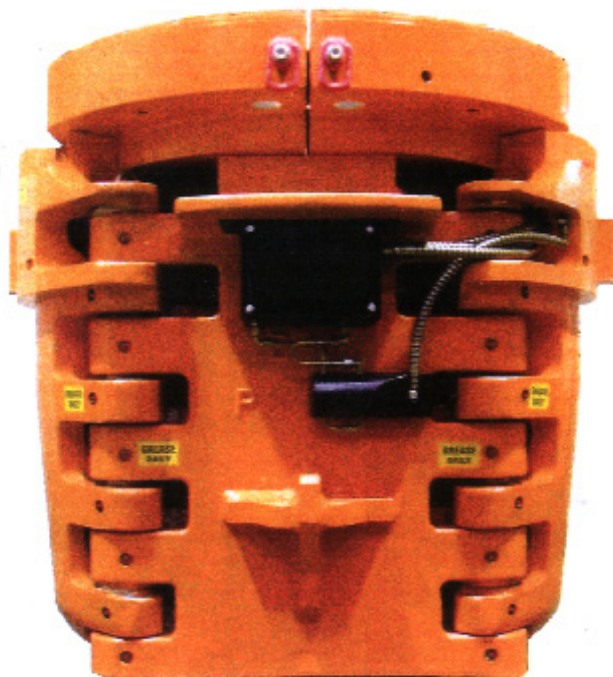


Blohm+Voss Pipe Handling Equipment
PS 750-2 and PS 1000 Power Slip
Technical Documentation
Original Instructions



Manual 776100-D Rev 013, September 2013, PS 750-2 and PS 1000 valid from SN 107413
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Blohm + Voss Oil Tools

Blohm+Voss

GENERAL INFORMATION

Warnings and Note

WARNING: A “WARNING” INDICATES A DEFINITE RISK OF EQUIPMENT DAMAGE OR DANGER TO PERSONNEL. FAILURE TO OBSERVE AND FOLLOW PROPER PROCEDURES COULD RESULT IN SERIOUS OR FATAL INJURY TO PERSONNEL, SIGNIFICANT PROPERTY LOSS, OR SIGNIFICANT EQUIPMENT DAMAGE.

NOTE: A “note” indicates that additional information is provided about the current topics.

WARNING: THIS TECHNICAL DOCUMENTATION CONTAINS INSTRUCTIONS ON SAFETY, INSTALLATION, OPERATION AND MAINTENANCE FOR THE BLOHM + VOSS OIL TOOLS TOOL .

Improper / Unsafe Use

The tool must only be used for the designated purpose.
When using the tool, the rated load must never be exceeded.

IT MUST BE STUDIED BEFORE WORKING WITH THE TOOL.

Intended use of this manual

This manual is intended for use by field service, engineering, installation, operation, and repair personnel. Every effort has been made to ensure the accuracy of the information contained herein. Blohm + Voss Oil Tools, will not be held liable for errors in this material, or for consequences arising from misuse of this material. Anyone using service procedures or tools, whether or not recommended by Blohm + Voss Oil Tools, must be thoroughly satisfied that

neither personal safety nor equipment safety will be jeopardized.

Intellectual property

All rights retained. No part of this document may be reproduced in any form (print, photocopy, microfilm or any other procedure) or be processed using an electronic system without written approval of Blohm + Voss Oil Tools.

All information contained in this manual is based upon the latest product information available at any time of printing.

Dependent on ongoing technical improvements (ISO 9001) “Blohm + Voss Oil Tools” reserves the right to change the design and specifications without announcement.

The values specified in this manual represent the nominal values of a unit produced in series. Slight deviations in the case of the individual devices are possible.

NOTE: In the event of problems that cannot be solved with the aid of this manual, please contact one of the addresses listed below.

CE Marking

The tool complies with the Machinery Directive 98/37/EC and 2006/42/EC

For machines containing any hydraulic or pneumatic powered parts, the Directive 2014/34/EU “Equipment and protective systems in potentially explosive atmospheres” applies.

The marking is as follows: CE Ex II 2G T5 (hydraulic tools) or CE Ex II 2G T6 (pneumatic tools).

Limited Warranty

The warranty provided will be void if the tool is either:

1. Repaired or serviced by a service facility which was not authorised by Blohm + Voss Oil Tools.
2. Replacement parts not manufactured by Blohm + Voss Oil Tools are used.
3. Modifications were made to the tool which were not approved by Blohm + Voss Oil Tools.

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General safety issues

WARNING: ONE SHOULD AVOID CREATING IGNITION SOURCES, LIKE HEAT, AS A RESULT OF THE USE OF THE TOOL WITH OTHER TOOLS OR EQUIPMENT.

WARNING: DO NOT USE THE TOOL FOR ANY OTHER PURPOSE THAN GIVEN IN THIS DOCUMENT WITHIN IT'S SPECIFICATION.

WARNING: FAILURE TO CONDUCT ROUTINE MAINTENANCE COULD RESULT IN EQUIPMENT DAMAGE OR INJURY TO PERSONNEL.

WARNING: WEAR PERSONAL PROTECTION EQUIPMENT WHILE WORKING WITH THE EQUIPMENT.

WARNING: IF ANY SAFETY ELEMENTS (LIKE SAFETY ROPES, SAFETY SHEETS, PLATES OR WASHERS) WERE DISASSEMBLED DUE TO MAINTENANCE WORK, DO **NOT** RE-USE THEM. ALWAYS REPLACE THEM WITH NEW SAFETY ELEMENTS.

WARNING: ALL WARNING PLATES, SIGNS AND LABELS ATTACHED TO THE EQUIPMENT MUST BE OBSERVED. THE WARNING PLATES, SIGNS AND LABELS MUST BE PRESENT ON THE TOOL. DO NOT REMOVE THE LABELS. IF THEY ARE MISSING, REPLACING IS MANDATORY.

WARNING: ANY MODIFICATION TO THE TOOL CARRIED OUT WITHOUT THE APPROVAL OF BLOHM + VOSS OIL TOOLS WILL VOID ANY WARRANTY.

WARNING: USING THE TOOL WITH DAMAGED OR WORN PARTS CAN CREATE SERIOUS INCIDENTS.

WARNING: IT IS NOT ALLOWED TO USE ANY COMPONENTS WHICH ARE OF „NON-B+V“ ORIGINE, OR USE „NON-OEM“ PARTS WHICH ARE NOT APPROVED BY B+V. IT WILL VOID ANY WARRANTY AND MAY EFFECT THE CORRECT FUNCTIONING OF THE TOOL AND IT'S SAFETY FEATURES.

WARNING: THE COMPANY OPERATING THE TOOL IS RESPONSIBLE FOR EVALUATING SAFE AND PROPER USE OF THE TOOL IN A HAZARD ANALYSIS.

WARNING: THE OPERATING COMPANY IS OBLIGATED TO ISSUE WORKING INSTRUCTIONS FOR SAFE USE AND SUPERVISE OBSERVANCE OF THESE WORKING INSTRUCTIONS.

WARNING: EVERY EMPLOYEE, WHICH OPERATES, SERVICES, INSPECTS OR OTHERWISE INVOLVED WITH THE USE OF THE TOOL IN OTHER AREAS HAS TO ENSURE, THAT THESE ACTIONS ARE DONE BY TRAINED AND BY AN BLOHM + VOSS OIL TOOLS AUTHORIZED PERSONNEL, AND SHOULD COMPLETE REGULAR COURSES OF TRAINING, TO ENSURE PROPER USE AS WELL AS SAFE OPERATION, CORRECT MAINTAINANCE AND INSPECTION.

WARNING: IF NECESSARY, A REASONABLE, ADDITIONAL SUPERVISOR SHOULD BE APPOINTED DURING OPERATION.

WARNING: STAY AWAY FROM THE TOOL DURING OPERATION. IN CASE IT IS REMOTE OPERATED IT MAY MAKE MOVEMENTS WITHOUT WARNING.



Warning sign PN 671638
General warning



Warning sign PN 671642
Pay attention: Apply grease at least once a day.



Warning sign PN 611524
Danger: Do not touch.



Warning sign PN 671640
Pay attention: Do not place your hands between moving parts.



Warning sign PN 671641
Pay attention: Risk of crushing.

Safety issues Power slips

WARNING: ALWAYS ENSURE THE SLIP SEGMENTS ARE LABELLED WITH THE SAME SERIAL NUMBER. NEVER USE SEGMENTS WITH DIFFERENT NUMBERS AS THEY MAY CAUSE THE PIPE TO DROP DUE TO DIFFERENT WEAR PATTERNS.

WARNING: UNDER NO CIRCUMSTANCES SHOULD THE SLIP ASSEMBLY BE RAISED WHILE SUPPORTING LOAD. IF THE SLIP ASSEMBLY IS LOWERED IN PLACE, THE TOOL CAN BEAR THE LOAD OF THE TUBULAR.

BEFORE RAISING THE SLIP ASSEMBLY, MAKE SURE THAT THE TUBULAR LOAD IS SUPPORTED. THE SLIP ASSEMBLY MUST BE RELEASED FROM ANY LOAD BEFORE RAISING IT.

WARNING: YOU MUST NEITHER ASSEMBLE NOR DISASSEMBLE SLIPS, GUIDES, INSERTS, ETC. WHEN THE TOOL IS PLACED IN THE ROTARY TABLE.

WARNING: NEVER USE THE POWER SLIP WITHOUT GUIDE PLATES. THIS CAN CAUSE DAMAGE TO THE SLIPS AND LEAD TO LOSS OF PIPES/ TUBULAR.

WARNING: IT MUST BE ENSURED AND CONTROLLED REGULARLY THAT THE BACK SIDE OF THE SLIPS ARE LUBRICATED WITH ENOUGH GREASE. THE QUANTITY OF GREASE MUST BE RELATED TO THE TYPE OF OPERATION AND TYPE OF MUD. FAILURE TO GREASE PROPERLY MAY LEAD TO STICKING SLIPS.

WARNING: DO NEVER UNLATCH/OPEN THE TOOL WHILE A PIPE IS SUSPENDED IN THE TOOL; THE PIPE WILL BE LOST!

WARNING: MAKE SURE ALL SLIP SEGMENTS ARE FREE IN THE UP POSITION WHEN LATCHING THE ELEVATOR. IF ANY OF THE SEGMENTS ARE STUCK IN THE DOWN POSITION, THE ELEVATOR MAY NOT CLOSE PROPERLY.

Safety issues automatic Power slips

WARNING: ENSURE THE CONNECTORS ARE FROM A MALE AND FEMALE TYPE TO PREVENT FAULTY CONNECTIONS.

WARNING: HYDRAULIC ONLY BEFORE ANY MAINTENANCE WORK IS CARRIED OUT, MAKE SURE THAT NO PRESSURE IS APPLIED TO THE EQUIPMENT AND THAT THE CONNECTING LINES ARE DISCONNECTED (IF APPLICABLE).

Warning: you must neither assemble nor disassemble slips, guides, inserts, etc. When the tool is placed above the well center.

EC-DECLARATION OF CONFORMITY

We,

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20457 Hamburg
Phone:+49(0)40 3119-1139
Fax:+49(0)40 3119-3305

declare that the product

B+V Type Power Slip PS 750-2 and PS 1000, hydraulic operated
including Slips, Carrier, Guide plates and Control Unit

which is the subject of this declaration, is in conformity with the following standard(s) or normative documents

98/37/EC:	Machinery Directive
2006/42/EC:	Machinery Directive from 31 December 2009.
DIN EN ISO 12100 :	Safety of machinery, part 1 and 2
DIN EN ISO 14121-1:	Safety of machinery, Risk assessment
Directive 94/9/EC:	Devices and protection systems for intended use in
explosive areas	
DIN EN 13463-1:2009-07:Non-electrical equipment for use in potentially explosive atmospheres	
ISO 14693/API 7K:	Specification for Drilling and Well Servicing Equipment

Marking:  II 2G T5

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DESCRIPTION

DESCRIPTION

1. DESCRIPTION

General

The Blohm+Voss Power Slip PS 750-2/1000 is designed to be installed into 49.5" rotary tables almost to flush level with the rig floor.

It lowers the casing connection for easier operation and eliminates the need for work platforms. The PS500 is rated for 500 short tons. The PS750-2 is rated for 750 short tons, the PS1000 for 1000 short tons. Body and Slip are produced according to API 7K latest edition.

The PS750-2 and PS1000 are used for suspending tubular like casing, drill pipe, tubing and drill collars. The power slip is available with two different guide mounts. (See Chapter "Description Option")

On the standard guide mount the guide plates are inserted and fastened with bolts.

On the modified guide mount the guide plates are pushed into a keyed joint. (See Chapter „Installation“)

Features

- Hydraulic operated flush mounted Power Slip
- Rapid changing of pipe sizes by means of Insert Carrier and Slip Assemblies.
- Material and manufacturing standard in acc. to API 7K
- Central Slip Grease System
- Hydraulic system is completely integrated and covered into the PS 750-2/1000 body.
- Protector and centraliser can be used when Slip Assembly (without Insert Carrier) has been lifted.
- A hydraulic feedback signal is available, which shows that the Slip Assembly has been set.
- Hydraulic operated Centring Device (can be switched off if not needed)

Intend of use

The Power Slip is designed to be installed into 49.5" rotary tables almost to flush level with the rig floor and will be used for handling vertical pipe strings.

Options

Hydraulic connections

Optional two different main hydraulic connection are possible:

- Below the power slip in the rotary table
- On top of the power slip above the drill floor with hydraulic hoses or multi-couplings.



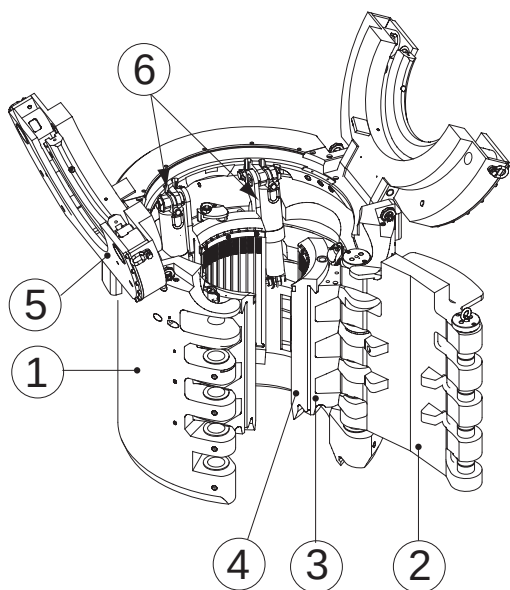
B+V PS750-2/1000 installed in the rotary table

Rotary tables and Guide mounting

The tool is available for the following Rotary Tables:

Rotary tables Configuration	Part number			
	Guide with plug-in connection		Guide with keyed joint system	
Power Slip	PS 750-2	PS 1000	PS 750-2	PS 1000
National	776100-N	772000-N	777100-N	773000-N
Emsco	776100-E	772000-E	777100-E	773000-E
Oilwell/Wirth	776100-W	772000-W	777100-W	773000-W

Other rotary tables configurations on request.



B+V PS750-1000 main components

Main assemblies

The power slips consist of the following main assemblies:

1. Body
2. Door
3. Slip Assembly
4. Insert Carrier
5. Hydraulic Centring Device
6. Hydraulic Assembly



Improper / Unsafe Use

The PS750-2/1000 must only be used for the designated purpose. When using the PS750-2, the load of 750 sh tons must never be exceeded. When using the PS 1000, the load of 1000 sh tons must never be exceeded.

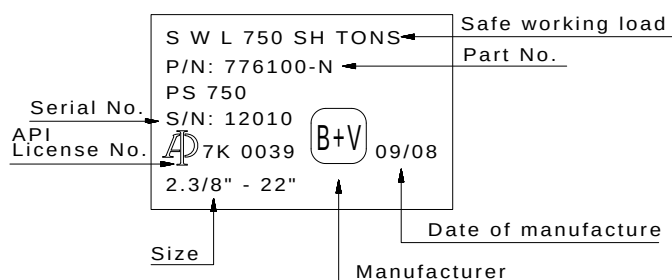
Limited Warranty

The warranty provided will be void if the Powerslip is either:

- a) repaired or serviced by a service facility which was not authorised by Blohm+Voss Oil Tools
- b) replacement parts not manufactured by Blohm+Voss Oil Tools are used
- c) modifications were made to the Powerslip which were not approved by Blohm+Voss Oil Tools

Identification

The identification area clearly identifies the Powerslip area (manufacturer, type, material, part number, serial number, date of manufacture). It is important to keep this information ready for the purpose of servicing and repair work.



Technical Data

	PS750-2	PS1000
Rotary table	49.5"	49.5"
Maximum allowable working load	750 sh tons	1000 sh tons
Pipe size range (i.e. Drill pipe, casing, tubing and drill collars)	2.3/8" to 22"	2.3/8" to 22"
Weight w/o Carrier (incl. hydraulic centring system)	14,870 Lb / 6,000 Kg	16,850 Lb / 6,800 Kg
Working pressure	Min 150 bar (2175 Psi), max 210 bar (3040 Psi)	Min 150 bar (2175 Psi), max 210 bar (3040 Psi)
Maximum allowed pressure	300 bar (4,350 Psi)	300 bar (4,350 Psi)
Hydraulic Flow rate	Min 5 Gpm (18.9 l/m), max 10 Gpm (37.9 l/m)	Min 5 Gpm (18.9 l/m), max 10 Gpm (37.9 l/m)
Hydraulic lines for operation	A + B	A + B
Hydraulic line for feedback	C	C
Grease line	G	G
Minimum required clearness of hydraulic fluid	NAS 9	NAS 9
Temperature working range ambient	- 20° C to + 40° C - 4° F to 104° F	- 20° C to + 40° C - 4° F to 104° F
Max temp hydraulic fluid	+ 60° C + 140° F	+ 60° C + 140° F

Hook up kit pn 775100-HUK / service tools

	Available for PS750-2	Available for PS1000
Grease pump	775810	775810
Lift beam traverse	775002-2	775002-2
5 Hose assembly 25 f (set)	757008	757008
1 point Sling for slip assembly	755662	755662
4 point Sling for slip assembly	755663	755663
Toolkit	775820	775820
Cover for HCD	775780	775780
Carrier lifting tool 2.3/8"-14"	757070	757070
Carrier lifting tool 16"-20"	775460	775460
Unlock tool for HCS	775900	775900
Service Box for Hook Up Kit	775008**	775008**
Set of tools	675162	675162
Bit breaker adapter plate	775795	775795
Wire rotator tong	675163	675163

Available optional equipment

	Available for PS750-2	Available for PS1000
Wiper	775950**** 775990	775950**** 775990
Bit breaker plate for 37,5"	553455***	553455***
Adapter for Wirth RTSS 495	775910	775910
Adapter for EMSCO T4950	775906	775906
Solid adapter 495-605	553220	553220
Hinge casing spider 200 shTons 11.3/4"-13.3/4" *	553600	553600
Reducing bushing 9.5/8"-10.3/4" *	553610	553610
Reducing bushing 2.3/8"-8.5/8" *	553611	553611
Electrical control unit*	757106	757106
Pneumatic control unit*	755107	755107
Manual control unit*	755108	755108
Grease counter unit ExII2G, supply 230 V AC*	755105-7	755105-7
Grease counter unit ExII2G, supply 24 V DC*	755105-8	755105-8
Multi coupling kit	776800	776800

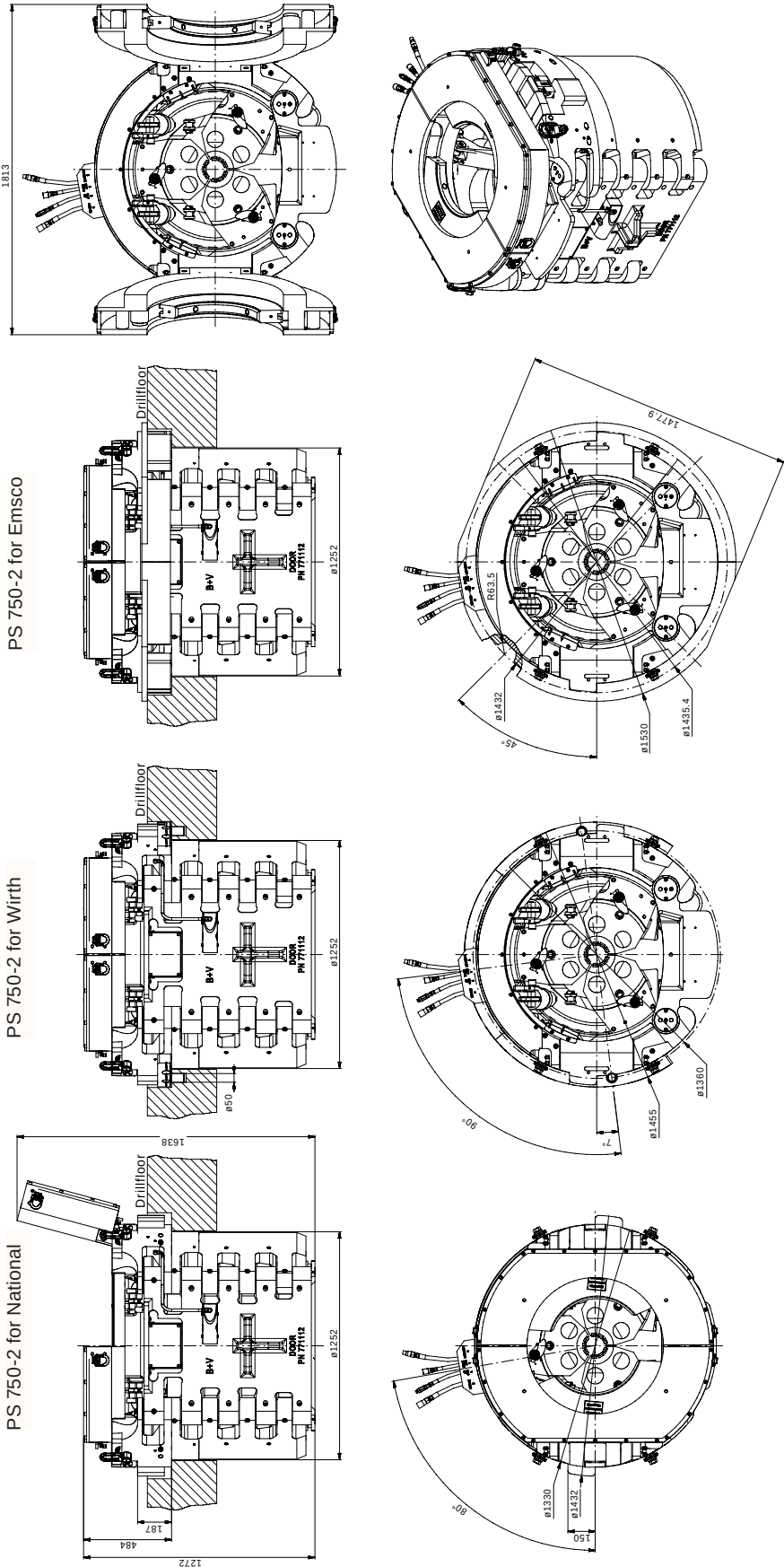
* Technical documentation separately available

** Up to 14"

*** On request. Standard bit breaker plates can be used

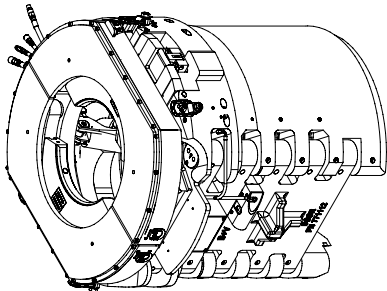
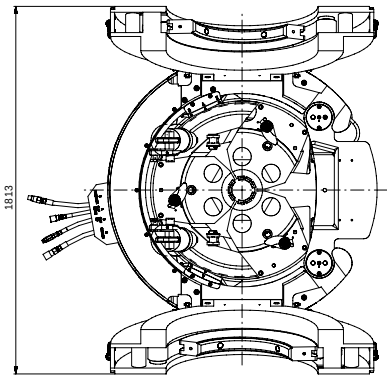
**** Cannot be ordered

Main Dimensions PS750-2

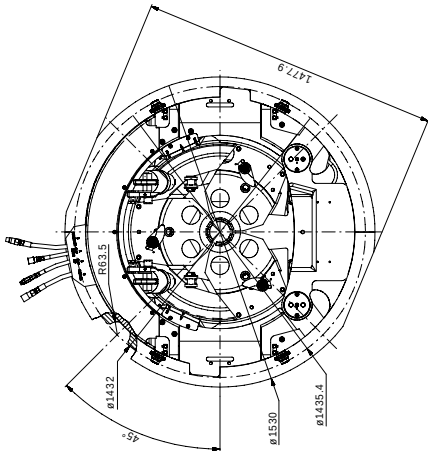
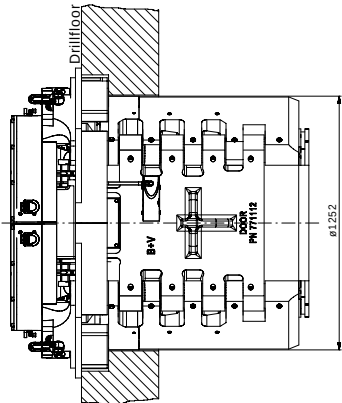


Main Dimensions PS1000

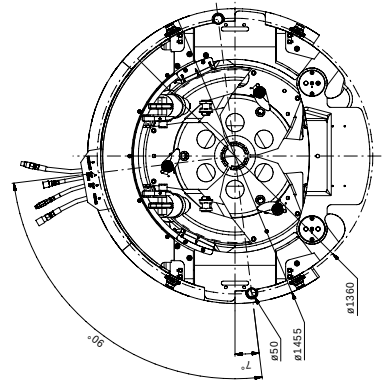
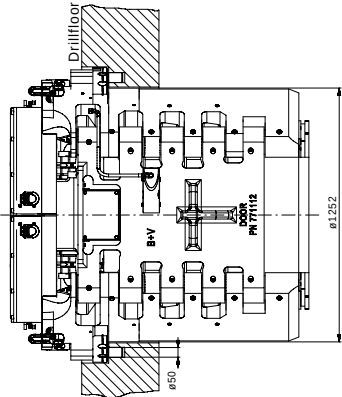
DESCRIPTION



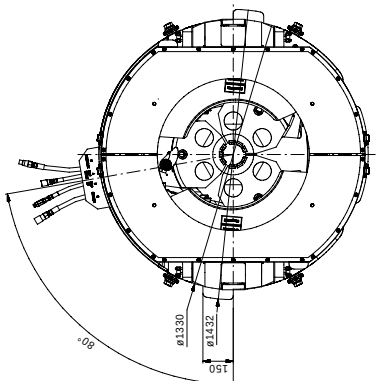
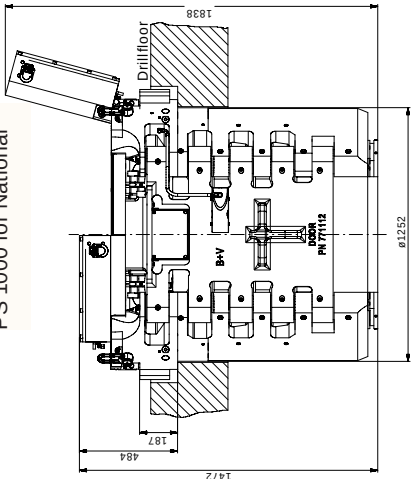
PS 1000 for Emsco



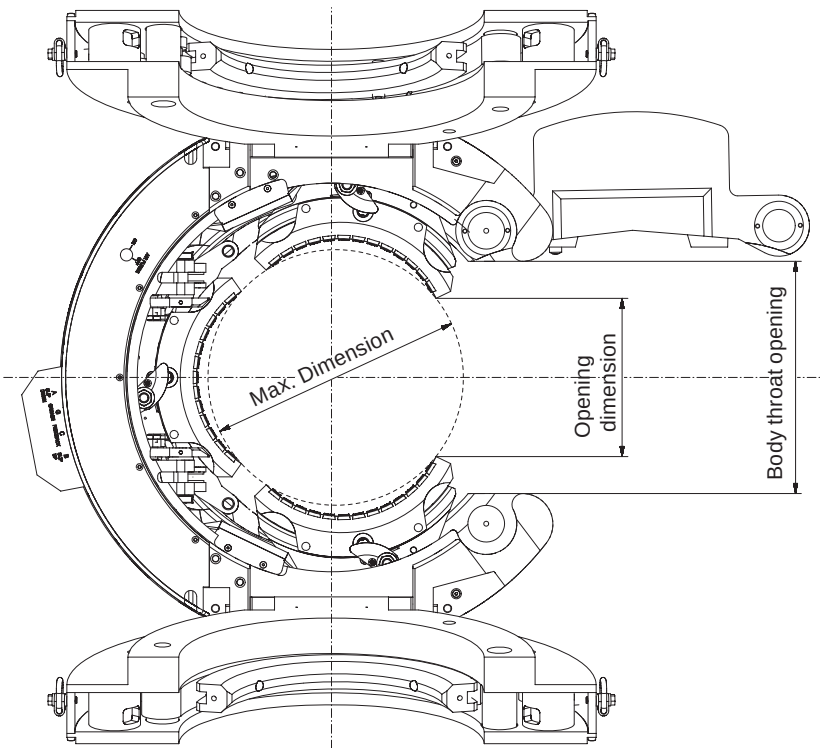
PS 1000 for Wirth



PS 1000 for National



Opening dimensions



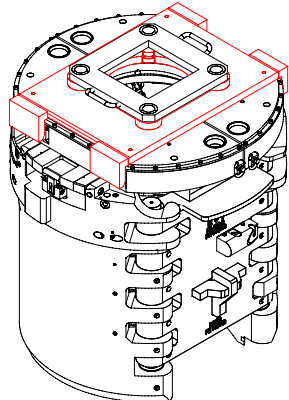
PS750-2 and PS1000

Pipesize	Body throat opening	Opening Dimensions	Max. Dimension (without clearance)	
			with Carrier	without Carrier
11.7/8"		12,7 inch / 321,7 mm	17,5 inch / 444,3 mm	
14"		14,2 inch / 360,7 mm	18,6 inch / 473,7 mm	
16"			20,5 inch / 522,2 mm	27,5 inch / 699,8 mm
17"	22,4 inch / 570 mm	20 inch* / 509,4 mm*	21,7 inch / 551,3 mm	27,5 inch / 699,8 mm
18"			22,7 inch / 576,2 mm	27,5 inch / 699,8 mm
20"			24,7 inch / 627,3 mm	27,5 inch / 699,8 mm
22"		22,6 inch / 573,4 mm	26,9 inch / 682,4 mm	

* Remove carrier first

Options

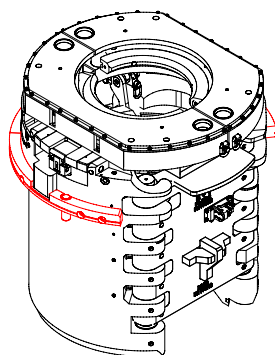
Bit breaker adapter plate with standard bit breaker plate



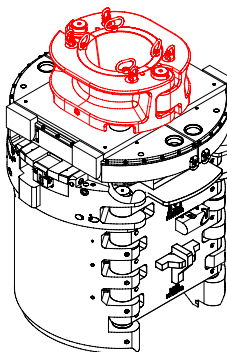
Service (carrier) box pn 775008



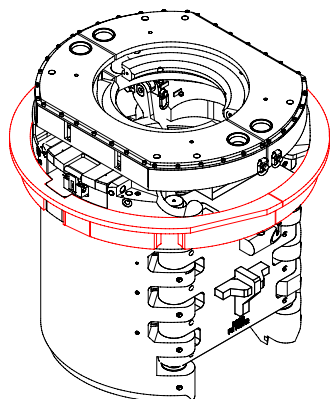
Adapter for Wirth RTSS 495, pn 775910



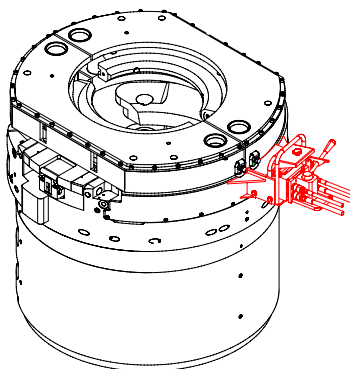
Hinge casing spider, pn 553600



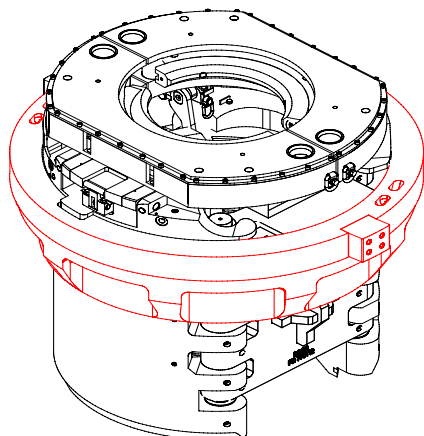
Adapter for Emsco T4950, pn 775006



Multi coupler kit



Solid adapter 495-605;



COMMISSIONING

2. COMMISSIONING

Commissioning PS750-2/1000

Blohm + Voss strongly recommends to accomplish the Power Slip commissioning with the Blohm + Voss Commissioning Service.

Read manual before first use !

OK	☐	Operating personnel is aware of all danger that depends on handling the B+V tool (see manual first) !
----	--------------------------	---

Prior to use of the Blohm+Voss Power Slip following checks must be carried out :

Scope of supply

OK	☐	Cross check of all delivered parts
----	--------------------------	------------------------------------

Hydraulic Characteristics

OK	☐	Operating pressure	150...210 bar (2175...3040 PSI)
----	--------------------------	--------------------	---------------------------------

OK	☐	Volumetric flow	37,85 l/min (10 GPM)
----	--------------------------	-----------------	----------------------

OK	☐	Minimum required hydraulic oil clearness	NAS 9
----	--------------------------	--	-------

Check and Lubrication

OK	☐	Check for correct seating of Door Hinge Pins
----	--------------------------	--

OK	☐	Apply grease to all greasing Points (see manual) until grease is visibly coming out of the bores
----	--------------------------	---

Commissioning Hinge Casing Spider

OK	☐	Operating personnel is aware of all danger that depends on handling the B+V tool (see manual first) !
----	--------------------------	---

Scope of supply

OK	☐	Cross check of all delivered parts including correct reducing bushings
----	--------------------------	--

Power Slip

OK	☐	Check if the carrier and guide plates are de-installed
----	--------------------------	--

OK	☐	Check if the hydraulic centering system is open
----	--------------------------	---

OK	☐	Check if the slips are in the upper position
----	--------------------------	--

OK	☐	Check if hydraulic power supply to the power slip is switched off
----	--------------------------	---

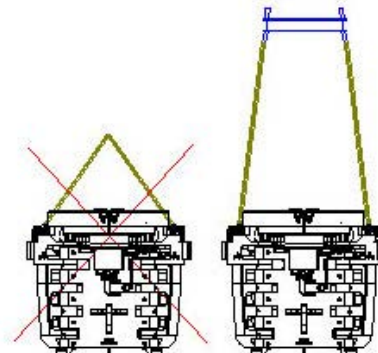
INSTALLATION

3. INSTALLATION

Lifting and transport

Lift the PS with Lifting Eyes and Traverse only (P/N 775002-2)

There are additional Sling Gears available.
(See Hook Up Kit p/n 775007-HUK-2)



Hydraulic System

WARNING: BEFORE START OF WORK WEAR YOUR PERSONAL PROTECTION EQUIPMENT. ESPECIALLY LEAK OIL UNDER PRESSURE CAN CAUSE SEVERE PERSONAL INJURY TO THE EYES.

Venting

The hydraulic system of a new Power Slip is shop-vented. Be aware that the hydraulic connection hoses (slips up, slips down and feed back signal) should be vented before connecting it to the power slip.

Hydraulic oils

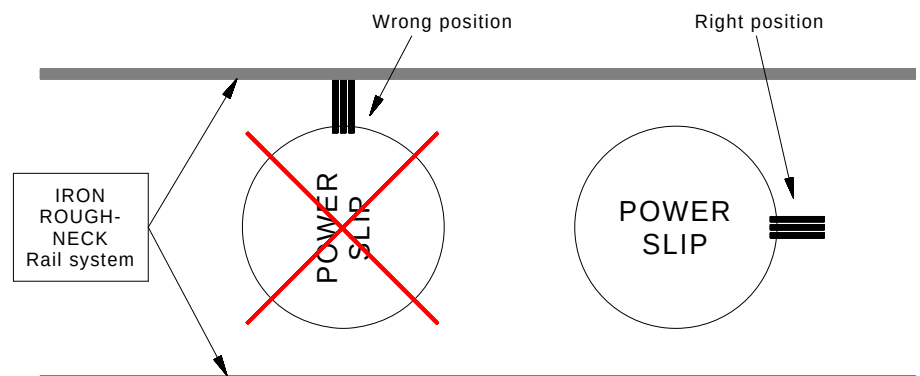
The below mentioned oils are recommended by B + V.

Brand	Flash point °C	Above -20°C	Flash point °C	Below -20°C
Aral	224	Aral Vitam GF 46	200	Aral Vitam GF 32
Castrol	200	Hyspin AWS-46	186	Hyspin AWS-32
Gulf	210	Harmony 46AW	202	Harmony 32AW
Shell	218	Tellus 46	209	Tellus 32
Finke	300	Aviaticon HY-HE-46	265	Aviaticon HY-HE-32
Fuchs	220	Renolin MR 10	210	Renolin MR 15

WARNING: ENSURE TO WEAR PERSONAL SAFETY PROTECTION LIKE GLOVES AND SAFETY GLASSES WHEN HANDLING HYDRAULIC OIL AND/OR GREASE. OIL AND GREASE MAY BE POTENTIALLY HARMFULL FOR SKIN AND EYES.

Aligning the Hydraulic Connection

The position of the hydraulic connection must be selected in such a way that no damage can occur to the connecting hoses/tubes due to external influence.



Aligning the PS

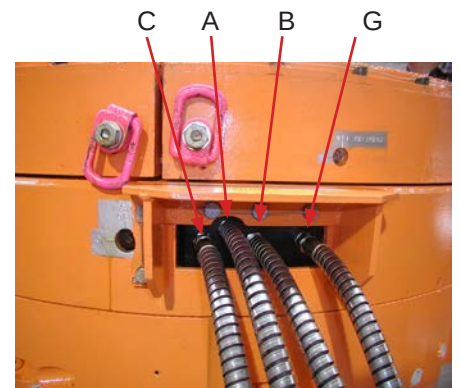
Hydraulic connection

One can connect the tool with the standard hydraulic connectors or using the optional multicoupling kit, which simplifies the connection.

- A = Pressure/return
- B = Pressure/return
- C = Feedback
- G = Grease



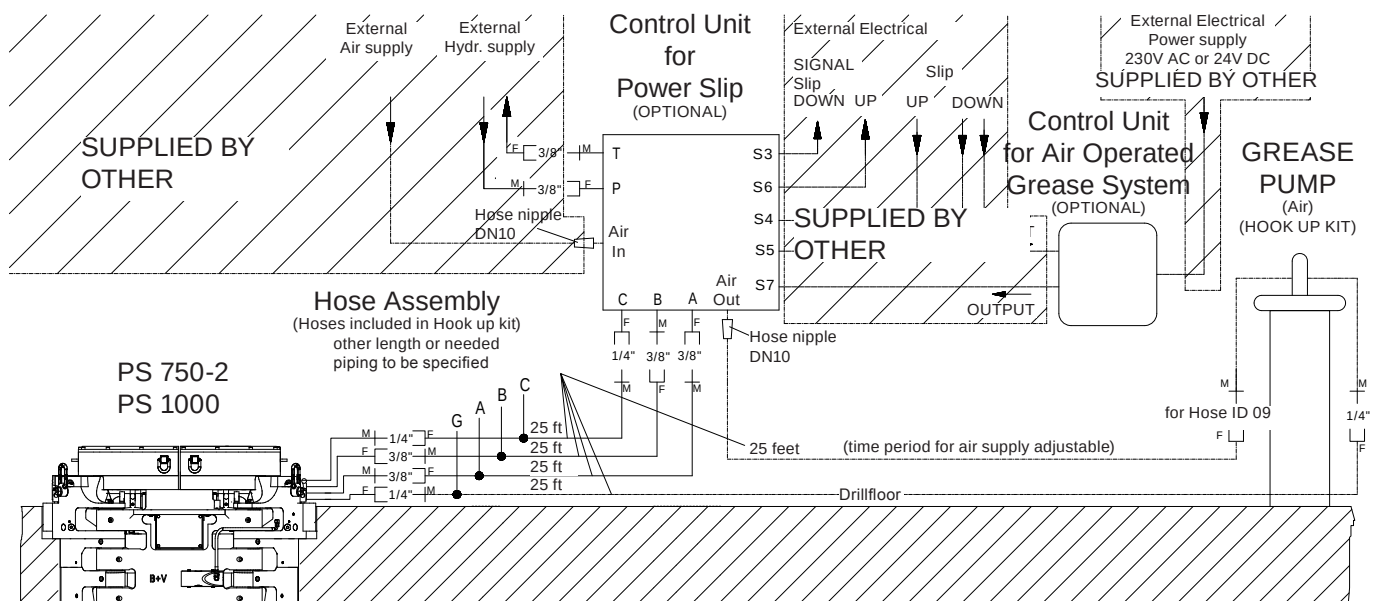
Multicoupling



Standard connection

Installation Schematic

The block diagram represents the connection of the PS, including lubricator control (grease interval counter optional available). Various Control Units (electrically, pneumatically and manually controlled) are available.



Control Unit supply

- S4: Slip UP - permanent electrical signal required
- S5: Slip DOWN - permanent electrical signal required
- S3: Signal Slip DOWN - supply of permanent electrical signal
- S6: Signal Slip UP - supply of permanent electrical signal

Pressure

Hydraulic	160-210 bar
Air	4-10 bar
Grease	400 bar

Coupling

- Coupling 1/4" NPT for pipe OD 8 mm
- Coupling 3/8" NPT for pipe OD 12 mm

Electric connection

- S4: 24VDC, 1,5mm² (Cable Gland diameter 9,0mm)
- S5: 24VDC, 1,5mm² (Cable Gland diameter 9,0mm)
- S6: max.250V, 1,5mm² (Cable Gland diameter 9,0mm)
- S3: max.250V, 1,5mm² (Cable Gland diameter 9,0mm)
- S7: 24VDC, 1,5mm² (Cable Gland diameter 9,0mm)

NOTE:

- B + V does not supply electrical cable outside of the control unit and does not supply installation of electrical cable
- Power supply of signal S3 / S6 through cable S3 / S6 (max voltage of pressure switches inside is 250V each, with switching capacity max.250V~1A/250V = 0.25A)
- If Power Slip, Control unit or Grease pump is delivered without hose assy, then B+V supplies complete couplings (both male and female) with outside thread for connection, see table for different thread sizes.

Legend

- A:Slip down
- B:Slip up
- C:Slip Feedback signal
- G:Grease connection
- P:Pressure
- T:Return
- S4:Slip up
- S5:Slip down
- S6:Signal Slips are up
- S3:Signal Slips are down
- S7:Signal for control unit grease system

- Hydraulic
- Air
- Grease
- Electric

Functional description of hydraulic system

See hydraulic schematic below.

Set slips

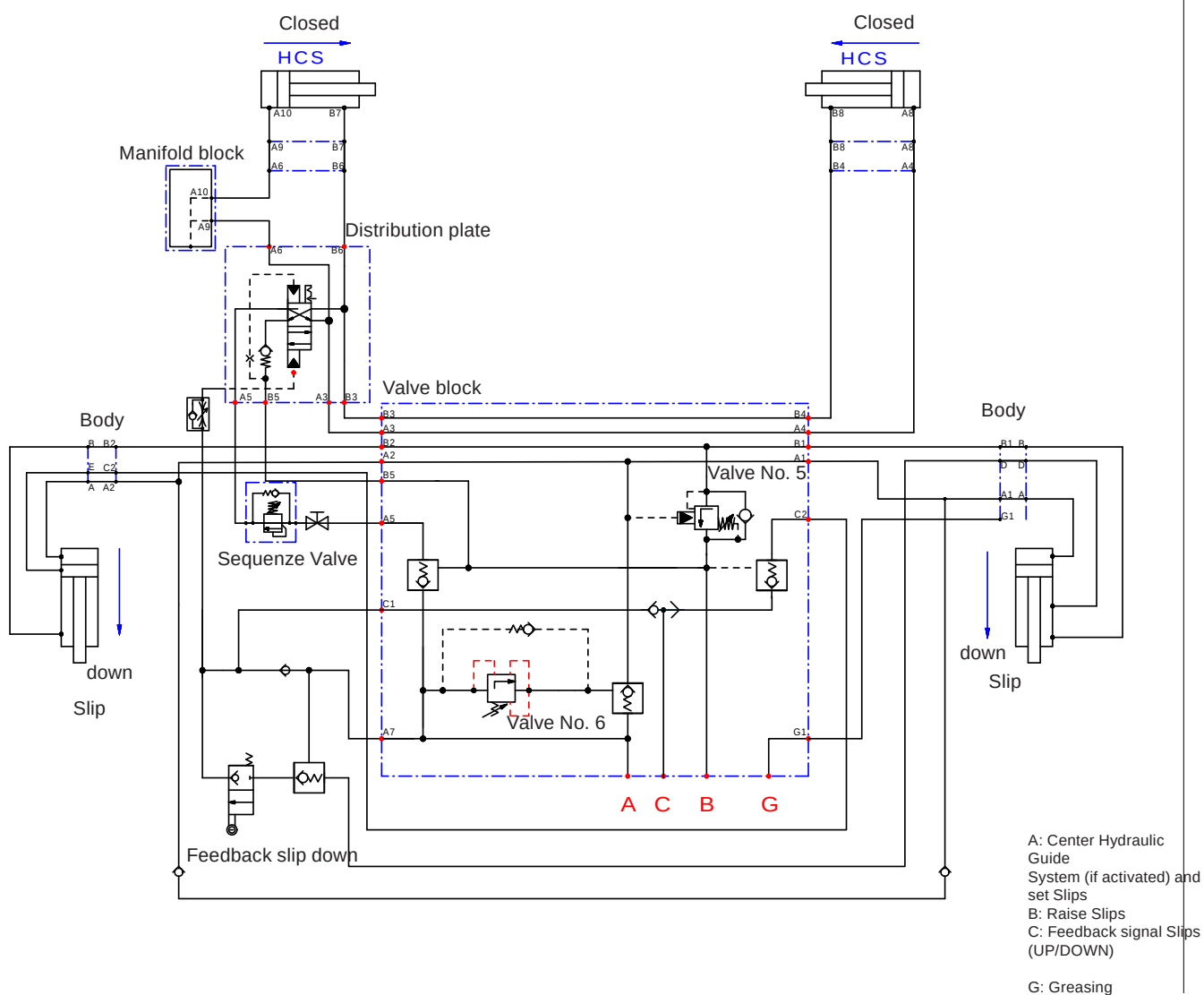
To set the slips the hydraulic connection A is pressurised. First the Centring system closes and centers the pipe. Then the slip assembly will be set and can take the load of the pipe. When the slips are fully set a plunger is actuated. The plunger release an hydraulic signal C to the driller as an indication that the slips are set.

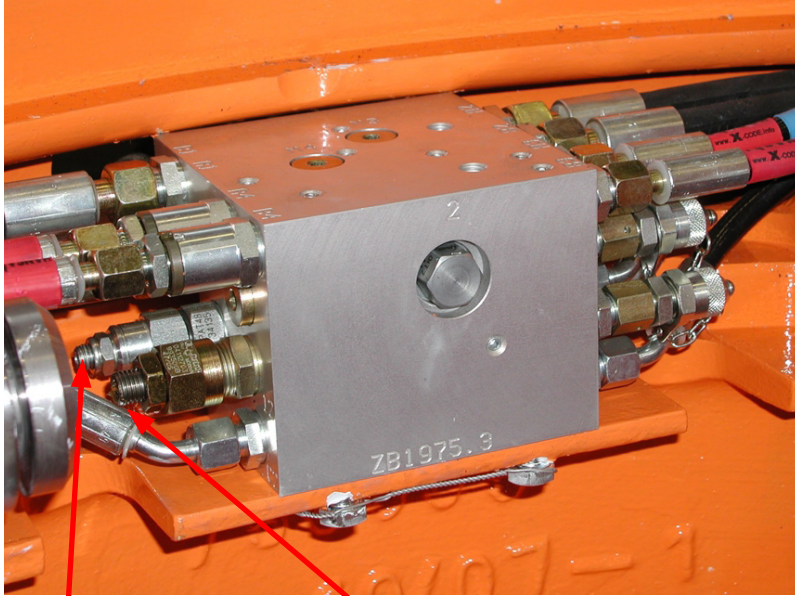
Raise slips

To raise the slips the hydraulic connection B is pressurised. The Slip Assembly raises and releases the pipe.

Feedback

The feedback signal shall only occur when both line A and B are pressurised.





Screw No.5

Screw No.6

Anti-lowering valve

The load Lowering Valve no.5 prevents the slips from closing in case of a pressure loss.

Adjusting Valve No. 5

The valve can be adjusted by releasing the lock nut and secondly, by rotating the adjusting screw counterclockwise. If valve adjustment is needed, start carefully with 1/4 rotation and test the valve function first. Afterwards make sure adjustment screw and lock nut are pulled tight.

Sequence Valve no.6 regulates the Hydraulic Pipe Centering force. Factory-made it is adjusted to 130 bar.

Adjusting Valve No. 6

If different Centering force is needed, remove the cap nut and release the lock nut. For higher force rotate the adjustment screw clockwise carefully. For lower force rotate counterclockwise.

Make sure the adjusted Centering pressure is at least 10 to 20 bar higher than the working pressure. Otherwise a sequence male function will occur. Pull tight the lock nut and cap nut after adjustment.

Hydraulic centering system (HCS)

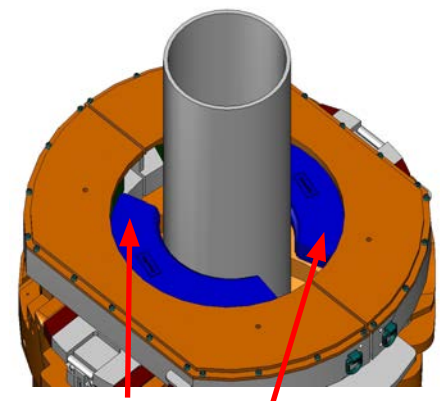
The PS 750-2/1000 is equipped with a Hydraulic Centring System (HCS) with replacable guide plates. The HCS centres the pipe prior to setting the slip assembly. It is necessary to adjust the centering system to the pipe type used before putting the equipment into operation in order to ensure that each pipe type centered optimally at maximum force (see instructions below). The centring opens automatically after setting the slips.

WARNING: USE THE CORRECT GUIDE PLATES FOR THE APPLICABLE PIPE DIAMETER.

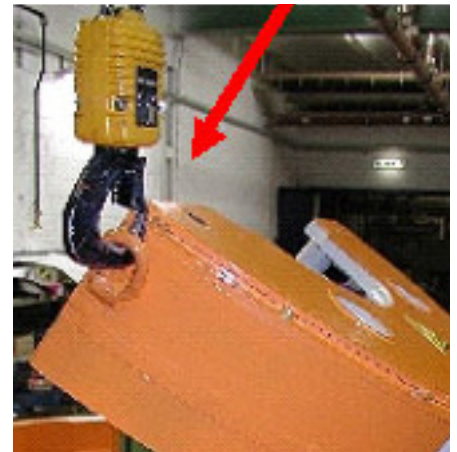
The table in the overview of slips, inserts and carriers shows which guide plates should be used for which pipe size.

The Hydraulic centring device is provided with replaceable guide plates so that different pipe diameters can be guided. It is important that the appropriate guide plates for the pipe diameters are used.

The diameter is stamped on the guide plates (use guide plates of the same size and observe the marking).



Guide plate for different pipe sizes



Adjusting

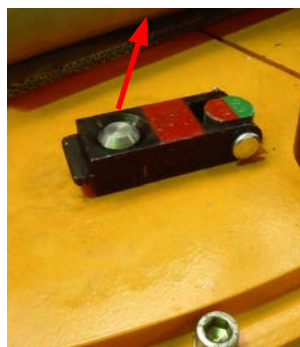
Adjusting Centering Stroke Limitation

The centering system can be adjusted for the following:

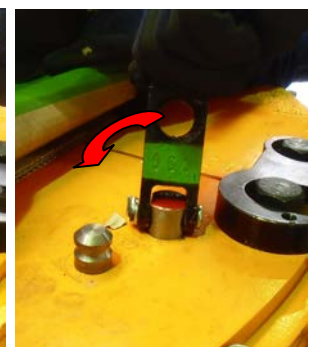
1. Drill Pipe / Drill Collar
2. Casing

Procedure:

- Pull the stroke limitation up on the handle
- Turn the handle until the desired position is reached and arrest it



Drill Pipe / Drill Collar

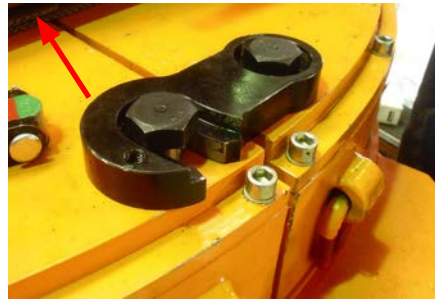


Turn and lay it down for Casing

HCS Opening/Closing

WARNING: NEVER OPEN OR CLOSE THE COVER ASSEMBLY BY HAND OR FEET. USE ALWAYS A TUGGER. OTHERWISE THERE IS RISK OF INJURY OR DAMAGING THE PS 500.

Before opening the centering system, release the mechanical lock upon the cover halves.



HCS closed



HCS opened

HCS Lock/Unlock

The unlock-tool is needed to unlock the Locking device and Closing Assembly.

When the cover is fully opened it is locked automatically.
Before closing the cover release the lock by use of the Unlock Tool.
Always use the Unlock Tool for closing the cover.

- First press the tool inwards. Than lift the tool to unlock the cover assembly.
- Close the cover by use of a crane
- First unlock and then close.

Fig. 01: The Unlock-Tool (p/n 775900) is part of the Hook Up Kit (p/n 775100-HUK)



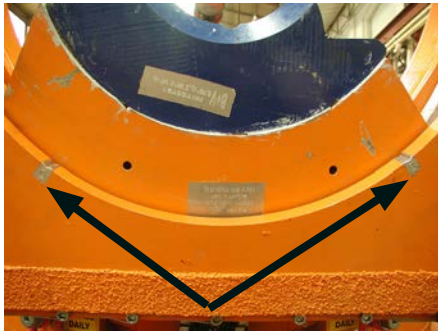
Fig. 01: Unlock tool (P/N 775900), Part of Hook Up Kit (P/N 775100-HUK)



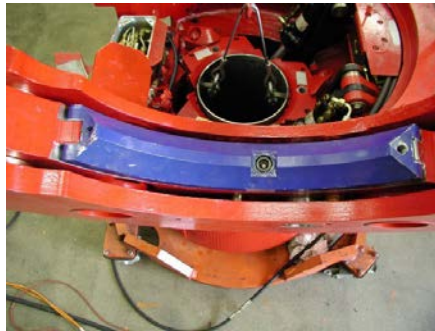
Fig. 02: Cover Assembly locked



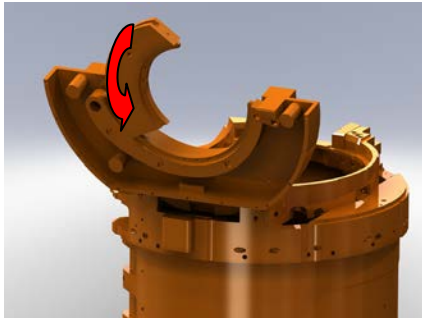
Fig. 03: Cover Assembly unlocked: Press Unlock Tool inwards



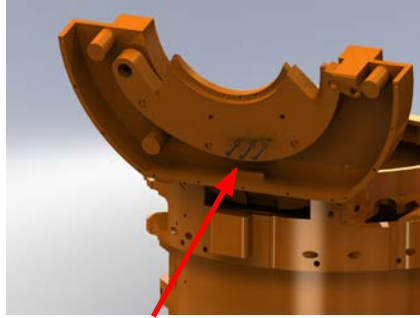
Marker for installation of the adapter



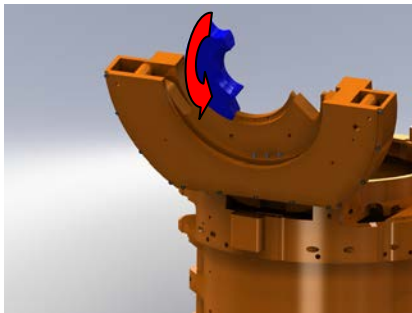
Guide with plug-in connection



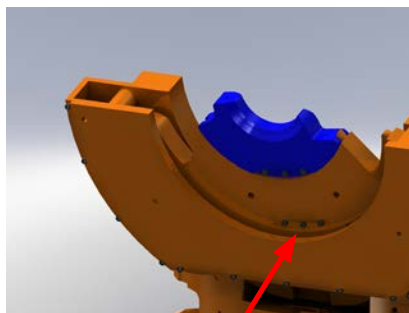
Adapter with keyed joint system



Adapter screws



guide with keyed joint system



Guide plate Screws



Transportation of Guide Plates



Socket wrench



Hole for socket wrench

Mounting the Guide Plates

Guide with plug-in connection

The Hydraulic Centring System must be opened for inserting / changing the Guide Plates.

Fix the guide plate and insert them into the hydraulic centring system from the top and screw on using all screws.

Always grease the contact surfaces when changing the Guide Plates. (The Hexagonal Bore Wrench p/n 775813 is Part of the Toolkit p/n 775820)

Installation of guide with keyed joint system

It is necessary to use the hydraulic centering system to replace / change the guide plates. Then push the guide with tapered groove sideways against the heel of the lever and fasten to lever with all bolts.

Always grease contact surfaces when replacing guide plates.

Transportation of Guide Plates

Use the attached lifting eyebolts as shown above to handle the Guide Plates (Lifting Eye bolts part of the Toolkit)

Switching the hydraulic system on/off

If the Hydraulic Centring System (HCS) is not needed it can be switched off by using the socket wrench (p/n 775812). The indicator pin in the square shows the actual position (HCS ON / OFF)

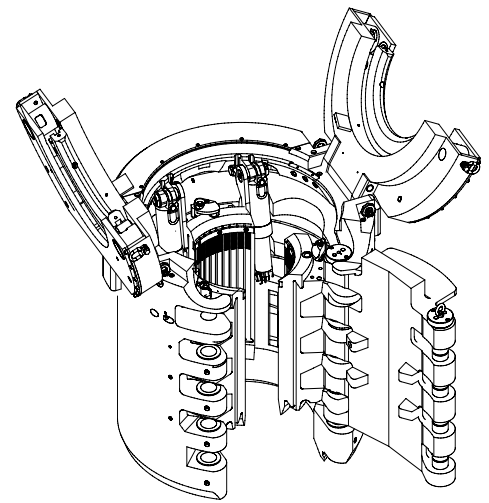
Turn left: ON
Turn right: OFF

Exchanging slips

General notes for exchanging slips

WARNING: SWITCH OFF THE HYDRAULIC POWER BEFORE REMOVING THE SLIPS

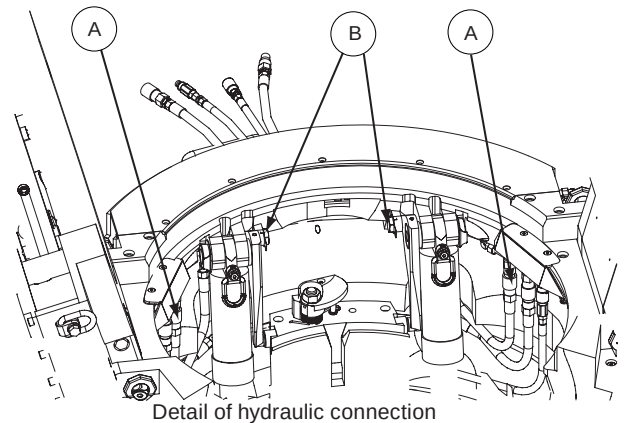
- Set the slips
- Open the HCS
- Remove the insert carriers (except 22")
- Open the door



Tool with door open

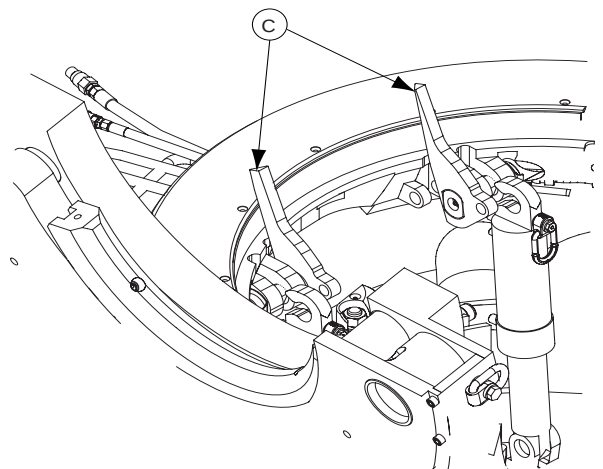
Exchanging slips

- Disconnect the hydraulic (A, 2 plc) hoses from the cylinders as shown in the image
- Remove the retaining bolts (b, 2 plc)



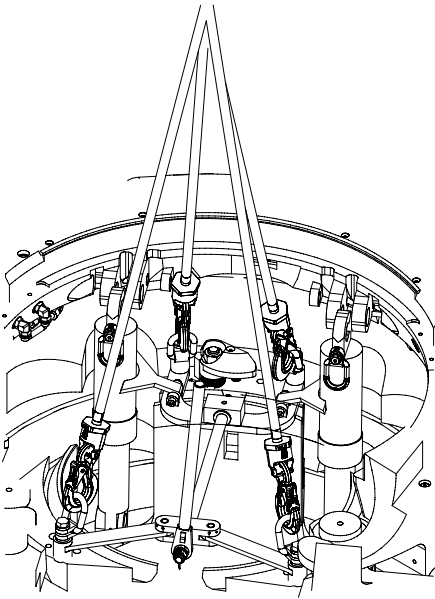
Detail of hydraulic connection

- Rotate the guide plates (C) in an up right position.
- Lift the cylinders from the tool with a tugger.
- Remove the guide plates, 2 plc.



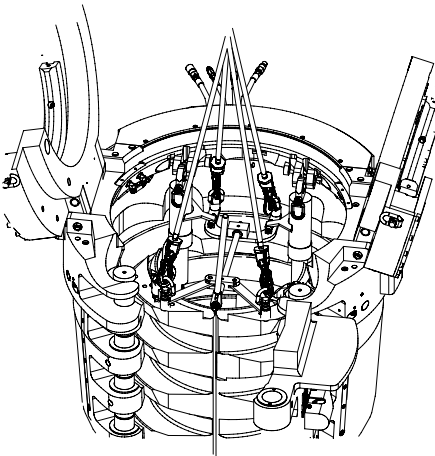
Removing Guide Plates

- Attach the Tightening Tool (pn 775190) to the slip.
- Ensure the cylinders are locked with the dedicated brackets.



Fitting Tightening Tool

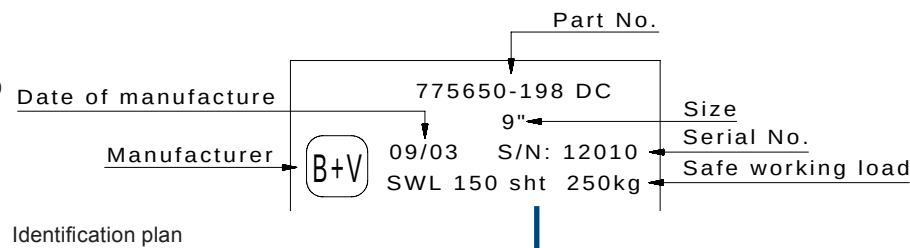
- Tighten the slips with the slip tightening tool.
- Now lift the slip set out of the Power Slip.



Fitting Tightening Tool

Insert Carriers

The PS750-2/1000 can be adjusted to different pipe diameters quickly with the aid of the insert carrier. Before using the Insert carrier, all contact surfaces of the slip assembly must be cleaned thoroughly. It is allowed to lubricate the insert dove tail slots with a waxy anti-corrosion protection e.g. CorrofernVL+byHVP; Germany.



Carrier Lifting Tool

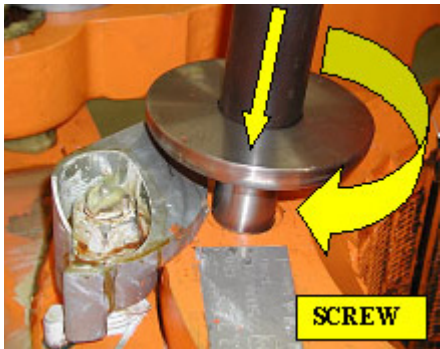
The Carriers Lifting Tools P/N: 775460 (for pipe sizes 16"-20") and P/N 757070 (for pipe sizes 2.3/8" –14") are contained in the Hook Up Kit P/N: 775100-HUK

Carrier Case

Carrier and tools can be stored in the Carrier (service) box.

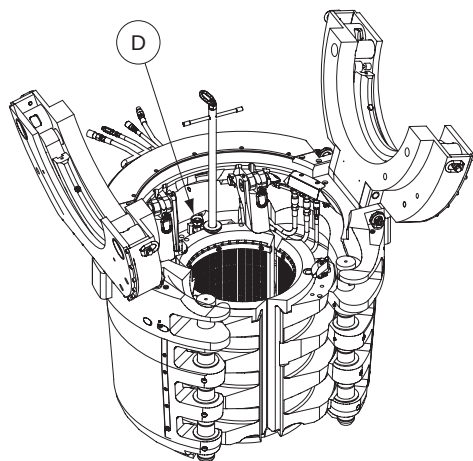


Carrier lifting tool

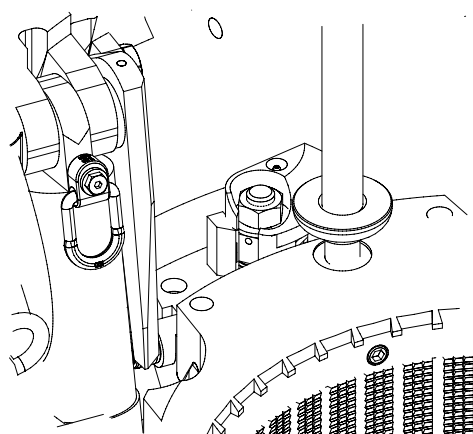


Exchanging insert carriers

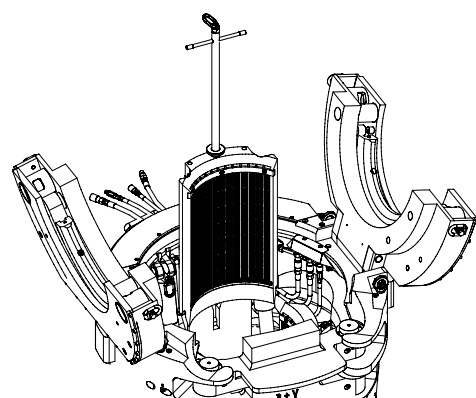
- Open the HCS
- Screw the Carrier Installation Tool (pn 775460 or 757070) in to the carrier to unlock the Carrier Securing Assembly (D).



Carrier Installation Tool



Detail Carrier Installation Tool



Lifting the Insert Carrier

- Lift the Insert Carrier by attaching an overhead lifting device to the eyebolt of the carrier Installation Tool.
- For installation of the carriers, repeat the above steps in reverse order.

Pipe Wiper System (optional)

General Information

The B+V Pipe Wiper System is designed for a standard 19" dual (split type) pipe wiper. It is optionally available.

WARNING: OTHER PIPE WIPER SIZES ARE NOT PERMITTED.

Features

The B+V Pipe Wiper System can stay mounted to the PS for all drilling operations. The usage of umbilical lines is not affected. The 19" dual (split type) pipe wiper can be changed easily.

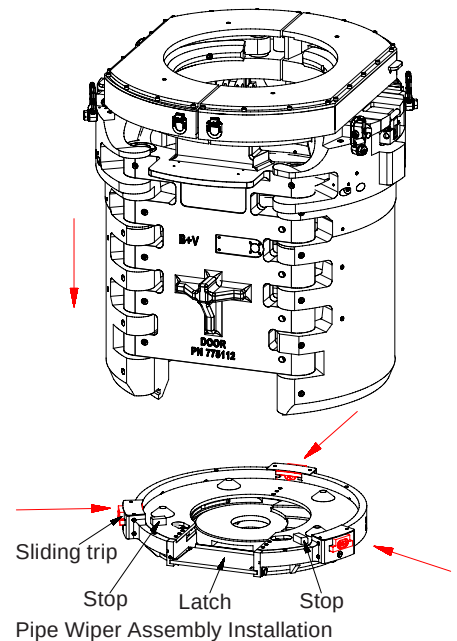
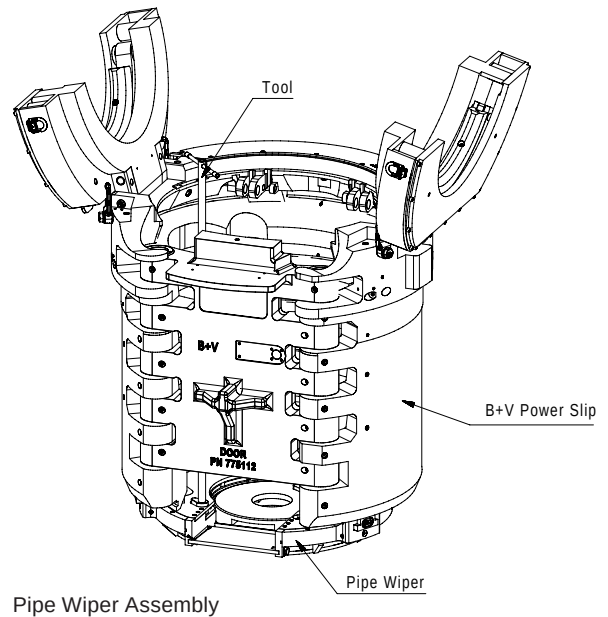
For changing the pipe Wiper, the PS stays in the rotary table.

WARNING: Do NOT use any other tool for handling the pipe wiper than the B+V pipe wiper handling tool, to ensure correct function of the locking devices.

When using the B+V Pipe Wiper System, the 19" dual (split type) pipe wiper opening diameter must be close to the pipe size used.

Installation of the B+V Pipe Wiper System

- Slide back sliding trips (3 plc)
- Pick up the PS and lower it on top of the pipe wiper system
- Ensure the latch of the wiper is in front of the door
- Place the body in between the stops.
- Now engage the sliding trips (3 plc) and fit with the screws

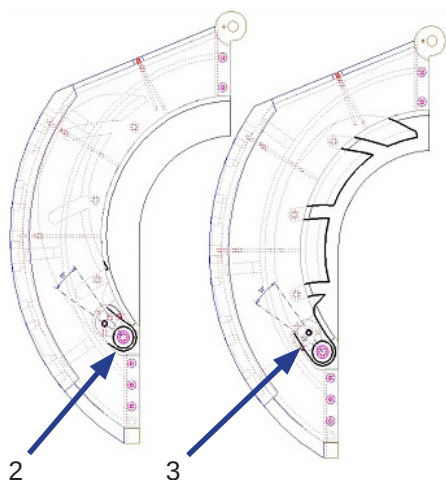


Tighten screws

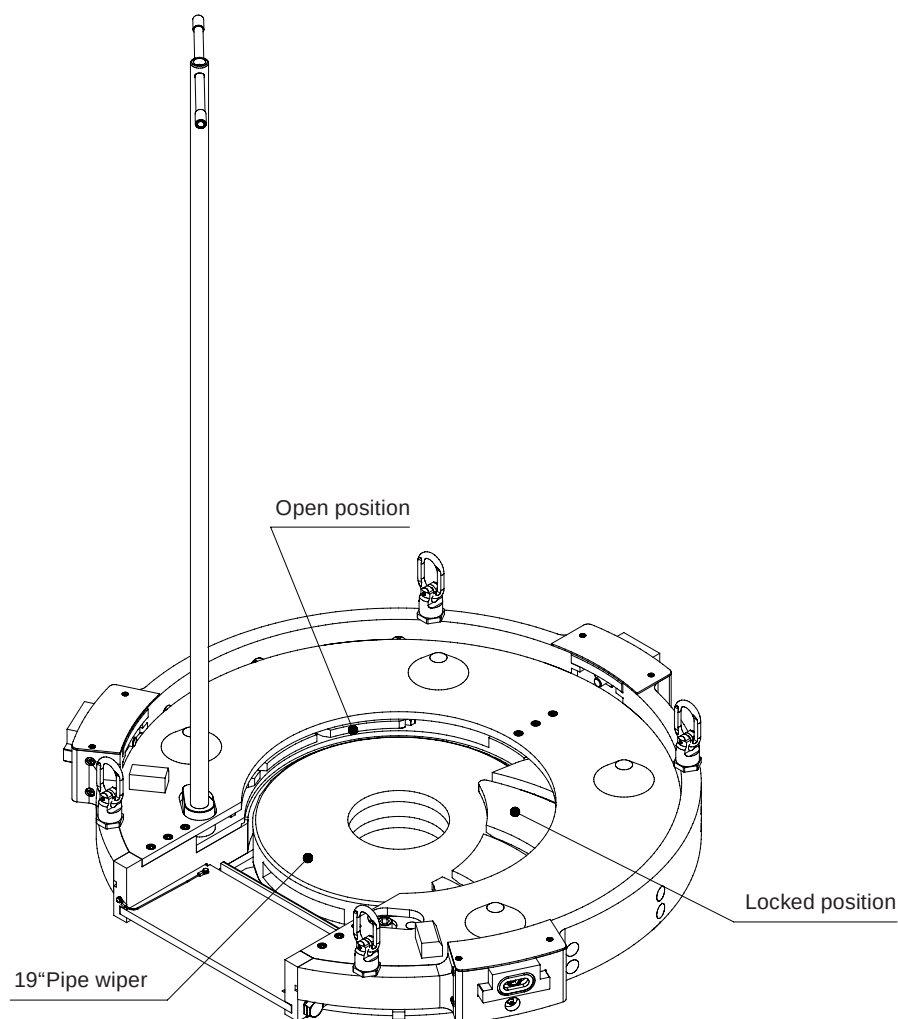
Installation of the 19" Pipe Wiper

Preparing Steps:

- Open the Hydraulic Centering System (HCS)
- Bring the slip in upper position
- Remove all three Insert Carrier from the Powerslip.
- Check with the handling tool that both tongues are in open position
- Insert the 19" dual type Pipe Wiper
- Put the handling tool in place at the bottom of the PS
- The handling tool is centering itself through a self centering device
- Press down the handling tool carefully.
- The locking pin (2) now is unlocked
- The tongue now can be turned to the inside about 19°
- The second bolt (3) now locks the tongue as soon as the handling tool is lifted slightly.
- Make sure the tongue is locked and cannot be moved with the handling tool
- Pipe Wiper is locked in the Pipe Wiper system



Pipe wiper fitted into PS



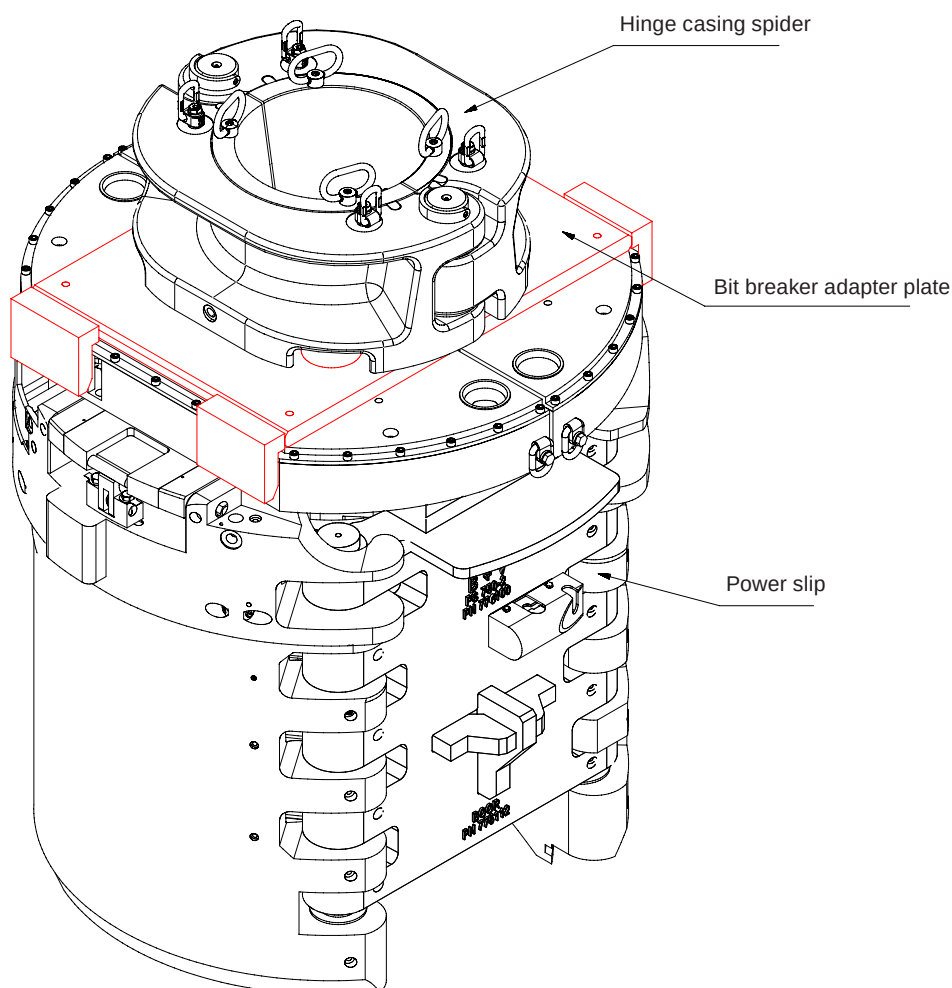
Hinge casing spider

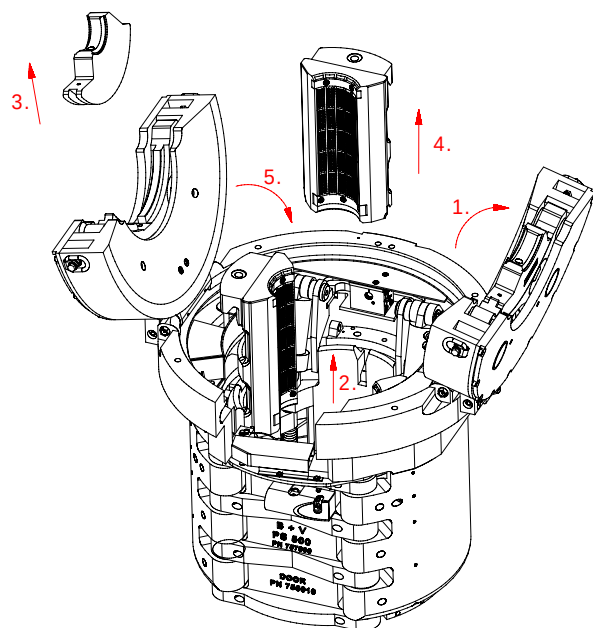
For the application of hand slips it is possible to fit the hinge casing spider. It can be placed on top of the bit breaker adapter plate. The maximum allowable working load is 200 ShTons.

Description	Part number
Hinge casing spider 200 shTons 11.3/4"-13.3/4" *	553600
Reducing bushing 9.5/8"-10.3/4" *	553610
Reducing bushing 2.3/8"-8.5/8" *	553611

Identification

The identification plate clearly identifies the hinge casing spider and reducing bushings (manufacturer, type, material, part number, date of manufacture). It is important to keep this information available for the purpose of servicing and repair work.





Fitting the hinge casing spider on the PS

Before fitting the hinge casing spider on the Power Slip, the following steps have to be carried out:

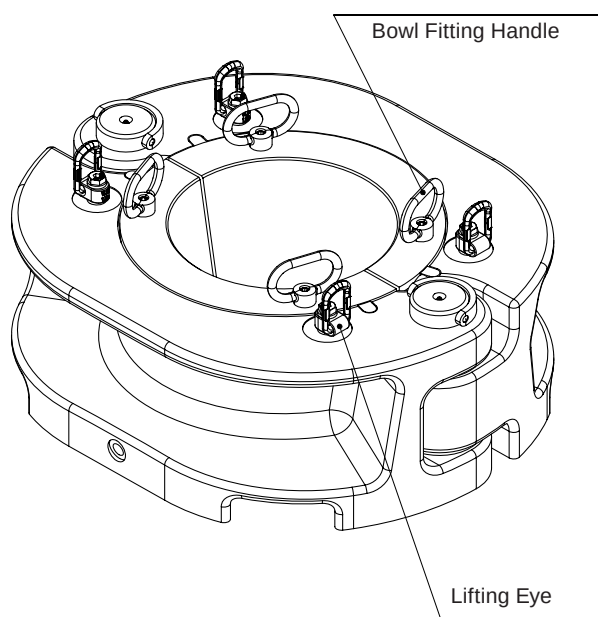
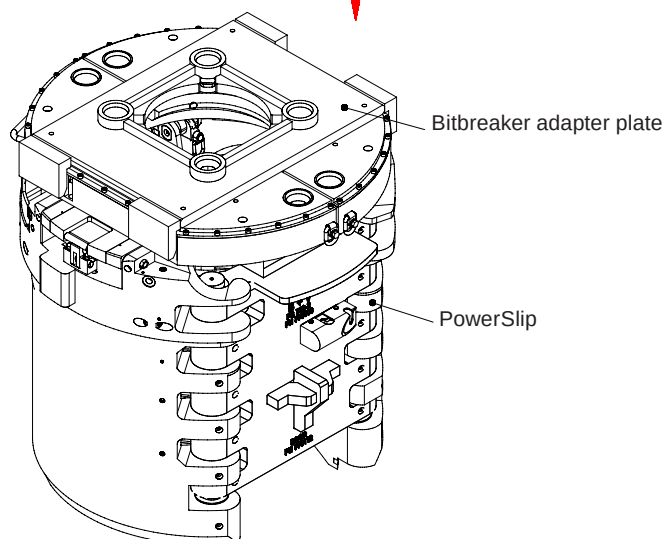
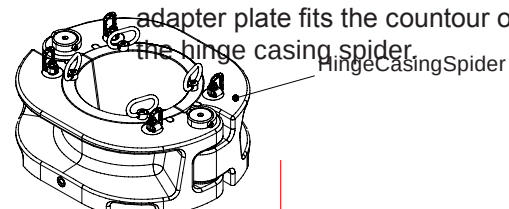
1. Open the Hydraulic Centering System (HCS)
2. Raise the slips to the upper position
3. Remove all guide plates
4. Remove the insert carriers
5. Close the HCS
6. Switch OFF the HCS

Handling the hinge casing spider

WARNING: ALWAYS USE THE 4 LIFTING EYES OR BOTH HANDLES.

Installation of the hinge casing spider

1. Fit the hinge casing spider on top of the bit breaker adapter plate.
2. Ensure the contour of the adapter plate fits the contour of the hinge casing spider.



Installation PS750-2/1000

Basically the Powerslip has to be installed as shown in the manual
Before installation into rotary table make sure, that the proper RT-Adapter is installed to the Powerslip.

OK	☐	Make sure the required Insert Carrier is installed before first use
OK	☐	Make sure the required Guide Plates are installed before first use
OK	☐	The Guide Plates are fixed with the screws
OK	☐	Hydraulic Centring Device is turned on if necessary
OK	☐	Cover is closed
OK	☐	Door is closed

Hydraulic Connections

OK	☐	Powerslip PS750-2/1000 is installed into Rotary Table
OK	☐	Control Unit connected to Hydraulic Power Unit (HPU)
OK	☐	PS750-2/1000 connected to Control Box
OK	☐	All Hydraulic Lines are connected

Function test

There are two possibilities to carry out the function test:

1. PS750-2/1000 standing on the floor

WARNING: Do NOT CARRY OUT THE FUNCTION TEST WITH THE DOOR OPEN

2. PS750-2/1000 installed into the rotary table

OK	☐	Hydraulic Centring Device centers the pipe prior to setting the slip
OK	☐	Slip down
OK	☐	Feedback signal: Slips are Set
OK	☐	The Hydraulic Centring Device opens automatically after setting the slips
OK	☐	Slip up
OK	☐	Feedback signal: Slips are up

Installation hinge casing spider

OK	☐	Installation and Removal Tool is ready for use
OK	☐	Check if the hinge pin is installed correctly
OK	☐	Check the correct reducing bushing is installed
OK	☐	Check the carriers and guide plates have been removed
OK	☐	Check if the hydraulic centering system is turned ON
OK	☐	Check if the slips are in the upper position
OK	☐	Check if Retaining Ring is tightened with Safety Clamp Screw
OK	☐	Check if Hydraulic Power supply to powerslip is turned off (Control Unit)

OPERATIONS

4. OPERATIONS

WARNING: Do NOT TOUCH THE PS.

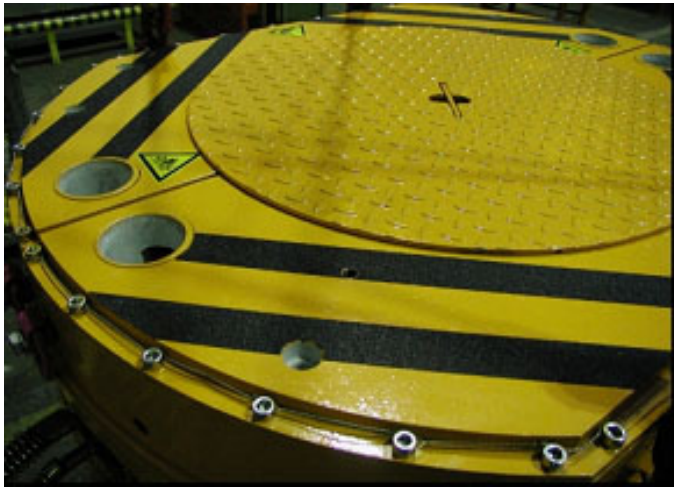
WARNING: NEVER RAISE THE SLIPS WHEN THE PIPE LOAD IS STILL SUSPENDED BY THE SLIPS.

Safety

- Make sure that ALL hydraulic lines are isolated before any work is carried out in the PS.
- It is recommended to have the PS operated by the driller.
- For smooth operation, it is recommended to slightly lower the pipe with the elevator while setting the PS slips.
- For smooth operation, it is recommended to slightly raise the pipe with the elevator while releasing the PS slips.
- The rotary locks in the outside of the PS may only be needed on semisubmersible rigs or while floating in pipe when there is a chance the PS could come out of the rotary table.

Operation

- Check slips/carriers are set on correct section of the pipe. Set the PS before releasing the elevator. The PS is set when the slips down feedback signal comes on.
- When the rotary table and the PS have to be rotated, always uncouple the quick disconnects on the PS prior to rotation.
- Place the PS in the rotary table using all 4 lifting eyes and the lifting bracket.
- Connect all hydraulic equipment and check correct functioning of the tool.
- With the pipe string being suspended by the PS slips, make up or break the upper stand or joint, and handle it.
- Pick up the weight of the pipe string with the elevator, before raising the PS slips
- Set the slips of the PS and then release the elevator.



Cover plate

Handling the slip during operation

WARNING: THE SLIP ASSEMBLY SHOULD NEVER BE RAISED UNDER LOAD.

WARNING: IF THE SLIP ASSEMBLY IS SET THE PS CAN BEAR THE LOAD OF THE PIPE.

WARNING: BEFORE RAISING THE SLIP ASSEMBLY, MAKE SURE THAT THE ELEVATOR IS CLOSED AND SUSPENDS THE WEIGHT OF THE PIPE.

WARNING: NEVER OPERATE THE SLIP ASSEMBLY WITH THE DOOR OPEN.

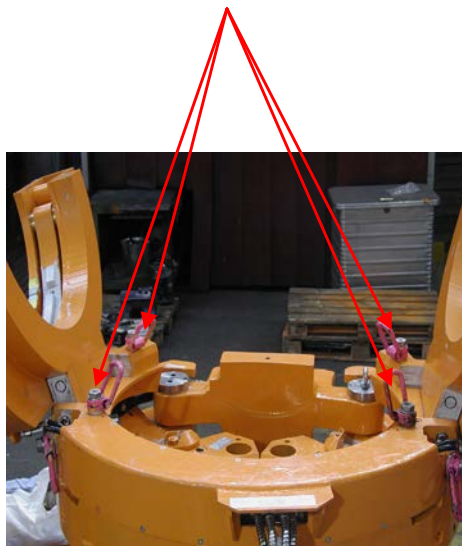
WARNING: NEVER SET THE SLIPS AS LONG AS THE ELEVATOR/TOP DRIVE IS STILL LIFTING OR LOWERING THE PIPE.

WARNING: WHEN USING THE HYDRAULIC CENTRING SYSTEM THERE IS A DANGER OF PERSONS GETTING JAMMED BETWEEN THE GUIDE PLATES AND THE PIPE.

WARNING: WHEN CLOSING THE CENTRING SYSTEM, THERE IS A RISK OF PERSONS GETTING JAMMED BETWEEN THE PS AND THE CENTRING SYSTEM.

WARNING: WITH THE POWER SLIP INSTALLED IN THE ROTARY THERE IS THE RISK OF SMALL PARTS FALLING INTO THE POWER SLIP OR BORE HOLE.

WARNING: THERE IS A RISK OF INJURY (DANGER OF TRIPPING) WHEN THE PS TOP COVERS ARE OPEN. USE ALWAYS THE COVER PLATE (P/N 775780) MUST BE USED FOR COVERING THE POWER SLIP OPENING



4-way lifting bracket

Removing the PS when pipe is in the hole

WARNING: LIFT THE PS OUT OF THE ROTARY TABLE ONLY WITH THE 4 WAY LIFTING SLING WITH THE LIFTING BRACKET.

Removing the PS from drill pipe (in rotary)

- Take the load from the slips
- Raise the slips
- Depressurize the PS hook up hoses
- Open the cover from the HCS
- Depending of the pipe size, remove the insert carrier
- Remove the removable hinge pin from the PS door (see procedure "Opening the door")
- Fit the 4-way lifting bracket
- Lift the PS from the rotary table by using the 4-way lifting bracket
- Open the PS door (see procedure "Opening the door")
- Move the PS away from well center

Connecting / disconnecting the hydraulic hoses

WARNING: BE CAREFUL WHEN DISCONNECTING HYDRAULIC HOSES. MAKE SURE PRESSURE IS OFF THE HOSES AND THE WEIGHT OF THE STRING CANNOT GENERATE PRESSURE

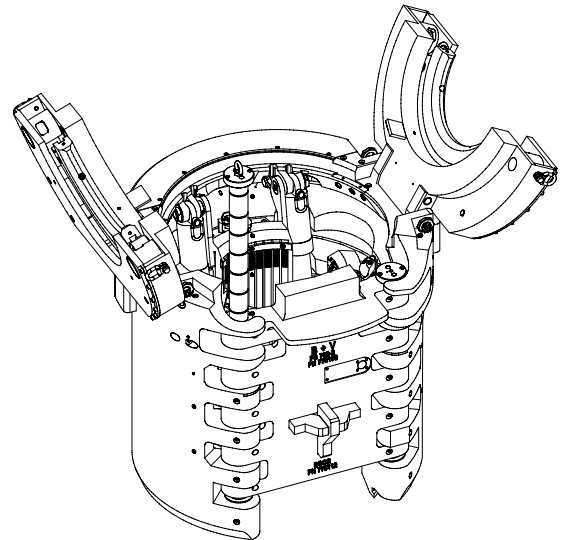
Dis-connection hoses in slips up position

- Set PS in neutral position
- Disconnect Quick Disconnects.

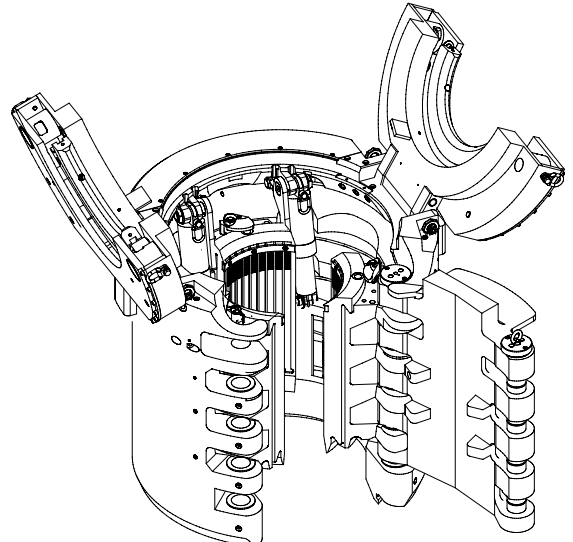
Procedure "Opening the door"

- Move the slips to the upper position.
- Open the HCS cover
- Loosen both screws (1) completely. They cannot be lost due to the securing rings (2). Never disassemble the securing rings.
- The door hinge pin (3) must be lifted (using a tugger) completely out of the PS. Use the lifting eye (4).
- Now open the door
- For closing the door, carry out above steps in reverse order.

WARNING: THE RIGHT HAND HINGE PIN HAS HYDRAULIC HOSES CONNECTED TO IT, SO REMOVAL MAY CAUSE DAMAGE.



Pulling out the door pin



Open the door

Use of handslips

Hand slips can be used to prevent the pipe from slipping through the PS, e.g. at the start or finish of a trip, when the pipe load is small.

WARNING: ALWAYS ENSURE THE HINGE CASING SPIDER TO BE PROPERLY INSTALLED PRIOR TO SUSPENDING ANY LOAD.

MAINTENANCE & INSPECTION

5. MAINTENANCE AND INSPECTION

General

If cracks, excessive wear etc. is recognised, contact Blohm + Voss Oil Tools or an authorised service company. Weldings of the castings should be done only by Blohm + Voss Oil Tools or an authorised service company in according to Blohm+Voss welding procedure.

Lubrication and Central-Grease-System

The PS750-2/1000 includes a central pneumatic grease system. The slip assembly and the Feedback valve are supplied by this and via a nozzle system with grease. The PS should be greased for a minimum of 15 seconds after a maximum of 30 cycles.

Do not apply grease to the following areas:

- back side of inserts
- inside of slips (contact area of the insert carrier)
- Insert Dies can only be mounted using a waxy anti-corrosion protection e.g. Corrofern VL+ by HVP; Germany. The use of lubrication grease is not allowed

The Powerslip should be greased for a minimum of 15 seconds after max. 30 actuations.

Manual lubrication

(1) Lubricate the frame on both sides as follows:

- each time before using the PS.
- each time before installing the PS into the Rotary Table

(1 and 2) Lubricate the door hinge pins on both sides

- each time before installing the PS into the Rotary Table

(3) Lubricate the hinge pin for the Centring System and the locking device for the Centring System on both sides

- each time before using the PS

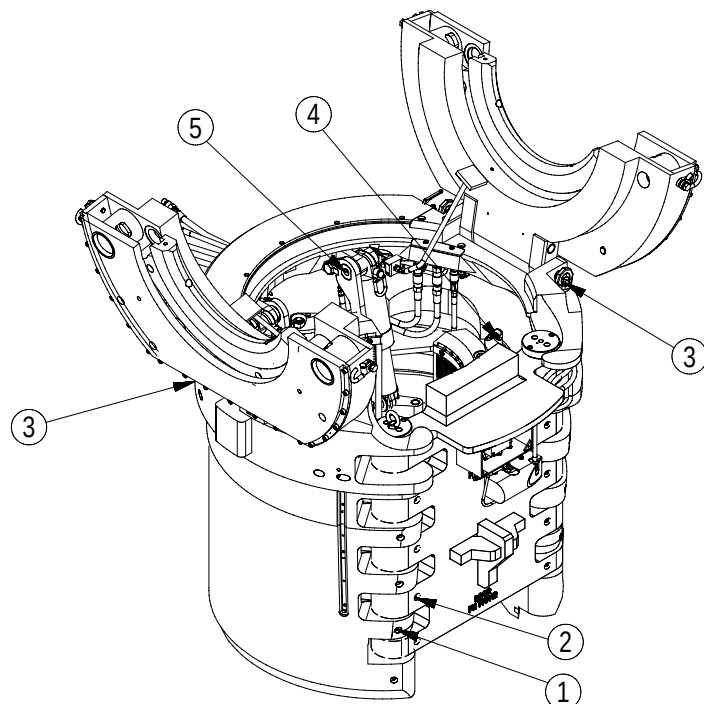
(4) Lubricate the Carrier securing bolts (3x)

- each time before using the PS

(5) Lubricate the Cylinder Pin (2 plc)

- each time before using the PS

Lubricate the locking device each time before using the PS



Greasing Points

GREASE DAILY



Manual greasing



Grease gun

Grease daily

All greasing points, which are labelled "Grease Daily", must be greased at least once a day. It can be necessary to carry this out more often depending on use.

- Slip Assembly
- Grooves of the Guide Plates
- Grease nipples
- Springs

Grease quality

In order to achieve efficient greasing even at different environmental temperatures, we recommend the following grease types should be used (obtainable from Blohm + Voss Oil Tools): Low-Viscosity grease Type AVIATICON Grease XRF

NLGI 0

Alternatively; use EP gear lubricating grease for greasing "non-oil tight gear trains"

NESSOS SF0

NLGI 0

DIN 51 826 GPOF-25

DIN 51 502 GPOF-25

For higher ambient temperature up to 30° Celsius / 86° Fahrenheit we recommend to use NLGI 2

Greasing check list PS

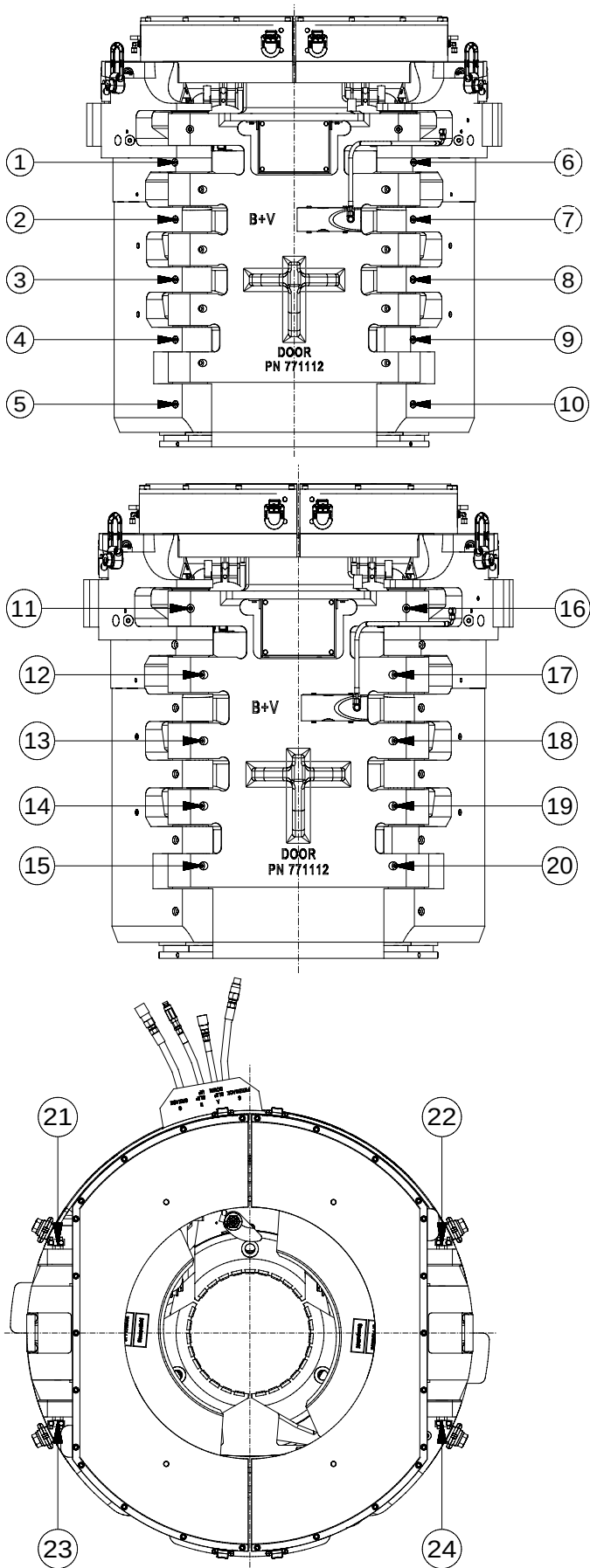
Greasing Points:

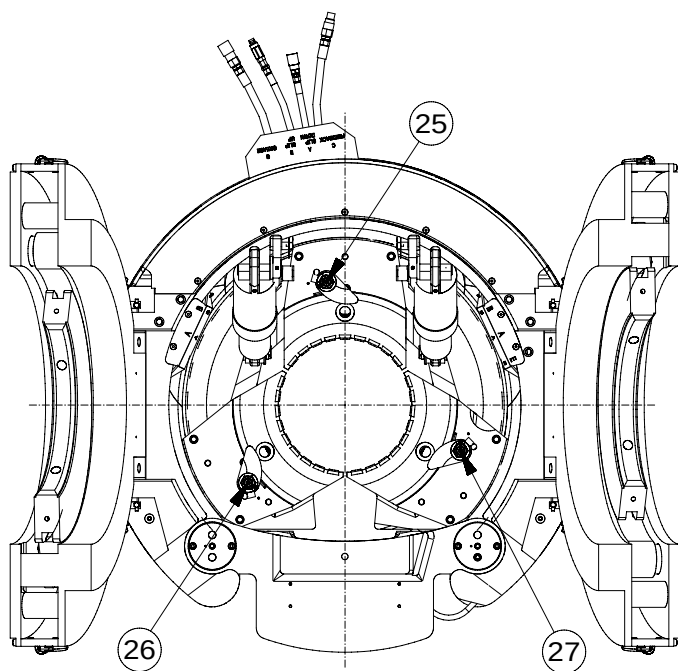
Pos.	Greased	Location
1	☐	Frame
2	☐	
3	☐	
4	☐	
5*	☐	
6	☐	
7	☐	
8	☐	
9	☐	
10*	☐	

Pos.	Greased	Location
11	☐	Door
12	☐	
13	☐	
14	☐	
15	☐	
16	☐	
17	☐	
18	☐	
19	☐	
20	☐	

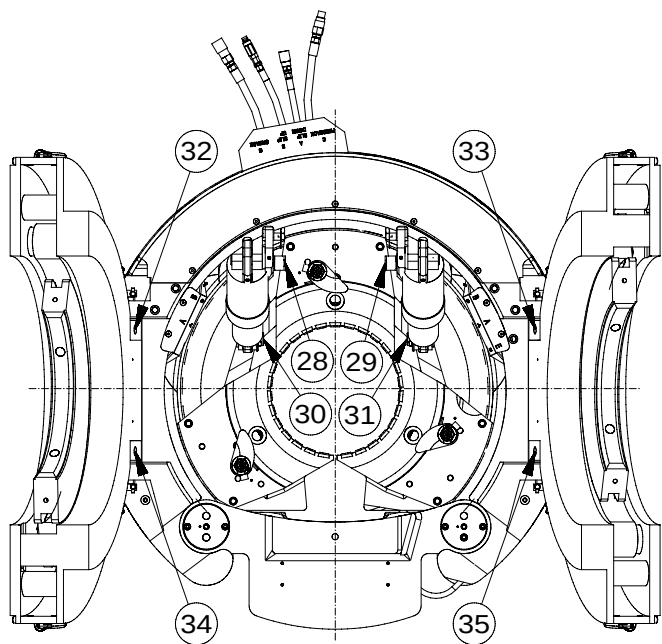
Pos.	Greased	Location
21	☐	Hinge pin for cover
22	☐	
23	☐	
24	☐	

* PS1000 only



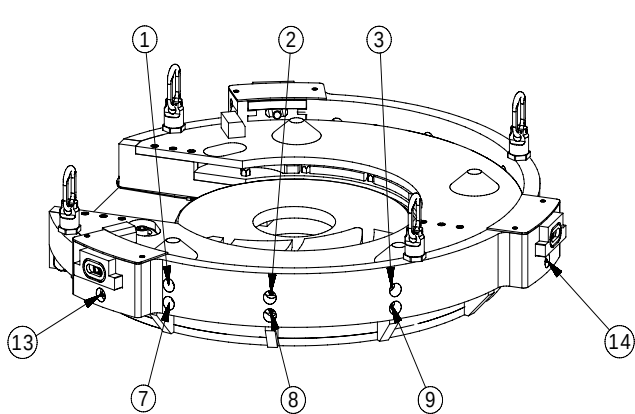


Pos.	Greased	Location
25	☐	Carrier securing assembly pn 775115
26	☐	
27	☐	



Pos.	Greased	Location
28	☐	Left hand and right hand cylinder bolt top
29	☐	
30	☐	Left hand and right hand cylinder bolt below
31	☐	
32	☐	Locking device for cover
33	☐	
34	☐	
35	☐	

Lubrication of pipe wiper system

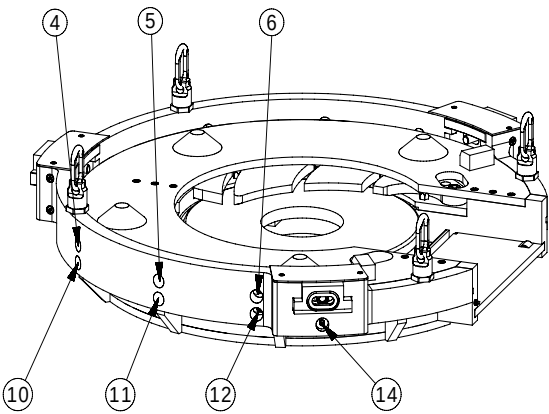


Pipe Wiper Assembly

Pos.	Greased	Location
1	☐	Area above tongue
2	☐	
3	☐	
4	☐	
5	☐	
6	☐	

Pos.	Greased	Location
7	☐	Area below tongue
8	☐	
9	☐	
10	☐	
11	☐	
12	☐	

Pos.	Greased	Location
13	☐	Sliding trip
14	☐	
15	☐	



Inspection categories acc. to API RP 8B

Category I

This category involves observing the equipment during operation for indications of inadequate performance.

When in use, equipment shall be visually inspected on a daily basis for cracks, loose fits or connections, elongation of part, and other signs of wear, corrosion or overloading. Any parts found to show cracks, excessive wear, etc., shall be removed from service for further examination.

The equipment shall be visually inspected by a person knowledgeable in that equipment and its function.

Category II

This is Category I inspection plus further inspection for corrosion, deformation, loose or missing components, deterioration, proper lubrication, visible external cracks, and adjustment.

Category II may involve some disassembly to access specific components and to identify wear that exceeds the allowable tolerances.

Category III

This is Category II inspection plus further inspection, which should include NDT of critical areas and may involve some disassembly to access specific components and to identify wear that exceeds the allowable tolerances.

Prior to inspection, all foreign material such as dirt, paint, grease, oil, scale, etc. shall be removed from the concerned parts by a suitable method (e.g. paint-stripping, steam-cleaning, grit-blasting).

Category IV

This is Category III inspection plus further inspection for which the equipment is disassembled to the extent necessary to conduct NDT of all primary-load-carrying components.

Equipment shall be:

- disassembled in a suitable-equipped facility to the extent necessary to permit full inspection of all primary-load-carrying components and other components that are critical to the equipment.
- inspected for excessive wear, cracks, flaws and deformation.

Procedure:

- Corrections shall be made in accordance with the manufacturer's recommendations.
- Prior to inspection, all foreign material such as dirt, paint, grease, oil, scale, etc. shall be removed from the concerned parts by a suitable method (e.g. paint-stripping, steam-cleaning, grit-blasting)

Frequency

Periodic inspection

The recommended schedule for inspection of all kind of

- Power Slips:

Daily:	I	
Weekly:		II
6 Monthly:	III	
2 Year:	IV	

The recommended frequencies apply for equipment in use during the specified period.

The inspection frequencies are only recommendations. The schedule of inspection heavily depends on the following factors:

- environment
- load cycles
- regulatory requirements
- operating time
- testing
- repairs
- re manufacture

Non-periodic inspection

A complete, on-job, shut-down inspection equivalent to the periodical Category III or Category IV should be made before (if anticipated) and after critical jobs (e.g., running heavy casing / drill strings, jarring, pulling on stuck pipes and/or operating at extreme low temperatures) <-20° C (<-4° F).

Inspection

A thorough inspection should be carried out periodically (every 3 months) or as special circumstances may require. Before starting an inspection disconnect any hydraulic/pneumatic system and remove all foreign materials (dirt, paint, grease Oil, scale, etc.) from surface by a suitable method. After a field inspection, it is advisable to record the extent of testing and testing results. Conduct the periodic or critical load inspection in the field by the crew with the supervisor. If cracks, excessive wear etc. is recognized, contact Blohm + Voss Oil Tools or an authorized service company.

Inspection of Hydraulic/Pneumatic System

Check for leakage every day. Should internal or external leakage reach an unacceptable high level, contact Blohm + Voss Oil Tools or an authorized service company.

Inspection check lists

CHECK LIST FRONT PAGE

TYPE OF EQUIPMENT

SERIAL NUMBER

PART NUMBER

SUPERVISOR

DATE OF INSPECTION

INSPECTION CATEGORY

PLACE OF INSPECTION

Inspection categories – CHECK LISTS

Check List Category I

(During operation)

- Power Slip is placed in the Rotary Table, Cover is closed)

GENERAL

DESCRIPTION	CHECKED	SIGNATURE
1 Complete front page of check list for the records	OK	
2 Check for correct size of slips, insert carrier and guide plates	OK	
3 Check correct function of Slips and Hydraulic Centring Device	OK	
4 Check function of feedback signal (slips set / raised)	OK	
5 Check function of grease system	OK	
Remarks		

CHECK FOR LOOSE ITEMS, ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
1 Hinges and bolts of cover assembly	OK	
2 Cover Locking device	OK	
3 Fixation of guide plates	OK	
4 Top cover screws	OK	
5 Lifting eyes for Cover Assembly	OK	
6 Lifting eyes for Power Slip	OK	
Remarks		

CHECK FOR CRACKS, ELONGATION, DAMAGE AND CORROSION, ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
1 Power Slip Body – Hinges of Cover Assembly	OK	
2 Hinges and bolts of cover assembly	OK	
3 Cover Locking device	OK	
4 Guide plates	OK	
5 Lifting eyes for Cover Assembly	OK	
6 Lifting eyes for Power Slip	OK	
Remarks		

CHECK FOR WEAR , ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
1 Manual and hydraulic guide plates: Check wear at inside surface Replace the guide if wear is more than 10 mm at the bevel inside the guide plate. For 5.7/8" dp is 8.3/8 diameter maximum measurement	OK	
Remarks		

HYDRAULIC

DESCRIPTION	CHECKED	SIGNATURE
1 Check for loose fittings, pipes, valves	OK	
2 Check for hydraulic leaks (hoses, valves and cylinders)	OK	
3 Check condition of hydraulic couplings and connection hoses	OK	
Remarks		

REMARKS

SUPERVISOR DATE

Check List Category II

(Power Slip is out of Rotary Table, Cover is open, Insert Carrier disassembled)

GENERAL

DESCRIPTION	CHECKED	SIGNATURE
1 Complete front page of check list for the records	OK	
2 Check for correct size of slips, insert carrier and guide plates	OK	
Check correct function of Slips and Hydraulic Centring Device: Set Slips cycle:		
1. Center Hydraulic Guides		
2. Set Slips	OK	
3. Open Hydraulic Guides		
Raise Slips cycle: Raise Slips without any movement of hydraulic Guides		
4 Check function of feedback signals (slips set / raised)	OK	
Remarks		

CHECK FOR LOOSE ITEMS, ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
1 Hinges and bolts of cover assembly	OK	
2 Cover Locking device	OK	
3 Fixation of guide plates	OK	
4 Top cover screws	OK	
5 Carrier Securing Assembly	OK	
6 Lifting eyes for Cover Assembly	OK	
7 Lifting eyes for Power Slip	OK	
8 Transportation beam	OK	
9 Securing of Door Assembly	OK	
10 Fixation of Hydraulic Cylinder	OK	
11 Fixation of Hydraulic Hoses below Cover Assembly	OK	
Remarks		

CHECK FOR CRACKS, ELONGATION, DAMAGE AND CORROSION, ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
1 Power Slip Body – Hinges of Hydraulic Cylinder	OK	
2 Power Slip Body – Hinges of Cover Assembly	OK	
3 Power Slip Body – Outside Body surface / contact areas to rotary table	OK	
4 Hinges and bolts of cover assembly	OK	
5 Cover Locking device	OK	
6 Guide plates	OK	
7 Lifting eyes for Cover Assembly	OK	
8 Lifting eyes for Power Slip	OK	
9 Transportation beam	OK	
10 Insert Carrier – Check condition of Insert Retainer Plates and Screws	OK	
11 Insert Carrier – Check teeth of insert dies	OK	

12	Insert Carrier – Check load recess at bottom	OK
13	Slip Assembly – Hinges for Hydraulic Cylinder	OK
14	Slip Assembly – Hinges and bolts between Center/Left/Right-segments	OK
15	Slip Assembly – Load recess at bottom (Insert Carrier is disassembled)	OK
16	Slip Assembly – Carrier Securing Assembly	OK
	Remarks	

CHECK FOR WEAR , ESPECIALLY FOR:

DESCRIPTION	CHECKED	SIGNATURE
Manual and hydraulic guide plates: Check wear at inside surface Replace the guide if wear is more than 10 mm at the bevel inside the guide plate For 5.7/8" dp is 8.3/8 diameter maximum measurement	OK	
1 Check wear of insert dies	OK	
2 Check for wear at insert carrier	OK	
Remarks		

GREASING

DESCRIPTION	CHECKED	SIGNATURE
Check that grease system and grease points get grease to all needed areas (as far as observable) – especially for:	OK	
Slip Assembly – back side	OK	
Slip Assembly – Carrier Securing Assembly	OK	
Cover Assembly – Hinges	OK	
Cover Assembly – Locking Device	OK	
Feedback signal	OK	
Door Assembly – Hinges at Door and Body	OK	
Remarks		

HYDRAULIC

DESCRIPTION	CHECKED	SIGNATURE
1 Check for loose fittings, pipes, valves	OK	
2 Check for hydraulic leaks of all hoses, valves and cylinders	OK	
3 Check condition of hydraulic couplings and connection hoses	OK	
3 Check hydraulic fittings and hoses in rotary table	OK	
Remarks		

REMARKS

 SUPERVISOR DATE

Check List Category III

(Power Slip is out of Rotary Table, Cover is open, Slip Assembly and Insert Carrier disassembled)

USE CHECK LIST OF CATEGORY II WITH FOLLOWING ADDITIONAL ITEMS:

DESCRIPTION		CHECKED	SIGNATURE
GENERAL			
1	Check completeness and condition of warning plates and labels	OK	
2	Check condition of identification plate (serial number, part number, date of manufacture etc.)	OK	
3	Clean tool thoroughly	OK	
NDT - INSPECTION			
	NDT all critical areas with die penetrant	OK	

REMARKS

SUPERVISOR

DATE _____

Check List Category IV

(Power Slip is out of Rotary Table, Cover is open, Slip Assembly and Insert Carrier disassembled)

USE CHECK LIST OF CATEGORY III WITH FOLLOWING ADDITIONAL ITEMS:

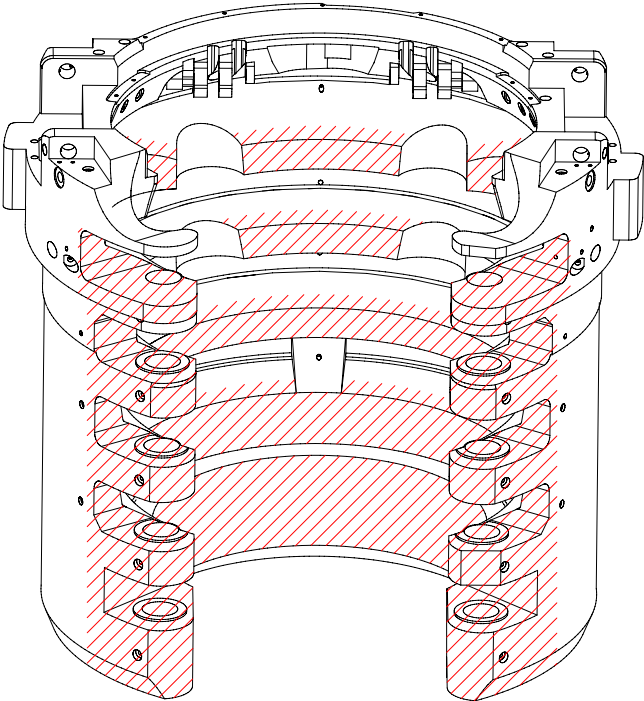
HYDRAULICS			CHECKED	SIGNATURE
1	Change all hydraulic hoses and fittings	OK		
2	Check condition of hydraulic valves and replace if necessary	OK		
3	Check condition of hydraulic pipes and replace if necessary	OK		

REMARKS

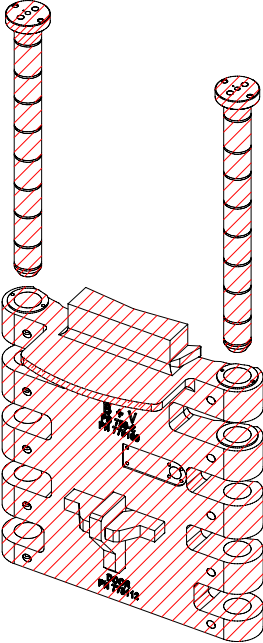
SUPERVISOR _____ DATE _____

Critical Areas

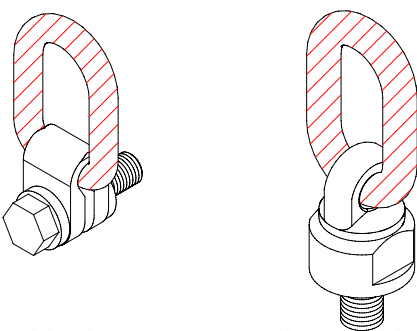
Critical Areas Centre Frame



Critical Areas Door and Hinge Pin

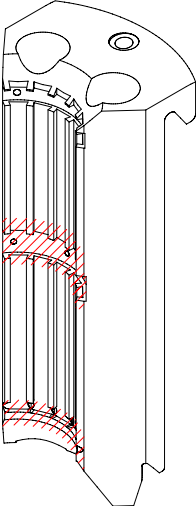


Critical Areas Lifting Eye

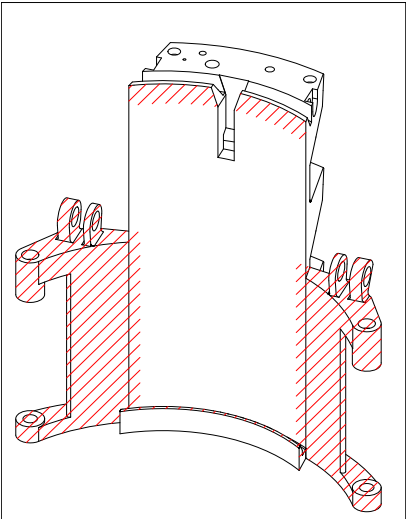


Critical areas are hatched

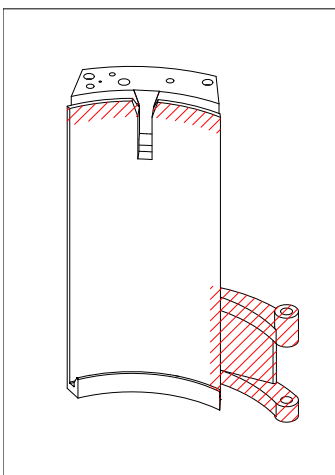
Critical Areas Carrier



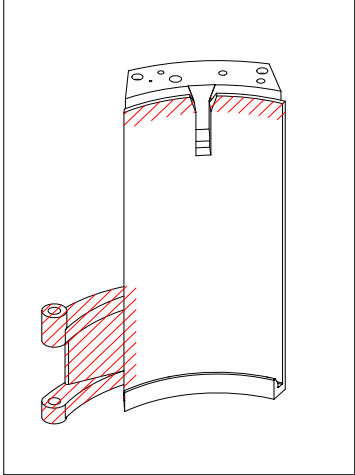
Critical Areas Centre Slip

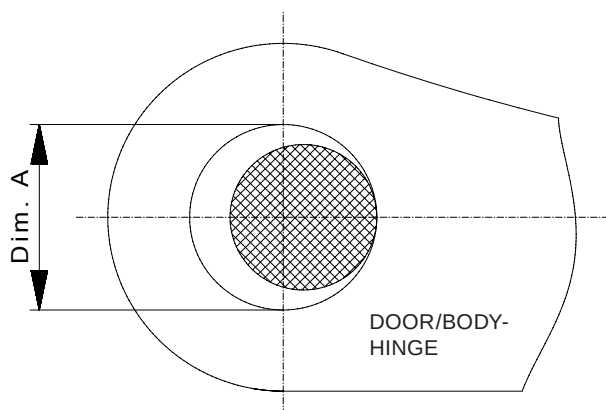


Critical Areas Left Slip



Critical Areas Right Slip





Door/Body Hinge dimensions

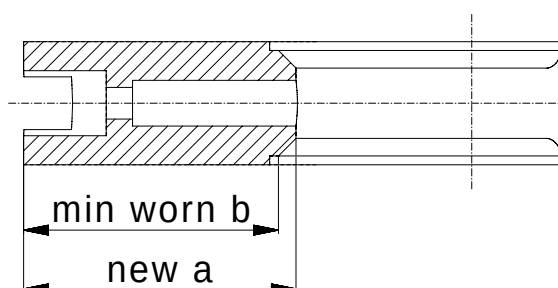
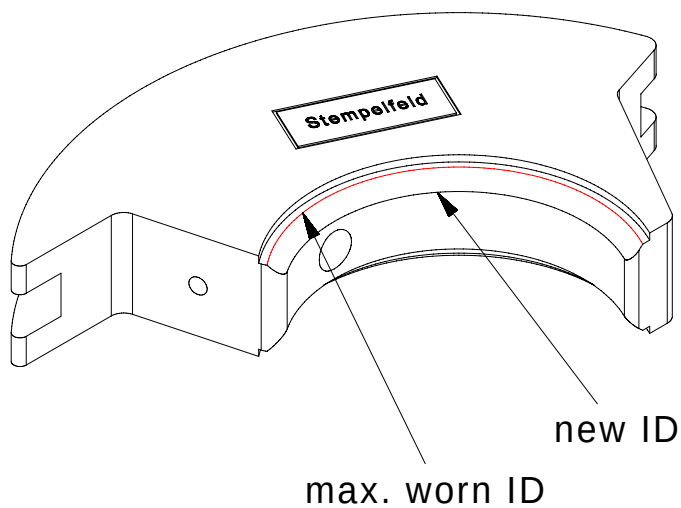
Wear data criteria

Bore of Door and Body Hinges PS750-2/1000

Door Hinge Pin

Hinge pin min dia new:	79,804 mm
Hinge pin min dia worn min:	78,260 mm

Wear data Guide plates



Guide plate PN	New a (mm)	Min worn b (mm)
755720 or 756420	153	143
755721 or 756421	147	137
755722 or 756422	125	115
755723 or 756423	105	95
755724 or 756424	137,5	127,5
755725 or 756425	115	105
755726 or 756426	87,5	77,5
755727 or 756427	72,5	62,5
755728 or 756428	50	40
755770 or 756470	150	140
755771 or 756471	65	55
755772 or 756472	55	45
755773 or 756473	185	175
755774 or 756474	170	160
755775 or 756475	165	155
755776 or 756476	155	145

SIZE COMPONENTS

6. SIZE COMPONENTS

Casing

	First Upgraded Insert Series		Second Upgraded Insert Series		Guide Plate with plu-in connection				Guide Plate with keyed joint system													
Pipe Diameter Ø	Range	P/N	Range	P/N	Guide P/N	Screw P/N	Nut P/N		Guide P/N	Screw P/N	Qty.	Washer P/N	Qty.	Diameter								
6.5/8"	7.5/8" x 6.5/8"	775630-228	7.5/8" x 6.5/8"	775670-228	756422	725465			757422	757410	6	757411	6	Ø 260								
7"	7"x7"	775630-229-1	7"x7"	775670-229-1																		
	7.5/8" x 7"	775630-229	7.5/8" x 7"	775670-229																		
7.5/8"	7.5/8" x 7.5/8"	775630-231	7.5/8" x 7.5/8"	775670-231																		
7.3/4"	7.5/8" x 7.3/4"	775630-269	7.5/8" x 7.3/4"	775670-269											-							
8.5/8"	9.5/8" x 8.5/8"	775630-234	9.5/8" x 8.5/8"	775670-234	756425															Ø 280		
9.5/8"	9.5/8" x 9.5/8"	775630-236	9.5/8" x 9.5/8"	775670-236	756423											757423					Ø 300	
	10.3/4" x 9.5/8"	775630-236-1	10.3/4" x 9.5/8"	775670-236-1																		
9.7/8"	10.3/4 x 9.7/8"	775630-265	10.3/4 x 9.7/8"	775670-265	756477											757477					Ø 310	
10"	10.3/4" x 10"	775630-237	10.3/4" x 10"	775670-237																	Ø 335	
10.3/4"	10.3/4" x 10.3/4"	775630-238	10.3/4" x 10.3/4"	775670-238	756426											757426						
11.3/4"	12.3/4" x 11.3/4"	775630-239	12.3/4" x 11.3/4"	775670-239	756427	755157	755158		757427								Ø 365					
11.7/8"	12.3/4" x 11.7/8"	775630-262	12.3/4" x 11.7/8"	775670-262																		
12.3/4"	12.3/4" x 12.3/4"	775630-241	12.3/4" x 12.3/4"	775670-241	756471										-					Ø 380		
	14" x 12.3/4"	775630-241-1	14" x 12.3/4"	775670-241-1																		
13.3/8"	14" x 13.3/8"	775630-243	14" x 13.3/8"	775670-243	756472									757472					Ø 400			
13.1/2"	14" x 13.1/2"	775630-270	14" x 13.1/2"	775670-270										-								
13.5/8"	14" x 13.5/8"	775630-259	14" x 13.5/8"	775670-259	756428									757428					Ø 410			
14"	14" x 14"	775630-255	14" x 14"	775670-255																		
16"	17" x 16"	775630-245	-	-	775459				755154											Ø 460		
17"	17" x 17"	775630-267	-	-	775454																	Ø 485
18"	18.5/8" x 18"	775630-247	-	-	775456																	Ø 510
	18.5/8" x 18.5/8"	775630-248	-	-	775451														Ø 530			
20" x 18.5/8"	775630-248-1	-	-																			
20"	20" x 20"	775630-249	-	-	775457	775435													Ø 560			
22"	22" x 22"	775120-3	-	-	775458															Ø 610		

Drill Pipe

Pipe Diameter Ø	First Upgraded Insert Series		Second Upgraded Insert Series		Guide Plate with plu-in connection				Guide Plate with keyed joint system				Diameter
	Range	P/N	Range	P/N	Guide P/N	Screw P/N	Nut P/N	Washer P/N	Guide P/N	Screw P/N	Washer P/N	Qty.	
2.3/8"	3.1/2" x 2.3/8"	775630-101	3.1/2" x 2.3/8"	775670-101	756473				-				Ø 140
	3.1/2" x 2.7/8"	775630-103	3.1/2" x 2.7/8"	775670-103									
3.1/2"	3.1/2" x 3.1/2"	775630-105	3.1/2" x 3.1/2"	775670-105	756474				757474	757410	757411	6	Ø 170
	4.1/2" x 3.1/2"	775630-105-1	4.1/2" x 3.1/2"	775670-105-1									
	4.1/2" x 4"	775630-106	4.1/2" x 4"	775670-106	756475				757475				Ø 180
	4.1/2" x 4.1/2"	775630-107	4.1/2" x 4.1/2"	775670-107									
4.1/2"	5.1/2" x 4.1/2"	775630-107-1	5.1/2" x 4.1/2"	775670-107-1	756476	725465	755157	755158	757476	757410	757411	6	Ø 200
	5.1/2" x 5"	775630-109	5.1/2" x 5"	775670-109									
5.1/2"	5.1/2" x 5.1/2"	775630-111	5.1/2" x 5.1/2"	775670-111	756470				-				Ø 210
	7" x 5.7/8"	775630-115	7" x 5.7/8"	775670-115	756421				757421				
6.5/8"	7" x 6.5/8"	775630-114	7" x 6.5/8"	775670-114	756424				757424				Ø 235
	7" x 6.906"	775630-112	7" x 6.906"	775670-112									
6.906"	7.5/8" x 6.906"	775630-112-1	7.5/8" x 6.906"	775670-112-1	756422				757422				Ø 260

Drill collar with ZIP groove

First Upgraded Insert Series		Second Upgraded Insert Series		Guide Plate with plu-in connection			Guide Plate with keyed joint system							
Pipe Diameter	Range	P/N	Range	P/N	Guide P/N	Screw P/N	Nut P/N	Washer P/N	Guide P/N	Screw P/N	Qty.	Washer P/N	Qty.	Diameter
4.3/4"	4.1/2" x 4.3/8" zip (4.3/4" DC)	775650-182	4.1/2" x 4.3/8" zip (4.3/4" DC)	775690-182	756420				-					ø 204
5.1/4"	5.1/2" x 5.1/8" zip (5.1/4" DC)	775650-183	5.1/2" x 5.1/8" zip (5.1/4" DC)	775690-183	756421				757421					ø 216
6.1/4"	6.3/4" x 5.3/4" zip (6.1/4" DC)	775650-187	6.3/4" x 5.3/4" zip (6.1/4" DC)	775690-187										
6.1/2"	6.3/4" x 6" zip (6.1/2" DC)	775650-188	6.3/4" x 6" zip (6.1/2" DC)	775690-188	756424				757424					ø 235
6.3/4"	6.3/4" x 6.1/4" zip (6.3/4 DC)	775650-189	6.3/4" x 6.1/4" zip (6.3/4 DC)	775690-189										
7"	6.3/4" x 6.1/2" zip (7" DC)	775650-190	6.3/4" x 6.1/2" zip (7" DC)	775690-190	756422				757422					ø 260
8"	8.1/2" x 7.1/2" zip (8" DC)	775650-194	8.1/2" x 7.1/2" zip (8" DC)	775690-194										
8.1/4"	8.1/2" x 7.3/4" zip (8.1/4" DC)	775650-195	8.1/2" x 7.3/4" zip (8.1/4" DC)	775690-195	756425				-					ø 280
8.1/2"	8.1/2" x 8" zip (8.1/2" DC)	775650-196	8.1/2" x 8" zip (8.1/2" DC)	775690-196										
8.3/4"	8.1/2" x 8.1/4" zip (8.3/4" DC)	775650-197	8.1/2" x 8.1/4" zip (8.3/4" DC)	775690-197	756423				757423					ø 300
9"	9.1/2" x 8.1/2" zip (9" DC)	775650-198	9.1/2" x 8.1/2" zip (9" DC)	775690-198										
9.1/2"	9.1/2" x 9" zip (9.1/2" DC)	775650-199	9.1/2" x 9" zip (9.1/2" DC)	775690-199										
9.3/4"	9.1/2" x 9.1/4" zip (9.3/4" DC)	775650-203	9.1/2" x 9.1/4" zip (9.3/4" DC)	775690-203					-					-
10"	9.1/2" x 9.1/2" zip (10" DC)	775650-202	9.1/2" x 9.1/2" zip (10" DC)	775690-202										

Drill collar without ZIP groove

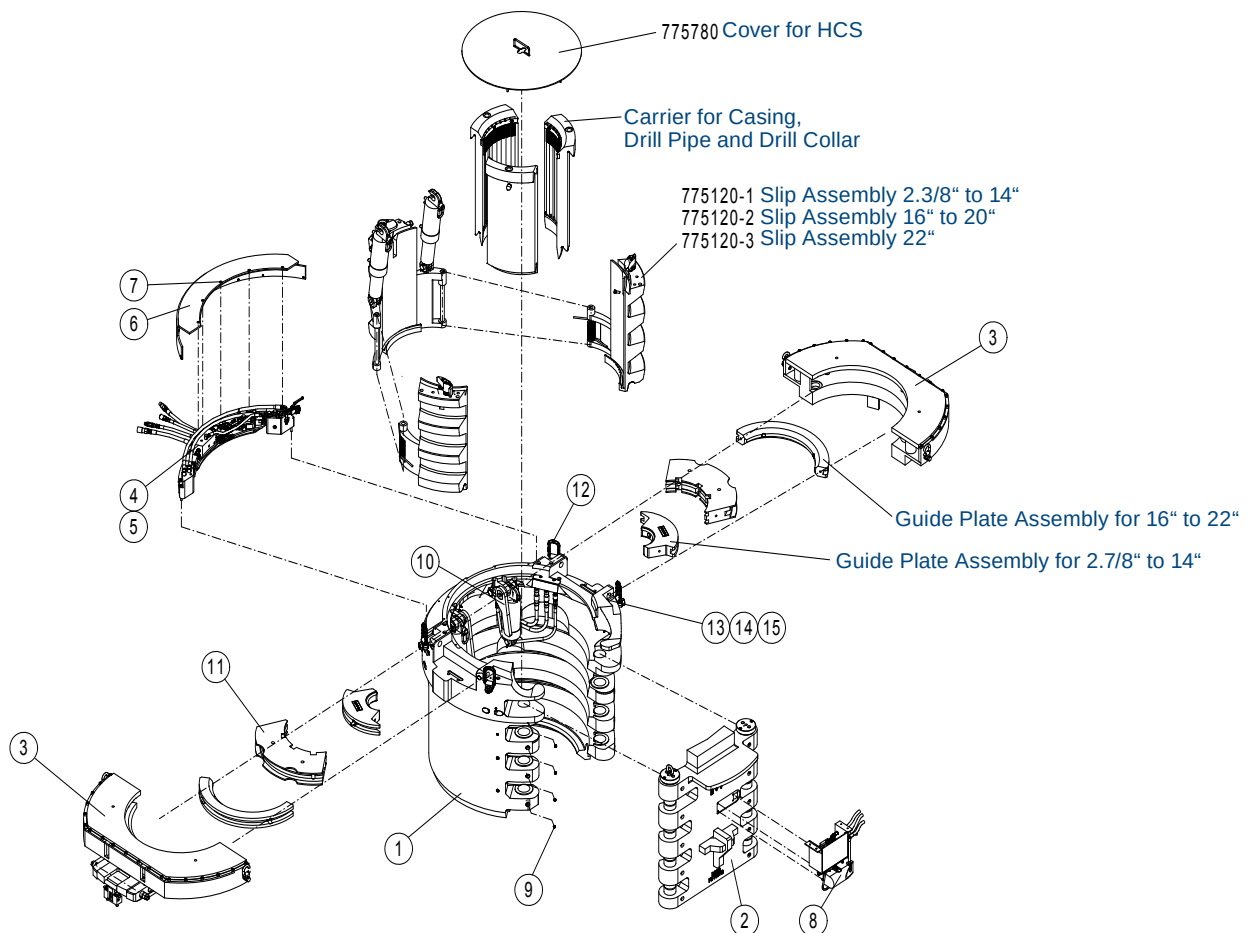
Pipe Diameter Ø	First Upgraded Insert Series		Second Upgraded Insert Series		Guide Plate with plu-in connection				Guide Plate with keyed joint system				Diameter	
	Range	P/N	Range	P/N	Guide P/N	Screw P/N	Nut P/N	Washer P/N	Guide P/N	Screw P/N	Qty.	Washer P/N		Qty.
3.1/8"	3.1/2" x 3.1/8" plain	775650-308	3.1/2" x 3.1/8" plain	775690-308	756476				757476					Ø 200
3.3/8"	3.1/2 x 3.3/8" plain	775650-309	3.1/2 x 3.3/8" plain	775690-309		725465	755157	755158	-					-
4.3/4"	5.1/2" x 4.3/4" plain	775650-276	5.1/2" x 4.3/4" plain	775690-276	756420									Ø 204
5.1/4"	-	-	-	-	-	-	-	-	-					-
6.1/4"	6.3/4" x 6.1/4" plain	775650-284	6.3/4" x 6.1/4" plain	775690-284	756421				757421					Ø 216
6.1/2"	6.3/4" x 6.1/2" plain	775650-286	6.3/4" x 6.1/2" plain	775690-286										
6.3/4"	6.3/4" x 6.3/4" plain	775650-287	6.3/4" x 6.3/4" plain	775690-287	756424				757424					Ø 235
8"	8.1/2" x 8" plain	775650-293	8.1/2" x 8" plain	775690-293	756422				757422					Ø 260
8.1/4"	8.1/2" x 8.1/4" plain	775650-295	8.1/2" x 8.1/4" plain	775690-295										
8.1/2"	8.1/2" x 8.1/2" plain	775650-296	8.1/2" x 8.1/2" plain	775690-296	756425				-					Ø 280
8.3/4"	-	-	-	-	-	-	-	-	-					-
9"	9.1/2" x 9" plain	775650-297	9.1/2" x 9" plain	775690-297		725465	755157	755158	757423					Ø 300
9.1/2"	9.1/2" x 9.1/2" plain	775650-298	9.1/2" x 9.1/2" plain	775690-298	756423									

DRAWINGS & SPARE PARTS

7. DRAWINGS AND SPARE PARTS

776100-N PS 750-2 for National RT (Guide Plate with plug-in connection)

777100-N PS 750-2 for National RT (Guide Plate with keyed joint system)



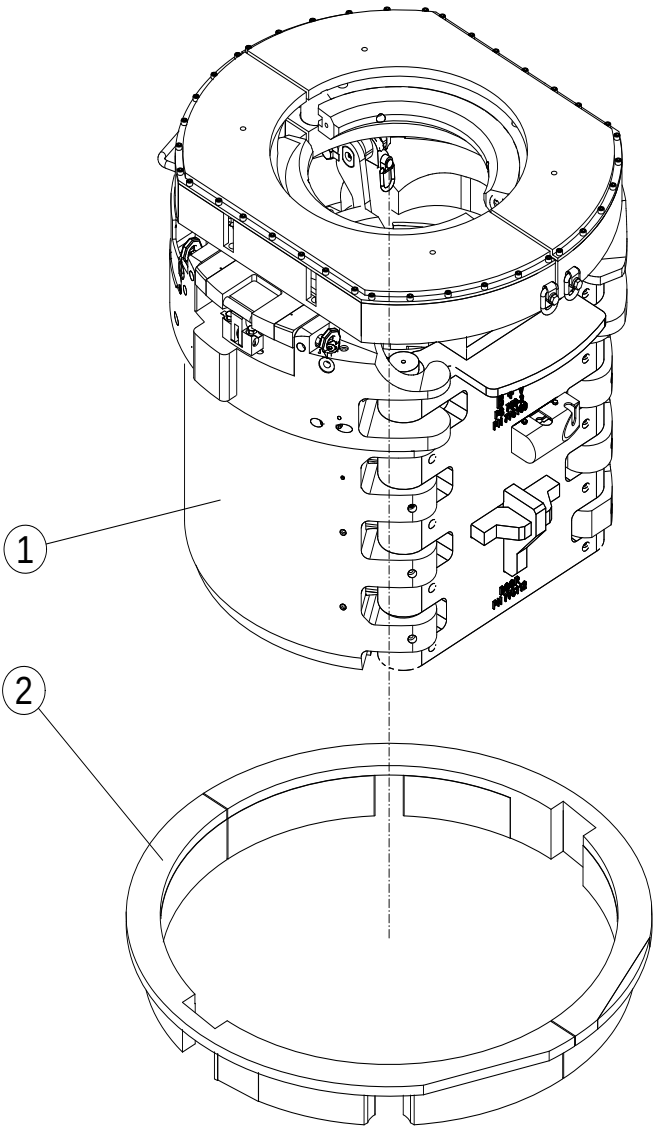
776100-N Parts list

Pos.	Quantity	P/N	Description
1	1	775105	PS 750-2, Body
2	1	775110	Door Assembly
3	1	775390	Centering Guide System Assembly
4	1	776300	Hydraulic Assembly
5	1	776300-1	Hydraulic Connention Assembly
6	1	776110	Cover for Hydraulic Arrangement
7	17	645054	Screw
8	1	776140	Feedback Assembly
9	1	775170	Greasing Assembly
10	1	775150	Cylinder Lock
11	1	775790	Adapter for Guide Plates
12	4	771109	Lifting eye
13	4	775135	Securing Plate
14	8	735852	Screw
15	8	792112	Washer

777100-N Parts list

Pos.	Quantity	P/N	Description
1	1	775105	PS 750-2, Body
2	1	775110	Door Assembly
3	1	775700	Centering Guide System Assembly
4	1	776300	Hydraulic Assembly
5	1	776300-1	Hydraulic Connention Assembly
6	1	776110	Cover for Hydraulic Arrangement
7	17	645054	Screw
8	1	776140	Feedback Assembly
9	1	775170	Greasing Assembly
10	1	775150	Cylinder Lock
11	1	775790	Adapter for Guide Plates
12	4	771109	Lifting eye
13	4	775135	Securing Plate
14	8	735852	Screw
15	8	792112	Washer

776100-E PS 750-2 for Emsco RT (Guide Plate with plug-in connection)
777100-E PS 750-2 for Emsco RT (Guide Plate with keyed joint system)



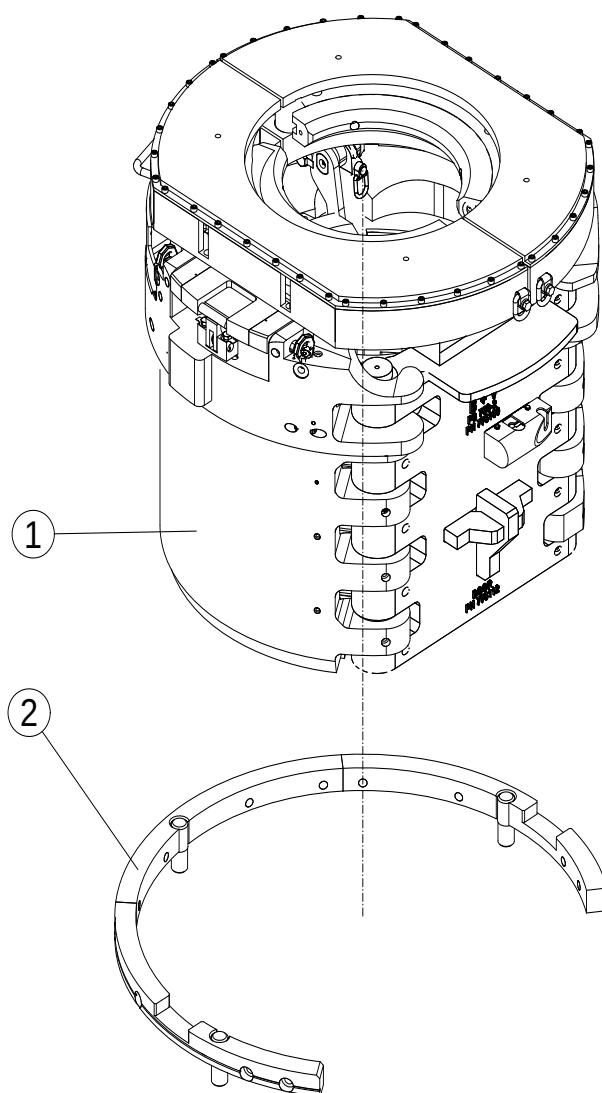
776100-E Parts list

Pos.	Quantity	P/N	Description
1	1	776100-N	PS 750-2 for National RT
2	1	775006	Adapter Ring for Emsco RT

777100-E Parts list

Pos.	Quantity	P/N	Description
1	1	777100-N	PS 750-2 for National RT
2	1	775006	Adapter Ring for Emsco RT

776100-W PS 750-2 for Wirth RT (Guide Plate with plug-in connection)
 777100-W PS 750-2 for Wirth RT (Guide Plate with keyed joint system)



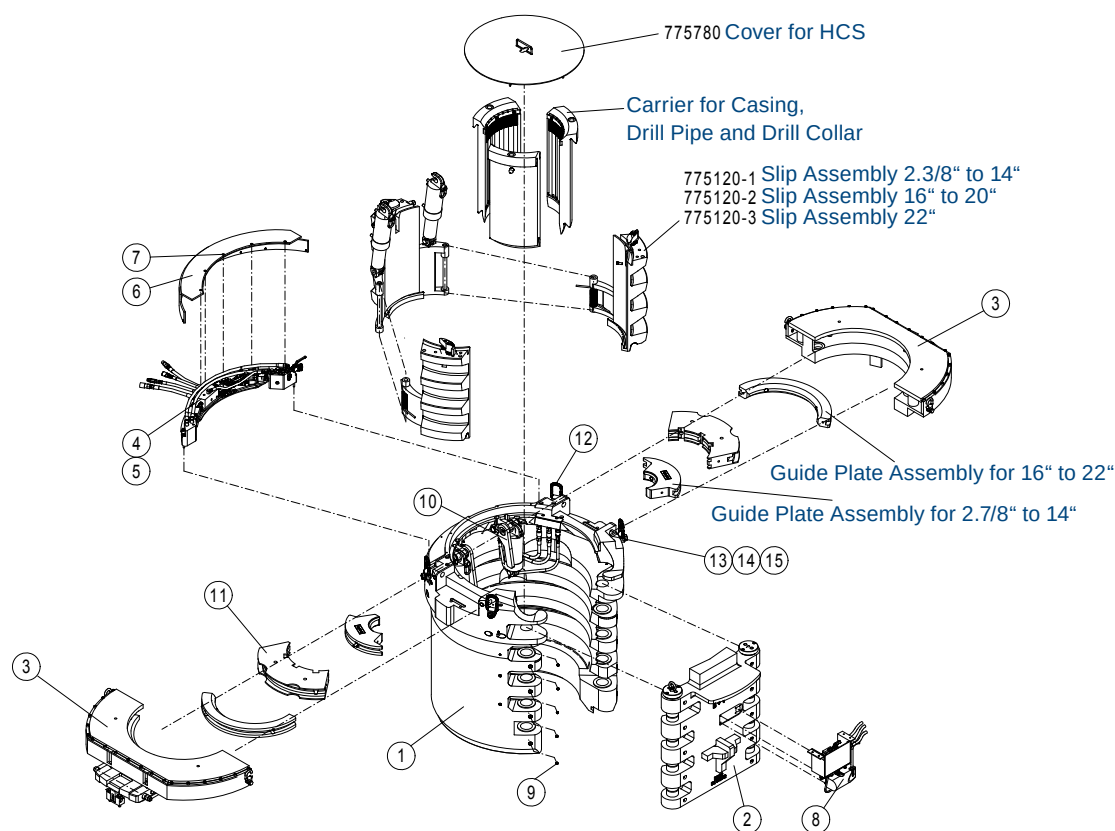
776100-W Parts list

Pos.	Quantity	P/N	Description
1	1	776100-N	PS 750-2 for National RT
2	1	775910	Adapter Ring National Wirth RT

777100-W Parts list

Pos.	Quantity	P/N	Description
1	1	777100-N	PS 750-2 for National RT
2	1	775910	Adapter Ring National Wirth RT

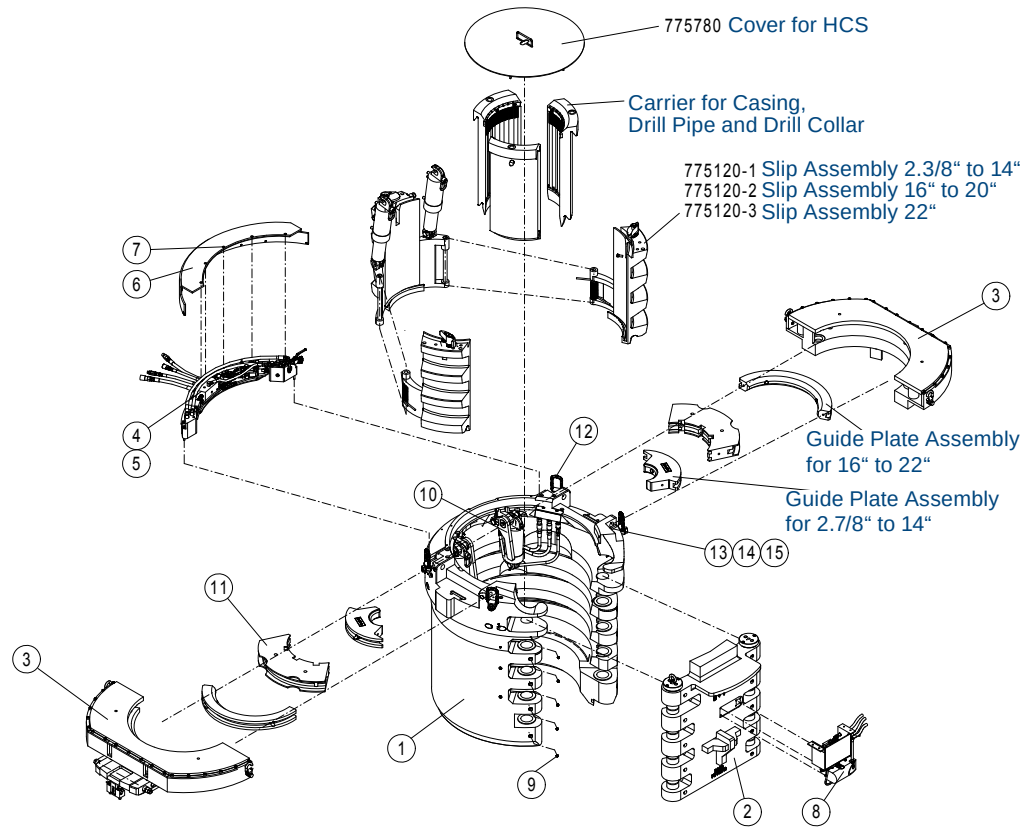
772000-N PS1000 for National RT (Guide Plate with plug-in connection)



772000-N Parts list

Pos.	Quantity	P/N	Description
1	1	771105	PS 1000, Body
2	1	771110	Door Assembly
3	1	775390	Centering Guide System Assembly
4	1	776300	Hydraulic Assembly
5	1	776300-1	Hydraulic Connention Assembly
6	1	776110	Cover for Hydraulic Arrangement
7	17	645054	Screw
8	1	776140	Feedback Assembly
9	1	771170	Greasing Assembly
10	1	775150	Cylinder Lock
11	1	775790	Adapter for Guide Plates
12	4	771109	Lifting eye
13	4	775135	Securing Plate
14	8	735852	Screw
15	8	792112	Washer

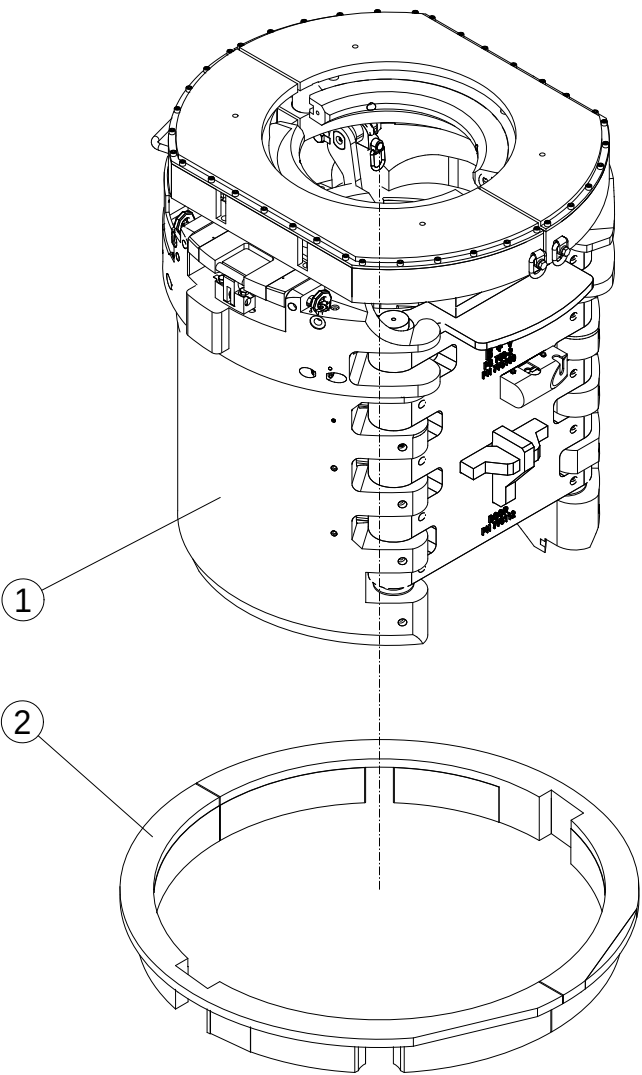
773000-N PS1000 for National RT (Guide Plate with keyed joint system)



773000-N Parts list

Pos.	Quantity	P/N	Description
1	1	771105	PS 1000, Body
2	1	771110	Door Assembly
3	1	775700	Centering Guide System Assembly
4	1	776300	Hydraulic Assembly
5	1	776300-1	Hydraulic Connention Assembly
6	1	776110	Cover for Hydraulic Arrangement
7	17	645054	Screw
8	1	776140	Feedback Assembly
9	1	771170	Greasing Assembly
10	1	775150	Cylinder Lock
11	1	775790	Adapter for Guide Plates
12	4	771109	Lifting eye
13	4	775135	Securing Plate
14	8	735852	Screw
15	8	792112	Washer

772000-E PS 1000 for Emsco RT (Guide Plate with plug-in connection)
773000-E PS 1000 for Emsco RT (Guide Plate with keyed joint system)



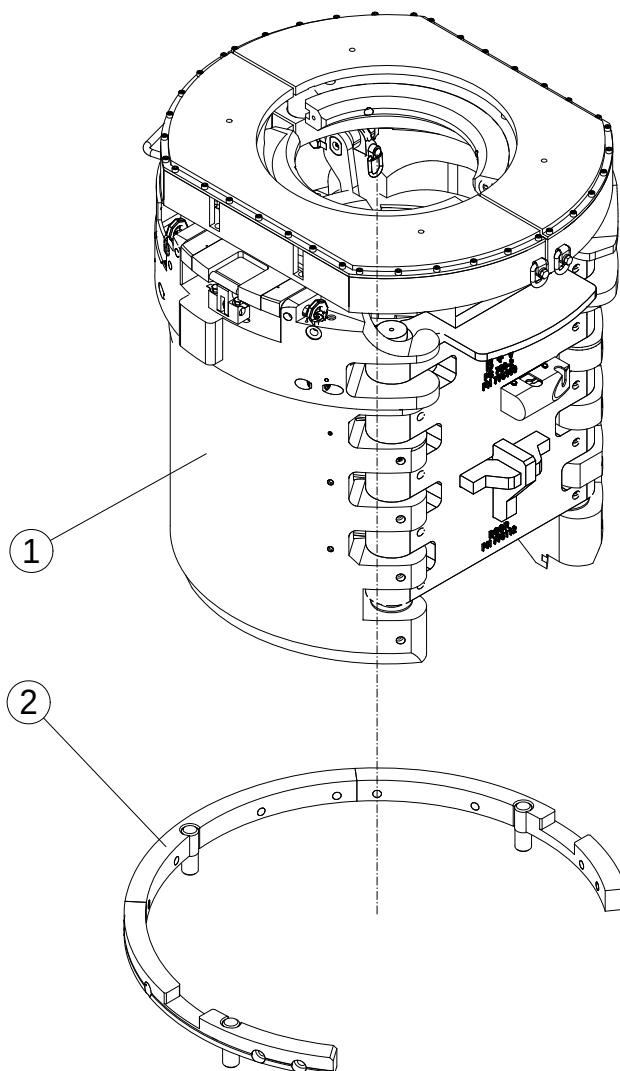
772000-E Parts list

Pos.	Quantity	P/N	Description
1	1	772000-N	PS 1000 for National RT
2	1	775006	Adapter Ring for Emsco RT

773000-E Parts list

Pos.	Quantity	P/N	Description
1	1	773000-N	PS 1000 for National RT
2	1	775006	Adapter Ring for Emsco RT

772000-W PS1000 for Wirth RT (Guide Plate with plug-in connection)
 773000-W PS1000 for Wirth RT (Guide Plate with keyed joint system)



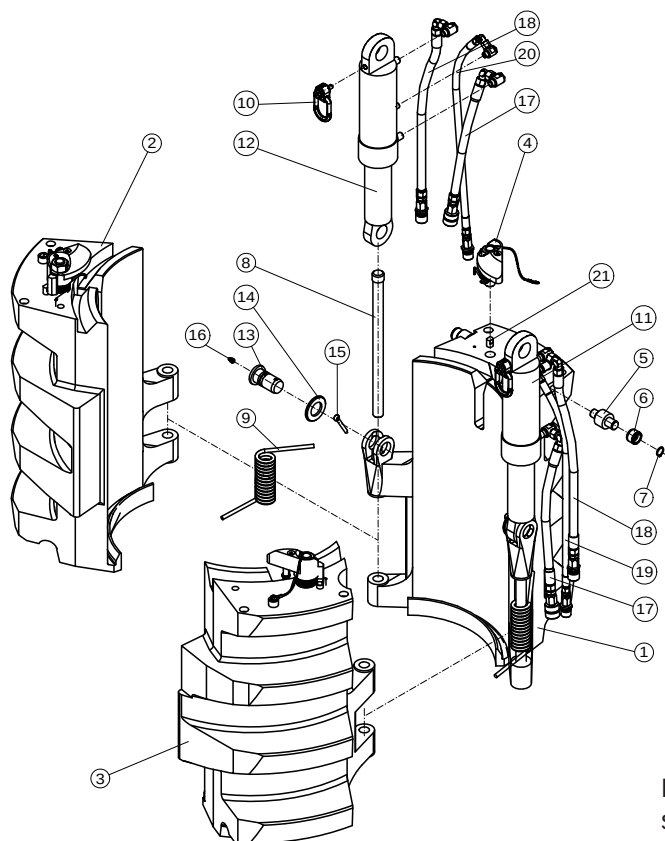
772000-W PS1000 Parts list

Pos.	Quantity	P/N	Description
1	1	772000-N	PS 1000 for National RT
2	1	775910	Adapter Ring National Wirth RT

773000-W PS1000 Parts list

Pos.	Quantity	P/N	Description
1	1	773000-N	PS 1000 for National RT
2	1	775910	Adapter Ring National Wirth RT

775120-1 Slip Assembly 2.3/8"-14"

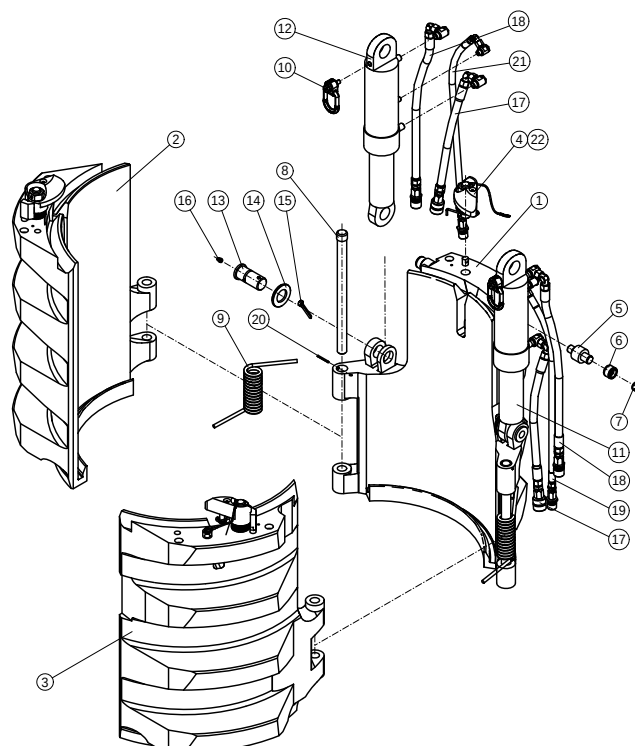


Pos. 22 not
shown

775120-1 Parts list

Pos.	Quantity	P/N	Description
1	1	775121-1	Center Slip 2.3/8"-14"
2	1	775122-1	Left H. Slip 2.3/8"-14"
3	1	775123-1	Right H. Slip 2.3/8"-14"
4	3	775015	Carrier Securing Assembly
5	2	775096-4	Bolt for Roller
6	2	752210	Roller
7	2	620608	Retaining Ring
8	2	775132	Hinge Pin
9	2	775133	Hinge Pin Spring
10	2	553469	Lifting eye
11	1	776199	Hydraulic Cylinder, right
12	1	776199-1	Hydraulic Cylinder, left
13	2	775096-1	Lower Cylinder Bolt
14	2	775160	Washer
15	2	70163	Cotter Pin
16	1	70064	Grease Nipple
17	2	775300-10	Hydr. hose Assembly for slip cylinder "B"
18	2	775300-12	Hydr. hose Assembly for slip cylinder "A"
19	1	775300-18	Hydr. hose Assembly for slip cylinder "C", right
20	1	775300-21	Hydr. hose Assembly for slip cylinder "C", left
21	3	775029-1	Stopper pin
22	1	775190	Slip Tightening Tool

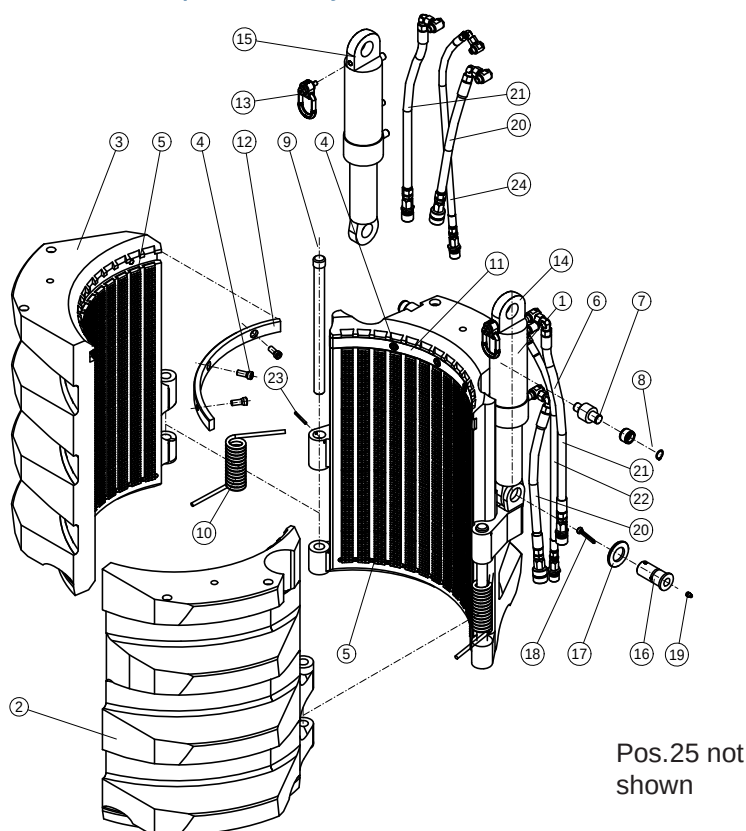
775120- 2 Slip Assembly 16" – 20"



775120-2 Parts list

Pos.	Quantity	P/N	Description
1	1	775121-2	Center Slip 16"-20"
2	1	775122-2	Left Slip 16"-20"
3	1	775123-2	Right Slip 16"-20"
4	3	775115	Carrier Securing Assembly
5	2	775096-4	Bolt for Roller
6	2	752210	Roller
7	2	620608	Retaining Ring
8	2	775130	Hinge Pin
9	2	775134	Hinge Pin Spring
10	2	553469	Lifting eye
11	2	776199	Hydraulic Cylinder, right
12	2	776199-1	Hydraulic Cylinder, left
13	2	775159	Lower cylinder bolt
14	2	775160	Washer
15	2	70163	Cotter Pin
16	2	70064	Grease Nipple
17	2	775300-10	Hydr. hose Assembly for slip cylinder "B"
18	2	775300-12	Hydr. hose Assembly for slip cylinder "A"
19	1	775300-18	Hydr. hose Assembly for slip cylinder "C", right
20	2	643508	Spring Type Pin
21	1	775300-21	Hydr. hose Assembly for slip cylinder "C",left
22	1	775029-1	Stopper pin
23	1	775190	Slip Tigthening Tool

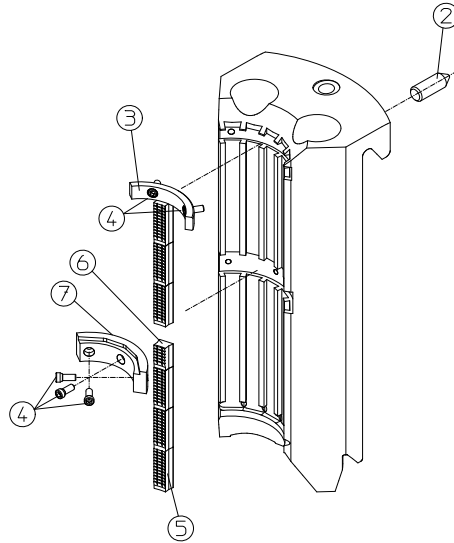
775120-3 Slip Assembly 22"



775120-3 Parts list

Pos.	Quantity	P/N	Description
1	1	775121-3	Center Slip 22"
2	1	775122-3	Left Slip 22"
3	1	775123-3	Right Slip 22"
4	9	775056	Screw
5	259	350113	Basic insert
6	2	775096-4	Bolt, center
7	2	752210	Roller
8	2	620608	Retaining ring
9	2	775130	Hinge pin
10	2	775134	Spring
11	1	775422-5	Insert retainer, center
12	2	775422-1	Insert retainer, left and right
13	2	553469	Lifting eye
14	1	776199	Hydraulic Cylinder, right
15	1	776199-1	Hydraulic Cylinder, left
16	2	775096-1	Bolt
17	2	775160	Washer
18	2	70163	Cotter Pin
19	2	70064	Grease nipple
20	1	775300-10	Hydraulic Hose Assembly „B“
21	2	775300-12	Hydraulic Hose Assembly „A“
22	1	775300-18	Hydraulic Hose Assembly „C“, right
23	2	643508	Spring Pin
24	1	775300-21	Hydraulic Hose Assembly „C“, left
25	1	775190	Slip Tightening Tool

775630 – BC* Carrier Assembly Drill Pipe and Casing



775630 – BC* Parts list

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775631-2	3	775631-2	3	775631-2	3	775632-2	3	775632-2	3	775632-2	3	Load Carrying Ring
5	351001	42	350602	42	350103	42	350903	63	350504	63	350105	63	Insert
4	775056	15	775056	15	775056	15	775056	15	775056	15	775056	15	Screw
3	775651-1	3	775651-1	3	775651-1	3	775632-1	3	775632-1	3	775632-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775631	3	775631	3	775631	3	775632	3	775632	3	775632	3	Carrier
	775630-101		775630-103		775630-105		775630-105-1		775630-106		775630-107		Slip Assembly
	3.1/2"x2.3/8" dp		3.1/2"x2.7/8" dp		3.1/2"x3.1/2" dp		4.1/2"x3.1/2" dp		4.1/2"x4" dp		4.1/2"x4.1/2" dp		Size
	255		253		250		244		242		240		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775633-2	3	775633-2	3	775633-2	3	775634-2	3	775634-2	3	775634-2	3	Load Carrying Ring
5	350905	84	350506	84	350107	84	351008	105	350409	105	350210	105	Insert
4	775056	15	775056	15	775056	15	775056	15	775056	15	775056	15	Screw
3	775633-1	3	775633-1	3	775633-1	3	775634-1	3	775634-1	3	775634-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775633	3	775633	3	775633	3	775634	3	775634	3	775634	3	Carrier
	775630-107-1		775630-109		775630-111		775630-115		775630-114		775630-112		Slip Assembly
	5.1/2"x4.1/2" dp		5.1/2"x5" dp		5.1/2"x5.1/2" dp		7"x5.7/8" dp		7"x6.5/8" dp		7"x6.906" dp		Size
	234		232		230		215		212		211		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775634-2	3	775635-2	3	775635-2	3	775635-2	3	775635-2	3	775635-2	3	Load Carrying Ring
5	350110	105	350909	105	350710	105	350601	105	350111	105	350010	105	Insert
4	775056	15	775056	15	775056	15	775056	15	775056	15	775056	15	Screw
3	775634-1	3	775635-1	3	775635-1	3	75635-1	3	75635-1	3	75635-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775634	3	775635	3	775635	3	775635	3	775635	3	775635	3	Carrier
	775630-229-1		775630-228		775630-112-1		775630-229		775630-231		775630-269		Slip Assembly
	7"x7" csg		7.5/8"x6.5/8" csg		7.5/8"x6.906" dp		7.5/8"x7" csg		7.5/8"x7.5/8" csg		7.5/8"x7.3/4" csg		Size
	210		204		203		202		200		199		Weight (kg)*2

*Bore Code for Pipe

*2Weight of one carrier with all accessories

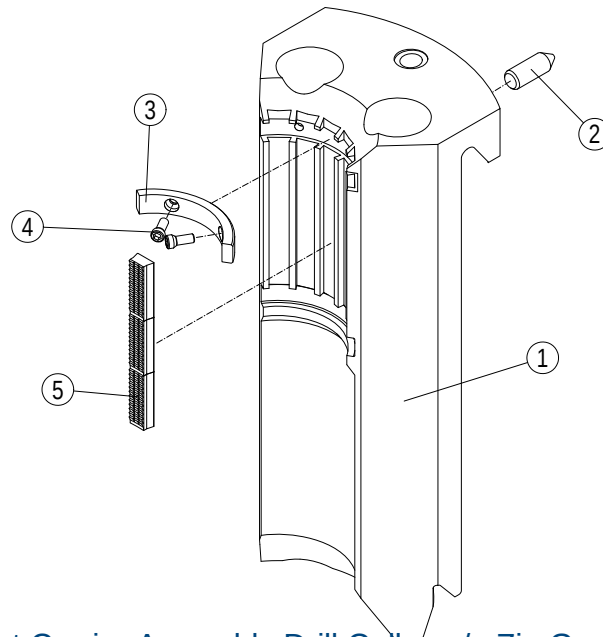
* Parts list (cont)

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	-	-	-	-	-	-	-	-	-	-	-	-	Load Carrying Ring
5	350911	147	350111	147	351011	147	350811	147	350712	147	350112	147	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775636-1	3	775636-1	3	775637-1	3	775637-1	3	775637-1	3	775637-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775636	3	775636	3	775637	3	775637	3	775637	3	775637	3	Carrier
	775630-234		775630-236		775630-236-1		775630-265		775630-237		775630-238		Slip Assembly
	9.5/8"x8.5/8" csg		9.5/8"x9.5/8" csg		10.3/4"x9.5/8" csg		10.3/4"x9.7/8" csg		10.3/4"x10" csg		10.3/4"x10.3/4" csg		Size
	274		270		255		254		253		250		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	-	-	-	-	-	-	-	-	-	-	-	-	Load Carrying Ring
5	350912	189	350812	189	350112	189	351112	189	350612	189	350513	189	Insert
4	775056	9	775056	9	775056	9	775056	9	775056	9	775056	9	Screw
3	775638-1	3	775638-1	3	775638-1	3	775639-1	3	775639-1	3	775639-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775638	3	775638	3	775638	3	775639	3	775639	3	775639	3	Carrier
	775630-239		775630-262		775630-241		775630-241-1		775630-243		775630-270		Slip Assembly
	12.3/4"x11.3/4" csg		12.3/4"x11.7/8" csg		12.3/4"x12.3/4" csg		14"x12.3/4" csg		14"x13.3/8" csg		14"x13.1/2" csg		Size
	214		213		210		160		158		157		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY			Name
7	-	-	-	-	-	-	-	-	-	-			Load Carrying Ring
5	350413	189	350113	189	350113	189	350113	189	350113	189			Insert
4	775056	9	775056	9	775056	9	775056	9	775056	9			Screw
3	775639-1	3	775639-1	3	775415-3	3	775642-1	3	775421-3	3			Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3			Guide Pin
1	775639	3	775639	3	775639	3	775639	3	775639	3			Carrier
	775630-259		775630-255		775630-245		775630-247		775630-249				Slip Assembly
	14"x13.5/8" csg		14"x14" csg		16"x16" csg		18"x18" csg		20"x20" csg				Size
	156		155		342		269		188				Weight (kg)*2

775650 – BC* Carrier Assembly Drill Collar



775650-BC* Parts list Carrier Assembly Drill Collar w/o Zip Groove - Upgraded Insert

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350205	27	350406	27	350910	36	350710	36	350510	36	350310	36	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775632-1	3	775633-1	3	775654-1	3	775654-1	3	775654-1	3	775654-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775652	3	775653	3	775654	3	775654	3	775654	3	775654	3	Carrier
	775650-182		775650-183		775650-187		775650-188		775650-189		775650-190		Slip Assembly
	4.1/2"x4.3/8"zip (4.3/4"DC)		5.1/2"x5.1/8"zip (5.1/4"DC)		6.3/4"x5.3/4"zip (6.1/4"DC)		6.3/4"x6"zip (6.1/2"DC)		6.3/4"x6.1/4"zip (6.3/4"DC)		6.3/4"x6.1/2"zip (7"DC)		Size
	240		228		219		218		217		216		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350911	45	350711	45	350511	45	350311	45	350911	45	350511	45	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775655	3	775655	3	775655	3	775655	3	775655	3	775655	3	Carrier
	775650-194		775650-195		775650-196		775650-197		775650-198		775650-199		Slip Assembly
	8.1/2"x7.1/2"zip (8"DC)		8.1/2"x7.3/4"zip (8.1/4"DC)		8.1/2"x8"zip (8.1/2"DC)		8.1/2"x8.1/4"zip (8.3/4"DC)		9.1/2"x8.1/2"zip (9"DC)		9.1/2"x9"zip (9.1/2"DC)		Size
	294		293		292		291		264		262		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY
5	350311	45	350111	45
4	775056	6	775056	6
3	775656-1	3	775656-1	3
2	775057	3	775057	3
1	775656	3	775656	3
	775650-203		775650-202	
	9.1/2"x9.1/4"zip (9.3/4"DC)		9.1/2"x9.1/2"zip (10"DC)	
	261		260	

Name
Insert
Screw
Insert Retainer
Guide Pin
Carrier
Slip Assembly
Size
Weight (kg)*2

*Bore Code for Pipe

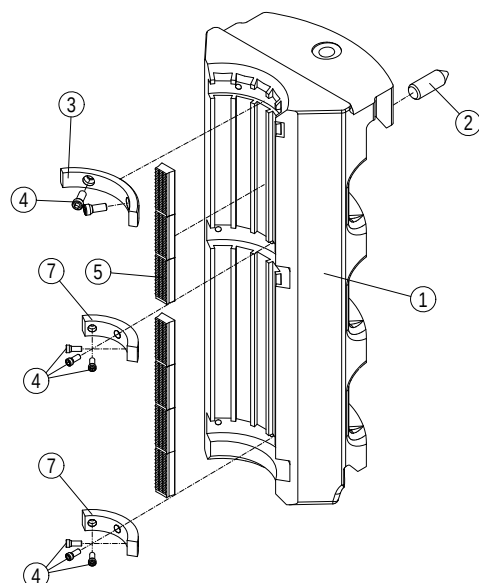
*2Weight of one carrier with all accessories

775650-BC* Parts list Carrier Assembly Drill Collar w/o Zip Groove - Upgraded Insert (cont.)

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350403	18	350203	18	350706	27	350510	36	350310	36	350110	36	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775651-1	3	775651-1	3	775653-1	3	775654-1	3	775654-1	3	775654-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775651	3	775651	3	775653	3	775654	3	775654	3	775654	3	Carrier
	775650-308		775650-309		775650-276		775650-284		775650-286		775650-287		Slip Assembly
	3.1/2"x3.1/8" plain DC		3.1/2"x3.3/8" plain DC		5.1/2"x4.3/4" plain DC		6.3/4"x6.1/4" plain DC		6.3/4"x6.1/2" plain DC		6.3/4"x6.3/4" plain DC		Size
	251		250		230		217		216		215		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY		Name
5	350511	45	350311	45	350111	45	350511	45	350111	45		Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6		Screw
3	775655-1	3	775655-1	3	775655-1	3	775656-1	3	775656-1	3		Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3		Guide Pin
1	775655	3	775655	3	775655	3	775656	3	775656	3		Carrier
	775650-293		775650-295		775650-296		775650-297		775650-298			Slip Assembly
	8.1/2"x8" plain DC		8.1/2"x8.1/4" plain DC		8.1/2"x8.1/2" plain DC		9.1/2"x9" plain DC		9.1/2"x9.1/2" plain DC			Size
	292		291		290		262		260			Weight (kg)*2

775670 – BC* Carrier Assembly Drill Pipe and Casing



775670-BC* Parts list Carrier Assembly Drill Pipe and Casing - Upgraded Insert

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775671-2	6	775671-2	6	775671-2	6	775672-2	6	775672-2	6	775672-2	6	Load Carrying Ring
5	351001	42	350602	42	350103	42	350903	63	350504	63	350105	63	Insert
4	775056	24	775056	24	775056	24	775056	24	775056	24	775056	24	Screw
3	775651-1	3	775651-1	3	775651-1	3	775632-1	3	775632-1	3	775632-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775671	3	775671	3	775671	3	775672	3	775672	3	775672	3	Carrier
	775670-101		775670-103		775670-105		775670-105-1		775670-106		775670-107		Slip Assembly
	3.1/2"x2.3/8"		3.1/2"x2.7/8"		3.1/2"x3.1/2"		4.1/2"x3.1/2"		4.1/2"x4"		4.1/2"x4.1/2"		Size
	dp		dp		dp		dp		dp		dp		
	280		278		275		274		272		270		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775673-2	6	775673-2	6	775673-2	6	775674-2	6	775674-2	6	775674-2	6	Load Carrying Ring
5	350905	84	350506	84	350107	84	351008	105	350409	105	350210	105	Insert
4	775056	24	775056	24	775056	24	775056	24	775056	24	775056	24	Screw
3	775633-1	3	775633-1	3	775633-1	3	775634-1	3	775634-1	3	775634-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775673	3	775673	3	775673	3	775674	3	775674	3	775674	3	Carrier
	775670-107-1		775670-109		775670-111		775670-115		775670-114		775670-112		Slip Assembly
	5.1/2"x4.1/2"		5.1/2"x5"		5.1/2"x5.1/2"		7"x5.7/8"		7"x6.5/8"		7"x6.906"		Size
	dp		dp		dp		dp		dp		dp		
	260		258		256		248		245		244		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY
7	775674-2	6	775675-2	6	775675-2	6	775675-2	6	775675-2	6
5	350110	105	350909	105	350710	105	350601	105	350111	105
4	775056	24	775056	24	775056	24	775056	24	775056	24
3	775634-1	3	775635-1	3	775635-1	3	775635-1	3	775635-1	3
2	775057	3	775057	3	775057	3	775057	3	775057	3
1	775674	3	775675	3	775675	3	775675	3	775675	3
	775670-229-1		775670-228		775670-112-1		775670-229		775670-231	
	7"x7"		7.5/8"x6.5/8"		7.5/8"x6.906"		7.5/8"x7"		7.5/8"x7.5/8"	
	csg		csg		dp		csg		csg	
	243		227		226		225		223	

Name
Load Carrying Ring
Insert
Screw
Insert Retainer
Guide Pin
Carrier
Slip Assembly
Size
Weight (kg)*2

*Bore Code for Pipe

*2Weight of one carrier with all accessories

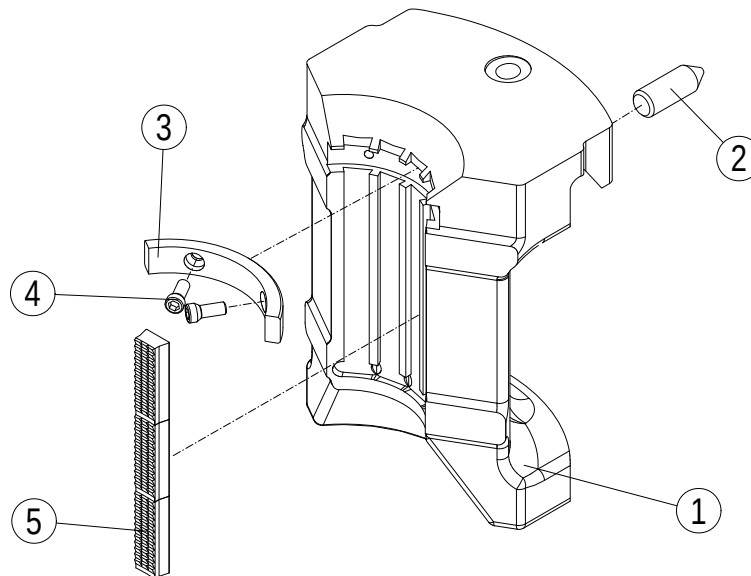
775670-BC* Parts list Carrier Assembly Drill Pipe and Casing - Upgraded Insert (cont.)

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775675-2	6	775676-2	3	775676-2	3	775677-2	3	775677-2	3	775677-2	3	Load Carrying Ring
5	350010	105	350911	147	350111	147	351011	147	350811	147	350712	147	Insert
4	775056	24	775056	15	775056	15	775056	15	775056	15	775056	15	Screw
3	77635-1	3	775636-1	3	775636-1	3	775637-1	3	775637-1	3	775637-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775675	3	775676	3	775676	3	775677	3	775677	3	775677	3	Carrier
	775670-269		775670-234		775670-236		775670-236-1		775670-265		775670-237		Slip Assembly
	7.5/8"x7.3/4" csg		9.5/8"x8.5/8" csg		9.5/8"x9.5/8" csg		10.3/4"x9.5/8" csg		10.3/4"x9.7/8" csg		10.3/4"x10" csg		Size
	222		249		245		249		248		247		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
7	775677-2	3	775678-2	3	775678-2	3	775678-2	3	775679-2	3	775679-2	3	Load Carrying Ring
5	350112	147	350912	189	350812	189	350112	189	351112	189	350612	189	Insert
4	775056	15	775056	18	775056	18	775056	18	775056	18	775056	18	Screw
3	775637-1	3	775638-1	3	775638-1	3	775638-1	3	775639-1	3	775639-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775677	3	775678	3	775678	3	775678	3	775679	3	775679	3	Carrier
	775670-238		775670-239		775670-262		775670-241		775670-241-1		775670-243		Slip Assembly
	10.3/4"x10.3/4" csg		12.3/4"x11.3/4" csg		12.3/4"x11.7/8" csg		12.3/4"x12.3/4" csg		14"x12.3/4" csg		14"x13.3/8" csg		Size
	244		201		200		197		132		130		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY							Name
7	775679-2	3	775679-2	3	775679-2	3							Load Carrying Ring
5	350513	189	350413	189	350113	189							Insert
4	775056	18	775056	18	775056	18							Screw
3	775639-1	3	775639-1	3	775639-1	3							Insert Retainer
2	775057	3	775057	3	775057	3							Guide Pin
1	775679	3	775679	3	775679	3							Carrier
	775670-270		775670-259		775670-255								Slip Assembly
	14"x13.1/2" csg		14"x13.5/8" csg		14"x14" csg								Size
	129		128		127								Weight (kg)*2

775690 – BC* Carrier Assembly Drill Collar



775690-BC* Parts list Carrier Assembly Drill Collar with Zip Groove - Upgraded Insert

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350205	27	350406	27	350910	36	350710	36	350510	36	350310	36	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775632-1	3	775633-1	3	775654-1	3	775654-1	3	775654-1	3	775654-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775692	3	775693	3	775694	3	775694	3	775694	3	775694	3	Carrier
	775690-182		775690-183		775690-187		775690-188		775690-189		775690-190		Slip Assembly
	4.1/2"x4.3/8" zip (4.3/4"DC)		5.1/2"x5.1/8" zip (5.1/4"DC)		6.3/4"x5.3/4" zip (6.1/4"DC)		6.3/4"x6" zip (6.1/2"DC)		6.3/4"x6.1/4" zip (6.3/4"DC)		6.3/4"x6.1/2" zip (7"DC)		Size
	260		242		135		134		133		132		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350911	45	350711	45	350511	45	350311	45	350911	45	350511	45	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	775655-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775695	3	775695	3	775695	3	775695	3	775695	3	775695	3	Carrier
	775690-194		775690-195		775690-196		775690-197		775690-198		775690-199		Slip Assembly
	8.1/2"x7.1/2" zip (8"DC)		8.1/2"x7.3/4" zip (8.1/4"DC)		8.1/2"x8" zip (8.1/2"DC)		8.1/2"x8.1/4" zip (8.3/4"DC)		9.1/2"x8.1/2" zip (9"DC)		9.1/2"x9" zip (9.1/2"DC)		Size
	135		134		133		132		120		118		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY
5	350311	45	350111	45
4	775056	6	775056	6
3	775656-1	3	775656-1	3
2	775057	3	775057	3
1	775696	3	775696	3
	775690-203		775690-202	
	9.1/2"x9.1/4" zip (9.3/4"DC)		9.1/2"x9.1/2" zip (10"DC)	
	117		116	

Name
Insert
Screw
Insert Retainer
Guide Pin
Carrier
Slip Assembly
Size
Weight (kg)*2

*Bore Code for Pipe

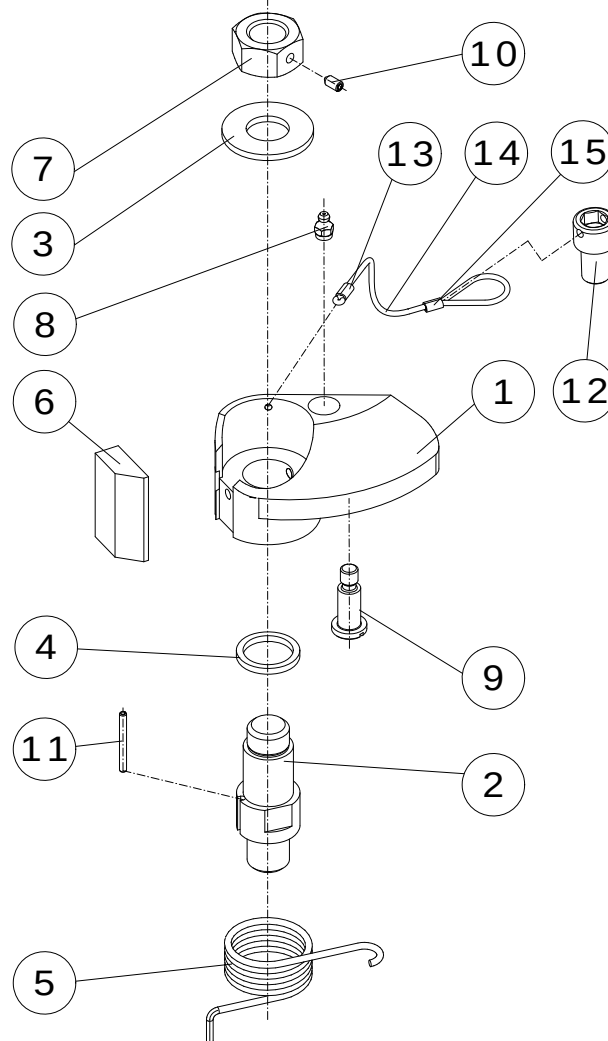
*2Weight of one carrier with all accessories

775650-BC* Parts list Carrier Assembly Drill Collar without Zip Groove - Upgraded Insert (cont.)

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350403	18	350203	18	350706	27	350510	36	350310	36	350110	36	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775651-1	3	775651-1	3	775653-1	3	775654-1	3	775654-1	3	775654-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775691	3	775691	3	775693	3	775694	3	775694	3	775694	3	Carrier
	775690-308		775690-309		775690-276		775690-284		775690-286		775690-287		Slip Assembly
	3.1/2"x3.1/8" plain DC		3.1/2"x3.3/8" plain DC		5.1/2"x4.3/4" plain DC		6.3/4"x6.1/4" plain DC		6.3/4"x6.1/2" plain DC		6.3/4"x6.3/4" plain DC		Size
	276		274		244		133		132		131		Weight (kg)*2

Pos	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	P/N	QTY	Name
5	350511	45	350311	45	350111	45	350511	45	350111	45	Insert
4	775056	6	775056	6	775056	6	775056	6	775056	6	Screw
3	775655-1	3	775655-1	3	775655-1	3	775656-1	3	775656-1	3	Insert Retainer
2	775057	3	775057	3	775057	3	775057	3	775057	3	Guide Pin
1	775695	3	775695	3	775695	3	775696	3	775696	3	Carrier
	775690-293		775690-295		775690-296		775690-297		775690-298		Slip Assembly
	8.1/2"x8" plain DC		8.1/2"x8.1/4" plain DC		8.1/2"x8.1/2" plain DC		9.1/2"x9" plain DC		9.1/2"x9.1/2" plain DC		Size
	133		132		131		120		116		Weight (kg)*2

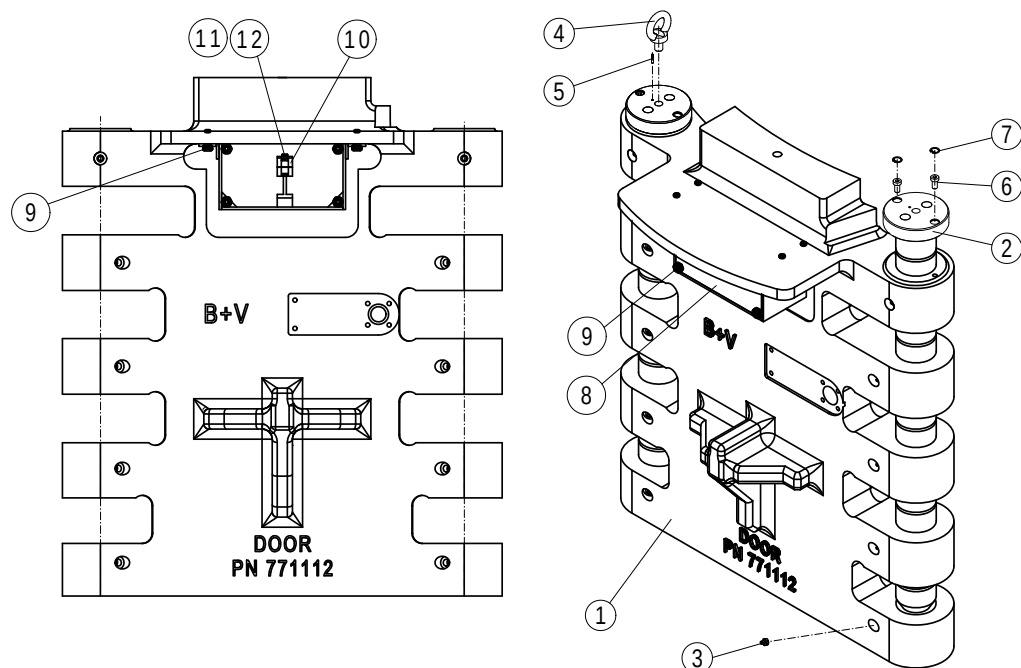
775115 Carrier securing Assembly



775115 Parts list

Pos.	Quantity	P/N	Description
1	1	775124	Securing Latch
2	1	775125	Pin for Securing Latch
3	1	775026	Washer No.1 for Securing Latch
4	1	775027	Washer No.2 for Securing Latch
5	1	775028	Spring
6	1	775129	Stopper
7	1	775015-1	Hexagonal Nut
8	1	70064	Grease Nipple
9	1	775019	Flat Headed Screw
10	1	775015-3	Threaded Pin
11	1	88240-4	Split Pin
12	1	643663	Screw
13	1	643801-1	Crimp Sleeve
14	0,27m	643801	Wire Line
15	1	643801-11	Wire Line Clamp

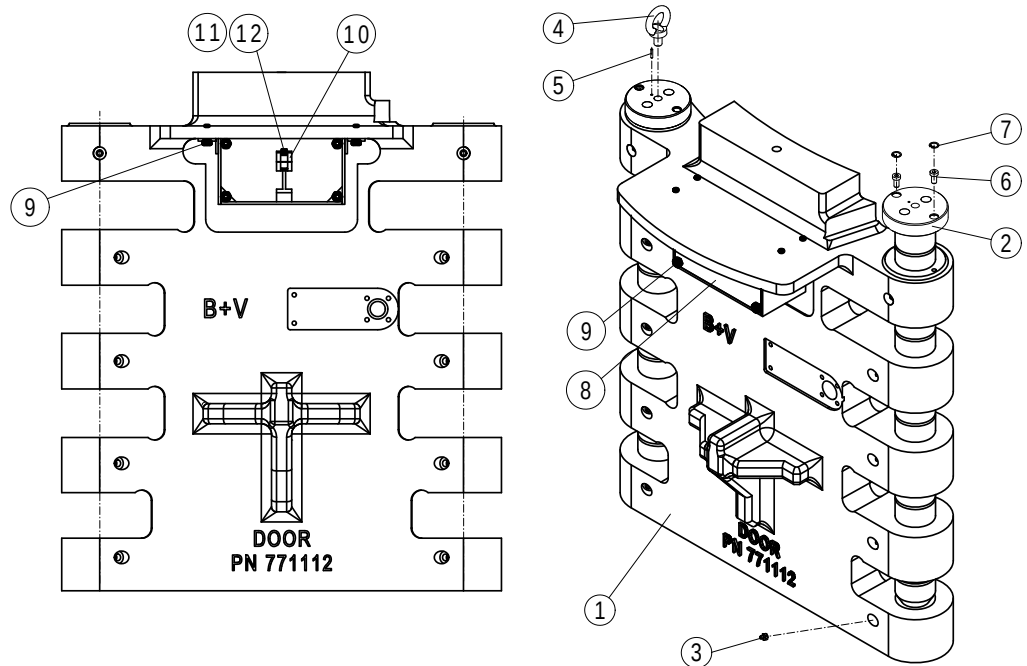
775110 Door Assembly for PS750-2



775110 Parts list

Pos.	Quantity	P/N	Description
1	1	775112	Door
2	2	775113	Hinge Pin Assembly
3	10	612515	Grease Nipple
4	1	755402	Ring bolt
5	1	641599	Pin
6	4	752395	Cylinder head Screw
7	4	756733	Securing Ring
8	1	775305	Feedback Hydraulic Cover
9	8	613723	Screw
10	1	613929	Tube Holder
11	2	755179	Screw
12	2	613783	Washer

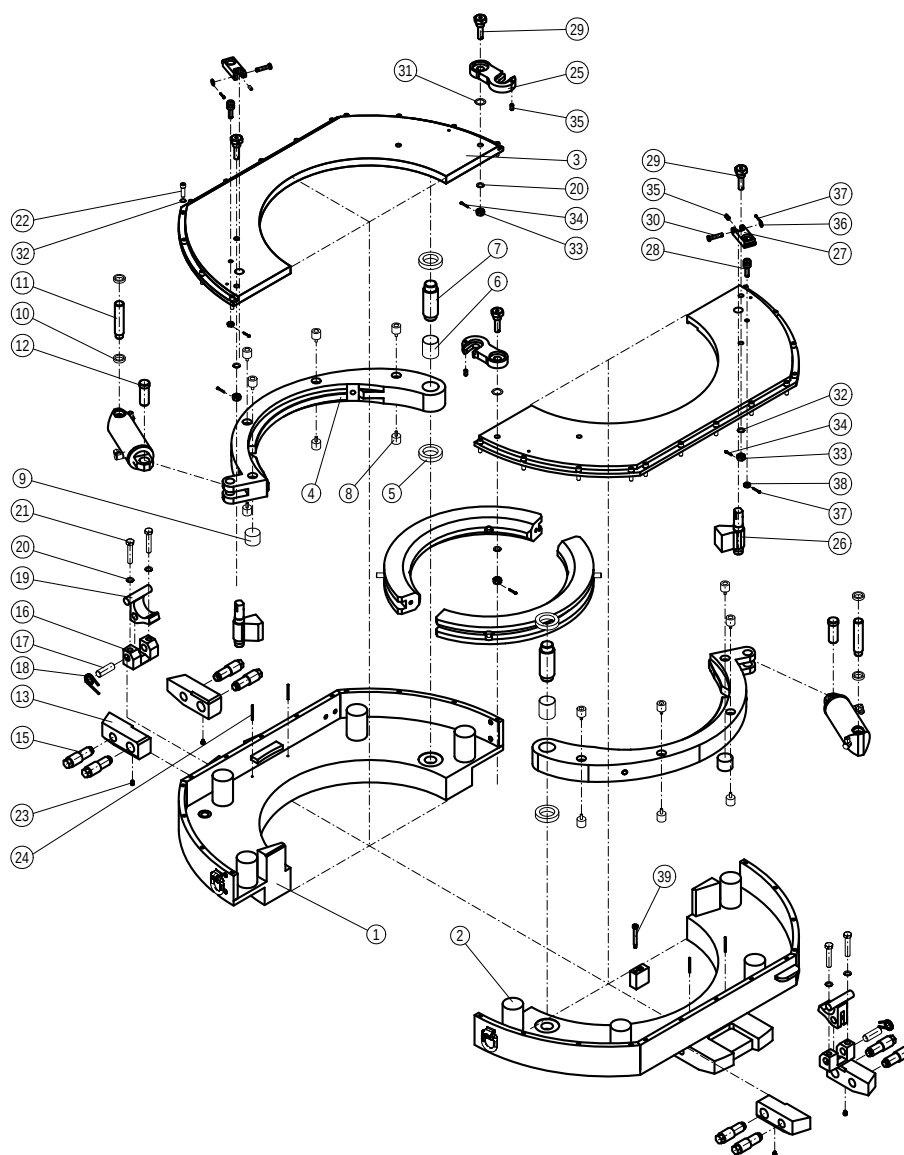
771110 Door Assembly for PS1000



771110 Parts list

Pos.	Quantity	P/N	Description
1	1	775112	Door
2	2	775111	Hinge Pin Assembly
3	10	612515	Grease Nipple
4	1	755402	Ring bolt
5	1	641599	Pin
6	4	752395	Cylinder head Screw
7	4	756733	Securing Ring
8	1	775305	Feedback Hydraulic Cover
9	8	613723	Screw
10	1	613929	Tube Holder
11	2	755179	Screw
12	2	613783	Washer

775390/775700 Centering Guide System Assembly



775390 Parts list

Pos.	Quantity	P/N	Description
1	1	775391	HCS Body , right part
2	1	775392	HCS Body, left part
3	2	775395	Cover
4	2	775393	Lever for HCS
5	4	755705	Washer No.1
6	2	755710	Bushing
7	2	775397	Hinge Bolt
8	18	755703-1	Roller, small
9	2	755703-2	Roller
10	4	755712	Washer No.
11	2	775398	Bolt for Cylinder
12	2	775399	Bolt
13	2	775396	Hinge
15	8	775067	Hinge Pin

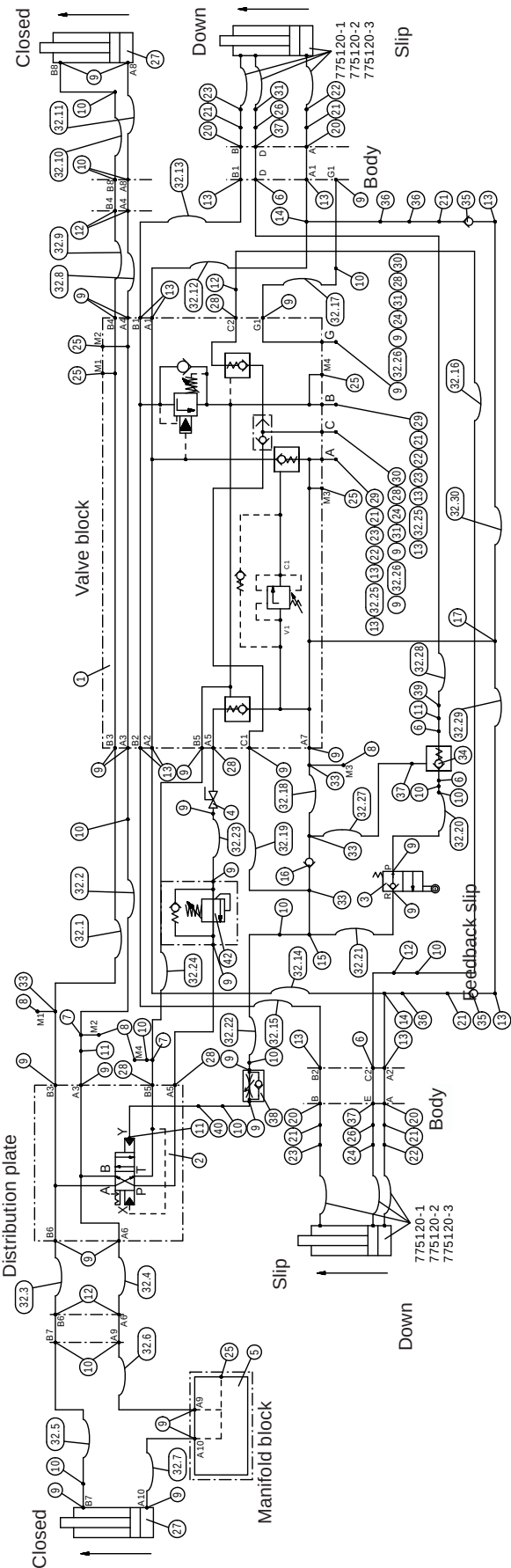
775390 Parts list (Continued)

Pos.	Quantity	P/N	Description
16	2	775063	Stopper seating
17	2	775064	Pin for Stopper
18	2	775065	Spring for HCS
19	2	775062	Cover Stopper
20	8	792106	Washer
21	4	775069	Screw
22	26	756351	Screw
23	4	775071	Pin
24	4	70064	Grease nipple
25	2	775490	Safety locking
26	2	775491	Stopper
27	2	775492	Handle
28	2	775493	Stop
29	4	775494	Bolt
30	2	775495	Bolt
31	2	775496	Washer
32	6	792104	Washer
33	4	755137	Nut
34	4	80340-1	Cotter Pin
35	4	643523-11	Spring loaded
36	2	725443	Washer
37	4	645196	Cotter Pin
38	2	660568	Nut
39	1	710353	Screw

775700 Parts list

Pos.	Quantity	P/N	Description
1	1	775391	HCS Body, right part
2	1	775392	HCS Body, left part
3	2	775395	Cover
4	2	776393	Lever for HCS
5	4	755705	Washer
6	2	755710	Bushing
7	2	775397	Hinge bolt
8	18	755703-1	Roller, small
9	2	755703-2	Roller
10	4	755712	Washer
11	2	775398	Bolt for Cylinder
12	2	775399	Bolt
13	4	775396	Hinge
14	4	775067-1	Hinge Pin
15	4	775067	Hinge Pin
16	2	775063	Stopper seating
17	2	775064	Pin for stopper
18	2	775065	Spring
19	2	775062	Cover stopper
20	4	617520	Safety sheet
21	4	775069	Screw
22	26	612559	Screw
23	4	775071	Pin
24	4	70064	Grease nipple

776300 Hydraulic Assembly



POWER REQUIREMENTS:
Working pressure: 1882-3040 PSI (150-210bar)
Max. pressure: 4350 PSI (300bar)
Flow Rate: min.10GPM (min.37.85l/min)

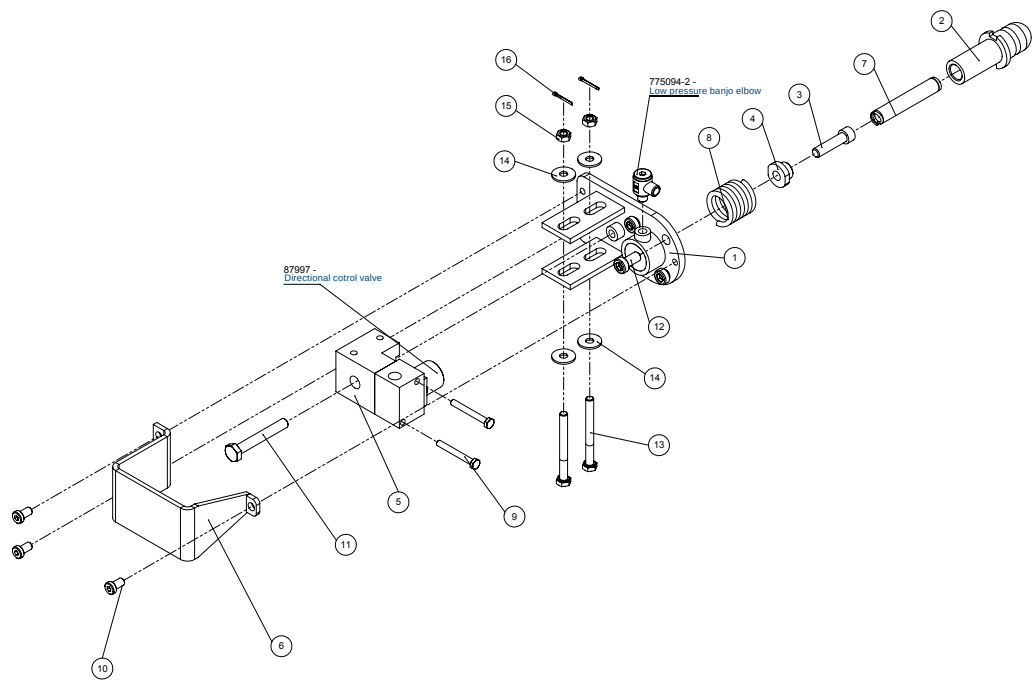
- A: Center Hydraulic Guide System, it set the Slips (if activated).
- B: Raise Slips
- C: Feedbacksignal Slips (UP/DOWN)
- G: Central Grease System

776300 Parts list

Pos.	Quantity.	P/N	Description
1	1	756801	Valve Block
2	1	756808	Distributor Plate
3	1	87997	Directional Control Valve
4	1	645099	Blocking Valve
5	1	756339	Distributor Block 2
6	4	613943	Fitting
7	2	755737	Equal Tee
8	4	755361	Pressure Coupling
9	30	612944	Straight Connection
10	15	645096	L-Adapter
11	3	612945	Straight Connection
12	6	645106	Connection
13	14	755373	Straight Male Stud Coupling
14	2	756318	Adjustable Stud Barrel Tee
15	1	645104	T-Connection
16	1	645110	Check Valve
17	1	710644	T-Connection
18	1,8m	755355	Plastic protective coil sleeve
19	1,5m	755354	Plastic protective coil sleeve
20	4	755365	Banjo Coupling
21	8	645109	Adjustable Adapter
22	4	612936	Coupling 3/8 male
23	4	612937	Coupling 3/8 female
24	3	612965	Coupling 1/4 male
25	5	612929	Blind Screw
26	1	2138-14	Straight Male Stud Coupling
27	2	776308	Cylinder for HCS
28	6	613946	Straight Connection
29	2	645116	Direct Pipe Fitting
30	2	645117	Direct Pipe Fitting
31	3	612966	Coupling 1/4 female
32	1	776300-50	Hydraulic Hose Assembly
32.1	1	776300-2	Hydraulic Hose Assembly for "B3"
32.2	1	776300-3	Hydraulic Hose Assembly for "A3"
32.3	1	776300-4	Hydraulic Hose Assembly for "B6"
32.4	1	776300-5	Hydraulic Hose Assembly for "A6"
32.5	1	776300-6	Hydraulic Hose Assembly for "B7"
32.6	1	776300-7	Hydraulic Hose Assembly for "A9"
32.7	1	776300-8	Hydraulic Hose Assembly for "A10"
32.8	1	776300-9	Hydraulic Hose Assembly for "A4"
32.9	1	776300-10	Hydraulic Hose Assembly for "B4"
32.10	1	776300-11	Hydraulic Hose Assembly for "B8"
32.11	1	776300-12	Hydraulic Hose Assembly for "A8"
32.12	1	776300-13	Hydraulic Hose Assembly for "A1"
32.13	1	776300-14	Hydraulic Hose Assembly for "B1"
32.14	1	776300-15	Hydraulic Hose Assembly for "A2"

Pos.	Quantity.	P/N	Description
32.15	1	776300-16	Hydraulic Hose Assembly for "B2"
32.16	1	776300-17	Hydraulic Hose Assembly for "C2"
32.17	1	776300-39	Hydraulic Hose Assembly for "G1"
32.18	1	776300-30	Hydraulic Hose Assembly for "A7"
32.19	1	776300-31	Hydraulic Hose Assembly for "C1"
32.20	1	776300-32	Hydraulic Hose Assembly for "P"
32.21	1	776300-33	Hydraulic Hose Assembly for "R"
32.22	1	776300-34	Hydraulic Hose Assembly for "Y"
32.23	1	776300-24	Hydraulic Hose Assembly for "A5"
32.24	1	776300-25	Hydraulic Hose Assembly for "B5"
32.25	1	776300-26	Hydraulic Hose Assembly for "A" and "B"
32.26	1	776300-27	Hydraulic Hose Assembly for "C" and "G"
32.27	1	776300-35	Hydraulic Hose Assembly for "Z"
32.28	1	776300-36	Hydraulic Hose Assembly for "D"
32.29	1	776300-37	Hydraulic Hose Assembly for "A11"
32.30	1	776300-38	Hydraulic Hose Assembly for "A12"
33	4	645095	Adjustable Stud Barrel Tee
34	1	726303	Pilot operated check valve
35	2	615861-4	Check valve
36	4	755367	Adjustable stud elbow
37	3	613945	Screw fitting
38	1	612934	Throttle
39	1	645105	Straight coupling
40	1	755738	90° Fitting
41	-	-	-
42	1	790109	Pressure Control Valve

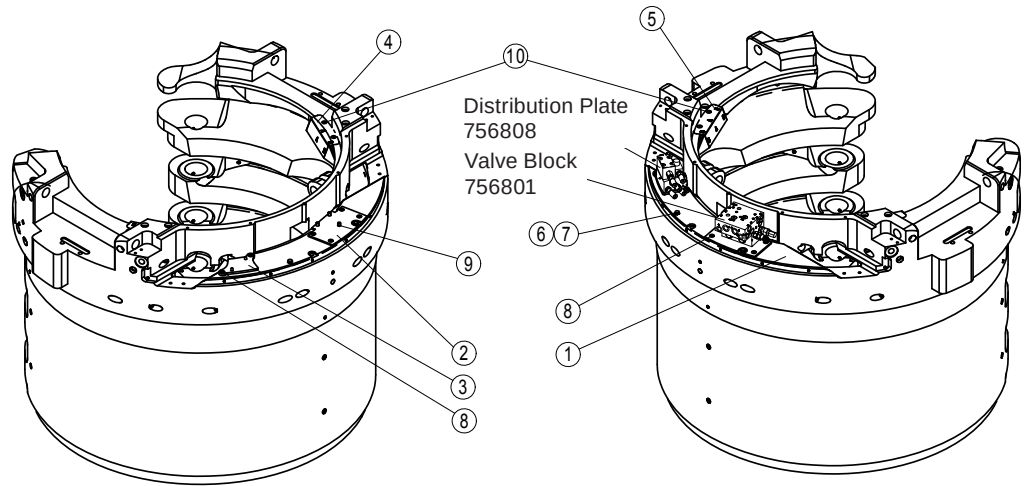
776140 Feedback Assembly



776140 Parts list

Pos.	Quantity	P/N	Description
1	1	757680-1	Connection plate
2	1	776140-2	Plunger
3	1	757680-3	Bolt
4	1	757680-4	Channel
5	1	757680-5	Block
6	1	757680-6	Cover plate
7	1	757680-8	Pressure spring
8	1	775090	Spring
9	2	726009	Screw
10	3	757680-12	Screw
11	1	757680-10	Screw
12	4	612576	Screw
13	2	757685	Screw
14	4	753051	Washer
15	2	613633	Nut
16	3	792112	Washer
17	4	792103	Washer
18	2	620609	Cotter pin

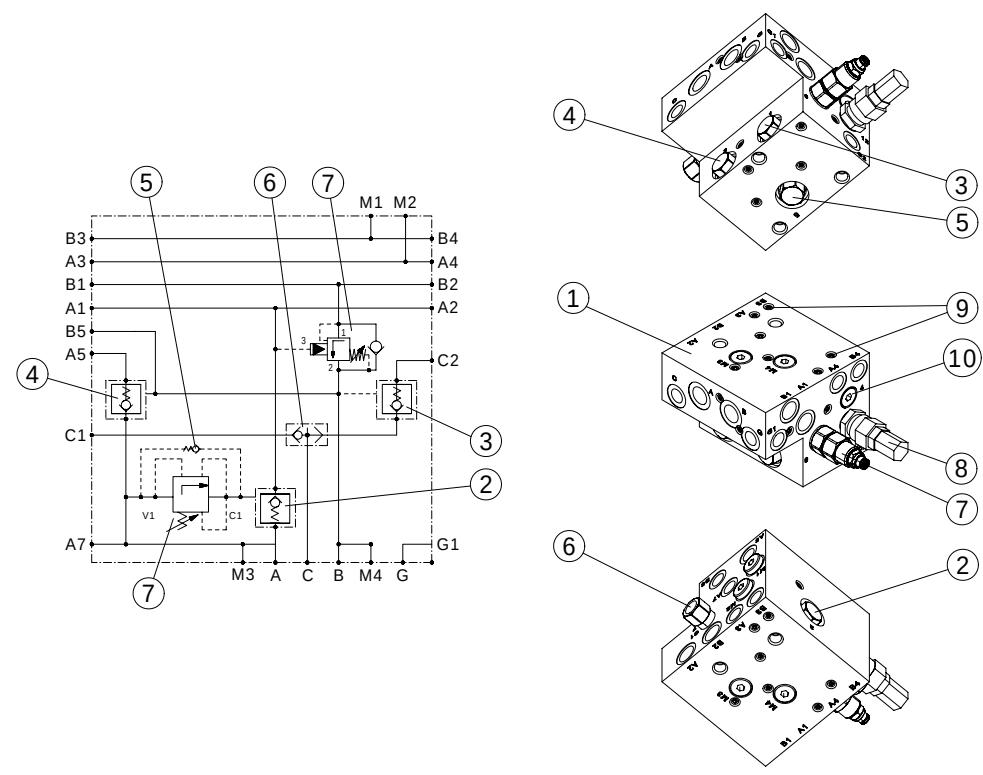
776300-1 Connection Plate



776300-1 Parts list

Pos.	Quantity	P/N	Description
1	1	776301	Hydraulic Base Plate
2	1	776302	Plate for Valve Block
3	1	776303	Plate for distribution plate
4	1	775118	Protection Plate for Hydraulic Connection
5	1	775118-1	Protection Plate for Hydraulic Connection
6	2	735852	Screw
7	2	645059	Washer
8	6	675047	Screw
9	3	776304	Screw
10	4	645054	Screw

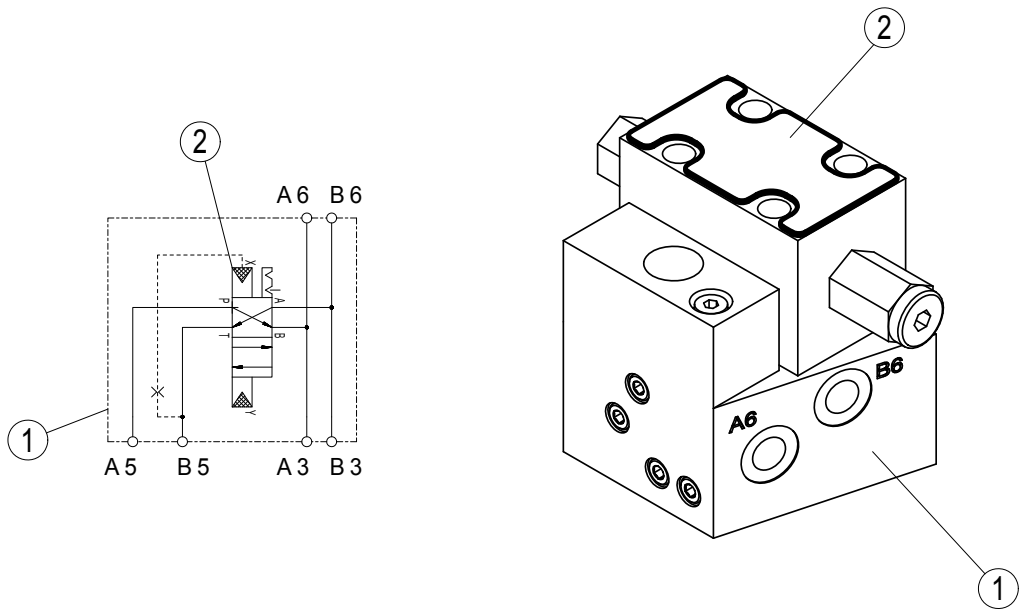
756801 Valve block



756801 Parts list

Pos.	Qty.	Part no.	Description
1	1	756801-1	Block
2	1	2002	Pilot-to-Open Check 3-Port valve
3	1	2002	Pilot-to-Open Check 3-Port valve
4	1	2002	Pilot-to-Open Check 3-Port valve
5	1	2008	Check Valve
6	1	2009	Alternating Check Valve
7	1	2010	load-lowering valve
8	1	2007	Sequence Valve
9	18	2012	Blind Screw
10	1	613978	Blind Screw

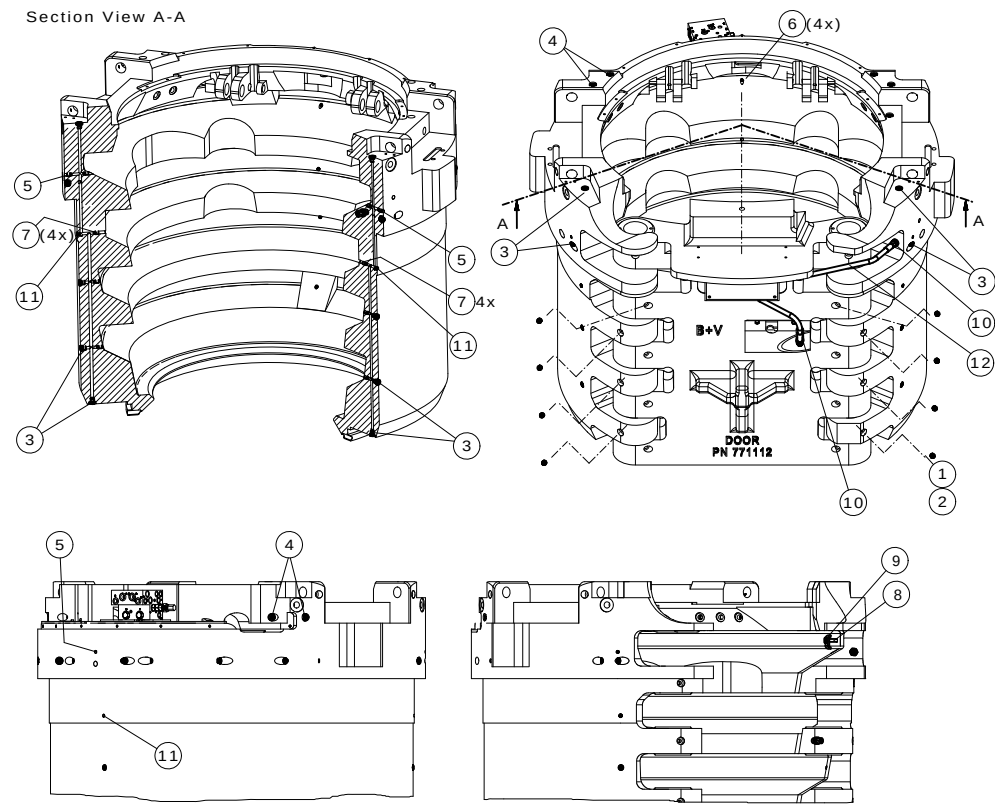
756808 Distribution plate



756808 Parts list

Pos.	Qty.	Part no.	Description
1	1	756802-1	Block
2	1	2013	Control Valve

775170 Greasing System for PS750

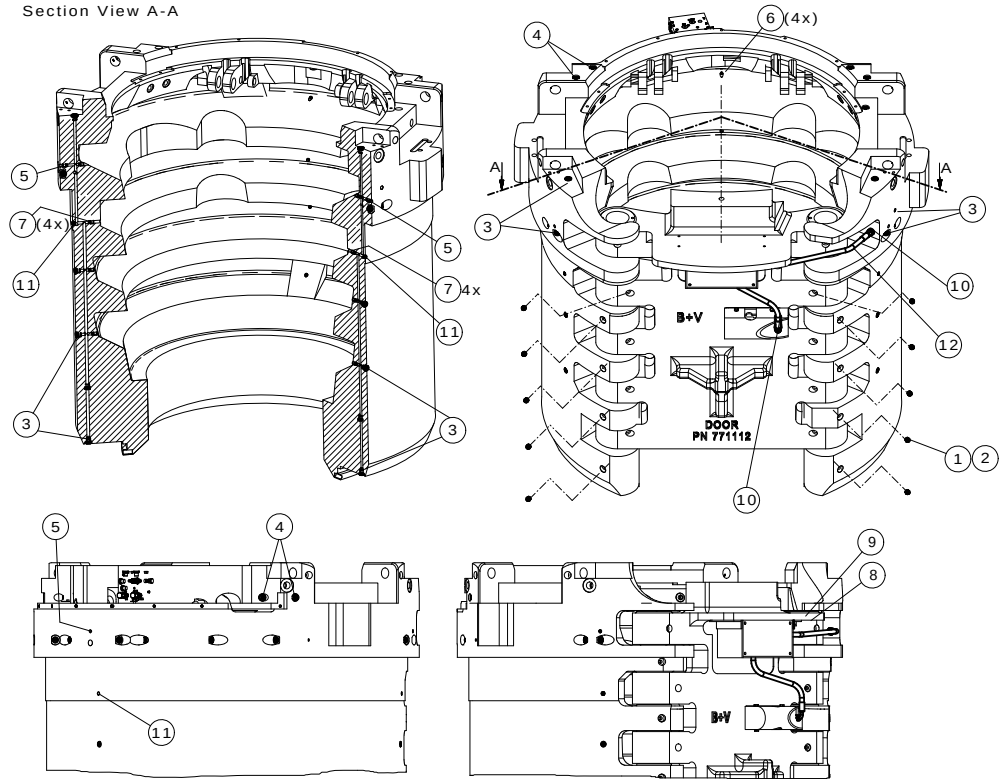


775170 Parts list

Pos.	Quantity	P/N	Description
1	8	612515	Grease nipple
2	8	612518	Protection Cap
3	25	612929	Blind Screw
4	10	645094	Blind Screw
5	3	775048	Socket
6	4	775048-1.5	Grease nozzle, 1,5mm
7	8	775048-2.0	Grease nozzle. 2,0mm
8	1	645158	Screw
9	1	775709	Cover plate
10	2	710653	Straight connection
11	3	771108	Blind Screw
12	1	775176-2	Grease Hose Assembly „G2“

771170 Greasing System for PS1000

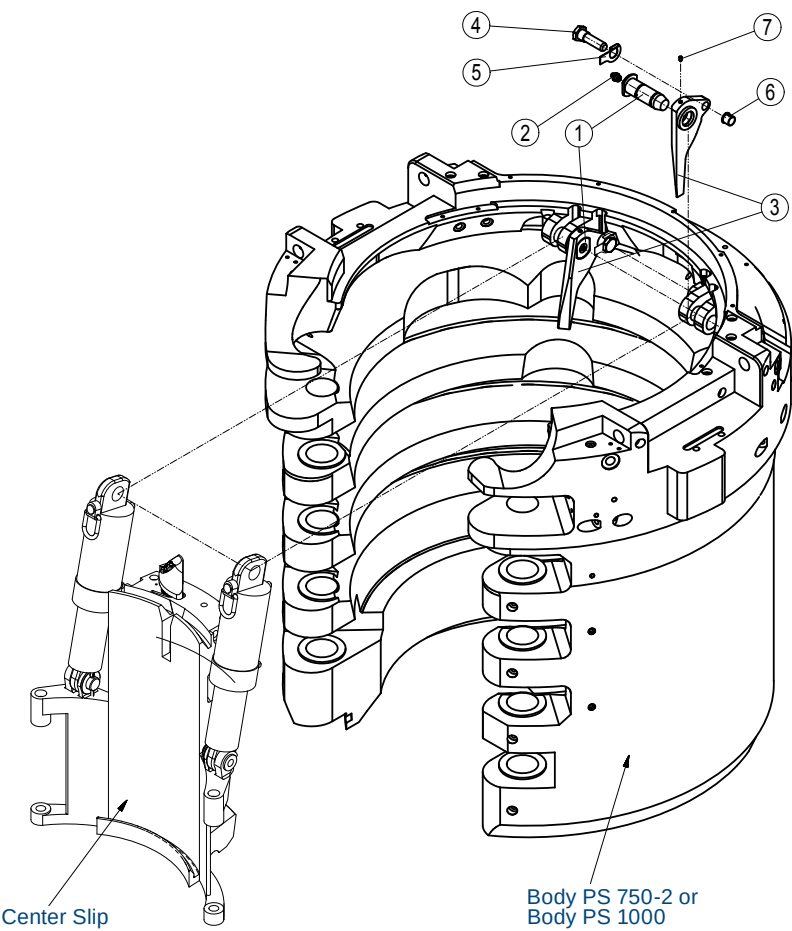
Section View A-A



771170 Parts list

Pos.	Quantity	P/N	Description
1	8	612515	Grease Nipple
2	8	612518	Protection Cap
3	25	612929	Blind Screw
4	10	645094	Blind Screw
5	3	775048	Set Screw
6	4	775048-1.5	Grease nozzle, diameter 1.5mm
7	8	775048-2.0	Grease nozzle, diameter 2.0mm
8	1	645158	Screw
9	1	775709	Plate
10	2	710653	Straight Connection
11	3	771108	Blind screw
12	1	775176-2	Grease Hose Assembly „G2“

775150 Cylinder Lock



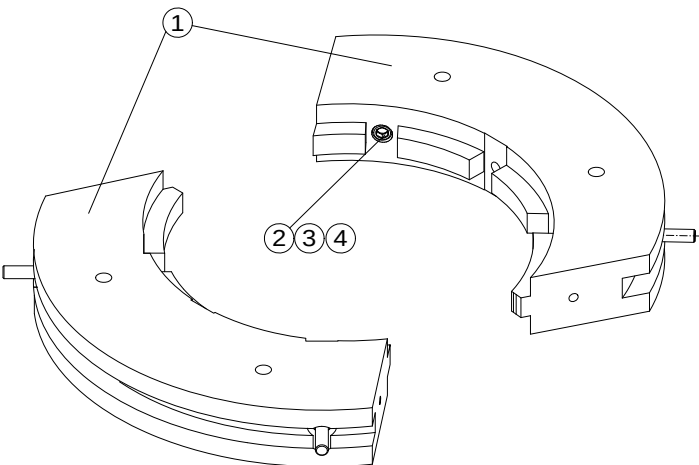
775150 Parts list

Pos.	Quantity	P/N	Description
1	2	775171	Locking Bolt
2	2	70064	Grease Nipple
3	1	775151	Guide Plate, one set
4	2	613623-11	Screw
5	2	725139	Safety sheet
6	2	775178	Bushing
7	2	645008	Set Screw

775100-HUK Parts list

Pos.	Quantity	P/N	Description
1	1	775810	Grease Pump for Power Slip
2	1	775002-2	Lift beam for Power Slip
3	1	755663	Sling Gear for Slip Assembly
4	1	755662	Sling Gear for Cover Assembly
5	1	775820	Toolkit for Power Slip
6	1	775780	Cover for HCS
7	1	775460	Carrier Lifting Tool for 16"-20"
8	1	757070	Carrier Lifting Tool for 2.3/8"-14"
9	1	775900	Unlock Tool
10	1	757008	Hose Assembly for PS Connection
11	1	775008	Service Box for Hook Up Kit
12	1	675162	Toolset for Power Slip
13	1	775795	Adapter for Bit Breaker Adapter Plate
14	1	675163	Wire Rotator Tong
15	1	553455	Bit breaker Adapter Plate 13.9/16"

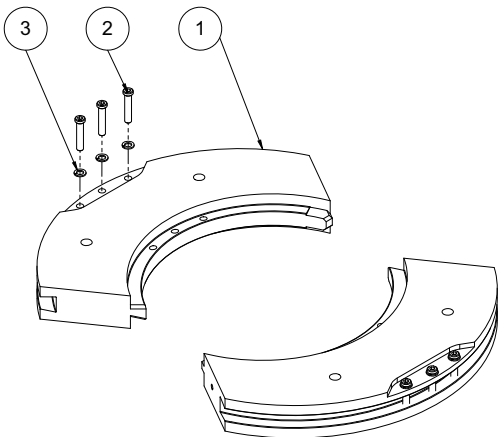
775790 Guide Plate Adapter



775790 Parts list

Pos.	Quantity	P/N	Description
1	2	775790-1	Guide Plate Adapter
2	4	755155	Screw
3	4	755157	Nut
4	4	755158	Washer

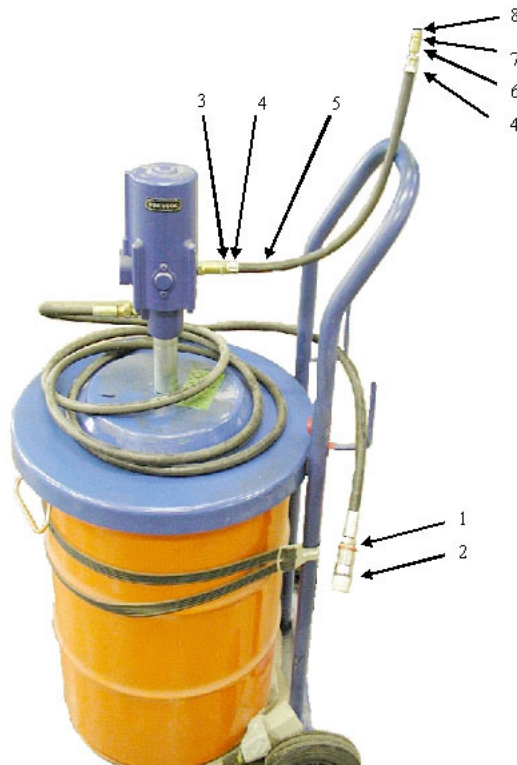
776790 Guide Plate Adapter



776790 Parts list

Pos.	Quantity	P/N	Description
1	2	776790-1	Adapter for Guide Plate Assemblies
2	6	757410	Screw
3	6	757411	Lock Washer

775810 Air Operated Greasing System



775810 Parts list

Pos.	Quantity	Part no.	Description
1	1	612957-1	U-Seal
2	1	612965	Coupling, for Feedback Signal (V)
3	1	612645	Straight-Flange R1/4"
4	2	612644-1	Straight-Connection I
5	0.5	612667	Air-Hose I
6	1	88229-8	Hose nipple
7	1	613811	Clutch Hose Coupling
8	1	612644	Straight-Connection I
9	1	775810-1	Trolley for 50 kg Grease Barrel
10	1	775810-2	Grease Pump, air operated
11	1	775810-3	Hydraulic Hose
-	-	775811	Grease Barrel (50 kg)

Instructions grease pump

Description:

The pump casing is manufactured from diecast zinc with a hardened stainless steel piston rod and high quality durable synthetic components. The polyurethane or Buna-N o-rings and washers are designed to meet the operating requirements of the pump.

Technical data:

Transmission ratio	50:1
Maximum air pressure:	10 bar
Minimum air pressure:	2 bar
Recommended air pressure:	8 bar
Stroke volume motor:	220 cm ³
Pump performance at 8 bar (free outlet):	1100 g/min
Pump pressure at 8 bar compressed air:	400 bar
Air consumption at 8 bar compressed air:	400l/min
Compressed air supply connection:	G1/4"female
Grease supply connection from the pressure side:	G1/4"male
Noise level at no load acc. to ISO 9614-2:	78 dB(A) 2m

Recommended application:

Designed to provide a trouble free performance with lubricants up to NLGI grade 2 and moderate length distribution lined. The delivery performance will vary dependent upon the viscosity and temperatures of the lubricant. The pump will also operate in non-vertical installations.

Operating requirements:

To avoid unnecessary damage and to prolong the life expectancy of the pump we recommend that an air line combination filter, regulator and lubricator is utilised to ensure that the compressed air supply is not contaminated and is regulated at the recommended pressure.

New installation lines should be cleaned regularly to avoid residual metal filings damaging individual components within the pump. When exchanging containers protect the suction tube to avoid dirt particles adhering to the suction tube and contaminating the lubricant in a new container.

Maintenance:

The muffler and air inlet filter should be cleaned regularly to maintain the trouble free performance of the pump. If an airline lubricator has not been installed, frequently lubricate the pump by inserting 2 to 3 drops of quality oil through the air inlet connector at regular intervals.

Warranty:

Only approved PRESSOL maintenance personnel should open or repair pumps within the warranty period.

Safety:

WARNING: THE COMPRESSED AIR LINE MUST BE DISCONNECTED AND THE GREASE CONTROL GUN ACTUATED TO ENSURE THAT THE GREASE PUMP IS DE-PRESSURISED BEFORE THE PUMP UNIT IS OPENED OR INSPECTED. FOR SAFETY REASONS THE COMPRESSED AIR LINE SHOULD BE DISCONNECTED WHEN THE PUMP IS NOT IN USE OR OTHERWISE THE PUMP WILL REMAIN PRESSURISED.

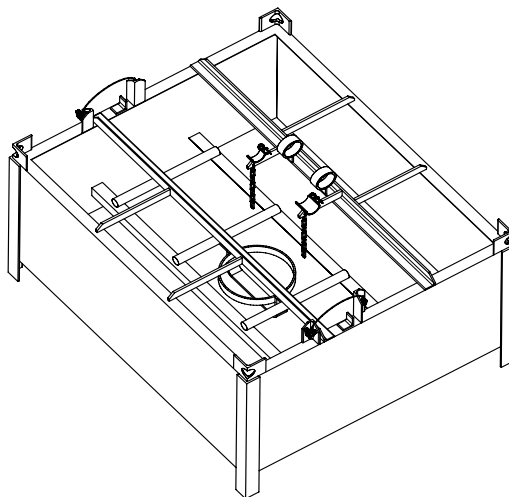
775820 Tool kit for PS 750-2 & PS 1000-2



775820 Parts list

Pos.	Quantity	P/N	Description
1	1	775814	Box
2	4	755719	Screw
3	3	755402	Lifting Eye Bolt
4	1	775813	Square Bore Wrench
5	1	755780	Turnscrew

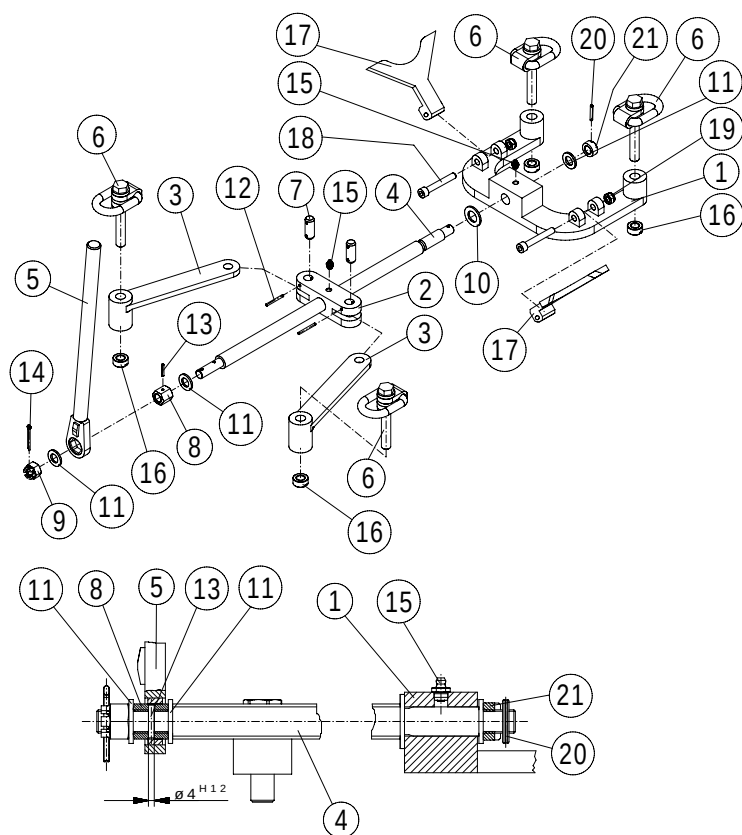
775008 Carrier Box



775008 Parts list

Pos.	Quantity	P/N	Description
1	1	775008-1	Box
2	6	70323	Die Retainer Pin
3	4	620415	Safety Spring
4	2	725443	Washer
5	2	70324	Cotter Pin
6	2	660414-4	Link Chain
7	2	645037	Rope
8	1	755667	Grease Filling Device Ass'y incl. 20l Grease

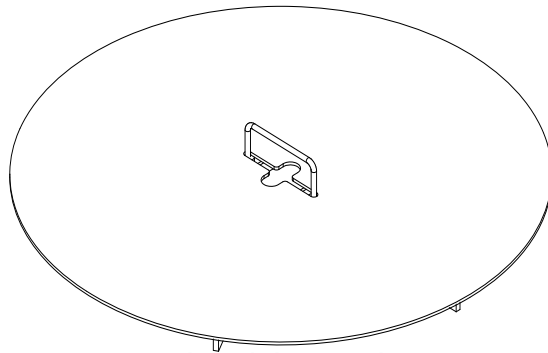
775190 Slip Tightening Tool



775190 Parts list

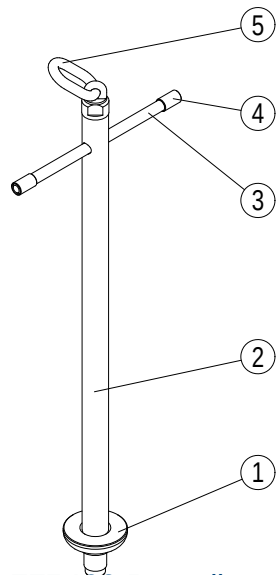
Pos.	Quantity.	P/N	Description
1	1	775192	Yoke
2	1	775193	Yoke for Lever
3	2	775194	Lever
4	1	775195	Threaded spindle
5	1	775189	Ratchet
6	4	775128	Lifting Eye
7	2	775186	Bolt
8	1	775198	Nut
9	1	775471	Nut
10	1	775472	Washer
11	3	775473	Washer
12	2	775474	Spring Dowel Pin
13	1	775475	Spring Dowel Pin
14	1	772339	Cotter Pin
15	2	70064	Grease Nipple
16	4	755192-1	Slotted Nut
17	2	775173	Cylinder Fix
18	2	735858	Screw
19	2	89125	Nut
20	1	621451	Spring Dowel Pin
21	1	755157	Nut

775780 Cover for HCS, PS 1000-2



775460 Carrier Lifting Tool for 16-20"

757070 Carrier Lifting Tool for 2³/₈" – 14"



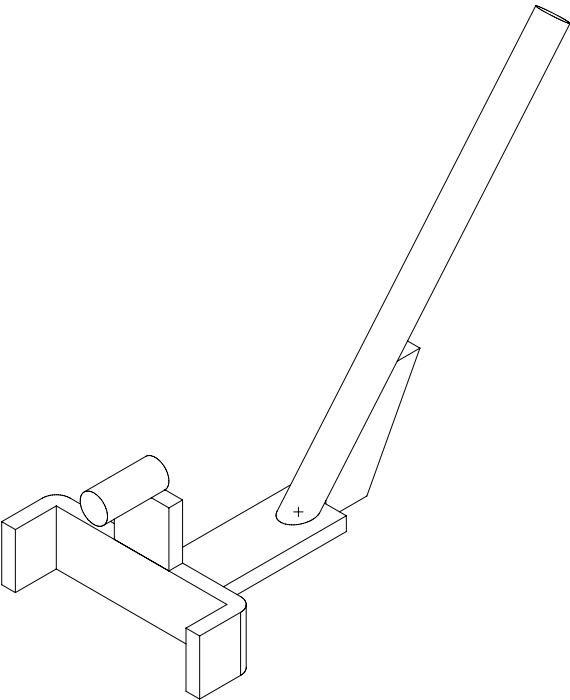
775460 Parts list

Pos.	Quantity	P/N	Description
1	1	775461	Disk
2	1	756072	Rod
3	1	756782	Handle
4	1	756783	Tube
5	1	775087	Lifting Hook

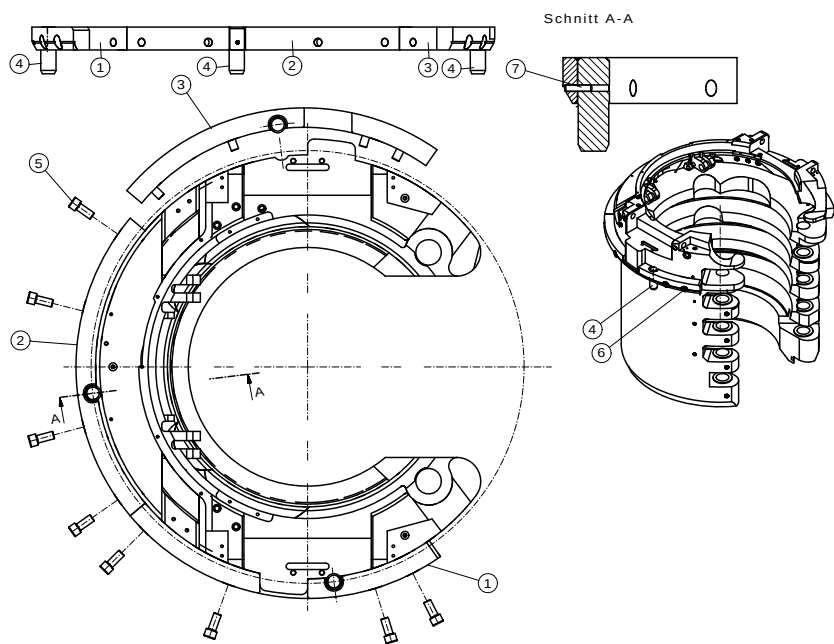
757070 Parts list

Pos.	Quantity	P/N	Description
1	1	776071	Disk
2	1	756072	Rod
3	1	756782	Handle
4	1	756783	Tube
5	1	775087	Lifting Hook

775900 Unlock Tool



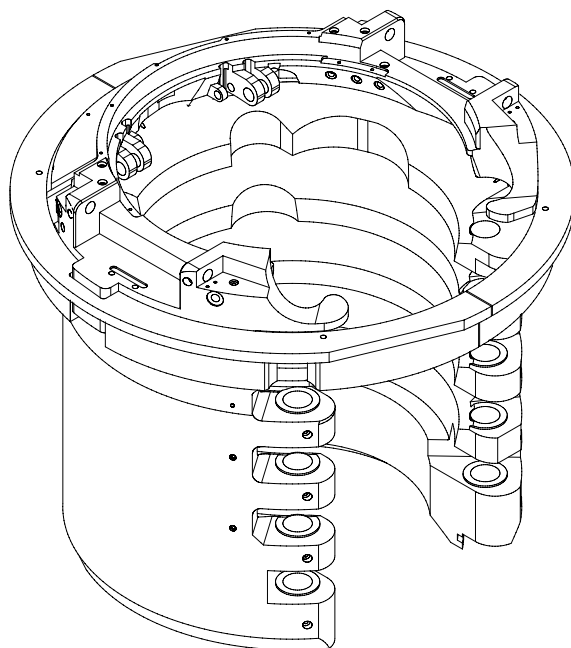
775910 Adapting Assembly for Wirth RTSS 49.1/2" (optional)



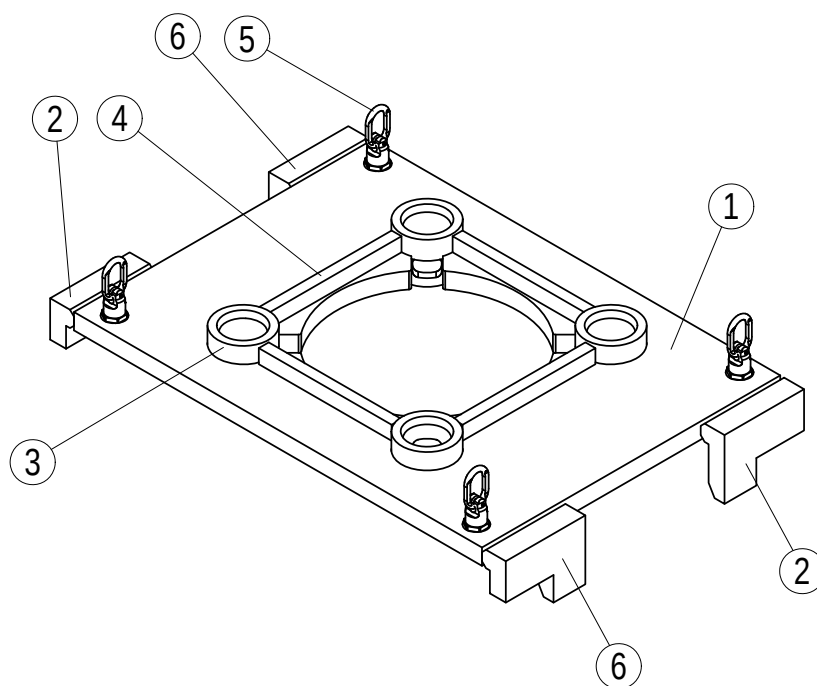
775910 Parts list

Pos.	Quantity	P/N	Description
1	1	775911	Adapting, left
2	1	755912	Adapting, center
3	1	755913	Adapting, right
4	3	775914	Bolt for Adapting
5	12	775916	Screw
6	1	755127	Safety Wire
7	3	87961	Cylinder pin

775006 Adapter Ring for EMSCO RT T-4950 (optional)



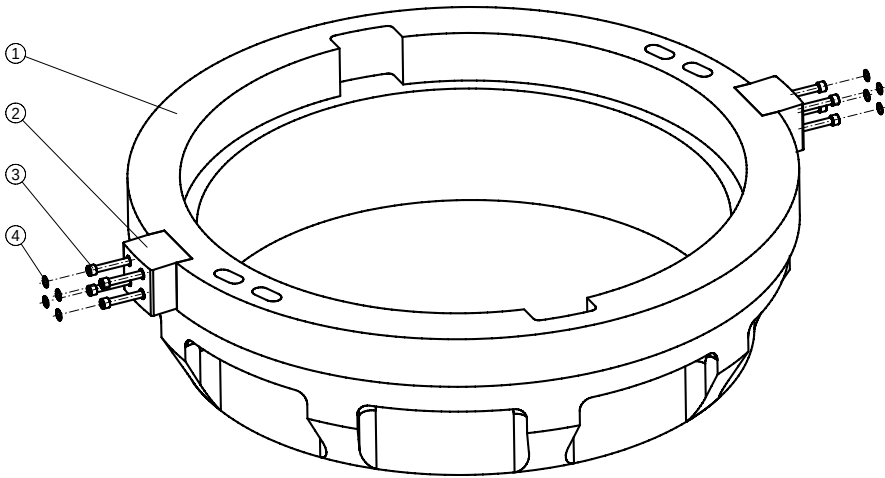
775795 Bit Breaker Adapter Plate



775795 Parts list

Pos.	Quantity	P/N	Description
1	1	775795-1	Plate
2	2	775795-2	Angle, right
3	4	775795-3	Distance tube
4	4	-	Distance Slat
5	4	553468	Lifting eye
6	2	775795-4	Angle, left

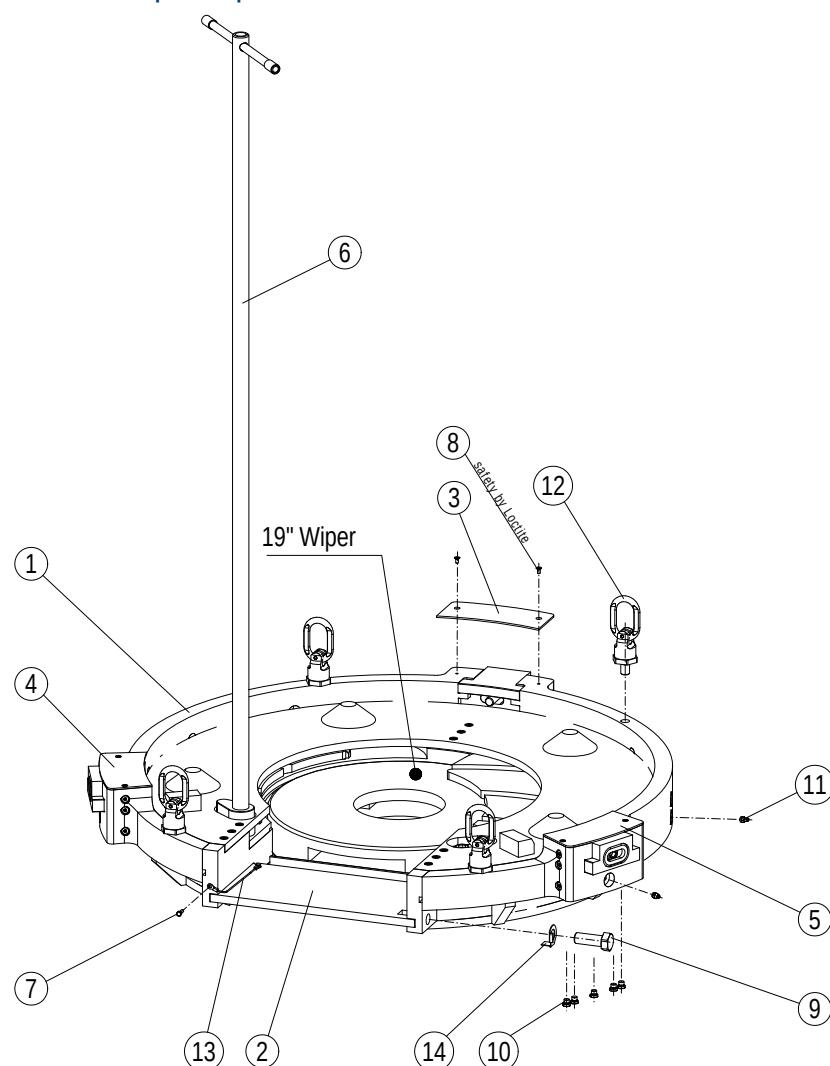
553220 Solid Adapter ring 60.5"- 49.5" National RT



553220 Parts list

Pos.	Quantity	P/N	Description
1	1	553221	Adapter Ring
2	2	553220-10	Block for solid adapter ring
3	8	725465	Screw
4	8	755168	Securing ring

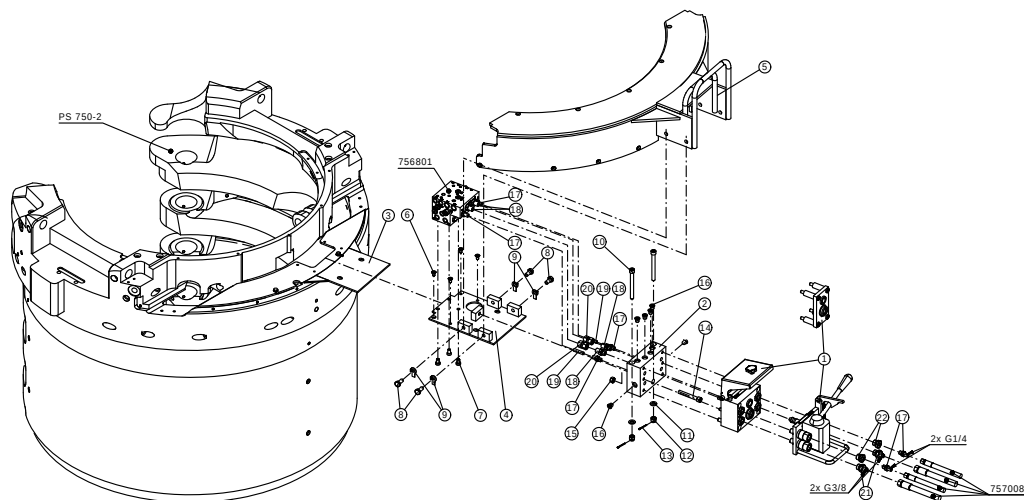
775990 Pipe Wiper



775990 Parts list

Pos.	Quantity	P/N	Description
1	1	775991	Housing Assembly
2	1	775992	Sliding Plate Assembly
3	1	775993	Cover Plate 1
4	1	775994	Cover Plate 2
5	1	775995	Cover Plate 3
6	1	775996	Tool
7	2	752340	Screw
8	6	756789	Screw
9	1	775989	Screw
10	24	710642	Blind Screw
11	15	70064	Grease Nipple
12	4	753005-1	Lifting eye
13	1	755127	Safety rope
14	1	725139	Washer

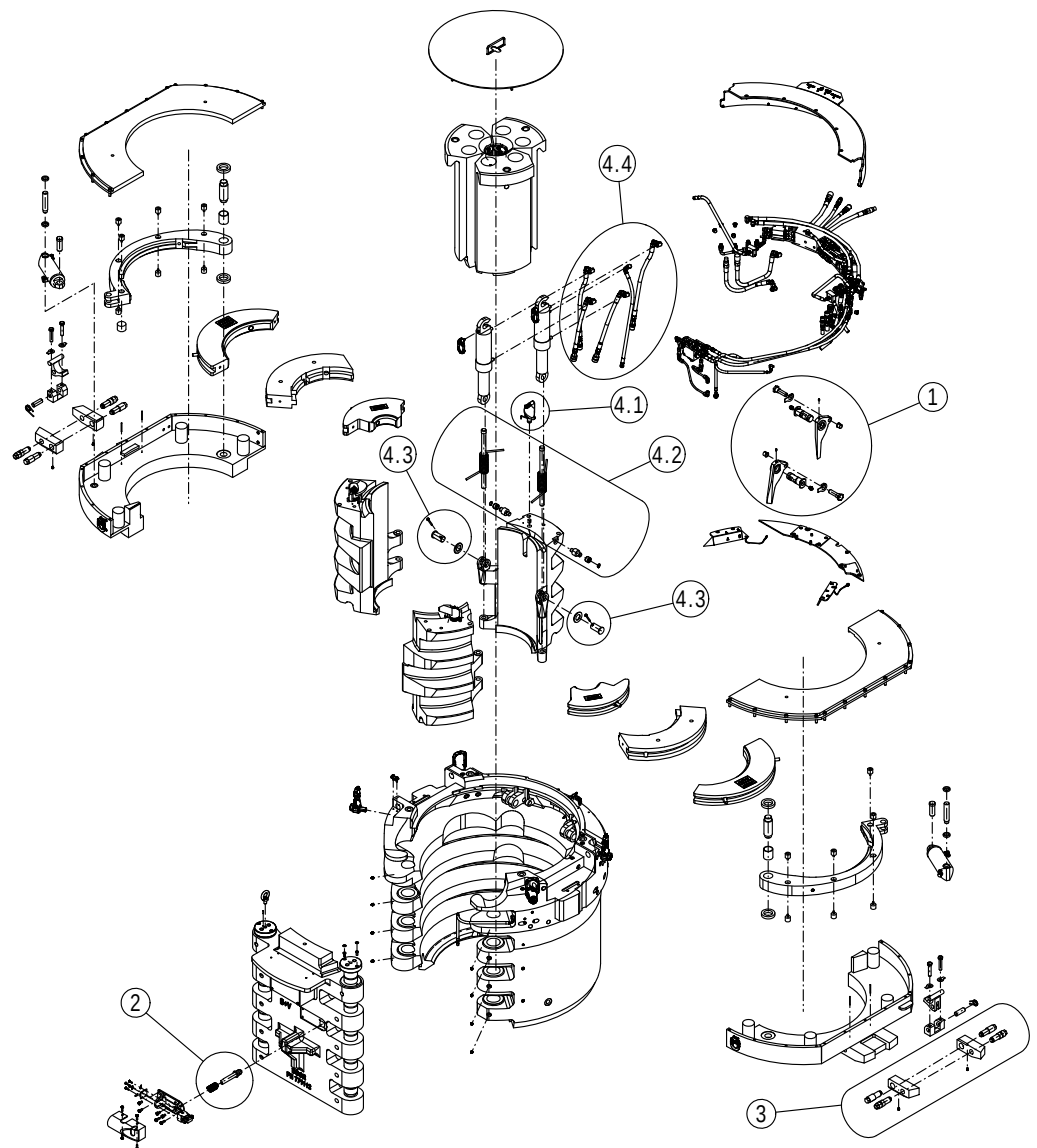
776800 Multi coupling kit



776800 Parts list

Pos.	Quantity	Part no	Description
1	1	775325	Multi-coupling Assembly
2	1	776801	Adapter
3	1	776802	Base Plate
4	1	776803	Hydraulic Connection Plate
5	1	776804	Cover
6	4	675047	Screw
7	3	776304	Screw
8	4	613823	Screw
9	4	613825	Safety sheet
10	2	776805	Screw
11	2	621431	Washer
12	2	613728	Nut
13	2	612693	Cotter Pin
14	1	671117	Screw
15	1	612690	Nut
16	6	612929	Blind Screw
17	6	612944	Straight Connection
18	4	755373	Straight Male Stud Coupling
19	1	645093	Hydraulic pipe
20	2	755364	Swivel Reducer
21	2	755374	Straight Male Stud Coupling
22	2	612944	Straight Connection

776100-RSP Spare Parts list for PS 750-2 and PS 1000



776100-RSP Spare Parts list

Pos.	Quantity.	Part no.	Description
1	1	775150	Cylinder Lock
2	1	776191	Spare Parts for Feedback Assembly
3	1	776192	Spare Parts for HCS Assembly
4	1	775120-1-RSP	Spare Parts for Slip Assembly 2.3/8" - 14"
	or	775120-2-RSP	Spare Parts for Slip Assembly 14" - 20"
	or	775120-3-RSP	Spare Parts for Slip Assembly 22"

776100-RSP-H Spare Parts list for hydraulics

Quantity	Part no.	Description
1	776193	Spare Parts for Hose Assembly
2	776194	Spare Parts for Valves

775120-1-RSP Spare Parts list for Slip Assembly. 2.3/8"-14" (2 years operation)

Pos.	Quantity	P/N	Description
4.1	3	775015	Carrier Securing Assembly
	2	775133	Spring for Slip
	2	775132	Hinge Pin for Slip
4.2	2	775096-4	Bolt for Center Slip
	2	752210	Roller
	10	613720	Retainer Ring
4.3	2	775096-1	Bolt
	10	775160	Washer
	10	775162	Cotter Pin
	10	70064	Grease Fitting
4.4	2	775300-10	Hydraulic Hose Ass'y for Slip Cylinder "B"
	2	775300-12	Hydraulic Hose Ass'y for Slip Cylinder "A"
	1	775300-18	Hydraulic Hose Ass'y for Slip Cylinder "C"

775120-2-RSP Spare Parts list for Slip Assembly 14"-20" (2 years operation)

Pos.	Quantity.	P/N	Description
4.1	3	775115	Carrier Securing Assembly
	2	775134	Spring for Slip
	2	775130	Hinge Pin for Slip
4.2	2	775096-4	Bolt for Center Slip
	2	752210	Roller
	10	613720	Retainer Ring
4.3	2	775159	Bolt
	10	775160	Washer
	10	775162	Cotter Pin
	10	70064	Grease Fitting
4.4	2	775300-10	Hydraulic Hose Ass'y for Slip Cylinder "B"
	2	775300-12	Hydraulic Hose Ass'y for Slip Cylinder "A"
	1	775300-18	Hydraulic Hose Ass'y for Slip Cylinder "C"

775120-3-RSP Spare Parts list for Slip Assembly 22"
(2 years operation)

Pos.	Quantity.	P/N	Description
4.2	2	775134	Spring for Slip
	2	775130	Hinge Pin for Slip
	2	775096-4	Bolt for Center Slip
	2	752210	Roller
	10	613720	Retainer Ring
4.3	2	775159	Bolt
	10	775160	Washer
	10	775162	Cotter Pin
	10	70064	Grease Fitting
4.4	2	775300-10	Hydraulic Hose Ass'y for Slip Cylinder "B"
	2	775300-12	Hydraulic Hose Ass'y for Slip Cylinder "A"
	1	775300-18	Hydraulic Hose Ass'y for Slip Cylinder "C"