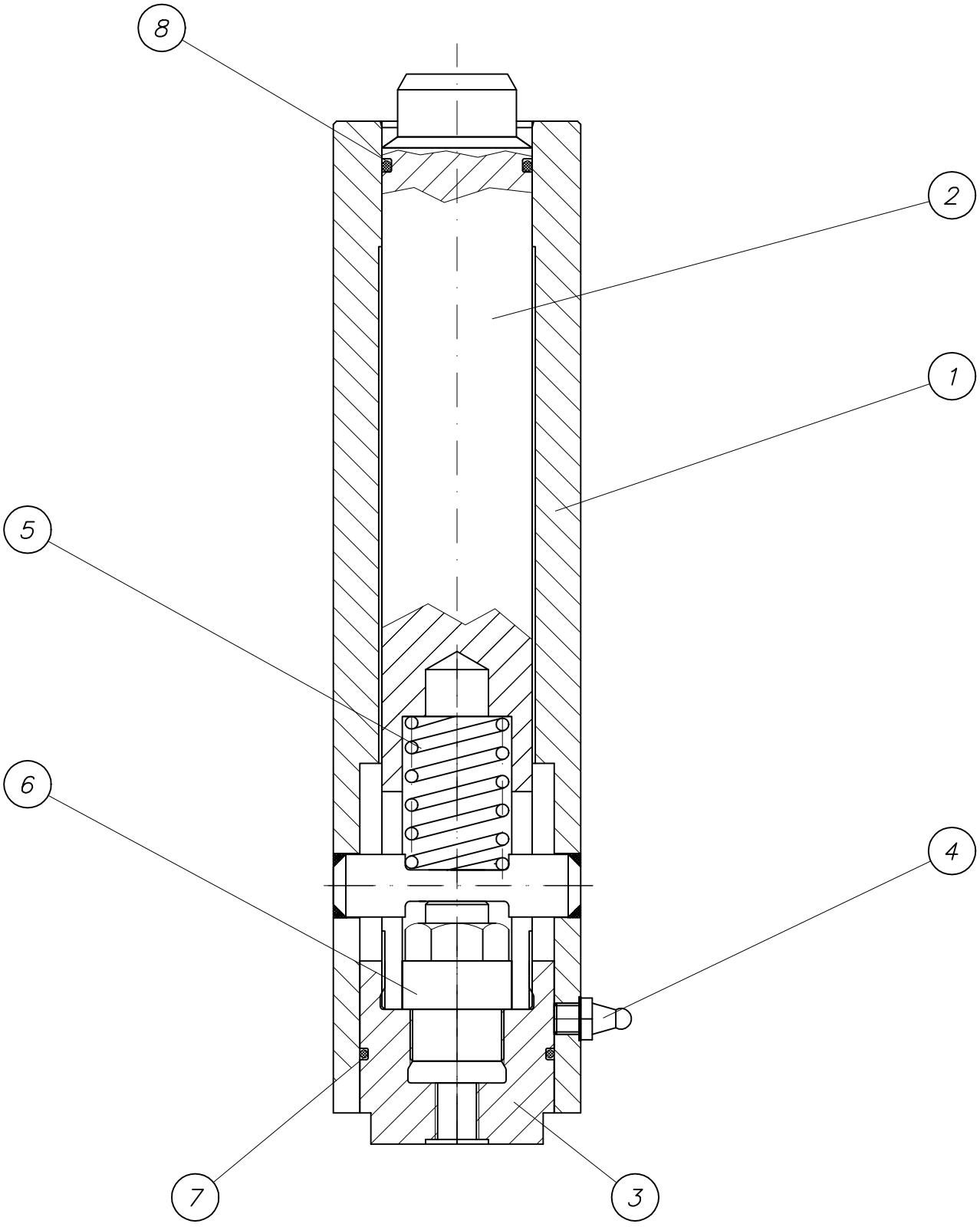
part list	description	created	index	valid from	valid to
B639197	transport savety device	04.12.00 ek	b	14.10.03	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	pipe	B639198 Ro D82.5x20x155	2448 St52-3	c 16.02.04		1,00 Stk
2	bolt	B639199 Rd 50x135	1013 St52-3	a 17.09.03		1,00 Stk
3	nut	B639201 Rd 70	1013 St52-3	a 17.12.02		1,00 Stk
4	grease nipple H1 M10 X 1 DIN 71412	WAI100805			0,01	1,00 Stk
5	pressure spring	WAI106537				1,00 Stk
6	cylinder	WAI106536				1,00 Stk
7	O-ring 56.74x3	WAI106538				1,00 Stk
8	O-ring	WAI101260				1,00 Stk
9	bolt	B639215 Rd 20x80	1013 S355J2G3		0,15	1,00 Stk
10	hexagon bolt M10 x 16	WAI102886				2,00 Stk
11	washer 10.5	WAI101559			0,00	2,00 Stk

Transportsicherung hinten
transport safety device rear

B 63 9 207b

Waitzinger
Baumaschinen GmbH



25.10.2004

PARTS LIST

23.06.05 08:20:46

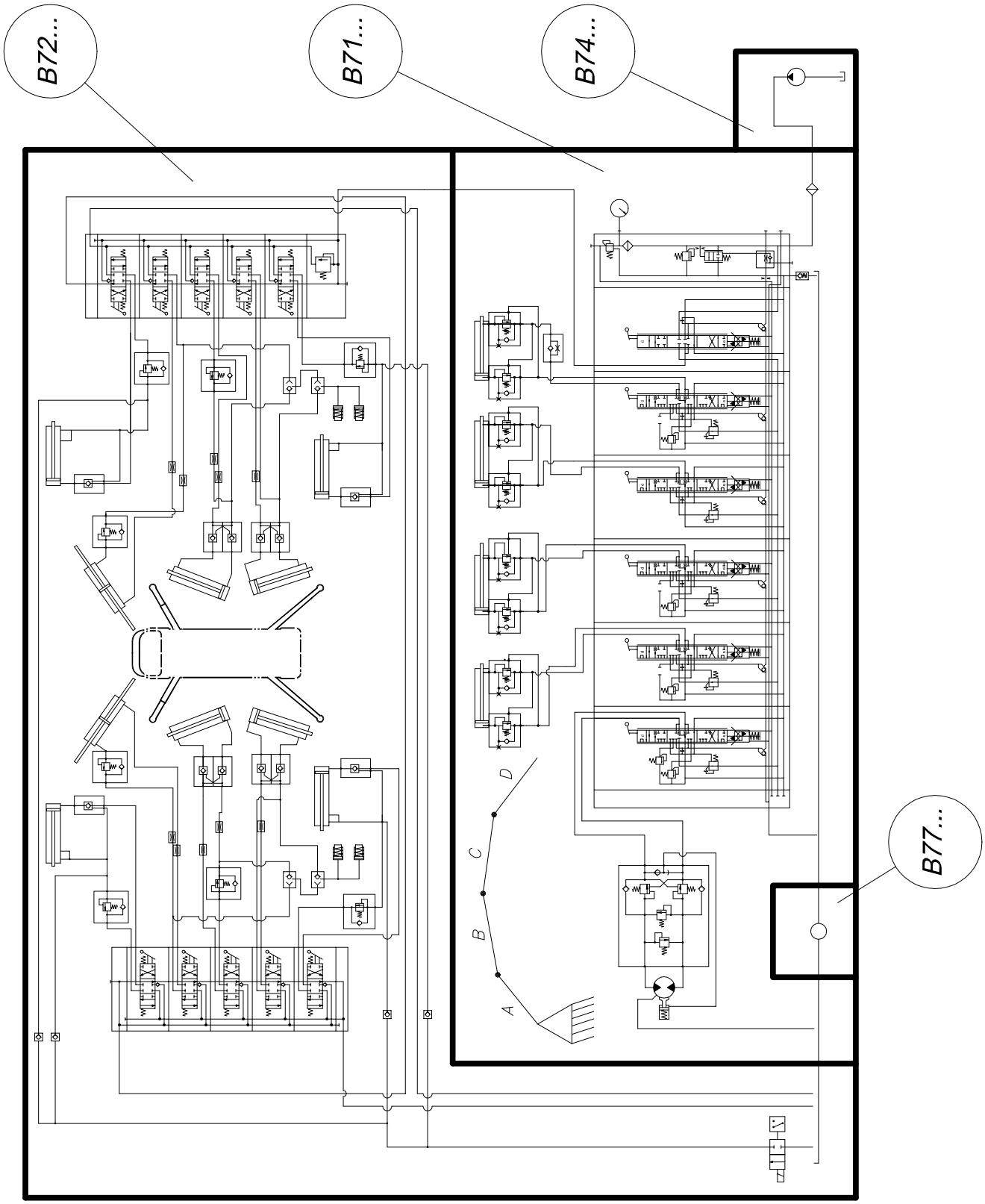
part list	description	created	index	valid from	valid to
B639207	transport savety device	04.12.00 ek	b	20.10.04	

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	pipe cpl. own parts list	B639218				1,00 Stk
2	bolt	B639209 Rd 50x320	1013 St52-3	b 20.10.04		1,00 Stk
3	nut	B639201 Rd 70	1013 St52-3	a 17.12.02		1,00 Stk
4	grease nipple H1 M10 X 1 DIN 71412	WAI100805			0,01	1,00 Stk
5	pressure spring	WAI106537				1,00 Stk
6	cylinder	WAI106536				1,00 Stk
7	O-ring 56.74x3	WAI106538				1,00 Stk
8	O-ring	WAI101260				1,00 Stk

Übersicht B 70 - B 79

over view B 70 - B 79

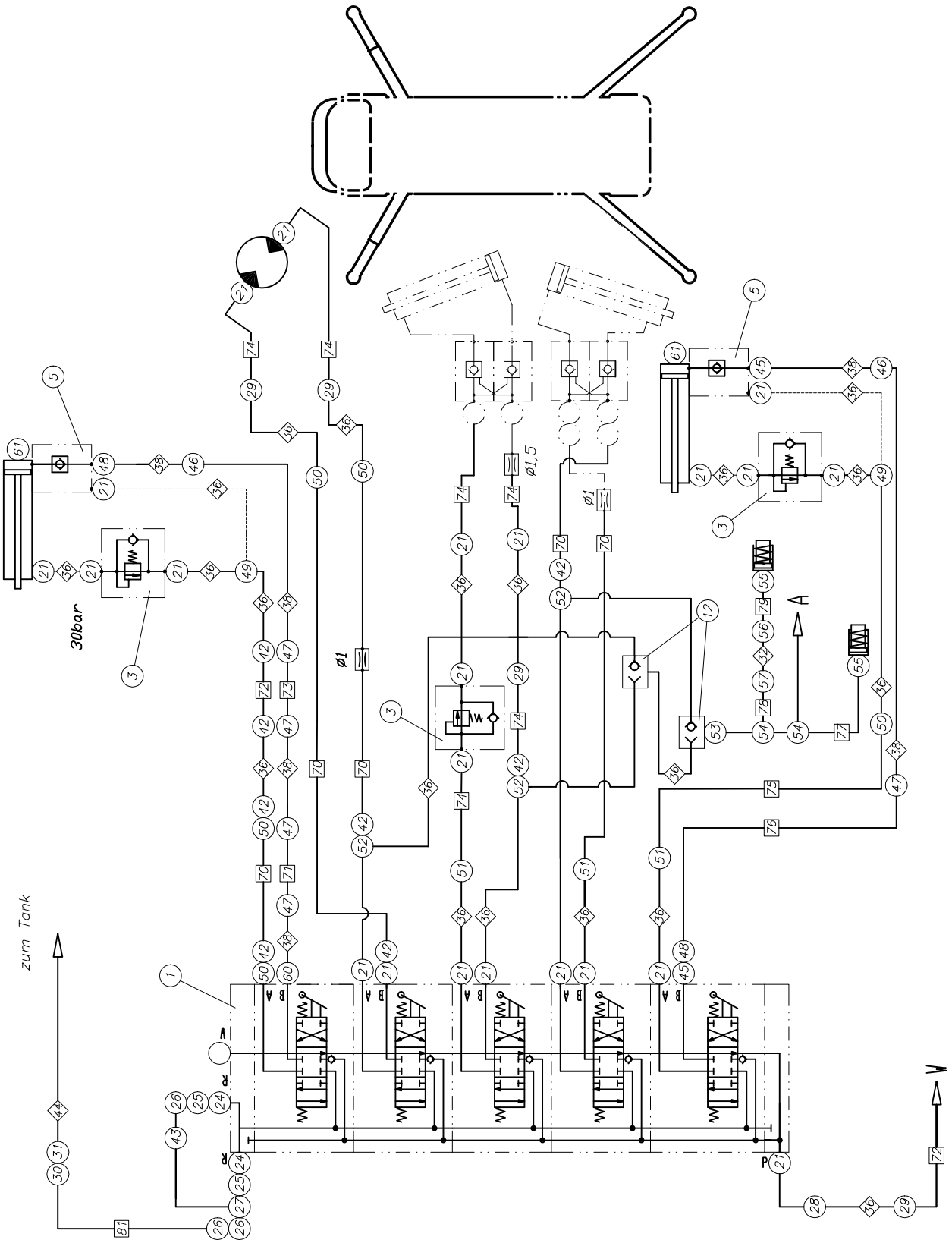
Waitzinger
Baumaschinen GmbH



Verrohrungsplan Abstützung
piping diagram outrigger

B 72 2 010 1

Waitzinger
Baumaschinen GmbH

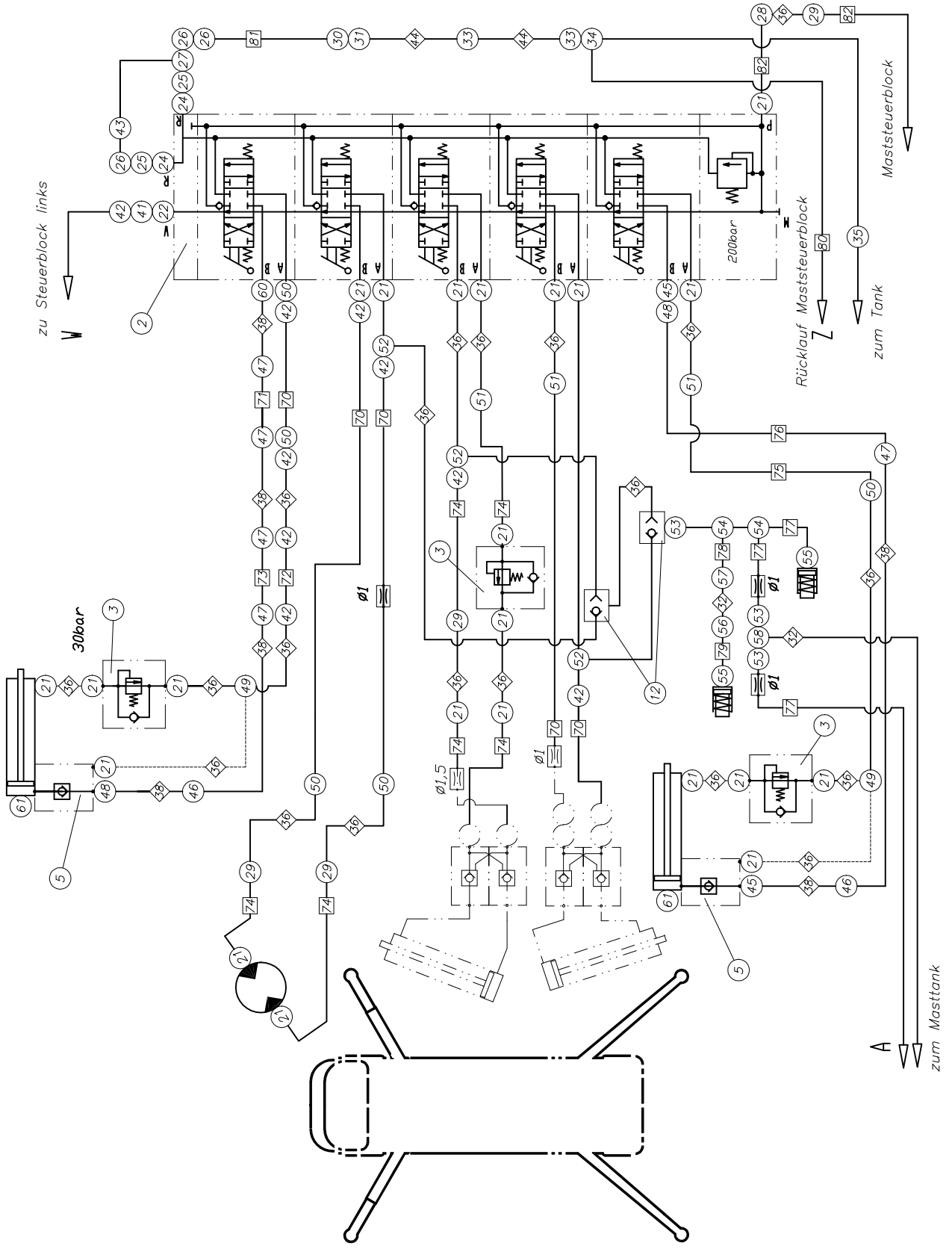


27.11.2003

Verrohrungsplan Abstützung
piping diagram outrigger

B 72 2 010 2

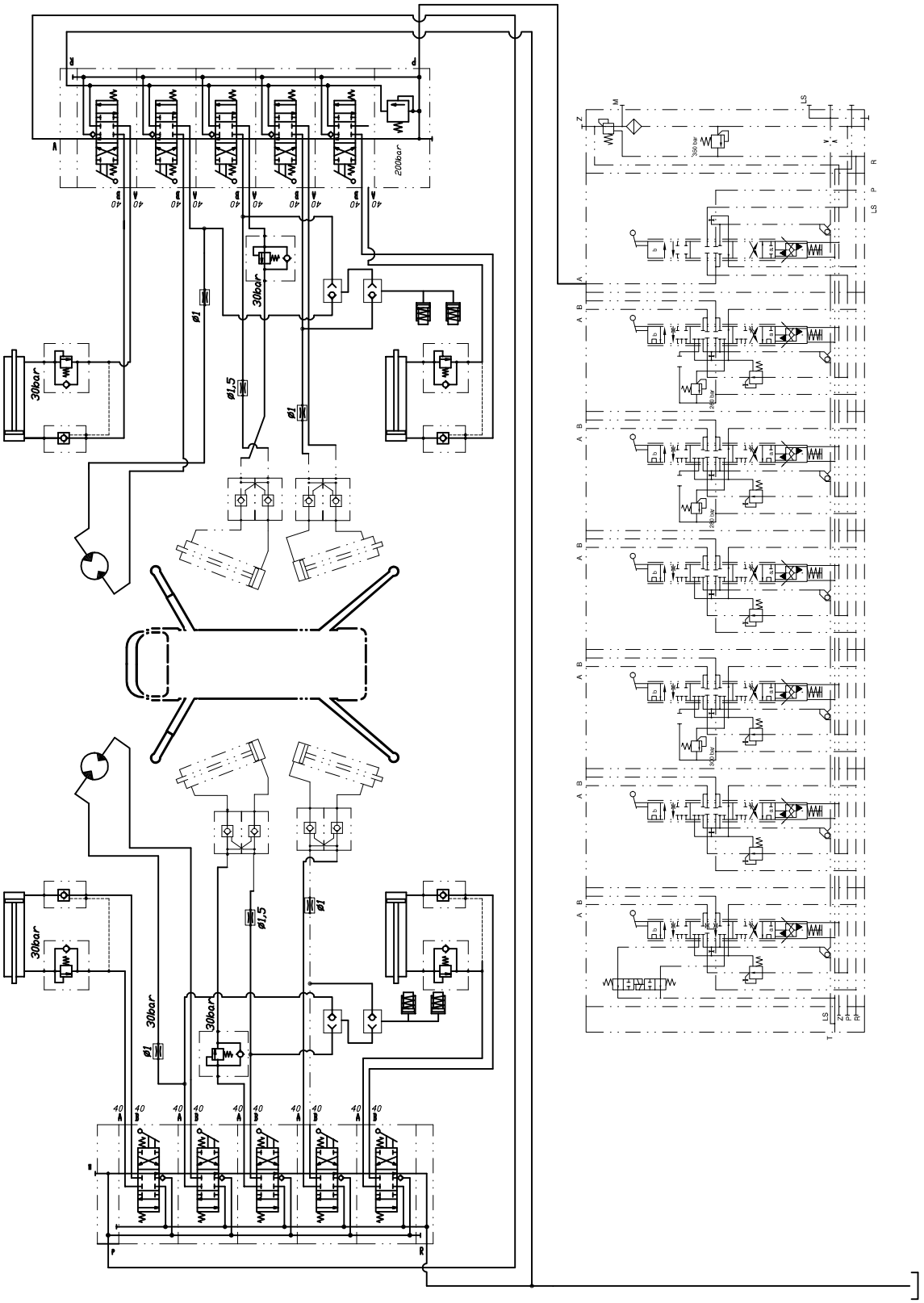
Waitzinger
Baumaschinen GmbH



Verrohrungsplan Abstützung
piping diagram outrigger

B 72 2 010 3

Waitzinger
Baumaschinen GmbH



27.11.2003

PARTS LIST

17.11.05 10:07:14

part list	description	created	index	valid from	valid to
B722010R1	piping diagram 42XXT boom	04.04.03 hbk			

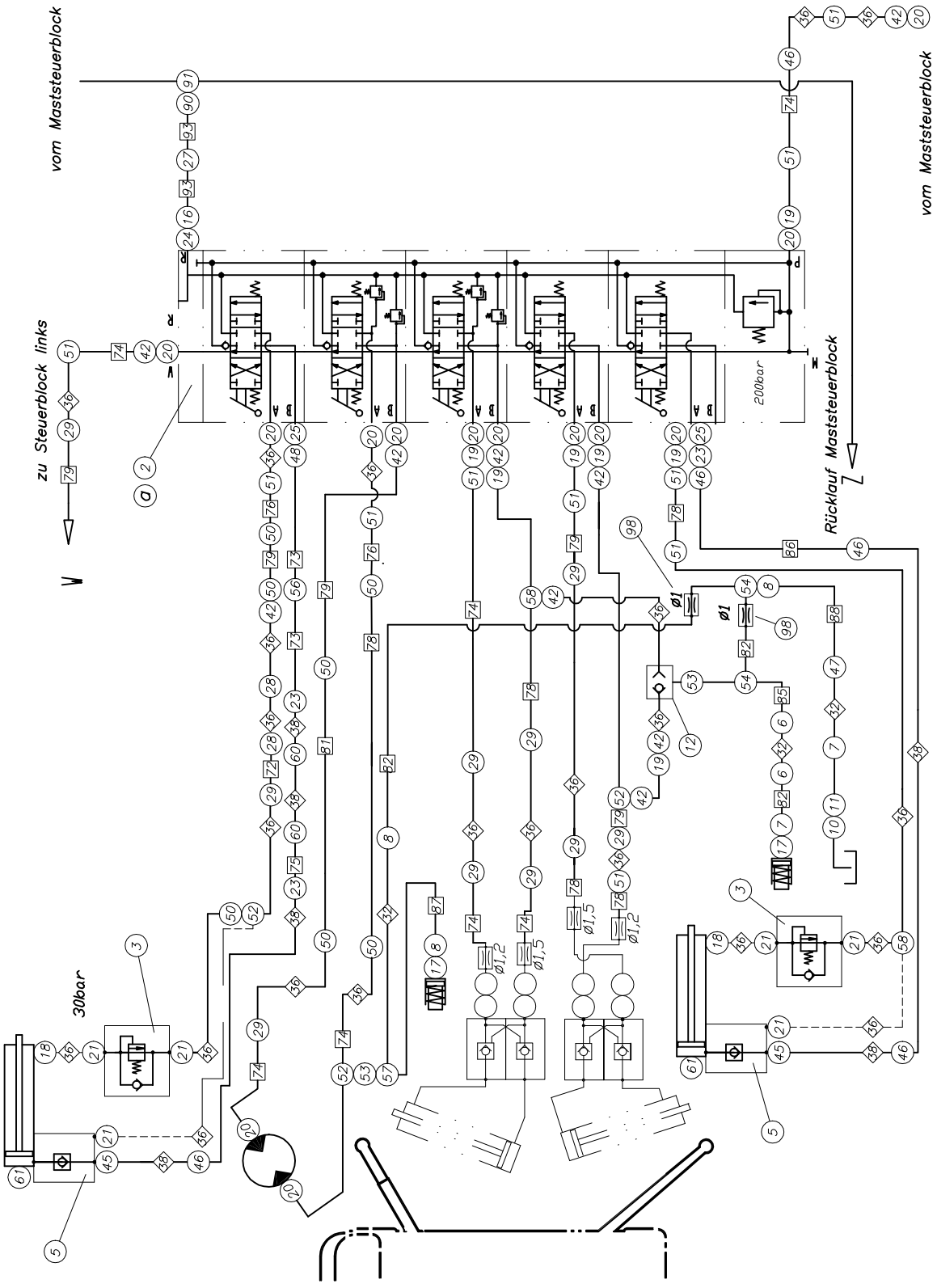
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
3	valve SVC 46 F-30	WAI106335				8,00 Stk
4	pilot operated twin check valve	WAI106410				4,00 Stk
5	valve RHC 31	WAI106698				4,00 Stk
12	valve WV 8-S	WAI105212				4,00 Stk
13	socket head port plugs M24x1.5	WAI106699			0,04	4,00 Stk

Verrohrungsplan Mastbock kpl.

piping diagram boom base cpl.

B 72 2 015b 1

Waitzinger
Baumaschinen GmbH

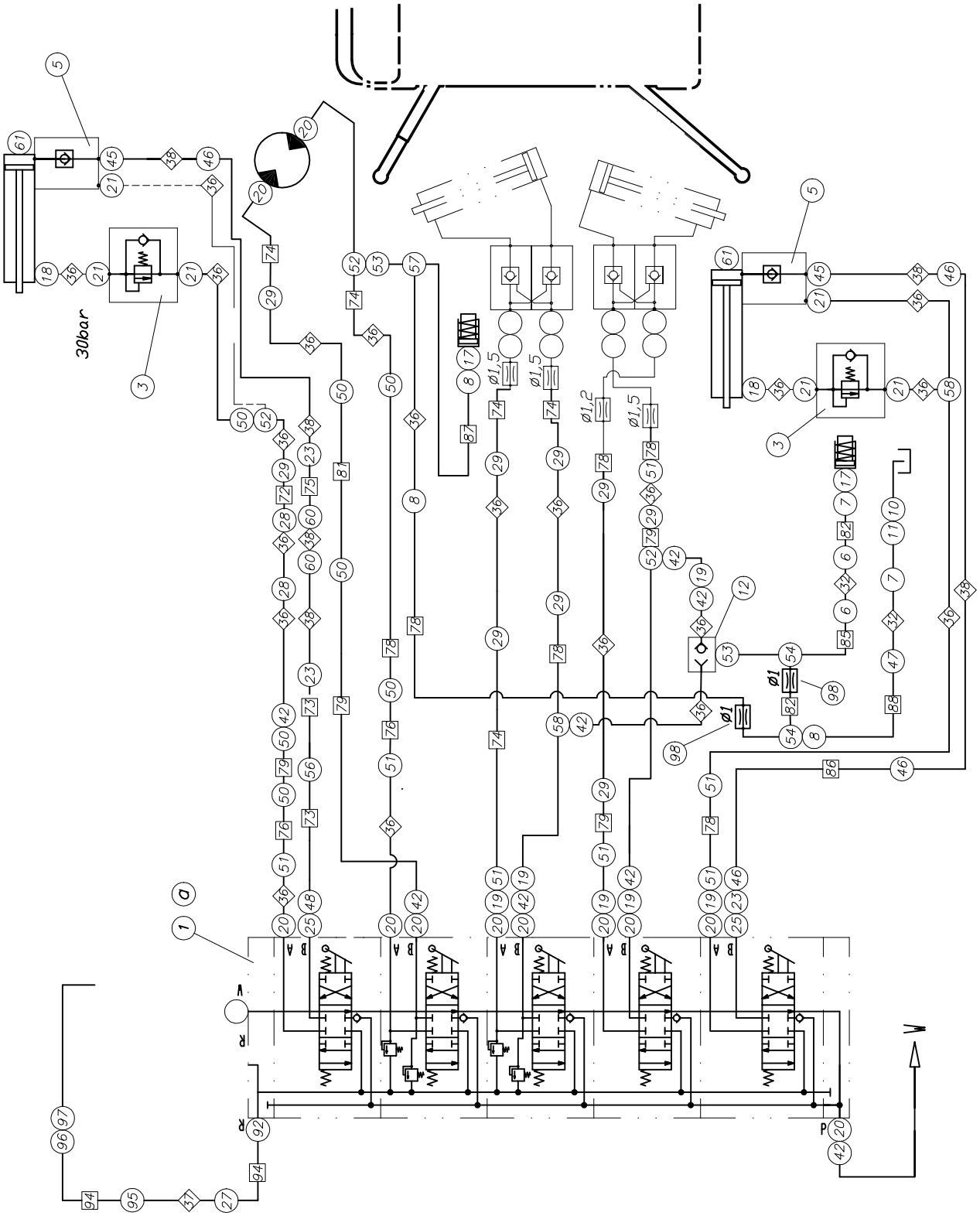


Verrohrungsplan Mastbock kpl.

piping diagram boom base cpl.

B 72 2 015b 2

Waitzinger
Baumaschinen GmbH

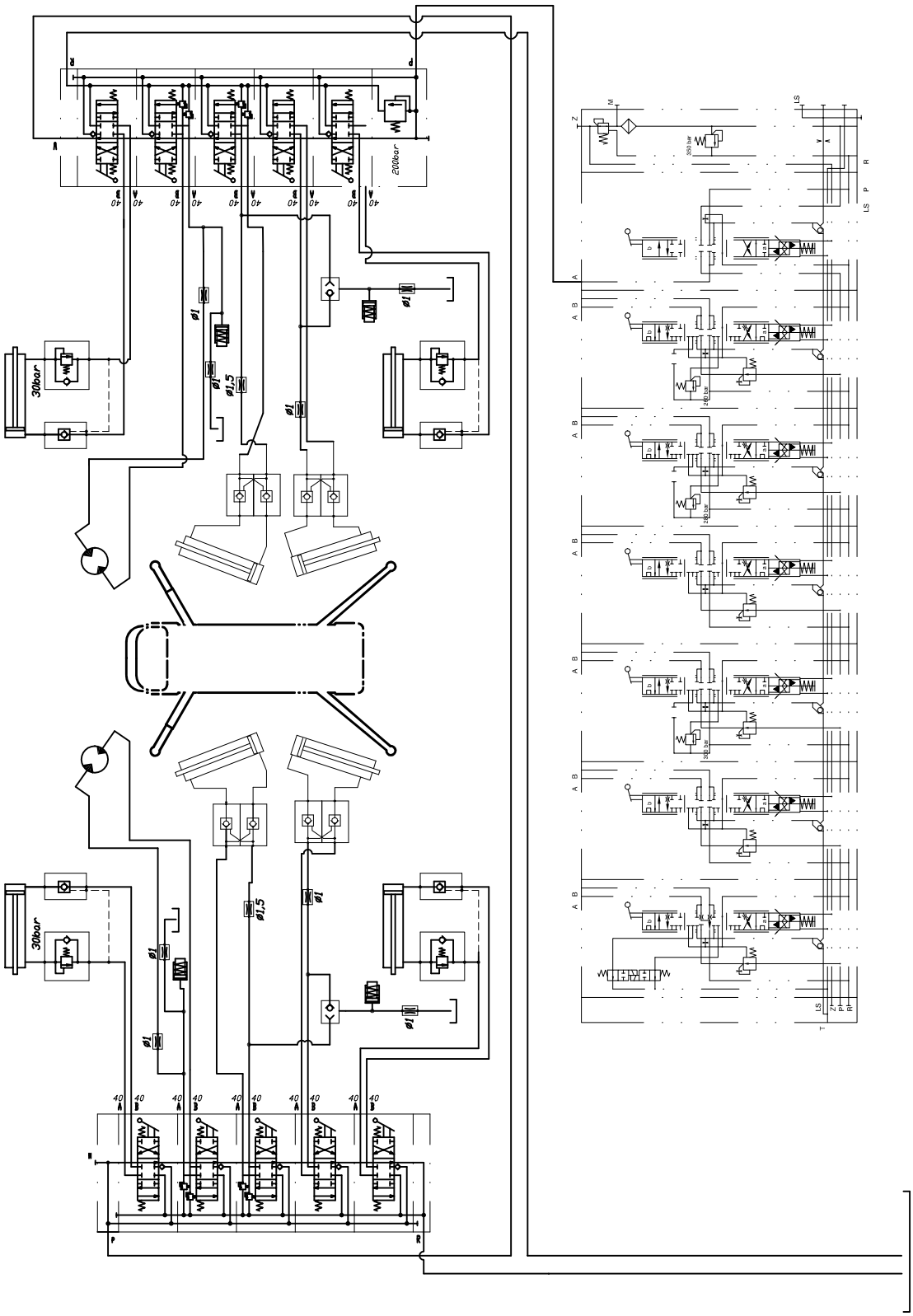


Verrohrungsplan Mastbock kpl.

piping diagram boom base cpl.

B 72 2 015b 3

Waitzinger
Baumaschinen GmbH



15.06.2005

PARTS LIST

17.11.05 10:05:54

part list	description	created	index	valid from	valid to
B722015R1	piping diagram 42XXT pedestal short	15.11.05 TECHNIK			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
18	throttlefree banjo elbows L12 R	WAI103763				2,00 Stk
21	straight male stud couplings L12 3/8"	WAI103741				6,00 Stk
23	straight couplings L 15	WAI100828			0,14	4,00 Stk
28	bulkhead elbows L12	WAI103782				2,00 Stk
29	straight couplings L12	WAI100603				2,00 Stk
36	hydr. pipe 12 x 2	WAI102022			0,49	8,00 Mtr
38	hydr. pipe 15 x 2	WAI101717			0,65	8,00 Mtr
42	swivel elbow L12	WAI100590				2,00 Stk
45	straight male stud couplings L15-G 3/8"	WAI103704				2,00 Stk
46	elbow couplings L15	WAI100829				2,00 Stk
50	bulkhead coupling L12	WAI101384				4,00 Stk
52	swivel barrel tee L12	WAI101325				2,00 Stk
60	bulkhead elbows L15	WAI101390				2,00 Stk
72	hose DN10x2600	WAI108616				2,00 Stk
75	hose DN12x2600	WAI108617				2,00 Stk

PARTS LIST

25.10.05 11:23:01

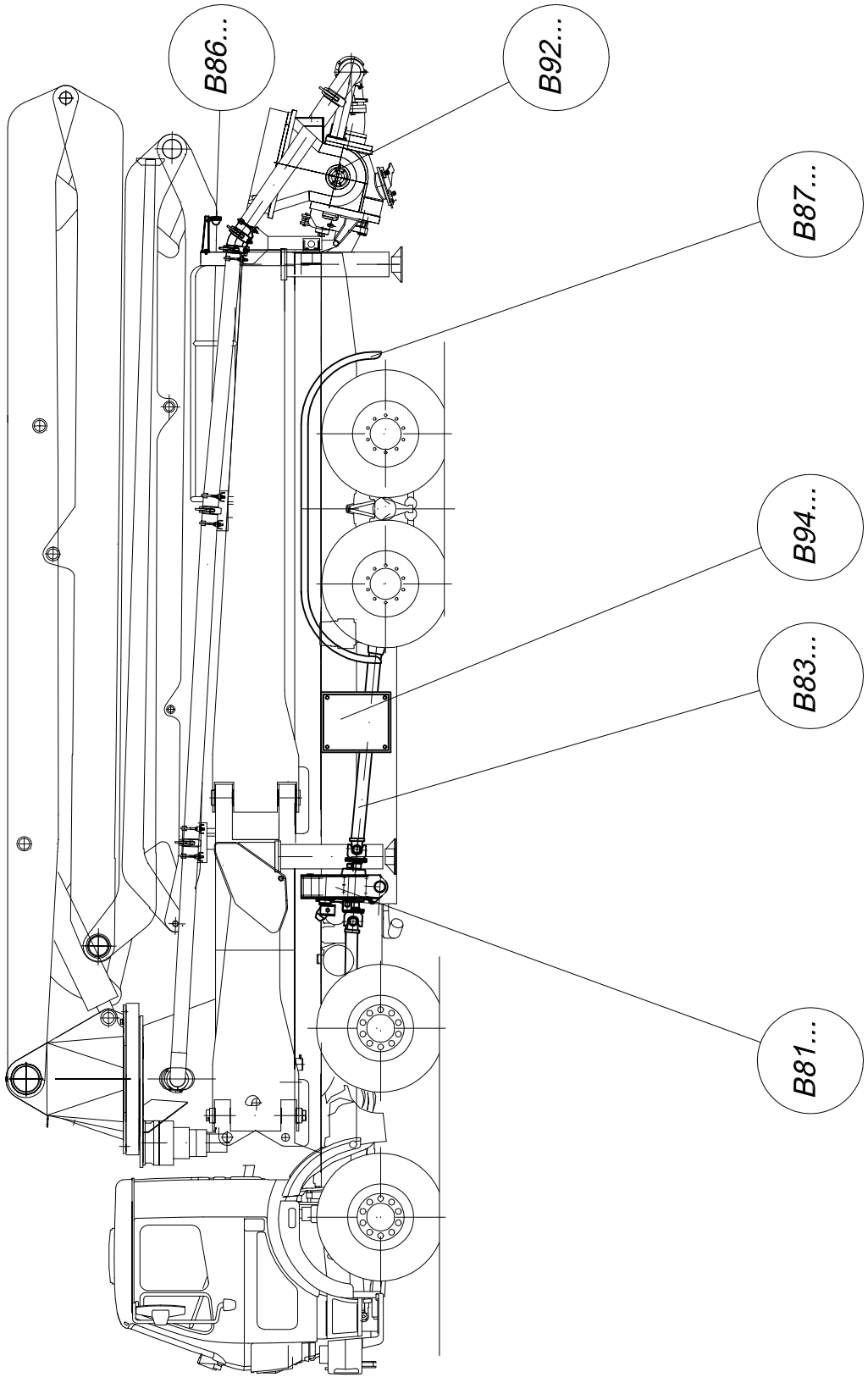
part list	description	created	index	valid from	valid to
B741031	hydraulic pump A11VO40/4496	04.04.02 ek			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	pump A11VO40DRS/10L-NSC12N00 own parts list	WAI104346			31,60	1,00 Stk
2	O-ring	WAI104873				1,00 Stk
3	cheese head screw M 12 x 35	WAI102895				2,00 Stk
4	spring washer A12	WAI103113				2,00 Stk

Übersicht B 80 - B 99

over view B 80 - B 99

Waitzinger
Baumaschinen GmbH



PARTS LIST

25.10.05 11:25:21

part list	description	created	index	valid from	valid to
B814088R1	distributor gear box 4496.xx	09.06.04 HF			

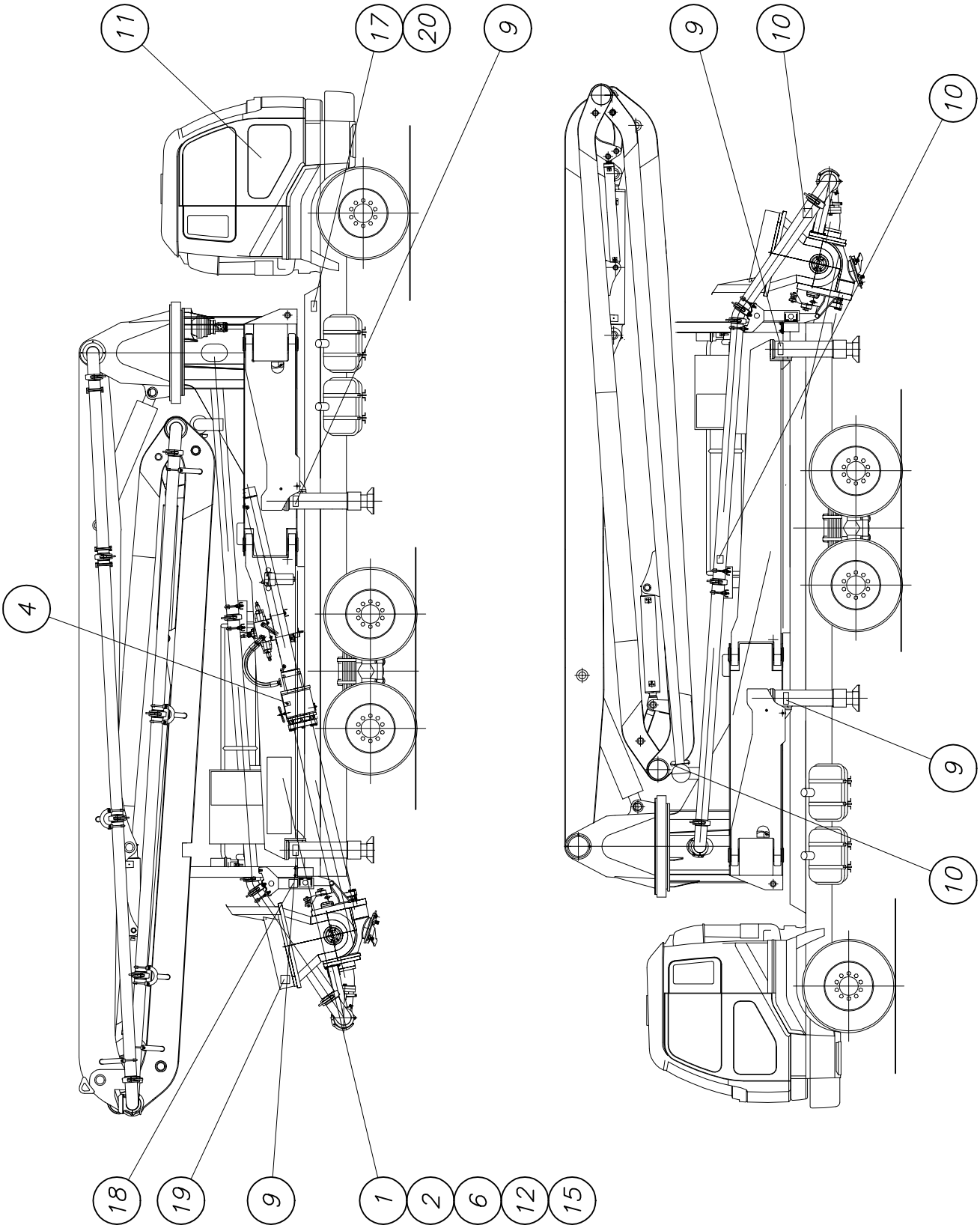
pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	PTO gearbox 4400. own parts list	WAI107195				1,00 Stk
2	buffer	WAI103414				4,00 Stk
3	hexagon bolt M 20 x 50	WAI102860				14,00 Stk
6	sealing ring 165 x 5	WAI102903				1,00 Stk
7	O-ring	WAI105771				1,00 Stk
10	conical spring washer	WAI102110			0,05	11,00 Stk
11	hexagon bolt M8 x 25 DIN 933 8.8	WAI101621				16,00 Stk
12	stop nut M8 DIN985 8. VERZ.	WAI102111			5,00	16,00 Stk
13	washer 8.4	WAI101625				16,00 Stk

Schildersatz Betonpumpe

sticker set concrete pump

B 92 1 004

Waitzinger
Baumaschinen GmbH

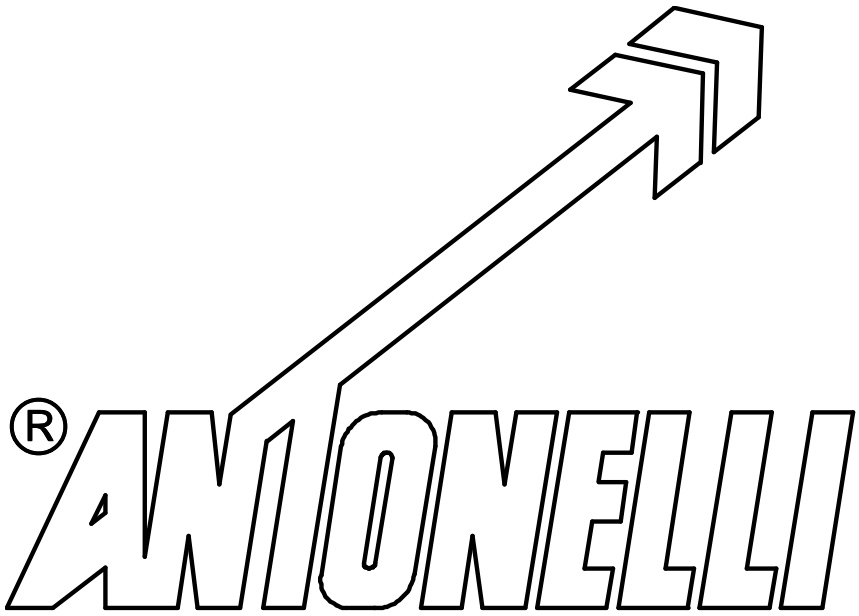


PARTS LIST

28.06.05 13:48:18

part list	description	created	index	valid from	valid to
B921004	sticker set CP english without boom	21.09.00 hbk			

pos	description stock	ident-no dimensions	DIN material	index	weigth Kg	quantity unit
1	sticker operation eng.	WAI105932				1,00 Stk
2	sticker electrocution hazard d/e	WAI105934				1,00 Stk
4	sticker danger of bruise d/e	WAI105936				1,00 Stk
6	sticker remote control d/e	WAI105938				1,00 Stk
7	sticker hopper d/e	WAI105939				1,00 Stk
9	sticker outrigger d/e	WAI105941				4,00 Stk
10	sticker coupling d/e	WAI105942				3,00 Stk
11	sticker gearbox switch system d/e	WAI105943				1,00 Stk
12	sticker person protection d/e	WAI105944				1,00 Stk
15	sticker electrocution hazard 2 d/e	WAI105974				1,00 Stk
17	identification badge	WAI106179				1,00 Stk
18	sign AL agitator	WAI106030				1,00 Stk
19	sign AL water pump	WAI106031				1,00 Stk
20	sign AL delivery line	WAI106032				1,00 Stk



ARM PACKET FOR

CONCRETE DISTRIBUTOR BOOM

AZ-42.5/125

MANUAL VALIDITY
BOOM AZ-42.5/125
SERIAL N°4780

MAN.N°94I EDIZ.N°1 (28/10/2002)

CONTENTS

01.0 - IDENTIFICATION DETAILS

CONCRETE BOOM
TYPE: AZ-42.5/125
SERIAL Nº: 4780

01.0.1 - BOOM IDENTIFICATION PLATE
The boom identification plate of fig. 1 is located on the turret structure as from pos. 6 of Pag. 8.

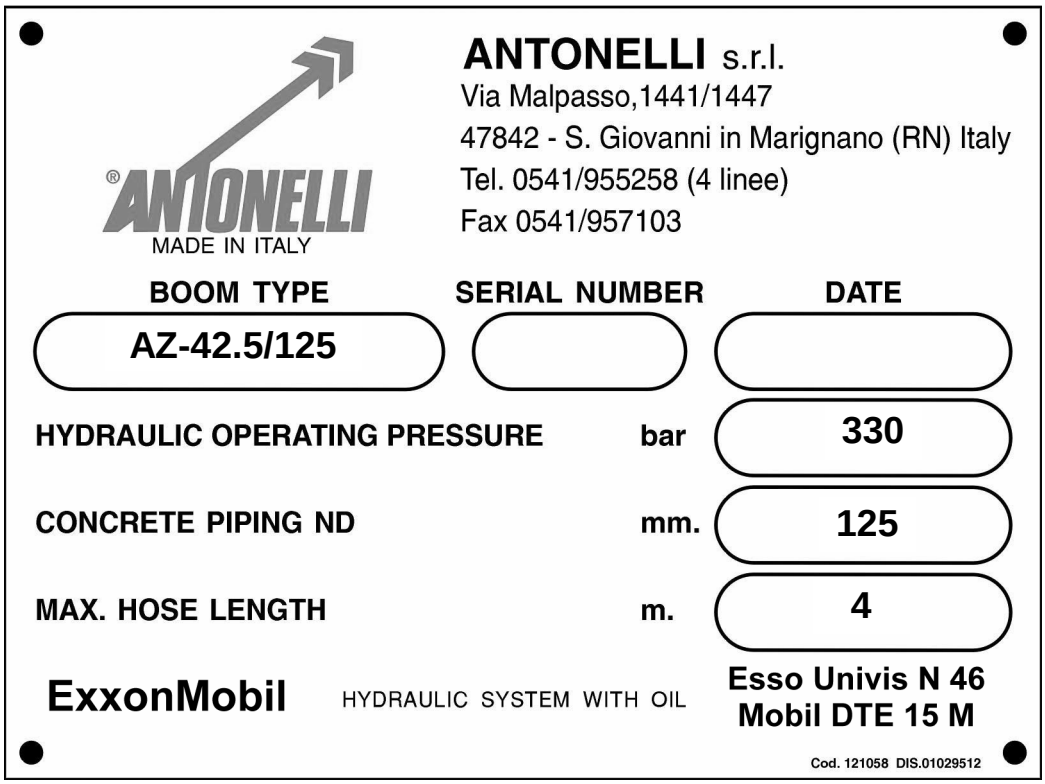
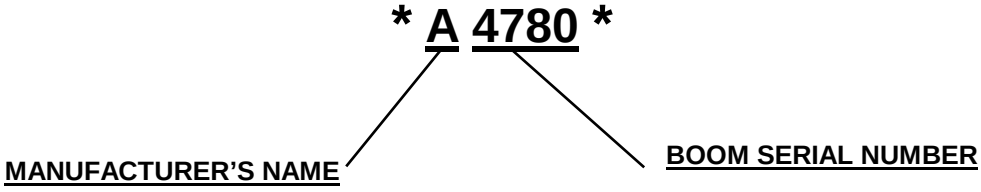
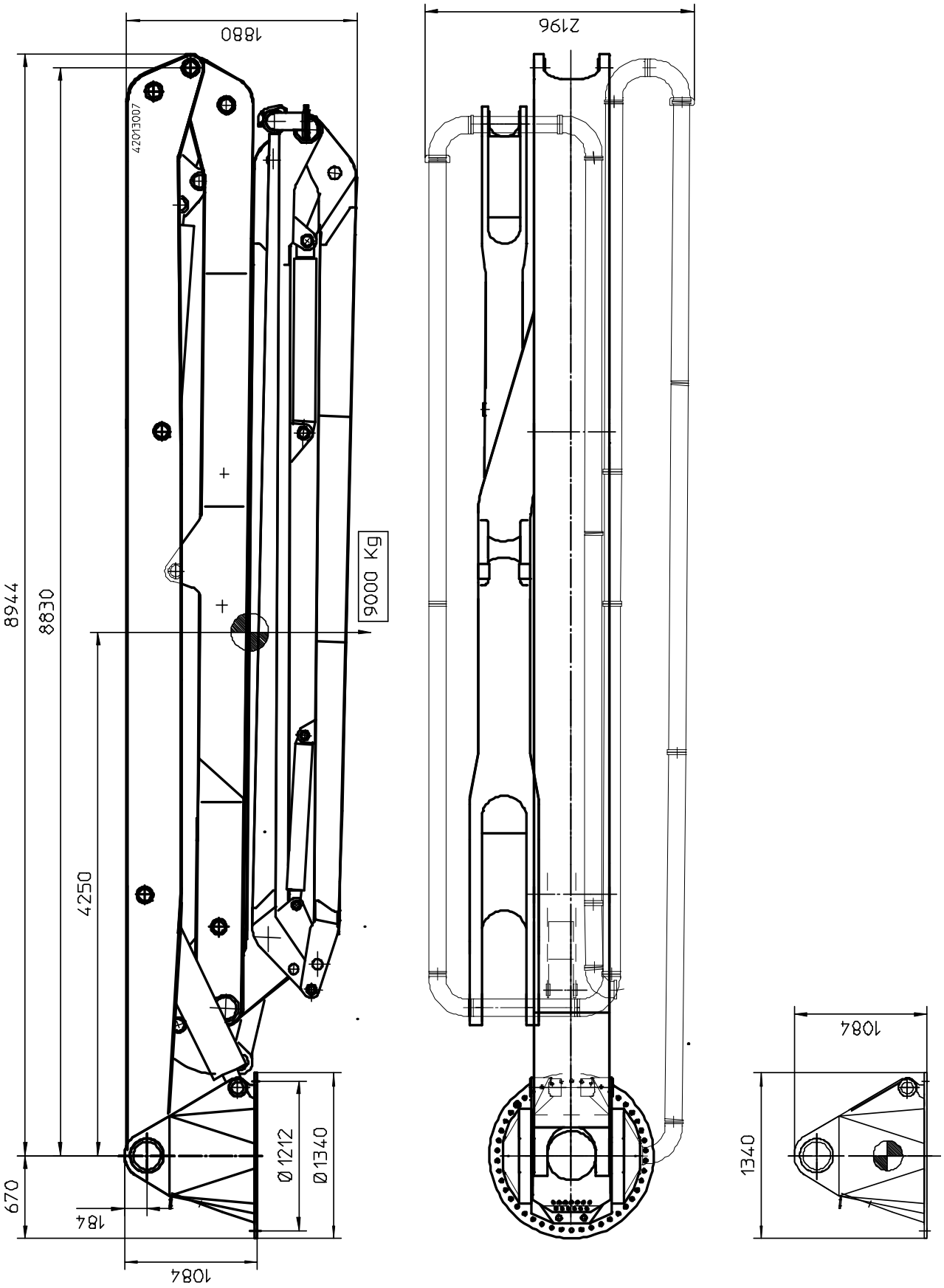


Fig.1

01.0.2 - PUNCHING OF BOOM
The manufacturer's name and the boom serial number are stamped near the boom identification plate on the edge of the base bearing support and on the upper steel sheet of the 1st section.



01.1 - OVERALL VIEW OF THE MACHINE, DIMENSIONS AND WEIGHTS

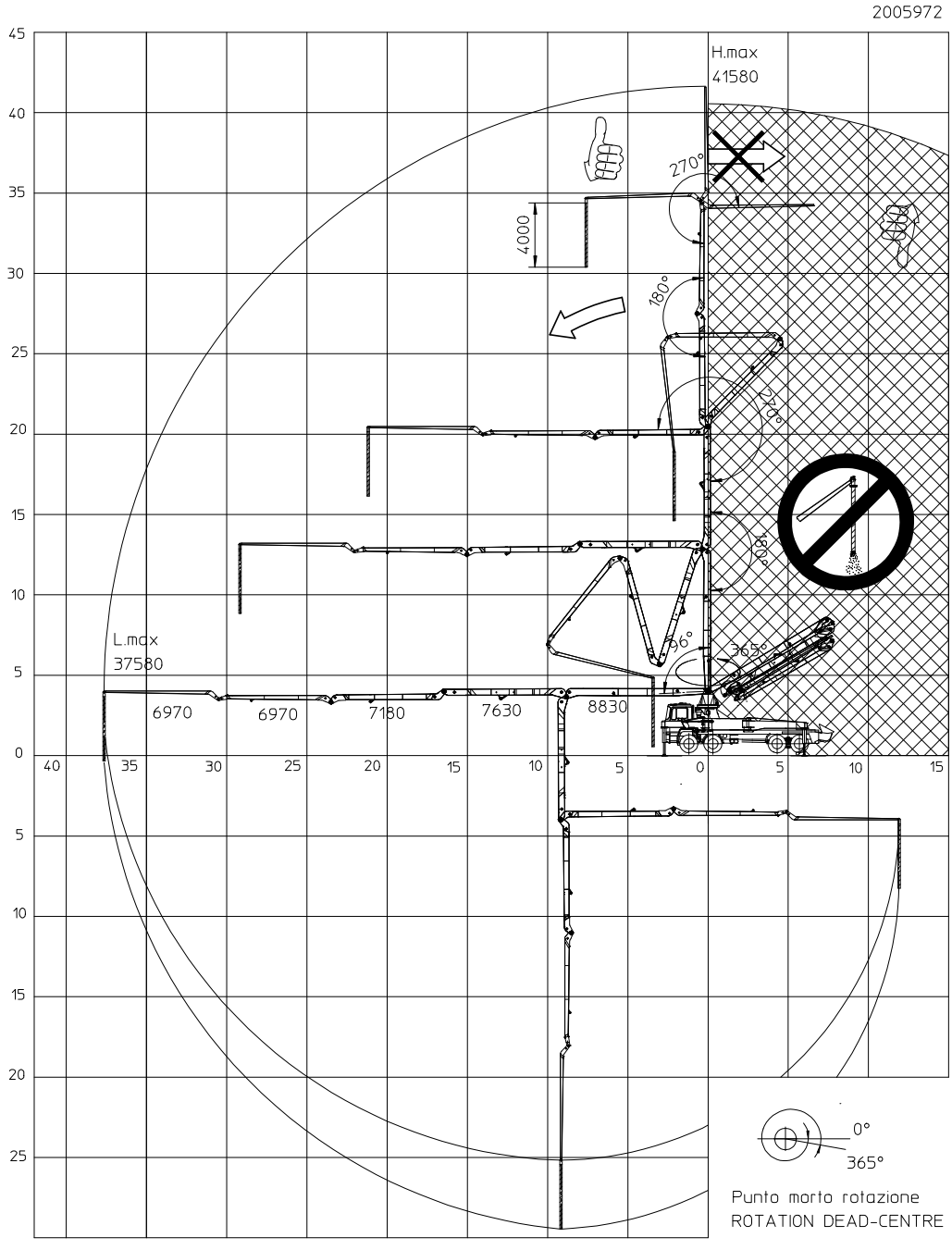


01.2 - BOOM OPENING AREA

The figure below shows the boom opening area.
The need for large opening angles (so as to be able to work close to the turret) does not mean it is possible to work with the terminal pipe in all reachable positions.

WARNING!

It is forbidden to work with the end section of the pipe further back than the head rotation vertical axis.



02.1 - SAFETY INSPECTION

THE CONCRETE DISTRIBUTOR BOOMS, INCLUDING PIPING, MUST BE CHECKED AFTER 500 HOURS AND AT ONCE A YEAR BY AN EXPERT TO ENSURE THEY ARE WORKING CORRECTLY

02.2 - IMPROPER USE

IT IS FORBIDDEN:

- To use the machine for work different from that for which it was designed and built.
- To modify or remove any safety and accident-prevention devices such as warning plates, guards, seals, lead seals, etc.
- To extend the boom or end section.
- To alter the set pressure in any part of the system.
- To perform jerky movements, or sharply reverse the direction of the boom, especially in a continuous manner as this could cause dangerous swinging.
- To install a concrete pipe of greater diameter or of heavier weight.
- To use the boom as an elevator.
- To make structural changes to boom sections (Sections, head, turret, stabilizers).
- To modify software management programmes.
- To make changes to the hydraulic cylinders or rotation system.
- To make changes to the distributor and various controls.
- Not to carry out recommended maintenance, especially safety inspections.
- To work in the presence of electric storms.
- To work near power lines (see point 03.1.7)
- To operate the stabilizers when persons are standing in their range of action and with the boom not completely closed.
- To use the boom when persons are standing in the danger area.
- To start pumping when persons are standing near the end pipe, i.e., within a radius delimited by its length.
- To pump the concrete with the end pipe bent or emerged in the concrete.
- To use or leave the boom open when wind is blowing at over 60 km/h.
- To open the boom when the vehicle is not correctly stabilized.
- To use the boom outside the recommended temperature range (-20÷40°C).
- To leave the ignition key in the control panel after work and the diesel engine running.
- To work with the end pipe further back than the vertical axis passing through the head (boom turned backwards).

WARNING! 

Failure to comply with the above will invalidate the warranty with declination of all responsibility on the part of Antonelli.

WARNING! 

Improper use could damage the machine and create dangerous situations for persons.

02.3 - PRESCRIPTIONS FOR MAKING THE CONCRETE DELIVERY LINE

- MAX INNER DIAMETER OF THE PIPE 125 mm
- MAX WEIGHT OF THE PIPE 12,8 Kg/m
- MAX INNER DIAMETER OF THE HOSE 125 mm
- MAX LENGHT OF THE HOSE 4m

03.6 - TABLE OF PRESSURES AND MANOEUVRE TIMES

When the boom is fitted on the vehicle, a final test will have to be performed to check pressures and manoeuvre times of each boom section. The above test must be performed using hot oil (oil temp.: 50℃) and with the hydraulic pump operating at full speed. The maximum pressures shown must correspond to the values indicated in the following tables with a tolerance equal to ± 2%. The manoeuvre times shown must correspond to the values indicated in the following tables with a tolerance equal to ± 15%; in the event of the values being below 15%, it is necessary to check if the flow capacity of the hydraulic pump of the distributor sections and the throttles inside the check valves correspond with the values shown on the table. Action will have to be taken if the maximum pressure and manoeuvre times at top speed are outside tolerance limits.

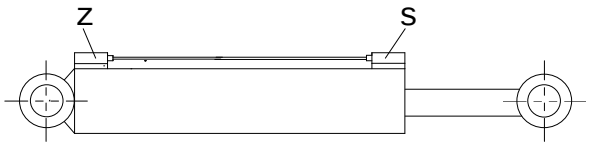
WARNING! ⚠

The boom should never be operated at pressures or at speeds higher than those set out in the beginning by Antonelli s.r.l and quoted below.

SYSTEM FEATURES AND SWIVEL SETTING PRESSURES

TAB.1:

DESCRIPTION	PRESSURE (BAR)
Swivel	120
Hydraulic distributor max. inlet pressure	350
Hydraulic distributor max. outlet pressure	10
Pressure max pump Load Sensing	330
Max. hydrostatic pump flow rate	80 l/1'



SETTING PRESSURES OF BOOM VALVES AND DISTRIBUTOR SECTIONS

TAB. 2:

BOOM HYDR. CYLINDER POS.	ARTIC. A		ARTIC. B		ARTIC. C		ARTIC. D		ARTIC. E	
CHECK VALVE POSITION	Z	S	Z	S	Z	S	Z	S	Z	S
Check valve throat d. (mm)	2.5	/	/	/	2,5	/	/	/	/	/
Check valve pressures (bar)	310*	340*	310*	340*	340*	340*	280*	310*	280*	310*
Pressures of distributor sect. (bar)	330	/	300	/	330	/	280	/	260	330
* valves adjusted on bench when they start to open and without counterpressure at the discharge										

MANOEUVRE TIMES

TAB.4 - BOOM:

BOOM SECTIONS	Section Artic. A		Section Artic. B		Section Artic. C		Section Artic. D		Section Artic. E		Right Swivel	Left Swivel
	Open.	Clos.	Open.	Clos.	Open.	Clos.	Open.	Clos.	Open.	Clos.	1 Rev.	1 Rev.
TIME (sec.)	100	100	140	140	140	140	70	70	55	55	210	210

04.1 - TROUBLESHOOTING OF THE ARM PACKET

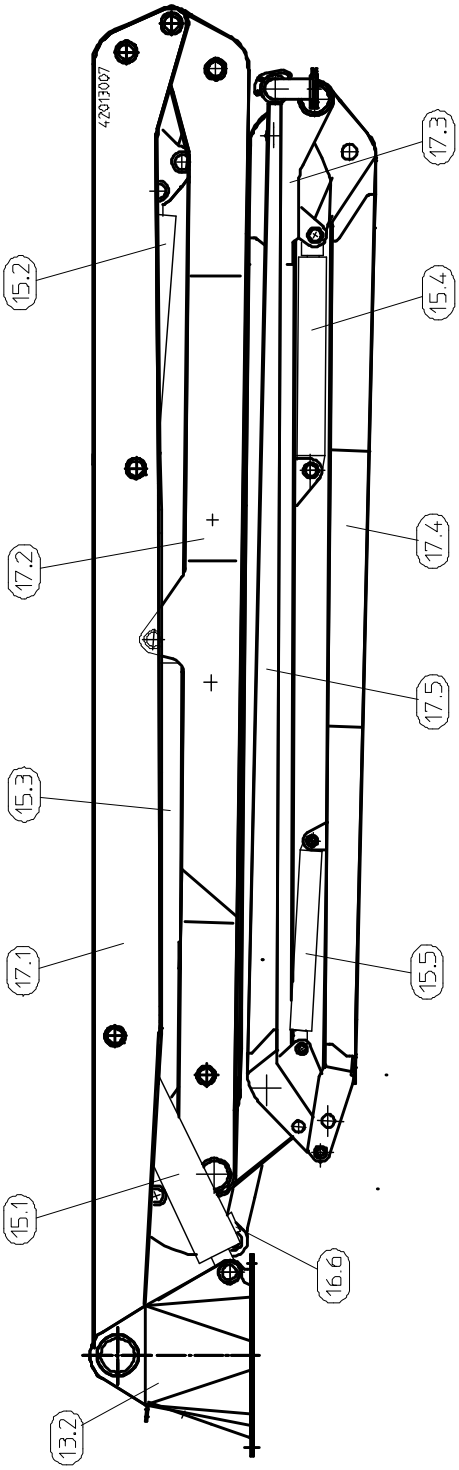
Despite the boom being carefully tested for hours, by simulating operating conditions, a number of faults can occur, mainly due to the presence of impurities in the hydraulic circuit or power contact problems.

PROBLEM	CAUSE	REMEDY
A single boom function fails to respond to the manual distributor	- Clogged restrictor. This restrictor is fitted in the valve applied to the cylinder on the oil drain-off side	Clean the restrictor with the boom closed.
A section of the arm drops despite not being activated.	- Non-return valve dirty	- Clean the valve at hydr. cylinder. Such operation must be done by an engineer. Set the valve after cleaning. The pressure to be set is printed on the valve body. - If this does not solve the problem, replace the valve.
The boom moves in jerks and/or irregularly.	- Air in the hydraulic circuit. - Insufficient fluid in circuit	- Check level of oil in sump. Increase the rpm of the hydraulic pump.
Noises in kinematic mechanisms	- Lack of or poor lubrication - Friction in concrete curve articulated joints	- Lubricate as indicated at chapter 07.1 of manual. - Dismantle coupling and, lubricate and replace gasket.

ANTONELLI	**DESCRIPTION** **AZ-42.5/125**	**10**

10.1 - GLOSSARY OF COMPONENTS

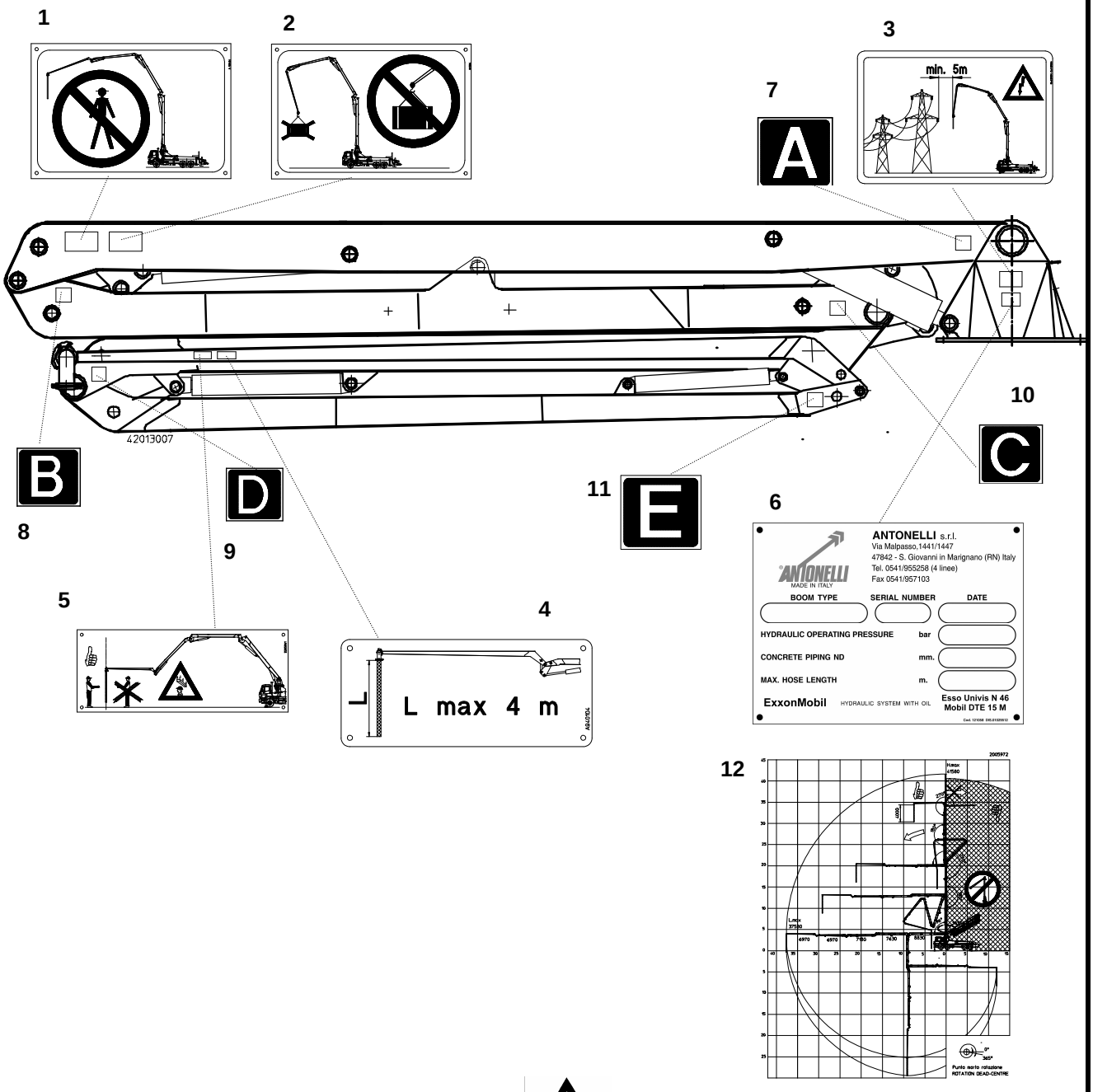
13.2 - REVOLVING HEAD
15.1 - HYDR. CYLINDER (1ST BOOM OP.)
15.2 - HYDR. CYLINDER (2ND BOOM OP.)
15.3 - HYDR. CYLINDER (3RD BOOM OP.)
15.4 - HYDR. CYLINDER (4TH BOOM OP.)
15.5 - HYDR. CYLINDER (5TH BOOM OP.)
16.6 - CHECK VALVE OF HYDRAULIC CYL.
17.1 - 1st BOOM SECTION
17.2 - 2nd BOOM SECTION
17.3 - 3rd BOOM SECTION
17.4 - 4th BOOM SECTION
17.5 - 5th BOOM SECTION



ANTONELLI	**DESCRIPTION** **AZ-42.5/125**	**11**

11.1 - POSITION OF IDENTIFICATION DETAILS AND SIGNPLATES

The identification plates 18 and are located on the right of the turret structure.
The manufacturer's name and boom serial number are stamped on the edge of the base bearing support.
The remaining signplates are located on both sides of the machine (excluding positions 6).

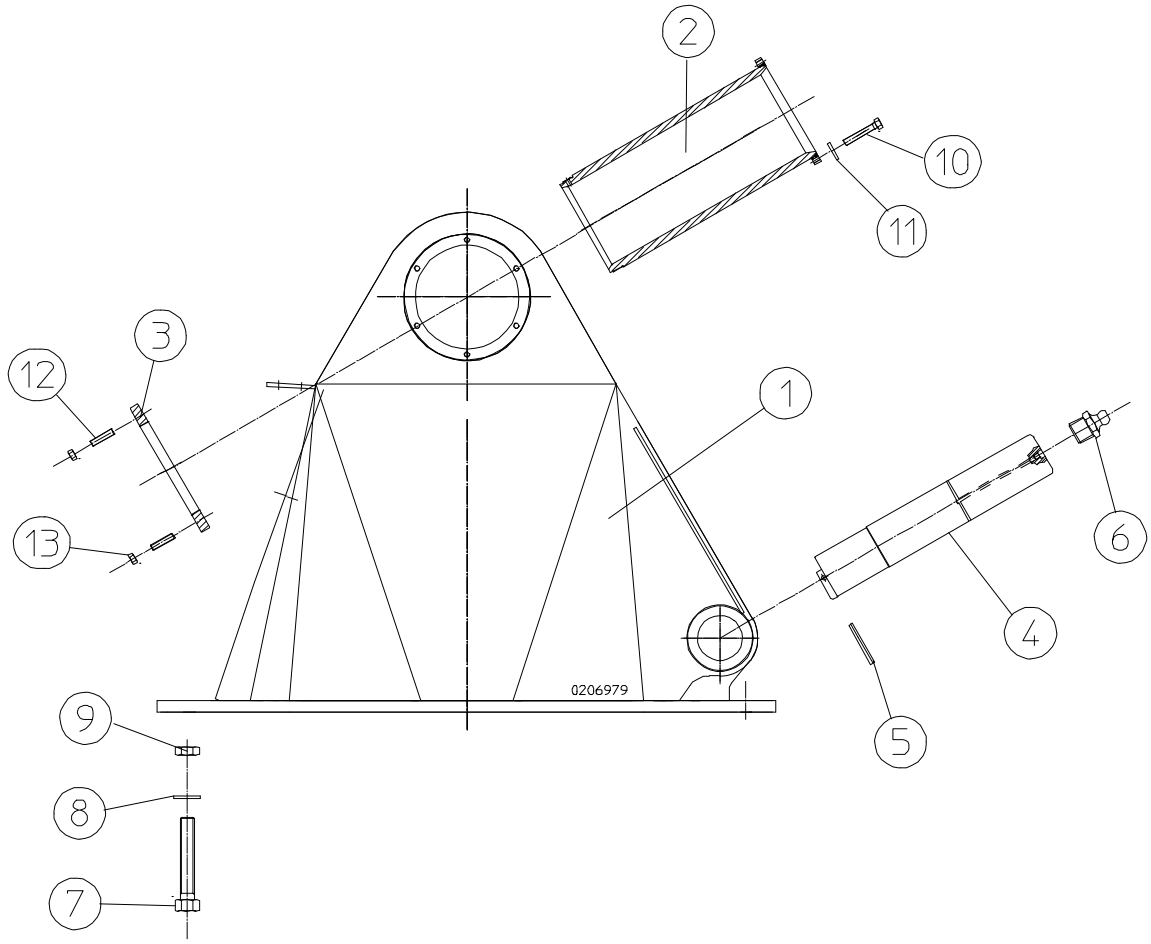


WARNING!

Every 6 months check the condition (wear and readability) of all the instruction plates fitted to the machine.

	DESCRIZIONE AZ-42.5/125	11

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
1	121092	2	TARGHETTA	PLATE	
2	121093	2	TARGHETTA	PLATE	
3	121024	2	TARGHETTA	PLATE	
4	121015	2	TARGHETTA	PLATE	
5	121106	2	TARGHETTA	PLATE	
6	121058	1	TARGHETTA	PLATE	INGLESE
7	120137	2	TARGHETTA	PLATE	
8	120138	2	TARGHETTA	PLATE	
9	120139	2	TARGHETTA	PLATE	
10	120157	2	TARGHETTA	PLATE	
11	121003	2	TARGHETTA	PLATE	
12	121107	1	TARGHETTA	PLATE	



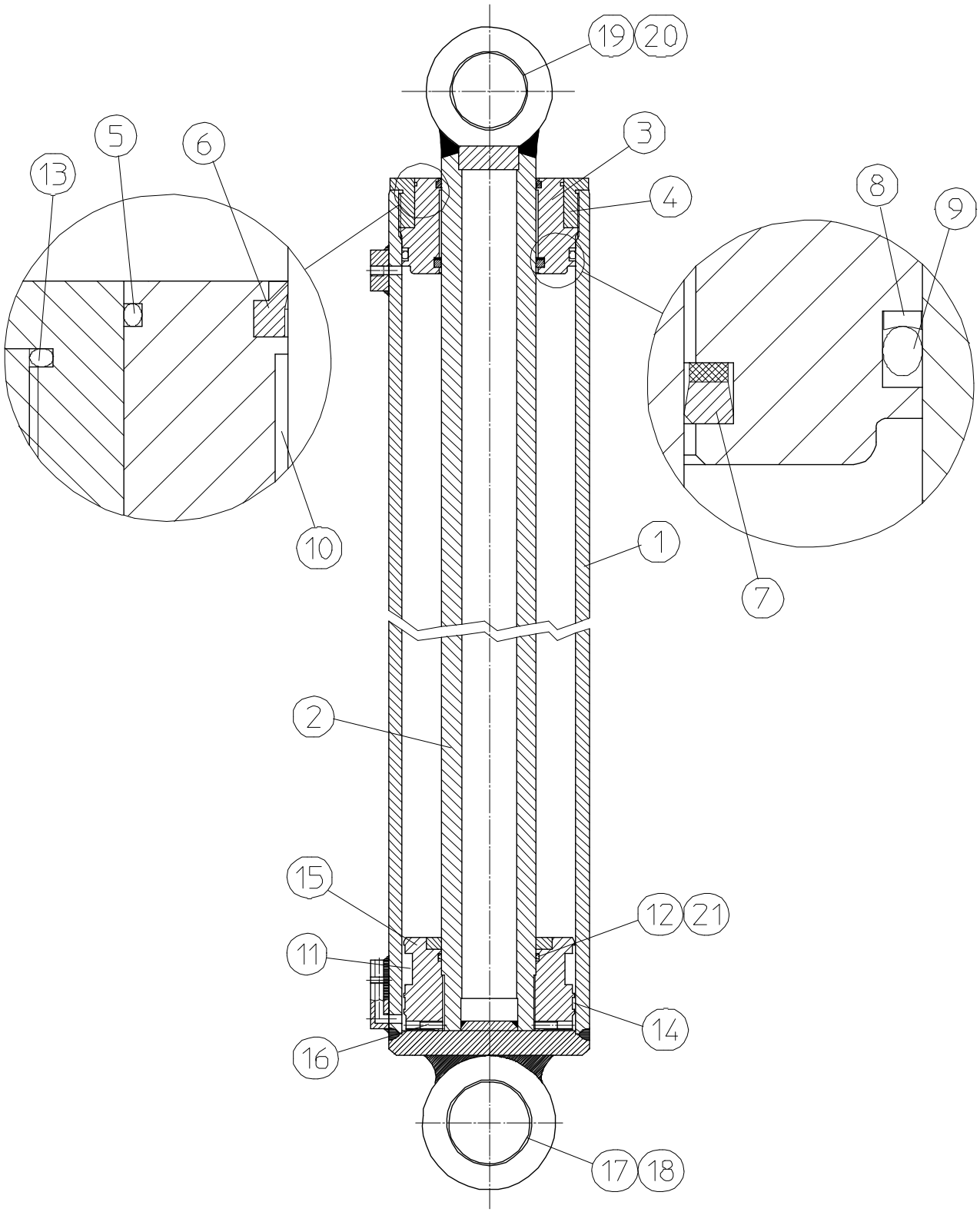
WARNING!
Before dismantling the head and the base bearing, mark the position to ensure correct re-assembly.

WARNING!
Tighten the screws of the base bearing (pos. 7) and the screws of the pin (pos. 10) with dynamometric key and right tightening torque (these screws belong to resistance class 10.9).

	SWIVEL HEAD AZ-42.5/125	13.2

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	284579	**1**	**Testata girevole**	**Swivel head**	
1		1	Struttura base	Base structure	
2	31546	1	Perno	Pin	P-1154/A
3	180908	1	Ghiera	Ring nut	G-005
4	31179	1	Perno	Pin	P-0910
5	100380	1	Spina elastica	Elastic pin	D.14*140
6	170012	1	Ingrassatore	Lubricator	A/M10*1
7	90727	46	Vite alta resistenza	High resistance screw	TCCE M27*150 10.9
8	100125	46	Rosetta alta resistenza	High resistance washer	D.27 UNI 5714
9	90421	46	Dado	Nut	M27*3 UNI 5587
10	90421	10	Vite alta resistenza	High resistance screw	TE M12*40*1.75 UNI 5737
11	100132	10	Rosetta alta resistenza	High resistance washer	D.12
12	91762	2	Vite	Screw	STCE M10x35x1.5 UNI 5927
13	90737	2	Dado	Nut	M10x1.5

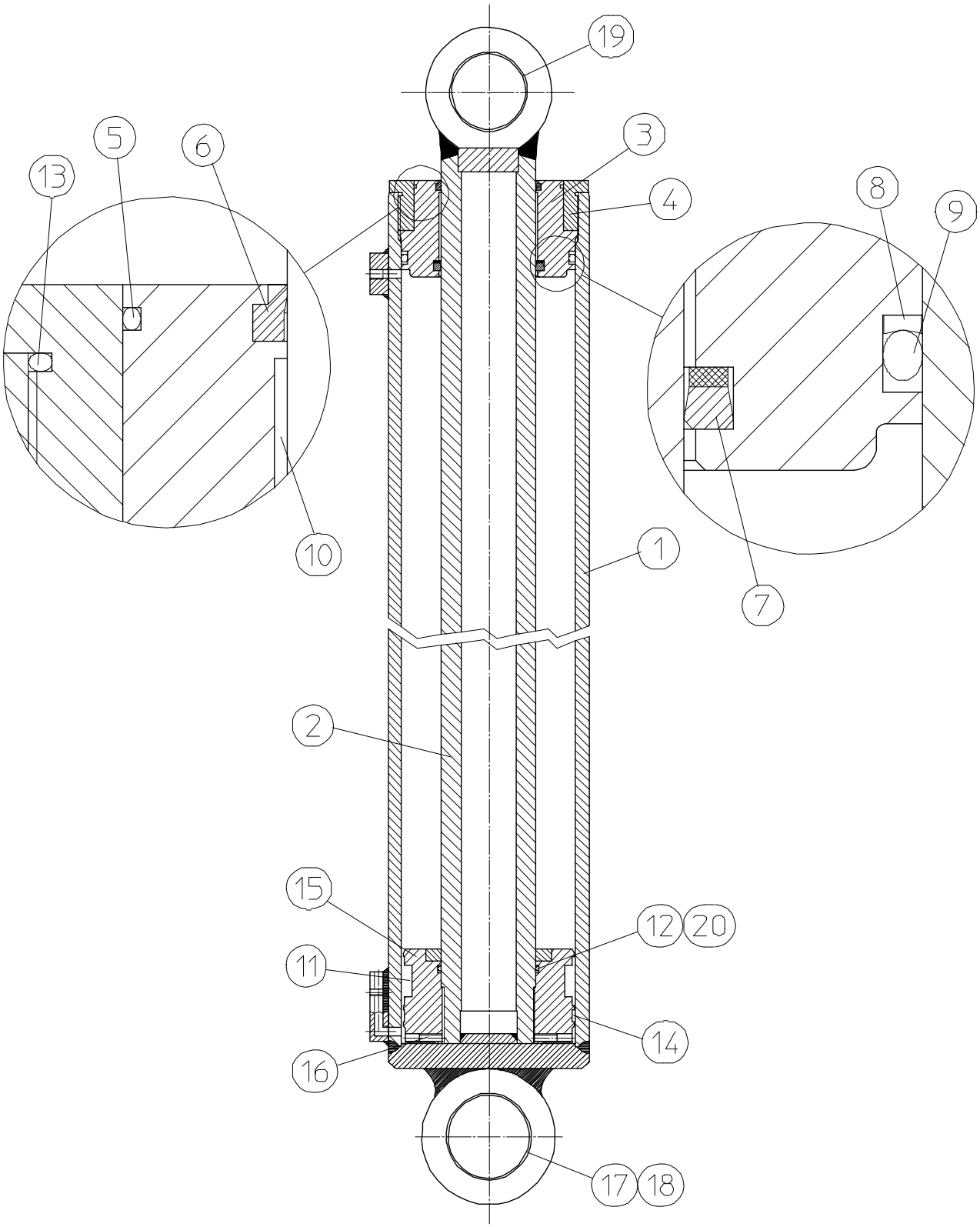
ANTONELLI	**HYDRAULIC CYLINDER P-204/B UF AZ-42.5/125**	**15.1** **CODE 43053U**



ANTONELLI	HYDRAULIC CYLINDER P-204/B UF AZ-42.5/125	15.1

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	43053U	**1**	**Cilindro idraulico P-204/B UF**	**Hydr. cylinder P-204/B UF**	
1		1	Cilindro	Cylinder	
2		1	Stelo	Rod	
3		1	Testina ant. interna	Front head int.	
4		1	Testina ant. esterna	Front head ext.	
5		1	Guarnizione	Gasket	OR-4900
6		1	Guarnizione	Gasket	SWP 130145
7		1	Guarnizione	Gasket	B-570511/NEI
8		1	Guarnizione	Gasket	BRS 680
9		1	Guarnizione	Gasket	ORD 680
10	20635	1	Boccola	Bushing	BR MB 130100 DU
11		1	Guarnizione	Gasket	DSM 1024925/1A
12		1	Guarnizione	Gasket	OR-351
13		1	Guarnizione	Gasket	ORD-377
14		1	Guarnizione	Gasket	E/GT 210/255*9,7
15		1	Pistone	Piston	
16		1	Vite	Screw	STCE M10
17	20483	2	Boccola	Bushing	BR MB 100115 DU
18		1	Distanziere	Spacer	L=90
19		2	Boccola	Bushing	BR MB 10060 DU
20		1	Distanziere	Spacer	L=40
21		2	Guarnizione	Gasket	BRS 860
	1973	1	Kit guarnizioni	Kit gaskets	

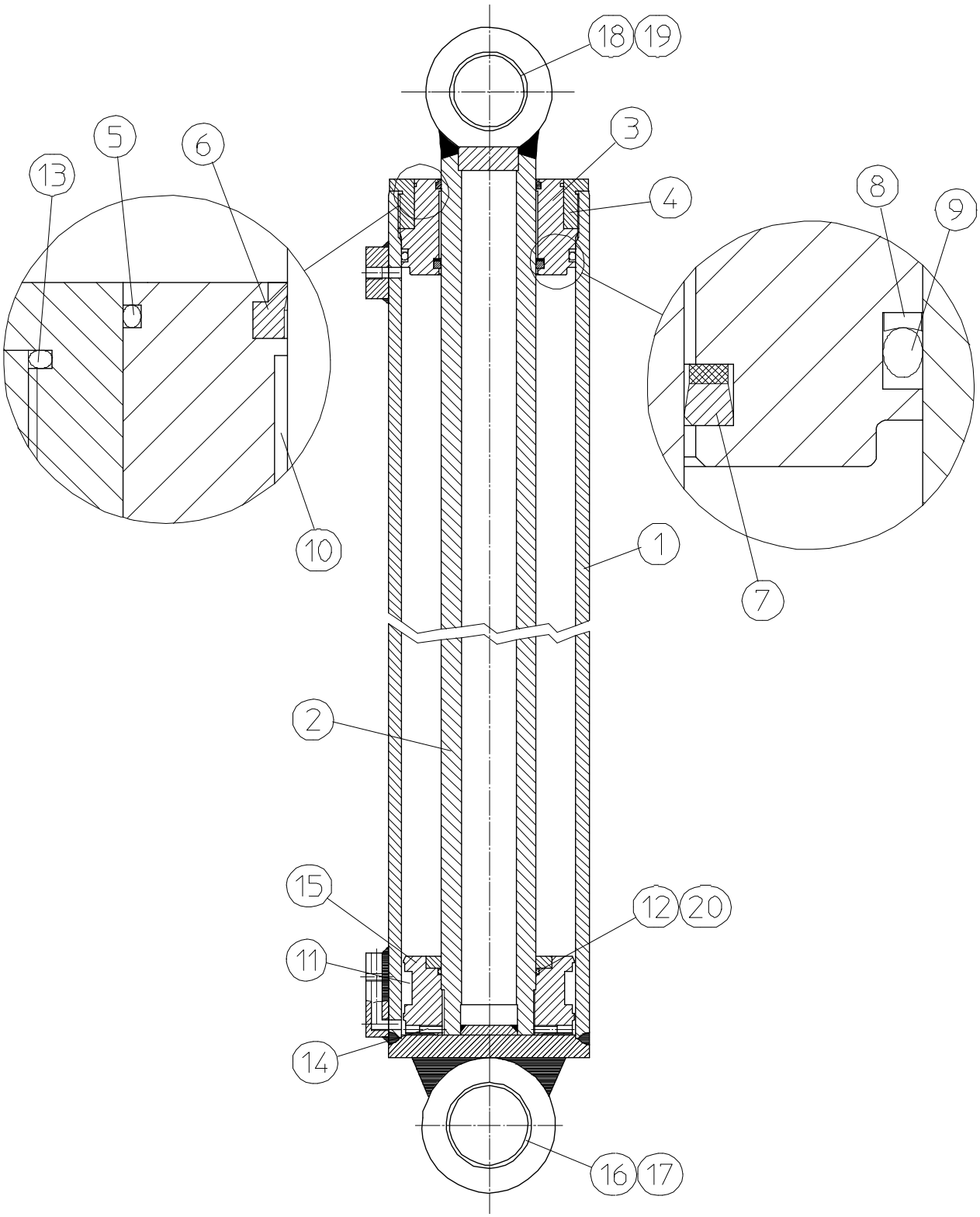
ANTONELLI	**HYDRAULIC CYLINDER P-205/B UF AZ-42.5/125**	**15.2** **CODE 43047U**



ANTONELLI	HYDRAULIC CYLINDER P-205/B UF AZ-42.5/125	15.2

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	43047U	**1**	**Cilindro idraulico P-205/B UF**	**Hydr. cylinder P-205/B UF**	
1		1	Cilindro	Cylinder	
2		1	Stelo	Rod	
3		1	Testina ant. interna	Front head int.	
4		1	Testina ant. esterna	Front head ext.	
5		1	Guarnizione	Gasket	OR-4900
6		1	Guarnizione	Gasket	SWP 130145
7		1	Guarnizione	Gasket	B-570511/NEI
8		1	Guarnizione	Gasket	BRS 680
9		1	Guarnizione	Gasket	ORD 680
10	20635	1	Bronzina	Bronze bushing	BR MB 130100 DU
11		1	Guarnizione	Gasket	DSM 1024925/1A
12		1	Guarnizione	Gasket	ORD 351
13		1	Guarnizione	Gasket	ORD-377
14		1	Guarnizione	Gasket	E/GT 260/255*9,7 102A
15		1	Pistone	Piston	
16		1	Vite	Screw	STCE M10
17	20483	2	Bronzina	Bronze bushing	BR MB 100115 DU
18		1	Distanziere	Spacer	L=90
19		2	Bronzina	Bronze bushing	BR MB 10060 DU
20		2	Guarnizione	Gasket	BRS 860
	1974	1	Kit guarnizioni	Kit gaskets	

ANTONELLI	**HYDRAULIC CYLINDER P-211/A UF AZ-42.5/125**	**15.3** **CODE 43055U**



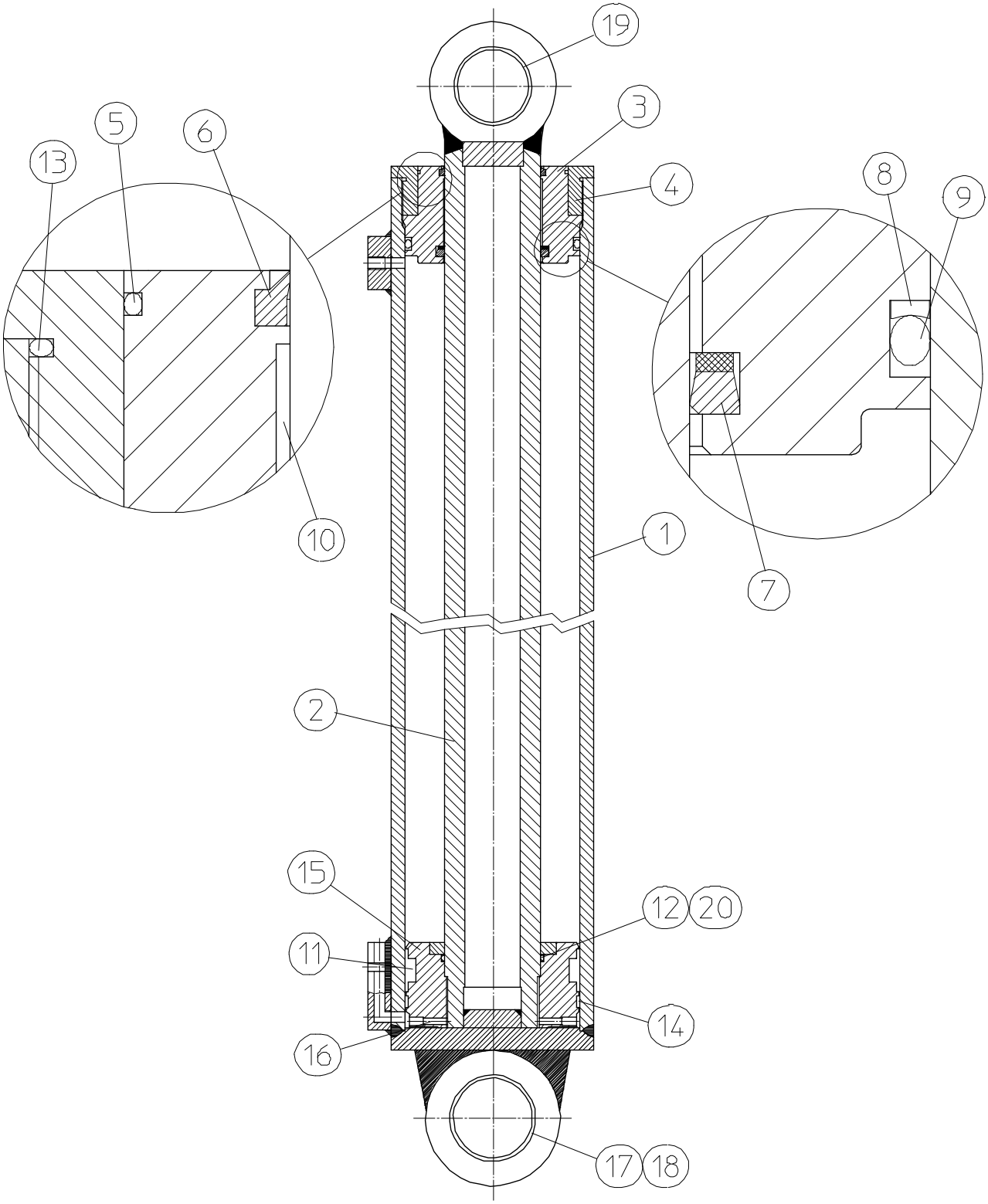
	HYDRAULIC CYLINDER P-211/A UF AZ-42.5/125	15.3

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	43055U	**1**	**Cilindro idraulico P-211/A UF**	**Hydr. cylinder P-211/A UF**	
1		1	Cilindro	Cylinder	
2		1	Stelo	Rod	
3		1	Testina ant. interna	Front head int.	
4		1	Testina ant. esterna	Front head ext.	
5		1	Guarnizione	Gasket	ORD-267
6		1	Guarnizione	Gasket	SWP 130145
7		1	Guarnizione	Gasket	B-570511/NEI
8		1	Guarnizione	Gasket	BRS 447
9		1	Guarnizione	Gasket	ORD 447
10	20635	1	Boccola	Bushing	BR MB 130100 DU
11		1	Guarnizione	Gasket	DSM 944846/1A
12		1	Guarnizione	Gasket	ORD 851
13		1	Guarnizione	Gasket	ORD-375
14		1	Vite	Screw	STCE M10
15		1	Pistone	Piston	
16	20562	2	Boccola	Bushing	BR MB 95100 DU
17		1	Distanziere	Spacer	L=95
18	20563	2	Boccola	Bushing	BR MB 95600 DU
19		1	Distanziere	Spacer	L=40
20		2	Guarnizione	Gasket	BRS 860
	1975	1	Kit guarnizioni	Kit gaskets	

HYDRAULIC CYLINDER P-213/A UF AZ-42.5/125

15.4

CODE 43056U



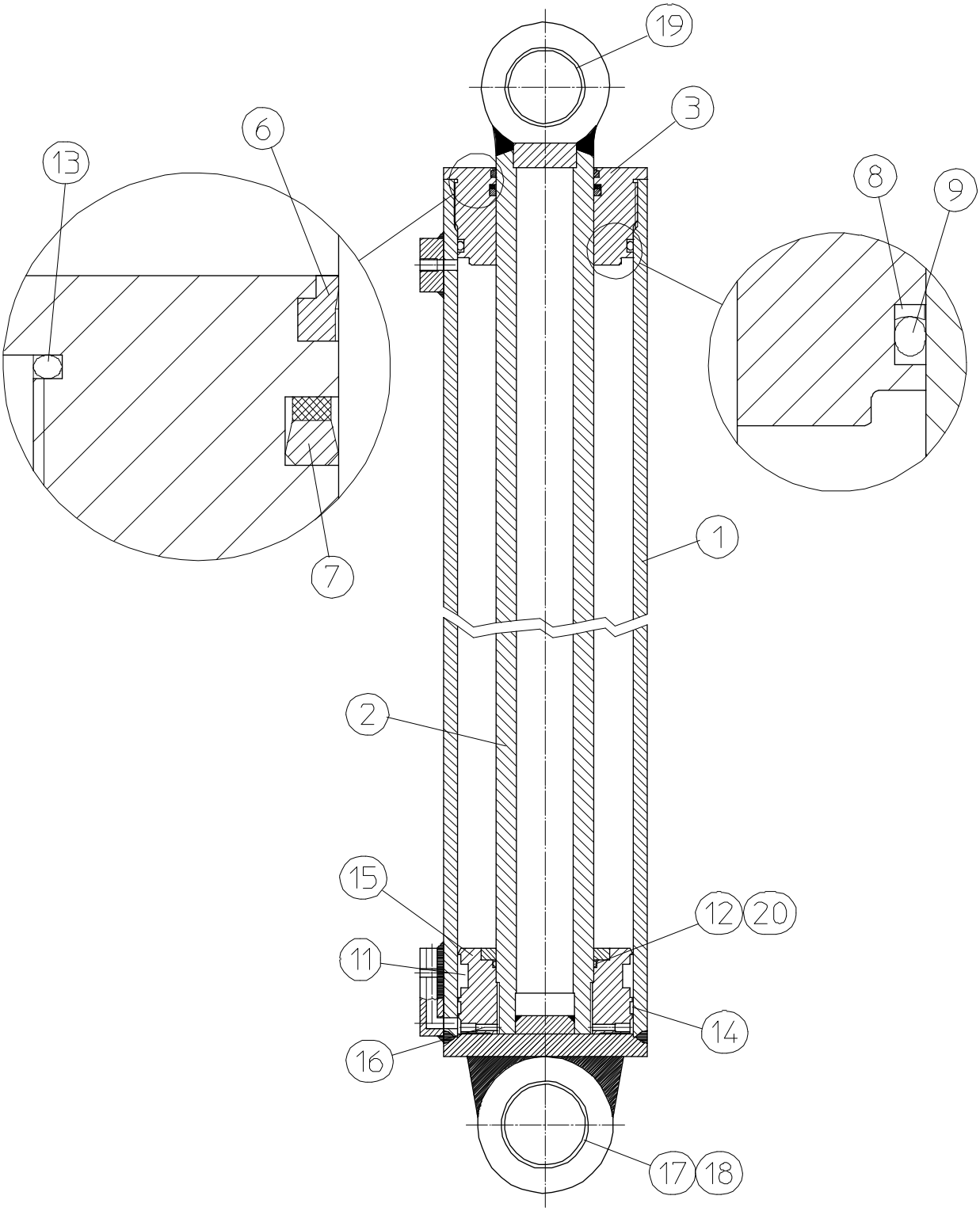
ANTONELLI	HYDRAULIC CYLINDER P-213/A UF AZ-42.5/125	15.4

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	43056U	**1**	**Cilindro idraulico P-213/A UF**	**Hydraulic cylin. P-213/A UF**	
1		1	Cilindro	Cylinder	
2		1	Stelo	Rod	
3		1	Testina ant. interna	Front head int.	
4		1	Testina ant. esterna	Front head ext.	
5		1	Guarnizione	Gasket	OR-4525
6		1	Guarnizione	Gasket	SWP 90105
7		1	Guarnizione	Gasket	B-413354/1NEI
8		1	Guarnizione	Gasket	BRS 437
9		1	Guarnizione	Gasket	OR-437
10	20695	1	Boccola	Bushing	BR MB 9075 DU
11		1	Guarnizione	Gasket	DBM 649551
12		1	Guarnizione	Gasket	OR-4312
13		1	Guarnizione	Gasket	OR-4650
14		1	Guarnizione	Gasket	E/GT 165/160 x 15
15		1	Pistone	Piston	
16		1	Vite	Screw	STCE M10
17	20694	2	Boccola	Bushing	BR MB 7080 DU
18		1	Distanziere	Spacer	L=78
19	20685	2	Boccola	Bushing	BR MB 7045 DU
20		2	Guarnizione	Gasket	BRS 235
	1976	1	Kit guarnizioni	Kit gaskets	

HYDRAULIC CYLINDER P-214/A UF AZ-42.5/125

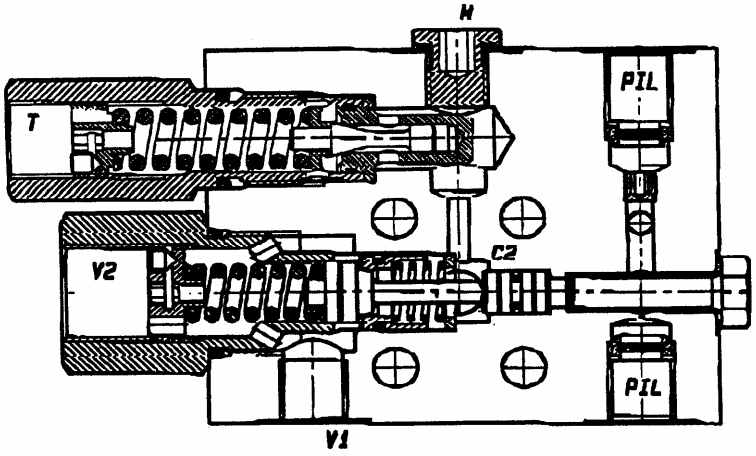
15.5

CODE 43057U



	HYDRAULIC CYLINDER P-214/A UF AZ-42.5/125	15.5

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	43057U	**1**	**Cilindro idraulico P-214/A UF**	**Hydr. cylinder P-214/A UF**	
1		1	Cilindro	Cylinder	
2		1	Stelo	Rod	
3		1	Testina anteriore	Front head	
6		1	Guarnizione	Gasket	SWP 6580
7		1	Guarnizione	Gasket	EU 6580
8		1	Guarnizione	Gasket	BRS 346
9		1	Guarnizione	Gasket	OR-346
11		1	Guarnizione	Gasket	DBM 452354
12		1	Guarnizione	Gasket	ORD-832
13		1	Guarnizione	Gasket	ORD-157
14		1	Guarnizione	Gasket	E/GT 115/110 x 9,7
15		1	Pistone	Piston	
16		1	Vite	Screw	STCE M8X16 UNI 5927
17	20520	2	Boccola	Bushing	BR MB 5060 DU
18		1	Distanziere	Spacer	L=52
19	20571	2	Boccola	Bushing	BR MB 5030 DU
20		2	Guarnizione	Gasket	BRS 832
	1977	1	Kit guarnizioni	Kit gaskets	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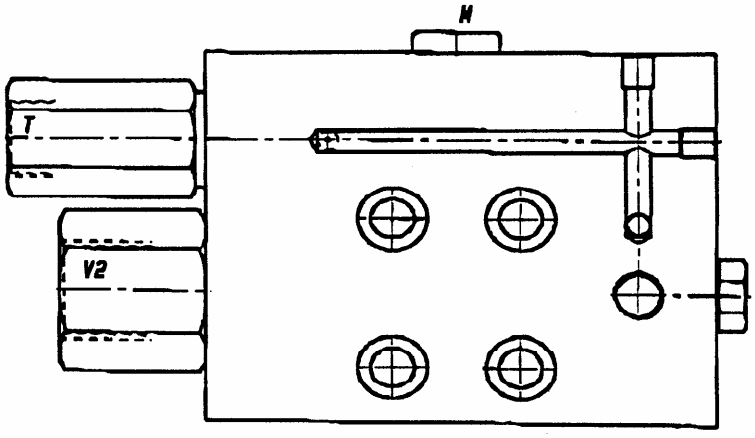
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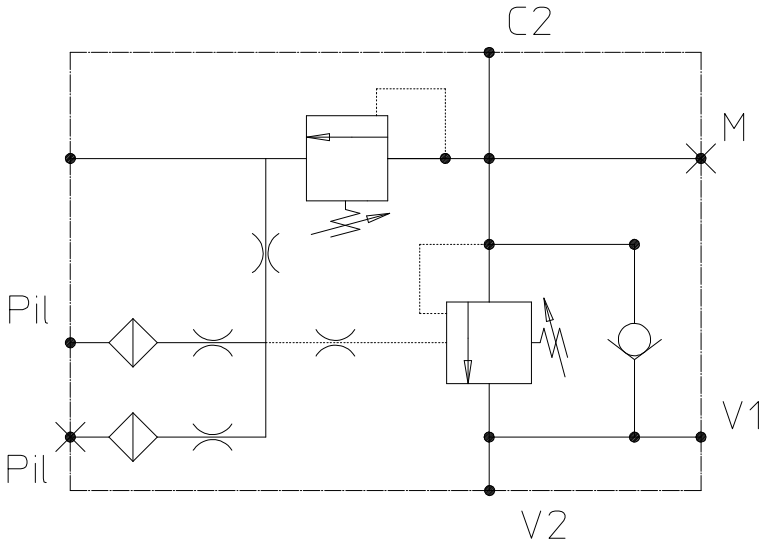
V2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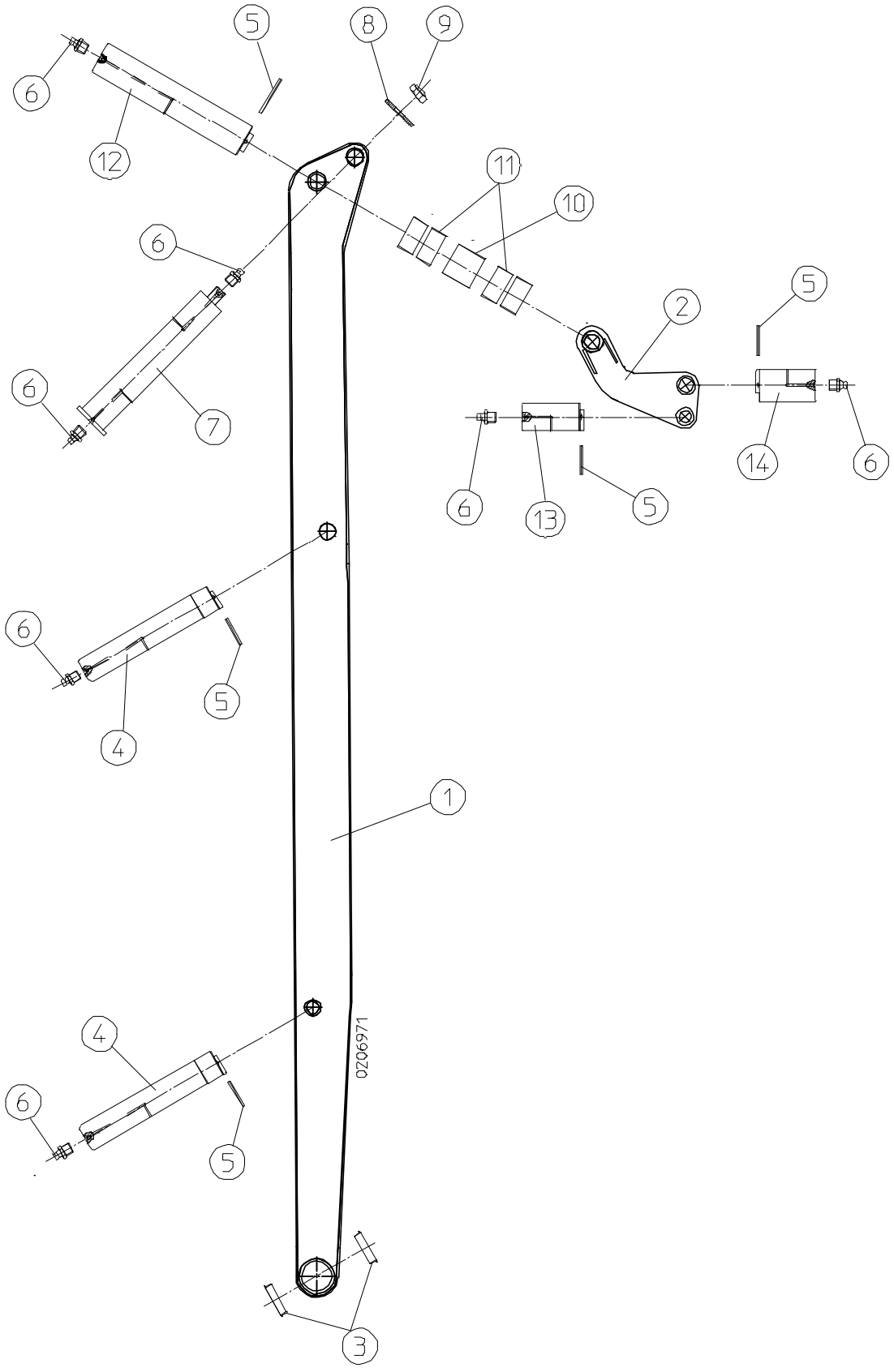
ANTONELLI	BOOM HYDRAULIC CYLINDER CHECK VALVE U/97 AZ-42.5/125	16.6

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	180214	**1**	**Valvola di blocco**	**Check valve**	**U/97**
	180214.340	1	Valvola di blocco 340 bar	Check valve 340 bar	U/97 340 bar
	180214.310	1	Valvola di blocco 310 bar	Check valve 310 bar	U/97 310 bar
	180214.280	1	Valvola di blocco 280 bar	Check valve 280 bar	U/97 280 bar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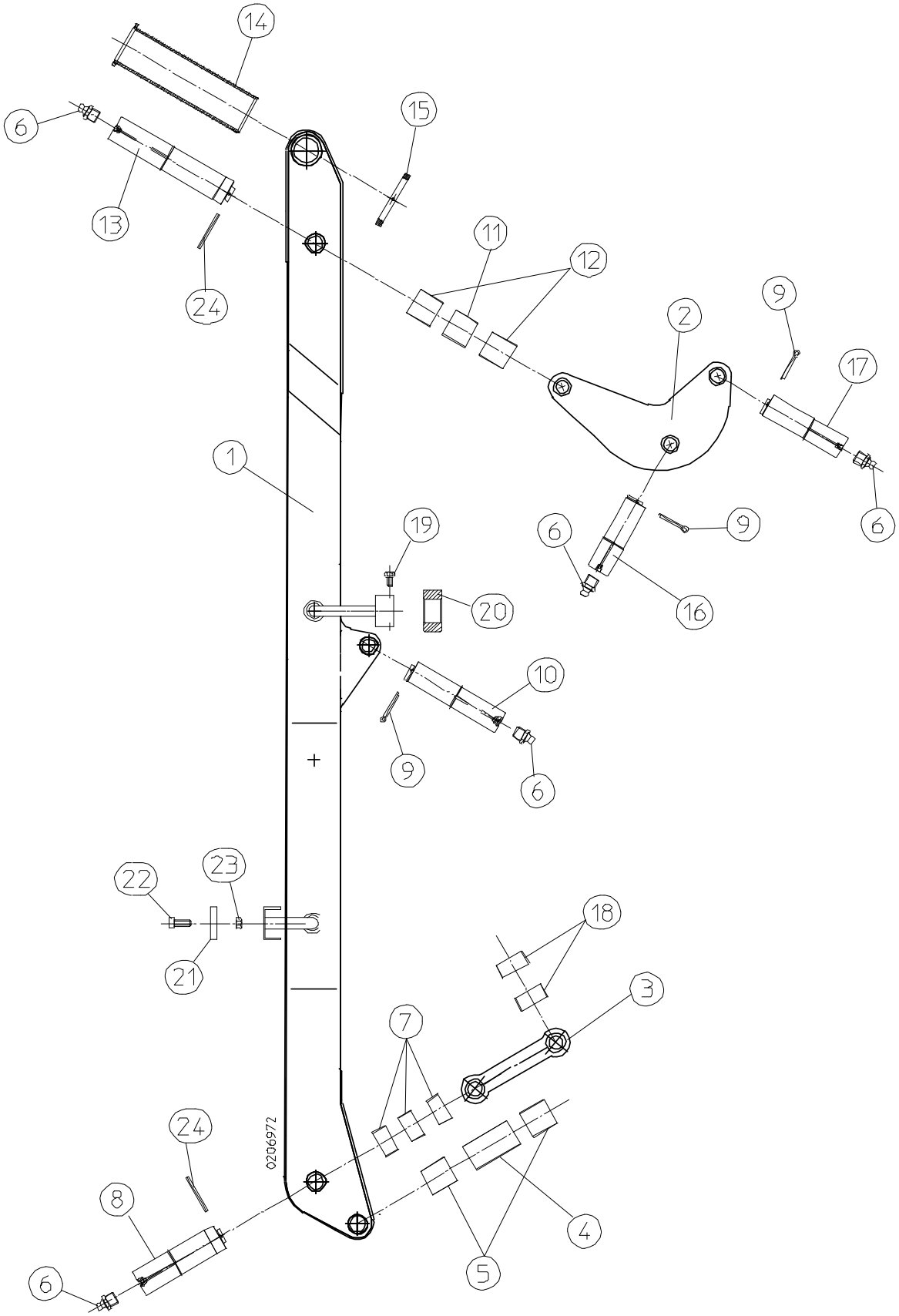
	FIRST BOOM SECTION AZ-42.5/125	17.1

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	287000	**1**	**Primo elemento**	**First section**	
1	287001	1	Struttura base	Base structure	
2	287011	1	Bilanciere B	Beam B	
3	20613	4	Bronzina	Bronze bushing	BR-1784
4	31180	2	Perno	Pin	P-0911
5	100380	5	Spina elastica	Elastic pin	D.14*140
6	170012	7	Ingrassatore	Lubricator	A/M10*1
7	31190	1	Perno	Pin	P-0913/A
8	21446	1	Boccola	Bushing	BO-1804
9	90718	1	Dado auto	Self-locking nut	M45*3
10	21962	1	Boccola	Bushing	BO-2273
11	20626	4	Bronzina	Bronze bushing	MB 12060 DU
12	31188	1	Perno	Pin	P-0914
13	31181	1	Perno	Pin	P-0912
14	31189	1	Perno	Pin	P-0920

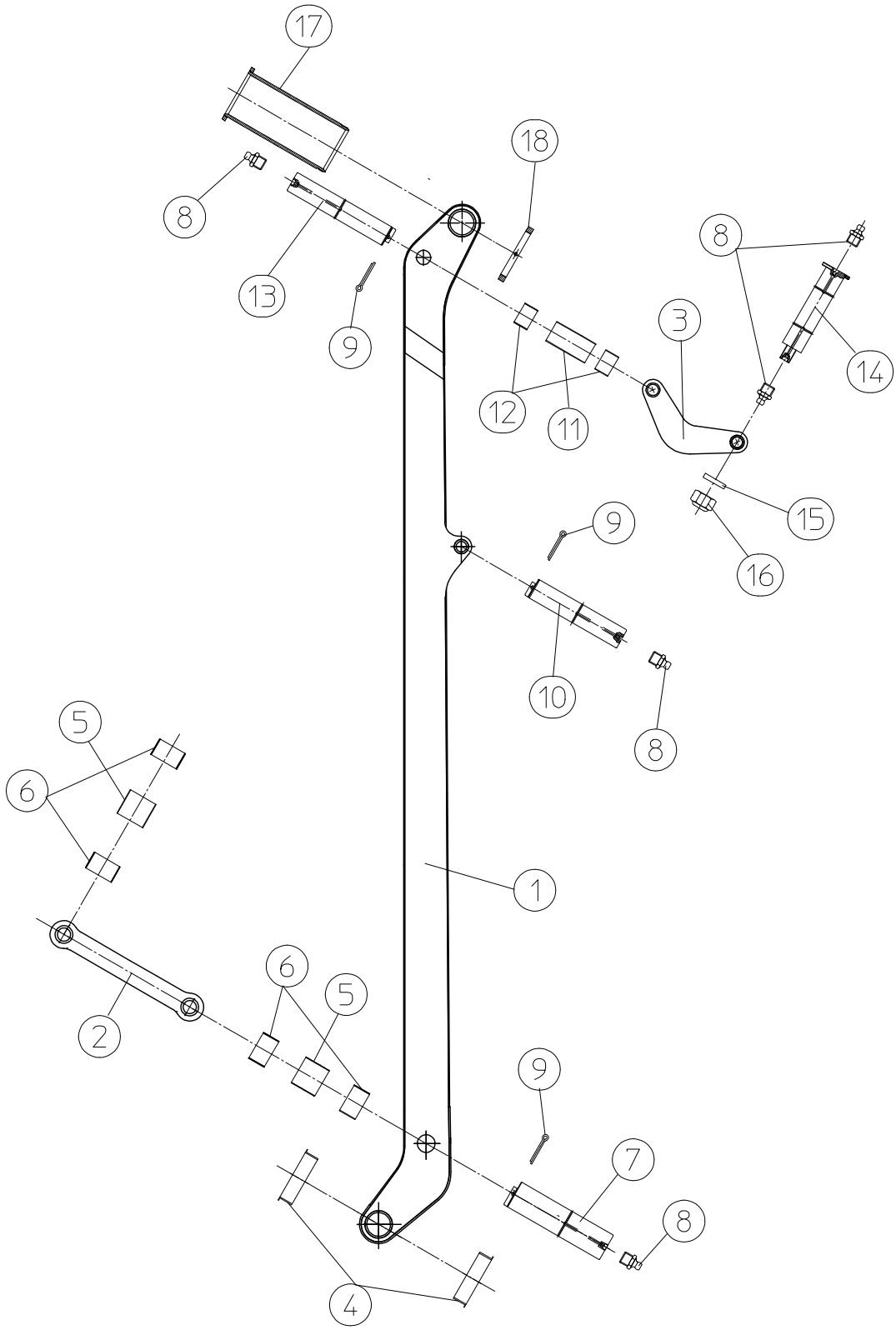
ANTONELLI	**SECOND BOOM SECTION** **AZ-42.5/125**	**17.2** **CODE 284512**



	SECOND BOOM SECTION AZ-42.5/125	17.2

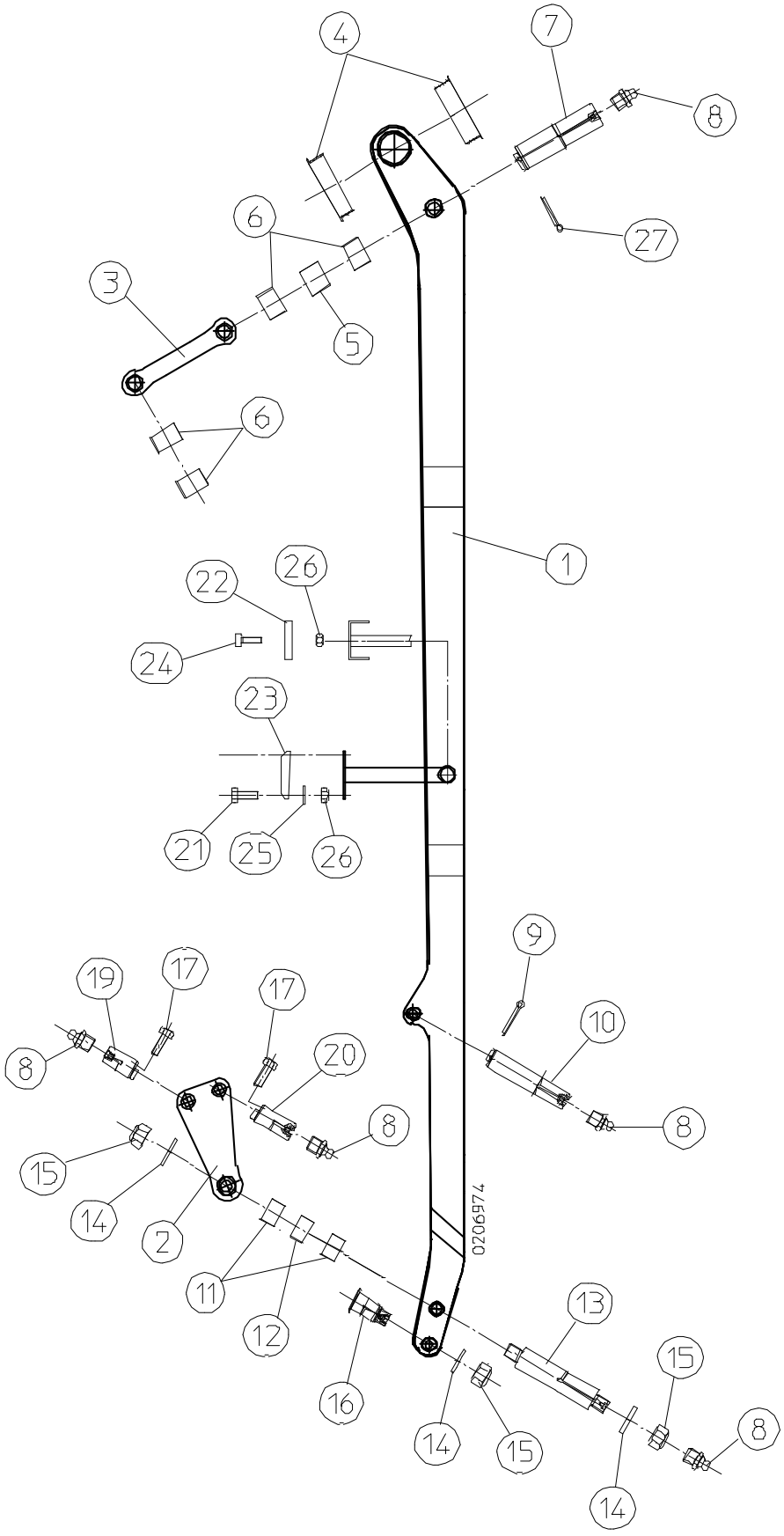
P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	284512	**1**	**Secondo elemento**	**Second section**	
1	42002001	1	Struttura base	Base structure	
2	42006003	1	Bilanciere C	Beam C	
3	41006005	1	Biella B	Connecting rod B	
4	21438	1	Boccola	Bushing	BO-1801
5	20618	1	Bronzina	Bronze bushing	MB 110115DU
6	170012	5	Ingrassatore	Lubricator	A/M10*1
7	20557	3	Bronzina	Bronze bushing	MB 11060 DU
8	31192	3	Perno	Pin	P-0917
9	121206	3	Copiglia	Split pin	D.10*110
10	31183	1	Perno	Pin	P-0916
11	21439	1	Boccola	Bushing	BO-1820
12	20618	2	Bronzina	Bronze bushing	MB 110115 DU
13	31191	1	Perno	Pin	P-0922
14	31608	1	Perno	Pin	P-1205/A
15	180161	1	Ghiera	Ring nut	Dwg. 030397
16	31185	1	Perno	Pin	P-0921
17	31182	1	Perno	Pin	P-0919
18	20626	2	Bronzina	Bronze bushing	MB 12060 DU
19	90113	2	Vite	Screw	TE M10x16x1.5
20	120302	1	Tassello in gomma	Rubber pad	D.133x60
21	230772	1	Tampone in teflon	Teflon pad	Dwg. 010131
22	91803	2	Vite	Screw	TCCE M10x35x1.5
23	90617	2	Dado Autobloc.	Self-locking nut	M10x1.5
24	100380	2	Spina elastica	Elastic pin	D.14x140

ANTONELLI	**THIRD BOOM SECTION** **AZ-42.5/125**	**17.3** **CODE 284515**



	THIRD BOOM SECTION AZ-42.5/125	17.3

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	284515	**1**	**Terzo elemento**	**Third section**	
1	42003001	1	Struttura base	Base structure	
2	41006004	1	Biella C	Connecting rod C	
3	42006016	1	Bilanciere D	Beam D	
4	20623	2	Bronzina	Bronze bushing	BR-1836
5	21436	2	Boccola	Bushing	BO-1812
6	20563	4	Bronzina	Bronze bushing	MB 9560 DU
7	31182	1	Perno	Pin	P-0919
8	170012	5	Ingrassatore	Lubricator	A/M10*1
9	121201	3	Copiglia	Split pin	D.10*120
10	31223	1	Perno	Pin	P-0941
11	21178	1	Boccola	Bushing	BO-1604
12	20551	2	Bronzina	Bronze bushing	MB 7050 DU
13	31221	1	Perno	Pin	P-0943
14	31251	2	Perno	Pin	P-0942/A
15	20017	1	Boccola	Bushing	BO-1159
16	90664	1	Dado auto	Self-locking nut	M36*3
17	31610	1	Perno	Pin	P-1206/A
18	180161	1	Ghiera	Ring nut	Dwg. 030397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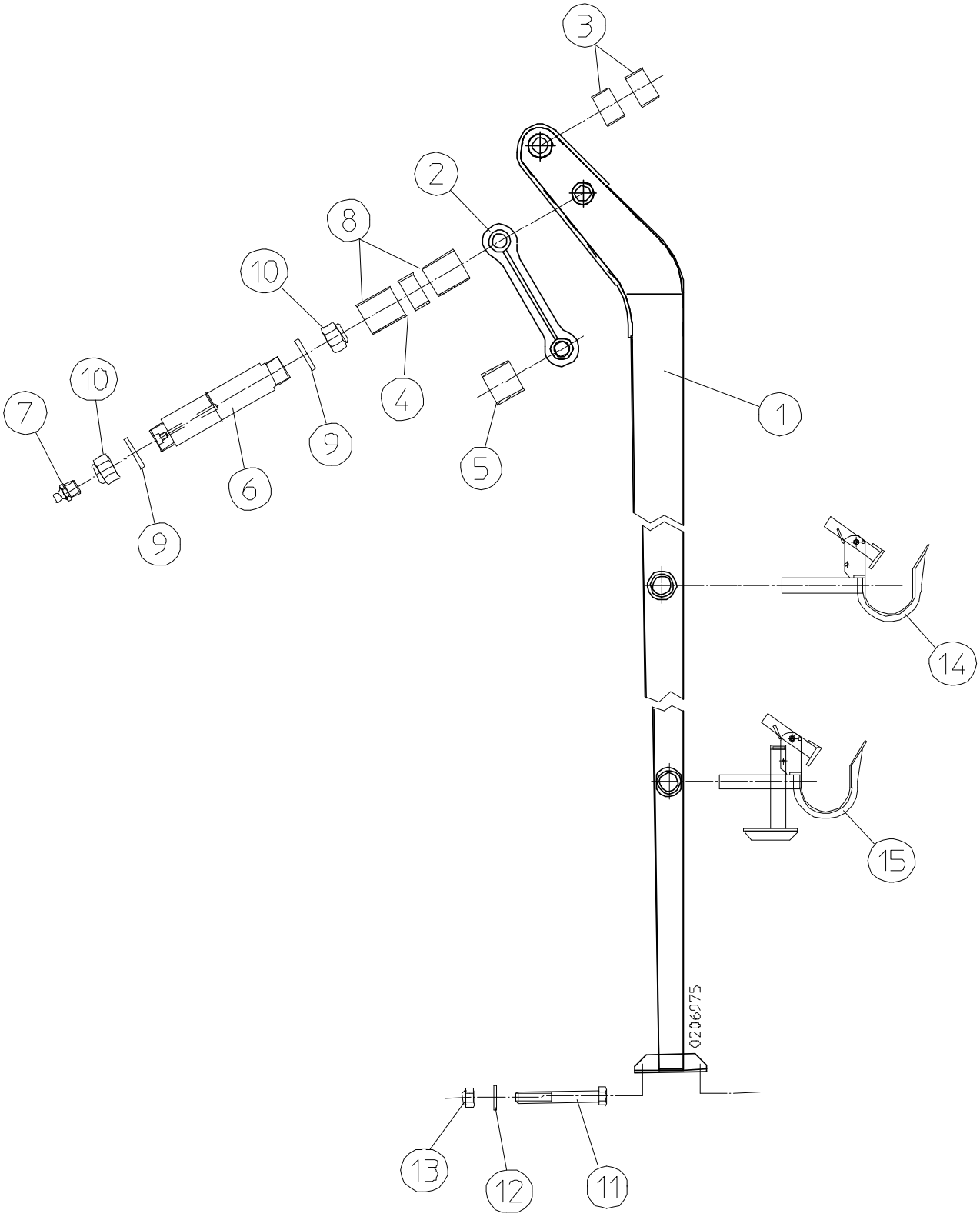
	FOURTH BOOM SECTION AZ-42.5/125	17.4

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	287018	**1**	**Quarto elemento**	**Fourth section**	
1	287097	1	Struttura base	Base structure	
2	287100	1	Bilanciere E	Beam E	
3	42006017	1	Biella D	Connecting rod D	
4	20623	2	Bronzina	Bronze bushing	BR-1836
5	21523	1	Boccola	Bushing	BO-1902
6	20551	4	Bronzina	Bronze bushing	MB 7050DU
7	31255	1	Perno	Pin	P-0973
8	170012	5	Ingrassatore	Lubricator	A/M10*1
9	120218	4	Copiglia	Split pin	D.8*80
10	30872	1	Perno	Pin	P-0656/1
11	20552	2	Bronzina	Bronze bushing	MB 6040 DU
12	22012	1	Boccola	Bronze bushing	BO-2322
13	31613	1	Perno	Pin	P-1209
14	374079	4	Boccola	Bushing	CU-094
15	180911	4	Ghiera	Ring nut	M40x1,5
16	31615	2	Perno	Pin	P-1211
17	90833	2	Vite	Screw	TE M10x30x1,5
19	31612	1	Perno	Pin	P-1208
20	31532	1	Perno	Pin	P-1143
21	90113	2	Vite	Screw	TE M10x16x1.5
22	230772	1	Tassello in Teflon	Teflon pad	Dwg. 010131
23	230768	1	Tampone in teflon	Teflon pad	Dwg. 140799
24	91803	2	Vite	Screw	TCCE M10x35
25	100039	2	Rosetta	Washer	D.10
26	90617	4	Dado autobl.	Self locking nut	M10x1.5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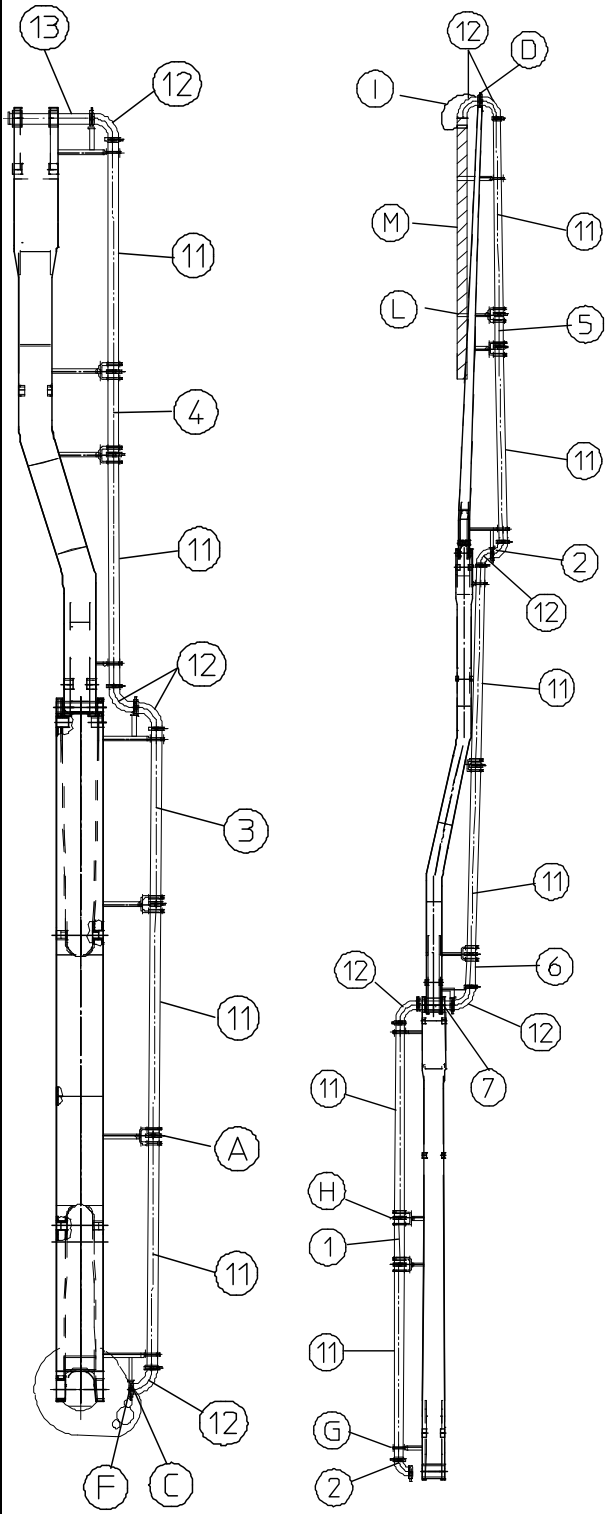
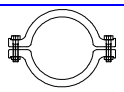
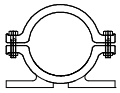
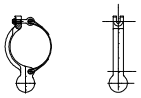
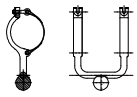
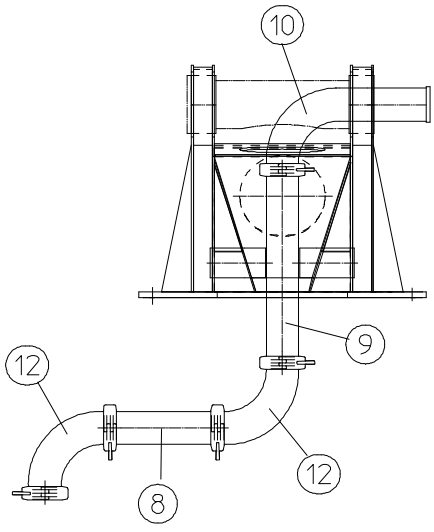
	FIFTH BOOM SECTION AZ-42.5/125	17.5

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	287019	**1**	**Quinto elemento**	**Fifth section**	
1	287098	1	Struttura base	Base structure	
2	287102	1	Biella E	Connecting rod E	
3	20571	2	Bronzina	Bronze bushing	MB 5030 DU
4	22017	1	Boccola	Bushing	BO-2327
5	20565	1	Bronzina	Bronze bushing	MB 5050 DU
6	31614	1	Perno	Pin	P-1210
7	170012	1	Ingrassatore	Lubricator	A/M10*1
8	20520	2	Bronzina	Bronze bushing	MB 5060 DU
9	374079	2	Boccola	Bushing	CU-094
10	180911	2	Ghiera	Ring nut	M40x1,5
11	90268	2	Vite	Screw	TE M16x45x1.5
12	100093	2	Rosetta	Washer	D.16
13	90638	2	Dado autobl.	Self-locking nut	M16x1.5
14	120547	1	Gancio tubo terminale	Hook for end hose	Dwg. 030423
15	120524	1	Gancio tubo terminale speciale	Special hook for end hose	

ANTONELLI	**CONCRETE PIPELINE DIAGRAM** **AZ-42.5/125**	**18.1** **DIS. 42017005**



ACCESSORIES FOR CONCRETE PLANT				
A		LEVER JOINT	4”1/2 5”1/2	CODE 110240 CODE 110270
B		BOLT JOINT	4”1/2 5”1/2	CODE 110287 CODE 110267
C		SUPPORTING LEVER JOINT	4”1/2 5”1/2	CODE 110294 CODE 110290
D		SUPPORTING BOLT JOINT	4”1/2 5”1/2	CODE 110292 CODE 110289
E		SPECIAL BOLT JOINT	5”1/2	CODE 111242
F		GASKET FOR JOINT	4”1/2 5”1/2	CODE 356 CODE 555
G		CLAMP AND SIMPLE SUPPORT	5”1/2	CODE 120541
H		CLAMP AND DOUBLE SUPPPORT	5”1/2	CODE 120542
I		Collar and safety cable		
L		End hose		
M		End hose support		

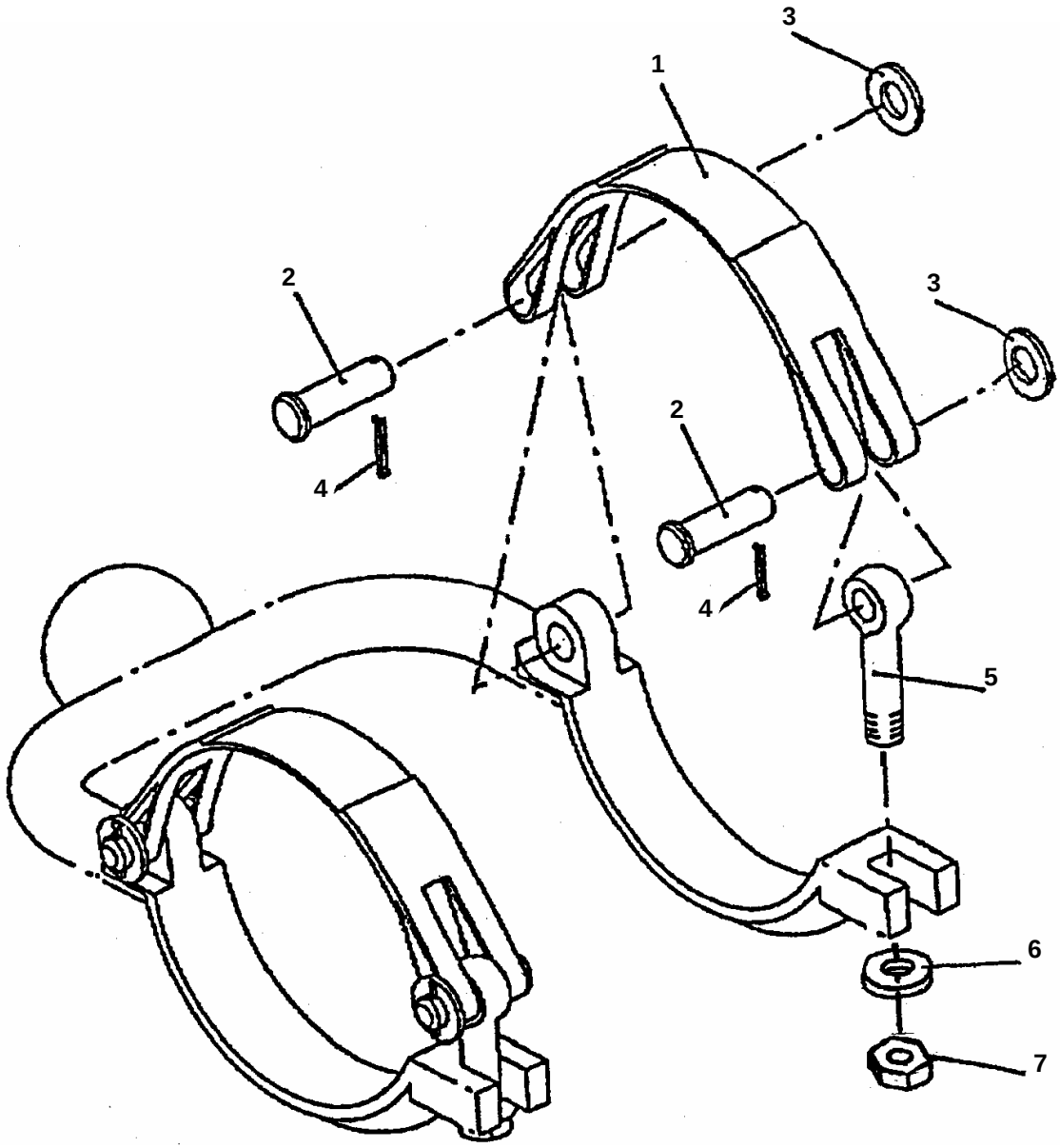


	CONCRETE PIPELINE DIAGRAM AZ-42.5/125	18.1

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
			Schema tubaz. cls	**Concrete pipeline diagram**	**DIS. 42017005**
1	62254	1	Tubo Jolly	Adapter pipe	0983 L=740 ± 20 mm
2	62079	2	Curva	Curve	1009-5”1/2
3	62188	1	Tubo Jolly	Adapter pipe	0927 L=2265 ± 20 mm
4	62189	1	Tubo Jolly	Adapter pipe	0928 L=1080 ± 20 mm
5	62214	1	Tubo Jolly	Adapter pipe	0946 L=510 ± 20 mm
6	60967	1	Tubo Jolly	Adapter pipe	0741 L=420 ± 20 mm
7	62307	1	Tubo	Pipe	1015 L=555
8	60985	1	Tubo	Pipe	0758 L=500
9	62221	1	Tubo	Pipe	0939 L=800
10	62514	1	Tubo	Pipe	1071 L=650/275
11	60500	10	Tubo	Pipe	0499 L=3000
12	60604	11	Curva	Curve	0520-5”1/2
13	62213	1	Tubo	Pipe	0947 L=1090

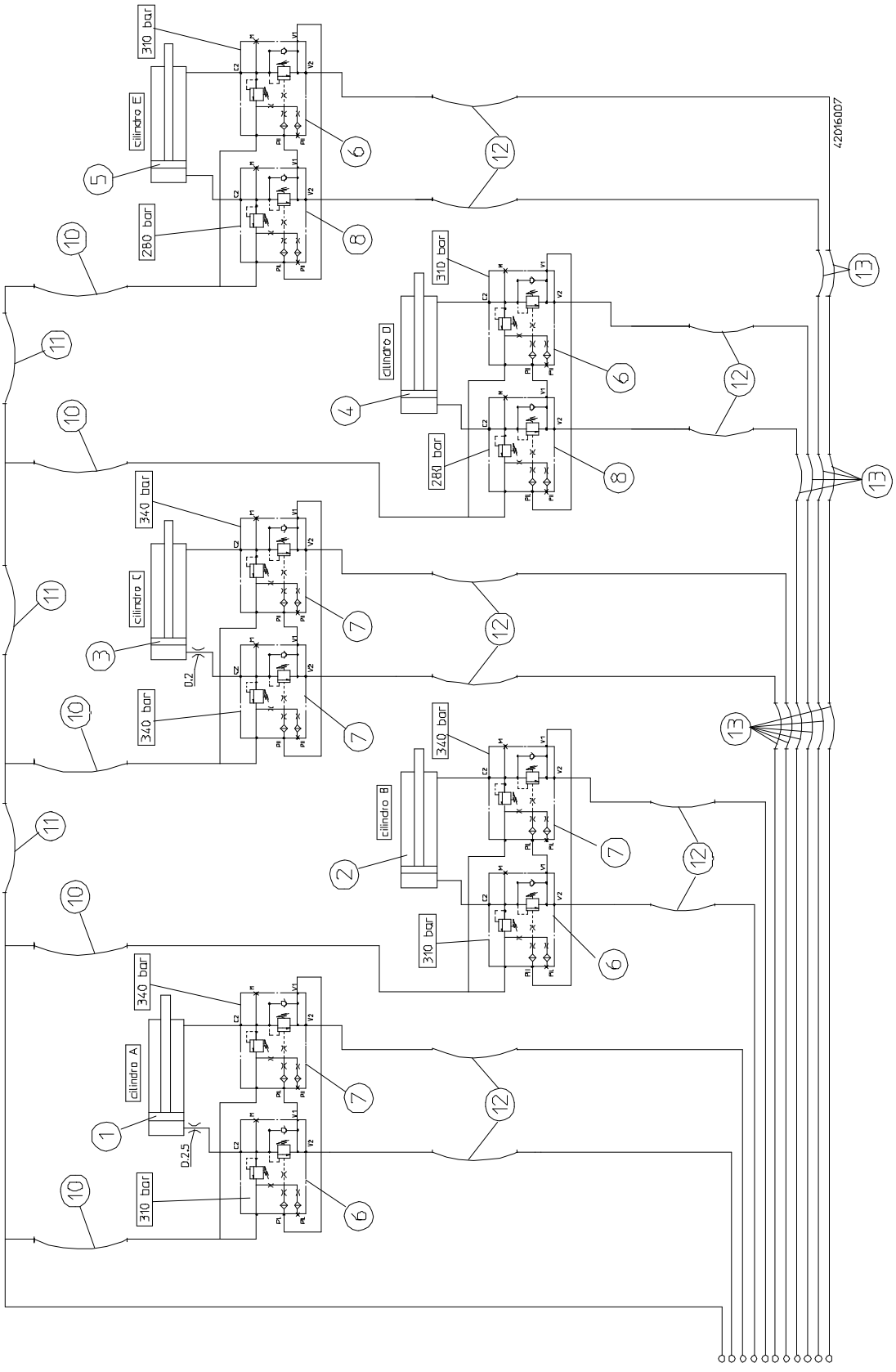
NB: For the exact length of the adapter pipes, see the exact value stamped on the plate of the pipe.

ANTONELLI	**SUPPORT FOR CONCRETE PLANT**	**18.2**



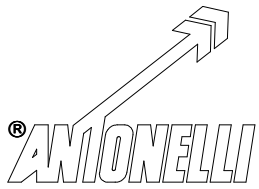
	SUPPORT FOR CONCRETE PLANT	18.2

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
	120545		**Supporto impianto cemento**	**Support for concrete plant**	5”1/2
1	111126	1	Fascetta 5”1/2	Hose clamp 5”1/2	Dis. 0502982
2	31202	2	Perno	Pin	P-0923
3	100041	4	Rosetta	Washer	D.12 UNI 6594 R40
4	120224	2	Copiglia	Split-pin	D.3x30
5	50552	1	Tirante	Tie rod	M12x70 UNI 6058 8.8
6	100108	1	Rosetta	Washer	D.12,5x30x5
7	90628	1	Dado autobloccante	Self locking nut	M12x1.75 UNI 7473 8G


42016007
310 bar
cilindro E
280 bar
cilindro D
340 bar
cilindro C
0.2
cilindro B
cilindro A
0.25

	HYDRAULIC SYSTEM DIAGRAM AZ-42.5/125 HAWE	20.1

P	CODE	Q	DESCRIZIONE	DESCRIPTION	DIMENSIONS/STANDARDS
		1	**Schema impianto oleodinam.**	**Hydraulic system diagram**	**FIG. 42016007**
1	43053U	1	Cilindro idraulico	Hydraulic cylinder	P-204/B UF
2	43047U	1	Cilindro idraulico	Hydraulic cylinder	P-205/B UF
3	43055U	1	Cilindro idraulico	Hydraulic cylinder	P-211/A UF
4	43056U	1	Cilindro idraulico	Hydraulic cylinder	P-213/A UF
5	43057U	1	Cilindro idraulico	Hydraulic cylinder	P-214/A UF
6	180214.310	4	Valvola di blocco U/97	Check valve U/97	U/97 310 bar
7	180214.340	4	Valvola di blocco U/97	Check valve U/97	U/97 340 bar
8	180214.280	2	Valvola di blocco U/97	Check valve U/97	U/97 280 bar
10	81008	5	Tubo gomma	Hose	3/8" L=950
11	81006	3	Tubo gomma	Hose	3/8" L=1400
12	81041	10	Tubo gomma	Hose	1/2" L=950
13	81042	12	Tubo gomma	Hose	1/2" L=1400



ANTONELLI S.R.L
V. MALPASSO,1441/1447
47048-S.GIOVANNI IN MAR. (RN) ITALY
TEL. (0541)955258 FAX (0541)957103
INTERNETADDRESS:http//www.rimini.com/aziende/antonelli
EMAIL: ANTONELLI@ RIMINI.COM

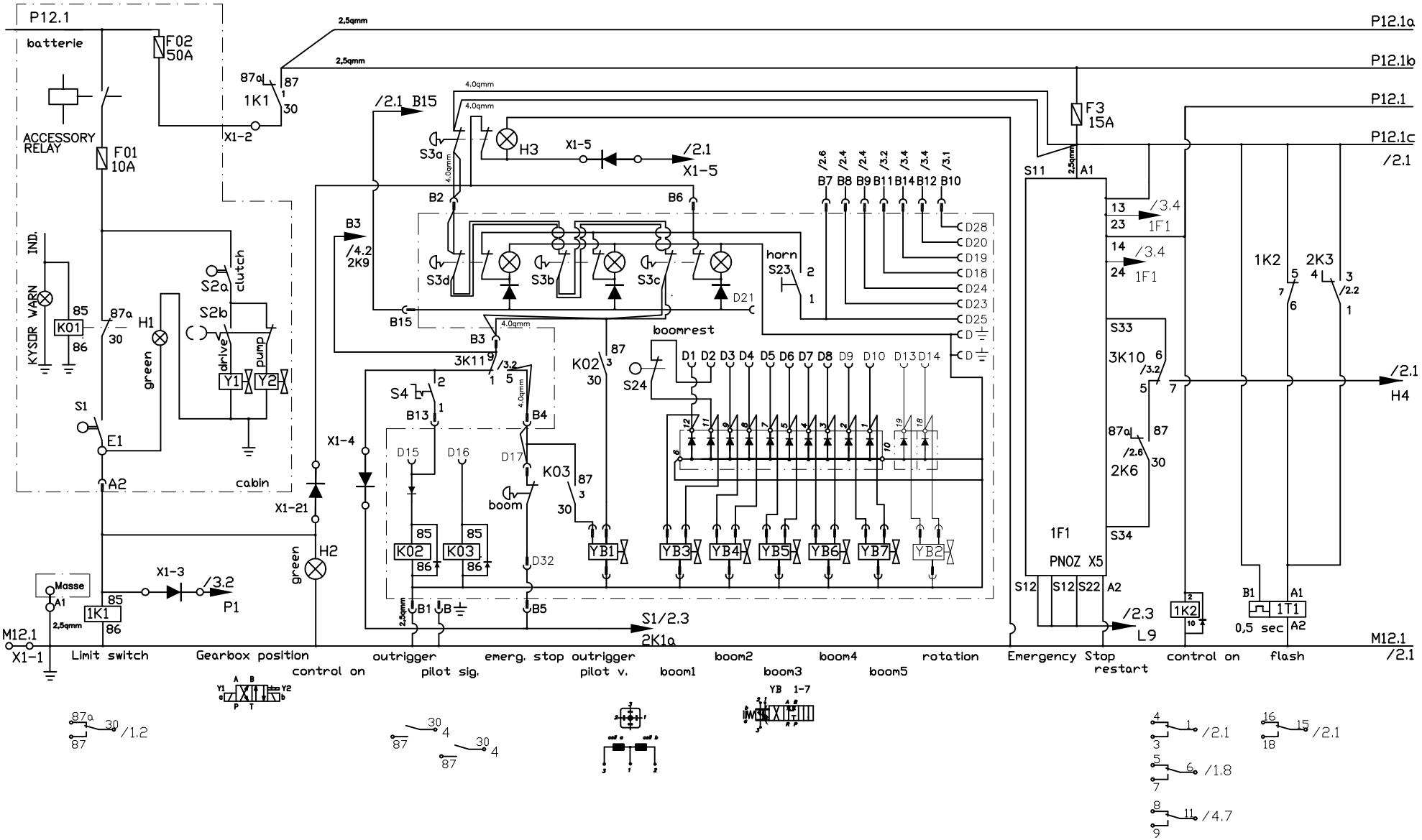
SCHEMATIC LIST-MODEL XXT42.5RZ

CONCRETE BOOM PUMP

CUSTOMER INFO:

POLITEHNIKA
MODEL: XXT42.5RZ CONCRETE BOOM PUMP
REED-SN 05-244-XXT42.5RZ
JOB NUMBER: VL-8714

DRAWING No.
B 51 3 017
B 56 2 066
B 56 1 084
B 56 1 085
B 56 1 086
B 72 2 010



Waitzinger Baumaschinen Vertrieb und Service GmbH				FREE DIMENSION TOLERANCE DIN 7168 MEDIUM			SCALE	WEIGHT
					DATE	NAME	M 42.5 XXT	
				DRAWN	2000/03/27	Fetzer	control panel V4 Page 1	
				CHKD.				
				APPD.				
d	siehe B_513017.doc	19.07.05	Körner					
c	siehe B_513017.doc	24.02.05	Körner					
b	siehe B_513017.doc	02.02.04	Körner	CHANGE ONLY WITH CAD			B 51 3 017	SHEET
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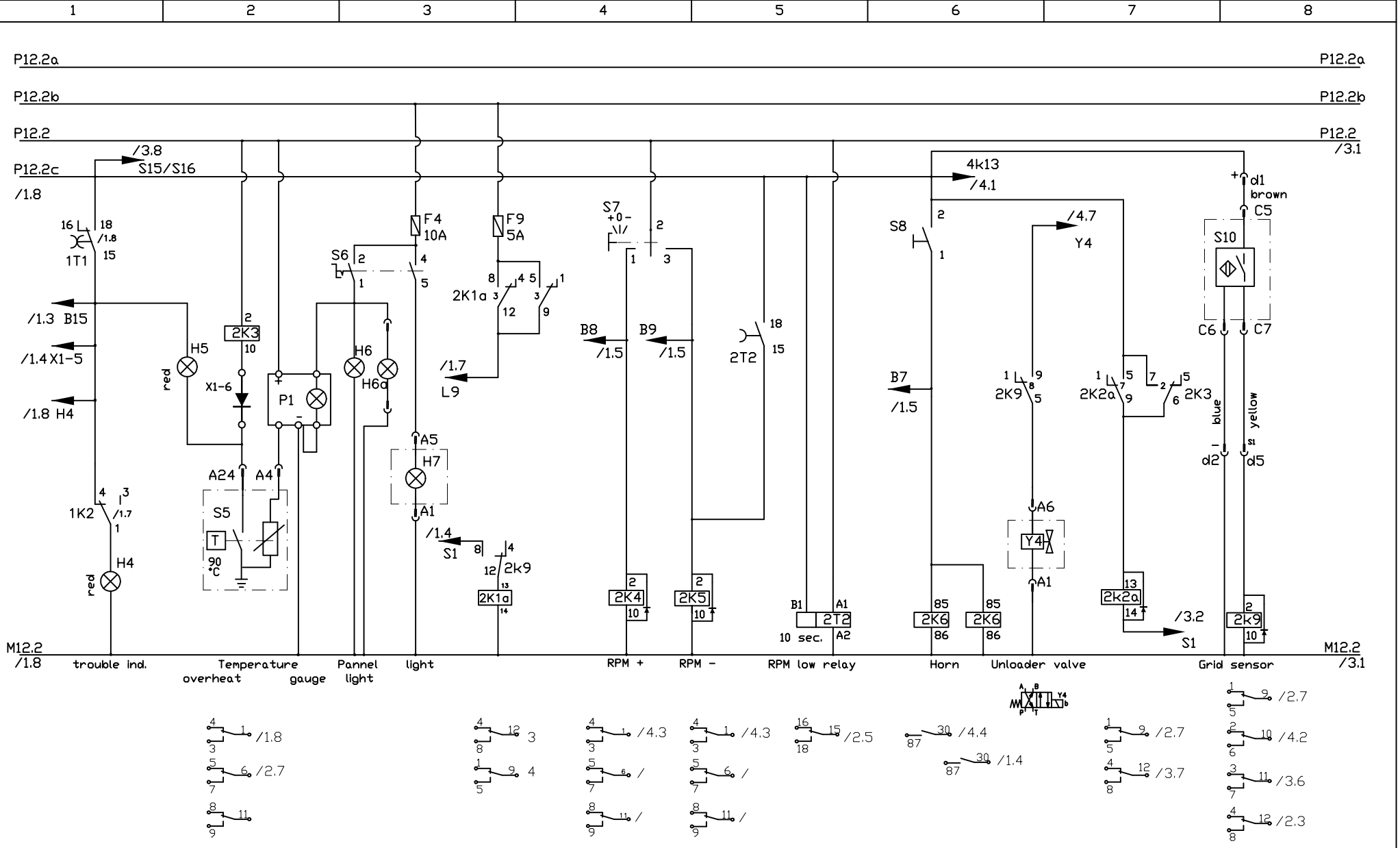
ISSUE	MODIFICATION	DATE	NAME	ORIGINAL			REPLACEMENT FOR	REPLACEMENT BY



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				CHKD.			
				APPD.			
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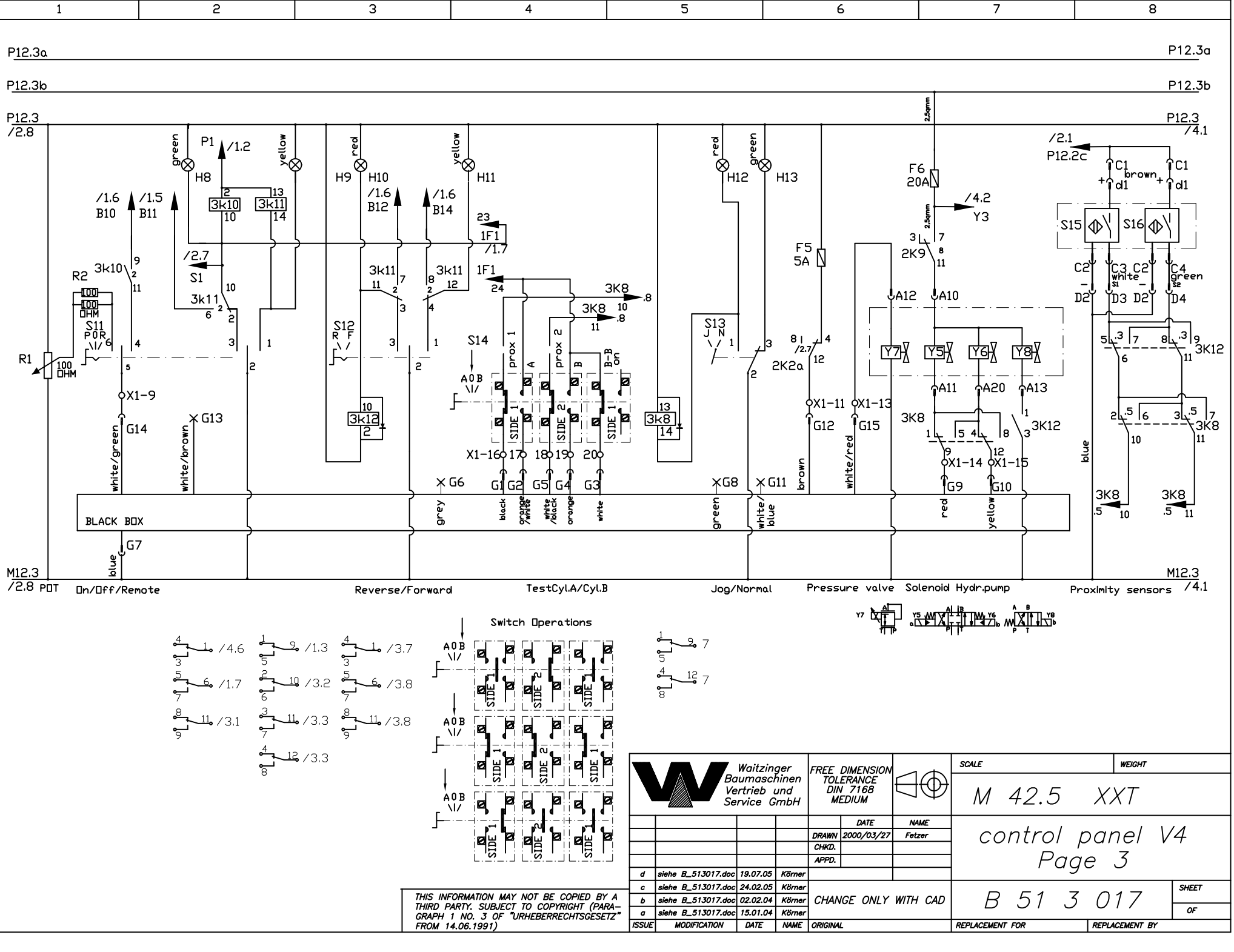

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Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2000/03/27	Fetzer
CHKD.		
APPD.		

ISSUE	MODIFICATION	DATE	NAME
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c	siehe B_513017.doc	24.02.05	Körner
b	siehe B_513017.doc	02.02.04	Körner
a	siehe B_513017.doc	15.01.04	Körner
ORIGINAL			

CHANGE ONLY WITH CAD

SCALE

WEIGHT

M 42.5 XXT

control panel V4
Page 3

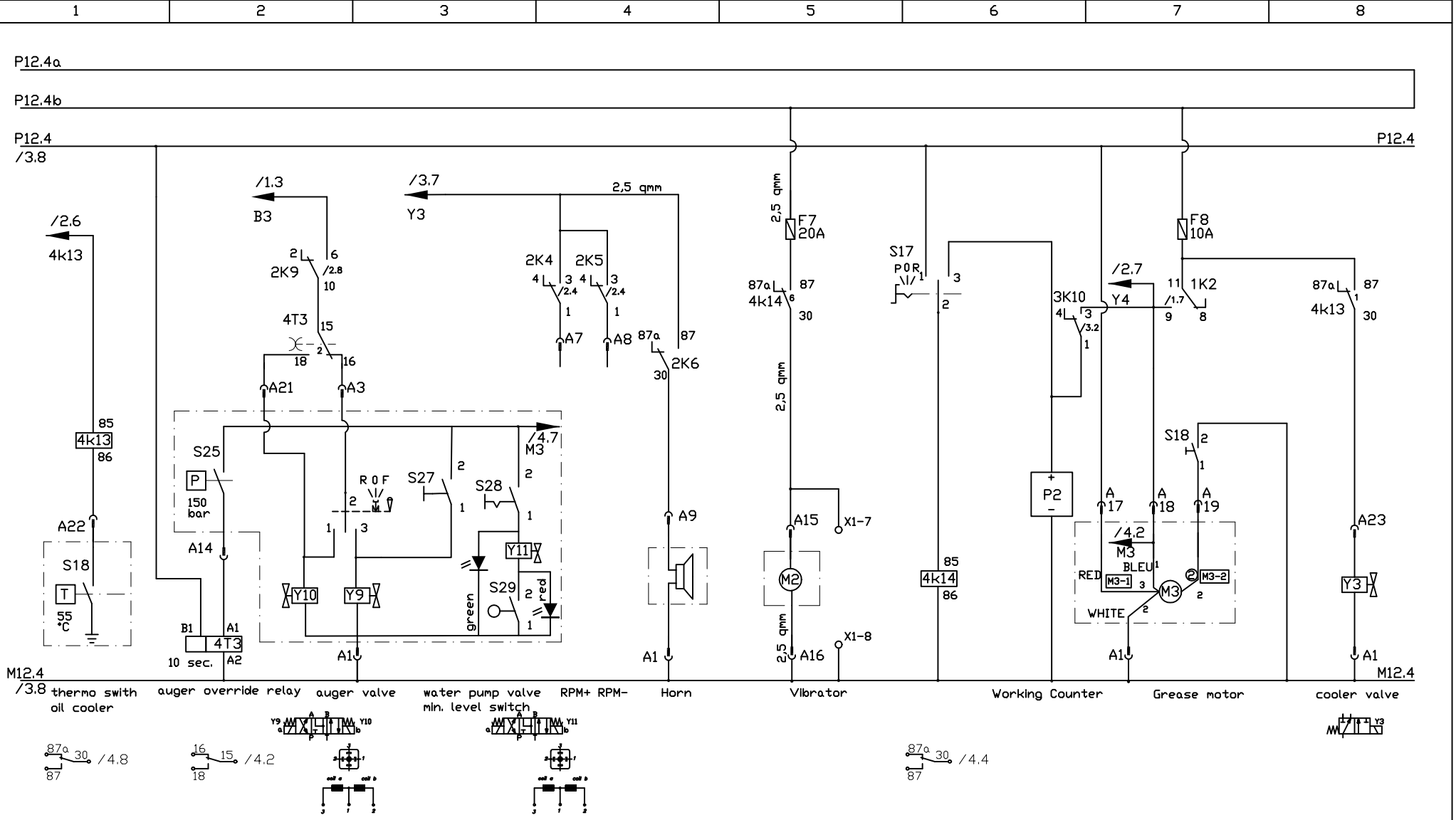
B 51 3 017

SHEET

OF

REPLACEMENT FOR

REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH				FREE DIMENSION TOLERANCE DIN 7168 MEDIUM			SCALE / WEIGHT
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				CHKD.			
				APPD.			
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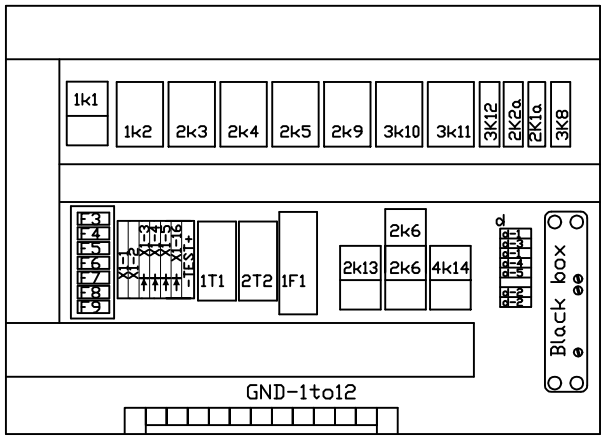
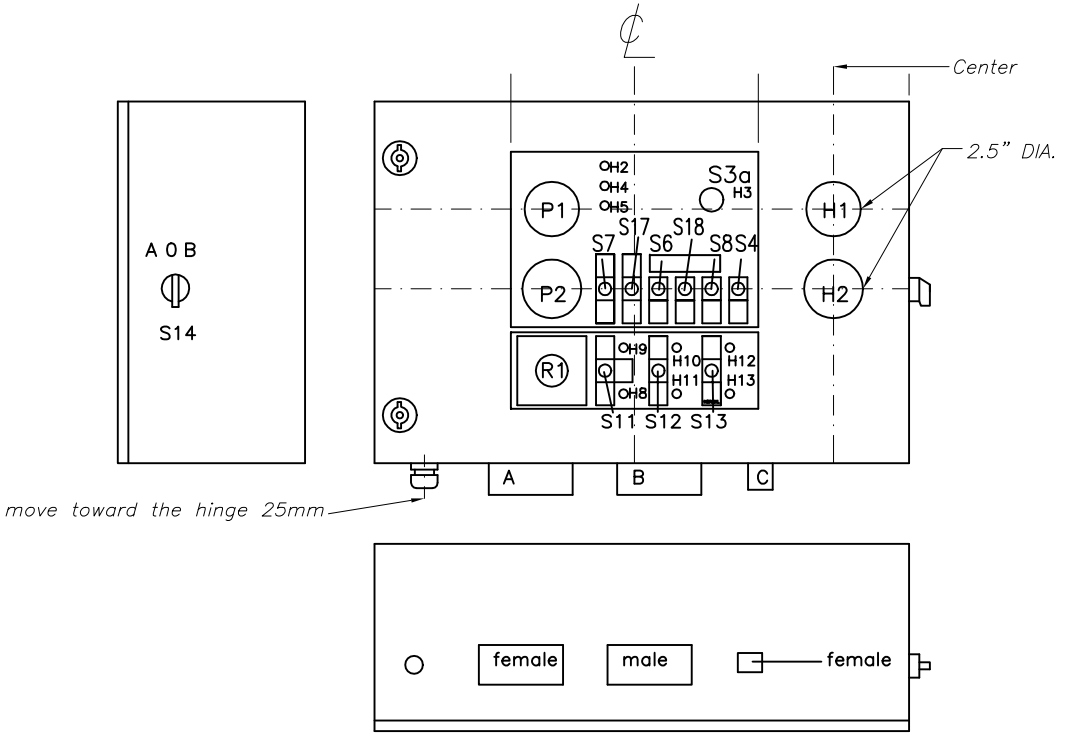
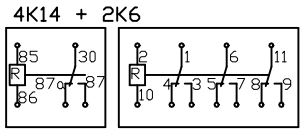
c	siehe B_513017.doc	24.02.05	Körner	CHANGE ONLY WITH CAD			B 51 3 017
b	siehe B_513017.doc	02.02.04	Körner				SHEET / OF
a	siehe B_513017.doc	15.01.04	Körner				
ISSUE	MODIFICATION	DATE	NAME	ORIGINAL			REPLACEMENT FOR / REPLACEMENT BY







ISSUE	MODIFICATION	DATE	NAME
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b	siehe B_513017.doc	02.02.04	Körner
a	siehe B_513017.doc	15.01.04	Körner

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

CHANGE ONLY WITH CAD

ORIGINAL

	DATE	NAME
DRAWN	2000/03/27	Fetzer
CHKD.		
APPD.		

SCALE

WEIGHT

M 42.5 XXT

control panel V4
Page 5

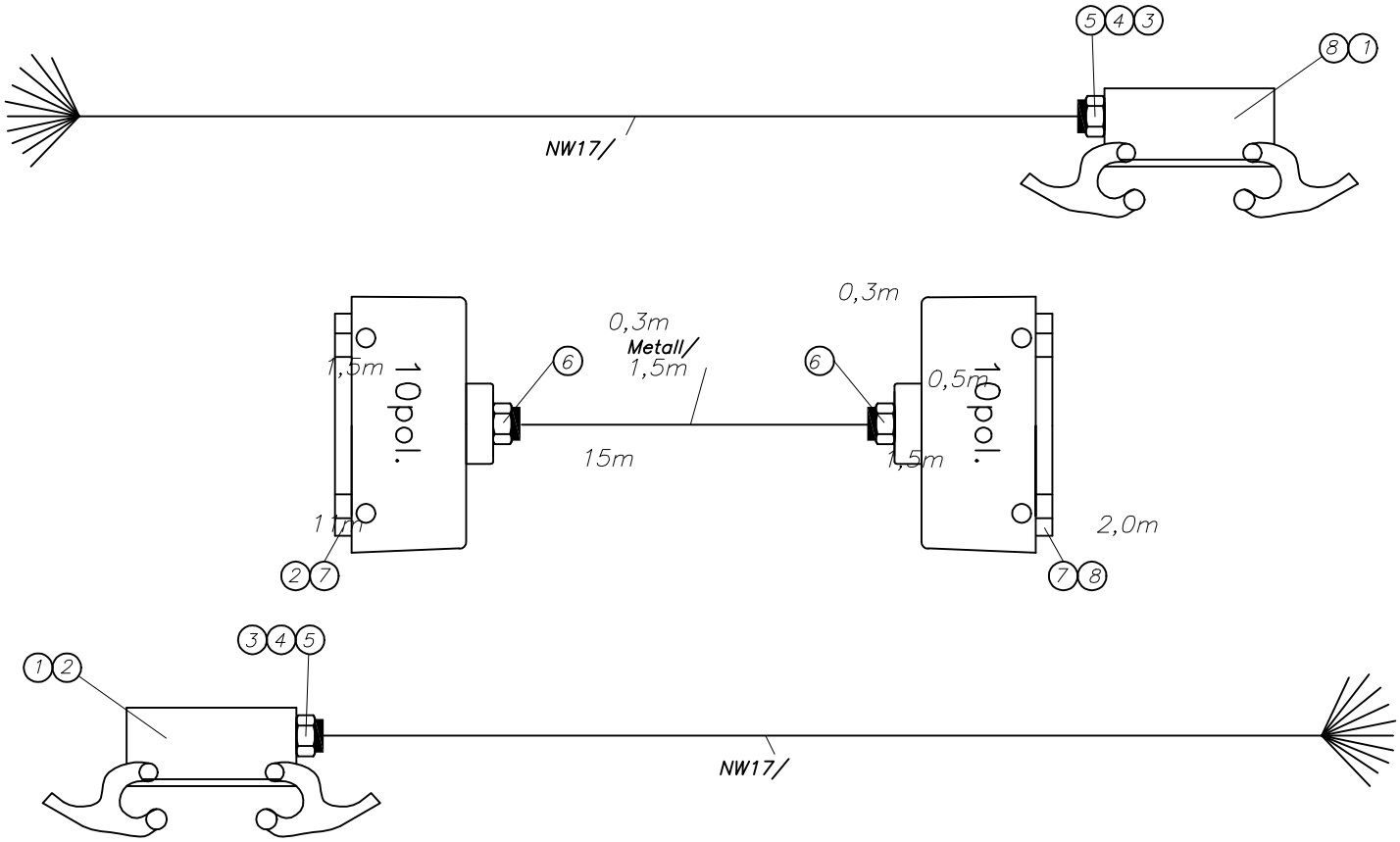
B 51 3 017

SHEET

OF

REPLACEMENT FOR

REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH				Freimaßtoleranz DIN 7168 mittel		Maßstab	Gewicht
						eigene Stückliste	
					Datum / Name		
				Bearb.	06.09.2004 Körner	Kabelbaum Mast 37m REED	
				Gepr.			
				Norm			
				Änderung nur auf CAD		B 56 2 066	Blatt 2 von 2 Bl.
Zust.	Änderung	Datum	Name	Urspr.		Ers. für	Ers. durch

Drehkopf

Zust.	Änderung	Datum	Name

Waitzinger Baumaschinen Vertrieb und Service GmbH

Freimaßtoleranz DIN 7168 mittel

	Datum	Name
Bearb.	06.09.2004	Körner
Gepr.		
Norm		

Änderung nur auf CAD

Ursprung

Maßstab

Gewicht

eigene Stückliste

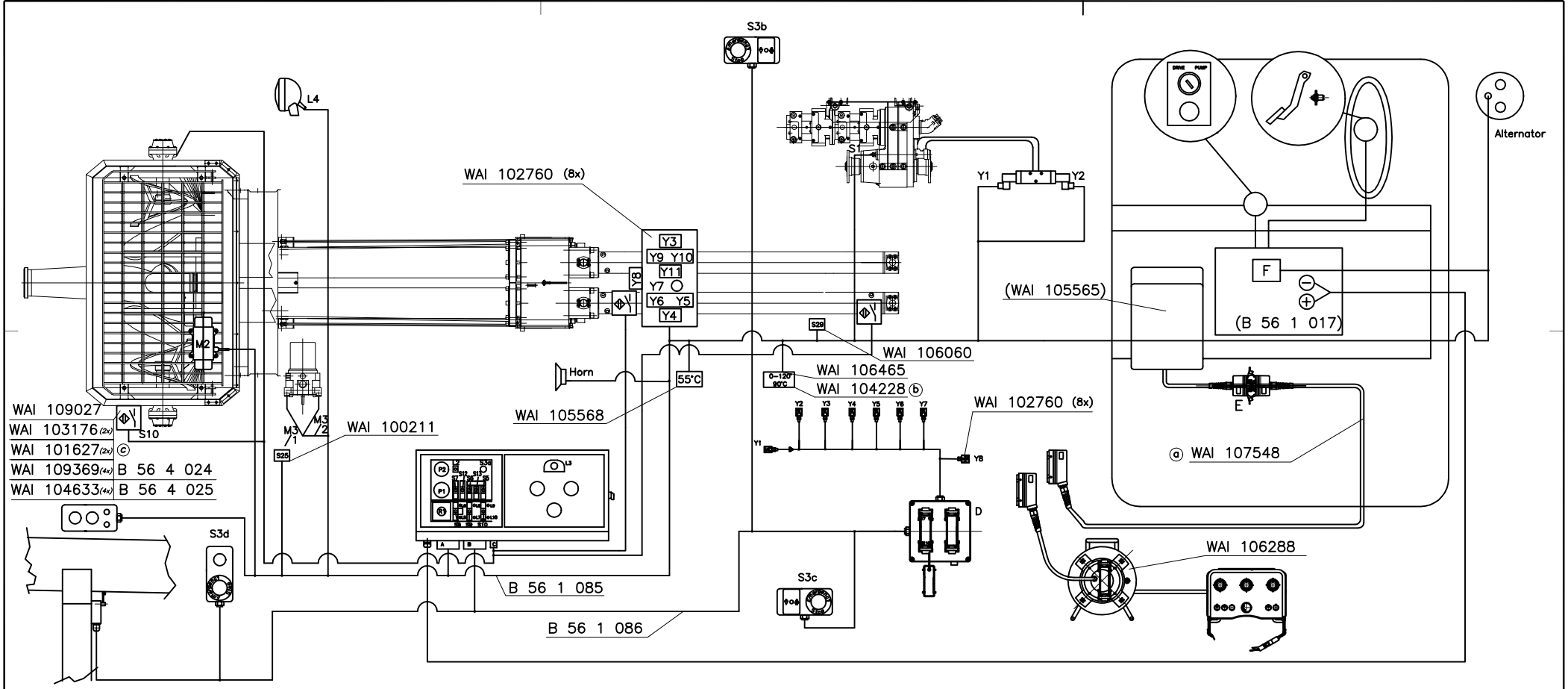
Kabelbaum Mast 37m REED

B 56 2 066

Blatt 1 von 2 Bl.

Ers. für

Ers. durch



PLUG A

1	Y3+L4+M3/1+ Y4+Y7+FAN	brn
2	S1>F1	blk/whi
3	Y3−1	red/yel
4	temp. switch	yel/whi
5	L4	grn/whi
6	Y4−1	blu/whi
7	F3	blu
8	F2	blk
9	Horn	blk
10	Y5−1/hopper Y6/Y8/Y9	blk/grn
11	Y5− 2	blk/red
12	Y7	gry/red
13	Y8	whi/brn
14	Y9	vio
15	M2	blk
16	M2	blu
17	M3/1 −1	gry
18	M3/1−3	grn
19	M3/2 −2	yel
20	Y6	whi
21	temp switch	whi
22	temp switch	whi
23	Y10	grn
24	free	free
	F5	red
	F6	gry/blk

PLUG B

1	D10−|||	brn	ground
2	S3b	gry	emergency stop
3	S3c	blk	emergency stop
4	D13	blu	emergency stop
5	D 22	gry/red	emergency stop
6	S3b−d	white	emergency stop
7	D 20	whi/grn	horn
8	D 15	grn	RPM +
9	D 16	blk/whi	RPM −
10	D 24	vio	Pot
11	D 17	blk/grn	pumping on
12	D 19	gry/blk	reverse
13	free	free	free
14	D 18	blu/whi	pumping
15	D 21	blk/red	flashing light
16	free	free	free

PLUG C

pin No.	wire No.	function
1	brown	+
2	blue	−
3	black	Sensor 1
4	black	Sensor 2
5		
6		
7		
8		

PLUG D

⏚	A 1	brn	ground
1	Y3/3	brn/whi	boom 1 up
2	Y3/2	blu	boom 1 down
3	Y4/3	grn/whi	boom 2 up
4	Y4/2	blk/grn	boom 2 down
5	Y5/3	gry/blk	boom 3 up
6	Y5/2	blk/whi	boom 3 down
7	Y6/3	blk/red	boom 4 up
8	Y6/2	gry/red	boom 4 down
9	free	free	free
10	−|||	brn	ground
11	Y2/2	vio	turn clockwise
12	Y2/3	blu/whi	turn anticlockw.
13	B4	red	plus
14	Y1/2/3 Y7	gry	pilot valve
15	B 8	grn	RPM +
16	B 9	blk/whi	RPM −
17	B 11	blk/grn	pumping on
18	B 14	blu/whi	pumping
19	B 12	gry/blk	reverse
20	B 7	whi/grn	horn
21	B 15	blk/red	free
22	B 5	gry/red	emergency stop
23	Y7	brn/whi	free
24	B 10	vio	POT

PLUG E

pin No.	wire No.	function	pin No.	wire No.	function
1	1	power supply 12V	17	34	boom 4 up
2	3	emergency stop	18	31	boom 3 down
3	4	12 V+	19	32	boom 3 up
4	5	RPM−	20	29	turn clockwise
5	6	free	21	30	turn anticlockw.
6	8	horn	22	28	boom 1 down
7	11	RPM+	23	27	boom 1 up
8	13	pump on	24	39	boom 2 down
9	9	GND	25	40	boom 2 up
10	14	reverse	26	–	free
11	25	pilot valve	27	–	free
12	–	free	28	35	pump speed pot
13	–	free	29	–	free
14	–	free	30	–	free
15	–	free	31	–	free
16	33	boom 4 down	32	–	free

TERMINAL F

blk/whi	A2
whi	S1
grn	Y1
gry/whi	Y2
blu	A7
blk	A8
vio	Lima D
brn	⊖
red	reserve
gry/blk	reserve

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

SCALE without | WEIGHT

own parts list

	DATE	NAME
DRAWN	2003/06/30	MI
CHKD.		
APPD.		

c	siehe B_561084.doc	07.11.05	Körner	CHANGE ONLY WITH CAD
b	siehe B_561084.doc	29.08.05	Körner	
a	siehe B_561084.doc	23.07.04	Körner	
	MODIFICATION	DATE	NAME	ORIGINAL

Cable harness / accessories REED 42XXT

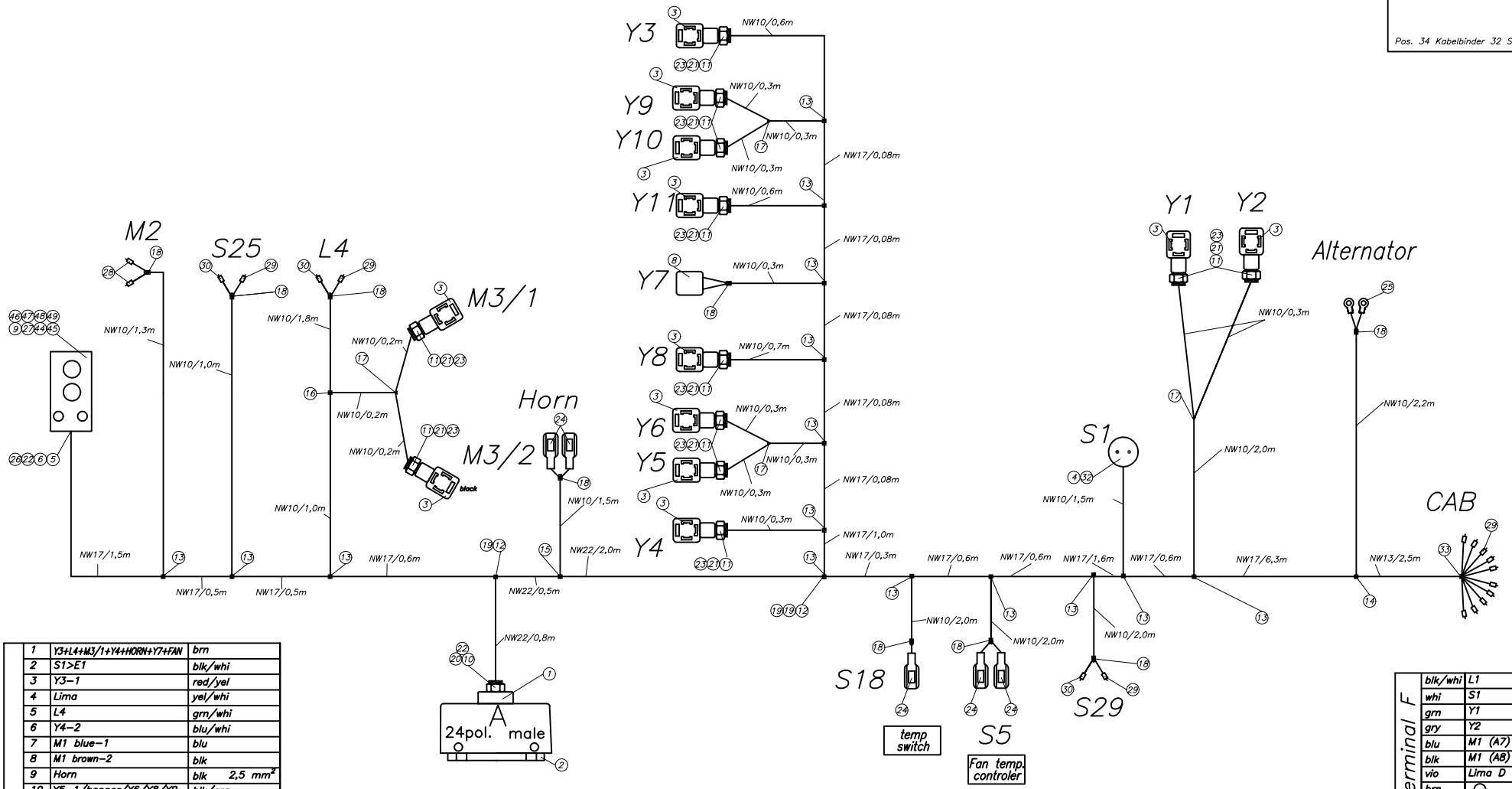
B 56 1 084

SHEET | OF

REPLACEMENT FOR | REPLACEMENT BY

Lose Teile:

Pos. 34 Kabelbinder 32 Stück



PLUG A			
	1	Y3+L4+M3/1+Y4+HORN+Y7+FAN	brn
	2	S1>E1	blk/whi
	3	Y3–1	red/yel
	4	Lima	yel/whi
	5	L4	grn/whi
	6	Y4–2	blu/whi
	7	M1 blue–1	blu
	8	M1 brown–2	blk
	9	Horn	blk 2,5 mm²
	10	Y5–1/hopper/Y6/Y8/Y9	blk/grn
	11	Y5–2	blk/red
	12	Y7	gry/red
	13	Y8	whi/brn
	14	Y9	vio
	15	M2	blk 2,5 mm²
	16	M2	blu 2,5 mm²
	17	M3/1 –1	gry
	18	M3/1–3	grn
	19	M3/2 –2	yel
	20	Y6	whi
	21		
	22		
	23	Fan	grn
	24	S5	yel/whi
		Res. F	red
		Res. F	gry/blk

Terminal F		
	blk/whi	L1
	whi	S1
	grn	Y1
	gry	Y2
	blu	M1 (A7)
	blk	M1 (A8)
	vio	Lima D
	brn	⊖
	red	reserve
	gry/blk	reserve

Waitzinger Baumaschinen Vertrieb und Service GmbH

free dimension tolerance DIN 7168 medium

		date	name
drawn		2003/06/30	Mi
chkd.			
appd.			

change only with CAD

issue	MODIFICATION	date	name
original			

scale | weight

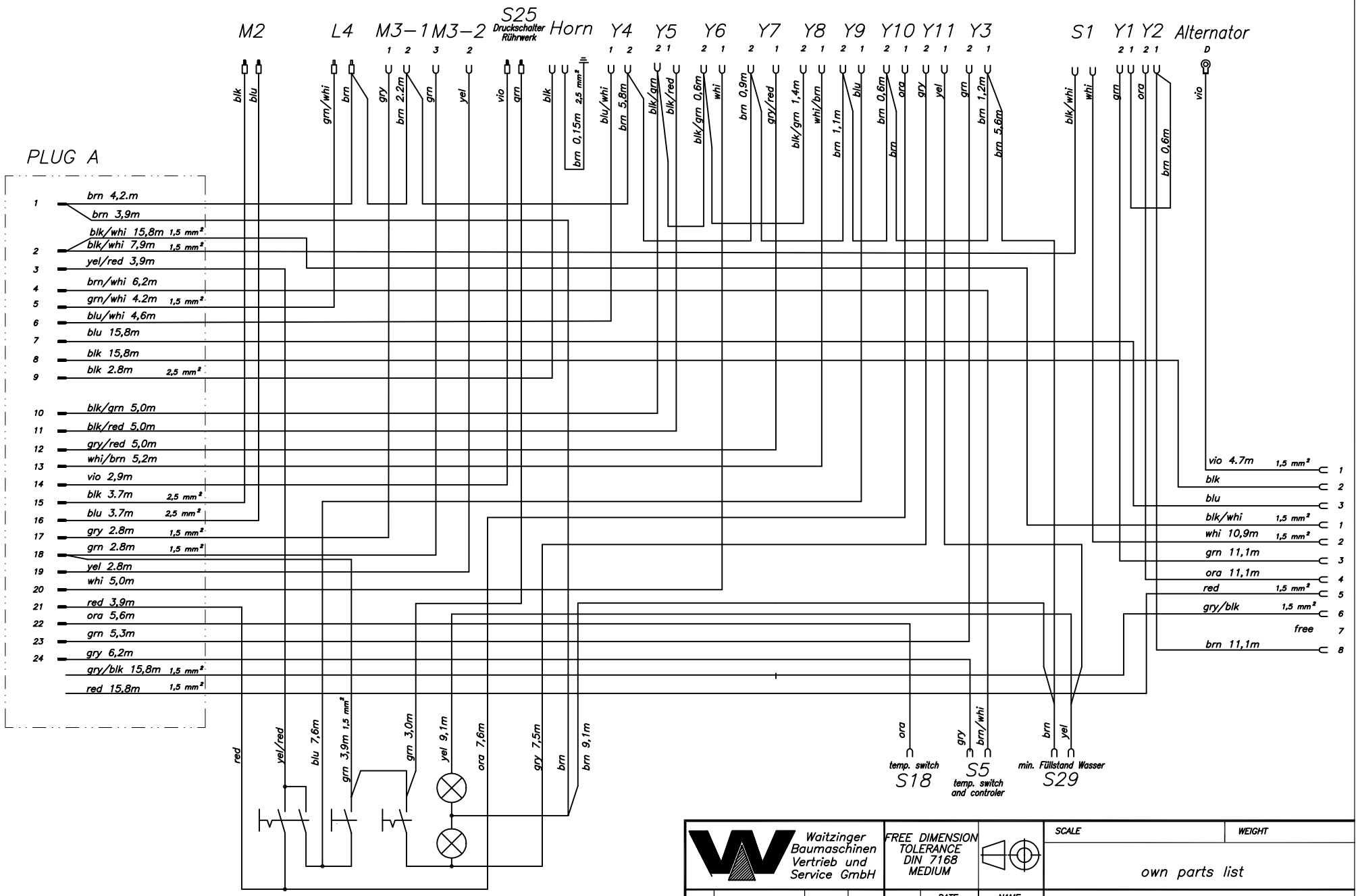
own parts list

cable loop pump REED cl 42XXT

B 56 1 085

sheet 1 of 2

replacement for | replacement by



Alle nicht bezeichneten Kabel sind 1mm²
Kabel um 10% länger als angegeben zuschneiden

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Fetzer
CHKD.		
APPD.		

CHANGE ONLY WITH CAD

ORIGINAL

ISSUE	MODIFICATION	DATE	NAME

SCALE

WEIGHT

own parts list

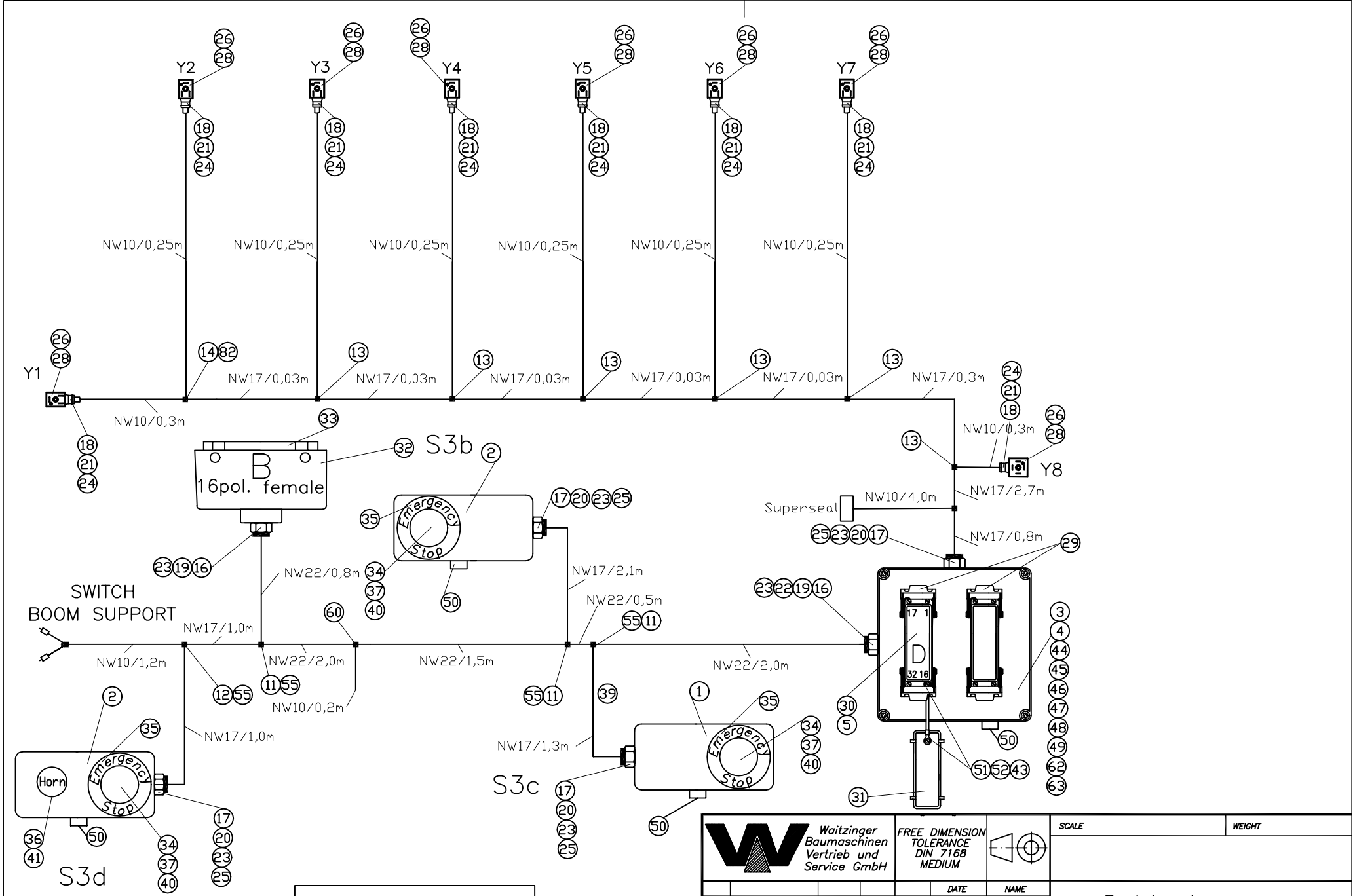
cable loop pump REED cl 42XXT

B 56 1 085

SHEET 2 OF 2

REPLACEMENT FOR

REPLACEMENT BY



Lose Teile:
Pos. 59 Kabelbinder 10 Stück

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b	siehe b_561086.doc	02.06.05	Körner
a	siehe b_561086.doc	02.02.04	Körner

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Mi
CHKD.		
APPD.		

CHANGE ONLY WITH CAD

ORIGINAL

SCALE

WEIGHT

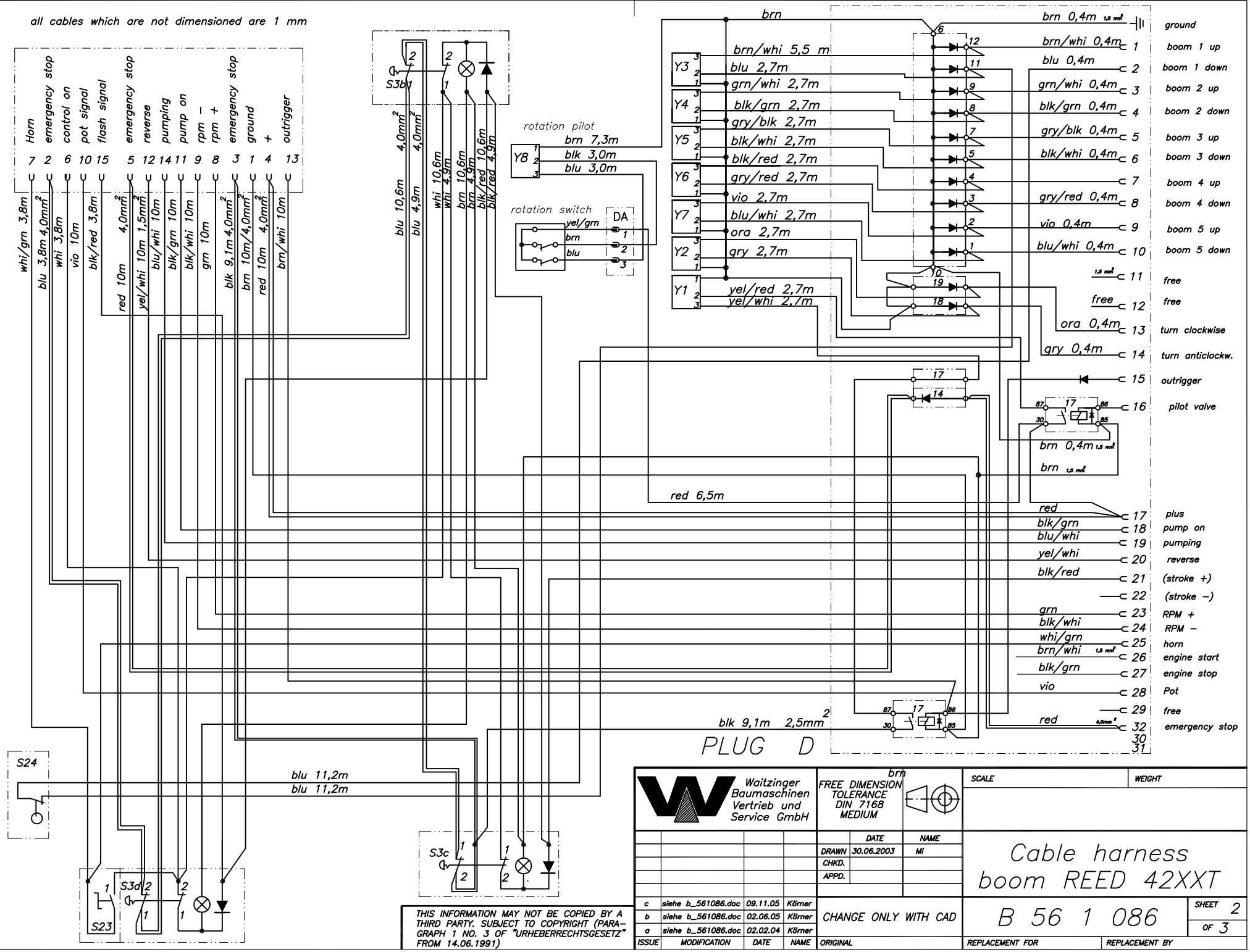
Cable harness boom REED 42XXT

B 56 1 086

SHEET 1 OF 3

REPLACEMENT FOR

REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH	FREE DIMENSION TOLERANCE DIN 7168 MEDIUM	brn	SCALE / WEIGHT

	DATE	NAME
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CHKD.		
APPD.		

Cable harness boom REED 42XXT

B 56 1 086

SHEET 2 OF 3

ISSUE	MODIFICATION	DATE	NAME
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b	siehe b_561086.doc	02.06.05	Körner
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CHANGE ONLY WITH CAD

ORIGINAL

REPLACEMENT FOR

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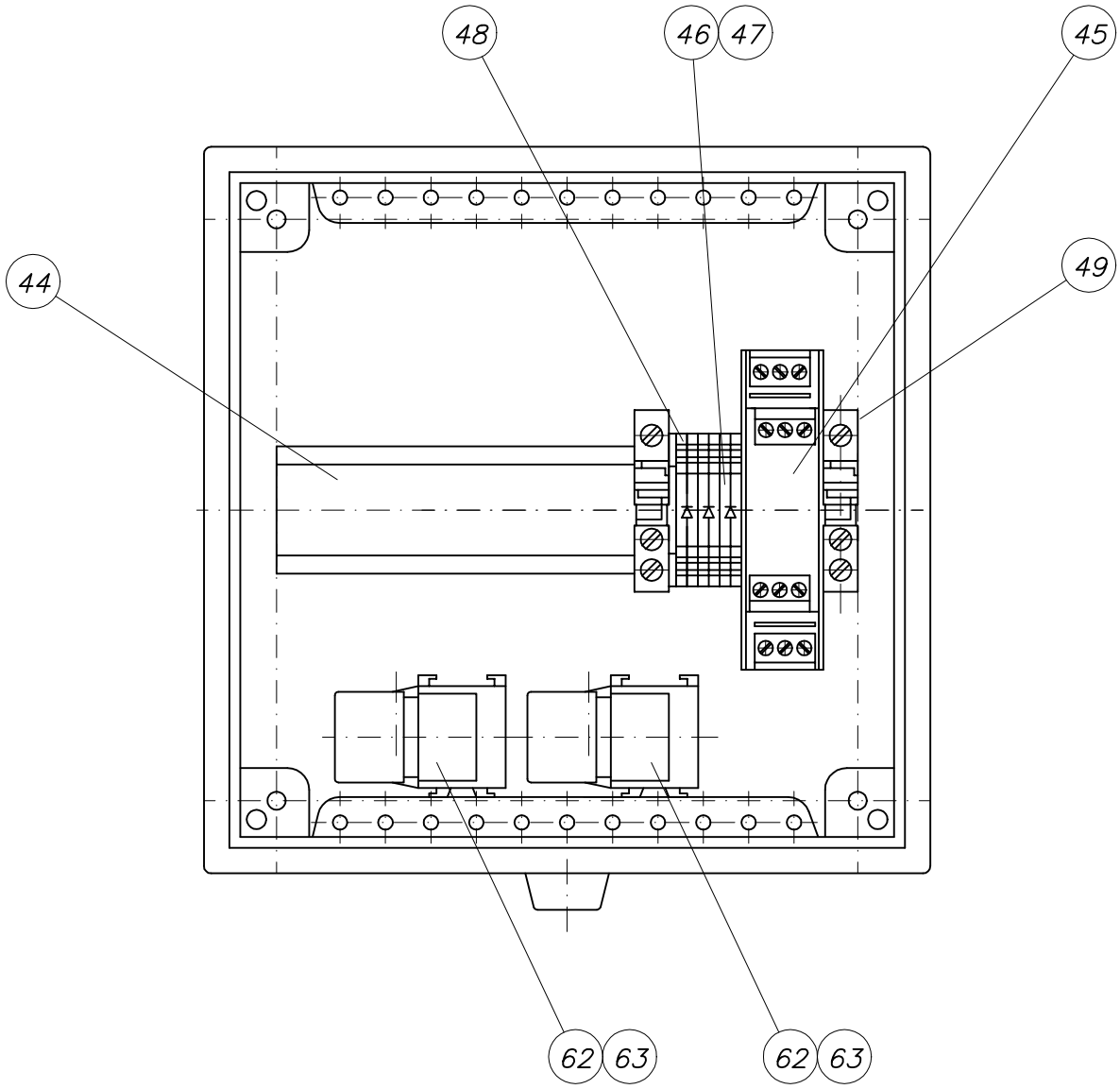

Waitzinger Baumaschinen Vertrieb und Service GmbH

FREE DIMENSION TOLERANCE DIN 7168 MEDIUM

	DATE	NAME
DRAWN	2003/06/30	Mi
CHKD.		
APPD.		

SCALE | WEIGHT

Cable harness boom REED 42XXT

B 56 1 086

SHEET 3 OF 3

ISSUE	MODIFICATION	DATE	NAME
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b	siehe B_561086.doc	02.06.05	Körner
a	siehe B_561086.doc	02.02.04	Körner

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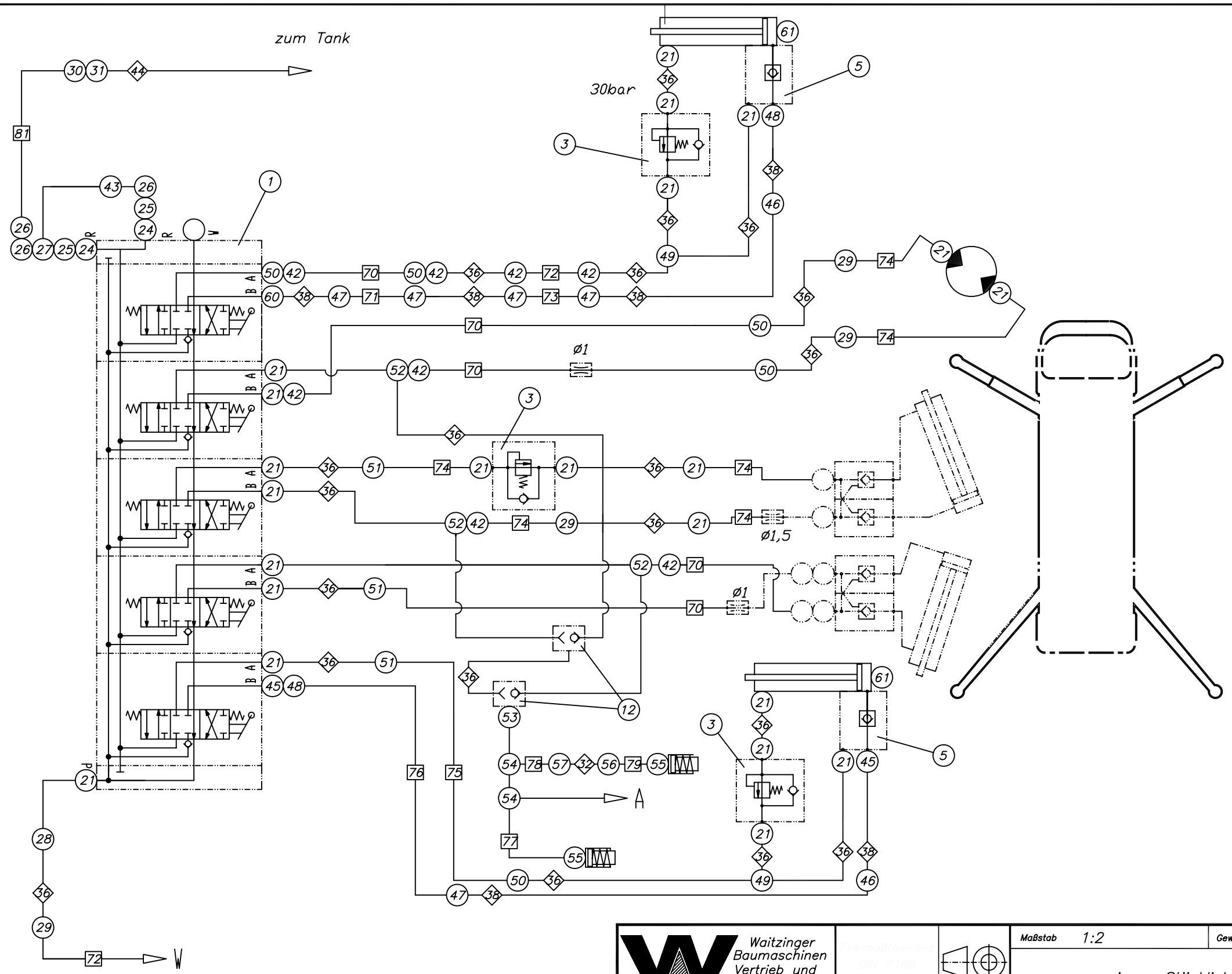
ORIGINAL | REPLACEMENT FOR | REPLACEMENT BY



Waitzinger Baumaschinen Vertrieb und Service GmbH

	Datum	Name
Bearb.	14.11.2003	Mi
Gepr.		
Norm		

Maßstab 1:2 | Gewicht

eigene Stückliste

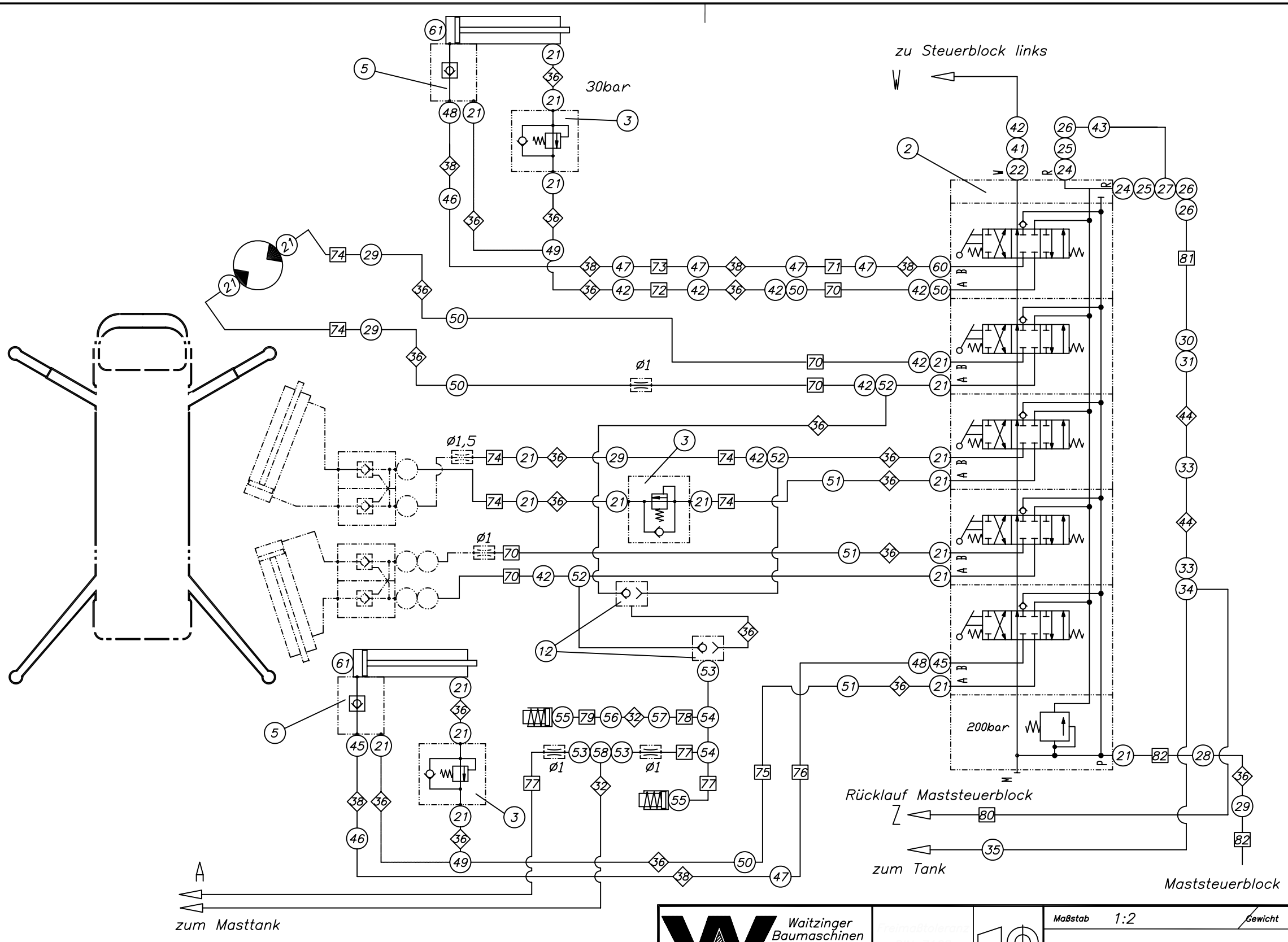
Verrohrungsplan 42 XXT Mastbock

B 72 2 010

Blatt 1 | 3 Bl.

Ers. für | Ers. durch

Zust.	Änderung	Datum	Name



Waitzinger Baumaschinen Vertrieb und Service GmbH

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Gepr.		
Norm		

Zust.	Änderung	Datum	Name

Maßstab 1:2 Gewicht

eigene Stückliste

Verrohrungsplan 42 XXT Mastbock

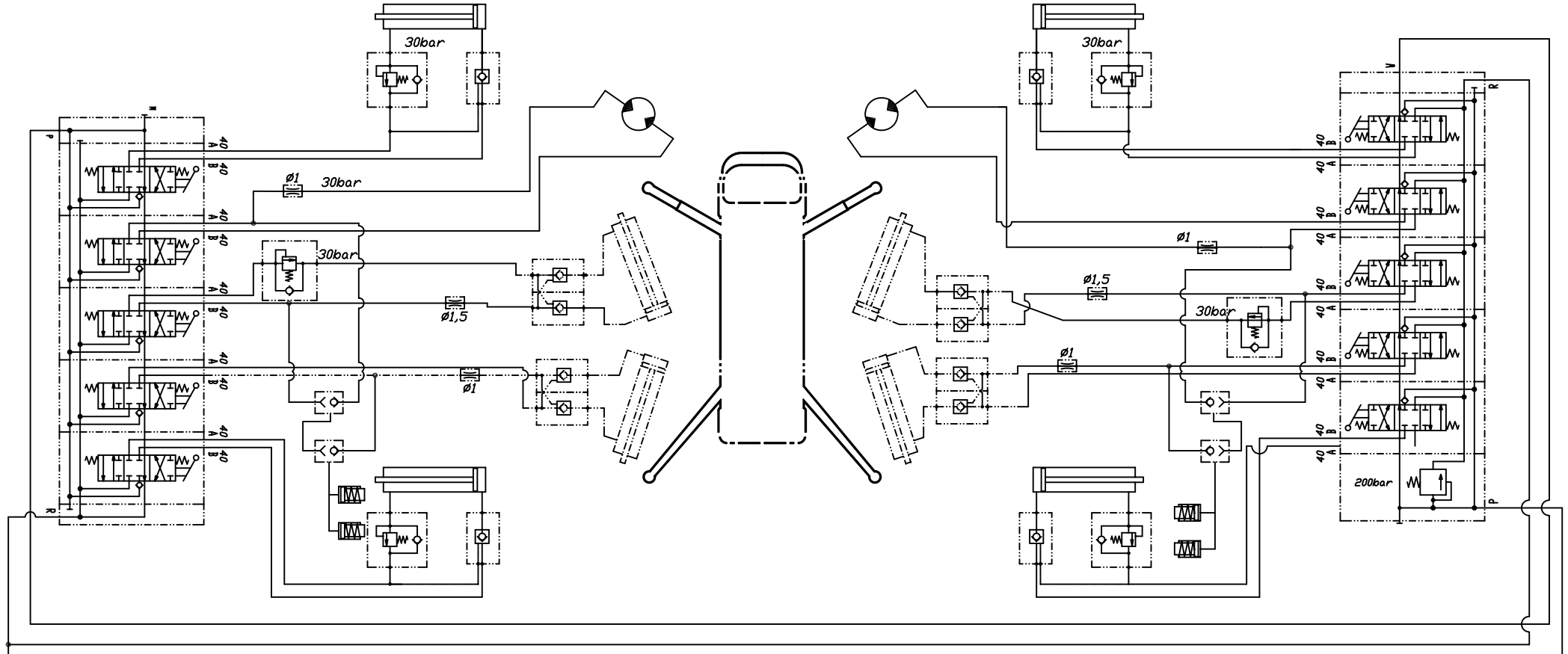
B 72 2 010

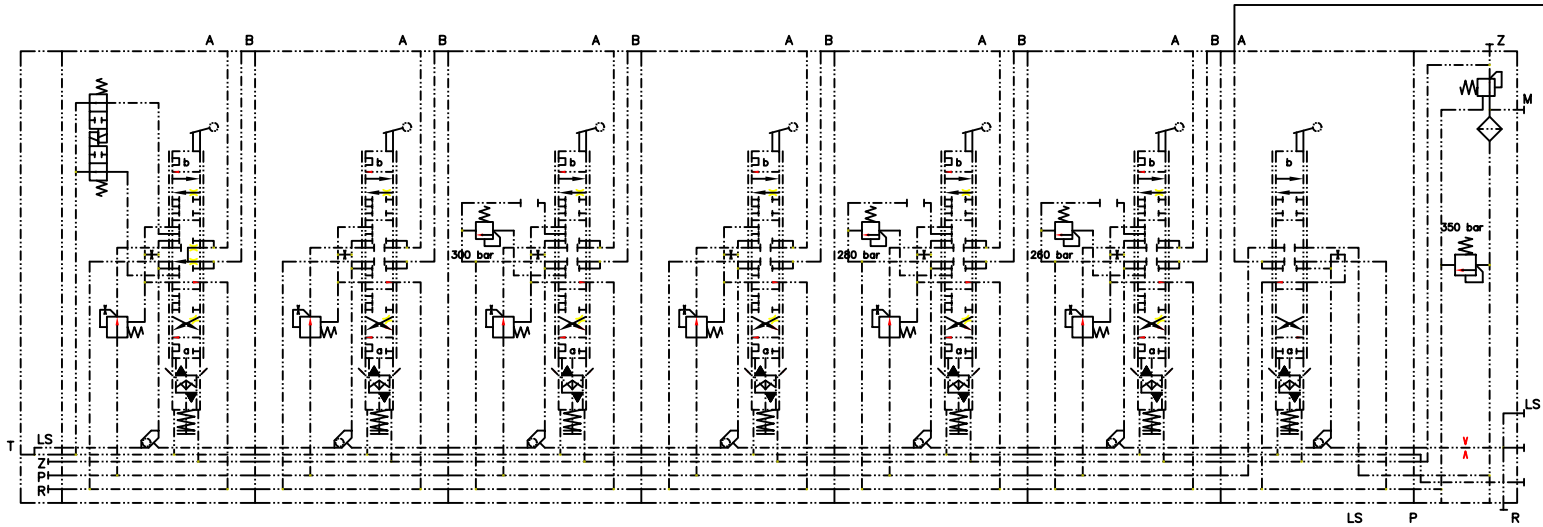
Blatt 2

3 Bl.

Ers. für

Ers. durch





Waitzinger Baumaschinen Vertrieb und Service GmbH

Zust.	Änderung	Datum	Name

	Datum	Name
Bearb.	14.11.2003	R.HBK
Gepr.		
Norm		

Maßstab 1:2 | Gewicht

eigene Stückliste

Verrohrungsplan 42 XXT Mastbock

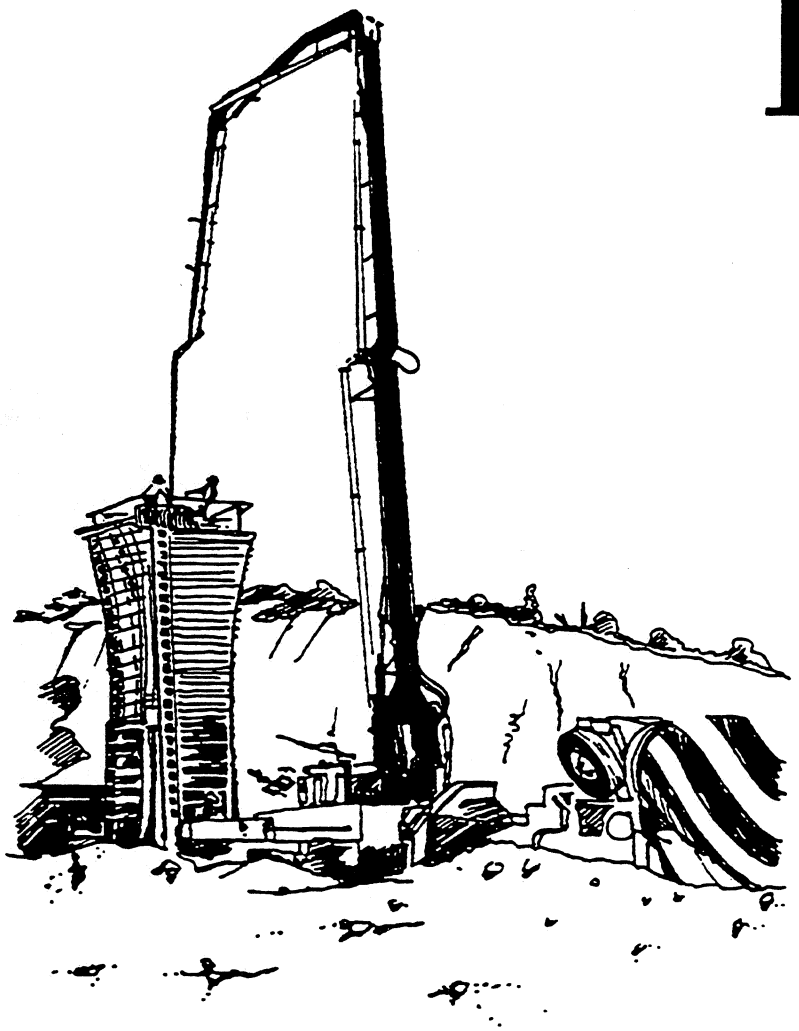
B 72 2 010

Blatt 3 | 3 Bl.

Ers. für | Ers. durch

AMERICAN CONCRETE PUMPING ASSOCIATION

Boom Inspection Book



INTRODUCTION

THE PURPOSE OF THIS BOOKLET is to assist concrete pump owners and operators in the inspection of concrete placing boom and outrigger assemblies. This booklet is not intended to supersede or replace the manufacturer's original inspection procedure and/or recommended intervals. This booklet is to supplement the original manufacturer's recommendations, or to be used if the original manufacturer's recommended inspection procedure is not available.

If you are unable to obtain the original operating procedures, inspection procedures, and service bulletin information from the manufacturer of your pump and boom, you may be able to obtain assistance by calling the American Concrete Pumping Association at 614-431-5618.

TABLE OF CONTENTS

Boom Inspection Book

General Inspection Rules

All concrete pump manufacturers require inspection of certain placing boom and pump components as a part of routine maintenance procedures. This Periodic Inspection Procedure and the following five policies have been adopted by the American Concrete Pumping Association for the guidance of all concrete pump owners and operators.

1. The owner of a concrete pump placing boom is responsible for its visual inspection for structural integrity.

2. This inspection should cover all structural components of the boom, pedestal, and outrigger assemblies.

3. Frequency: Inspections should be made:
   Annually for the first four years.
   Thereafter every 6 months of service or more frequently as recommended by the manufacturer.

4. If cracks or other distressed parts are found, they shall be repaired, according to the manufacturer's recommendations if available, by qualified personnel.

5. Special events:
   In the event of road accidents, structural member failure, contact with fixed objects or power lines, or boom overloads, the boom shall be inspected as above and before being returned to service.

The following important assumptions should be made if different specifications for your pump and boom are not available from the manufacturer:

I. Maximum discharge hose length to be supported by the boom is 10'0" – assume this if not specified longer by the manufacturer for your unit.

II. It is important that the concrete placing boom not be overloaded. Therefore you should never:

1. Use the boom to hoist equipment.

2. Attach excessive hoses to the tip of the boom.

3. Use pipeline on the boom that exceeds the thickness specified by the manufacturer.

   Maximum boom pipe wall thickness — on older pumps generally 9 gauge is the maximum allowable; assume this if a heavier wall is not specified by the manufacturer for your unit.

   The following is the maximum pipeline thickness for many popular brand concrete placing booms.

1. Schwing	7 ga or 5 mm (.195 inch)
2. Putzmeister	9 ga
3. Thomsen 845, 875, 2001	9 ga (.150 inch)
4. Challenge Titan 3900	9 ga (.150 inch)
5. Whiteman	11 ga
6. Morgen	9 ga
7. Pecco	9 ga
8. Elba	7 ga

III. The unit is unsafe if any cracking or structural damage is found or if the maximum dimensions noted above are exceeded. Operators should be instructed to report these conditions to management immediately.

Visual Inspection

Visual inspection is a search for the following types of problem areas which must be corrected for safe operation:

1. Cracks
2. Stressed or deformed areas
3. Worn pivot points
4. Worn pins or bushings
5. Pivot points not taking grease
6. Loose or missing pin retainers
7. Damaged hydraulic cylinders
8. Loose or missing bolts or connectors

Visual inspection requires a minimum of equipment but it does require careful preparation of the pump and boom and the development of a checklist for the specific model being inspected. If a "checklist" is not available from the manufacturer, a sample checklist is included on pages 14 – 16 as a guide. A completed checklist documenting each inspection should be kept with the pump and boom records.

The boom and outrigger areas must be thoroughly cleaned prior to inspection. All grease, oil, concrete and rust must be removed. To accomplish this use solvent, soap, and high pressure hot water or steam. This is especially important in the areas of the joints, cylinder mounting areas, boom to turret connecting area, outrigger to boom pedestal or frame areas, and pump subframe to truck frame mounting areas. The inspector should be familiar as possible with the operation of the boom. The inspector should review the manufacturers operating instruction manual, or should be assisted by a concrete pump operator who is familiar with the operation of the boom.

The equipment should be set up on level ground where the boom can be opened and fully extended safely. Remember to stay at least 17' from power lines. The outriggers should be fully extended and set prior to inspection. The inspector will need:

1. Portable light
2. Magnifying glass
3. Wire brush
4. Putty knife
5. Gauges for tolerance measurements
5. Dye penetrant kit
6. Hand tools
7. Grease guns
8. Ladder or other access to elevated areas

Inspection Procedure

The inspector must carefully examine all areas of the concrete placing boom and outrigger assembly looking for signs of potential problems. These signs would include cracks, cracked paint, rust, bent or distorted metal, failed pin restraints, loose or missing bolts, missing grease zerks, hydraulic oil leaks. The inspector must pay close attention to:

1. Welds
2. Joints where boom sections meet
3. Hydraulic cylinder attachment points
4. Pipe mounting brackets
5. Outrigger stress points
6. Stress concentration points where road shocks may be transmitted to boom structural members

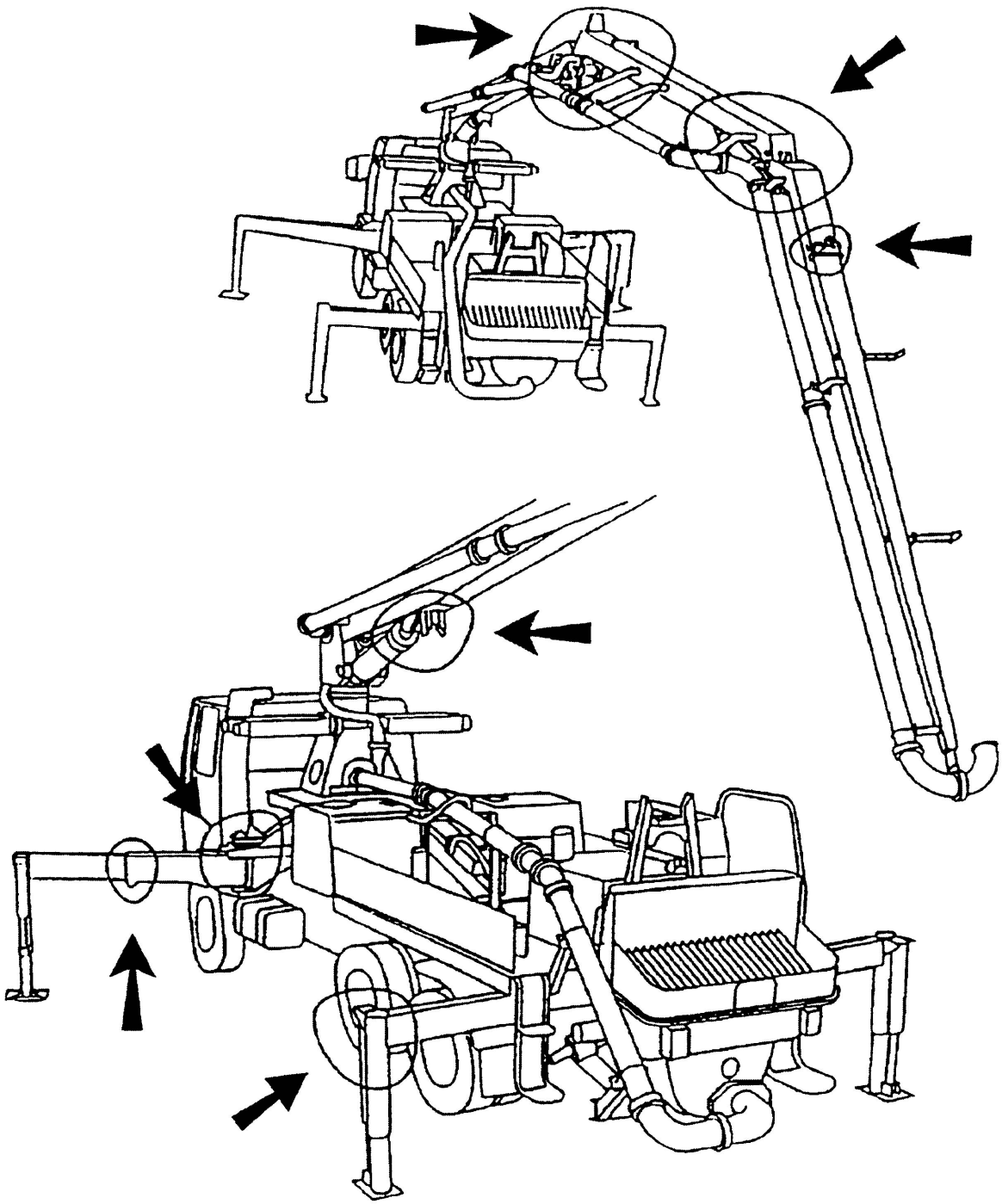
The following page shows a typical concrete placing boom with important areas circled. These areas are only the most common problem areas. Other problem areas may exist.

When the inspector encounters cracks in the paint, he must remove the paint to inspect the metal underneath. Using the portable light and magnifying glass, the inspector should closely inspect the area. If there is any doubt as to whether the metal is cracked, the inspector may contact a testing laboratory to further test the area using a mag particle test, ultrasound, or x-ray. The inspector must inspect all pins, bushings, and pin retainers.

After checking each area in a static condition the inspector should check for proper operation and lubrication.

A sample checklist may be found on pages 14-16 for recommended guidelines for this inspection procedure.

Inspection of Common Problem Areas



Inspection of Boom Turntable

1. Before determining the wear on the turntable bearing, you must first secure the vehicle on which you will be working. Make sure that you are on solid ground and there is plenty of clearance around the vehicle.

WARNING!!!
Allow yourself enough room to move the boom without causing danger to yourself or others. Set up the outriggers for support, the same as you would for any job.

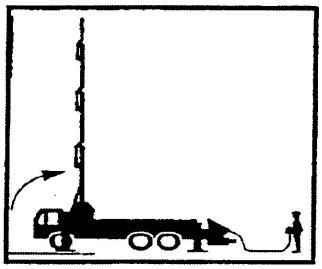


Figure 1

2. Starting with the boom extended over the cab of the truck, raise the boom to an over center vertical position. This will cause the boom to rock backwards on the turntable toward the hopper. (See Figure 1.)

3. Remove the turntable gear shroud and expose the turntable gear.

WARNING!!!
While the turntable shroud is removed from the vehicle, there is potential danger of injury or dismemberment to yourself or others. Use caution at all times and beware of the potential hazards.

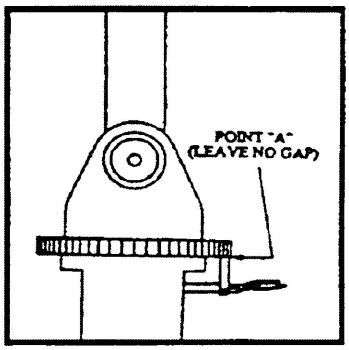


Figure 2

4. Once the boom is steady, and is over center with the weight back toward the hopper, locate point "A" on the underside of the turntable. Use a piece of steel back toward the hopper, locate point "A" on the underside of the turntable. Use a piece of steel and clamp it to the turntable shroud support. The location of point "A" must be on the opposite side from the direction the boom will be lowered. This will be the starting point from which you will determine the amount of play in the turntable. Make sure there is no gap between the underside of the turntable gear and the piece of steel clamped onto the shroud support. (See Figure 2).

5. After point "A" has been established, lower the boom straight forward into a horizontal position. The weight is now transferred to the front of the turntable gear. (See Figure 3.)

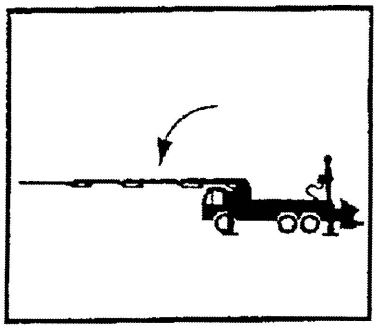


Figure 3

6. Using a feeler gauge, measure the difference between point "A" and the underside of the turntable. If the clearance is less than 1/16" or .060 (1.6mm) then the bearing is within the safety margin, and continue with the next step. However, if the play is greater than 1/16" or .060" (1.6mm) then it is beyond the safety margin and is in need of replacement. (See Figure 4.)

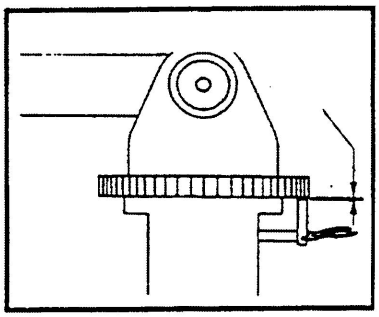


Figure 4

Pin and Bushing Inspection Procedure

With the boom extended, use a pin type feeler gauge to check the clearance on the unloaded side of each pin and bushing, and on each swivel pin and bushing. You may need to move the boom into different positions to gain access to each pin and bushing. For pins that are between two ears where the edge of the bushing is not accessible, you must use a magnetic dial indicator to the boom section so that the indicator can touch the area to be measured. Gently run the cylinder one direction to take all the clearance out of the pin and bushing. Set the indicator to zero and gently run the cylinder the opposite direction. Note the movement on the indicator dial. This is the clearance in the pin and bushing.

Inspecting Gear Lash

1. After you are finished inspecting the turntable play you must inspect the drive gear lash. Return the boom to the vertical position.

2. Once the boom is steady, use a pry bar and rotate the slewing drive gear so that the side of the slewing drive gear tooth is in solid contact with the side of the accompanying turntable. This will leave the total gap on the opposite side of the slewing drive gear tooth.

3. Using a feeler gauge, measure the gap between the gear teeth. This is the gear lash. If the clearance is less than .2 mm (.008 inches), or greater than .8mm (.031 inches), then the gear lash is in need of adjustment. (See Figure 5.)

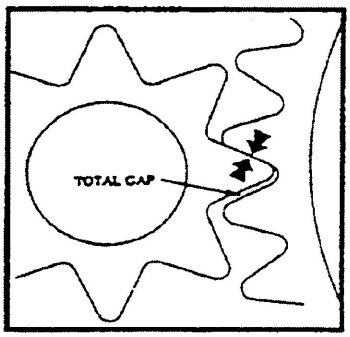


Figure 5

4. Continue the inspection, checking the tolerance in at least 8 different locations, by rotating the boom in 45° increments and repeating steps 2 through 3. If at any time the gear lash is greater than .8mm (.031 inches) or less than .2mm (.008 inches), adjust the gear lash using the manufacturer's recommended procedures for proper adjustment.

5. Once the inspection is complete, and the gear lash is satisfactory, replace the turntable shroud and slewing drive gear shroud, if applicable.

WARNING!!!

To prevent any danger to yourself or others and to protect the gears from damage from any foreign objects or debris, replace the protective shrouding for both the turntable and the slewing drive gear. If the gear lash is in need of adjustment, refer to the manufacturers maintenance manual for the adjustment procedure.

Instructions

Using the sample checklist on pages 14 through 16 proceed to inspect the boom using the procedures found in this booklet as outlined below.

ITEM 1
Use decal list page 17 and location list page 18 to insure all decals are legible and in proper location. Check that all items are present and functional. Note if repair or replacement is required.

ITEMS 2-9
Inspect as described on page 7. Check also for proper operations and lubrication.

ITEMS 2 AND 3
Check for proper operation and ease of extension. Confirm that proper locking devices to restrain outriggers when traveling or pumping are in place and functional. Pay careful attention to area where outriggers meet tower base.

ITEMS 5 AND 6
Inspect as described on page 7. Check condition of turntable or pedestal bushing, on pages 10-12. If pedestal style, clearance on side opposite extended boom should not exceed 1'/8" (.125"). If clearance is excessive replacement of pedestal bushing is recommended.

On turntable bearing units, check for excessive play in the bearing by following the procedures on pages 10-11 of this booklet.

ITEMS 6 – 9
Inspect boom sections as described on pages 7-8. Check for completeness and for proper operation. Check pins and bushings for excessive clearance and evidence of wear as described on page 11. Clearance should not exceed the table below. If clearances are excessive, pins and/or bushings should be replaced.

1.5% of bore diameter up to 3"
1.25% of bore diameter 3" to 5"
1.0% of bore diameter over 5"

ITEM 10
Check for proper assembly and completeness including clamps, seals, safety cables, pins, U bolts, etc. Check that all nuts and bolts are present and tight. Check for proper safety sling or cable. Remove clamps on all rotating pipeline joints. Check alignment of flanges while the boom is folded and unfolded. Pipeline flanges should line up within 1/8 inch. Adjust as necessary.

Boom and Outrigger Check List

Name of Company _____

Make _____ Model _____ Serial Number _____ Unit Number _____

Location of Inspection _____ Date of Inspection _____

1. GENERAL ITEMS

		Unsatisfactory	Satisfactory
1.1	Decals		
1.2	Rubber Boom Rests		
1.3	Tie Down Straps		
1.4	Bearings & Pins Greased		
1.5	Proper Thickness Boom Pipe		

2. FRONT OUTRIGGERS

2.1	Structural Members and Welded Seams		
2.2	Outrigger Tubes		
2.3	Outrigger Pads		
2.4	Locking Device for Traveling and Operation		
2.5	Pivot Points		
2.6	Ease of Extension		
2.7	Hydraulic Cylinders		

3. REAR OUTRIGGERS

3.1	Structural Members and Welded Seams		
3.2	Outrigger Tubes		
3.3	Outrigger Pads		
3.4	Locking Device for Traveling and Operation		
3.5	Pivot Points		
3.6	Ease of Extension		
3.7	Hydraulic Cylinders		

Inspector's Name _____ Date _____

4. TOWER

		Unsatisfactory	Satisfactory
4.1	Structural Members and Welded Seams		
4.2	Bearing Condition		
4.3	Bearing Lubrication		
4.4	Tower Mounting Bolts		
4.5	Hydraulic Motor Mounts		
4.6	Slewing Gear		
4.7	Service the Turret Gear Box		

5. PEDESTAL

5.1	Structural Members and Welded Seams		
5.2	Cylinder Bearing Eyes		
5.3	Hollow Pin and Bushing		
5.4	Hollow Pin Retainer		

6. BOOM SECTION #1

6.1	Structural Members and Welded Seams		
6.2	Cylinder Attachment Point		
6.3	Pins, Bearings, and Bearing Eyes		
6.4	Pin Retainers		
6.5	Latch Hook		
6.6	Hydraulic Cylinders		
6.7	Hydraulic Lines		

Inspector's Name_____ Date _____

7. BOOM SECTION #2

		Unsatisfactory	Satisfactory
7.1	Structural Members and Welded Seams		
7.2	Cylinder Attachment Point		
7.3	Pins, Bearings, and Bearing Eyes		
7.4	Pin Retainers		
7.5	Boom Rest Point		
7.6	Hydraulic Cylinders		
7.7	Hydraulic Lines		

8. BOOM SECTION #3

8.1	Structural Members and Welded Seams		
8.2	Cylinder Attachment Point		
8.3	Pins, Bearings, and Bearing Eyes		
8.4	Pin Retainers		
8.5	Boom Rest Point		
8.6	Hydraulic Cylinders		
8.7	Hydraulic Lines		

9. BOOM SECTION #4

8.1	Structural Members and Welded Seams		
8.2	Cylinder Attachment Point		
8.3	Pins, Bearings, and Bearing Eyes		
8.4	Pin Retainers		
8.5	Boom Rest Point		
8.6	Hydraulic Cylinders		
8.7	Hydraulic Lines		

10. DELIVERY PIPELINE

10.1	Mounting Hardware for Attaching Delivery Pipeline		
10.2	Bolt Type Clamps with Safety Pins		
10.3	Safety Cable for Hose		

Inspector's Name _____ Date _____

List of Decals

The American Concrete Pumping Association recommends, as a minimum, the following decals be affixed to the concrete placing boom, outrigger and pump assembly.

WS0 Safety Operating Instructions (see pages 19-20 for detail)

WS1 Caution: Inspect vehicle and boom prior to use

WS2 Danger: Qualified Operators Only

WS3 Danger: Electrocution Hazard

WS4 Danger: Qualified Operators Only

WS5 Danger: Electrocution Hazard

WS6 Caution: Inspect vehicle and boom prior to use

WS7 Warning: Do not stand on grates

WS8 13 Hand signals

WS9 Caution: Remote controlled

WS10 Warning: Safety Guards

WS11 Caution in danger area

WS12 Caution: Boom is not a crane

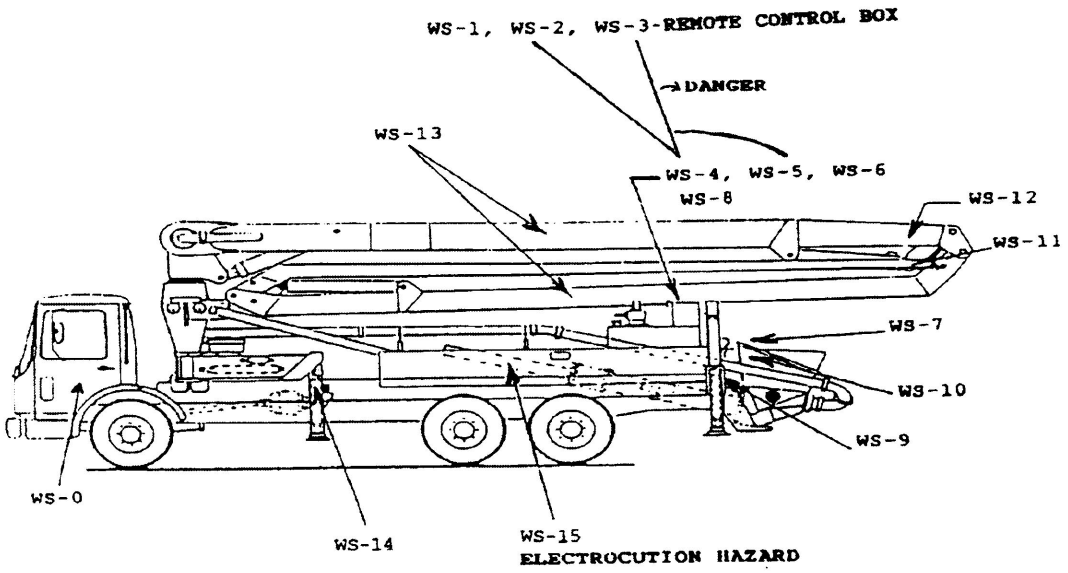
WS13 Danger: Unlawful to operate this equipment within 17 feet of high voltage lines

WS14 Caution: Stand clear of jack support

WS15 Danger: Electrocution Hazard

Decals must be complete and legible. Replacement decals can be obtained from the equipment manufacturer. See page 18 for recommended decal location.

Location of Decals



DECAL #WS0 CONTENT*

Safety Operating Instructions

1. Pump and boom operators must read and be familiar with the operator's manual before operating this equipment.
2. Authorized Personnel only are allowed on or near concrete pump and truck unit.
3. Safety devices **MUST NOT** be altered or removed.
4. If failures or malfunctions occur, stop operation and repair immediately.
5. Electrical and Manual controls must always be in good condition.
6. **NEVER** stand on hopper grate.
7. Keep hands, feet or human body away from hopper/concrete valve area during operation or any motion.
8. This machinery is remote controlled and may start at any time! Stand clear.
9. If vision is obscured an assistant is required.
10. If something happens to hinder the safe operation of this machine, **HALT USE** until corrected.
11. Ensure stability of unit, when in doubt of ground condition use extra blocking under outrigger legs, operate unit on level ground.
12. Clear area before extending outriggers or swinging boom.
13. Outriggers must be fully extended before boom is opened/extended or operated.
14. Engage outrigger transport locking device before entering public road.
15. Maintain safe distance from excavations. Slopes could break away.
16. Do not drive with an unfolded placing boom or un-retracted outriggers.

**Slight variations may occur depending on measurement system used by manufacturer.*

17. Safety chain, whipcheck or other suitable securing device must be used to secure tip hose to boom tip section.

18. **NO** structural extension or additional hose should be added to the boom tip section. One tip hose 10-13 feet allowed unsupported. Additional hose and or line system require proper support of boom structure.

19. Do not use boom structure as a crane, hoist or for lifting work. Use of the placing boom as a hoist is **STRICTLY PROHIBITED**.

20. Do not move truck, pump assembly with boom extended/unfolded.

21 **DANGER OF ELECTROCUTION** keep all personnel clear of truck, pump and outriggers. If structure comes near to or makes contact with live high voltage lines anyone on or near this unit may be electrocuted.

22. **KEEP MINIMUM 17 FEET** from any electrical wires. Remote control cable and box is conductive, operator **BEWARE!**

23. Boom should be folded/retracted upon completion of work and during gale wind conditions (where wind speed exceeds 48 mph). In storm conditions put boom in folded/travel position.

24. Support additional pipe line properly for vertical and horizontal movement. Use proper pipeline couplings to handle concrete pressure.

25. Before opening any area of concrete pipeline depressurize system by reverse pumping. Then be cautious when opening couplings.

26 Only trained personnel should clean conveying pipeline with compressed air and water. A ball catcher or trap basket must be used at the discharge end.

27. Always wear approved safety helmet working around concrete pump unit. Full protective safety goggles to eliminate eye burns and damage are helpful.

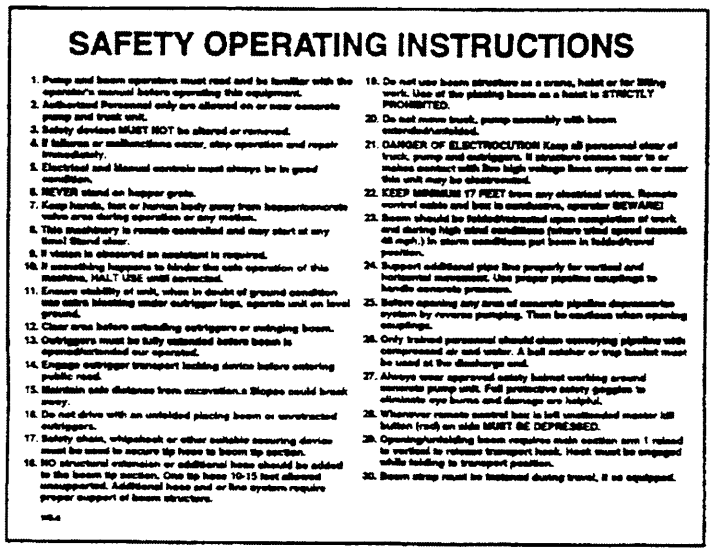
28. Whenever remote control box is left unattended master kill button (red) on side **MUST BE DEPRESSED**.

29. Opening/unfolding boom requires main section arm 1 raised to vertical to release transport hook. Hook must be engaged while folding to transport position.

30. Boom strap must be fastened during travel, if so equipped.

WS-0

(See pages 19-20 for detail.)



SAFETY OPERATING INSTRUCTIONS

1. Pump and boom operators must read and be familiar with the operator's manual before operating this equipment.
2. Authorized Personnel only are allowed on or near concrete pump and truck unit.
3. Safety devices MUST NOT be altered or removed.
4. If failures or malfunctions occur, stop operation and repair immediately.
5. Electrical and Manual controls must always be in good condition.
6. NEVER stand on hopper grate.
7. Keep hands, feet or human body away from hopper/concrete valve areas during operation or any motion.
8. This machinery is remote controlled and may start at any time! Stand clear.
9. If vision is obscured an assistant is required.
10. If something happens to hinder the safe operation of this machine, HALT USE until corrected.
11. Ensure stability of unit, when in doubt of ground condition use cribs blocking under outrigger legs, operate unit on level ground.
12. Clear area before extending outriggers or swinging boom.
13. Outriggers must be fully extended before boom is operated/extended over operator.
14. Engage outrigger transport locking device before entering public road.
15. Maintain safe distance from excavation.s Slopes could break away.
16. Do not drive with an unfolded placing boom or unretracted outriggers.
17. Safety chain, whipcheck or other suitable securing device must be used to secure tip hose to boom tip section.
18. NO structural extension or additional hose should be added to the boom tip section. One tip hose 10-15 feet allowed unsupported. Additional hose and or line system require proper support of boom structure.
19. Do not use boom structure as a crane, hoist or for lifting work. Use of the placing boom as a hoist is STRICTLY PROHIBITED.
20. Do not move truck, pump assembly with boom extended/unfolded.
21. DANGER OF ELECTROCUTION! Keep all personnel clear of truck, pump and outriggers. If structure comes near to or makes contact with live high voltage lines anyone on or near this unit may be electrocuted.
22. KEEP MINIMUM 17 FEET from any electrical wires. Remote control cable and hose is conductive, operator BEWARE!
23. Boom should be folded/disassembled upon completion of work and during high wind conditions (actions wind speed exceeds 48 mph.) In storm conditions put boom in folded/stored position.
24. Support additional pipe line properly for vertical and horizontal movement. Use proper pipeline couplings to handle concrete pressure.
25. Before opening any area of concrete pipeline depressurize system by reverse pumping. Then be cautious when opening couplings.
26. Only trained personnel should clean conveying pipeline with compressed air and water. A ball catcher or trap basket must be used at the discharge end.
27. Always wear approved safety helmet working around concrete pump unit. Full protective safety goggles to eliminate eye burns and damage are helpful.
28. Whenever remote control box is left unattended master kill button (red) on side MUST BE DEPRESSED.
29. Opening/unfolding boom requires male section arm 1 raised to vertical to release transport hook. Hook must be engaged while folding to transport position.
30. Boom strap must be fastened during travel, if so equipped.

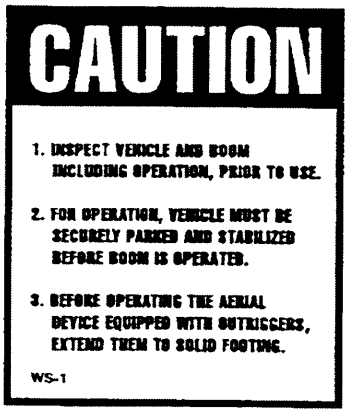
WS-4

Decal Colors

Danger =
Red & Black

Caution =
Yellow & Black

Warning =
Orange

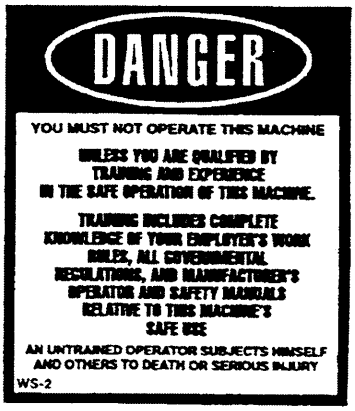


CAUTION

1. INSPECT VEHICLE AND BOOM INCLUDING OPERATION, PRIOR TO USE.
2. FOR OPERATION, VEHICLE MUST BE SECURELY PARKED AND STABILIZED BEFORE BOOM IS OPERATED.
3. BEFORE OPERATING THE AERIAL DEVICE EQUIPPED WITH OUTRIGGERS, EXTEND THEM TO SOLID FOOTING.

WS-1

WS-1



DANGER

YOU MUST NOT OPERATE THIS MACHINE

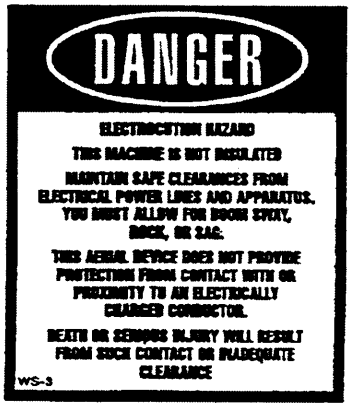
UNLESS YOU ARE QUALIFIED BY TRAINING AND EXPERIENCE IN THE SAFE OPERATION OF THIS MACHINE.

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, ALL GOVERNMENTAL REGULATIONS, AND MANUFACTURER'S OPERATOR AND SAFETY MANUALS RELATIVE TO THIS MACHINE'S SAFE USE

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY

WS-2

WS-2



DANGER

ELECTROCUTION HAZARD

THIS MACHINE IS NOT INSULATED

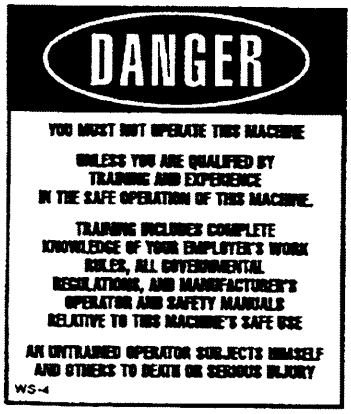
MAINTAIN SAFE CLEARANCES FROM ELECTRICAL POWER LINES AND APPARATUS. YOU MUST ALLOW FOR BOOM SWAY, ROCK, OR SAG.

THIS AERIAL DEVICE DOES NOT PROVIDE PROTECTION FROM CONTACT WITH OR PROXIMITY TO AN ELECTRICALLY CHARGED CONDUCTOR.

DEATH OR SERIOUS INJURY WILL RESULT FROM SUCH CONTACT OR INADEQUATE CLEARANCE

WS-3

WS-3



DANGER

YOU MUST NOT OPERATE THIS MACHINE

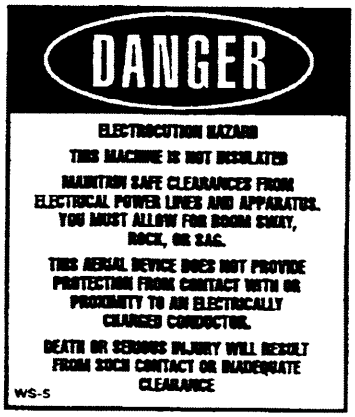
UNLESS YOU ARE QUALIFIED BY TRAINING AND EXPERIENCE IN THE SAFE OPERATION OF THIS MACHINE.

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, ALL GOVERNMENTAL REGULATIONS, AND MANUFACTURER'S OPERATOR AND SAFETY MANUALS RELATIVE TO THIS MACHINE'S SAFE USE

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY

WS-4

WS-4



DANGER

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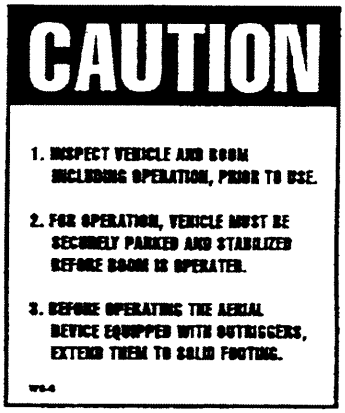
WS-5

WS-5



CAUTION

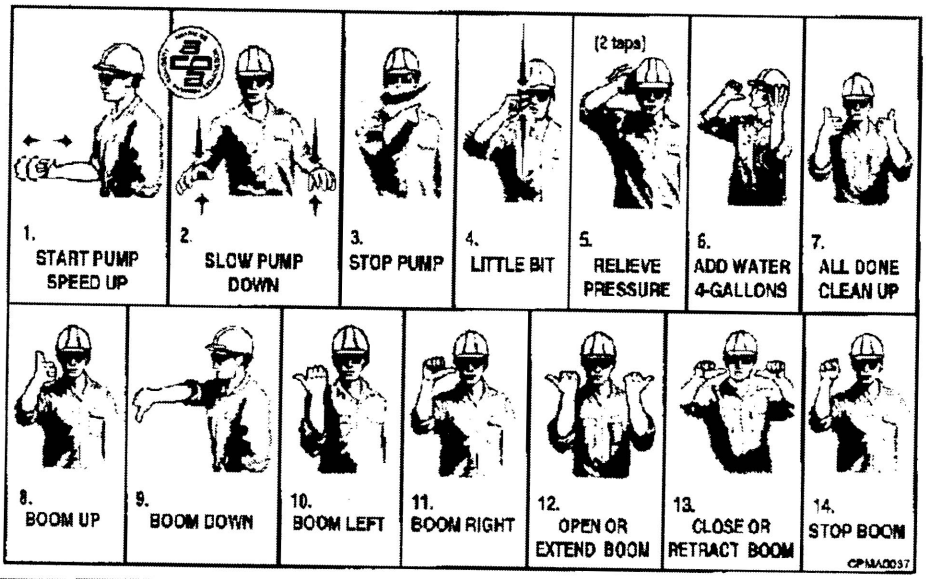
1. INSPECT VEHICLE AND BOOM INCLUDING OPERATION, PRIOR TO USE.
2. FOR OPERATION, VEHICLE MUST BE SECURELY PARKED AND STABILIZED BEFORE BOOM IS OPERATED.
3. BEFORE OPERATING THE AERIAL DEVICE EQUIPPED WITH OUTRIGGERS, EXTEND THEM TO SOLID FOOTING.

WS-6

WS-6

WS-7

WS-9



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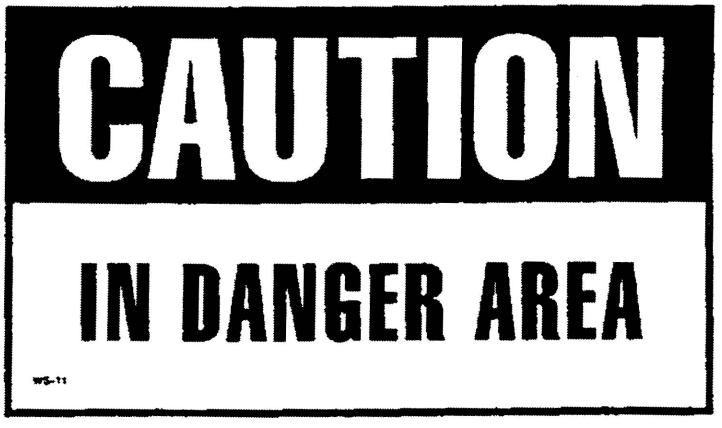

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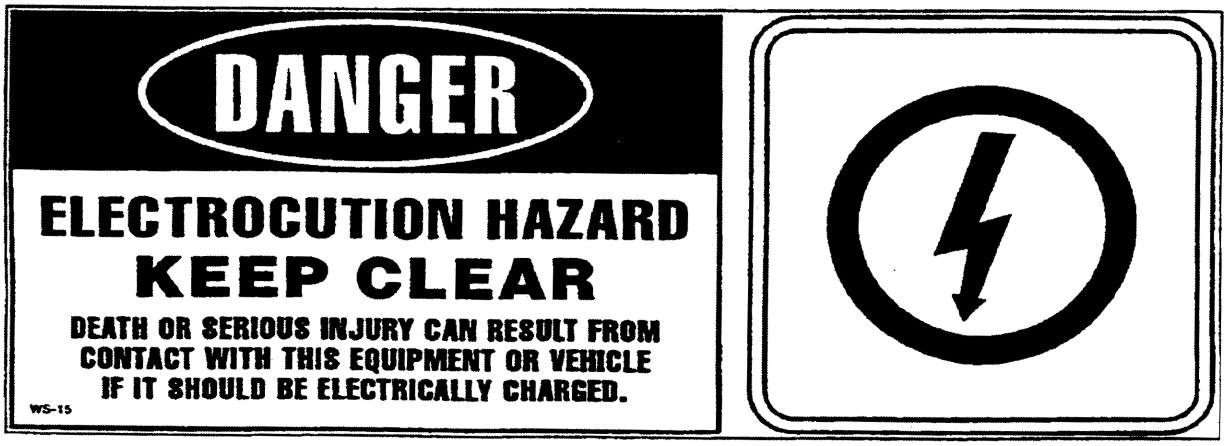

WS-15

A guide for the prevention of accidents when driving, operating, cleaning, and maintaining concrete pumps, placing booms, and related equipment.

American Concrete Pumping Association
606 Enterprise Drive
Lewis Center, OH 43035
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www.concretepumpers.com

REED

REED, LLC
13822 Oaks Avenue
Chino, CA 91710 USA
www.reedpumps.com

Version 5.0.1

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

SAFETY MANUAL

A GUIDE FOR THE PREVENTION OF ACCIDENTS WHEN DRIVING, OPERATING, CLEANING, AND MAINTAINING CONCRETE PUMPS, PLACING BOOMS AND RELATED EQUIPMENT

Introduction

Safety is one of the major concerns of every person involved in the concrete pumping industry. Although much of the responsibility for everyday safety rests upon the pump operator, it is vital that everyone involved makes safety the top priority. This includes the owners, the mechanics, the ready mix drivers, the placing crew, the concrete contractors and the machine manufacturers.

Although this Safety Manual covers a great deal of information regarding the prevention of accidents while operating a concrete pump or placing boom, it is unlikely that every conceivable circumstance has been covered. Regardless of how thorough a manual like this may be, there is always the unexpected. Please understand that there is no substitute for **common sense** and dedication to the idea that **you are responsible for your own safety**, and affect the safety of those around you. You have to know the rules first, but you must keep your mind on the job if knowledge of the rules is going to keep you and your co-workers alive and well. No attempt has been made in this Safety Manual to provide the highly specialized knowledge of the workings of the individual machines that is also critical for safe and proper operation. For that, you must **read and understand the operation manual for the machine(s) that you operate**!

This Safety Manual is a guide for the prevention of accidents and is to be used in conjunction with **professional training**. Additional information and materials are available through the American Concrete Pumping Association, including, specifically, an Operators Certification Program. Make the commitment to be professional - get your certification!

Version 5.0.1
January, 2006

SAFETY MANUAL

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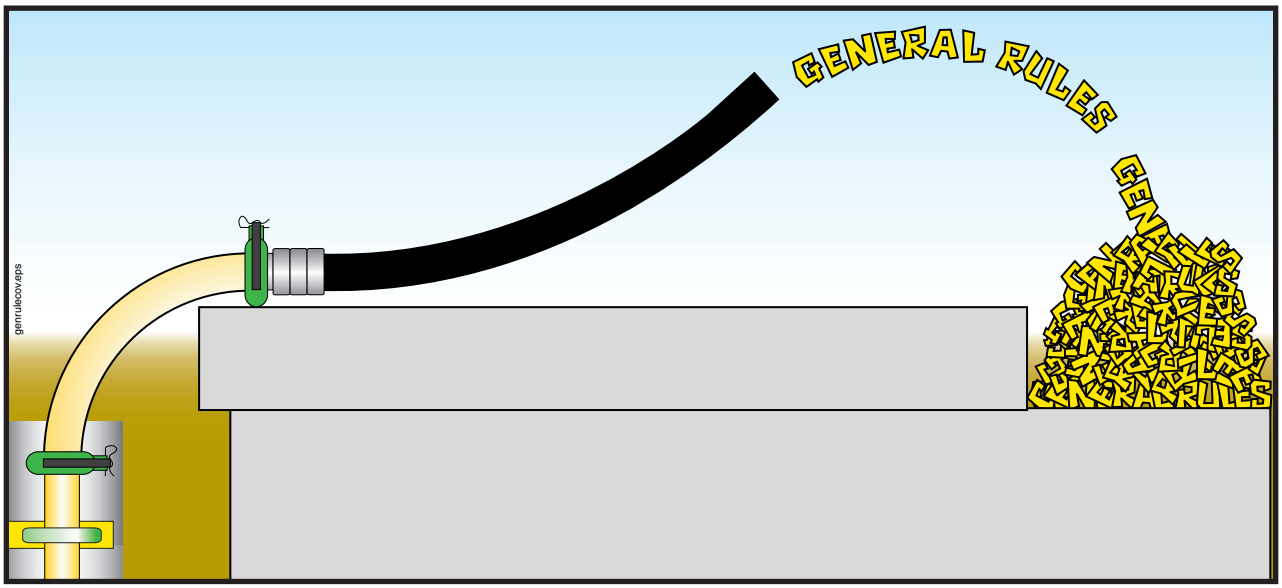


General Rules
Table of Contents

I. Before You Leave The Yard

1. Safety Alert Symbol And Signal Word Explanation

1.1

The triangle with the exclamation point inside is used to alert you to an important safety point, and is called a *Safety Alert Symbol*. One of the following color-coded signal words will appear after the safety alert symbol:

- If the safety alert symbol is followed by the signal word **DANGER** with white letters in a red box (DANGER), it indicates a hazardous situation which, if not avoided, **WILL** lead to **death or serious injury.**
- If the safety alert symbol is followed by the signal word **WARNING** with black letters in an orange box (WARNING), it indicates a potentially hazardous situation which, if not avoided, **COULD** result in **death or serious injury.**
- If the safety alert symbol is followed by the signal word **CAUTION** with black letters in a yellow box (CAUTION), it indicates a potentially hazardous situation which, if not avoided, **COULD** result in **minor to moderate injury.**
- The signal word **CAUTION,** used in a yellow box, but **without the safety alert symbol** (CAUTION), means the point addresses a hazard which, if not avoided, **COULD** cause **damage to equipment or property.**

2. What To Do Before You Arrive At Work

2.1

Get enough sleep to be ready for the day's work. Accidents can happen when the body is on the job, but the mind is not.

Dress in appropriate apparel and Personal Protective Equipment (P.P.E.) (see Figure 1). You should always wear these items when pumping concrete:

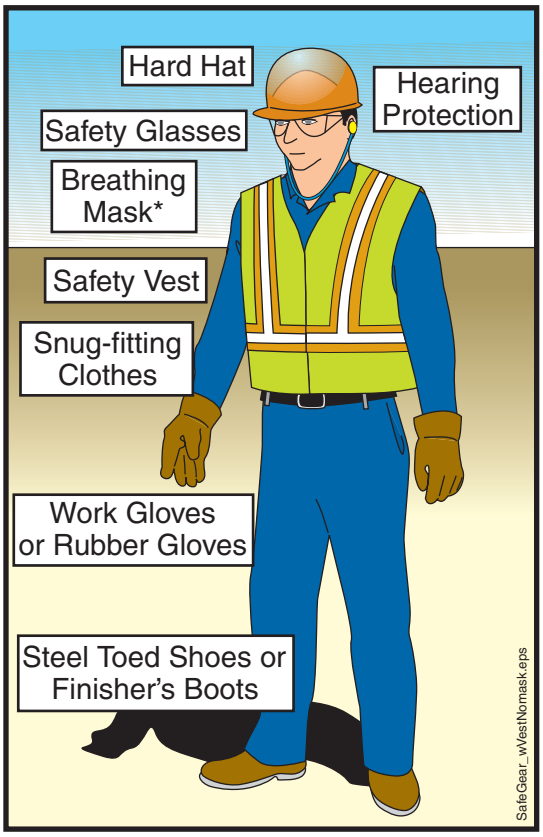
- hard hat
- safety glasses or goggles
- snug fitting clothes
- gloves
- steel toed shoes

In addition, you should wear:

- hearing protection if you stand near the pump
- breathing mask when mixing slurry or whenever there is cement dust in the air

- rubber gloves during cleanout
- rubber boots anytime you have to stand in concrete

Jewelry, athletic shoes, sandals, and shorts are examples of clothing that should NOT be worn when pumping.



* Breathing mask needed when cement dust (or other toxic dust) is present in the air.

Figure 1
Personal Protective Equipment (P.P.E.)

2.2

⚠WARNING Be sure that any clothing you wear does not have strings, fringes, or other external tightening means that could be caught in moving parts (Figure 2).

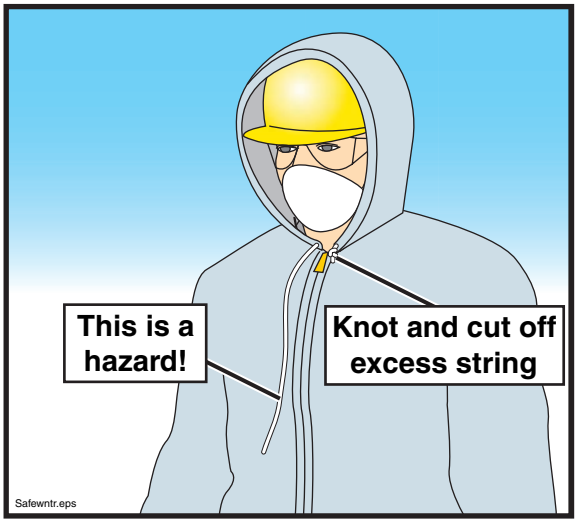


Figure 2
No strings attached

2.3 Arrive to work on time. Accidents can be caused by hurrying through procedures.

2.4 **⚠WARNING** **Never** go to work on a construction site or work on, around or near a piece of machinery when under the influence of drugs or alcohol. Beware of "over the counter" drugs, many of which have specific warnings about operating machinery after taking the medication (Figure 3).

Figure 3
Your co-workers depend upon you for their safety

2.5 **⚠WARNING** Don't bring your personal problems to work with you. In an office setting this may be annoying to co-workers, but on a construction site it can be deadly. The workers around you depend on you for their safety.

3. What To Check Before You Leave The Yard

3.1 **⚠WARNING** Do not operate the machine until you read and understand the unit's operation manual. Lack of understanding of proper operating procedures could result in unsafe operation. Operation manuals are issued with each new unit. If you haven't seen it, ask your supervisor. Replacements are available from the manufacturer.

3.2 **⚠WARNING** Inspect delivery pipes, concrete delivery hoses, and end hoses for wear. Never use a worn hose or worn or dented pipe. **Know the maximum pressure that your machine can exert on the concrete, and be sure that the pipes, hoses and clamps are capable of handling the pressure**. Maximum pressure on concrete is stated in operation manuals, service manuals, and on the serial number plate of the machine. A chart showing the minimum wall thickness of pipeline versus maximum pressure is found on page 73 in the appendix section of this Safety Manual.

3.3 **⚠WARNING** If you will need to use compressed air to clean out the boom or system pipeline, BE SURE that you have the proper training, equipment, and attachments to do this procedure safely! Proper attachments include:

- A blow out head with properly sized air discharge regulator valve and separate water/air inlet. The two openings should be spaced apart far enough that a blowout ball could not cover both openings at once.
- A *go devil*, or a hard sponge ball. Regardless of which is used, it **must** fit into the pipeline tight enough that air cannot escape ahead of it.
- A ball or go devil catcher that will catch the go devil or ball when the line has been purged of all concrete. There are two types of catchers (see paragraph 7.23 on page 31).
- A hose that is rated for the pressure of the air compressor you will use and that is able to connect with both the air compressor and the blow out head. The hose must be in good working condition and must be free of cracks, frays, tears or other damage. Do **NOT** improvise on this. **Make sure** that you have the right part (Figure 4).

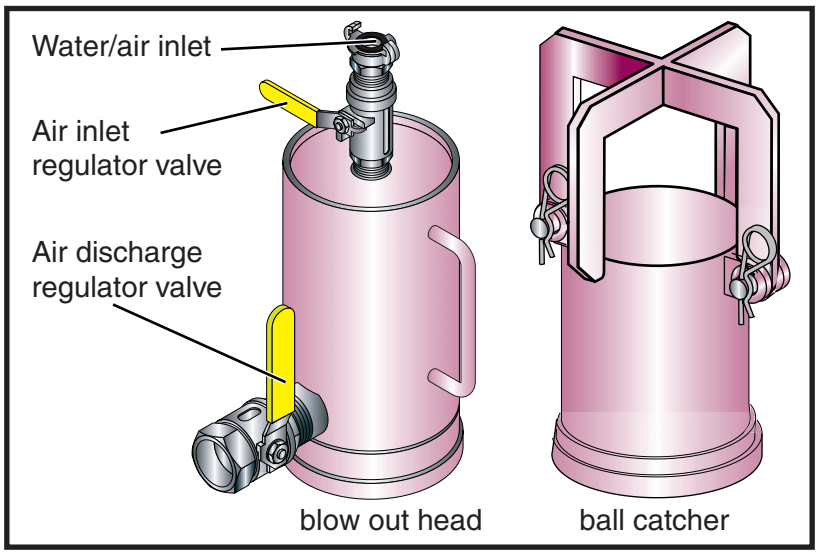


Figure 4
Compressed air accessories

3.4 ⚠**WARNING** Be sure that the unit is equipped with all the pipes, clamps, gaskets and hoses, blow out adapters, ball catchers, and other accessories that you will need for the day's work. "Making do" with inappropriate equipment could cause accidents.

3.5 On trailer mounted units, check the oil and cooling system (air or water cooled systems) of the pump drive engine. Accidents could occur when lack of maintenance is causing a distraction while operating the equipment.

3.6 Be sure the battery has enough charge to start the pump drive engine. You will be rushed on the job if you have to do repair work before you can begin operation.

3.7 **⚠WARNING** The operator is responsible for checking to see that the concrete pump, placing boom, and delivery system are in safe and proper working condition. If an unsafe condition exists, **work must not begin** until necessary repairs have been completed, or until the machine can be operated safely.

3.8 **⚠WARNING** The operator is responsible for checking that all safety equipment and guards are in place and in good condition. If found to be missing, incomplete, or damaged, **work must not begin** until the situation has been made safe.

3.9 **⚠WARNING** The operator is responsible for checking that all safety decals are in place and are in readable condition. If found to be missing or unreadable for any reason, steps should be taken to obtain replacements.

3.10 **⚠WARNING** Inspect the tires and brakes on the truck. Never drive a truck with bald or cracked tires, or with weak or worn brakes. If you have air brakes, be sure that the air system is free from leaks and will maintain pressure when driving. Loss of air pressure will cause the brakes to be applied while driving. If driving continues after the brakes are applied, the resulting friction could cause enough heat to start a fire.

3.11 Drain moisture from the air tanks that supply the unit's brakes (if so equipped). This is especially important if weather conditions could cause the moisture to freeze. If you lose air pressure because of frozen moisture, the brakes will apply themselves, and you will have to stop driving until the unit is repaired.

3.12 **⚠WARNING** (See Figure 5.) Mount or dismount the pump or truck using the *3 Point Rule* (i.e. keep two hands and one foot or one hand and two feet in contact with a secure surface at ALL times).

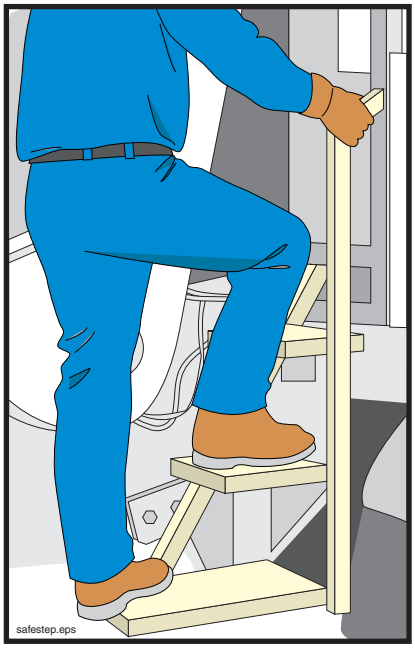


Figure 5
The 3 Point Rule

3.13 **⚠WARNING** Never mount or dismount the truck or pump while carrying objects that prevent you from using the "3 Point Rule." Move the objects separately, if needed.

3.14 **⚠WARNING** Be sure that outriggers are pinned and locked before traveling. If the locking device is damaged or worn, it should be repaired immediately and the unit **must not be driven until the outriggers can be positively locked** against accidental opening (see Figure 6).

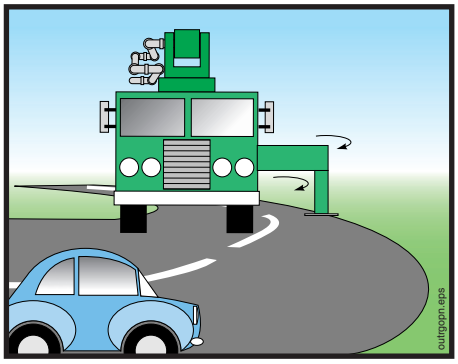


Figure 6
Before driving, be sure outriggers cannot open

3.15 **⚠WARNING** Be sure there is nothing in the cab of the truck (such as empty soda cans, loose tools, etc.) that could interfere with the operation of the vehicle.

3.16 Be sure that all road-related safety devices (warning signs, flares, fire extinguisher, etc.) are present and secured for travel.

3.17 Be sure all personal protective equipment (hard hat, safety goggles, rubber gloves, etc.) are secured for travel.

3.18 **⚠WARNING** Be sure the windshield and mirrors are clean and free of frost or ice, and that the mirrors are properly adjusted.

3.19 **⚠WARNING** Verify that head lights, tail lights, turn signals, brake lights, backup warning horn, and backup lights are operational.

3.20 In some cases you may be asked to operate a machine other than the one with which you are familiar. In these cases, be sure to:

- Know the weight, height, and width of the machine.
- Have a copy of the operation manual with you.
- Ask the machine's normal operator, the dispatcher, or your supervisor questions regarding any unusual or unique operational characteristics of the machine.
- Familiarize yourself with the machine by setting it up in the yard and running the functions, and by familiarizing yourself with the operation manual. This is especially important if the new machine is significantly different than the one you normally operate. Your co-workers depend on you to know the machine.

3.21 **⚠WARNING** Before driving the unit, be sure the boom is securely in its cradle, resting on approved boom rests that are in good condition, and secured by the tie-down strap (if so equipped). On some makes and models, the boom can be damaged by the bouncing motion that occurs while driving, but this damage is easily avoided by using the strap (Figure 7).

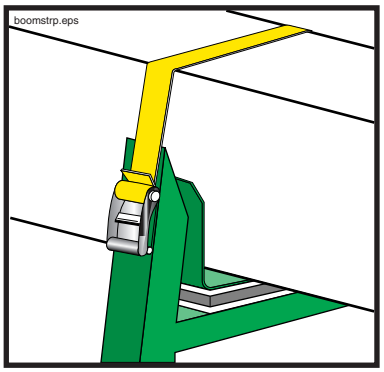


Figure 7
If your unit has a boom strap, use it

3.22 **⚠WARNING** Be certain that all loose items on the unit are secured for travel before driving.

4. Safety Rules For Driving Truck Mounted Concrete Pumps

4.1 **⚠WARNING** **Electrocution hazard!** (See figure 8.) If you're going to drive under low-hanging overhead power lines and it is not possible to maintain adequate safety distance between the pump and the wires, **you should look for another route!** If none is available, contact the power company responsible for the lines and have them de-energized.

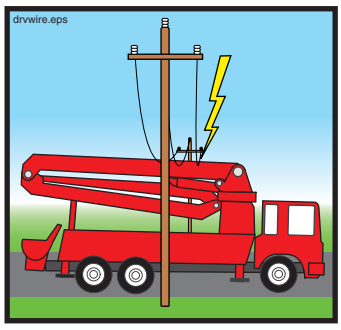
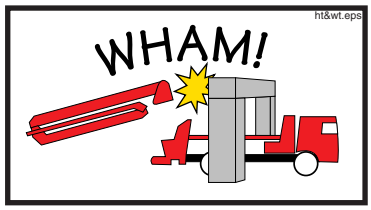


Figure 8
Watch for low-hanging power lines

4.2 Carefully select your route of travel. Avoid steep hills, residential areas, construction, low overpass clearances and narrow bridges whenever possible. **The driver is responsible for knowing the weight and height** of the machine.

4.3 **⚠WARNING** **Collision/falling hazard!** Before driving on bridge or elevated roadways, **be sure that they can support the weight of the vehicle** (Figure 9).



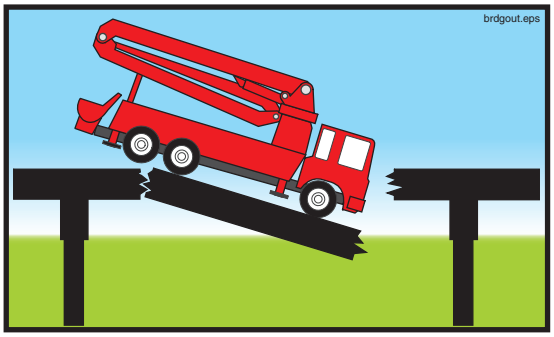


Figure 9
Know your height and weight

4.4 **⚠WARNING** **Collision hazard!** Before driving under ANY structure, **BE SURE** that the machine will clear (Figure 9).

4.5 **⚠WARNING** **Explosion hazard!** Never refuel the unit near hot surfaces, sparks, or open flames (Figure 10).

Figure 10
Be careful when refueling

4.6 **⚠WARNING** **Tipping hazard!** The vehicle must **not** be driven with an unfolded placing boom.

4.7 **⚠WARNING** **Possible boom movement.** Before driving the unit be sure that the distribution gearcase (PTO) has **disconnected** the hydraulic pumps. **Driving with the hydraulic pumps engaged creates a hazard** and is destructive to the pumps.

4.8 **CAUTION** Never drive the unit with concrete in the hopper. Concrete could splash out and damage other cars or property.

4.9 **⚠WARNING** **Runaway truck hazard!** When going down a hill, use one gear lower going down than it would take to go up.

4.10 **⚠WARNING** Truck mounted concrete pumps are generally top-heavy. Use caution when making sharp turns with the vehicle (Figure 11).

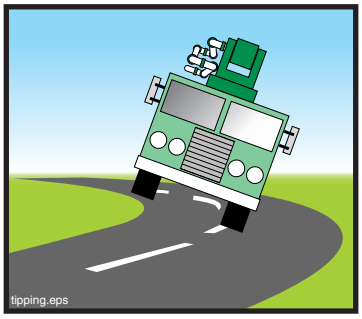


Figure 11
Maintain control on the curves

4.11 **⚠WARNING** Slow down at intersections, near playgrounds, residential areas, and near schools. Children have no knowledge of the increased stopping distances required by heavy vehicles.

4.12 **⚠CAUTION** Be familiar with your emergency equipment. Know how to light a flare, etc.

4.13 **⚠WARNING** Drive defensively. You are at a distinct disadvantage when it comes to maneuverability and stopping distance.

4.14 **CAUTION!** If you must tow the unit, know the correct places to hook the towing cable(s). Improper towing can damage the vehicle or pump.

4.15 **⚠WARNING** **Never** back up without a guide.

4.16 **⚠CAUTION** Know the rules and laws that apply to your state and locality. They have been enacted for your protection and the protection of those around you.

5. Safety Rules For Towing Trailer Mounted Concrete Pumps

5.1 **⚠WARNING** Be sure the towing vehicle is heavy enough and has enough horsepower and braking ability to tow the trailer. This is critical to maintaining control at highway speeds and to braking ability. If the trailer is heavier than the towing vehicle, braking distances will be greatly increased (Figure 12).

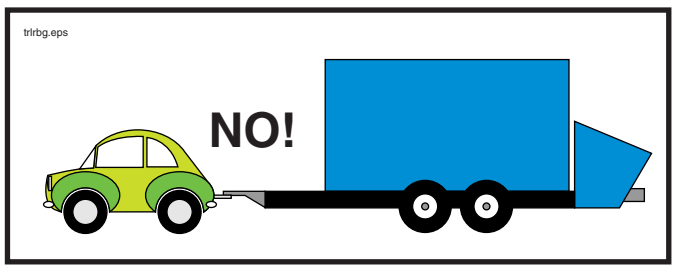


Figure 12
Do not under size the towing vehicle

5.2 **⚠WARNING** Check the tires, tire pressure, and brakes on the trailer before towing. Never tow a vehicle with cracked or bald tires. A trailer tire blowout can cause loss of control in the towing vehicle.

5.3 **⚠WARNING** Be especially careful on ice or slippery roads when towing a trailer. A skid that would normally be easily correctable can be multiplied by the trailer, causing loss of control.

5.4 **⚠WARNING** Be sure that the electrical connections between the towing vehicle and the trailer are sturdy and reliable, and that the lights on the towing vehicle and trailer are working.

5.5 **⚠WARNING** Always use safety chains and break-away protection when towing a trailer.

5.6 **⚠CAUTION** Be aware of local or state regulations regarding mirrors and lights when towing a trailer.

5.7 **⚠WARNING** When towing a trailer, your stopping distance and turning radius are greatly increased. Be aware of this **at all times**.

5.8 **⚠WARNING** When towing a trailer long distances, it is important to check the hitch, wiring, and safety chains frequently.

5.9 **⚠WARNING** Be aware of your length when towing a trailer. A common cause of trailer accidents is turning too close to curbs or objects.

5.10 **⚠WARNING** Never back up a trailer without a guide.

II. On The Job site

6. Safety Rules For Job Setup

SETTING UP A TRUCK MOUNTED BOOM PUMP

6.1 **The job setup phase can set the stage for accidents.** Taking a few extra moments to correctly set up the job will improve your chances of having a safe, trouble-free day.

6.2 **The operator is responsible for the safe operation of the machine**. Notify your employer, the job superintendent, and/or O.S.H.A. if you are being asked to set up in an unsafe manner. **You are never required to take a chance with safety.** You are the **only** person who can determine that the job circumstances under your control are safe.

6.3 Canadian law requires that the boom remains a minimum of 7 meters from electric wires. To conform to the Canadian law, any text in this manual that refers to a 17 foot or 5 meter safety distance from electric wires should be read as 7 meters for use in Canada.

6.4 **⚠ DANGER** **When overhead wires are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 17 feet of the wires.** The spotter must understand the responsibilities assigned, and must be able to judge a 17 foot distance.

6.5 **⚠ DANGER** **You MUST avoid hazardous proximity or contact with electric lines at all times!** Position the machine so a minimum safety distance of **17 feet (5 meters)** is maintained in all boom positions needed to do the job (Figure 13). **Never decrease the safety distance to reach an unsafe area with the boom.**

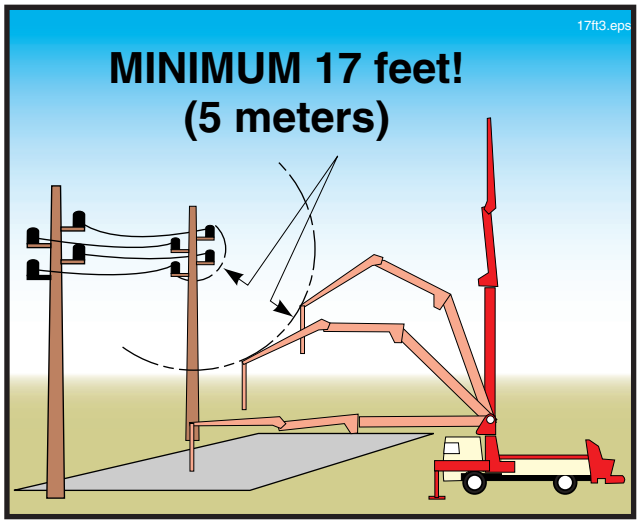


Figure 13
Always maintain the safety distance

6.6 **⚠ DANGER** If you are in doubt about your proximity to high voltage wires, or if it is not possible to maintain 17 feet of clearance, you must lay a separate pipeline or use a different placement method. **Never take chances with high voltage!** (See Figure 14.)

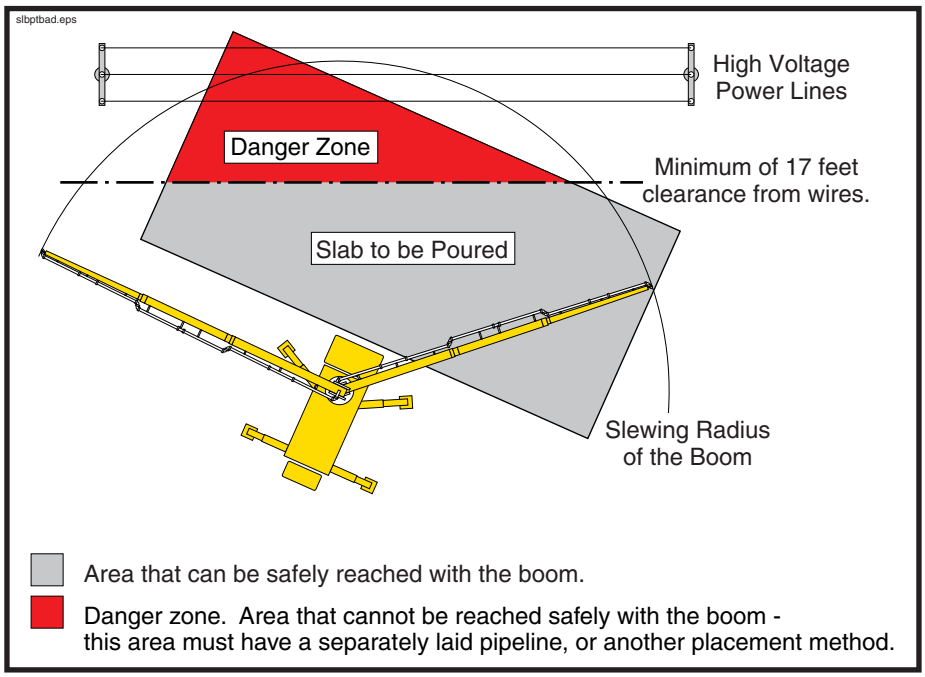


Figure 14
Lay a separate pipeline if you can't maintain the safety distance

6.7 **⚠ DANGER** Do not put the boom on top of electrical wires, even if you can maintain 17 feet of clearance. Mechanical or hydraulic malfunction may cause the boom to move down (Figure 15).

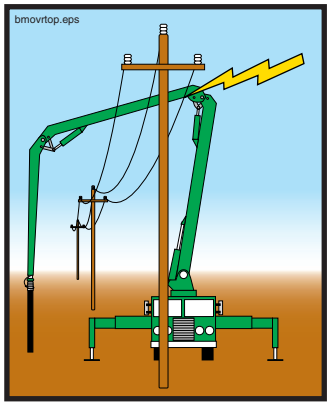


Figure 15
Never boom over wires

6.8 **⚠ DANGER** **It is crucial to take electric wires into consideration during setup, even if they are away from the area to be pumped!** Accidents may occur during cleanout and moving that can be avoided by proper initial setup. In the illustrations below, the pour is outside of the minimum safety distance, but the danger still exists. You **must** be aware of the wires at all times! (See Figure 16.)

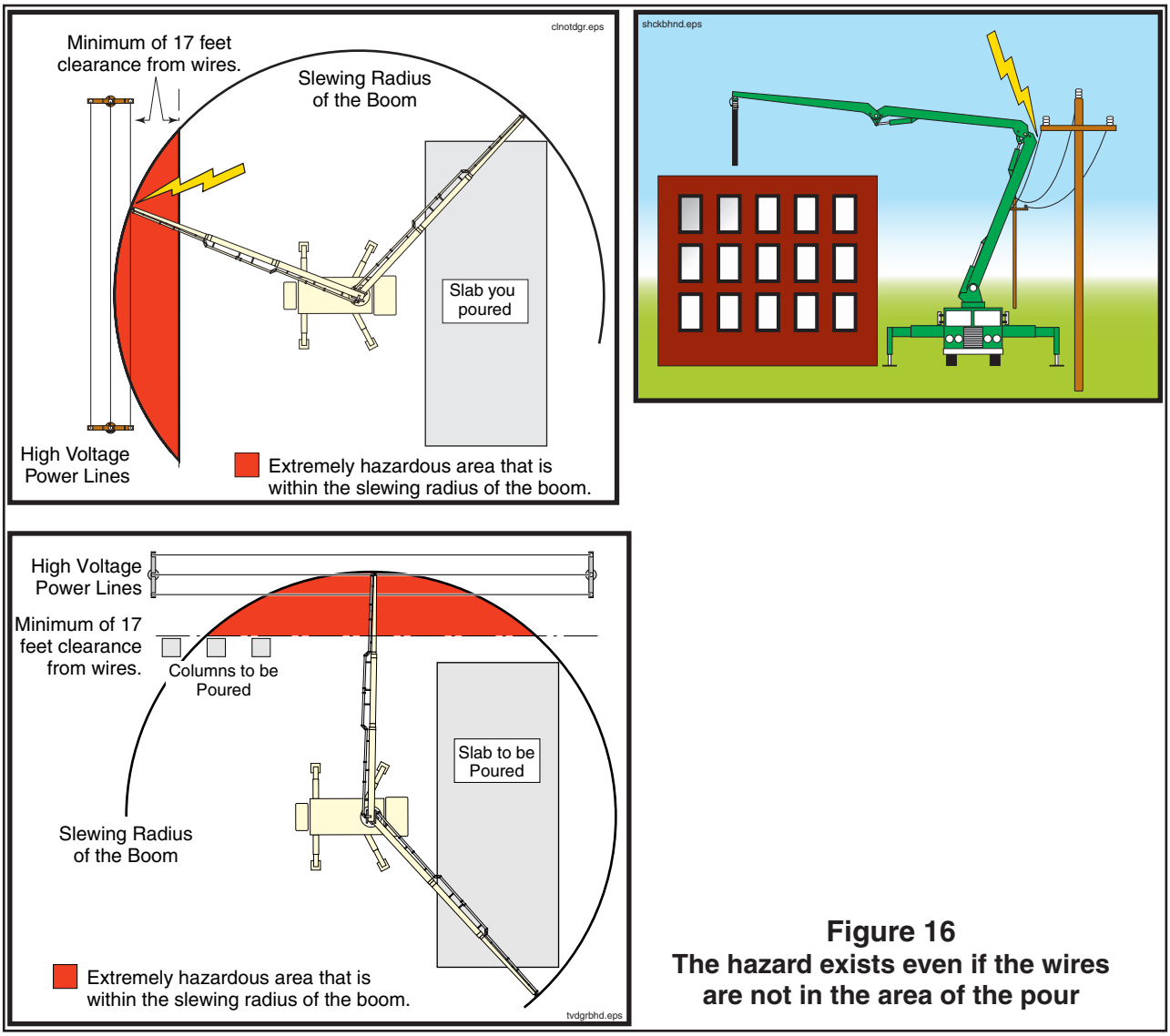
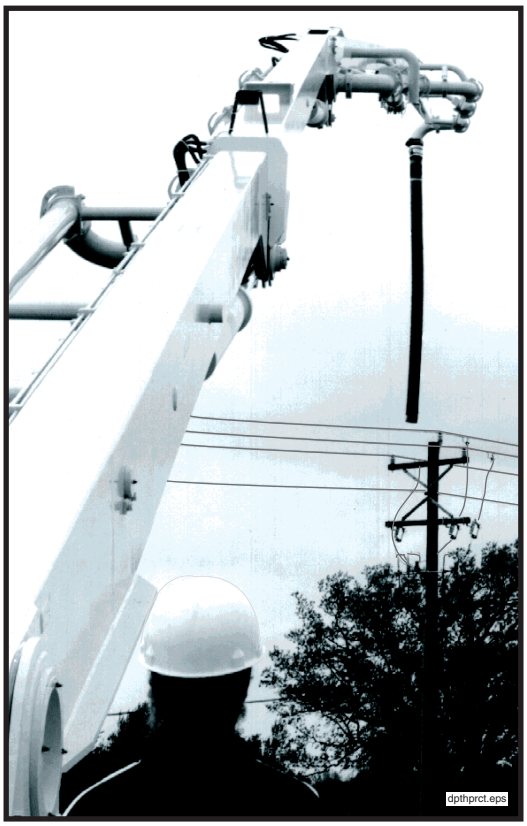


Figure 16
The hazard exists even if the wires are not in the area of the pour

6.9 **⚠ DANGER** Depth perception varies from person to person and is affected by the distance from the objects being observed. Minimum distances from electrical wires and other obstructions should always be judged by placing yourself in a viewing position that does not require depth perception judgements. If this is not possible, a spotter **must** be used! See the glossary for the definition of spotter (Figure 17).



Will it hit the wires?
You can't tell from here.

Get the best possible vantage point

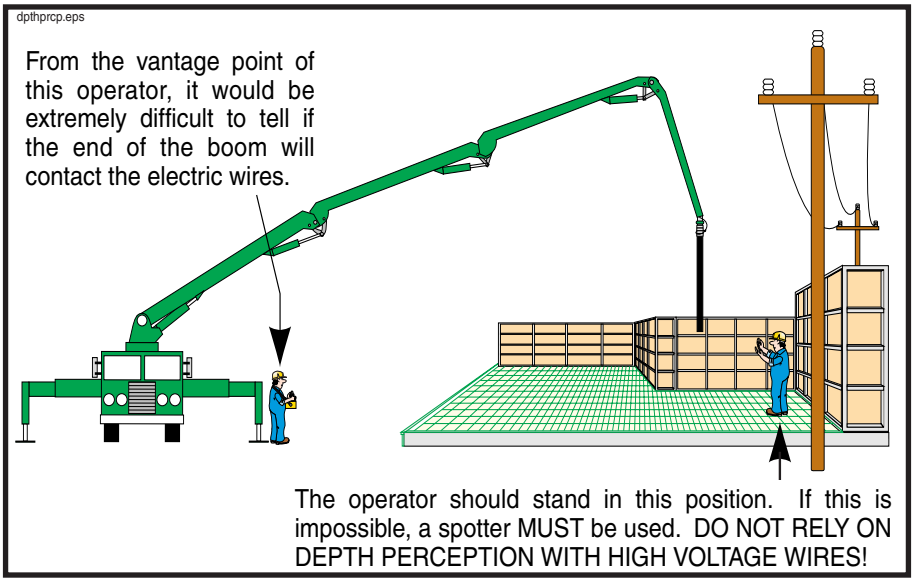


Figure 17
Never rely on depth perception with electric wires

6.10 **⚠ DANGER** Always assume that a power line is live. Never take the word of someone on the job site that it has been de-energized. **Only a qualified representative of the responsible power company can verify that a line has been de-energized** (see Figure 18).

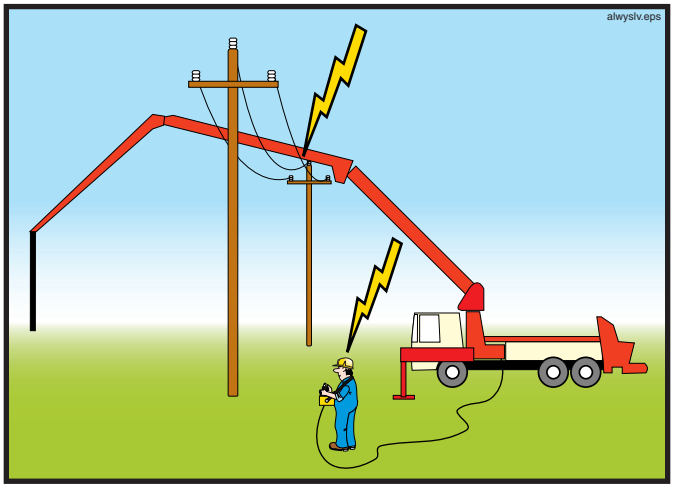


Figure 18
Assume the wires are energized

6.11 **⚠WARNING** Maintain a safe distance from obstructions, such as cranes, scaffolding, and buildings (Figure 19).

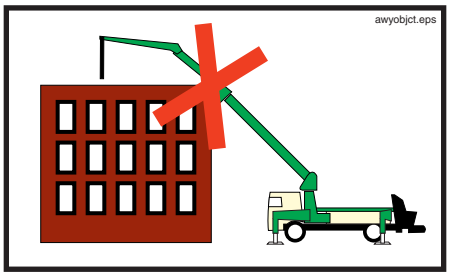


Figure 19
Maintain a safe distance from obstructions

6.12 **⚠WARNING** Place wheel chocks under the tires on sloping terrain. Release the brakes and allow the machine to settle against the chocks, then reapply the brakes.

6.13 **⚠CAUTION** Remove any snow, ice, oil, or dirt from steps and platforms.

6.14 **⚠WARNING** Possible boom damage! Never add extensions to the end of the placing boom! If continuation pipes are connected to the end hose, they must **NOT** impose any load on the boom (Figure 20).

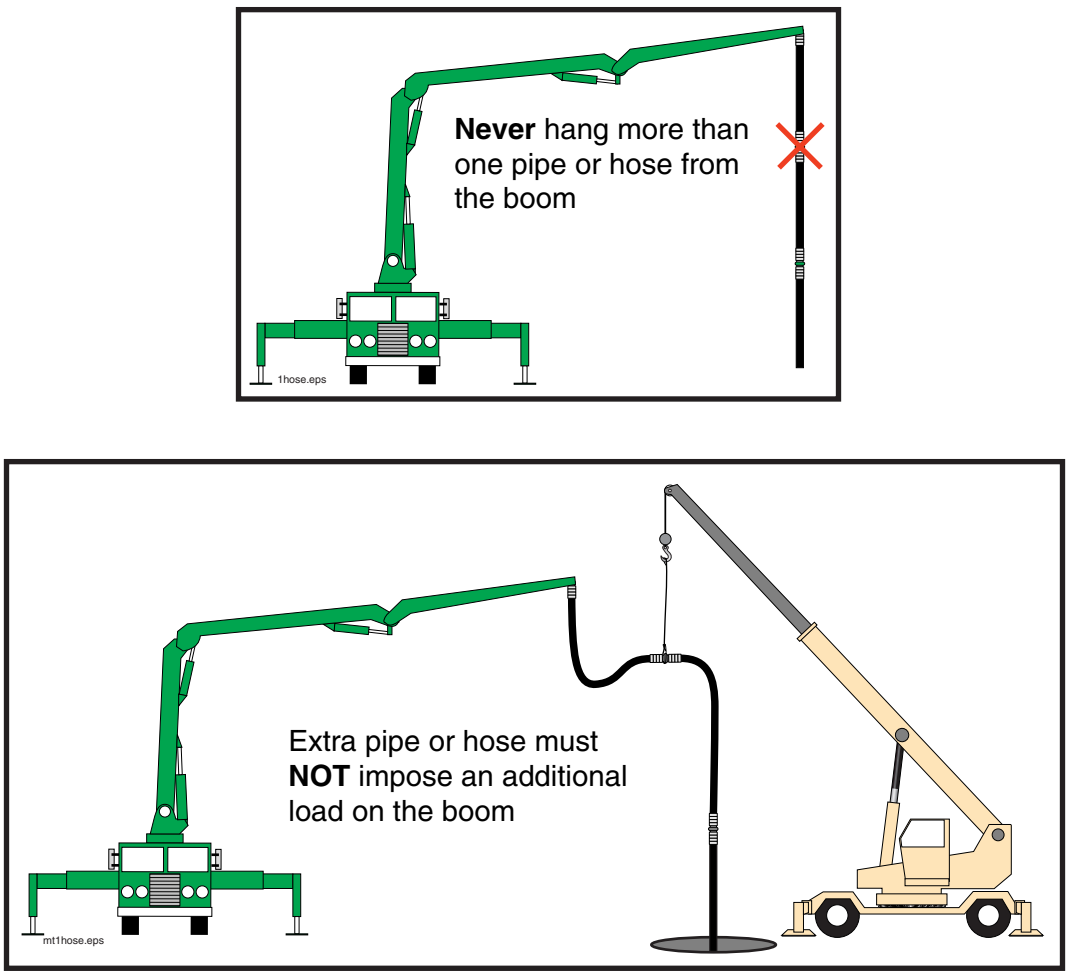


Figure 20
Know and do not exceed the maximum weight allowed to hang from the boom

6.15 **⚠WARNING** The length of a 125mm boom end hose may not exceed 13 feet (4 meters). Certain machines may require a shorter length or smaller diameter end hose. Check with the boom manufacturer.

6.16 **⚠WARNING** Possible structural damage. If you remove the supplied tip hose and replace it with a combination of reducers and hoses, the total weight of all hanging pieces (including the weight of the concrete) must not exceed the weight of the supplied tip hose (including concrete). The supplied tip hose is typically 12 feet long and 125mm (or 5 inch) diameter. When filled with normal, hard rock concrete it weighs 376 pounds. Certain units may have a lower allowable weight and, thus, a different tip hose. The operation manual included with the unit will inform you of the specification if the unit requires a smaller than standard tip hose. It is the operator's duty to know the specification of the unit in operation (Figure 21). **Find out if your unit has special requirements!**

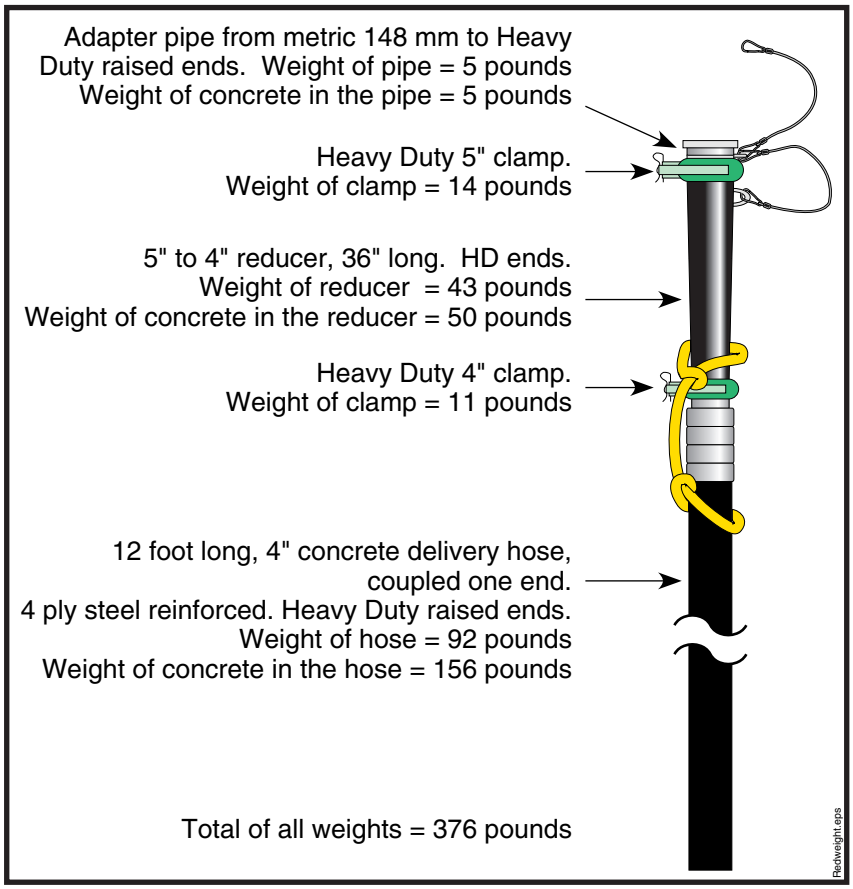


Figure 21
A typical reducer/hose combination

6.17 **⚠WARNING** A *concrete delivery hose* is a flexible concrete hose that has two end couplings. An *end hose* is a flexible concrete hose that has one end coupling. In normal usage, it is preferable to have an end hose as the last piece of delivery system. If you will be swinging the full boom over workers or property you must be able to plug the delivery system. See the instructions for plugging the delivery hose on page 43.

6.18 **⚠WARNING** All hanging system components must be fastened with safety cables or straps, and **each component must be capable of handling the maximum concrete pressure of the machine** (see Figure 22).

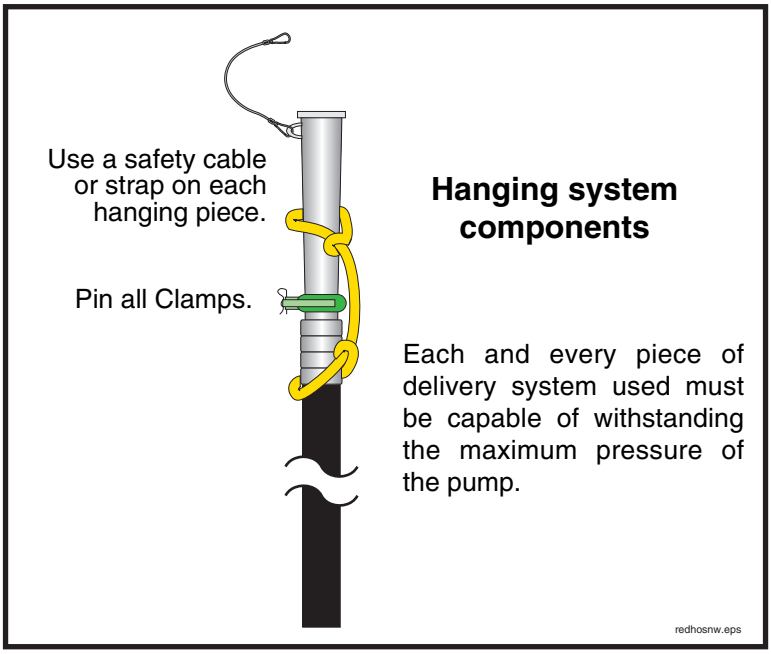


Figure 22
Assure the safety of hanging system components

6.19 **⚠WARNING** Placing booms possess a very wide effective operating range. Due to this high degree of mobility, some placing booms can reach a position unsuitable for practical operation. Under certain circumstances **overloading, tipping, or damage to the boom is possible**. These unsuitable areas are documented on safety decals and in operation manuals (see Figure 23). **Be aware of these areas if they apply to your unit and set up the pump taking these areas into consideration**.

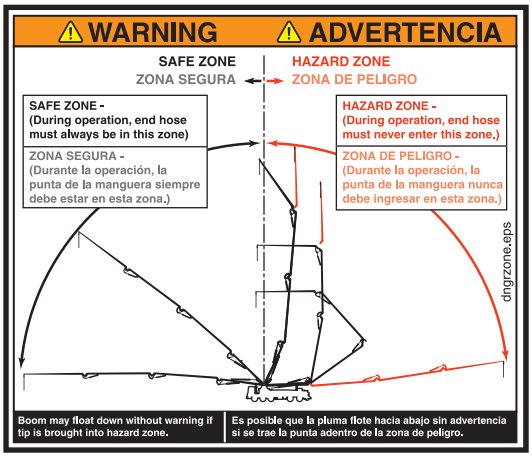


Figure 23
An example of a hazard area decal

6.20 **⚠WARNING** Collision hazard! Secure the immediate area of the machine from public traffic in accordance with all applicable regulations (warning lights, safety cones, barricades with flashers, etc.).

6.21 **⚠WARNING** Consider the safe approach and departure of the ready-mix trucks and adjust your setup accordingly. Adjusting your setup position by a few degrees one way or another could mean the difference between a safe approach and an unsafe approach. Some examples of unsafe approaches are: too near an excavation or sticking out into traffic.

6.22 **⚠WARNING** If you set up the unit with one or more outriggers not fully extended on the side away from the pour (shortrigging), you will tip the machine if you forget and rotate the boom over the side with the unextended outriggers. That being said, it is known that under certain circumstances, shortrigging is unavoidable (see Figure 24). If no alternatives are practical and you must shortrig for a particular job, keep these points in mind.

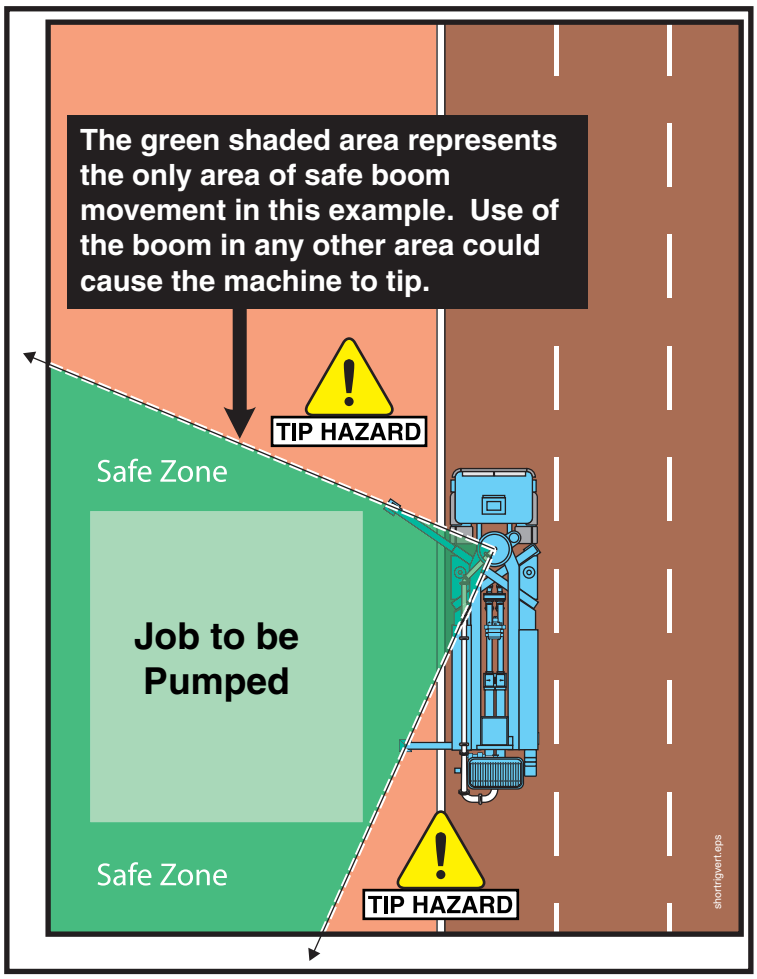
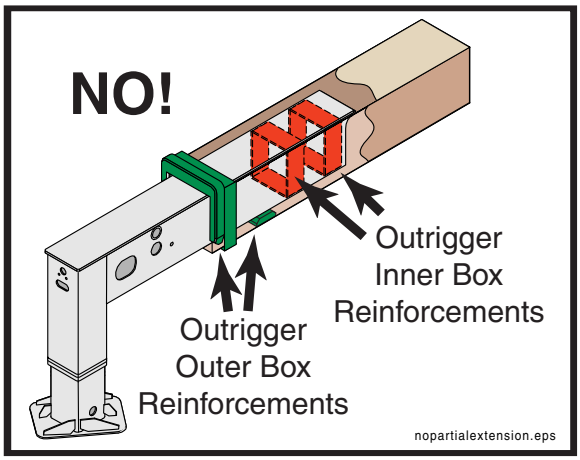


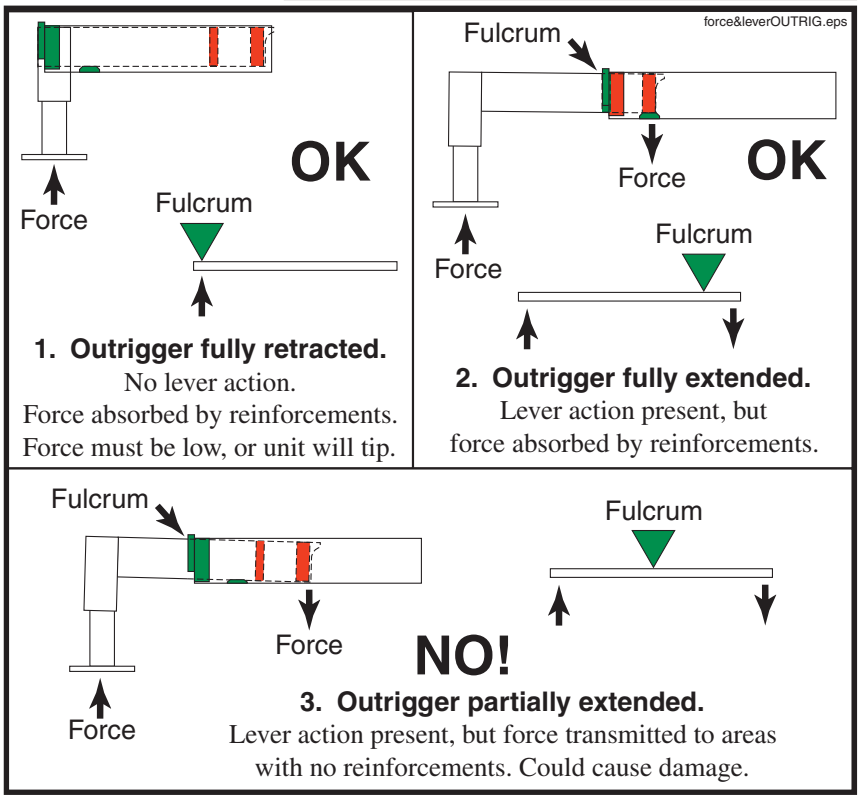
Figure 24
Shortrigging

- You may only operate the boom when it is placed between outriggers that are completely extended; you may tip if the boom is placed anywhere else.

- You should still jack the outriggers that are not fully extended. This will assist in stabilizing and preventing the unit from rocking. The margin of safety this gives you is very small; and won't prevent you from tipping.
- Don't get lazy! If it is possible to extend all of the outriggers, do it!
- Don't forget that you didn't fully extend all the outriggers. Explain to other workers on the job what will happen if you forget and slew the boom over unextended outriggers. That way, if they see you are moving the boom into a tipping area, they may be able to warn you.
- Outriggers that cannot be fully extended should NOT be partially extended unless specifically allowed by the manufacturer. The inner and outer outrigger box reinforcements will not align in intermediate positions. (Figure 25.)

Figure 25
Partial extension is not allowed





⚠WARNING When setting the outriggers, jack the unit to within 3° of level, or according to the operation manual of your unit. If the unit is not set up within the specification for level, the boom brakes could fail, causing the boom to rotate downhill by the force of gravity.

6.23 **⚠WARNING** Tipping hazard! Do not unfold the boom until the outriggers have been correctly positioned and secured! The outriggers must be completely extended and opened as described in the operation manual. Do not partially extend the outriggers because intermediate positions are **not safe!** See the information regarding shortrigging (paragraph 6.22).

6.24 **⚠WARNING** Tipping hazard! Check soil conditions before jacking the outriggers. If necessary, use cribbing or suitable pads under the outrigger legs to increase the area of soil contact. See the chart in Figure 26 for examples of load bearing capacities of various soil types and for an example of how to calculate how much cribbing is needed. If in doubt, the site management may be able to supply the load bearing capacity of the soil.

APPROXIMATE PRESSURE SUPPORTING CAPABILITY OF VARIOUS TYPES OF SOIL

Virgin ground	22 PSI
Asphalt, min. 8" thick	29 PSI
Compressed crushed stone	36 PSI
Clay/silt soil, firm	43 PSI
Mixed granular soil	51 PSI
Firm compacted gravel	58 PSI
more compacted	72 PSI
more compacted (e.g. class 5)	109 PSI
Brittle weathered rock	145 PSI

To calculate soil pressure: Divide the force on the outrigger leg (from the decal) by the number of square inches of soil contact.

PSI = LOAD÷AREA

PSI = pressure on the soil
Load = force in pounds
Area = square inches of soil contact.

EXAMPLE: Load bearing capacity of the soil (8 inches of asphalt) = 29 PSI
Force on the soil by the outrigger leg = 40,000 Pounds (from decal)
Pad on outrigger = 12" x 12" (144 square inches)
40,000 ÷ 144 = 278 PSI.
In this example you could expect the outrigger to sink into the asphalt and possibly cause a tip-over. To prevent this, you install additional cribbing:
Additional cribbing = 40" x 40" (1600 square inches)
40,000 ÷ 1600 = 25 PSI
Now the asphalt should support the outrigger.

soilpres.eps

Figure 26
Calculating load bearing capacity

6.25 **⚠WARNING** Tipping hazard! Regardless of whether you know the load bearing capacity of the soil or not, you must test your setup by slowly moving the empty boom over each outrigger (Figure 27). If the outrigger begins to sink, retract the boom or move it back in the direction from which it came, until the weight of the boom is removed from the outrigger. Add more cribbing under the outrigger pads and retest until the outriggers are stable. When you put concrete in the boom, again check the outriggers for sinking. Continue to add more cribbing until the soil can support the load. After the pour begins, continue to check the outriggers for sinking throughout the course of the day. The stability of the unit **must** be ensured.

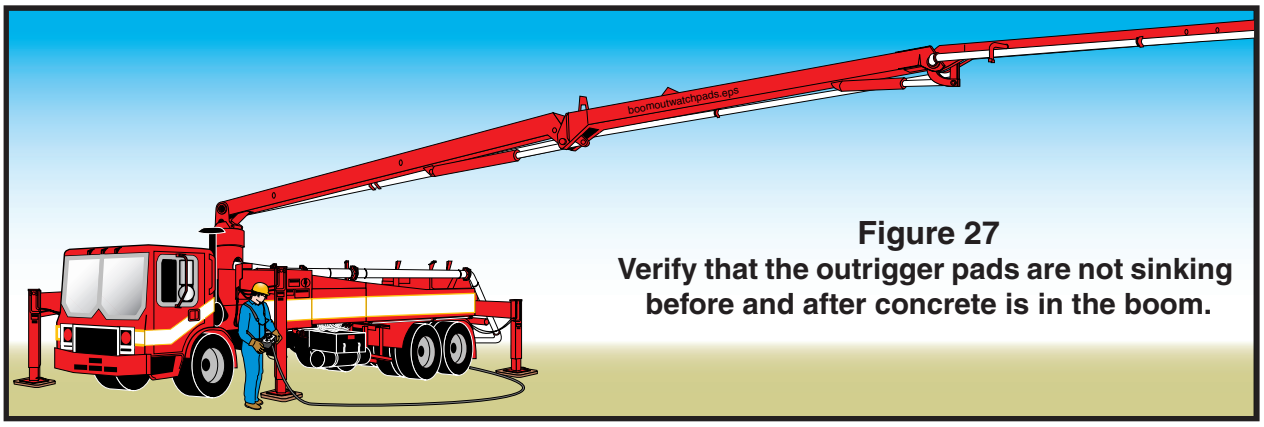


Figure 27
Verify that the outrigger pads are not sinking before and after concrete is in the boom.

6.26

⚠WARNING TIPPING HAZARD! Maintain a safe distance between the unit and the edge of a cliff or any excavation. The rule of thumb is: for every foot of drop, stay back from the base edge at least 1 foot (the one to one rule). (See Figure 28.) Note that the forces on the outriggers are transferred to the soil at a 45° angle. Watch out for the condition shown in Figure 29.

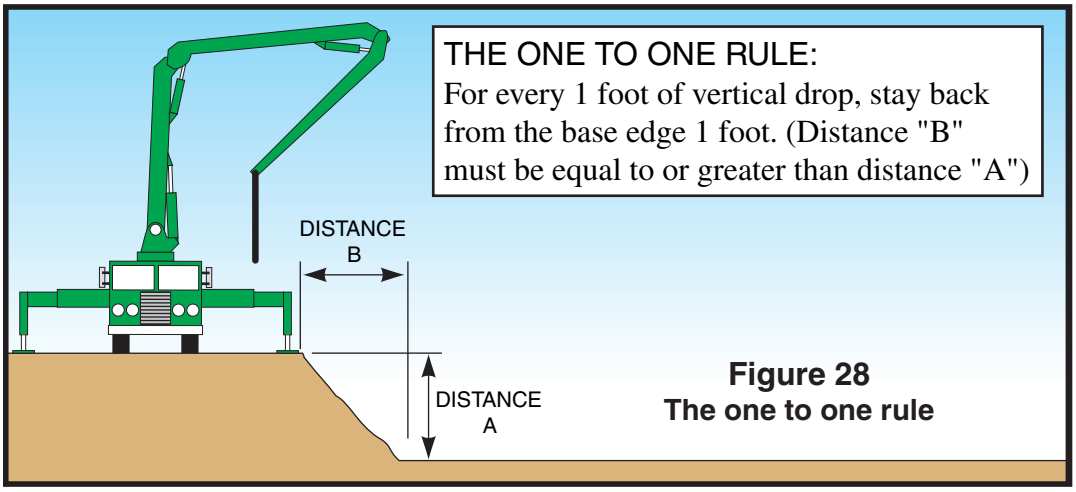


Figure 28
The one to one rule

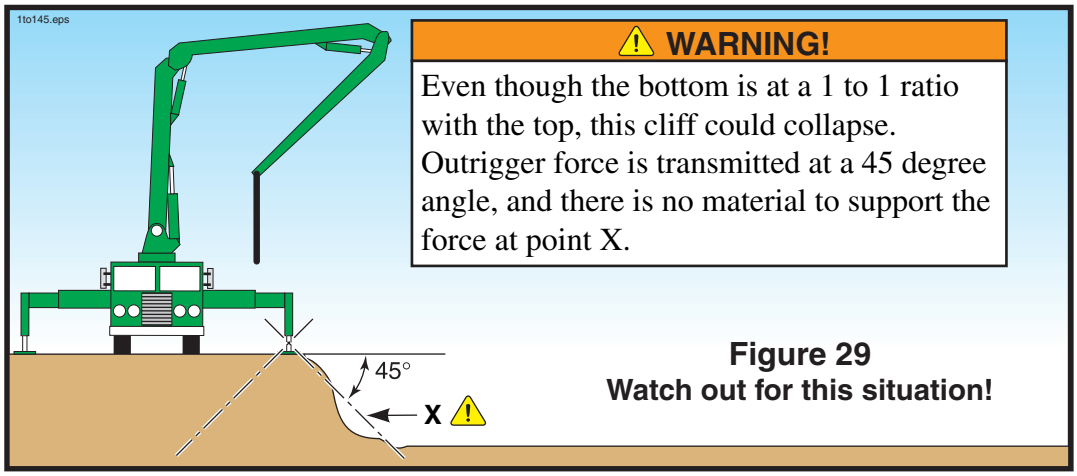


Figure 29
Watch out for this situation!

6.27 **⚠WARNING** Tipping hazard! Take care when setting the outriggers (Figure 30). Never set up on uneven or hilly soil or try to bridge a hole with cribbing. In these cases, you could dig a flat spot in the soil (A, B, & C). Be sure that the outrigger pad contacts all pieces of cribbing. Run cribbing in the opposite direction, if needed (D).

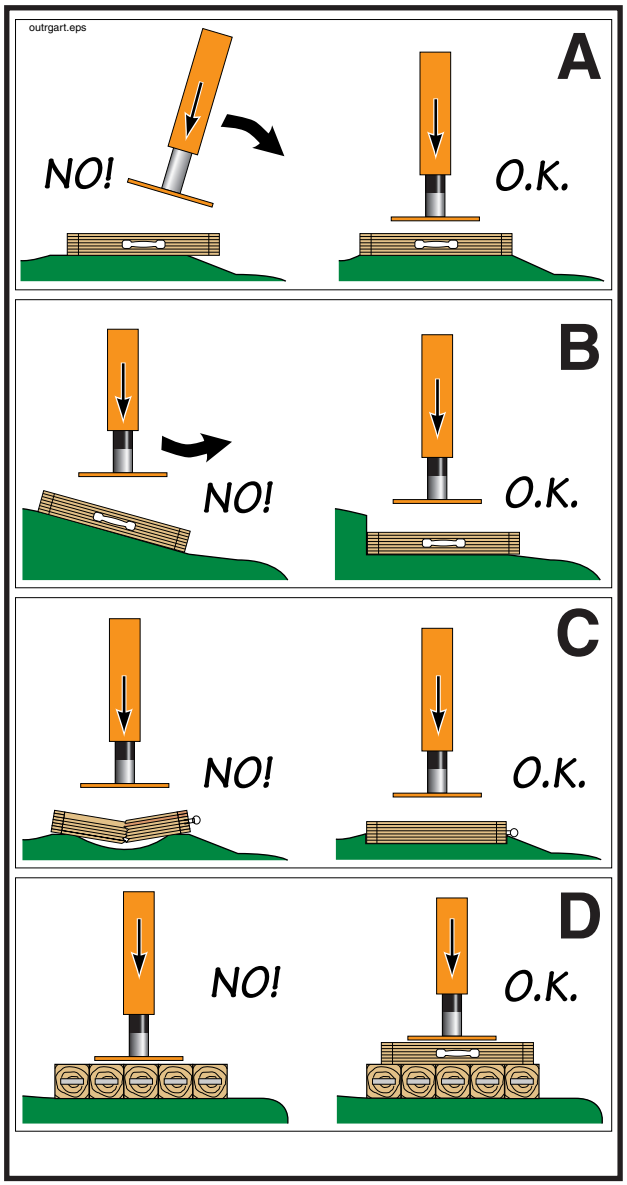


Figure 30
Beware of these outrigger hazards

6.28 **⚠WARNING** When you have the outriggers positioned correctly, close all outrigger hydraulic shutoff valves (if your machine is so equipped).

6.29 **⚠WARNING** Do not unfold or operate the placing boom when lightning is present in the immediate area. If you are operating and lightning moves into the area, put the boom into the transport position, or another low position, and seek shelter until the lightning is gone.

6.30 **⚠WARNING** Tipping hazard! Do not operate the placing boom when wind velocity exceeds 48 m.p.h. (77 k.p.h.)! When wind velocity exceeds 48 m.p.h. the machine could tip, and the boom may not be able to slew into or resist slewing away from the wind.

6.31 **⚠WARNING** If you will be unable to see the point of placement, establish a system of communications with the workmen who will be there. Arrange for radio communications, a system of visual or auditory signals (lights or bells), or a spotter. If a spotter is used, **agree on hand signals before beginning the pour!** If the boom will be moved extensively, arrange for a workman to stay with the pump and to put yourself in a position to see the end of the boom (Figure 31).

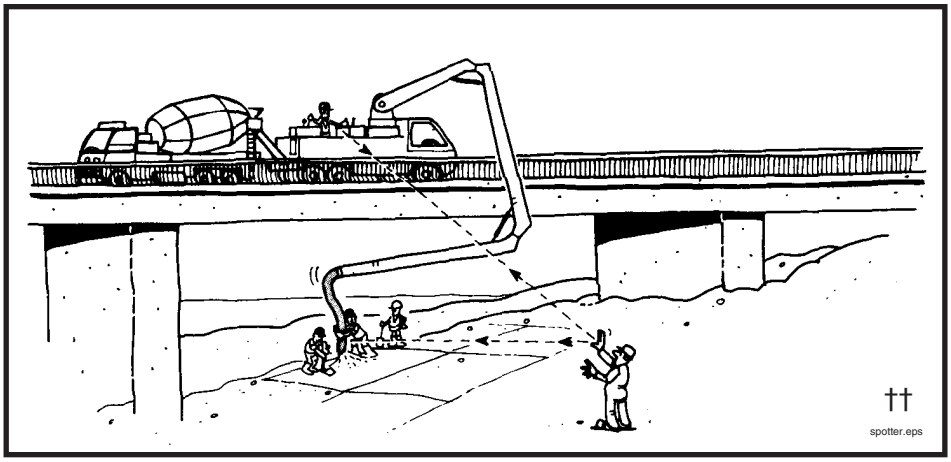


Figure 31
Arrange communications before starting

6.32 **⚠WARNING** **Possible boom damage**! If you will be pumping out of the boom into a separately laid pipeline, you must use a flexible hose to connect them. Do not connect steel pipe directly to the boom. **Be sure that the hose is capable of handling the maximum concrete pressure of the pump**. Do not let the end of the boom rest on the ground when connected to a separately laid pipeline.

6.33 **⚠WARNING** **It is extremely important to verify that the material delivery system of the boom is capable of handling the pressure of the concrete pump.** In some cases, you may not be able to use the boom if you are pumping on piston side. It is up to the machine owner and operator to determine if the boom can be used when pumping on piston side. Keep in mind that pipeline wears out with each stroke of the pump. Verify pipe wall thickness and compare it to pressure handling capabilities of that pipe style. The chart for this comparison is found in the appendix of this manual.

6.34 **⚠WARNING** **Use only material delivery system components in good condition.** The useful life of delivery system components is affected by pumping pressure, concrete composition, pipeline material, velocity of moving concrete, and other factors. The use of ultrasonic equipment for determining pipe wall thickness is highly recommended (Figure 32). Read and understand the minimum wall thickness chart in the appendix section of this manual. If you don't understand the chart, contact the service department of the manufacturer of your machine; they will assist you.

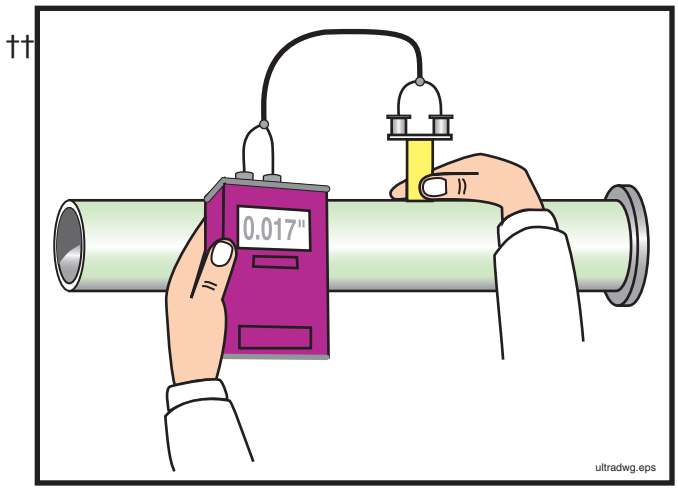


Figure 32
Check for wear on the delivery system components

6.35 **⚠WARNING** **When the machine is ready to work, secure it against unauthorized use!** Either stay with the unit or make sure no one can start it without you. This could be accomplished, for example, by activating the emergency stop switch of the remote control box (cable or radio, whichever is active), then locking it in the cab of the truck. Another way would be to take the transmission out of gear, lock the cab of the truck, and take the key with you.

6.36 **⚠WARNING** **Watch for children!** When the machine outriggers are jacked up, it is very easy for children to access the space underneath the machine. The rotating driveline(s) and hot components pose serious hazards. Do not let anyone remain under the machine while it is running.

6.37 **⚠WARNING** If spectators will be near the pour, cordon off an area where they will be safe. Never operate the machine if it is not safe to do so, even if the spectators just want to see a certain operation or function.

7. Setting Up A Trailer Mounted Pump and/or A Separate Pipeline

7.1 **The job setup phase sets the stage for most accidents.** Taking a few extra moments to correctly set up the job will improve your chances of having a safe, trouble free day.

7.2 **The operator is responsible for the safe operation of the machine**. Notify your employer, the job superintendent, and/or O.S.H.A. if you are being asked to set up in an unsafe manner. **You are never required to take a chance with safety.** You are the **only** person who can determine that the job circumstances under your control are safe.

7.3 **⚠WARNING** The **power connections for electrically driven concrete pumps or separate placing booms must be made by a licensed electrician.** The supply power and appropriate disconnect boxes are the responsibility of the contractor.

7.4 **⚠WARNING** **Electrical power on the job site may be taken only from a fused, grounded disconnect box with a disconnect switch that can be locked against activation.** If you will be making repairs to the concrete pump or separate placing boom, first lock out the power at the disconnect box**.**

7.5 **⚠WARNING** On units equipped with electric motors, **check the power cables every day.** If they are frayed or have open spots in the insulation, replace the wire. If the connectors are worn or loose, have repairs made by a licensed electrician.

7.6 **⚠WARNING** **Consider the safe approach and departure of the ready-mix trucks and adjust your setup accordingly.** Adjusting your setup position by a few degrees one way or another could mean the difference between a safe approach and an unsafe approach. Some examples of unsafe approaches are: too near an excavation or sticking out into traffic.

7.7 **⚠WARNING** **Avoid collisions!** Secure the immediate area of the machine from public traffic in accordance with all applicable regulations (warning lights, safety cones, barricades with flashers, etc.).

7.8 **⚠WARNING** Pipelines, end hoses, couplings, and all other **material delivery components must be able to withstand the maximum concrete pressure of the pump. Be sure** of it! Read and understand the minimum wall thickness chart found in the appendix of this manual.

7.9 **⚠WARNING** Do not use a piece of pipeline, end hose, coupling, or any other material delivery component that is not in good condition. **Replace, do not repair damaged pipes and hoses.** Concrete pipeline system is subject to wear, and the rate of wear is affected by pumping pressure, concrete composition, pipeline

material, and other factors. Read and understand the minimum wall thickness chart in the appendix of this manual. **Bursting pipes and concrete escaping under pressure is a serious safety hazard!** (See Figure 33.)

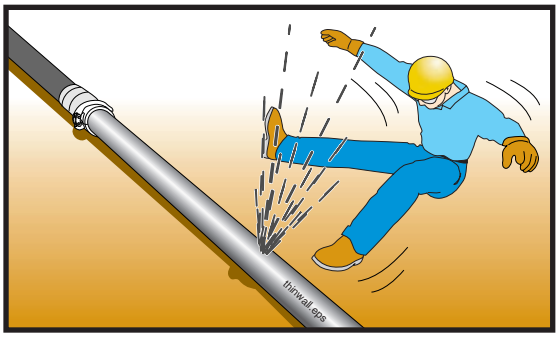


Figure 33
Delivery system components must be able to withstand maximum pump pressure

7.10 When laying out a pipeline, it is preferable to use an elbow instead of a hose to make direction changes. Elbows have less resistance to flow than hoses, and will therefore reduce the overall pressure required to push the concrete.

7.11 Always use the largest diameter pipeline that is practical, and use steel pipe instead of rubber hose. This will keep the pressure required to push the concrete to a minimum.

7.12 Support the delivery pipeline. Either an "S" transition pipe should be used to bring the pipe to ground level, or **each** section of the pipeline should be supported at the pump outlet level.

7.13 **⚠WARNING** The sections of pipe nearest the pump are subjected to the highest pressure and the greatest wear. Because of this increase of pressure near the pump, you should install only thick walled pipe, in "like new" condition there. Read and understand the minimum wall thickness chart in the appendix of this manual.

7.14 **⚠WARNING** **The maximum concrete pressure of the pump must be the only factor used to determine what thickness of pipe and what type of ends are needed**. In the case of a rock jam or any other type of blockage, **the maximum pressure of the pump will be exerted**.

7.15 Grooved (Victaulic) ends are **not recommended** for concrete pumping. Read and understand the comparison between heavy duty raised, metric, and grooved ends in the appendix of this manual.

7.16 **⚠WARNING** If the pipeline remains on the job (as is the case when pumping a high rise building), **the operator is responsible for checking the pipeline for dents, cracks, wear, and continuity each day before the pour begins**.

7.17 **⚠WARNING** In vertical runs, the weight of the vertical sections of pipe must be supported by a thrust block (often called a *deadman,* Figure 34) or other load-bearing device. **Each section of pipeline in a vertical run must be secured from lateral and horizontal movement.**

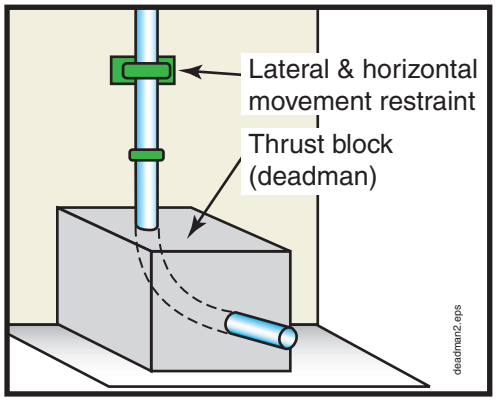


Figure 34
A thrust block (deadman)

7.18 **⚠WARNING** If you will be unable to see the point of placement, establish a system of communications with the workmen who will be there. Arrange for radio communications, a system of visual or auditory signals (lights or bells), or a spotter (Figure 35). If a spotter is used, **agree on hand signals before beginning the pour!**

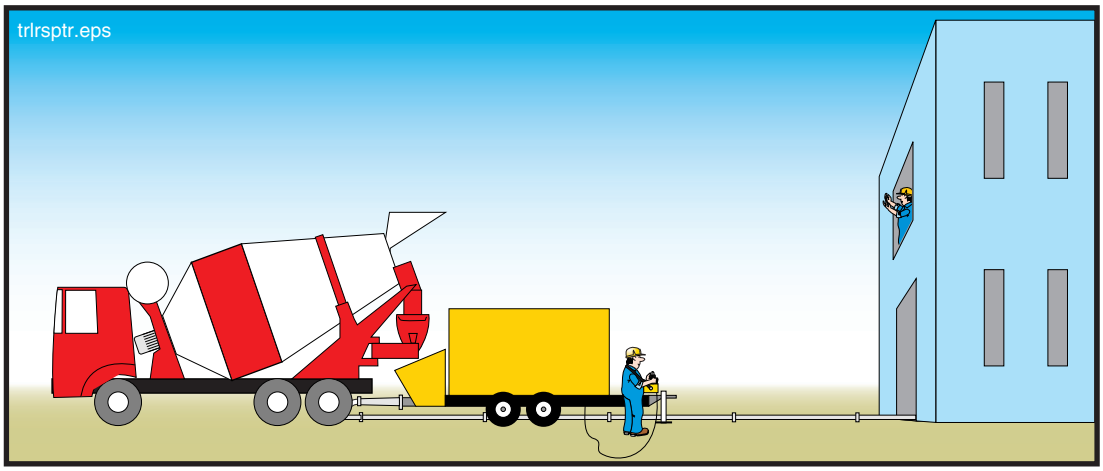


Figure 35
Arrange communications before starting

7.19 **⚠WARNING** Never leave the machine unattended when it is running or ready to run. Stop the engine and remove the key if you must leave the area. Make sure no one can start the machine without you. If you're unsure that the engine would restart, you must leave someone to monitor the unit. This is especially critical if there are children in the vicinity.

7.20 **⚠WARNING** Watch for children! It is easy for children to access the space underneath the machine, but it is not safe for them to do so.

7.21 **⚠WARNING** If spectators will be near the job, cordon off an area where they will be safe.

7.22 **⚠WARNING** If you will be cleaning the pipeline with compressed air at the completion of the job, **be sure that you have all the necessary accessories to do the job safely.** If you don't have all of them, make arrangements to get them before you begin to pump. **Do not improvise on this. Make sure** that you have the right parts. The minimum accessories include:

- A blow out head with properly sized air discharge regulator valve, and separate water/air inlet. The two openings should be spaced apart far enough that a blowout ball could not cover both openings at once.
- A *go devil*, or a hard sponge ball. Regardless of which is used, it **must** fit into the pipeline tight enough that air cannot escape ahead of it.
- A ball or "go devil" catcher that will catch the go devil or ball, or some other method of controlling the discharge while the line is being purged of material. There are two types of catchers (see paragraph 7.23).
- A hose that is rated for the pressure of the air compressor you will use and that is able to connect with both the air compressor and the blow out head. The hose must be in good working condition and must be free of cracks, frays, tears or other damage.
- If you will be cleaning the pipeline with compressed air at the completion of the job, be sure an adequate air compressor is available before starting the job.
- If you will be cleaning a vertical pipeline with compressed air at the completion of the job, you **must have a shutoff valve or switching valve installed at the bottom of the vertical run!**

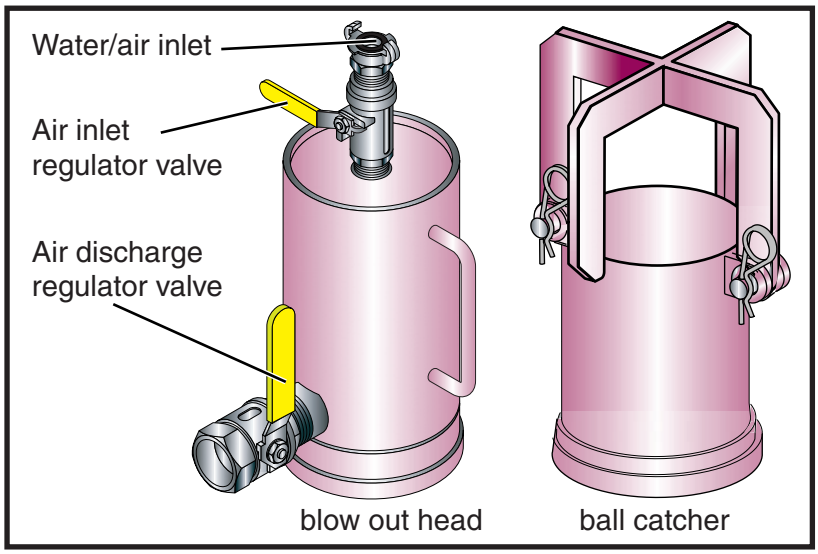


Figure 36
Ball catcher and blow out head

7.23

⚠WARNING There are two types of ball catchers. Know which type of catcher you are using. You may need to adjust your clean out procedure according to which type you have. The two types are as follows.

1. Catchers that stop the ball or go devil before air can escape, and
2. Catchers that allow the air out of the pipeline after the ball or go devil has reached the end.

Each type has advantages and disadvantages (Figure 37).

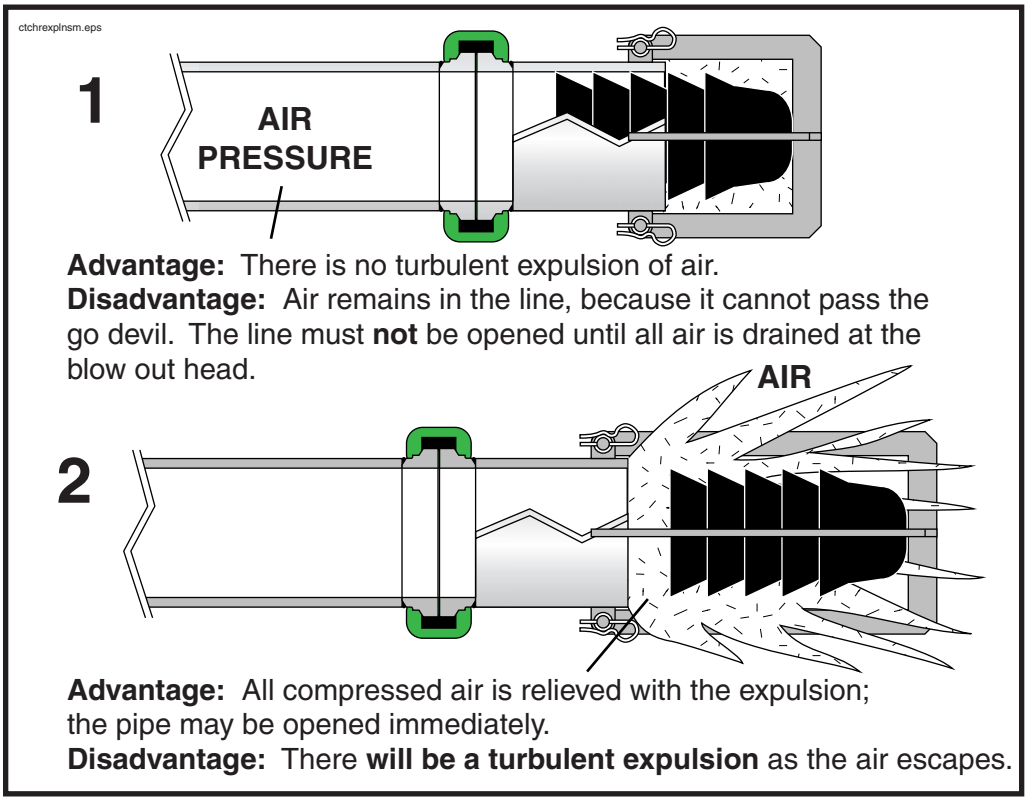


Figure 37
Types of catchers

With catcher type 1, the go devil stops, but air is still trapped behind it. The advantage is prevention of the sometimes violent expulsion of air at the end of the pipe. The disadvantage is that the air must be drained from the blow out head before the pipe line is safe to open. The pipeline must be controlled; allow no one to open it until all compressed air is relieved.

Catcher type 2 is long enough that the compressed air escapes behind the go devil. **Note!** This would happen with either catcher when used with a ball instead of a go devil. The advantage of this is that once you hear the turbulent expulsion, there is no pressurized air remaining in the line, and the line may be opened immediately. The disadvantage is the expulsion itself. In this case, the end of the line must be controlled because flying concrete and aggregate pose a hazard.

Both catchers can be safely used if care is given to the hazards involved.

III. Concrete Pump Operation

8. Safety Rules For Pump Operators

8.1 **⚠WARNING** Only qualified operators are allowed to operate the pump. A "Qualified Operator" is defined as someone who:

- has reached the age of 18 years (21 for interstate travel),
- is physically and mentally capable,
- has been trained in the operation and maintenance of the pump and the placing boom (if applicable),
- has demonstrated his/her capabilities to the employer in respect to the operation and maintenance of the pump and placing boom, and
- can be expected to perform these duties, as assigned, in a reliable manner.

8.2 **⚠WARNING** Because the operator is responsible for the safe operation of the machine, it is crucial that he/she understands the proper operation of the machine and the safety rules that apply to the job at hand, so the course of action taken in unforeseen circumstances will be a safe one. Only thorough training and supervised job experience can supply the necessary understanding.

8.3 **⚠WARNING** When operating the machine, **wear Personal Protective Equipment.** (See Figure 38.)

* Needed when exposed to airborne cement particles (or any other toxic dust).

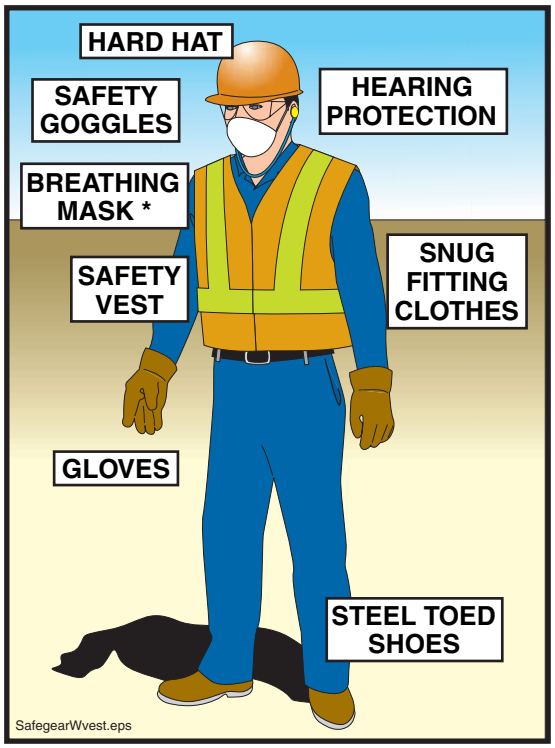


Figure 38
Wear Personal Protective Equipment (P.P.E.)

8.4 **⚠WARNING** All guards, covers, and service flaps must be closed and locked during operation.

8.5 **⚠WARNING** **Electrocution hazard!** If you are operating and lightning moves into the area, put the boom into the transport position, or another low position, and seek shelter until the lightning is gone.

8.6 **⚠WARNING** **Crushing hazard! Never, ever** position yourself between a ready mix truck and the pump! Stand off to the side, so the ready mix driver can see you at all times (Figure 39).

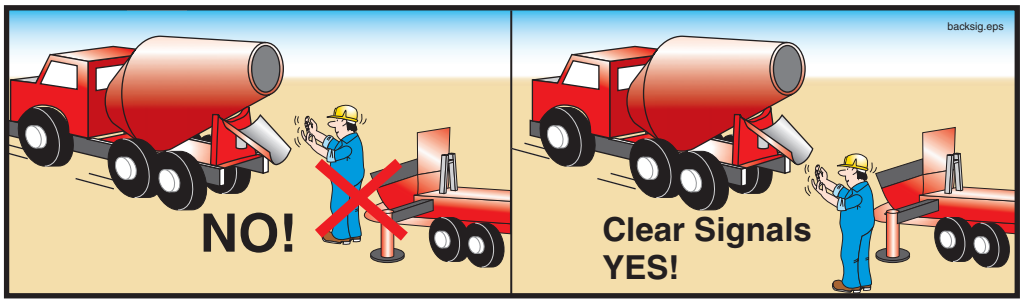


Figure 39
Never stand between the ready mix truck and the pump
Use clear and concise hand signals

8.7 **⚠WARNING** When backing in ready mix trucks, use clear and concise hand signals (Figure 39).

8.8 **⚠ DANGER** You must avoid hazardous proximity or contact with power lines under all circumstances. **Be <u>sure</u>** that you maintain 17 ft. (5 meter) clearance! The 17 foot clearance allows room for the movement of the wires and the boom by wind force, electrical arcing, and human error (Figure 40). **Do not take chances with high voltage; it is the number one killer of concrete pump operators!**

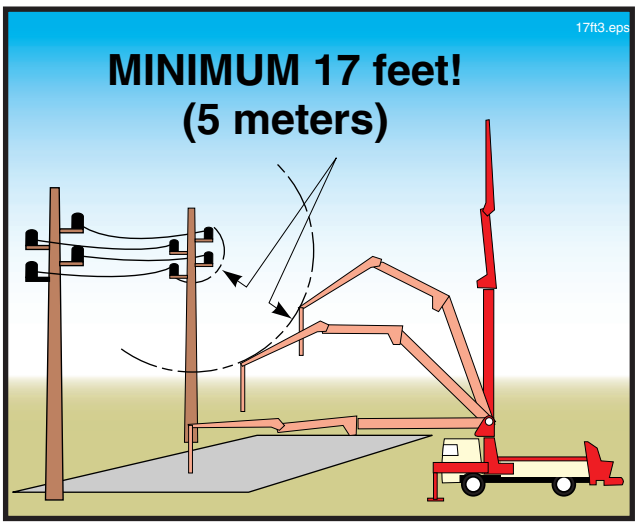


Figure 40
Maintain a clearance of at least 17 feet from wires

8.9 **DANGER** **When overhead wires are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 17 feet of the wires.** The spotter must understand the responsibilities assigned, and must be able to judge a 17 foot distance.

8.10 **DANGER** Direct contact with a live power line is always dangerous to everyone and anyone electrically connected to the machine (Figure 41). **Use extreme caution** near high voltage wires.

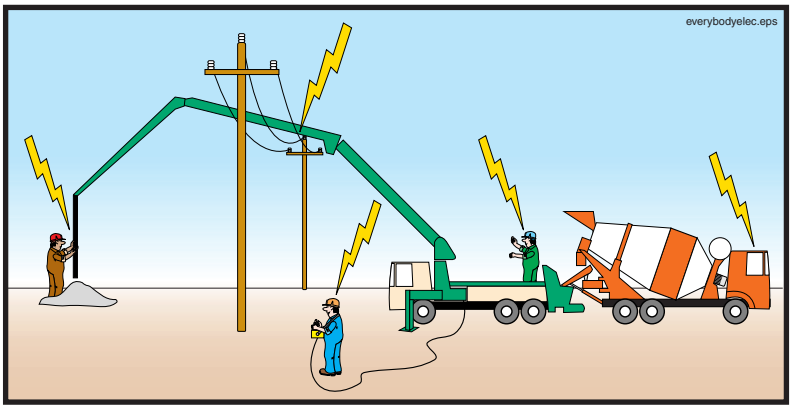


Figure 41
If the pump is energized, everything that touches the pump is also energized

8.11 **DANGER** Do not rely on depth perception when working near high voltage lines. Put yourself at the best possible vantage point to see the distance between the boom and the wires. If that is not possible, then **you must use a spotter!** (See Figure 42.) See the definition of "spotter" in the glossary found in the appendix of this manual.

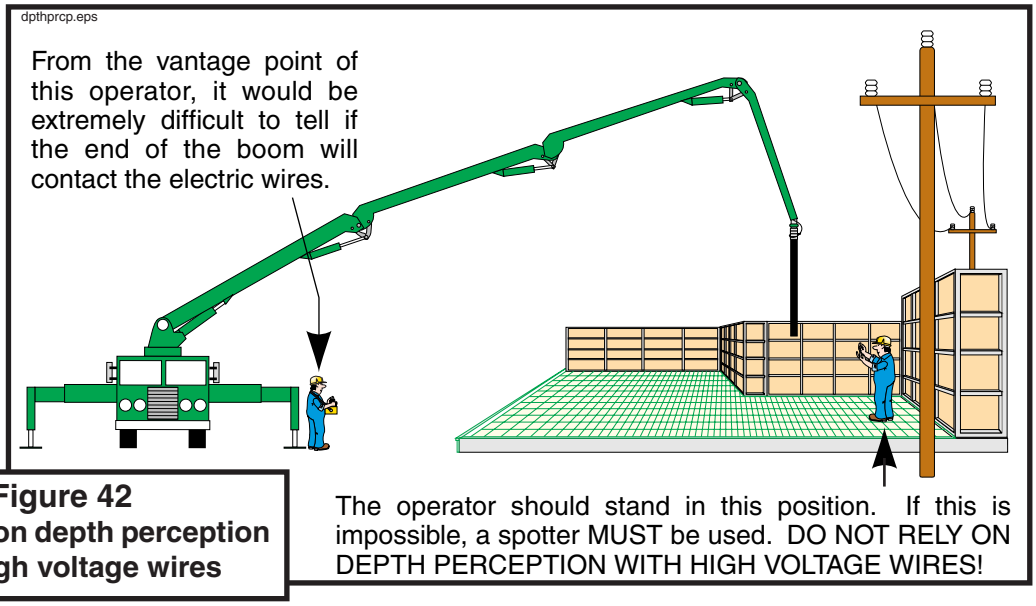
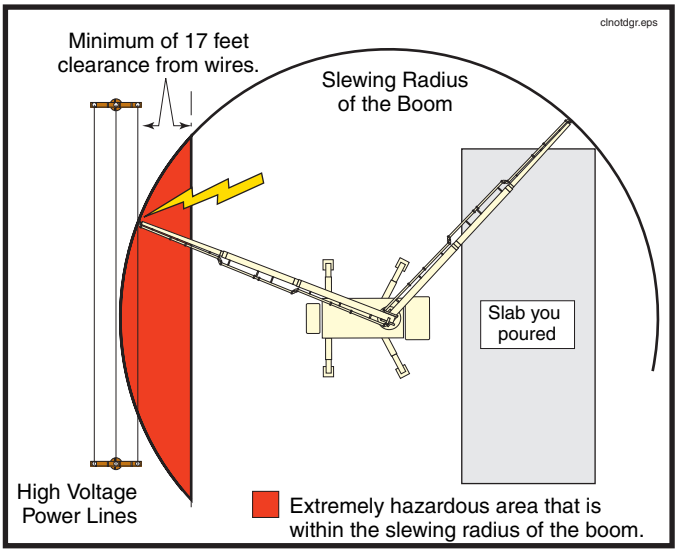


Figure 42
Never rely on depth perception with high voltage wires

8.12 **⚠ DANGER** Watch for wires that are not directly in the area of the pour. Accidents can happen when moving between points of placement, or when moving the boom after the pour is completed (Figure 43). **Never let down your guard when the boom is in the air!**



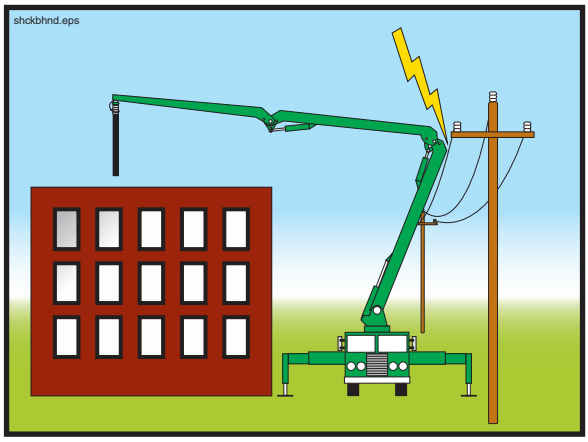


Figure 43
Never let down your guard when moving the boom

8.13 **⚠ DANGER** **High voltage makes conductors out of materials that would normally not conduct**! Many nonconductors will conduct enough current to kill you if you contact the 8000 volts to ground that is normally found on power poles in the United States (Figure 44). Voltage in the wires may be higher than 8000, especially in industrial areas.

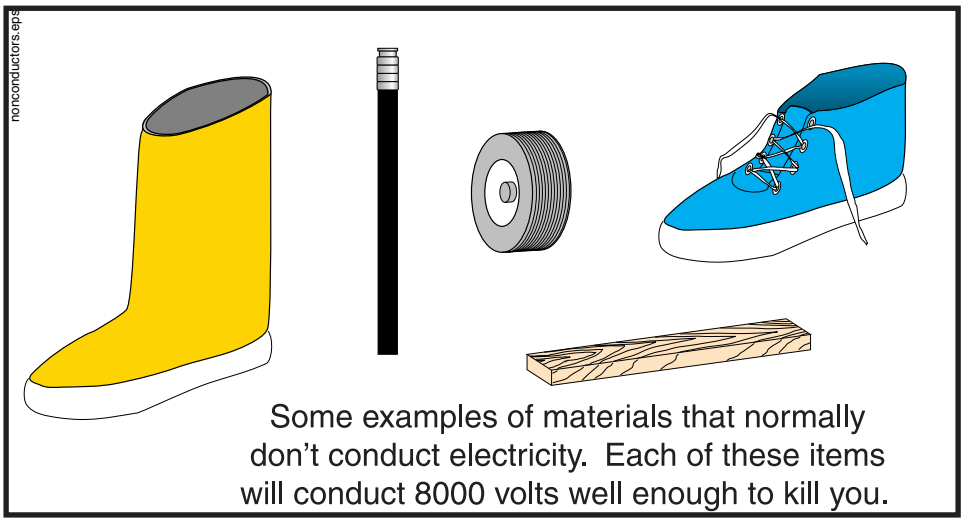


Figure 44
Even poor conductors will conduct high voltage

8.14 **⚠CAUTION** **Loss of hearing!** While standing near a working concrete pump, sound pressure levels may exceed O.S.H.A. standards for constant exposure (Figure 45).

PERMISSIBLE NOISE EXPOSURES*

*Under part 1910.95 "Occupational Noise Exposure," (Dept. of Labor) of the Code of Federal Regulations, Chap. XVII of Title 29 (39 F.R. 7006).

DURATION per DAY in HOURS	Sound level in dB (A) Slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or LESS	115

††

WEAR HEARING PROTECTION!

Figure 45
Noise level and exposure time limits

8.15 **⚠WARNING** Do not allow unauthorized persons in the operational area of the pump and boom. Warn unauthorized persons present in the area to leave and stop work if they do not comply.

8.16 **⚠WARNING** Do not use the boom as a hoist or crane! (Figure 46.)

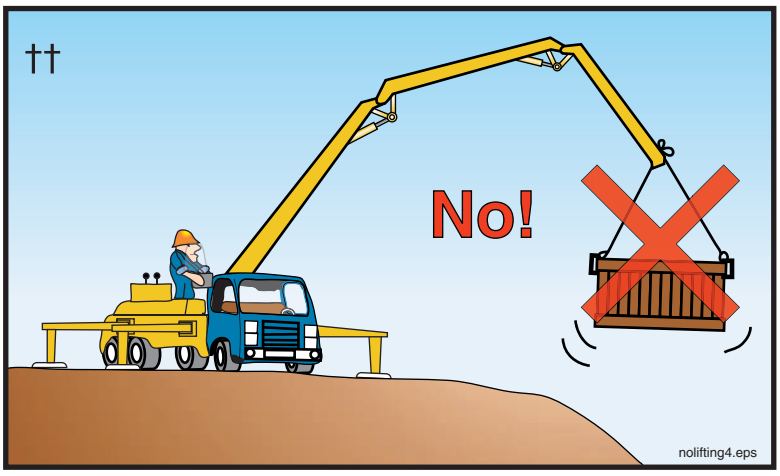


Figure 46
No lifting with the boom

8.17 **⚠WARNING** **Explosion hazard.** Never remove the fuel cap or refuel the unit near hot surfaces, sparks, or open flames. Never smoke while refueling.

8.18

⚠WARNING **Do not let the concrete level in the hopper become low!** If air is sucked into the material cylinders, the pump will compress the air. Compressed air always poses a hazard as it is expelled from the hopper or the delivery pipeline (Figure 47). If air is taken into the material cylinders, take the following steps to minimize the hazard:

1. Stop the pump immediately. Hit the emergency stop button if that is the quickest way to stop the pump. There will be an expulsion of compressed air the next time the concrete valve shifts, which can be safely absorbed by filling the hopper with concrete.
2. Pump slowly in reverse for a couple of strokes. This will not remove all the air, but it should minimize the amount left in the pipeline.
3. Persons standing at the discharge end or near the delivery line must be warned to move away until all of the air has been purged. Personnel should move a prudent and reasonable distance beyond the end-hose movement area or the point of discharge, and personal protective equipment (PPE) should be worn (Figure 47).
4. When the pump is restarted, the slowest possible speed should be used until **all** air is removed from the pipeline. Don't assume that the first little air bubble is the end of the compressed air.
5. Do not allow anyone near the discharge until concrete runs steadily from the end and there is no movement of the delivery system.

If workers are positioned in high or precarious places, warn them to expect a loud sound as the air escapes the pipeline. (Warn them even if they are well away from the discharge.) That way, we can prevent the worker from falling as a result of being startled by the noise.

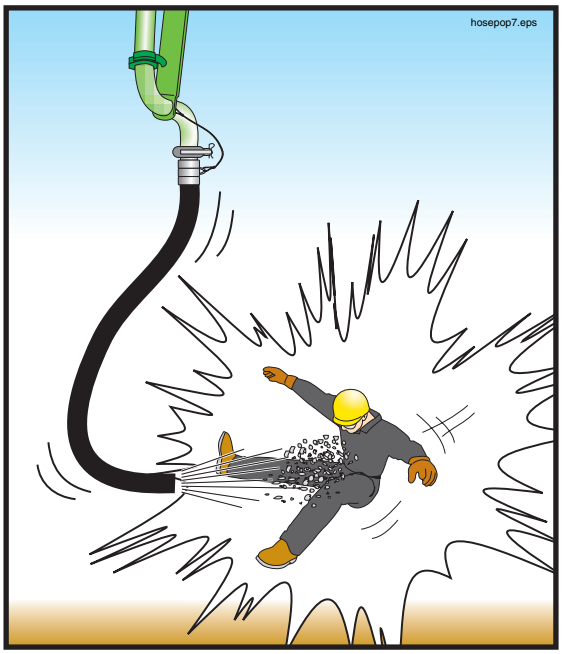


Figure 47
Remove everyone from the discharge area whenever air is in the line

8.19 **⚠WARNING** When initially priming the delivery system, when restarting after moving, when restarting after adding or removing hoses, when attempting to remove a blockage by "rocking" the concrete, or whenever air has been introduced into the line, warn everyone to stay away from the discharge until material runs steadily. Personnel should move a prudent and reasonable distance beyond the end-hose movement area or the point of discharge, and personal protective equipment (PPE) should be worn (Figure 47).

8.20 **⚠WARNING** A bulk density of approximately 150 pounds per cubic foot is assumed for the material to be pumped with a placing boom (normal concrete). If you intend to pump material with a higher bulk density (e.g., steel fiber entrained concrete), you must contact the manufacturer for advice. Failure to do so may result in damage to the boom and/or instability in certain operating positions.

8.21 **⚠WARNING** **Blockages in the pump or delivery pipeline can create an unsafe condition.** Blockages are caused by many different factors, as outlined below.

CAUSES OF BLOCKAGES

- **Faulty concrete mix design.** The concrete that is being supplied may not be a pumpable mix, for example there may be too much sand or too little cement. There may be bleeding or segregation. Some admixtures adversely affect pumpability (e.g., too much air entrainment). If the mix is not pumpable, no amount of operator expertise will make it so.
- **The line size may be inadequate.** The line size should always be at least 4 times larger than the largest aggregate being pumped, or blockages could occur.
- **Worn concrete valve parts.** Worn parts allow the finest material and water to escape back into the hopper when pressure is applied.
- **Pipeline and joint deficiencies.** This would include dirty pipes (pipes that have not been cleaned properly), worn and leaking pipe joints that allow loss of concrete fines and water, pipes that haven't been properly primed before starting, and too many sections of rubber hose, which increases friction. These are all causes of blockages that can be controlled by the operator.
- **Pump inadequate for the application.** The pump selected for the job may not have enough pressure or horsepower available for the required duty.
- **Concrete setting up in the pipeline.** This may be caused by delays on site (e.g., repairing a broken form), or by attempting to pump "old" concrete (concrete that was batched hours before pumping and is being kept alive only by adding water and constant agitation). Weather conditions can also affect how quickly the concrete becomes hard. Companies should establish procedures for these situations. A good rule of thumb is: **If in doubt...wash out**.
- **Foreign matter in the concrete.** Pieces of old concrete that break away from mixer fins, unmixed clumps of cement, mixer fins, hammers, and furry mammals are examples of foreign matter that have caused blockages.
- **An inexperienced operator can cause blockages by setting up the job improperly.** For example, if the placing crew is forced to add hose or pipe to reach a far point after the pour is already in progress, there is a great chance of creating a blockage due to the dry conditions inside the pipe or hose. It is for this reason that the job should be set up so pipe or hose need only be removed (never

added) as the day progresses. If dry pipe or hose must be added, it must be lubricated just like the rest of the pipe was lubricated when you first started.

- **An inexperienced placing crew can cause blockages by kinking the end hose.** This type of blockage can lead to serious accidents because the hose may un-kink by the force of the pump.
- **The concrete becomes segregated in the hopper.** When it's raining hard, the cement and fine material get washed from the stone and course sand. This mix will not pump. **Cover the hopper** as you wait out the passing storm. It is also for this reason that you should **never allow a truck mixer to wash out in your hopper!**

8.22 **⚠WARNING** Never try to remove a pipeline blockage by applying high pressure to it, because that will cause the blockage to become a plug. If you have a blockage, immediately stop the pump. Stroke the pump a couple of times in reverse. Slowly stroke the pump in forward, and try to dislodge the blockage. If you are moving the blockage, continue to do so slowly and gently. While attempting to clear the blockage, remove all personnel from the discharge area, as air may be introduced into the placing line during this process.

8.23 **⚠WARNING** If the pump or associated equipment develops a problem that creates an unsafe condition, you must stop pumping immediately! Do not restart until the unsafe condition has been remedied.

8.24 **⚠WARNING** The following points must be observed when locating a blockage.

- Pump in **reverse** for **at least two stroke**s, then stop the pump. **Do not allow anyone to open the pipeline** until this is done (Figure 48).
- Wear personal protective equipment when opening a blocked pipeline.
- Clear the area of nonessential personnel before opening the line.
- Plugs will be found in (in the order of likelihood) reducers, hoses, elbows, and pipe.
- If you are tapping the pipe to find the plug, the sound will be a dull thud (tik-tik) rather than a ringing sound (tong-tong) at the spot of the plug, because the jammed material will keep the pipeline from vibrating. (This method won't find a plug in a hose.)

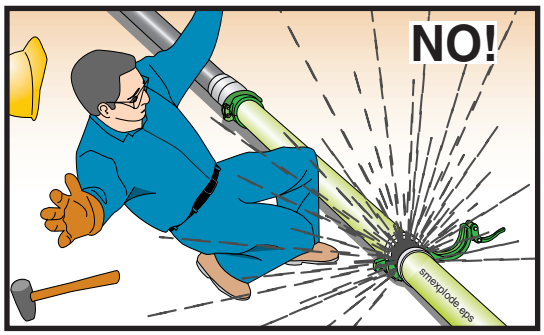


Figure 48
Never open a pressurized pipeline

8.25 **⚠WARNING** It is possible that some pressure will remain in the pipeline after reversing the pump. Use a shovel or pry bar to open the clamps on a blocked pipeline. Wear face protection, and turn away from the pipeline when opening the clamp.

8.26 **⚠WARNING** It would be better to let the pipe be ruined by setting concrete than to risk injury by ignoring safe procedures. Always use safe practices when cleaning pipe. Remember, pipeline is replaceable, you are not.

8.27 **⚠WARNING** **Do not kink hoses**. Kinking will cause the pump to create maximum concrete pressure. **The pump may unkink the hose with force!** (See Figure 49.)

Figure 49
Kinking the hose creates a hazard

8.28 **⚠WARNING** Never use compressed air to clear a blockage! It is unsafe and unnecessary. The pump can develop much more pressure than an air compressor. If the pump pressure can't move it, air pressure won't either.

8.29 **⚠WARNING** Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized. Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it (Figure 50).

Figure 50
Never straddle or sit on a pressurized pipeline

8.30 **⚠WARNING** Crushing/amputation hazard. Do not remove the water box covers or grates when the machine is stroking (Figure 51). If you must remove the water box cover (to add water, for example), and there is not a bolt-down grate over the water box, then stop the pump, take the transmission out of gear, and lock the cab so the pump cannot be restarted until you are finished and the covers are back in place. If a bolt-down grate is installed, you may simply stop the pump from stroking before removing the water box covers. Replace the covers before restarting the pump.

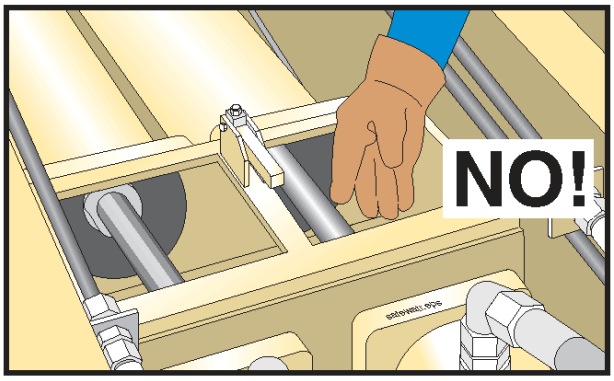


Figure 51
Keep your body out of the waterbox

8.31 **⚠WARNING** **Never leave the pump unattended!** Before you leave a laborer, ready mix driver, or any other worker alone with the pump for any reason, make sure the worker who you leave with the pump knows:

- the safety rules for a person stationed at the pump (the rules are listed in this Safety Manual, beginning on page 57)
- how to stop the pump
- the location of the emergency stop switches
- how to signal you.

8.32 **⚠WARNING** To prevent any unintentional movements of the machine, **all** control devices on the operator's panel and the remote control box must be switched off before changing from remote control to local control, or vice-versa. Whenever you are connecting or disconnecting the remote cable, push in the emergency stop button.

8.33 **⚠WARNING** Crushing/amputation hazard. Never put your hands, feet, or any other body part into the water box, concrete valve, or hopper when the hydraulic system is operational or ready to operate! (See Figure 52.)

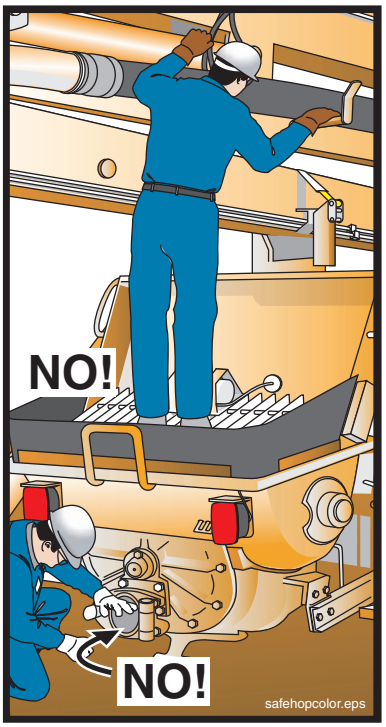


Figure 52
Don't put your body in the machine

8.34 **⚠WARNING** Do not work on the hopper, water box, concrete valve, or the hydraulic system unless the drive engine is turned off and the accumulator pressure (if so equipped) has been released! On units with internal combustion engines, the key must be removed. If there is more than one key, you should tag the ignition. On units driven by electric motors, the main disconnect must be locked out according to applicable standards.

8.35 **⚠WARNING** Never operate the boom "blind." If you can't see the point of placement, you must establish a system of communications with the workmen who can see the point of placement. Arrange for radio communications, a system of visual or auditory signals (lights or bells), or a spotter. If a spotter is used, **agree on hand signals before beginning the pour!** (Use of the ACPA standardized hand signals is highly recommended.) If the boom will be moved extensively, arrange for a workman to stay with the pump and put yourself in a position to see the end of the boom (Figure 53).

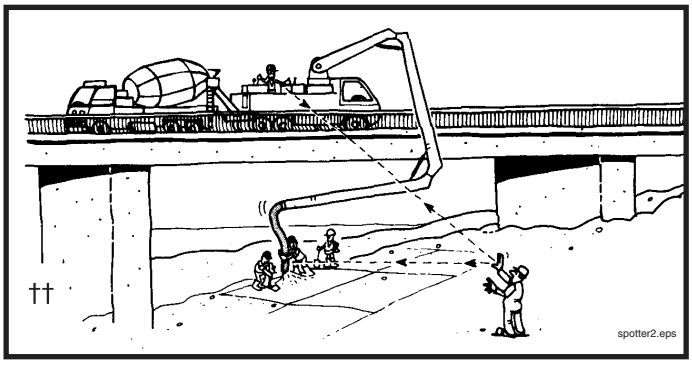


Figure 53
Never pump blind

8.36

⚠WARNING Always block the discharge end when you must swing a full boom over workers or property. You must stop concrete from falling out of the boom. This can be done with a shut-off valve, or by removing the hose and putting a blanking plug on the last elbow (Figure 54), or by kinking the end hose and securing it in the kinked position. Please note— hoses that can be easily kinked may not be strong enough to withstand the pressure of the pump. Verify the working pressure of the hose against the maximum pressure of the pump before using this type of hose.

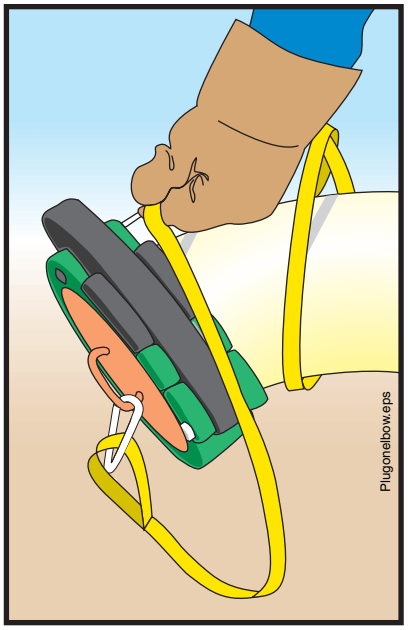


Figure 54
A blanking plug in place on a tip elbow with safety sling

IV. Cleaning The Pump And System

9. Safety Rules For Cleaning The Boom

9.1 **⚠WARNING** Do not let down your guard when the pour is completed. Accidents also happen during cleanout and the drive back to the yard. It is important not to become relaxed about job safety until you are no longer on the job.

9.2 **⚠WARNING** Watch for electric wires when moving the boom for cleanout or folding the boom for transport!

9.3 **⚠WARNING** Using compressed air to clean the boom delivery system should only be done when no other method is practical or as recommended by the manufacturer.

9.4 **⚠WARNING** If you have to use compressed air for cleaning the boom you **must** have all of the necessary accessories. Read and understand the complete safety rules regarding cleaning out with compressed air (point 12.4 on page 47 of this Safety Manual). Cleaning with compressed air should only be done by a qualified person.

9.5 **⚠WARNING** **Never** use compressed air to blow through rubber hoses or short sections of pipe. In the case of rubber hoses, their flexibility will allow them to "whip" wildly with the force of the air and moving concrete. Short sections of pipe will not have sufficient mass to allow the concrete to move slowly, so there will be rapid expulsion of the material.

9.6 **⚠WARNING** If the ball or go devil doesn't come out of the delivery system after applying compressed air, **you must relieve the pipe of air pressure before opening it.** If the bleed off valve plugs when you are draining the air, the only safe way to proceed is to drill small holes into the pipeline, which will then allow the air to escape. Wear a full face shield when drilling the holes. Pipe you have drilled into is ruined and must be replaced. Drill the holes to relieve the air pressure even if the concrete has set up in the pipe. The pipe is hazardous until the pressure is relieved.

9.7 **⚠WARNING** Exercise care when "tapping" on the pipeline to find the location of the cleanout ball. Applying too much force will dent a standard pipe (making it weak and unsafe) and could break the carbide insert of double wall pipe.

9.8 **⚠WARNING** It is better to let the pipe be ruined by setting concrete than to risk injury by ignoring safe procedures. Remember, pipeline is replaceable, you are not.

10. Safety Rules For Cleaning The Concrete Valve & Hopper

10.1 **⚠WARNING** Tipping hazard! Before moving the unit for cleaning, **fold the boom and secure the outriggers into the travel position.**

10.2 **⚠WARNING** Wear protective clothing and equipment when cleaning the concrete pump. Protect against concrete burns and concrete poisoning by wearing rubber boots and gloves during cleanout or any other time that you will be **in** contact with the concrete.

10.3 **⚠WARNING** Crushing and amputation hazard! **Never put your hands or any other body part into the concrete valve.** Instead, use water jets and the supplied rake (Figure 55).

10.4 **⚠WARNING** **Never put your hands or any other body part into the machine when the hydraulic system is operational.** If you must remove the grate to chip at hardened concrete, you must first disable the system by taking the transmission out of gear and locking the cab door, or stopping the engine, relieving pressure in the accumulator circuit (if so equipped) and securing the controls against unintended operation. Reinstall the grate before restarting the engine (Figure 55).

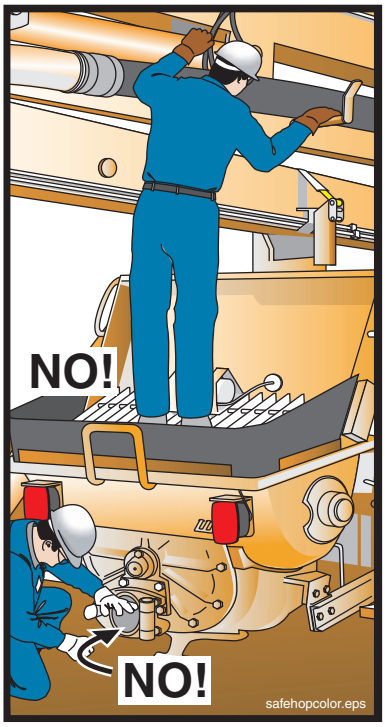


Figure 55
Keep your body parts out of the machine

11. Safety Rules For Cleaning The Water Box

11.1 **⚠WARNING** Crushing and amputation hazard! Stop the concrete pump before removing the water box covers. If your unit has bolt down guards, do not remove them for cleaning. If there is not a bolt-down guard over the water box, then stop the pump, take the transmission out of gear, and lock the cab so the pump cannot be restarted until you are finished cleaning and the covers are back in place. If a bolt-down grate is installed, you may simply stop the pump from stroking before removing the water box covers. Replace the covers before restarting the pump.

11.2 **⚠WARNING** If possible, position the folded boom in a slightly raised position when cleaning the water box (watch for wires when raising the boom). The outriggers must be extended and jacked. If the boom is raised, it will be unnecessary to bend over the water box for cleaning.

11.3 **⚠WARNING** Falling hazard! Be sure of your footing when cleaning the water box.

11.4 **⚠WARNING** Crushing and amputation hazard! Do not remove the water box guards for cleaning. Clean the water box with water jets only. **Do not put your hands or any other body part into the water box for cleaning, or at any other time when the machine is running or ready to start.**

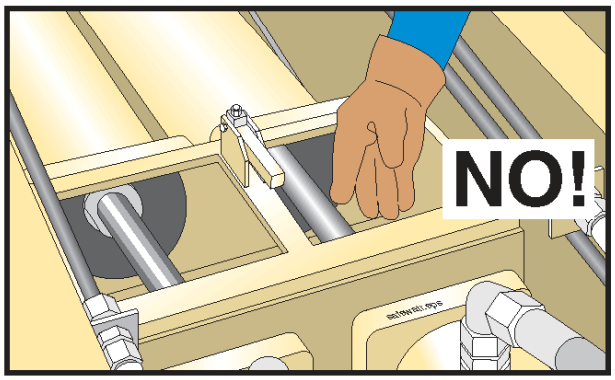


Figure 56
Keep your hands out of the waterbox

12. Safety Rules For Cleaning A Separately Laid Pipeline

12.1 **⚠WARNING** Flying particle hazard! Clear the discharge area of personnel and equipment before forcing a ball or go devil through the pipeline, even if you are cleaning with water. Some air will be trapped in the pipeline, and the trapped air will become compressed before discharge.

12.2 **⚠WARNING** Short pipelines and single pipe sections should be cleaned by removing the clamps and dumping the pipe sections. Remember to lift with your legs, not with your back.

12.3 **⚠WARNING** The point of discharge must be controlled. Use a ball catcher or some other containment device at the point of discharge, even when cleaning with water.

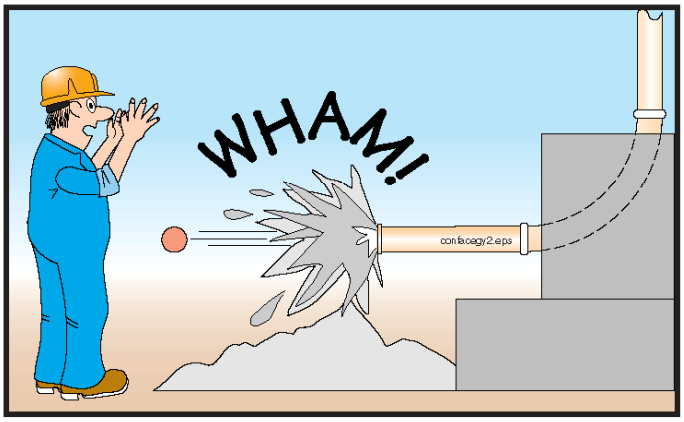


Figure 57
Cleaning with compressed air can be extremely hazardous if you don't follow the safety rules

12.4 **⚠WARNING Blowing out with compressed air creates potential hazards! Serious injury or death could result** if you do not adhere to these safety points.

- **Blowing out must be performed under the supervision of a qualified person.** (See the glossary for the definition of *qualified person*.)
- **Blowing out requires two people!** One trained person must be at the inlet end to operate the air insertion, and the other trained person must be near (but safely back from) the discharge point to monitor the discharge and to make sure that no one enters the hazard area.
- **No pipe bends or flexible delivery hoses may be connected to the end of the pipeline during the blowing out process,** unless there is a pre-planned cleanout station erected to route the discharge into the ready mix truck.
- **The point of discharge must be controlled. Clear the discharge area of personnel and equipment** before beginning the blowing out process. Do not allow anyone to enter the area during the blow out process. If a ball catcher is used, be aware of which type you have, and adjust your procedure accordingly. Ball catcher types are described in paragraph 7.23 on page 31.
- **The concrete outlet must be positioned high enough to permit easy discharge of the material**.
- If you are going to divert the discharge into a discharge pipe system, **you must lubricate the discharge line with slurry, or a plug could occur.**
- **The pipe cleaning blow out head must be equipped with a properly sized air discharge regulator valve and a separate water/air inlet.** The two openings should be spaced apart far enough that a blowout ball could not cover both openings at once (Figure 58).

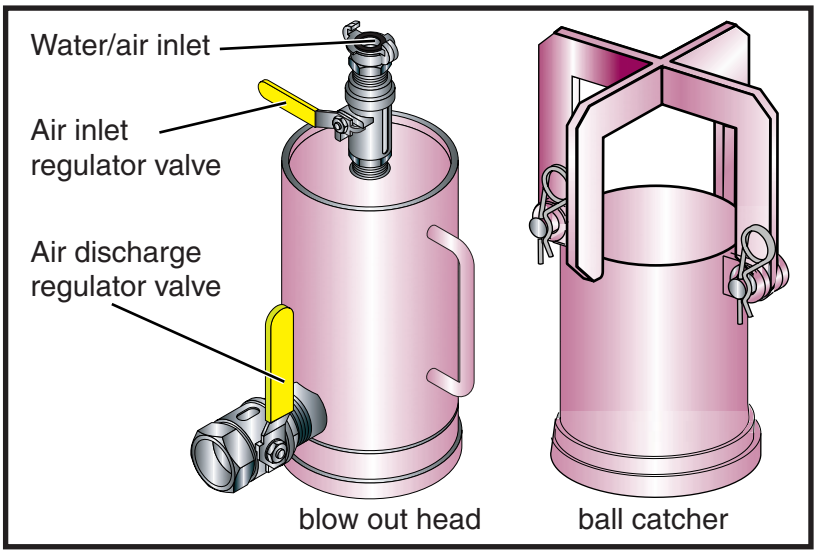


Figure 58
Ball catcher and blow out head

- The plug or go devil must be thick enough to prevent compressed air flow around the plug into the concrete.

- **The pipeline must not be disassembled until it has been completely relieved of air.** Be **sure** of this! (See Figure 59.)

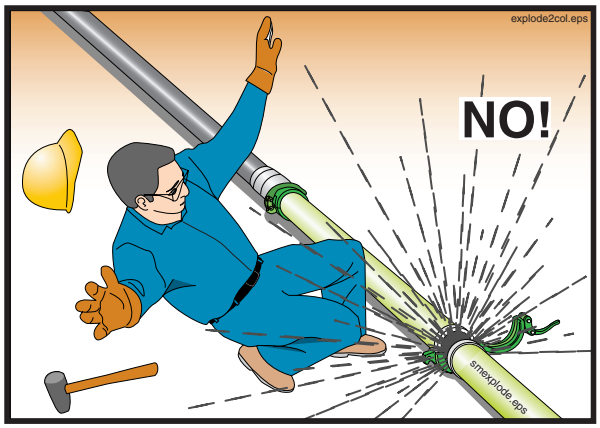


Figure 59
Never open a pressurized pipeline

- **Do not use compressed air to blow out concrete delivery hose, single pipe sections and short pipelines up to a length of 40 feet.** Hoses will jump and move unpredictably; short pipelines don't have enough concrete to resist the force of the air, causing it to discharge too quickly, like a cannon (Figure 60).

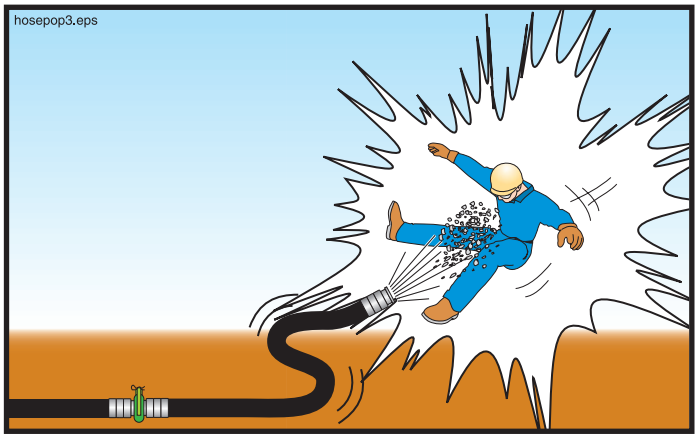


Figure 60
Never use air to blow out hoses or short pipelines

- **When air pressure begins to drop rapidly, shut off the air supply from the compressor, and immediately begin bleeding air out of the pipeline.** (The drop in pressure signifies that the pipeline is almost empty of concrete.)

12.5 **⚠WARNING** When blowing out a vertical line, a shutoff valve is required to prevent the following scenario.

1. (See diagram A in Figure 61.) Without a shutoff valve installed, the pipeline is disconnected from the pump. Immediately, the concrete drains out of the vertical sections of pipe, leaving concrete in both horizontal sections, and air trapped in between.

2. (See diagram B in Figure 61.) The ball is inserted, and pushed with compressed air. This also compresses the air that is trapped in the vertical sections of pipe. The trapped air will be violently expelled when it reaches the end of the pipe, but the pipe will not yet be empty.

A shutoff valve installed at the bottom of the vertical run will prevent this hazardous situation. The shutoff valve must be capable of handling the maximum concrete pressure of the pump and, of course, must be installed before the pour begins. Several different styles are available, ranging from a manually operated flat gate that is put into place with a hammer to fully hydraulic types that will also divert the concrete to a different pipeline. With a shutoff valve installed, you can proceed as indicated below.

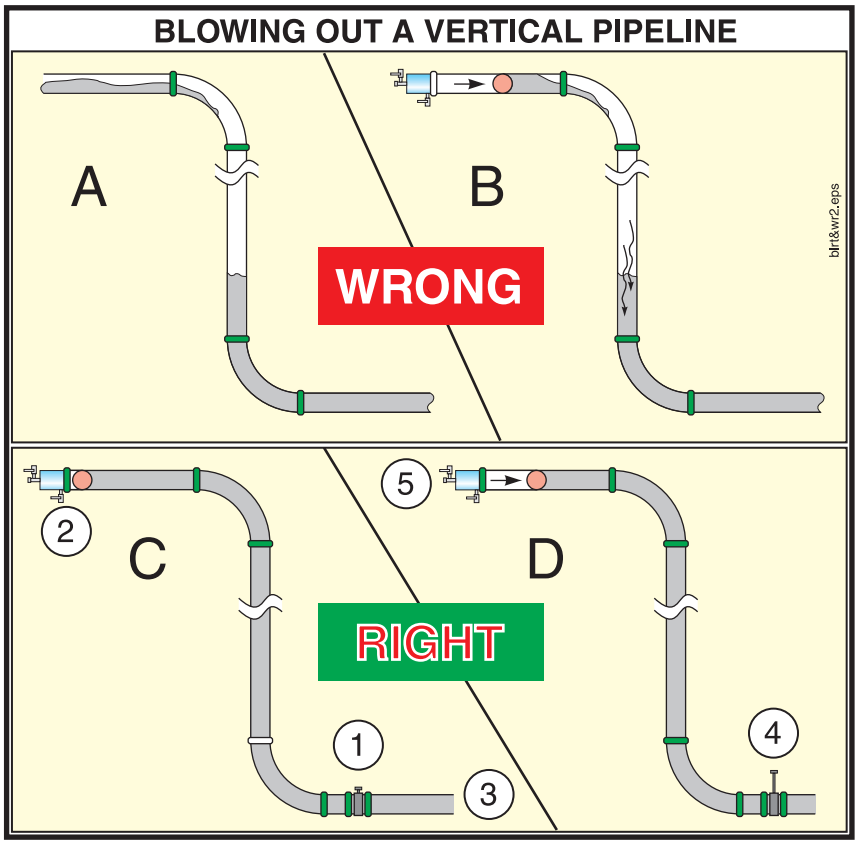


Figure 61
Blowout of a vertical line

12.6 **⚠WARNING** **Blowing out vertical sections of pipe** (for example on a high rise building) **requires additional safety precautions.**

1. **Know where the discharge area for blowing out will be before the pour begins**. Ready the area and accessories before the pour begins so you will not waste time when pumping is completed.
2. **Blowing out with compressed air requires two qualified persons.**

3. **The persons at both ends of the pipeline must be able to communicate without delays**, which means you must establish communications (for example, with a radio).
4. **When pumping is complete, close the shutoff valve before disconnecting the pipeline from the pump** (item 1, Figure 61). Failure to do this will cause the concrete to fall out of the vertical sections of pipe, leaving concrete in the horizontal sections of pipe and an air pocket in the vertical sections. This does not apply if you are using a switching (diversion) valve.
5. Install the ball(s) in the pipeline, secure the blow out head and hook up the air compressor. **Do not apply the air yet!** (Item 2, Figure 61.)
6. If you will be diverting the discharge to a cleanout area, lubricate the discharge line with slurry, or a plug could occur.
7. **Position the ready mix truck at the cleanout standpipe**, or install the ball catcher or other containment device at the end of the discharge line. (Item 3, Figure 61.)
8. **Clear the discharge area of personnel.** You must allow no one to enter the discharge area until the pipeline is depressurized.
9. **Divert the vertical pipe line to the clean out area, or open the shutoff valve in the delivery pipe line now.** Allow gravity to start the concrete moving through the discharge line. As the concrete falls from the vertical sections, it will take the ball with it, making it impossible to trap air in the line. (Item 4, Figure 61.)
10. **Apply the compressed air to the pipeline.** Close communications must be maintained at this time. Add only enough air to keep the concrete moving. Do not allow the concrete to accelerate. (Item 5, Figure 61.)
11. **When concrete starts to accelerate, shut-off the air supply from the compressor, and open the air regulator to bleed air from the line.** Rapidly accelerating concrete indicates that the pipeline is almost empty. After the ball has been expelled from the pipeline, leave the air regulator open to be sure that all air is removed from the system.
12. All the rules for blowing out found in point 12.4 on page 47 also apply to blowing out a vertical pipe line. These rules are in addition to the general "cleaning a pipeline with compressed air" rules.

12.7 **⚠WARNING** **Never use compressed air to attempt to clear a blockage!** It is unsafe and unnecessary. If the pump pressure can't move it, air pressure won't either.

V. Maintenance Of The Machinery

13. Safety Rules Regarding Inspection

13.1 **⚠WARNING** It is imperative that your boom, outriggers, and other structural members be inspected by a certified boom inspector on a regular basis. The results should be documented carefully and a record kept. Consult the manufacturers recommendations for the proper interval for your machine.

13.2 **⚠WARNING** Visually inspect your unit each day before it is put into operation. If any problem is found that will affect the safe operation of the pump, don't use the pump until it is repaired!

13.3 **⚠WARNING** Any structural problem found on the placing boom, outriggers, or tower section of the unit should be reported to the manufacturer so that proper repair procedures can be designed and implemented. You do not need to report any structural problem that has been previously reported and for which a repair procedure has already been designed and implemented.

13.4 **⚠WARNING** If safety decals are faded, missing, damaged, or otherwise unreadable, they must be replaced immediately. Contact the manufacturer of your unit to obtain replacements.

13.5 **⚠WARNING** If safety devices or guards are removed for inspection purposes, they must be replaced before someone uses the machine.

13.6 **⚠WARNING** Pay attention to the *Operation Manual* and manufacturer's service bulletins regarding maintenance and inspection procedures and intervals.

13.7 **⚠WARNING** If inspection reveals something that looks wrong, or even suspicious, report it to the manufacturer for consideration. Don't just assume that it's OK.

13.8 **⚠WARNING** Inspect the tip hose safety cable and mounting hardware on a regular basis. Replace it if it becomes old, frayed, or rusted.

13.9 **⚠WARNING** Inspect the boom tie down and boom rest assemblies regularly (if your unit is so equipped). The boom must not be allowed to bounce during travel.

13.10 **⚠WARNING** Visual inspection of the concrete pump circuits and safety devices should be done daily. Hands on inspection and documentation of results should be done weekly, or at least when preventive maintenance is scheduled.

13.11 **⚠WARNING** Do not neglect the delivery pipeline, clamps, or hoses. Check them often for wear, dents, and frays. Never send a unit to a job with a worn or damaged delivery system. Ultrasonic thickness testers are more accurate than the tap method.

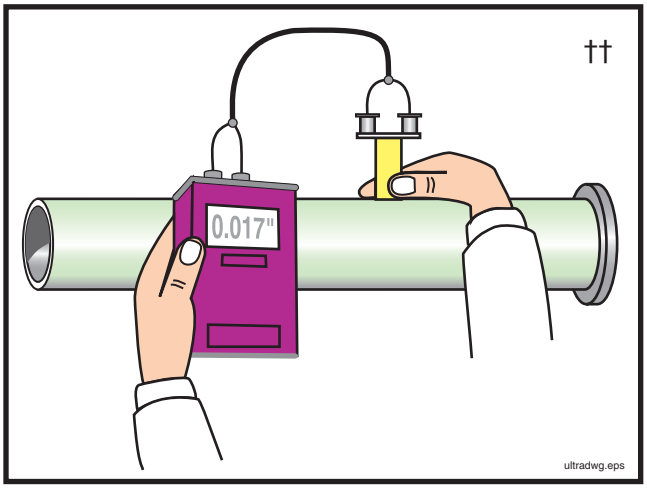


Figure 62
Check delivery system wall thickness with an ultrasonic thickness tester

14. Safety Rules Regarding Scheduled Maintenance

14.1 **⚠WARNING** Proper and timely maintenance is important to the safe operation of a concrete pump and placing boom. The proper procedures are outlined in the operation manual supplied with the pump. Do not put it off. Do not treat it lightly. Do not "fudge" results. The lives of the operator, oiler, and workers on the job are depending on it.

14.2 **⚠WARNING** Keep the machine clean! Oil spills, grease, loose tools, and displaced accessories are hazards.

14.3 **⚠WARNING** Pins should be used on all delivery system clamps. Clamps that will hang over workers, and clamps used on system that will be dragged shall be pinned (Figure 63).

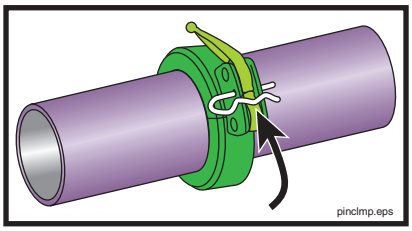


Figure 63
Pin the clamps

14.4 **⚠WARNING** Be sure that you are installing the correct clamps for the types of pipe ends used. Never try to mate dissimilar pipe ends unless using a clamp specifically made for this purpose. See the comparison regarding weld-on ends on page 72 in the appendix of this manual.

14.5 **⚠WARNING** When installing new pipe and/or hose on the machine be sure that it is capable of handling the maximum concrete pressure of the pump.

14.6 **⚠WARNING** Remember that boom pipe cannot weigh more than 10.14 pounds per foot, when empty. Certain models and brands may have different requirements. Check the operation manual for your machine.

14.7 **⚠WARNING** If safety devices or guards are removed for servicing, they must be replaced before the machine is put back in service.

14.8 **⚠WARNING** Do not change the maximum relief valve setting on any hydraulic circuit without permission from the manufacturer. **Never** change an accumulator circuit pressure setting without specific instructions from the manufacturer.

14.9 **⚠WARNING** Never make unauthorized modifications to structural members or pressure circuits.

14.10 **⚠WARNING** You must **replace, not repair** damaged hydraulic or concrete hoses or pipes.

14.11 **⚠WARNING** Never try to repair a machine using worn, damaged, or defective components.

14.12 **⚠WARNING** Welding on the boom, outriggers, tower, or any other structural member may be done **only** by a welder certified to A.W.S. D1.1 (Sections 3, 5 and paragraph 9.25 of Section 9). All structural welding must be done to the manufacturer's specifications.

14.13 **CAUTION** **Never allow welding current to travel through bearings or hydraulic cylinders**. Keep the ground cable on the component that is being welded.

14.14 **CAUTION** **Electronic components can be destroyed by welding current**. Before welding on the unit, you must disconnect the battery cables, and unplug all radio remote control power wires. If you have a proportional boom system, the proportional amplifiers must be removed from the mother board before welding. If in doubt, contact the service department of the manufacturer for instructions **before** proceeding.

15. Safety Rules When Servicing The Machinery

15.1 **⚠WARNING** **Repairs should be carried out by qualified workshop personnel** (See the glossary for the definition of *qualified personnel*.)

15.2 **⚠WARNING** **Read and understand the maintenance procedures in the *Operation Manual* of the machine before attempting any repairs.** If in doubt, call the manufacturer. Incorrectly done repairs affect the safe use of the machine.

15.3 **⚠WARNING** Burn hazard! **Never work on a hot hydraulic system.**

15.4 **⚠WARNING** **If it is necessary to unfold the placing boom to do maintenance work, the outriggers must be extended and jacked, just as if the machine were on a job site**. If you are not an operator, have the operator set up the machine for you. The need to repair the machine does not qualify you to operate the machine.

15.5 **⚠WARNING** Electrocution hazard! **If it is necessary to unfold the placing boom to do maintenance work, you must watch for overhead power lines.** You must maintain a minimum of 17 ft. (5 meters) clearance between the power line and any part of the unit.

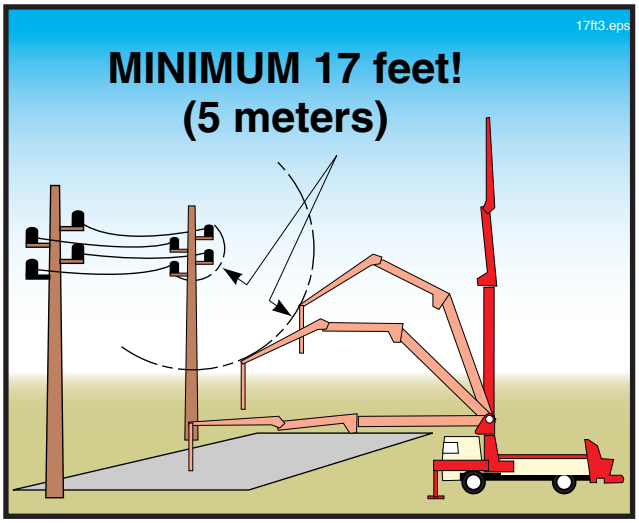


Figure 64
Watch for power lines if you must unfold the boom

15.6 **⚠WARNING** Falling hazard! If you cannot work at ground level, you must find and use a suitable work platform, a tie-off harness system, or otherwise secure yourself from falling.

15.7 **⚠WARNING** If maintenance work requires that you use a crane, hoist, fork truck, or similar machine, read and understand the safety regulations for that equipment. Remember, **the boom may not be used as a hoist or crane!**

15.8 **⚠WARNING** Crushing hazard! **Secure the placing boom and relieve all pressure before working on the boom hydraulic system.**

15.9 **⚠WARNING** **Only operators should operate the unit.** If work on the machine requires that it be operated and you are not qualified as an operator, you must get someone who is qualified to assist you.

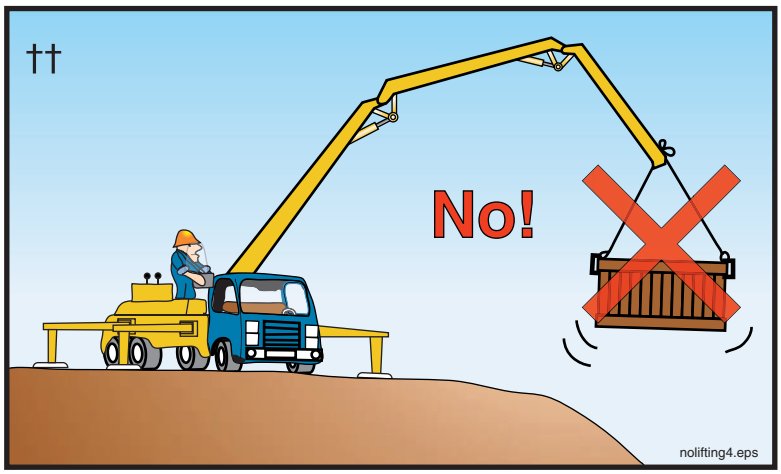


Figure 65
No lifting with the boom

15.10 **⚠WARNING** Electrocution hazard! **Repair work on high voltage electrical systems must be done by qualified electricians.** For this rule, high voltage means anything over 24 volts.

15.11 **⚠WARNING** Explosion hazard! **Be sure that you understand the potential danger of spring loaded or compressed gas components before you service them.** (Examples: nitrogen accumulators, gas springs for toolbox doors, tires, brake chambers.) If you don't know the dangers, call the manufacturer **before** beginning work!

15.12 **⚠WARNING** If you will be working in a hidden area inside the machine, lock it out as follows.

- With a gas or diesel engine, remove the ignition key and place a *Do Not Operate* sign on the controls. Carry the key with you.
- With an electrically driven pump, lock out the main breaker and tag the controls.

The above rules are one simple "Lock Out-Tag Out" procedure. There may be state or local regulations that require a more advanced or stringent Lock Out-Tag Out program. Be aware of the regulations in your area.

15.13 **⚠WARNING** **Never activate the system hydraulics without checking if another workman is in a hidden position.** Always yell "clear" before starting the engine or electric motor, and allow time for response.

15.14 **⚠WARNING** **Never work on a pressurized hydraulic system.** Stop the engine or electric motor and relieve the accumulator circuit (if so equipped) before you open the hydraulic system.

15.15 **⚠WARNING** **Never use gasoline or diesel fuel as a cleaning solvent**. This is critical to remember when cleaning hydraulic oil reservoirs, because gas and diesel fuels are highly explosive and **traces left in the oil may ignite when compressed!**

15.16 **⚠WARNING** Remember to mount and dismount the unit using the "3 Point Rule." One hand and two feet or two hands and one foot are to be in contact with a secure surface at all times (Figure 66).

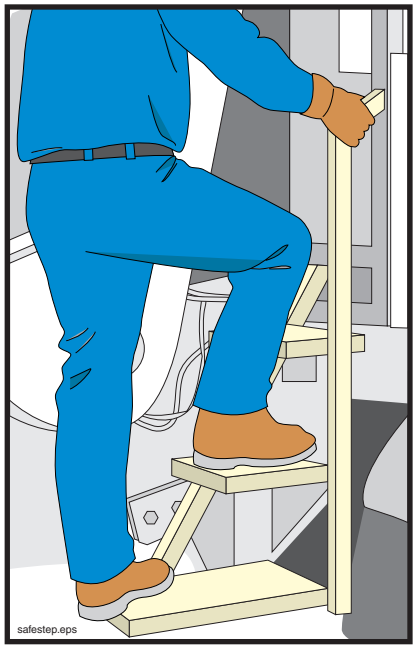


Figure 66
The 3 Point Rule

15.17 **⚠WARNING** **Inspect the repairs.** After modifications to structural members (boom, outriggers, tower, etc.) the repair must be inspected by qualified personnel before use.

15.18 **⚠WARNING** **Always use the correct tools for the job.** Tools should be kept clean and in good condition.

15.19 **⚠WARNING** If you see a co-worker engaging in an unsafe practice, warn him about the dangers. Safety is always in the hands of those on the job!

15.20 **⚠WARNING** After any repair is completed, test the function of the repaired part to be sure that repairs were done correctly.

VI. Co-worker Safety

16. Safety Rules For Workers Assigned To The Pump.

16.1 **⚠WARNING** **You must know how to stop the pump and boom.** Have the operator show you the locations of the emergency stop switches (Figure 67).

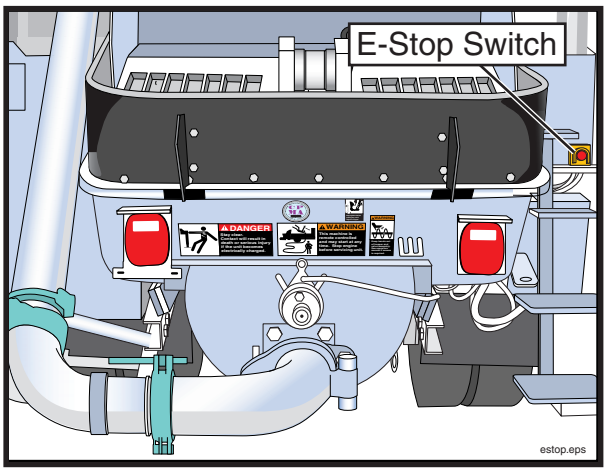


Figure 67
Know how to stop the unit in an emergency

16.2 **⚠WARNING** **You should wear the same personal protective equipment as the operator.** Goggles, hard hat, ear protection, and rubber gloves are especially important when working near the hopper (Figure 68).

* Breathing mask needed when cement dust (or other toxic dust) is present in the air.

Figure 68
Wear the same personal protective equipment as the operator

16.3 **⚠WARNING** **Electrocution hazard!** If the pump or boom becomes energized with high voltage and you are in contact with **any** part of it, you are at **risk of electrocution!** You should monitor the movement of the boom and **alert the operator if the boom comes within 17 feet of an electrical wire.** (See Figure 69.)

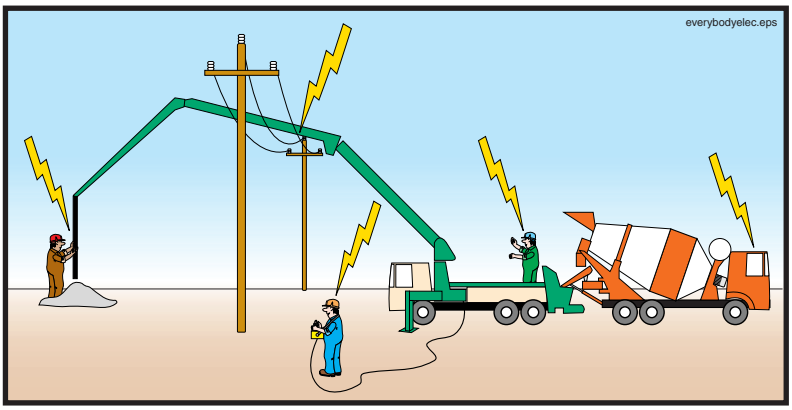


Figure 69
If the pump becomes energized, everything that touches the pump is also energized

16.4 **⚠WARNING** Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if the boom is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

16.5 **⚠WARNING** **Crushing hazard. Never, ever position yourself between the ready mix truck and the pump!** Stand to the side, where the driver can see you (Figure 70).

Figure 70
Never stand between the ready mix truck and the pump

16.6 **⚠WARNING** When backing in ready mix trucks, use clear and concise hand signals (Figure 71).

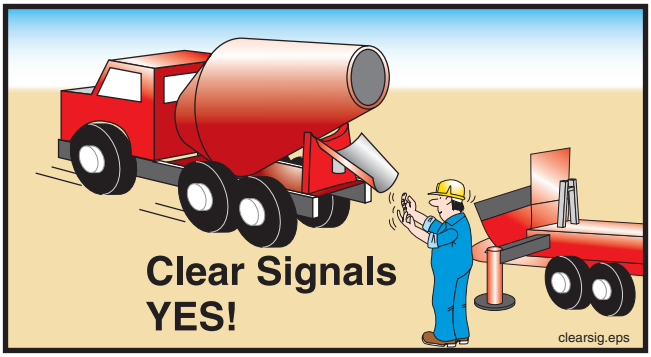


Figure 71
Use clear, concise hand signals

16.7 **⚠WARNING** Do not allow the ready mix driver to put concrete in the pump hopper until the pump operator gives him the OK. Filling the hopper early can cause the pump to plug.

16.8 **⚠WARNING** If you see foreign material that could create a blockage coming from the ready mix truck, alert the operator to stop the pump. Do not attempt to remove the material from the hopper or grate while the hydraulic system is ready to work. (See point 16.17 on page 62.) If necessary, depress the E-stop button to stop the pump and alert the operator.

16.9 **⚠WARNING** **Never allow the ready mix driver to clean out in the hopper,** because it can create a blockage. (Water will wash the cement and fine sand from the course aggregate causing segregation.)

16.10 **⚠WARNING** Do not operate the pump or boom unless you are also a trained operator and the regular operator has released the controls to you. **There must not be more than one operator at a time.** This does not apply to stopping the pump or boom if there is a need to do so.

16.11 **⚠WARNING** Do not let the concrete level in the hopper become low! If air is sucked into the material cylinders, the pump will compress the air. Compressed air always poses a hazard as it is expelled from the hopper or the delivery pipeline (Figure 72). If air is taken into the material cylinders, take the following steps to minimize the hazard:

1. Stop the pump immediately. Hit the emergency stop button if that is the quickest way to stop the pump. There will be an expulsion of compressed air the next time the concrete valve shifts. If possible, fill the hopper with concrete to help contain the expulsion.
2. Alert the operator of the problem. It is his job to know the procedures for safe removal of air from the pump and delivery system. These procedures include pumping in reverse for a couple of strokes.
3. Persons standing at the discharge end or near the delivery line must be warned to move away until all of the air has been purged. Warn them to stay

a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 72).

4. When the pump is restarted, the slowest possible speed should be used until **all** air is removed from the pipeline. Don't assume that the first little air bubble is the end of the compressed air.
5. Do not allow anyone near the discharge until concrete runs steadily from the end and there is no movement of the delivery system.

- If workers are positioned in high or precarious places, warn them to expect a loud sound as the air escapes the pipeline. (Warn them even if they are well away from the discharge.) That way, we can prevent the worker from falling as a result of being startled by the noise.

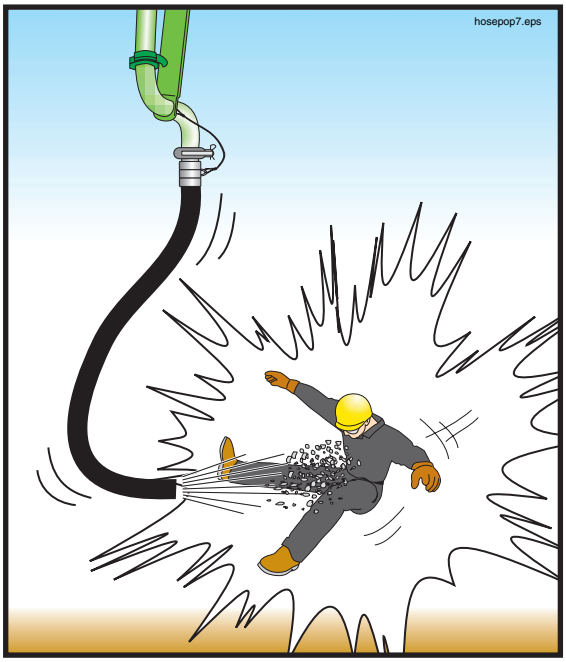


Figure 72
Remove everyone from the discharge area whenever the pump is first starting, restarting after moving, or if air has been introduced into the line

16.12

⚠WARNING When initially priming the delivery system, when restarting after moving, when restarting after adding or removing hoses, or whenever air has been introduced into the line, warn everyone to stay away from the discharge until concrete runs steadily and there is no movement of the delivery system. Personnel should stay back a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 72). Air will be in the line when first starting, when restarting after moving, when a blockage has been successfully removed by "rocking" the concrete, and after the line has been taken apart or opened for any reason.

16.13 **⚠WARNING** **Never use compressed air to clear a blockage!** The operator is responsible for knowing the safe blockage removal procedures. It is unsafe and unnecessary to use compressed air. If the pump pressure can't move it, air pressure won't either.

16.14 **⚠WARNING** Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized. Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it (Figure 73).

Figure 73
Never straddle or sit on a pressurized pipeline

16.15 **⚠WARNING** Expulsion hazard! (See Figure 74.) **Never open a pipeline that is under pressure.** The pump must be run in reverse for at least two strokes and then stopped before opening a pipeline. If you don't know how to reverse the pump, have the operator do it. If the pipeline is pressurized with air, do not open it. The operator is responsible for knowing how to safely release the air pressure.

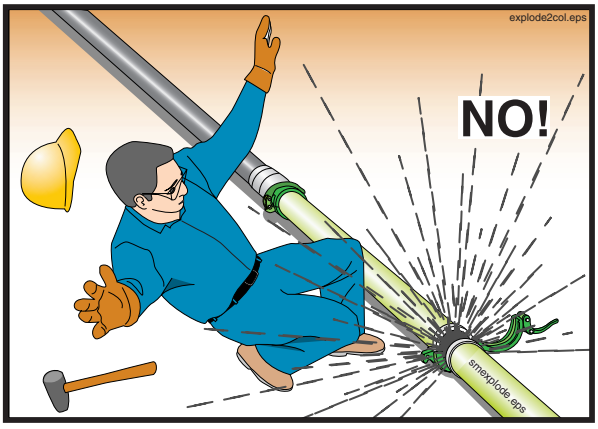


Figure 74
Never open a pressurized pipeline

16.16 **⚠CAUTION** Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

16.17 **⚠WARNING** Crushing/amputation hazard! Never put your hands, feet, or any other body part into the water box, concrete valve, or hopper when the hydraulic system is operational or ready to operate! Never stand on the hopper grate! (See Figure 75.)

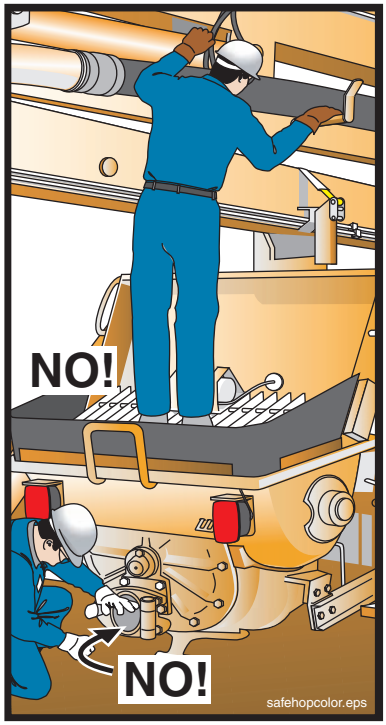


Figure 75
Never put your body in the machine!

16.18 **⚠WARNING** Never lift or remove the hopper grate for any reason (Figure 76).

Figure 76
Lifting hopper grate exposes the agitator and the concrete valve

16.19 **⚠WARNING** Do not remove the water box covers or grates when the machine is stroking (Figure 77). If you must remove the water box cover (to add water, for example), and there is not a bolt-down grate over the water box, then stop the pump and engine, and put the key in your pocket so it cannot be restarted

until you are finished and the covers are back in place. If a bolt-down grate is installed, you may simply stop the pump from stroking before removing the water box covers. Replace the covers before restarting the pump.

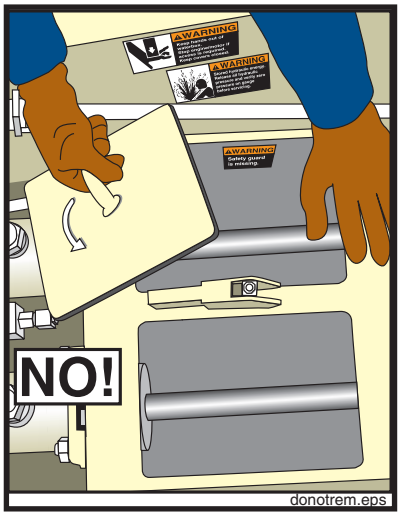


Figure 77
Do not remove the water box covers when the machine is stroking

16.20 **⚠WARNING** Mount or dismount the pump or truck using the *3 Point Rule.* One hand and two feet or two hands and one foot are to be in contact with a secure surface at all times (Figure 78).

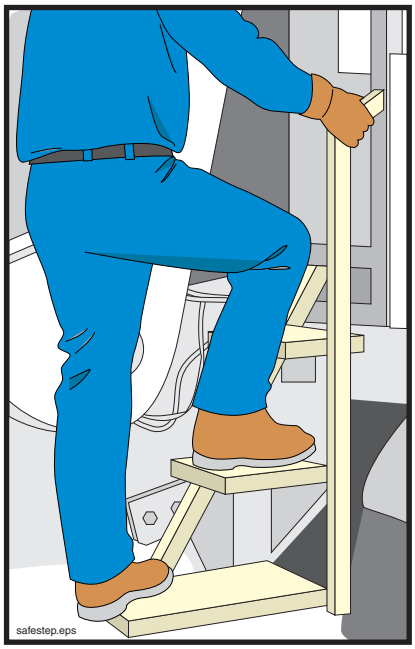


Figure 78
The 3 Point Rule

16.21 **⚠WARNING** Keep unauthorized personnel off of the pump.

17. Safety Rules For The Placing Crew

17.1 **⚠WARNING** **Electrocution hazard!** If the pump or boom becomes energized with high voltage and you are in contact with **any** part of it, you are at **risk of electrocution!** You should monitor the movement of the boom and **alert the operator if the boom comes within 17 feet of an electrical wire.** (See Figure 79.)

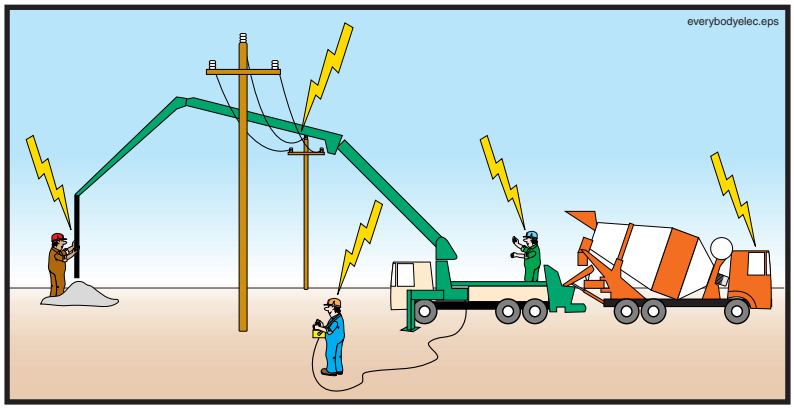


Figure 79
If the pump becomes energized, everything that touches the pump is also energized

17.2 **⚠WARNING** If the boom can contact overhead wires a spotter must be used to warn the operator if the boom is coming near the wires (Figure 80.)

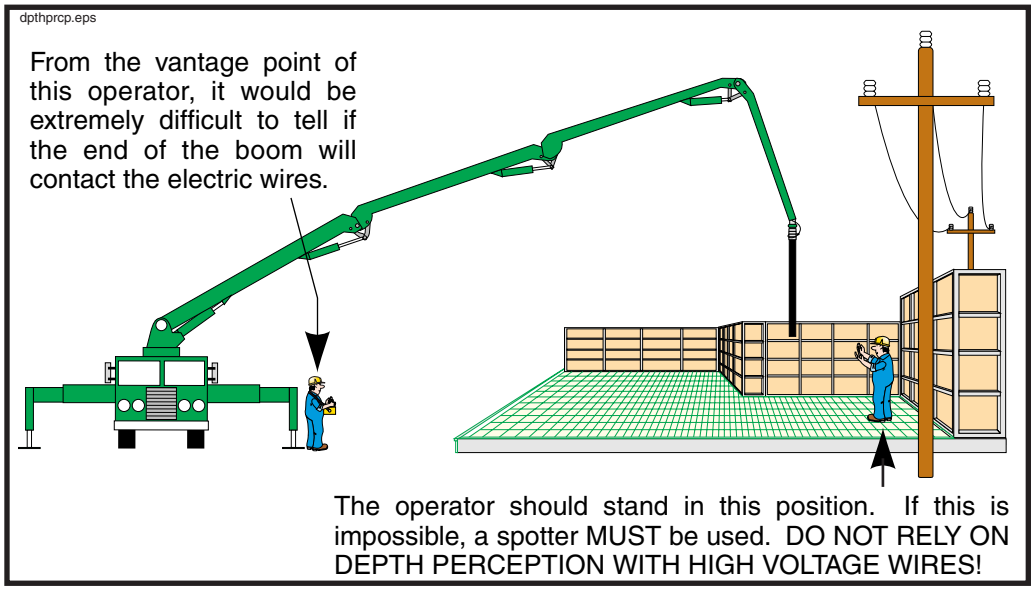


Figure 80
Use a spotter near obstructions or wires

17.3 **⚠WARNING** Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if he is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

17.4 **⚠WARNING** Wear Personal Protective Equipment (P.P.E.) when working around a concrete pump (Figure 81). The gloves should resist concrete lime burns. If you will be working **in** the concrete, protect your feet and hands with rubber boots and gloves.

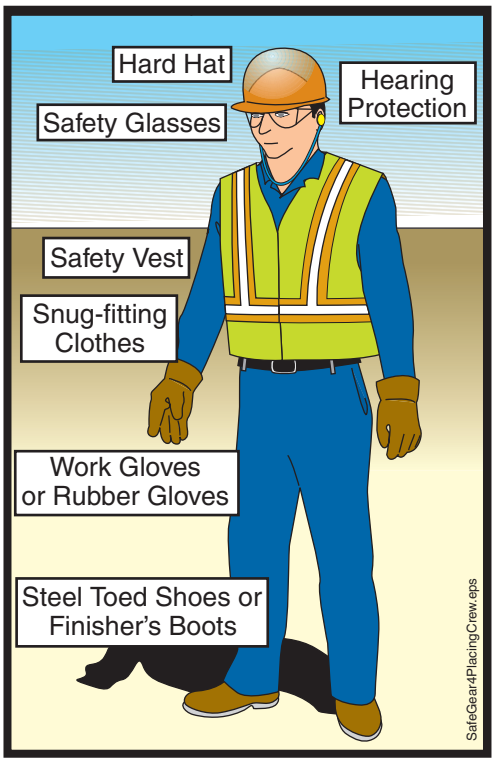


Figure 81
Wear Personal Protective Equipment (P.P.E.)

17.5 **⚠WARNING** When the operator is initially priming the delivery system, restarting after moving, restarting after adding or removing pipes or hoses, or any time that air has been introduced into the delivery system, stand a reasonable and prudent distance away from the tip hose or point of discharge. Do not get near the discharge until material runs steadily and there is no movement of the delivery system. (Figure 82). Compressed air in the line can cause rubber hose to move violently. If the operator tells you that air is coming in the delivery system, proceed as follows:

- Get to ground level (if in a high place) and remain well away from the discharge or at least take cover.
- Stay away from the discharge. Be sure that **all** the air is gone before getting near the point of discharge again. It is the operator's job to know when it's safe to go back to normal pumping.

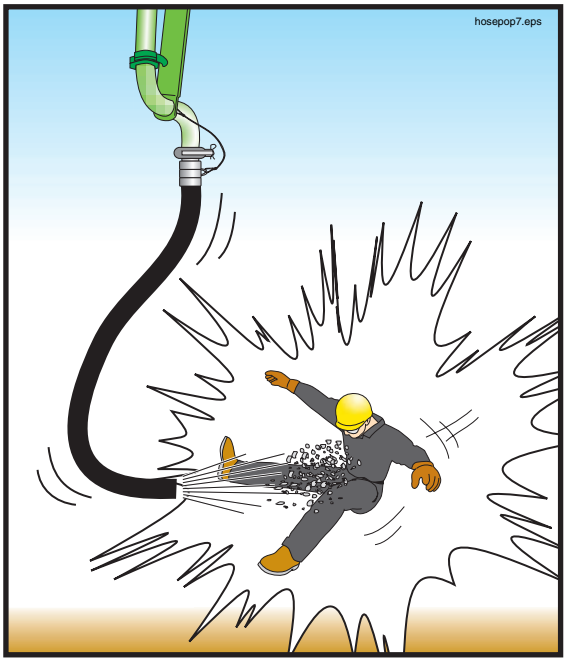


Figure 82
Stay away from the point of discharge when starting or restarting, and when there's air in the pipeline

17.6 **⚠WARNING** **Never use compressed air to clear a blockage!** It is unsafe and unnecessary. If the pump pressure can't move it, air pressure won't either. Stand away from the discharge and the line if anyone attempts to use compressed air in this manner.

17.7 **⚠WARNING** **Do not look into the end of a plugged hose or pipe!**

17.8 **⚠WARNING** When the pump crew is using compressed air to clean the boom or system pipeline, stay away from the discharge area. **Never try to hold down a pipe or hose that is being cleaned with air.**

17.9 **⚠WARNING** Never open a pressurized pipeline (Figure 83). The pump operator must release the pressure before you open the line. If the line is pressurized with compressed air, let the operator release the pressure and verify that the air has escaped before you proceed.

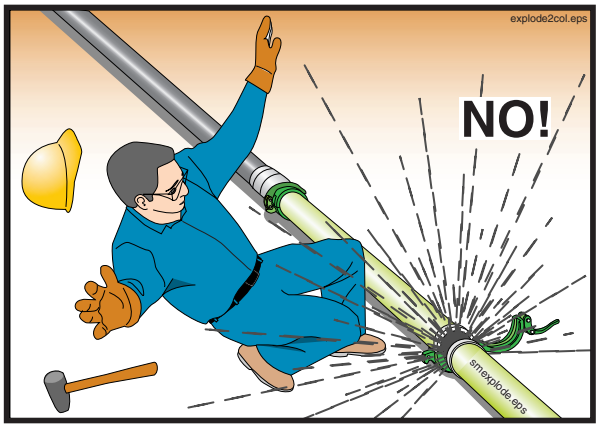


Figure 83
Never open a pressurized pipeline

17.10 **⚠WARNING** After removing pipe sections you must **reassemble using gaskets and clamps.** Pipelines assembled without gaskets will leak cement and water, which can cause a blockage.

17.11 **⚠WARNING** Concrete is being moved through the delivery system by pressure. Failure of a pipe, clamp, hose, or elbow is possible. For this reason, spend as little time as possible standing under the boom, and wear protective clothing.

17.12 **⚠WARNING** The hose man should not hug the hose, but hold it with both hands, to allow the hose to move freely (Figure 84).

Figure 84
Do not hug the boom hose

17.13 **⚠WARNING** The hose man should not walk backwards (Figure 85). Walking forward will allow him to see obstacles and avoid tripping.

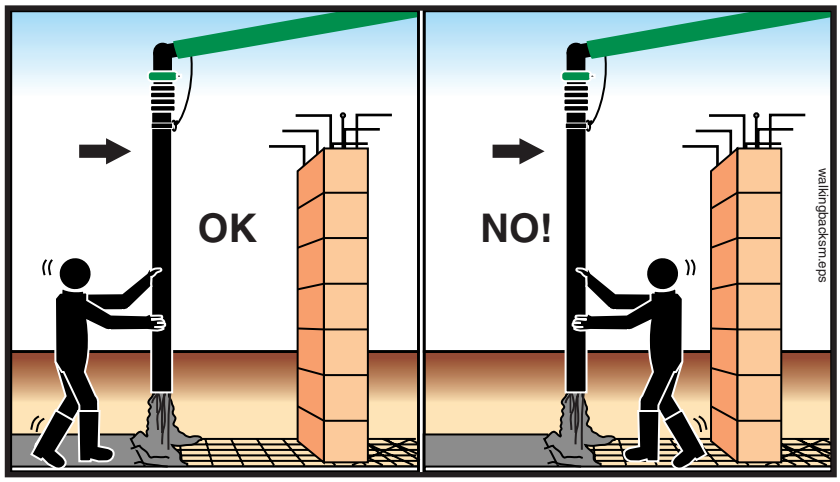


Figure 85
Do not walk backwards, stay out of the path of the boom

17.14 **⚠WARNING** The hose man should never position himself between the boom or boom hose and any fixed object like a wall or column (Figure 85).

17.15 **⚠WARNING** Do not kink the end hose. Kinking will cause the pump to create maximum concrete pressure. The pump may unkink the hose by force! (See Figure 86.)

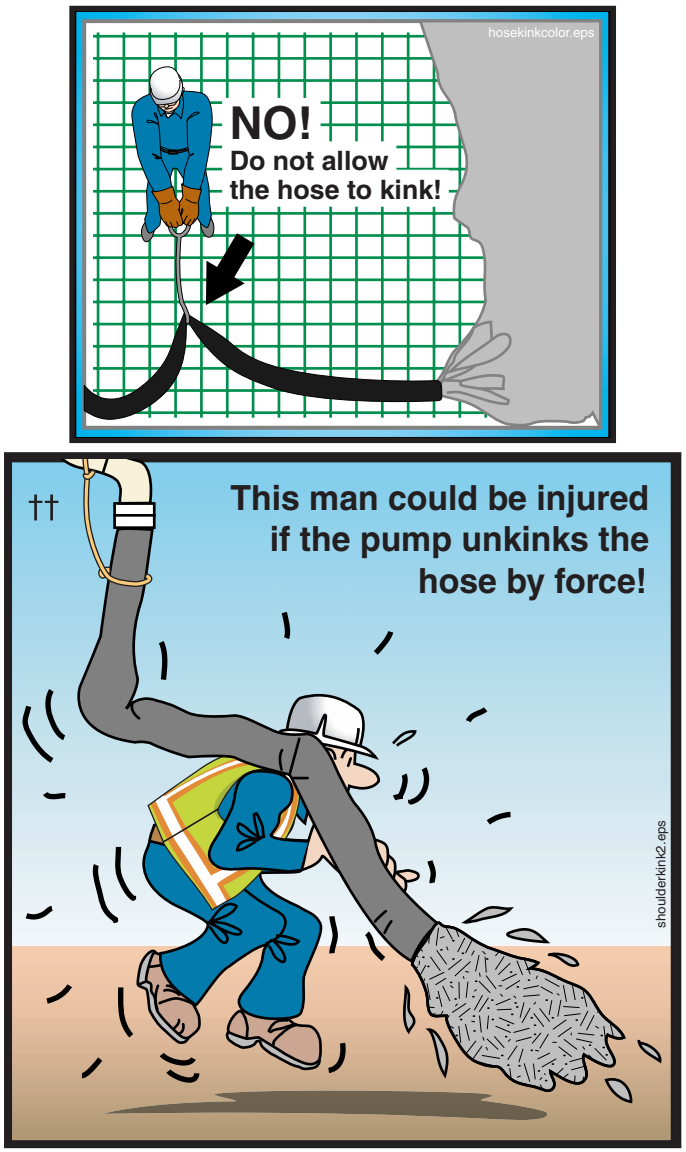


Figure 86
Never kink the hose; Never hold the hose with your shoulder

17.16 **⚠WARNING** Never try to support the tip hose with your back or shoulders. Let the hose hang from the boom (Figure 86).

17.17 **⚠CAUTION** Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

17.18 **⚠WARNING** Crushing hazard! Never position your hands or any body part between the end of the delivery system and a fixed object (e.g., between the tip hose and the concrete form) (Figure 87). Watch for clamps lowering with the line, because they have a larger diameter than the pipes/hoses they connect.

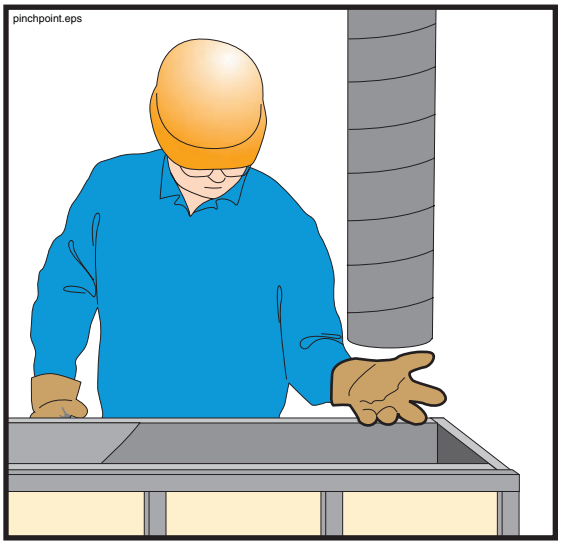


Figure 87
Watch out for the pinch points

17.19 **⚠WARNING** Do not allow the boom hose to get lower than two feet above the deck to prevent the boom hose from hitting the feet of the hose man, and to prevent the hose opening from being blocked by the deck, which could cause the hose to whip.

17.20 **⚠WARNING** Falling hazard! When pouring columns, slabs, or walls above ground, secure yourself from falling.

17.21 **⚠WARNING** Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized (Figure 88). Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it.

Figure 88
Never straddle or sit on a pressurized pipeline

17.22 **⚠WARNING** To avoid confusion and conflicting signals, only one person should signal the pump operator.

17.23 **⚠WARNING** Before the pour begins, the hose man, the operator and the spotter should agree on the hand signals (Figure 89).

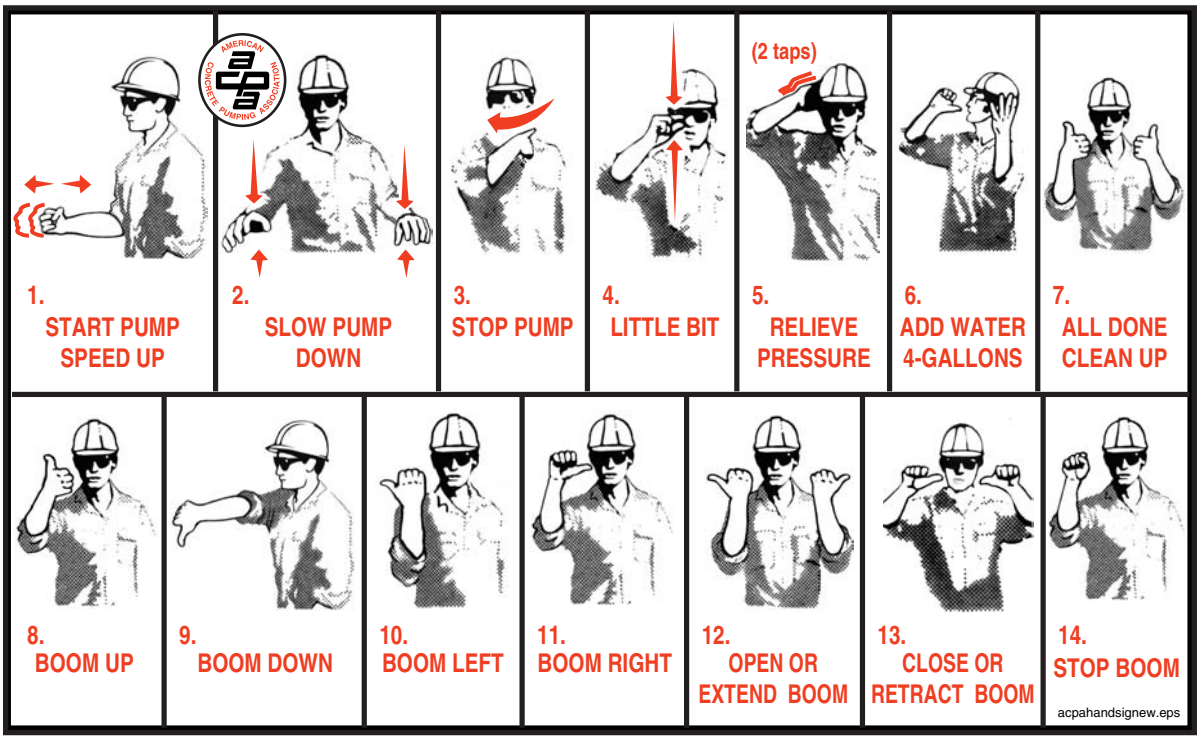
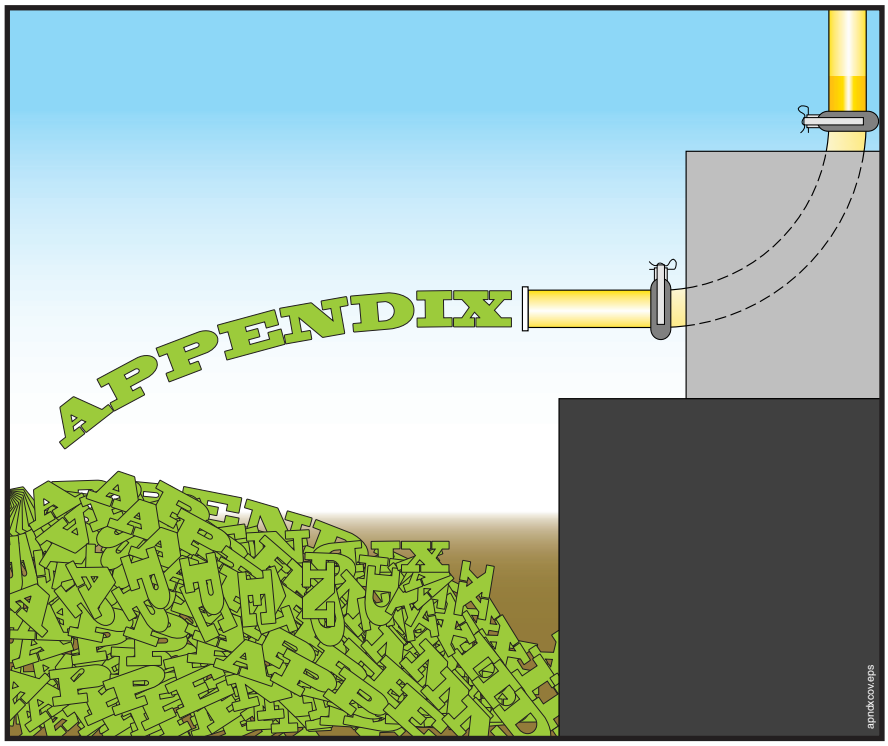


Figure 89
ACPA recommended hand signals



Appendix

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VII. Weld On Ends / Coupling Comparison

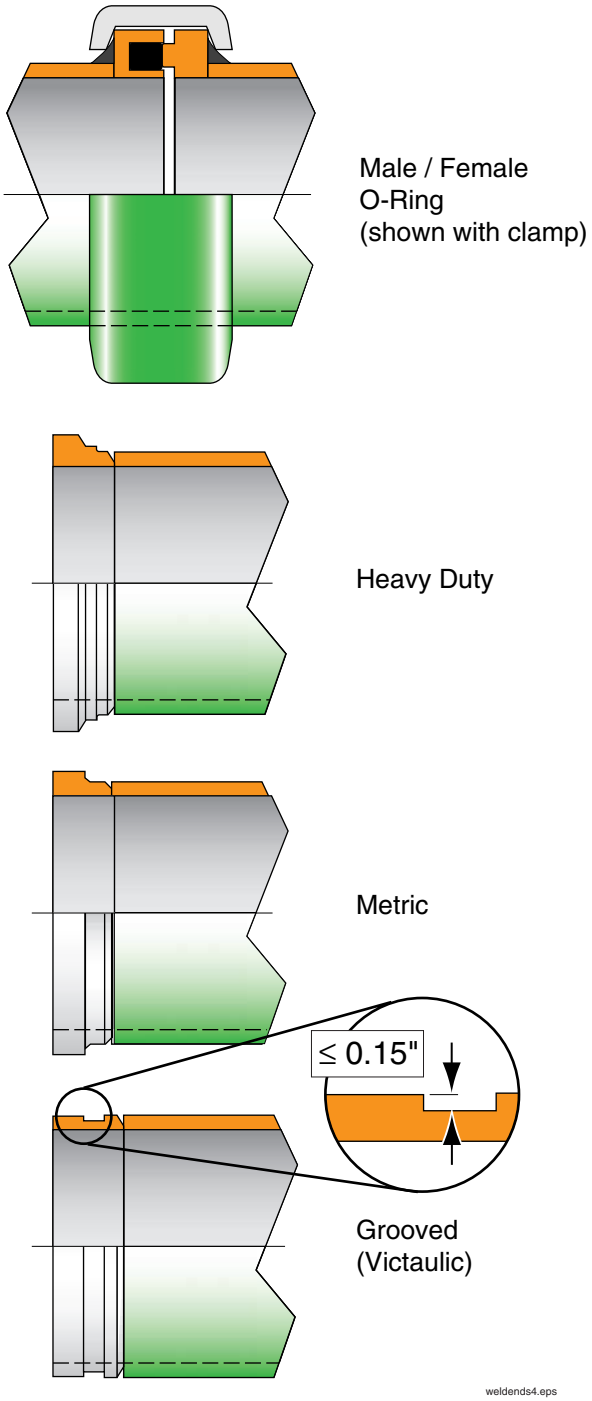
Shown is a comparison among commonly used ends/couplings. No two ends shown can be joined without the use of an adapter pipe or a special adapter clamp. Clamps and pipe strength must also be considered when determining proper system requirements. The ratios shown in the text below represent the safety factor from burst : working

1. Male / female o-ring type couplings have the highest pressure rating of the ends commonly used for concrete pumping. They can withstand 4350 PSI @ a 2:1 safety factor. They are self aligning and waterproof when used with o-rings in good condition. Typically not used on booms because of their weight. Pipes equipped with this style coupling cannot be swapped end-for-end.

2. Heavy-Duty couplings are designed for pressures up to 2250 PSI @ 2:1. They have 20% more contact area than metric couplings, and a tapered face that draws the pipe sections together during assembly. Both the ends and clamps weigh more than metric style, and therefore should not be used on booms without consulting the manufacturer.

3. Metric couplings are designed for pressures up to 1400 PSI @ 2:1. They have 85% more contact area than grooved couplings. The face is flat and will not draw pipe together. Although they have a raised edge, they are not compatible with Heavy Duty couplings unless a special clamp or an adapter pipe is used to change from one style to the other. Metric connections are standard equipment on booms because of the weight savings compared with other styles.

4. Grooved couplings (lip height of 0.15” or less) are designed for pressures only up to 750 PSI @ 2:1. The recessed groove is hard to clean when changing pipe on a job. The weld-on end fails before the pipe because the groove is cut into the pipe thickness, making it the weakest spot. Grooved couplings are not recommended for concrete pumping applications.



NOTE: All pressure ratings listed refer to 5 inch (125mm) diameters in like-new condition. Other pressures would apply to other sizes.

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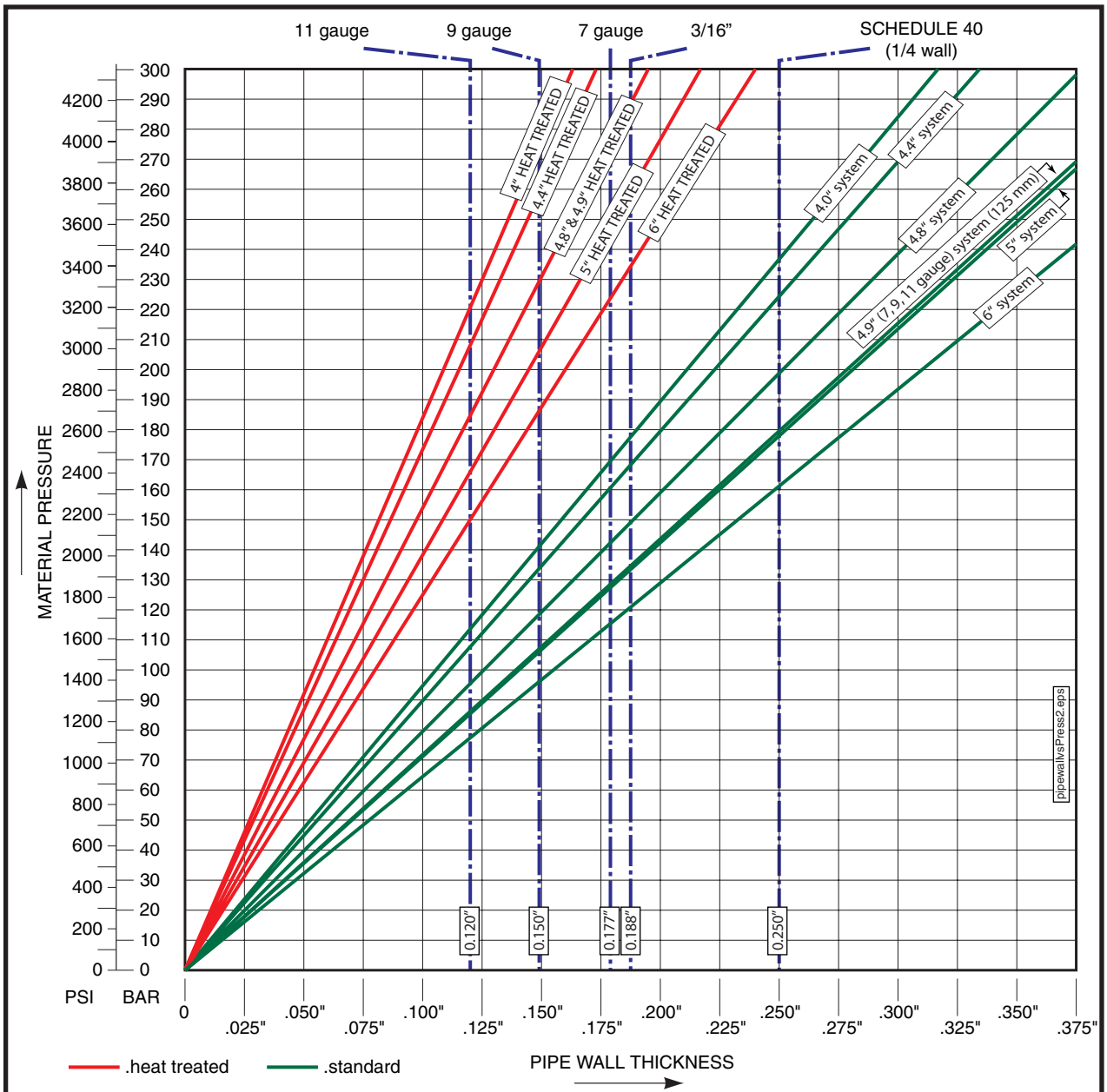
VIII. Minimum Pipe Wall Thickness Chart



1. This chart assumes a safety factor of 2:1. Higher safety factors may be required in some circumstances.
2. Wear reduces wall thickness. Thickness must be checked on a regular basis.
3. Pressures may be limited even more by clamp style or pipe end used.
4. The chart is based on 62,000 PSI tensile strength. Heat-treated calculations are based on 120,000 PSI tensile strength.
5. The chart is for pressure calculations ONLY. There is no allowance for mechanical forces other than pressure, and thicker walls may be needed for mechanical strength because of support or restraint considerations.
6. The chart does not take into account metal fatigue caused by pressure cycles.

Note! This chart is intended as a guide for concrete pumping applications and is subject to the notes, assumptions, and conditions listed above. Any other use of this chart is not recommended.

This chart does not apply to double-wall pipe. Double wall pipe can be checked by inspecting the inside of the pipe. If the insert is intact, the pipe is okay. If the insert is worn through, the pipe must be replaced. Contact your pipe supplier for the pressure capacity of your double-wall pipe.

IX. Glossary Of Terms

Accumulator

A hydraulic device that stores fluid power energy in much the same way that a battery stores electrical energy. Because an accumulator will store energy, it MUST be drained and depressurized before work begins on an accumulator equipped actuator or hydraulic system.

Agitator

A device that sits in the concrete hopper to keep concrete moving, preventing it from setting. It is typically a rotating shaft to which several paddles have been mounted. *See Also:* Hopper Grate

AWS D1.1

The code for structural welding with steel as defined by the American Welding Society. Sections 3, 5, and paragraph 9.25 of section 9 apply. *See Also:* Certified Welder and EN 287-1

Blanking Plate

Also known as a blanking plug or end cap. It's purpose is to prevent material from falling out of the delivery system (typically the end hose) when moving a boom with a full pipeline over personnel or property.

Blockage

Simply put, if the pump is pushing and concrete fails to come out at the point of discharge, it is called a blockage. Blockages can be removed with pump pressure, by rocking the pump between forward and reverse, or some other remedial measure. If the blockage can not be removed in such a manner, it's called a plug. *See Also:* Plug, Rock Jam. The causes of blockages are detailed in section 8.21 of this manual. In all cases, blockages create a hazard by causing high concrete pressure, combined with the sometimes uncoordinated efforts of untrained workmen to remedy the problem.

Bulk Density

The mass of a substance per volume. For example, one cubic foot of air weighs much less than one cubic foot of water. One cubic foot of lightweight concrete weighs less than one cubic foot of steel entrained concrete. We could say that steel entrained concrete has a higher bulk density than lightweight concrete. All calculations for the operation manuals and specifications of concrete pumps are based upon 150 pounds per cubic foot, which is the approximate mass of hard rock (normal) concrete.

Certified Operator

An operator that has been issued a certification card by the American Concrete Pumping Association. There are several classes of certification, each relating to a different category of pump. For an operator to become certified, he (she) must pass the written tests regarding operation, setup, and clean out for each category of pump, pass the safety rules test which is common to all certification categories, meet the experience requirements set forth for each category, and maintain a safe and clean driving record. The certification card only certifies that the operator has passed a written test administered by an A.C.P.A. certification tester and does not attest to their ability to operate a concrete pump. *See Also:* Qualified Person, Qualified Operator.

Certified Welder

As it relates to concrete pumping and this Safety Manual, a Certified Welder is a person that has applied for, taken and passed the American Welding Society (AWS) or the European Norm (EN) test for structural steel welding. Anyone welding on a concrete pump placing boom, outriggers, towers, etc. must be certified to AWS D1.1 sections 3, 5, and paragraph 9.25 of section 9 **and/or** EN287-1/PREN288-3.

Concrete Delivery Hose
A flexible concrete hose that has two end couplings.

Concrete Pressure
The force per square area that is exerted on the concrete. The concrete pressure will always be a ratio in direct proportion to the hydraulic oil pressure on the concrete pump circuit. *See Also*: Maximum Pressure

Conductors
Materials that will conduct electricity. Copper, silver, aluminum, gold, steel, and water are considered GOOD conductors of electricity. Air, fiberglass, rubber, ceramics and glass are considered POOR conductors. All of these conductors have a resistance to the flow of electricity that can be measured in terms of ohms per linear foot. As voltage gets higher, more current flows through the same resistance. In the case of high voltage electric wires (8000 volts, for example) even the poor conductors will carry enough current through your body to ground that you could be killed. (As little as 35 milliamps can cause fibrillation of the heart.) Some conductors, like air, resist electricity very well, but if the voltage gets high enough, current will flow (lightning is a good example of this). *See Also:* Electrocution

Decibels
One tenth of a bel. Abbreviated dB. It is a measurement of sound volume. As it applies to concrete pumps, it is a measurement of the sound pressure level one meter away from a noise source. O.S.H.A. has developed guidelines for time limits on exposure to sound at different volume levels. The chart can be found on page 36 of this manual.

Drive Engine
The primary source of power for a hydraulic system. Typically, the word “engine” denotes and internal combustion device, whereas the word “motor” denotes an electrical device.

Electrocution
Made from the words “Electric” + “Execution.” It means death by electricity. *See Also:* Conductors

EN 287-1 / PREN 288-3
The code for structural welding with steel as defined by the European Norm. *See Also:* Certified Welder, AWS D1.1.

End Hose
A flexible concrete hose that has one end coupling.

Foreign Material
Material that was never intended to be pumped, which ends up in the concrete hopper. Examples of foreign material include small animals, hammers, ready mix truck fins, unmixed clumps of cement, hardened concrete that breaks away from ready mix truck fins, and soda pop cans. These items could create a blockage if pumped.

Go Devil
A plug made from a rubber composite, usually with several fins that expand to seal when pressure is applied. They are intended to be inserted in a steel delivery pipeline and pushed with water or compressed air for the purpose of cleaning the pipe. *See Also:* Sponge Ball

Guide
An assistant brought in to help in backing up a truck or trailer, or to help in other circumstances where the driver cannot see enough to assure safety. *See Also:* Spotter

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High Voltage

For the purposes of this manual, anything over 24 volts is to be considered high voltage. In the U.S., electrically driven concrete pumps normally operate the motors at 480 volts AC (high voltage) and the controls at 24 volt DC (low voltage). When dealing with electric wires in residential or industrial areas the voltage will be approx. 8000 volts to ground, or 13,800 volts from phase to phase (distribution voltage). When dealing with electric wires that are mounted on steel towers high above the ground, the voltage will range from 100,000 to 1,000,000 volts (transmission voltage).

Hopper Grate

A meshwork placed over the concrete hopper, typically made from steel bars. It serves the functions of keeping human body parts away from the agitator (when left in it's proper position) and keeping large foreign objects from falling into the hopper, which could cause blockages if they were pumped.

Jacking the Outriggers

Adjustment of the outriggers in the vertical direction. With boom mounted concrete pumps you should strive to make the adjustments so that the unit sits within 3° of level.

Licensed Electrician

A qualified electrician licensed by the state, county or municipality where the connections are to be made. In some locations electricians are not required to be licensed, and in these cases the work should still be carried out by competent professionals. Under no circumstances should high voltage connections be made by a concrete pump operator or related personnel.

Maintenance

All procedures for service, inspection, and repair of concrete pumps and related equipment and devices. Maintenance and inspection are methods of ***maintaining*** the desired state of the equipment. Repair is the method of ***restoring*** the desired state of the equipment.

Maximum Pressure

When talking about a hydraulic system, maximum pressure refers to the highest pressure that can be achieved with the settings of the circuit relief valves. When discussing concrete output, maximum pressure refers to the pressure that will be developed if the hydraulic system pressure reaches the relief valve setting. Concrete pressure is the force at which the differential cylinders are moving, divided by the cross sectional area of the concrete cylinder. Maximum concrete pressure, then, is developed when the differential cylinders are moving with maximum force, which is determined by the hydraulic system relief valve setting. *See Also:* Concrete Pressure.

Minimum Safety Distance

In this manual, the term "minimum safety distance" refers to the closest distance that you are allowed to approach an object, electrical wires, etc. and still leave room for errors in human judgement or machine malfunction. With electrical wires in the U.S., this distance is 17 feet, as recommended by the American Concrete Pumping Association. This distance may have other values in different countries (Canada specifies 7 meters). It is up to the operator to know the value for the place of operation.

Operational Area

The area around a working piece of equipment or point of discharge where hazards can be encountered due to the nature of the machinery or process in use.

O.S.H.A.

Occupational Safety and Health Administration. A branch of the United States federal government that deals with job safety. They establish and enforce safety regulations for industry and

business. Among the areas over which they have authority are construction job sites and work shops.

Personal Protective Equipment (P.P.E.)

Things you can wear to protect yourself from potential dangers in a concrete placing environment. Examples are:

- Snug fitting work clothes
- Steel toed work boots
- Lime resistant gloves
- Safety glasses
- Ear muffs or ear plugs
- Rubber boots when you have to stand in concrete
- Hard hat
- Breathing mask when working with cement dust

Plug

A plug is a blockage that cannot be removed with the pump pressure, or by other remedial measures. A plug must be removed manually. *See Also:* Blockage.

Point of Discharge

Also known as the point of placement. The location of concrete expulsion from a delivery system. This can be the point of placement (the actual form that is being filled with concrete) or the clean out area after completion of the job.

Pour

Used by the concrete pumping industry and in this manual as a noun. It is the specific job for the pump during any given time period. (e.g. "We'll grab lunch right after the pour.")

Qualified Person

As used in this Safety Manual, a *qualified person* is defined as: a person who, by possession of a recognized degree of certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work. Other qualified persons may include master mechanics and after-sales service technicians of the manufacturer. *See Also:* Certified Operator

Qualified Operator

Operators shall be considered qualified when they have completed a program of training and supervised operation of concrete pumps and have passed a practical operating examination of their ability to operate a specific model and type of equipment as well as their understanding of the controls and operating procedures. Furthermore, the operator must meet the knowledge and physical requirement sections of the concrete pumping safety standard.

Qualified Personnel

A generic term used to describe a person who is qualified in the area of application. For example, having your boom repairs inspected by "qualified personnel" before use would refer to inspection by a certified welder or certified welding inspector. Having repairs to your hydraulic system done by "qualified personnel" would refer to repairs made by qualified workshop personnel.

Qualified Workshop Personnel

An individual who:

- has reached the age of 18 years,
- is physically and mentally capable,
- has been trained in proper repair, maintenance, and inspection procedures plus the pertinent safety rules for concrete pumps and related equipment,
- has demonstrated their capabilities to their company in regards to the above mentioned

procedures and rules, and
- can be expected to perform these duties, as assigned, in a reliable manner.

Rock Jam

A specific type of blockage caused when the cement and fines of the concrete are not present in sufficient quantity to fully coat the larger aggregates and the walls of the delivery system. In these cases, the rock (larger aggregates of the mix) will form a wedge inside of the pipe. Resistance to movement then becomes overpowering and the concrete stops. *See Also:* Blockage.

Separate Pipeline

A pipeline that is laid between the concrete pump and the point of discharge, other than the placing boom pipeline.

Shutoff Valve

In hydraulics: a valve with the ability to stop the flow or pressure of hydraulic oil. It must be able to withstand the maximum pressure of the hydraulic circuit that it controls. In concrete: A manually or hydraulically operated valve that will prevent the flow of concrete in either direction. The shutoff valve must be able to withstand the maximum pressure on the concrete of which the pump is capable of exerting.

Soil Pressure

The force per square area that is exerted on the ground by the outrigger legs. The amount of pressure that the soil will support varies with the composition and compaction of the soil. To make a determination on the stability of the soil, see the chart on page 22 of this manual.

Sponge Ball

A medium to hard sponge formed into a sphere and used to clean the inside of delivery pipelines. *See Also:* Go Devil

Spotter

A spotter is a person who stands at a vantage point where he (she) can see both the point of discharge and the operator of the pump. The spotter would then direct the operator to operate the unit as required by the job circumstances with two-way radios or hand signals. A spotter can be anyone who is familiar with the safety rules for the pump and workers and is equipped with a radio or knows the appropriate hand signals. A spotter is needed whenever the operator cannot safely see the point of placement or the distance between the unit and an unsafe area. *See Also:* Guide

Sucking Back

The act of putting the concrete pump into the reverse mode for any of several reasons.

Thrust Block

Also known as a “dead man”. This is a large block of poured concrete, usually with one or more sweep elbows cast inside, placed at the bottom of a vertical run for the purpose of supporting the weight of the vertical run and for lateral stabilization of the pipeline. It stabilizes and supports the vertical run by virtue of its enormous mass (normally one cubic yard or larger).

Towing Vehicle

In this manual, *Towing Vehicle* applies only to vehicles that tow trailer mounted concrete pumps. It is the vehicle that you will use to tow the trailer on the road, on the job site, or in the yard. See the safety rules regarding this subject on page 10 of this Safety Manual.

Transport Position

This relates to the position of the boom when you will be driving the unit. The travel position of the boom is the position of the boom when it is completely folded and lowered into the rests.

Unauthorized

Without authority, without permission. Examples: Unauthorized operation of the boom could be operation by a passer-by, unauthorized repairs to the boom could be repairs designed without the manufacturer's knowledge.

Unintentional Movement

Movement of the pump, boom or related equipment without a specific intentional command by the operator. An example of an unintentional movement would be if an operator fell while walking with the remote control box and accidentally hit a joystick, causing a boom movement.

Vertical Run

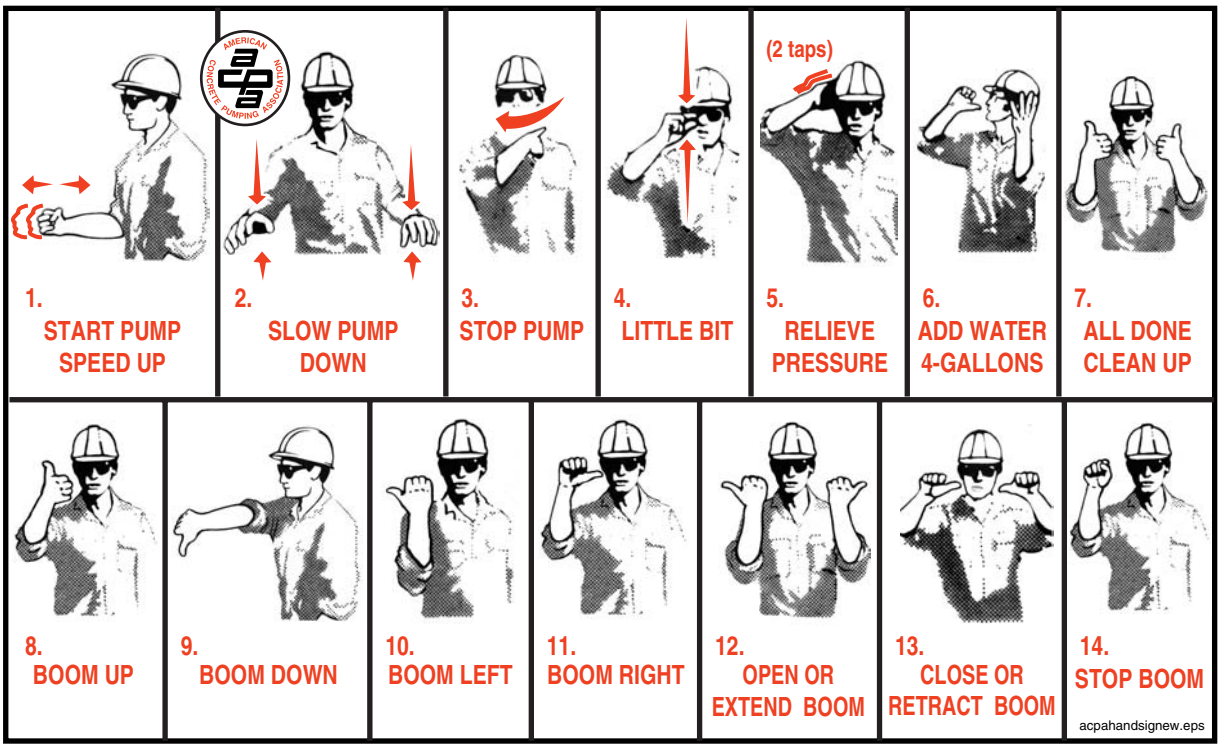
Sections of concrete delivery pipeline that are running in an up (or down) direction. Vertical runs have very specific procedures and rules for installation, support, cleaning, and inspection. Concrete pumping personnel should, therefore, have specific training in these procedures and rules before attempting to use them in a job setting.

Water Jet

The actual stream of water that comes out of the end of a water hose or pressure washer. This is the only part of the water system that needs to go into the hopper, concrete valve, or water box for cleaning.

X. Recommended Hand Signals

The American Concrete Pumping Association (ACPA) recommends using the following hand signals as standard procedure.



XI. Bibliography

Further information regarding concrete pumping is available from the sources listed below. Information for this book was gathered from several different sources, including the following books:

PUMPING CONCRETE AND CONCRETE PUMPS © F. W. Schwing, GmbH

CONCRETE PUMP OPERATOR'S GUIDE TO SAFETY © British Concrete Pumping Association

The MANUAL and ADVISORY SAFETY CODE of PRACTICE for CONCRETE PUMPING © British Concrete Pumping Association

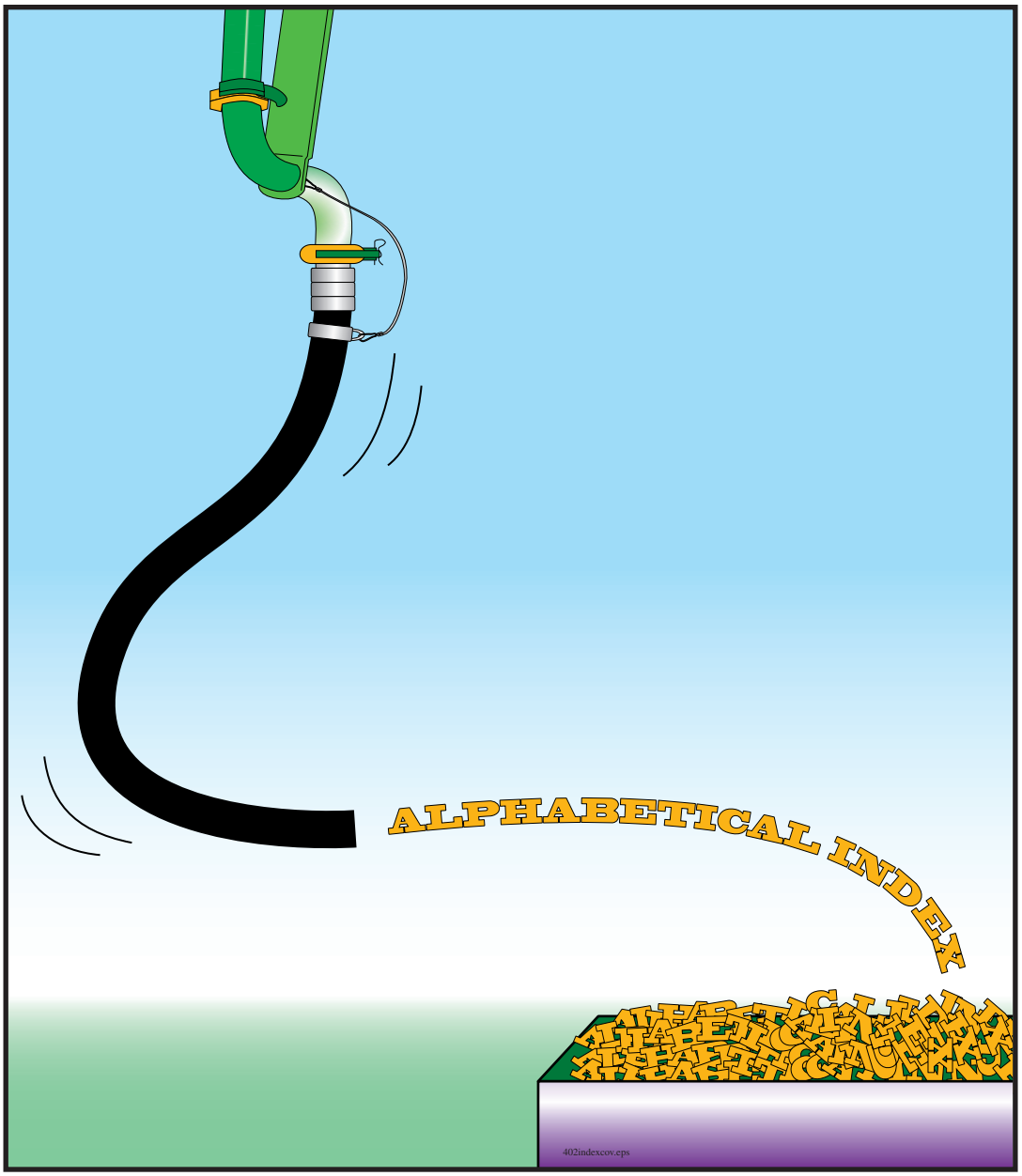
SAFETY STANDARD FOR CONCRETE PUMPS, PLACING BOOMS, AND DELIVERY SYSTEM by the Concrete Pump Manufacturers Bureau

Additional technical information and/or graphic were supplied by:

Construction Forms, Inc.

The American Concrete Pumping Association

Some cartoons were scanned from the book CONCRETE PUMP OPERATOR'S GUIDE TO SAFETY © British Concrete Pumping Association. Used by Permission.



Alphabetical Index

AS WE MAKE IMPROVEMENTS TO THE ***REED*** TRUCK MOUNTED CONCRETE BOOM PUMP MODEL ***XXT42.5RZ***, WE LIKE TO SUPPLY YOU, THE CUSTOMER, WITH UPDATED INFORMATION WHICH APPLIES TO YOUR PUMP.

THIS SECTION IS PROVIDED AS A PLACE TO STORE SERVICE BULLETINS AS YOU RECEIVE THEM FROM ***REED*** **LLC.**

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SERVICE BULLETIN 001
WARRANTY PROGRAM

BULLETIN NO: SB 001

DATE: FEBRUARY 5,1998

TO: ALL ***REED*** DEALERS

SUBJECT: ***REED* WARRANTY PROGRAM**

Each ***REED*** Concrete Placing Trailer Pump, Truck Mounted Boom Pump and Dry-mix Spraying Gun, undergoes before delivery a thorough Quality Assurance inspection, a performance check and final testing. However, even with these precautions the possibility exists that after delivery, for some reason, a component may fail.

This is the reason for warranty. If this should happen to one of your machines during the first 12 months or 1000 pumping hours after delivery, there is a good chance the failed component could be replaced under warranty.

REED has updated and formalized its **WARRANTY PROGRAM** and this bulletin is issued to make all dealers aware of the program.

Enclosed is a supply of our new **WARRANTY CLAIM** forms. From this point on, all warranty claims must be submitted on these forms. Also, please find a description of the program, coverage and how to make a claim and its submission. We suggest you give this some careful attention. Briefly some noteworthy items are:

- Do not return any failed part unless requested by ***REED***.
- Purchase the replacement part through normal channels from ***REED***. Submit your claim noting the invoice number of the replacement part. Upon approval of the claim, a credit will be issued.
- Every effort will be made to process claim within 2 weeks from receipt except for those occasions where the part is to be returned.

Should questions arise during your review, please do not hesitate to contact us.

We appreciate the opportunity to be of service.

Sincerely,

Mike Wickstrom
Service Manage

WARRANTY PROGRAM POLICY

REED Concrete Placing Equipment MODEL ***XXT42.5RZ*** is designed and engineered to perform as stated on published specifications. Only quality materials and workmanship are used in the manufacture of these products. As a back up for the product manufactured by ***REED***, a guarantee against defects in design and workmanship of components is provided for each machine.

The ***REED*** guarantee/warranty states, in general, that ***REED*** will replace free of charge any components found to be defective within the time frame of the warranty period. There are exceptions to some components which are not the responsibility of ***REED***. These are noted elsewhere.

A formal printed policy is available and depicts in more detail the warranty and description. However, for your ready reference the following is offered:

A. WARRANTY PERIOD

- ALL CONCRETE PLACING MACHINES

  The warranty period is for twelve (12) months from date of delivery to initial user or 1000 pumping hours whichever comes first.

- NEW PARTS WARRANTY

  For parts sold through the ***REED*** Parts Department the warranty is ninety (90) days from invoice ship date.

- REPLACEMENT WARRANTY PARTS

  Replacement parts provided under the terms of the machine warranty are for the warranty period applicable to the unit in which they were installed as if such parts were original components of the machine.

B. WARRANTY COVERAGE

- DEFECTIVE PARTS

  Unless otherwise authorized the replacement part **MUST** be **PURCHASED** from ***REED***. Once warranty claim is received and approved, ***REED*** will provide credit to the dealer/user for their cost of the replacement part as invoiced by ***REED***.

- LABOR

  No labor time and related compensation will be provided by ***REED*** to dealers/users or others to perform work under this warranty policy.

- TRAVEL TIME

  No travel time, mileage or other expenses will be compensated by ***REED*** to dealers/users or others to perform work under this warranty policy.

- FREIGHT, IMPORT DOCUMENTATION, CUSTOM DUTY

  Any expense incurred for freight, import duty and documentation will not be reimbursed by ***REED*** in association with this warranty policy.

C. EXCLUSIONS

- CHASSIS AND RELATED COMPONENTS (TRUCK MOUNTED UNITS)

  The warranty for the chassis is handled by the chassis manufacturer and their dealer network. Prior to putting the truck in service it is suggested you contact the nearest manufacturer dealership.

- ENGINE - TRAILER UNITS

  The engine warranty is handled by the engine manufacturer and their dealer network. The terms and conditions of their warranty will apply. Contact the local engine dealer for specifics on warranty of the engine.

- NORMAL WEAR

  This pertains to items that have failed as a result of normal wear and tear to the product including but not limited to material cylinder and hydraulic cylinder piston components, delivery systems, pins, chains, bushings, seals, concrete pump wear parts, brakes, filter elements, fluids and tires.

- DAMAGES

  Caused by transport of equipment or parts, improper set-up or installation, operator error, improper operation or storage, environmental conditions, accidents, improper mechanical techniques employed by anyone or any other cause other than a structural defect in materials or workmanship.

- MAINTENANCE

  Caused by failure to perform any scheduled maintenance or routine maintenance as specified in technical manual on any structural or mechanical component.

- MODIFICATIONS

  Any non-authorized changes or modifications of any kind to the product. Any modification must be authorized and approved in writing by ***REED*** Engineering Department.

- ABUSE

  Any accidental or intentional abuse of product including but not limited to neglect, loading beyond capacity or any operation of the equipment beyond the limits set forth by ***REED*** documentation and as depicted in the appropriate technical manual.

D. SUBMISSION OF CLAIM BY DEALER/USER

Should a component failure be encountered during the warranty period and should it fall within the guidelines of the ***REED*** **WARRANTY POLICY** the following procedure is to be followed to claim warranty:

1. REPLACEMENT PART

   - Obtain the replacement part by ordering it from the **REED PARTS DEPT.** through normal channels. You will be **INVOICED** for the part.

   - If the part has been previously ordered from ***REED*** and is in your replacement stock inventory you may choose to use that part.

2. COMPLETE THE CLAIM FORM

   REED has supplied you with a pre-numbered Warranty Claim Form which consists of four (4) parts. This and only this form is **ACCEPTABLE**. **DUPLICATE** copies of the form are **NOT ACCEPTABLE**. If you do not have the proper form, contact the ***REED*** Service Department. They will send you a supply.

REED
CONCRETE PLACING EQUIPMENT

WARRANTY CLAIM

13822 OAKS AVENUE
CHINO, CA. 91710 909-364-2100

NO.

Date: (1)

Distributor Account Number:
Distributor: (2)
Address:
City:
State: Zip Code:
Phone: ( )

End User Account Number:
End User: (3)
Address:
City:
State: Zip Code:
Phone: ( )

MACHINE PUMP DATA

Model (4) Serial No. (5) In Service Date (6)
Hours of Operation (7) Failure Date (8) Repair Date (9)

NOTE - Hold deficient part(s) until requested by **REED** or until claim is approved. All parts requested to be returned must have a return authroization number provided by **REED**, shipped freight prepaid.Parts must ship within 30 days from **REED** request.

RETURN AUTHORIZATION NO. (10) SHIP DATE (11)

PART NUMBER	DESCRIPTION (12)	QTY.	NET PRICE	TOTAL PRICE	**REED** REPLACEMENT PART INVOICE NO. (13)

Describe Failure and How it Occurred (14)

REED comments

Claim Approved for

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REED Use - Claim Approved ☐ Denied ☐

Signed Date

Dealer Signature (15)

Date

The following instructions are offered for completing the **WARRANTY CLAIM FORM**. Refer to sample of form. Circled numbers on form correspond to items below. **FILL IN**:

1. Date your claim is written

2. Distributor name and address

3. End user name and address

4. Model number of unit affected

5. Serial number of unit affected

6. Date unit was first placed in service

7. Hours (from hour-meter) of operation at time of failure

8. Date when failure occurred

9. Date when unit was repaired

10. Return Authorization number as received from ***REED*** Service Department. This will only apply when failed component is requested to be returned by ***REED***.

11. Date when failed part is shipped back to ***REED***

12. List ***REED*** part number, description of part, quantity and price of part.

13. List ***REED*** invoice number sent you when replacement part was purchased

14. Briefly describe failure and how it occurred

15. Dealers signature and date

The claim form **MUST BE COMPLETELY FILLED OUT**. Claims lacking specific, accurate information will be returned **UNPROCESSED**. If additional room is needed to describe the failure or to list the parts used, attach a separate sheet and identify those sheets with the **SAME WARRANTY CLAIM NUMBER**.

3. SUBMITTING TO ***REED***

When all appropriate data has been entered on the claim and signed, proceed as follows:

- Remove copies of form marked **"DEALER"** (yellow) and **"RETURN AUTHORIZATION"** (green). The Dealer copy is for your records and the Return Authorization copy is to be retained in the event ***REED*** requests the return of the part.

- Mail the ***"REED"*** copy (white) and **"ACCOUNTING"** copy (pink) along with any back-up data such as a copy of the replacement part **INVOICE** to ***REED***. **DO NOT FAX COMPLETED FORM** and send only **FORM ORIGINALS**.

E. RETURN OF FAILED COMPONENT

Depending on the type of part and circumstance surrounding the component failure, the possibility exists that ***REED*** may request that the failed part be returned to them for investigation and evaluation purposes or to apply for warranty from the manufacturer of the part.

- Upon receipt of your warranty claim and before claim is approved, ***REED*** will inform you in writing if the part is to be returned. On this correspondence a **RETURN AUTHORIZATION** number will be given to you.

- This number is to be written in the appropriate area on the **RETURN AUTHORIZATION** copy (green) of the warranty form. Include this copy as part of your packing slip. Also write the number on a tag and attach to the part.

- Parts requested to be returned must be shipped back to ***REED*** within 30 days from issuing of the **RA** number. Failure to do so will cause warranty claim to be **DENIED**.

- Returned parts are to be properly packaged and shipped freight **PREPAID**.

- Any parts received by ***REED*** without the **PROPER RA** number will be shipped back at **DEALER/USER EXPENSE**.

- If claim is approved and no request to return parts from ***REED*** has been made, then parts can be discarded.

F. APPROVAL/DENIAL OF CLAIM

Every effort will be made to process the warranty claim within 2 weeks from receipt.

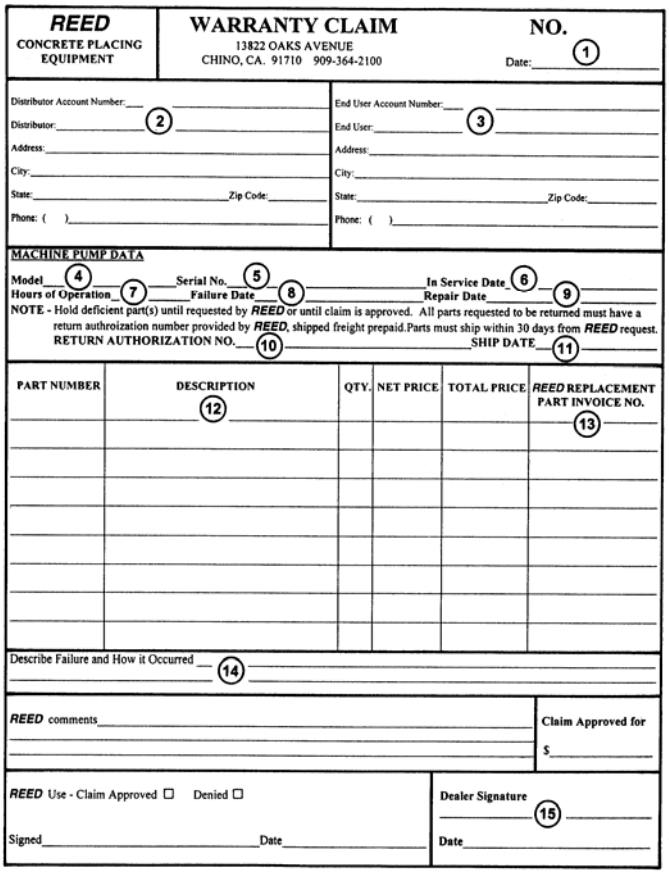
- APPROVAL

  Once your claim has been approved by ***REED***, the pink copy will be forwarded to our Accounting Dept. They in turn will issue a credit against the invoice for the replacement purchased part.

  In the meantime a fax or notification will be sent you indicating the claim and the amount approved.

- DENIAL

  If your warranty claim is denied for any reason, a fax or notification will be sent to you indicating reasons for denial. Should you have any dispute with the decision, you have the right to have the decision reconsidered. You must present your arguments in **WRITING** within 15 days of your receipt of the claim denial.



REED
CONCRETE PLACING EQUIPMENT

WARRANTY CLAIM NO. (1)
13822 OAKS AVENUE
CHINO, CA. 91710 909-364-2100
Date:

Distributor Account Number:
Distributor: (2)
Address:
City:
State: Zip Code:
Phone: ( )

End User Account Number:
End User: (3)
Address:
City:
State: Zip Code:
Phone: ( )

MACHINE PUMP DATA
Model (4) Serial No. (5) In Service Date (6)
Hours of Operation (7) Failure Date (8) Repair Date (9)
NOTE - Hold deficient part(s) until requested by **REED** or until claim is approved. All parts requested to be returned must have a return authroization number provided by **REED**, shipped freight prepaid.Parts must ship within 30 days from **REED** request.
RETURN AUTHORIZATION NO. (10) SHIP DATE (11)

PART NUMBER	DESCRIPTION (12)	QTY.	NET PRICE	TOTAL PRICE	*REED* REPLACEMENT PART INVOICE NO. (13)

Describe Failure and How it Occurred (14)

REED comments

Claim Approved for
$

REED Use - Claim Approved ☐ Denied ☐

Signed Date

Dealer Signature (15)
Date