

Blohm+Voss Pipe Handling Equipment
Hydraulic Operated Elevator/Spider
BVE / BVS 500 PN 752000-Y-H-VC
4.1/2" - 14"
Technical Documentation
Original Instructions



Manual PN 752000-Y-H-VC-D Rev 003, September 2013
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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. It must be studied before working with the 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.

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 94/9/EC “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 its 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 its 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 671640-1
Pay attention: Do not place your hands between moving parts.



Warning sign PN 671641
Pay attention: Risk of crushing.

Safety issues Power slips/Spiders/Elevators

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/Spider/Elevator 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/spiders/elevators

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).

Safety issues spiders

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,

Blohm + Voss Oil Tools
Hermann-Blohm-Strasse 2
20457 Hamburg
Phone:+49(0)40 3119-1139
Fax:+49(0)40 3119-3305

declare that the product

B+V Type BVE/S (Elevator/Spider) Load rating 250 to 750ton

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 2014/34/EU:	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 13535:2002/API 8C:	Petroleum and natural gas industries-Drilling and production equipment-Hoisting equipment

Marking:   II 2G T5

Table of contents	
GENERAL INFORMATION	2
4. Operations	26
5. Maintenance and Inspection	28
6. Size components	40
DESCRIPTION	
COMMISSIONING	
INSTALLATION	
OPERATION	
MAINTENANCE & INSPECTION	
SIZE COMPONENTS	
DRAWINGS	
Warnings and Note	2
Intended use of this manual	2
Intellectual property	2
Improper / Unsafe Use	2
Manufacturer & Agents World wide	2
CE Marking	2
Limited Warranty	2
General safety issues	3
Safety issues Power slips/Spiders/Elevators	4
Safety issues automatic power slips/spiders/elevators	4
Safety issues spiders	4
EC-DECLARATION OF CONFORMITY	5
Table of contents	6
1. Description	10
General	10
Intend of Use	11
Identification	11
Improper / Unsafe Use	11
Limited Warranty	11
Technical Data	12
Contents of delivery	12
Main Dimensions BVE and BVS elevator/spider	13
Height Dimensions	14
Programming of Software	15
Casing operation (BVE elevator)	15
Hydraulic functioning	15
Schematic Hydraulic Plan	16
2. Commissioning	18
Commissioning BVE/BVS Elevator/Spider	18
Scope of supply	18
Hydraulic Characteristics	18
Check and Lubrication	18
Function Test	19
3. Installation	22
Lifting and transport	22
Checking Guide Plates	22
Installation of Elevator	23
Installing the spider	23
Changing Slips	23
Changing Inserts	23
Installation Checklist BVE/BVS Elevator/Spider	24
Hydraulic Connections	24
Function test	24
Safety	26
Operation	26
General	28
Daily Lubrication	28
Grease quality	28
Locking of screws	29
Cylinders	29
Inspection categories acc. to API RP 8B	30
Frequency	30
Periodic inspection	30
Non-periodic inspection	30
Inspection	30
Inspection of Hydraulic/Pneumatic System	30
Critical Load Inspection	31
Dismantling Inspection	31
Inspection check lists	32
CHECK LISTS	33
Check Category I (Ongoing observation)	33
Check List Category III (every 6 months)	34
Check List Category IV (every year)	34
Wear data criteria	35
Critical Areas	35
Handling, storage and transport	36
Storage	36
Short term storage after use and less then 3 months	36
Long term storage over 3 months	36
Preserve the tool:	
Grease all blank surfaces with grease: Cylinders	36
Handling	36
Transport	36
Trouble shooting	37
Slips, Inserts, Guide Plates	40

7. Drawings and Spare Parts BVES-500 42

Drawing No. 75200-Y-H-VC	42
Side view	43
Top view dressed as a Spider	44
Top view dressed as an Elevator	44
Top view	45
Rear view	45
Rear view	46
752000-Y-H-VC B+V Type BVE/S Elevator / Spider Body, API8C-PSL1, hydraulically operated, complete less Slips, Guide Plates & Guide Bell	47
752104 Door Assembly	49
752204 Bolt Assembly	50
752109 Link Block Assembly	51
752106 Yoke Assembly	52
752133 Signal Bar Assembly	53
752136 Hydraulic Cylinder Assembly	54
752140-VC Hydraulic Assembly	55
752140-VC Hydraulic Assembly	56
645307 Hydraulic Block	58
752600 Casing Guide Bell Assembly /Elevator	59
752108 Slip Retainer Pin Assembly	60
752765 Spider Adapter Plate for Rotary Table	61
752700 Upper Guard Guide Assembly / Spider	62
752700 Upper Guard Guide Assembly / Spider	63
752700 Parts list	63
Upper Guard Guide Plate / Spider	64
Parts list Upgraded Upper Guard Plate / Spider	64
Guide Plate Assembly / Elevator (Body Guide Plate and Door Guide Plate)	65
Parts list Upgraded Guide Plate Assembly / Elevator	65
Slip Assembly	66
Parts Lists Slip Assemblies	66
Spare Parts for one year operation	69
752000-Y-H-RSP Elevator Spare Parts	69
752000-Y-H-RSP Spider Spare Parts	71
752140-VC-RSP Hydraulic Spare Parts	73

TABLE OF CONTENTS	DESCRIPTION	COMMISSIONING	INSTALLATION	OPERATION	MAINTENANCE & INSPECTION	SIZE COMPONENTS	DRAWINGS
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DESCRIPTION

DESCRIPTION

1. Description

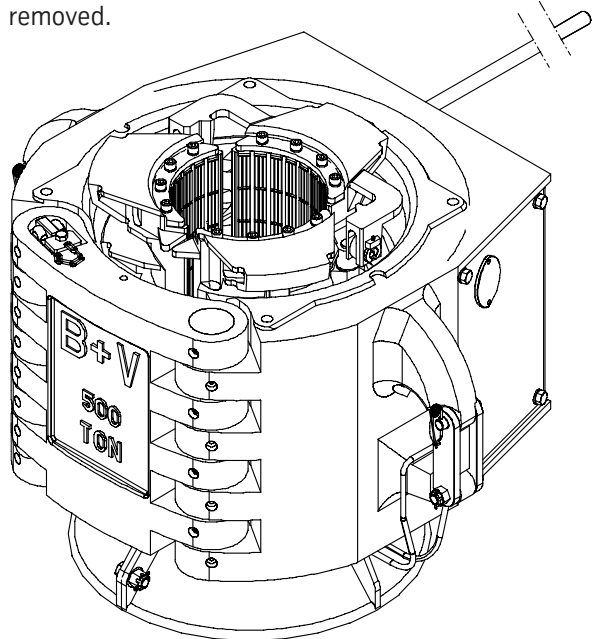
General

The Blohm+Voss 500 tons Elevator / Spider is designed with strength and safety factors in accordance with API Section 8C - Regulations and will be used for handling long, heavy strings of casings. These tools are convertible for use as casing spiders or casing elevators, and can be operated easily by one man due to unitized slip assemblies and a positive locking mechanism.

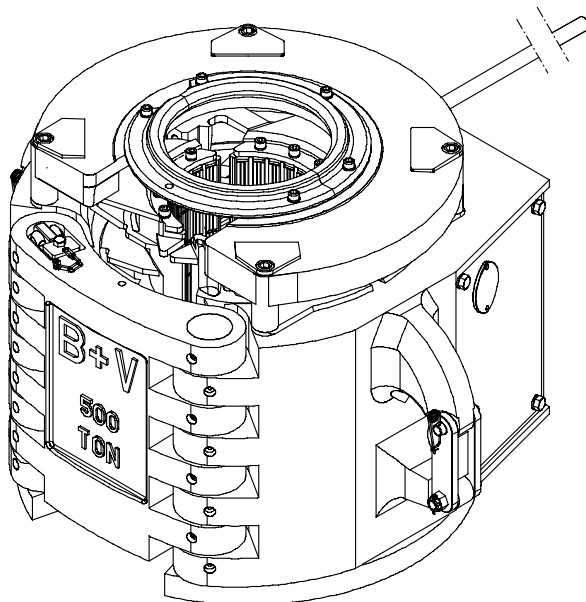
The unitized design of the slip assemblies allows the tool to grip casing with uniform radial pressure, ensuring a safe hold while minimizing the possibility of damage to the pipe. This model is available for hydraulic power slip operation and can handle pipes from 4.1/2" through 14" O.D. On all slip body sizes, reducing inserts are installed simply and rapidly, permitting the handling of pipes with an O.D. up to 1" smaller than the slip body size without changing slips.

When dressed as an elevator, the tool includes a body guide plate, a door guide plate and a casing guide bell, which automatically centers the pipe for positive locking of the slips. Auxiliary equipment needed to use the tool as a spider includes a spider adapter plate, which sits on the rotary table to provide a secure platform for the tool, and an upper guard guide assembly, which functions as a pipe centering device.

Both models feature double-hinges and a swing-away door, which permits them to be rapidly installed on casing, or removed.



Dressed as an elevator



Dressed as a spider

Intend of Use

The Blohm + Voss 500 tons Elevator / Spider is designed with strength and safety factors in accordance with API Section 8C - Regulations and will be used for handling long, heavy strings of casings.

Identification

The identification area clearly identifies the BVE/S 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.

Improper / Unsafe Use

The BVE-BVS 500 elevator/spider must only be used for the designated purpose.

When using the BVE-BVS 500 elevator/spider, the load 500 sh tons must never be exceeded (depending on the rating).

Limited Warranty

The warranty provided will be void if the Elevator/Spider 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 Elevator/Spider which were not approved by Blohm+Voss Oil Tools

Technical Data

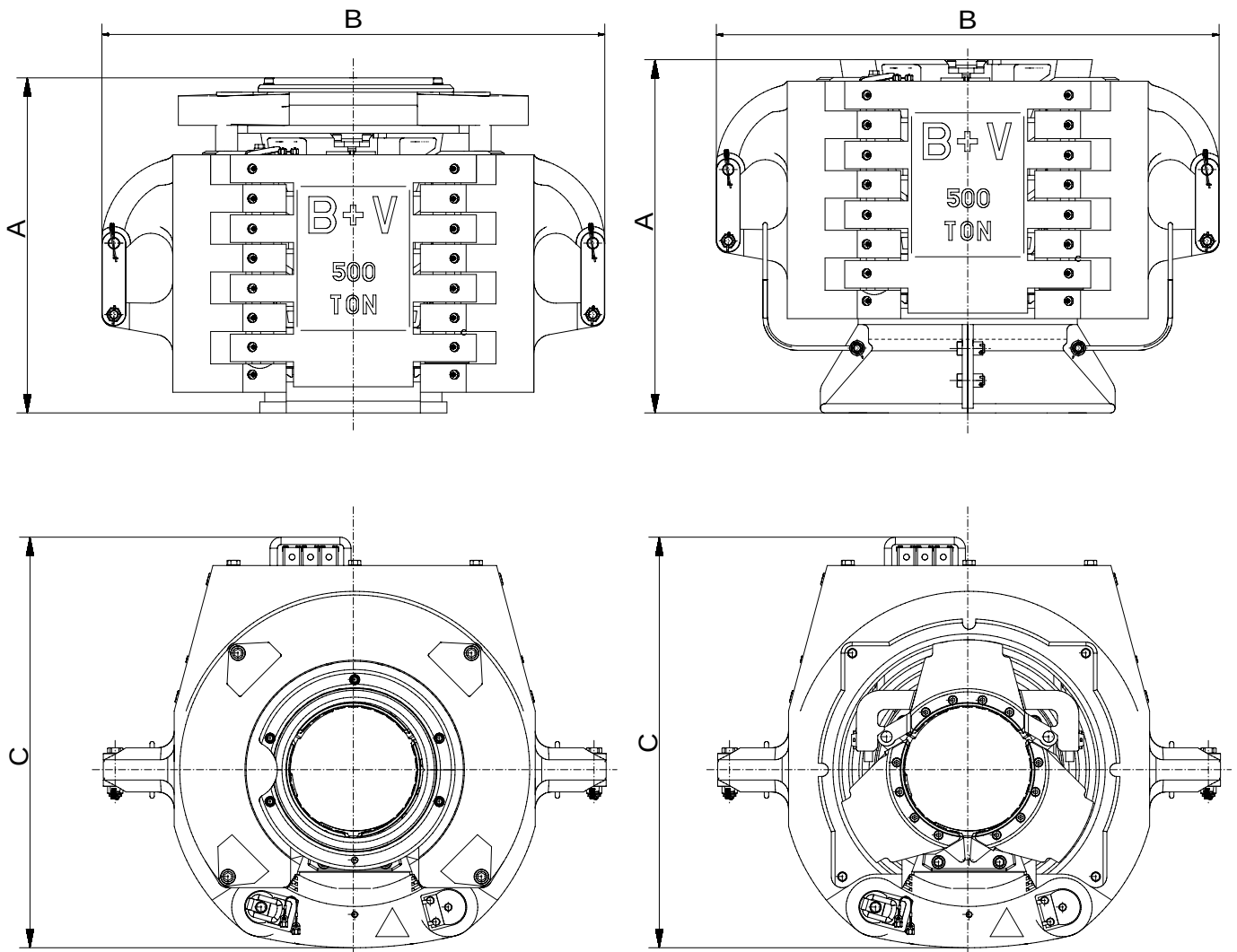
BV Type:	BVS 500	BVE 500
Working pressure	Min 130 bar (1,885 Psi), Max 210 bar (3,040 Psi)	Min 130 bar (1,885 Psi), Max 210 bar (3,040 Psi)
Maximum allowed pressure	210 bar (3,040 Psi)	210 bar (3,040 Psi)
Required Flow rate	Min 5 Gpm (37.85 l/m) Max 10 Gpm (65.7 l/m)	Min 5 Gpm (37.85 l/m) Max 10 Gpm (65.7 l/m)
Temperature working range ambient	- 20° C to + 40° C - 4° F to 104° F	- 20° C to + 60° C - 4° F to 140° F
Load Capacity	500 sh tons	500 sh tons
Part number	752000-Y-H-VC	
API test load	750 sh tons	750 sh tons
Pipe Diameter min	4.1/2" EU dp	4.1/2" EU dp
Range max	14" IEU dp	14" IEU dp
Weight	2610 kg	2360 kg
Elevator Links	n.a.	3 1/2" 500t Elevator

Contents of delivery

BVE 500 (elevator)	Qty	Part Number
Body Assembly less Slips, Guide Plates, Guide Bell (hydraulically operated)	1	752001-Y-H-VC
Casing Guide Bell	1	752600
Oil Hose Assembly	1	710082
Slip Assembly	1	See chapter "Size Components".
Guide Plate Assembly	1	
BVS 500 (spider)	Qty	Part Number
Body Assembly less Slips, Guide Plates, Guide Bell (hydraulically operated)	1	752001-Y-H-VC
Upper Guard	1	752700
Spider Adaptor Plate	1	752765
Oil Hose Assembly	1	710080
Slip Assembly	1	See chapter "Size Components".
Guide Plate Assembly	1	

Main Dimensions BVE and BVS elevator/spider

DESCRIPTION



BVS

A = 910 mm / 35.82"

B = 1,365 mm / 53.3/4"

C = 1160 mm / 45.569"

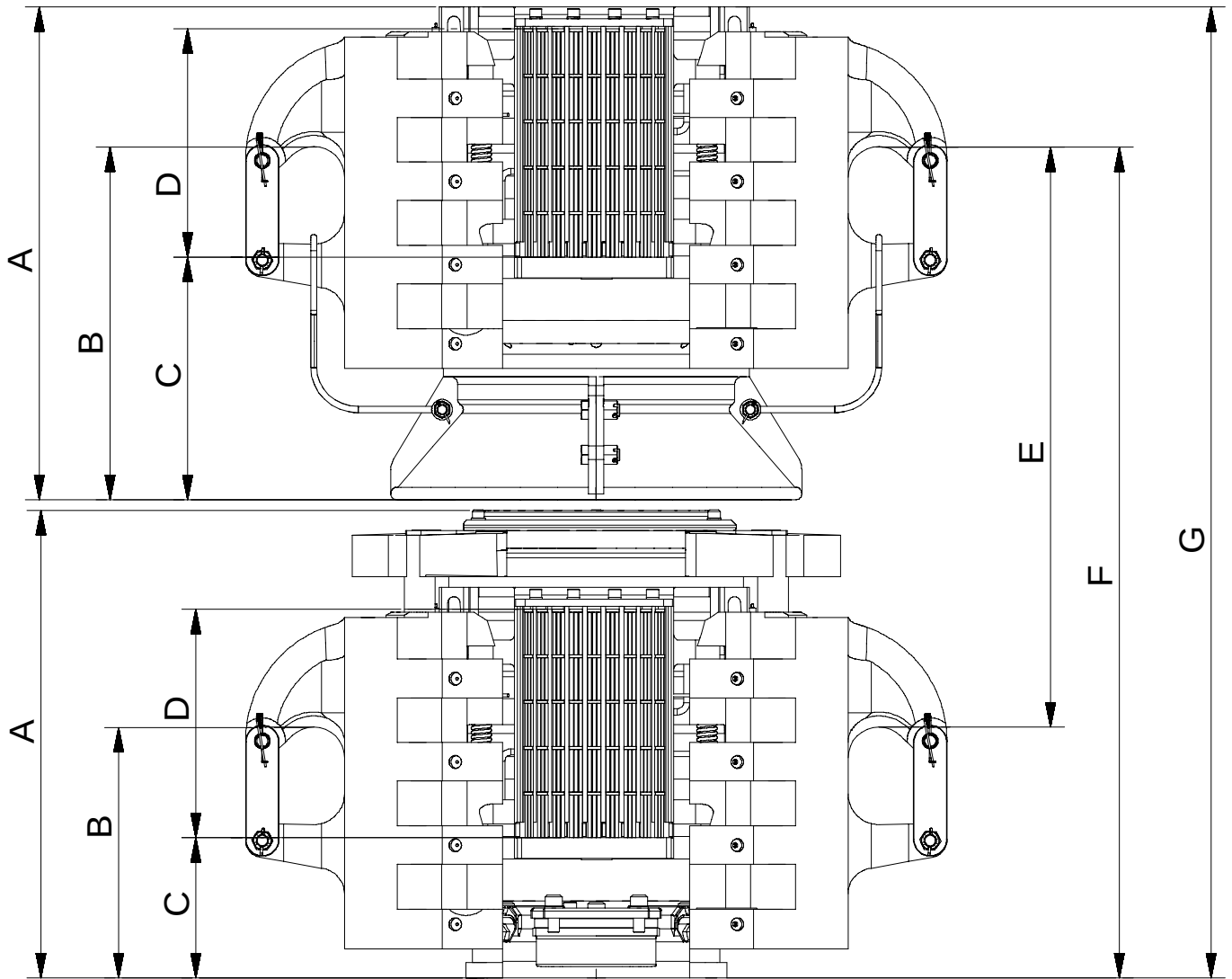
BVE

A = 916 mm / 36.06"

B = 1,365 mm / 53.3/4"

C = 1160 mm / 45.6692"

Height Dimensions



BVS	BVE
A = 910 mm / 35.82"	A = 960 mm / 77.17"
B = 488 mm / 19.22"	B = 688 mm / 27.1"
C = 272 mm / 10.7"	C = 472 mm / 18.58"
D = 445 mm / 17.52"	D = 445 mm / 17.52"
E = 1,129 mm / 44.45"	
F = 1,617 mm / 63.66"	
G = 1,890 mm / 74.4"	

Programming of Software

Use the Top Drive Rotating Head for providing hydraulic power to the BVE.

Recommended is to program the software according below description.

Casing operation (BVE elevator)

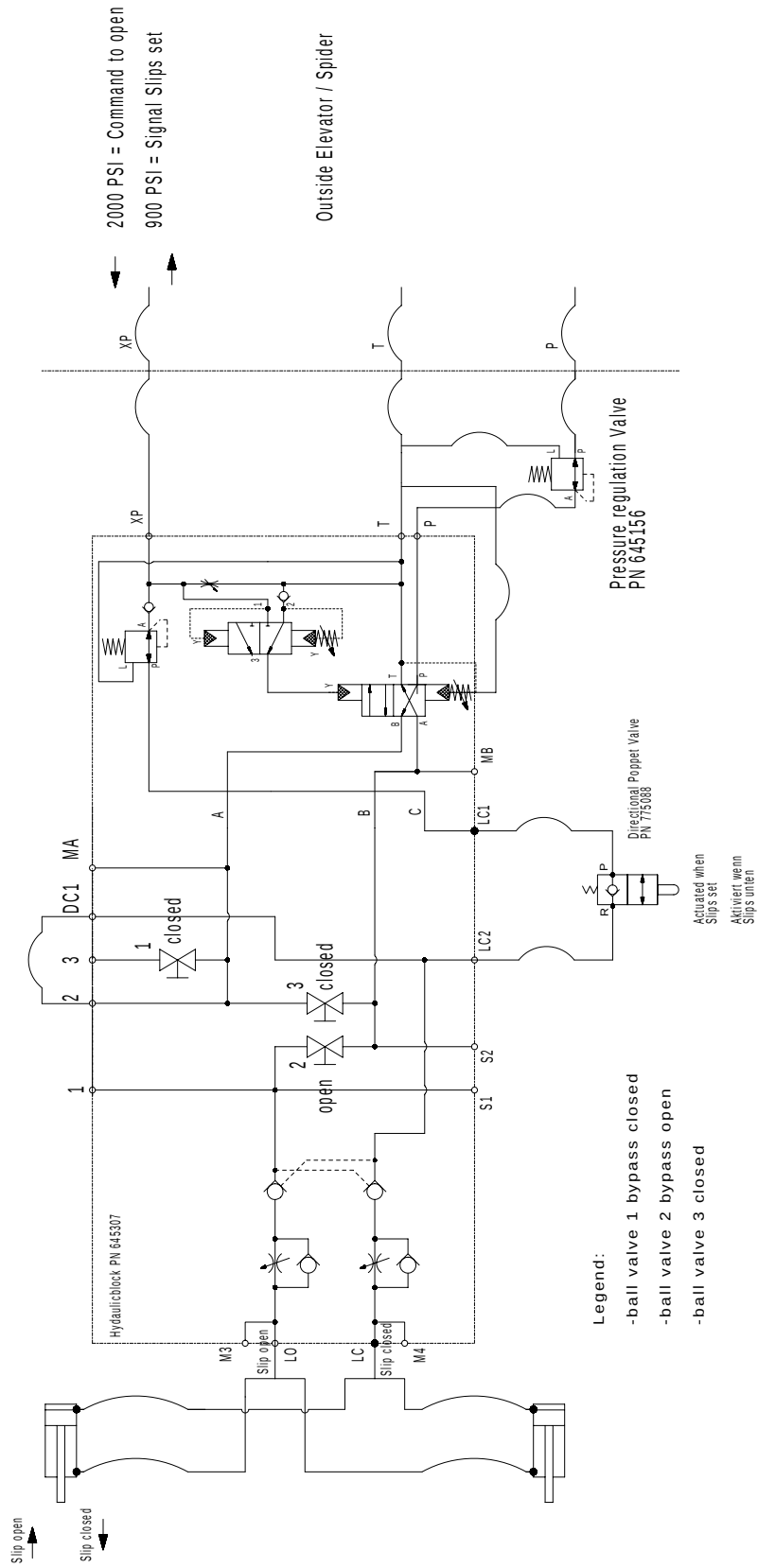
1. Driller raises the slips by pushing the control button twice.
2. The slips raise
3. To set the slips, the driller has push the control button once

Hydraulic functioning

To operate the B+V BVE/S 500, connect line P,T to the hydraulic supply and XP. To raise the Slips, line XP must be pressurized with 2000 PSI (138 bar).

0 PSI / bar at line XP sets the Slips. Once the Slips are fully set, line XP gives a 900 PSI / 62 bar) feedback signal.

Schematic Hydraulic Plan



COMMISSIONING

2. Commissioning

Commissioning BVE/BVS Elevator/Spider

Blohm + Voss strongly recommends to accomplish the Elevator/Spider commissioning with the Blohm + Voss Commissioning Service.

Read manual before first use !

OK	☐	Check crew is aware of all danger regarding handling the B+V tool.
----	--------------------------	--

OK	☐	Go through manual with crew.
----	--------------------------	------------------------------

Prior to use of the Blohm+Voss Elevator/Spider following checks must be carried out :

Scope of supply

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

Hydraulic Characteristics

OK	☐	Operating pressure	130...210 bar (1,885...3,040 PSI)
----	--------------------------	--------------------	-----------------------------------

OK	☐	Volumetric flow	5 (37.85 l/m) to 10 Gpm (65.7 l/m)
----	--------------------------	-----------------	------------------------------------

OK	☐	Hydraulic filter and regulator	Filter installed in pressure line
----	--------------------------	--------------------------------	-----------------------------------

Check and Lubrication

OK	☐	Check elevator/spider is in closed position
----	--------------------------	---

OK	☐	Check Hydraulic Supply lines are disconnected
----	--------------------------	---

OK	☐	Apply grease to all greasing points until grease is visibly coming out of the bores
----	--------------------------	---

OK	☐	Check if elevator/spider is installed as outlined in manual
----	--------------------------	---

OK	☐	Connect feedback line
----	--------------------------	-----------------------

Function Test

OK	☐	Check elevator/spider opens by hydraulic pressure
OK	☐	Check feedback signal is given when slips are closed
OK	☐	Switch hydraulic pressure off
OK	☐	Check required slips are installed before first use
OK	☐	Check slips are of same size and serial number
OK	☐	Check if slips are fixed properly
OK	☐	Check all safety / lock wire is present
OK	☐	Check if the feedback valve is present
OK	☐	Check elevator/spider opens by hydraulic pressure.
OK	☐	Pick up a pipe; Check if the elevator/spider closes and the feedback signal is given

INSTALLATION

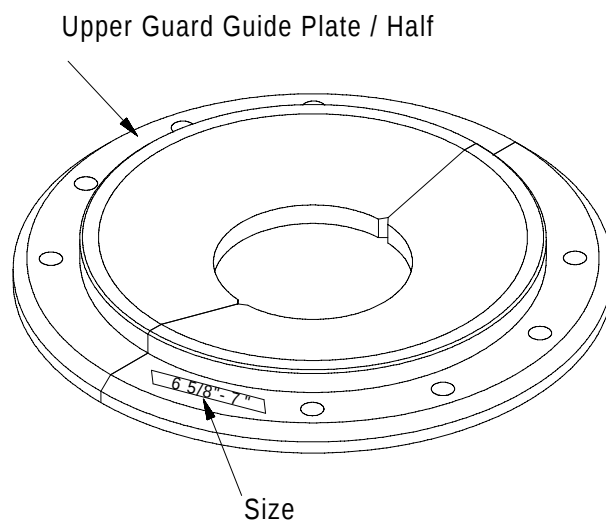
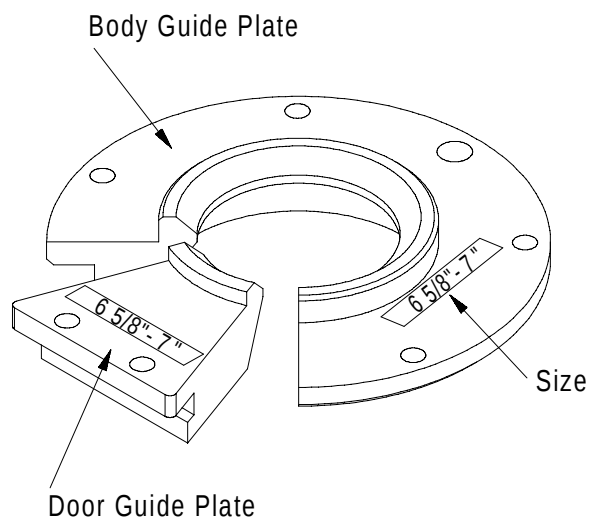
3. Installation

Lifting and transport

WARNING: Lift the BVE/BVS Elevator/
Spider on the lifting ears only.
WARNING: Wear your personal protection
equipment at all times.

Checking Guide Plates

Prior to installation, inspect the body guide plate, door guide and guide bell on the elevator and the top guard and top guard guide plate on the spider, making sure they are tightly secured to tool bodies and are of the right size for the casings to be handled. Also ensure that the inserts are properly installed and that they are of the correct size for the slip bodies.





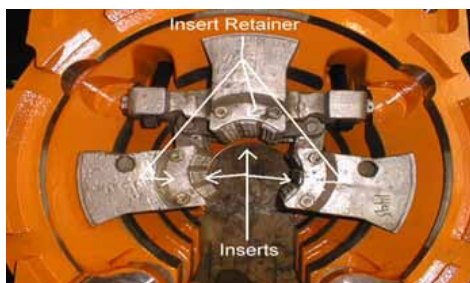
Link Block Assembly



Oil supply quick-connect coupling



Retainer pin is pulled out



Insert retainer and inserts

Installation of Elevator

1. Remove the link block bolts and allow the link block assembly to swing open (see picture).
2. Place the links in the now open assembly and secure by replacing the bolt removed in the previous step. Raise the elevator in the derrick to a height sufficient to allow installation of the spider.

WARNING: Keep distance from the elevator during operation and trials

Installing the spider

1. Place the spider adapter plate (see picture) on the rotary table.
2. Secure the spider to the adapter plate, aligning the opening through the spider body with the opening in the adapter plate.
3. Connect the rig oil supply to the quick-connect couplings, which is located at the rear cover plate of the tool. Connect the A, B and C (feed-back) line.

Changing Slips

Raise the slips, suspend them from a line and pull out the two retainer pin assemblies. Install the slip size desired, and then reinstall the retainer pin assemblies.

Changing Inserts

Remove the inserts retainer cap screws (See picture). Then pull the inserts and replace them with the size desired. When reinstalling inserts, make sure the insert slots are greased and the inserts teeth are pointing upward.

Installation Checklist BVE/BVS Elevator/Spider

Basically the Elevator/Spider has to be installed as shown in the manual

- | | | |
|----|--------------------------|---|
| OK | ☐ | Make sure the required slips are installed before first use |
| OK | ☐ | Make sure the slips are fixed properly |
| OK | ☐ | Make sure Hydraulic Pressure is switched on. |

Hydraulic Connections

- | | | |
|----|--------------------------|--|
| OK | ☐ | Make sure the controls are connected to the Hydraulic Power Supply |
| OK | ☐ | Make sure all connections are made properly |

Function test

There are two possibilities to carry out the function test:

1. BVE-BVS Elevator/Spider standing on the floor
2. BVE-BVS Elevator/Spider installed into the links

- | | | |
|----|--------------------------|---|
| OK | ☐ | Close elevator/spider |
| OK | ☐ | Open elevator/spider |
| OK | ☐ | Check signal elevator/spider closed is present. |

OPERATIONS

4. Operations

Safety

WARNING: Do not touch the BVE/BVS Elevator/Spider.

WARNING: Never open the Spider/elevator when the pipe load is still suspended by the Spider / elevator.

The hydraulic slips are activated with a remote control valve, which may be actuated by hand or foot depending on the type of valve.

- Make sure that ALL hydraulic lines are isolated before any work is carried out in the BVE/BVS Elevator/ Spider.

Operation

The driller, derrick man and floor man must coordinate operation of the slips in the elevator and spider so one tool is engaged around the casing before the other is disengaged. Thus, one or both tools continuously suspend the casing during all stages of casing handling operations. After the first joint has been set in the spider, follow this operating procedure:

1. The floor man attaches the top end of the casing pick-up line to the lower locking arm of the hook. The pick-up line must be long enough to attach to the next joint in the V-door when the elevator is lowered to the spider.
2. In lifting the casing joint into the V-door, the floor man can use the cat line or an oil-wrench, or a crewman can use a hydraulic pick-up machine, if available.
3. The floor man attaches a single-joint elevator to the bottom end of the pick-up line, then he attaches the single-joint elevator to the joint in the V-door so the joint can be maneuvered to the spider for make-up.
4. The power tong operator then makes up the joint.
5. The derrick man removes the single-joint elevator or pick-up line from the top of the joint.
6. The derrick man guides the elevator over the top end of the joint while the driller lowers the elevator into position approximately six inches below the joint collar.
7. The driller or derrick man then sets the elevator slips.
8. A signal is given to the driller when the slips are closed.
9. Simultaneously, the driller picks up the elevator while the driller or floorman raises the spider slips.
10. The driller then lowers the joint through the spider stopping the elevator guide bell approximately six inches above the spider.

WARNING: Be careful not to hit the spider top guard with the elevator guide bell. Doing so will create a hazard for personnel and could damage the equipment.

12. The driller sets the spider slips.
13. The driller slacks off on the elevator so its slips can be released.
14. The driller raises the elevator slips.
15. The driller picks up the elevator to clear the next joint of casing while the floor man repeats Step 3 for the next joint.

MAINTENANCE & INSPECTION

5. Maintenance and Inspection

General

If cracks, excessive wear etc. is recognised, contact Blohm + Voss Repair GmbH or an authorised service company.

Weldings of the castings should be done only by Blohm + Voss Repair GmbH or an authorised service company in according to Blohm+Voss welding procedure.

A regular preventative maintenance program should be established for all elevators. These written maintenance procedures should be given to the crew or maintenance personnel.

WARNING: For Service and Maintenance disconnect the oil supply.

Daily Lubrication

When the tool is in use, the following lubrication procedure should be performed daily, or as inspection indicates:

1. Lubricate the bowl and back of the slips with heavy grease (See figure).
2. Apply an extreme-pressure lubricant through the grease fittings on the door (See picture). Contact B+V or one of our Agents to purchase special high pressure grease.
3. Lubricate the door hinge pins.
4. Grease the signal bar through the back plate via the 2 grease nipple.

Grease quality

In order to achieve efficient greasing even at different ambient temperatures, we recommend the following grease types should be used (obtainable from Blohm + Voss Repair GmbH):

Low-Viscosity grease

Type AVIATICON Grease XRF

NLGI 0

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

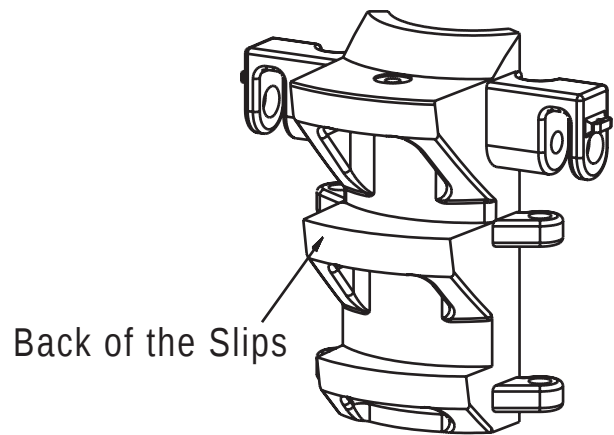
NESSOS SF0

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



Grease fittings in the door and frame



Recommended grease gun (for info only).

Daily Inspection

Inspect the inserts and replace if necessary. Always grease the insert slots when installing inserts. Failure to routinely grease insert slots will cause the inserts to stick.

Locking of screws

All Screws are normally secured by a mechanical bolt lock or with a safety wire. All other screws are secured by metal adhesive (Locktite).



Yoke

Cylinders

Inspect the yoke pivot pin and yoke bushings periodically, changing them when necessary. Replace the yoke if it shows free play.

Cylinder

IMPORTANT: Remember to use only genuine B+V Replacement Parts and Accessories. Otherwise, Blohm+Voss will not be responsible for the proper operation of B + V-Elevator/Spider.

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

- Elevators:

Ongoing	I
Daily:	II
6 Monthly:	III
1 Year:	IV

- Spiders:

Ongoing:	I
Weekly:	II
6 Monthly:	III
1 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.

Critical Load Inspection

Critical loads may occur. For example: impact loads such as jarring, pulling on stuck pipe, etc. If critical loads occurred unexpectedly, conduct the inspection immediately.

Dismantling Inspection

Generally, when the equipment returns to base, warehouse, etc. Carry out the Tool inspection, immediately. Furthermore, control it prior to its being sent on the next job.

- The Tool should be dismantled and inspected in a suitably equipped facility for excessive wear, cracks, flaws or deformations.
- Corrections should be made in accordance with recommendations which can be obtained from Blohm + Voss Oil Tools.
- Weldings at the castings should be done only by Blohm + Voss Oil Tools or an authorized service company in according to Blohm+Voss welding procedure.
- When need is shown in a field inspection, dismantle the Tool and arrange an inspection in a suitably equipped facility.
- Springs should be carefully visually inspected for excessive wear and obvious weakness.

Inspection check lists

CHECK LIST FRONT PAGE	
TYPE OF EQUIPMENT	
SERIAL NUMBER	
PART NUMBER	
SUPERVISOR	
DATE OF INSPECTION	
INSPECTION CATEGORY	
PLACE OF INSPECTION	

CHECK LISTS

Check Category I (Ongoing observation)

Observe during operation for inadequate performance

Check List Category II (Daily)

CHECK FOR THE FOLLOWING GENERAL ISSUES (but not limited to):

DESCRIPTION	CHECKED	SIGNATURE
1 Complete front page of check list for the records	OK	
2 Check for correct size of elevator or slip segments	OK	
3 Check correct function elevator latch	OK	
4 Check function of feedback signal (elevator closed)	OK	
5 Check state of lubrication	OK	
6 Check functioning of elevator/spider as a whole	OK	
Remarks		

CHECK FOR LOOSE ITEMS, ESPECIALLY FOR (but not limited to):

DESCRIPTION	CHECKED	SIGNATURE
1 Hinge pins, bolts and retainers	OK	
2 Fixation of slips and inserts	OK	
3 Screws, bolts, nuts, washers, retainers, springs and lock wire	OK	
4 Link blocks	OK	
5 Check completeness and condition of warning plates and labels	OK	
Remarks		

CHECK FOR CRACKS, ELONGATION, DAMAGE AND CORROSION, ESPECIALLY FOR (but not limited to):

DESCRIPTION	CHECKED	SIGNATURE
1 Elevator Body and Door	OK	
2 Hing pins, bolts, nuts	OK	
3 Slip and inserts	OK	
4 Feedback valve	OK	
Remarks		

HYDRAILIC

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		

SUPERVISOR

DATE

Check List Category III (every 6 months)

GENERAL		
DESCRIPTION	CHECKED	SIGNATURE
1 Carry out an Category II inspection	OK	
2 NDT (MPI) critical areas. Some disassembly may be needed to do so	OK	
3 Check parts for wear according to allowable tolerances.	OK	
Remarks		

Check List Category IV (every year)

GENERAL		
DESCRIPTION	CHECKED	SIGNATURE
1 Carry out an Category III inspection	OK	
2 NDT (MPI) critical areas and load bearing components. Strip elevator/spider to do so	OK	
3 Replace all hydraulic hoses and fittings	OK	
4 Check condition of hydraulic valves and replace if necessary	OK	
Remarks		

SUPERVISOR

DATE

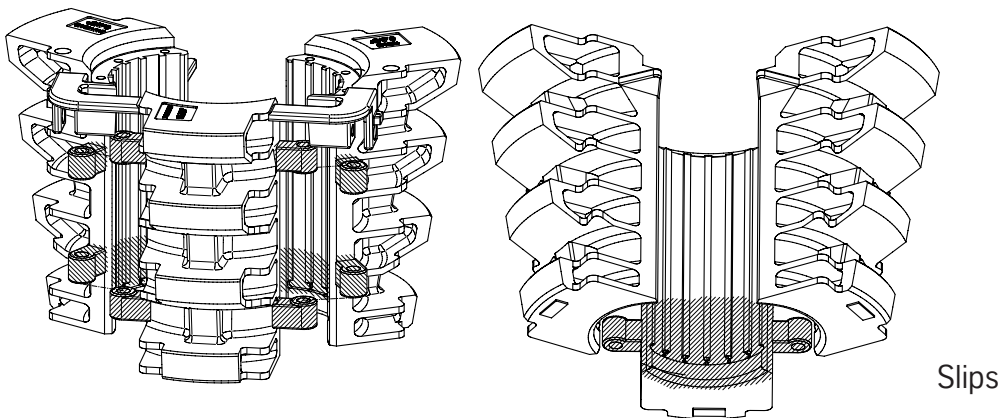
Wear data criteria

Hinge Pin

	Left pin	Right Pin
Hinge pin dia new:	75.80 mm	75.80 mm
Nominal bore dia.:	76.50 mm	76.00 mm
Bore dia. new max:	76.6 mm	76.106 mm
Bore dia. worn max:	77 mm	76.5 mm

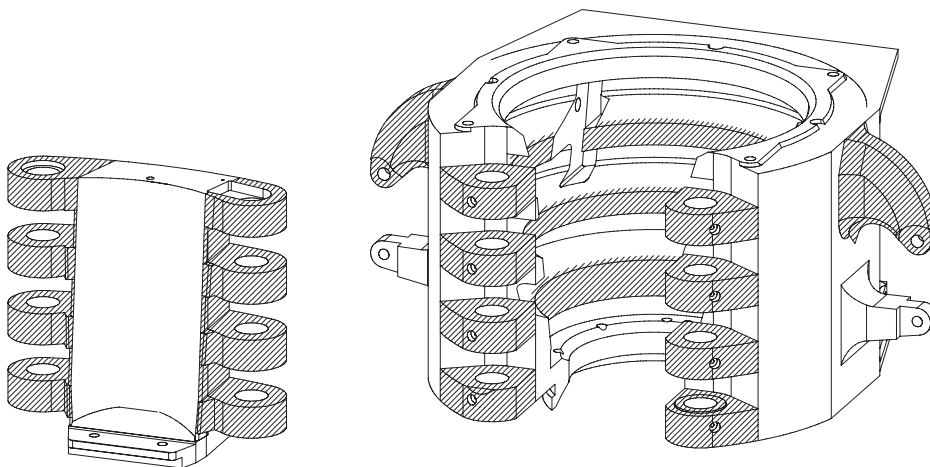
All kind of repairs not performed by Blohm+Voss Repair GmbH, should nevertheless be done in accordance with their methods and procedures or with their agents. Minor cracks or defects, which may be removed without reducing safety or operation of the elevator, can be removed by grinding (see critical areas). Following the repair, the parts should again be inspected by an appropriate method to insure that the defect has been completely removed.

Critical Areas



Slips

Critical area's are hatched.



Door and elevator body

Handling, storage and transport

Storage

Storage of the tool requires the following measures to be taken:

- Ensure the tool is protected from water ingress
- Ensure the tool is stored in such a way, that personnel cannot be wounded by moving parts or sharp edges. If needed, secure the tool with ropes or otherwise in order to protect it from sliding due to ship movements.

Short term storage after use and less than 3 months

Preserve the tool: Grease all blank surfaces with grease: Cylinders

Preserve all other blank surfaces with Tectyl Type 864 or equivalent

Storage: Store in a dry environment with humidity max 80%.

Commissioning: Not needed

Long term storage over 3 months

Preserve the tool: Grease all blank surfaces with grease: Cylinders

Preserve all other blank surfaces with Tectyl Type 864 or equivalent

Storage: Store in a dry environment with humidity max 80%

Commissioning: As per procedure in the User Manual

Handling

Lift the tool by its lifting ears only.

Transport

When the tool is in its original crate, use a fork lift for lifting the crate only. The weight of the tool is indicated on the identification area of the tool, and also on its original transporting crate.



Trouble shooting

Slips fail to give reliable signal

1. Cause: Improper adjustment signal bar
2. Correction:
 - Adjust signal bar by dressing the elevator with the correct size slips and inserts.
 - Close the slips around a new undamaged part of pipe with the correct size.

NOTE: Ensure they are in good condition.

- Remove the back plate
- As the slips are closed, adjust the signal bar to the position it is operated by the curved part.

Slip fail to swing wide open when locked in up position

1. Cause: Damaged hinge pin or damaged hinge pin spring
2. Correction:
 - Inspect hinge Pin and spring and replace if necessary.

Slips hang unevenly in up position

1. Cause: Bent yoke.
2. Correction:
 - Repair or replace yoke.

IMPORTANT: A bent yoke may result when the guide plates are improperly matched to the O.D. of the casing being run. This can allow the casing coupling to hit the slips and damage the yoke.

Problems with slipping pipe, or uneven wear of inserts

1. Cause: Non matched slips
2. Correction:
 - Always use matched slip sets (with similar serial number).
2. Cause: Worn inserts
3. Correction:
 - Replace Inserts.

SIZE COMPONENTS

6. SIZE COMPONENTS

Slips, Inserts, Guide Plates

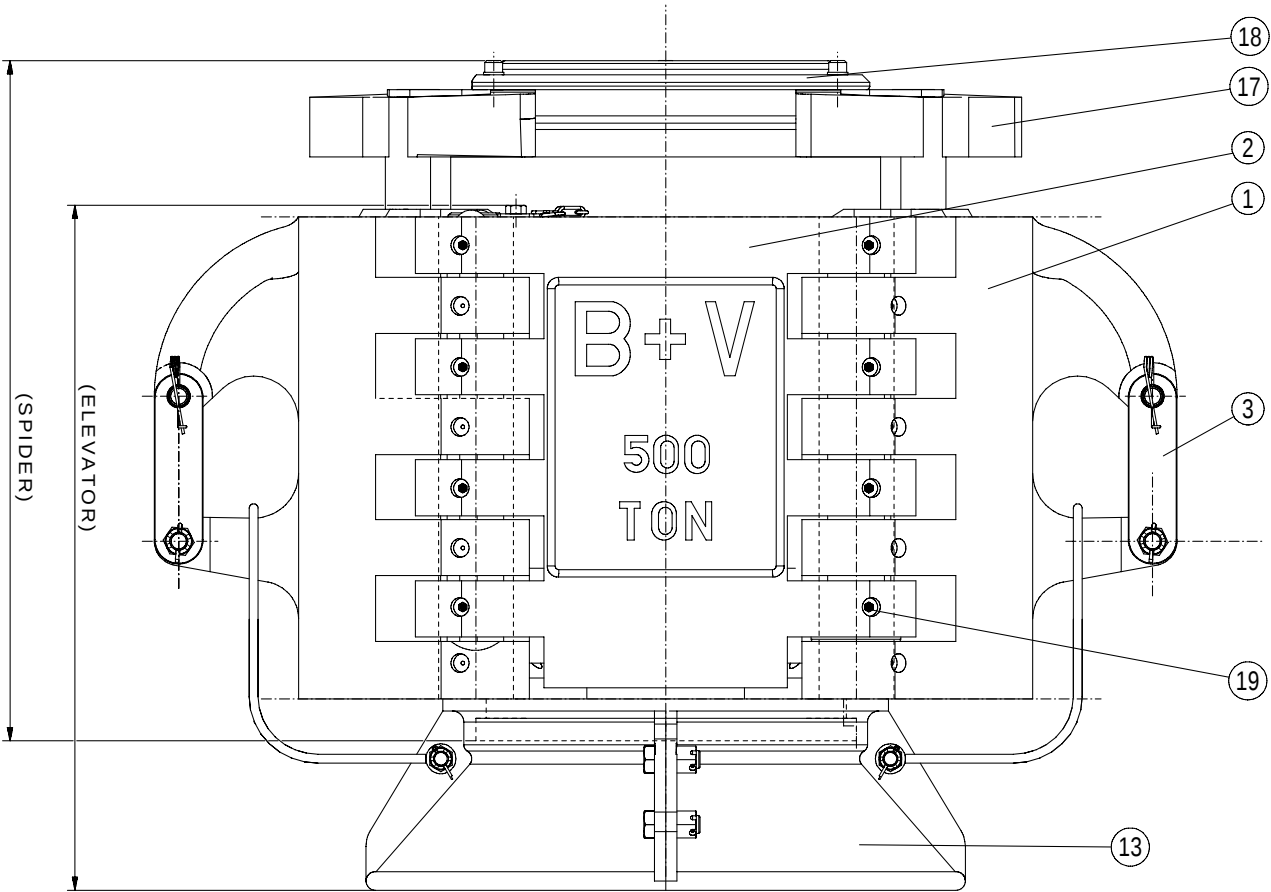
API	Slip Assemblies		Inserts	Elevator Guide Plates			Spider Guide Plates			
Size	Pipe Size	P/N	P/N-Qty	Guide P/N	Screw P/N	Washer P/N	Guide P/N	Screw P/N	Washer P/N	Diameter
5.1/2"	4.1/2"	752510	350905-45	752390	752308	752309	752710	752333	752325	ø 145
	5"	752500	350506-45	752935			752715			ø 165
	5.1/2"	752490	350107-45							
7.5/8"	6.5/8"	752480	350909-75	752940			752720			ø 205
	7"	752470	350610-75							
	7.5/8"	752460	350111-75	752945			752725			ø 225
9.5/8"	7.3/4"	752465	350011-75							
	8.8/5"	752450	350911-90	752965			752730			ø 250
10.3/4"	9.5/8"	752440	350111-90	752970			752735			ø 280
	9.7/8"	752370	350811-90							
	10.3/4"	752350	350111-90	752975			752740			ø 305
11.3/4"	10.3/4"	752430	350912-105							
	11.3/4"	752420	350112-105	752980			752745			ø 330
	11.7/8"	752425	350012-105							
14"	12.3/4"	752375	350112-135	752985-2			752755			ø 355
	13.3/8"	752380	350612-135	752990-2			752760			ø 375
	13.5/8"	752385	350413-135							
	14"	752390	350113-125	752995-2			752770			ø 385

DRAWINGS & SPARE PARTS

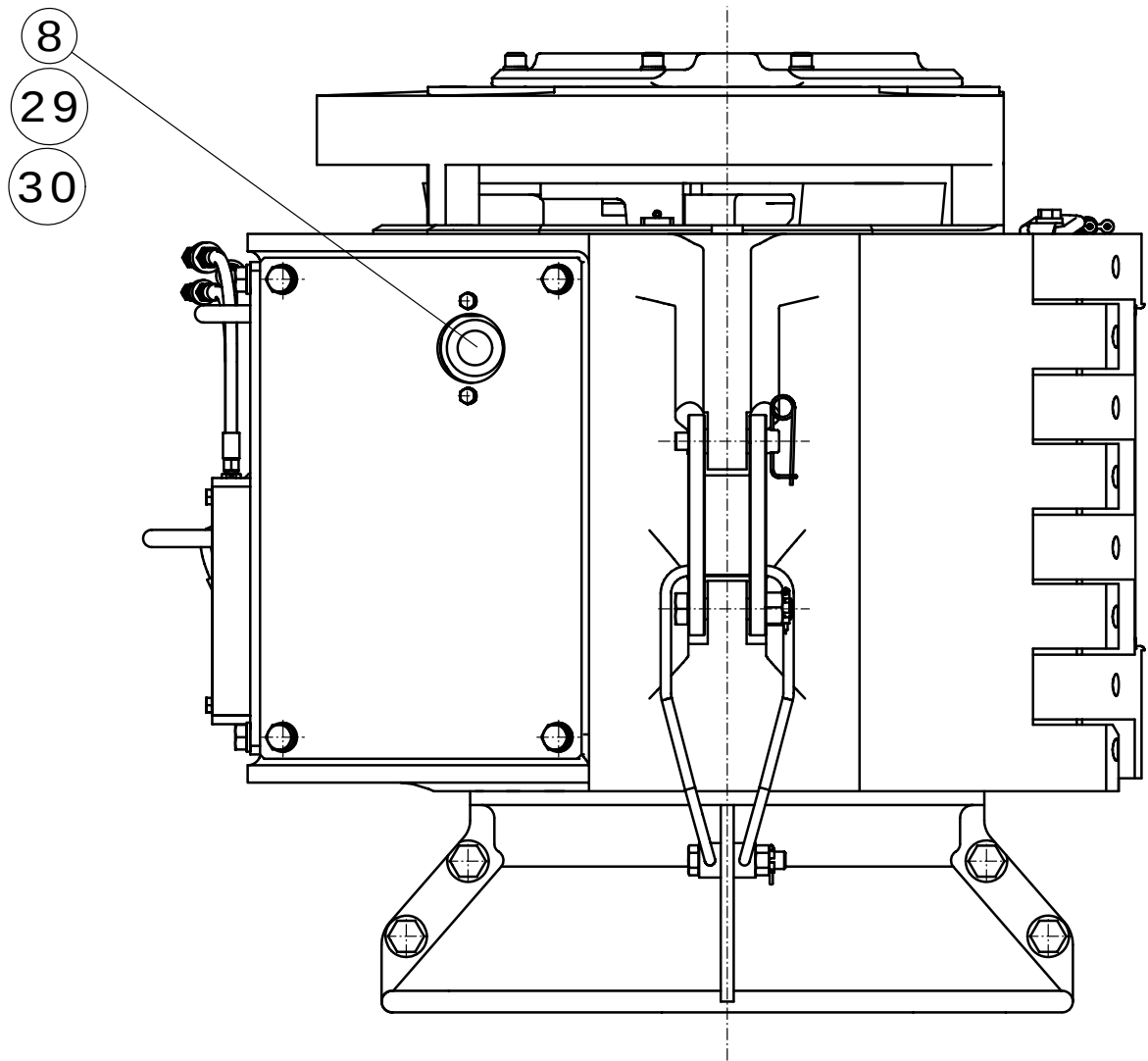
7. Drawings and Spare Parts BVES-500

Drawing No. 75200-Y-H-VC

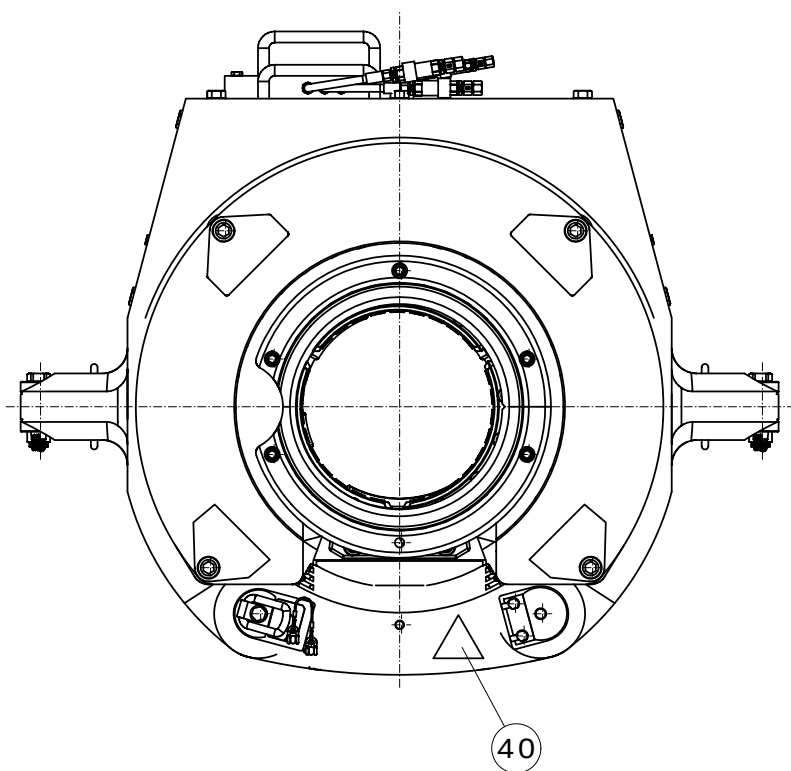
Front View



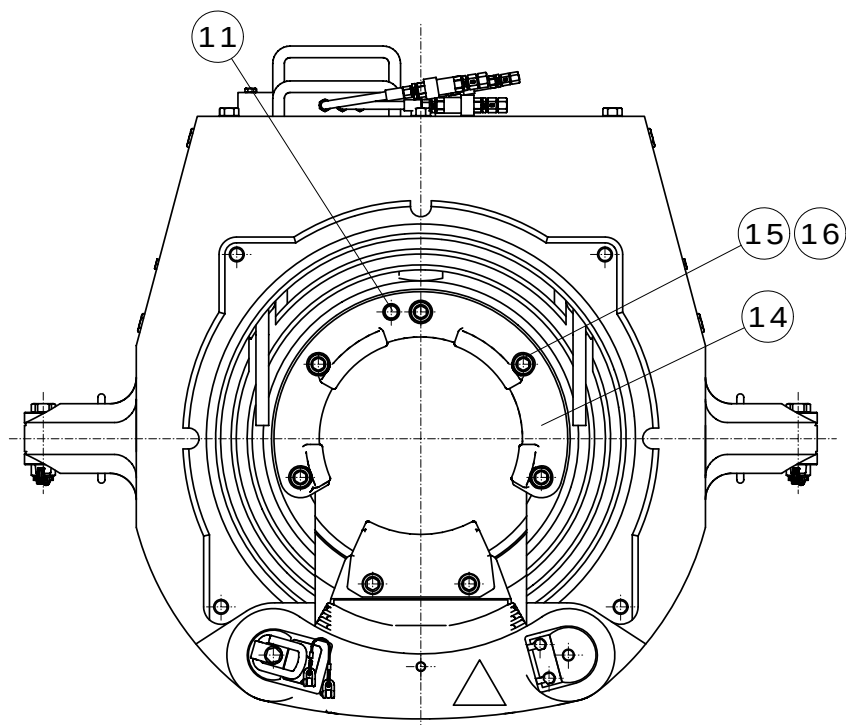
Side view



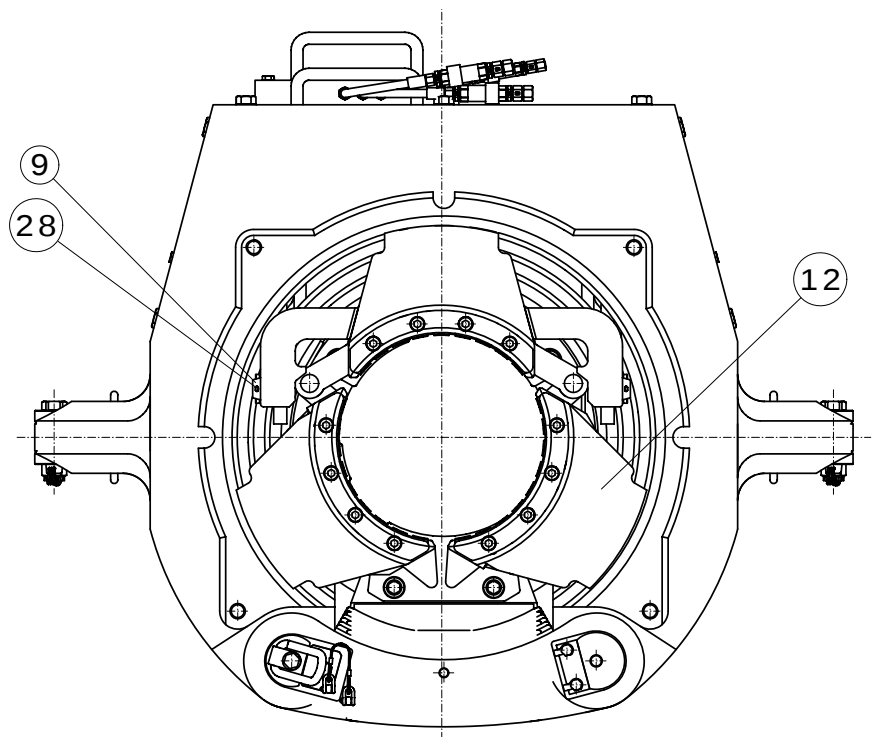
Top view dressed as a Spider



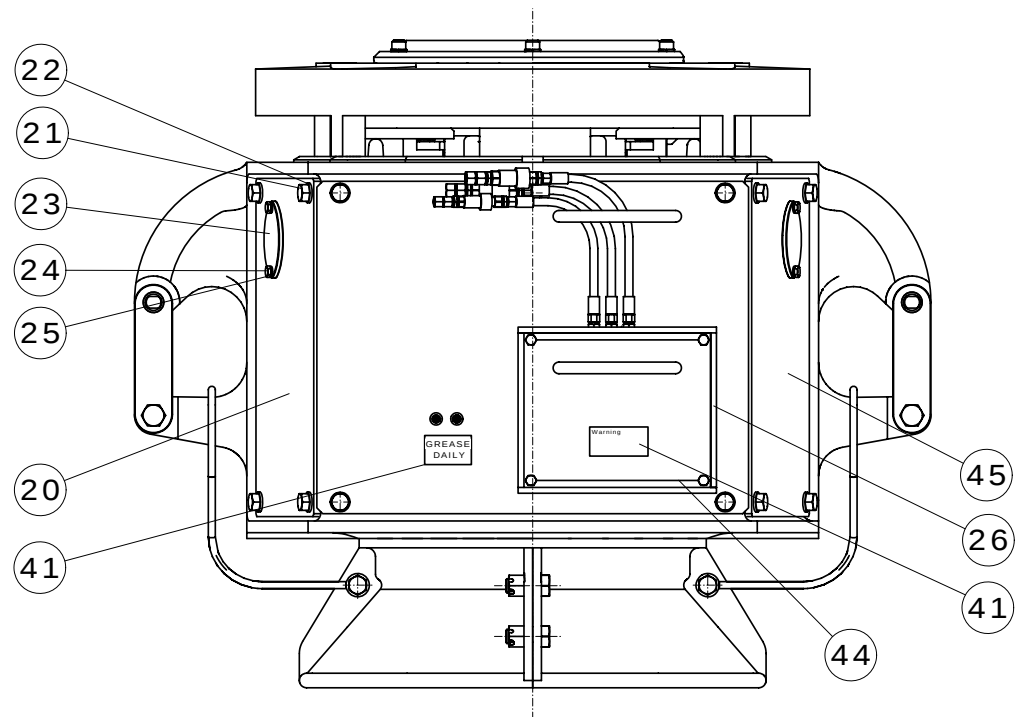
Top view dressed as an Elevator



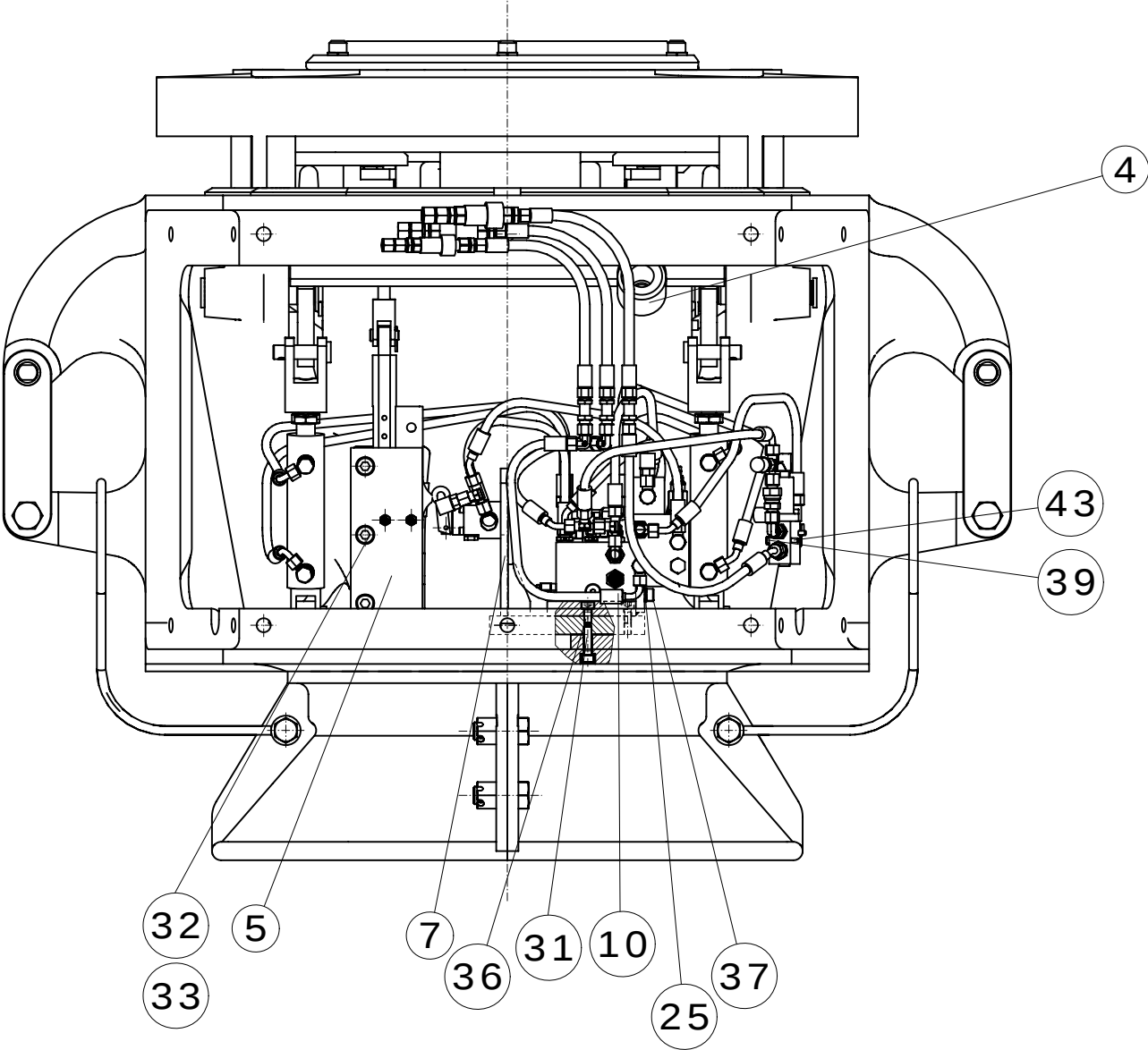
Top view



Rear view



Rear view



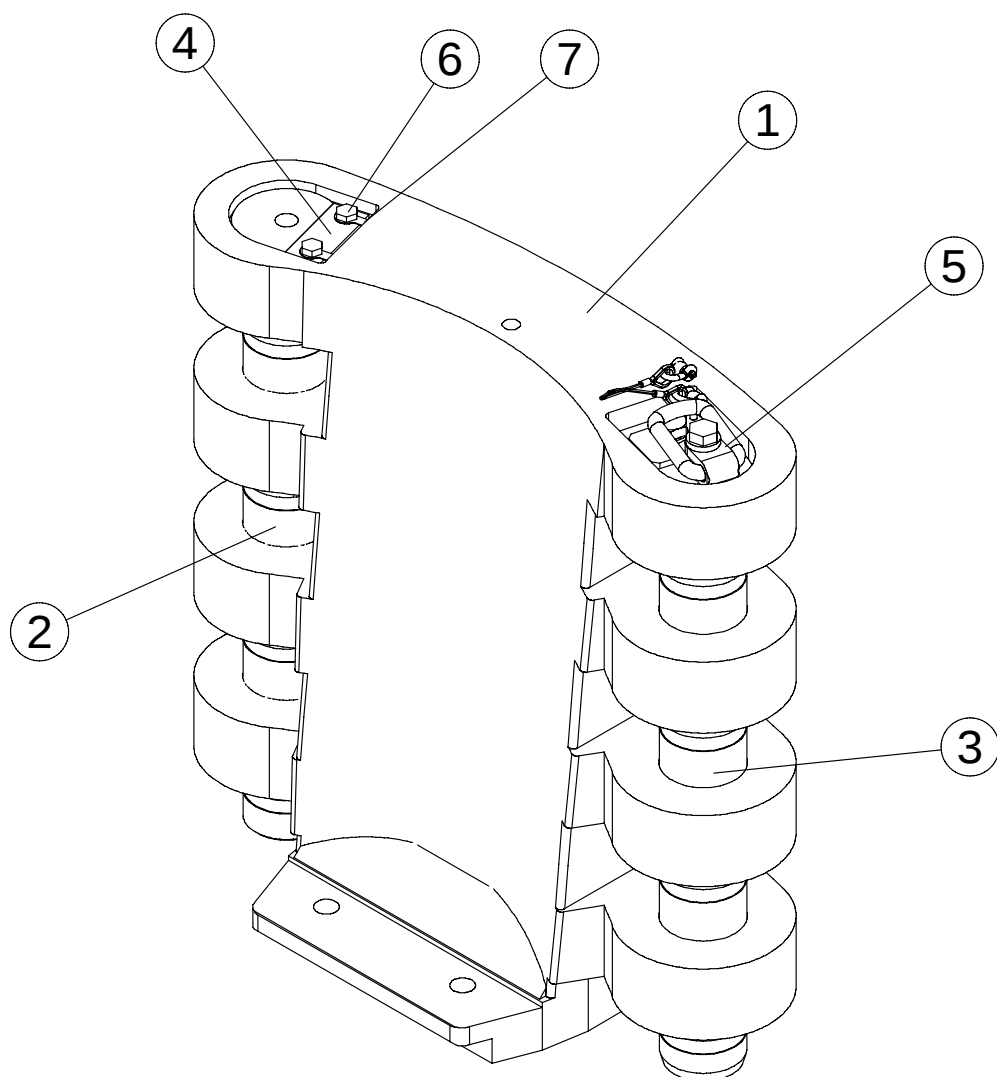
752000-Y-H-VC B+V Type BVE/S Elevator / Spider Body, API8C-PSL1,
hydraulically operated, complete less Slips, Guide Plates & Guide Bell
Parts list Elevator hydraulic operated

Position	Qty.	Part No.	Description
1	1	752100	Spider Body BVE/S 500
2	1	752104	Door Assembly
3	2	752109	Link Block Assembly
4	1	752106	Yoke Assembly
5	1	752133	Block Assembly
6	-	-	-
7	1	752132	Holding Plate Assembly
8	2	752220	Yoke Pivot Pin
9	2	752108	Slip Retainer Pin Assembly
10	1	752140-VC	Hydraulic Assembly
11	1	752206	Slip Stop Pin
12	1	-	Slip Assembly
13	1	752600	Guide Bell (optional for Elevator)
14	-	-	Guide Plate (optional for Elevator)
15	7	752308	Cap screw
16	7	752309	Lock Washer
17	-	-	Upper Guard Assembly
18	-	-	Upper Guard Guide Plate
19	18	70064	Grease Fitting R1/8"
20	1	752115	Cover plate (side)
21	13	752326	Cap screw
22	13	752327	Cover Plate Lock Washer
23	2	752117	Cover plate
24	4	752118	Screw
25	6	752119	Lock Washer
26	1	752139-VC	Cover plate (front)
27	-	-	Spider Adapter Plate (optional)
28	2	752322	Cotter Pin
29	2	752321	Yoke Pivot Pin Washer
30	2	752314	Cotter Pin
31	4	752832	Screw
32	3	752323	Lock Retainer CapScrew (long)
33	3	752325	Lock Washer
34	-	-	-
35	1	752146-VC	Hydraulic Block Holder
36	2	612666	Screw
37	2	612697	Screw
38	-	-	-
39	2	613783	Washer with TAP
40	2	671640-1	Warning sign "Hands"
41	2	671638	Warning sign Blohm + Voss
42	1	671642	Warning sign "GREASE DAILY"
43	2	752129	Screw
44	1	671052	Safety Wire
45	1	752115-VC	Coverplate (side)

Parts list Spider hydraulic operated

Position	Qty.	Part No.	Description
1	1	752100	Spider Body BVE/S 500
2	1	752104	Door Assembly
3	2	752109	Link Block Assembly
4	1	752106	Yoke Assembly
5	1	752133	Block Assembly
6	-	-	-
7	1	752132	Holding Plate Assembly
8	2	752220	Yoke Pivot Pin
9	2	752108	Slip Retainer Pin Assembly
10	1	752140-VC	Hydraulic Assembly
11	-	-	Slip Stop Pin
12	1	-	Slip Assembly
13	-	-	Guide Bell (optional for Elevator)
14	-	-	Guide Plate (optional for Elevator)
15	-	-	Cap screw
16	-	-	Lock Washer
17	1	752700	Upper Guard Assembly
18	1	-	Upper Guard Guide Plate
19	18	70064	Grease Fitting R1/8"
20	1	752115	Cover plate (side)
21	13	752326	Cap screw
22	13	752327	Cover Plate Lock Washer
23	2	752117	Cover plate
24	4	752118	Screw
25	6	752119	Lock Washer
26	1	752139-VC	Cover plate (front)
27	1	752765	Spider Adapter Plate (optional)
28	2	752322	Cotter Pin
29	2	752321	Yoke Pivot Pin Washer
30	2	752314	Cotter Pin
31	4	752832	Screw
32	3	752323	Lock Retainer CapScrew (long)
33	3	752325	Lock Washer
34	-	-	-
35	1	752146-VC	Hydraulic Block Holder
36	2	612666	Screw
37	2	612697	Screw
38	2	752119	Lock Washer
39	2	613783	Washer with TAP
40	2	671640-1	Warning sign "Hands"
41	2	671638	Warning sign Blohm + Voss
42	1	671642	Warning sign "GREASE DAILY"
43	2	752129	Screw
44	1	671052	Safety Wire
45	1	752115-VC	Coverplate (side)

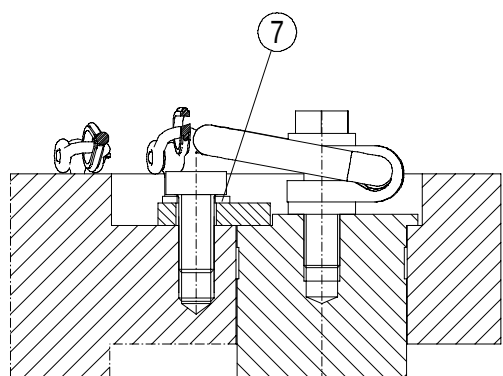
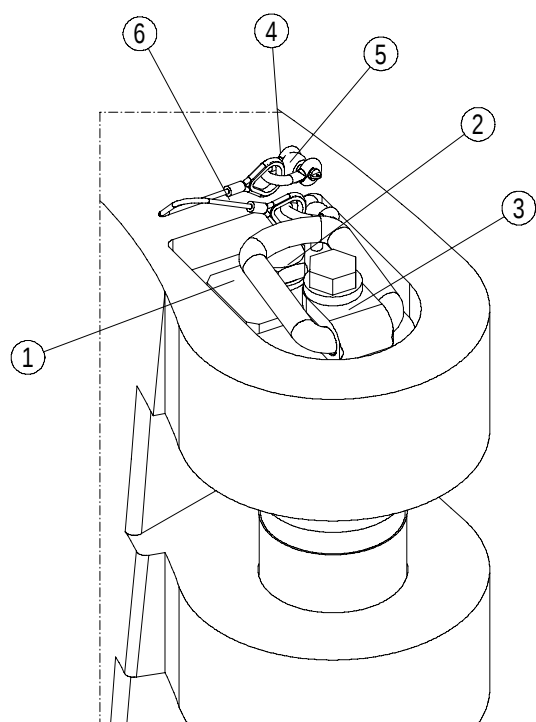
752104 Door Assembly



752104 Parts list

Pos.	Qty	Part no.	Description
1	1	752101	Door
2	1	752103	Door Hinge Pin
3	1	752105	Hinge Pin
4	1	752103-1	Plate
5	1	752204	Bolt Assembly
6	2	645195	Screw
7	2	735854	Washer

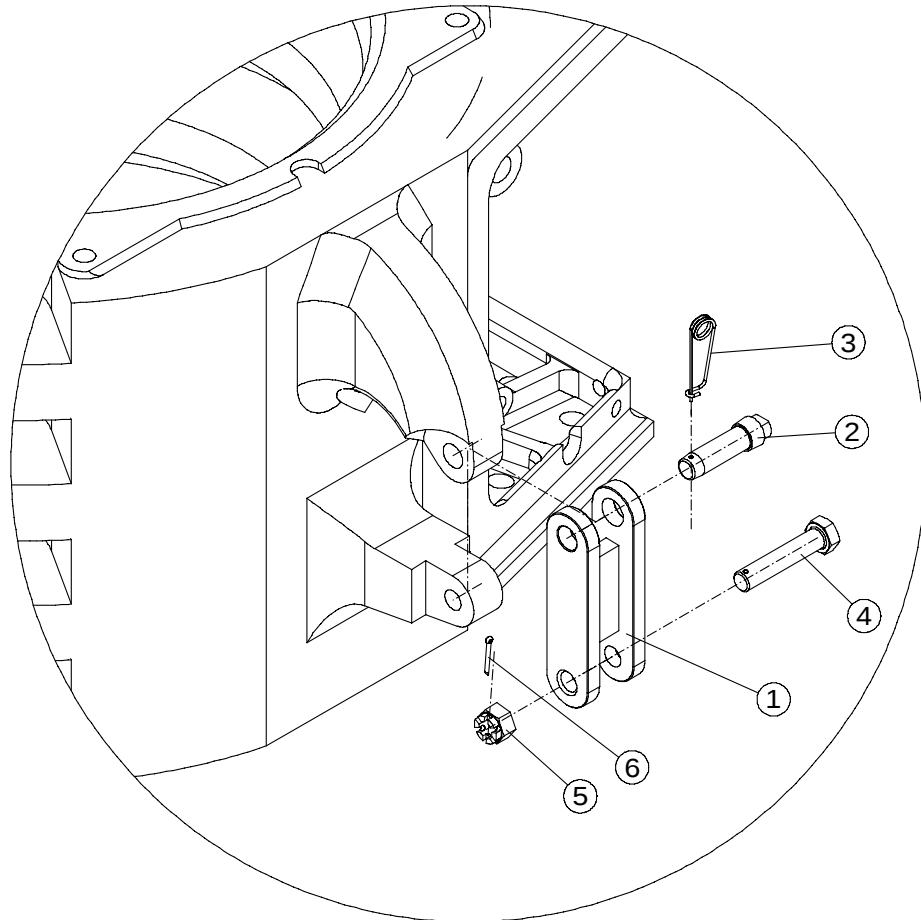
752204 Bolt Assembly



752204 Parts list

Pos.	Qty	Part no.	Description
1	1	752205	Plate
2	1	612554-1	Screw
3	1	553468	Lifting Eye
4	2	654037-2	Shackle
5	2	660414-1	Eye Screw
6	1	645037	Rope
7	1	615875	Washer

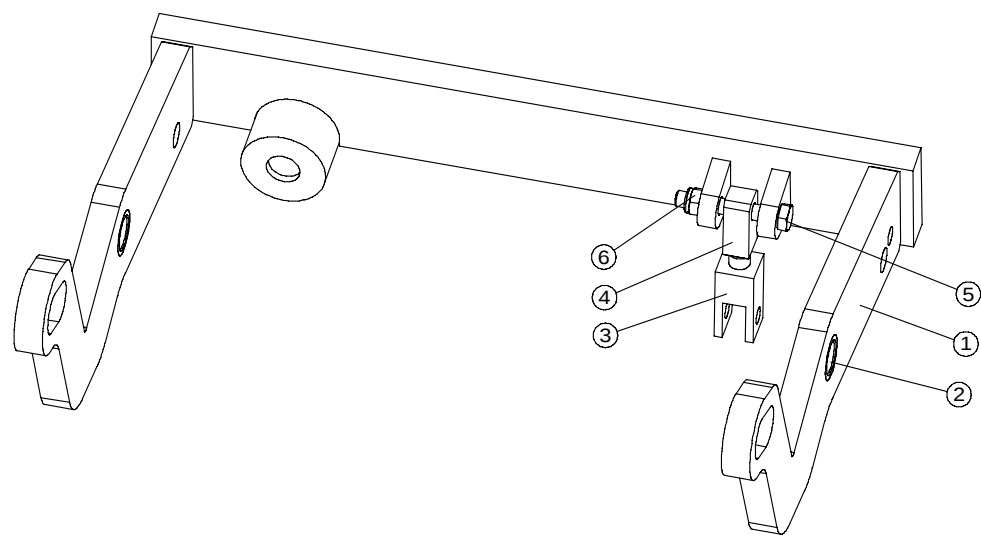
752109 Link Block Assembly



752109 Parts list

Pos.	Qty	Part. No.	Description
1	1	752102	Link Block
2	1	752202	Link Block Pin
3	1	752301	Safety Spring
4	1	752224	Srew
5	1	752330	Nut
6	1	752331	Cotter Pin

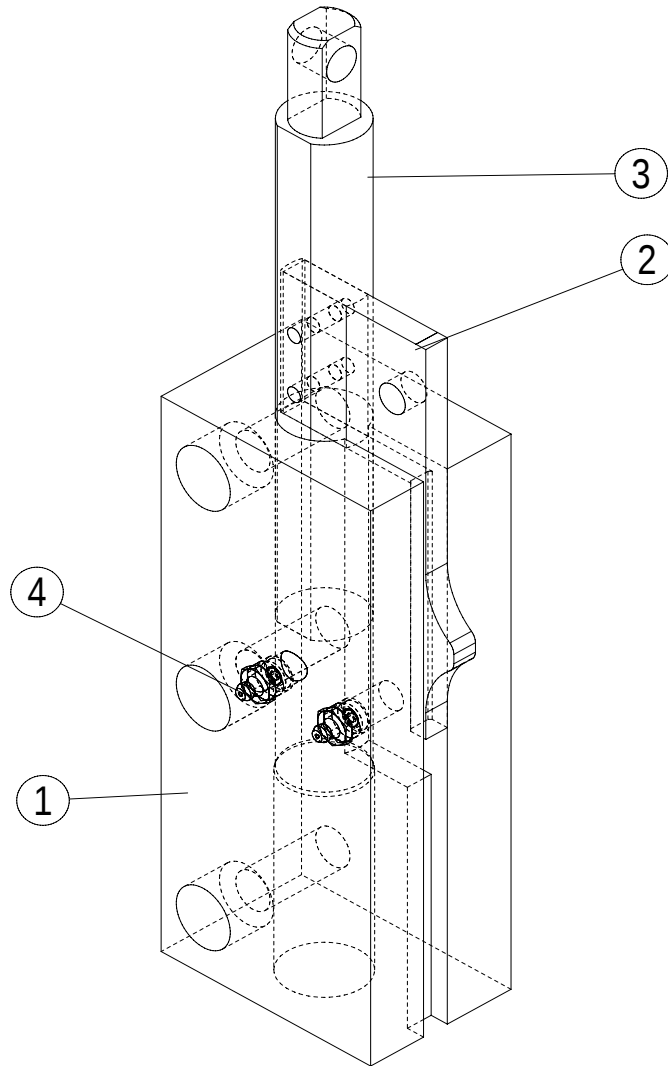
752106 Yoke Assembly



752106 Parts list

Pos.	Qty	Part. No.	Description
1	1	752107	Yoke
2	2	752310	Yoke Bushing
3	1	752208	Yoke Clevis
4	1	752207	Yoke Eye Bolt
5	1	752311	Yoke Eye Bolt Pin
6	1	752312	Lock Nut

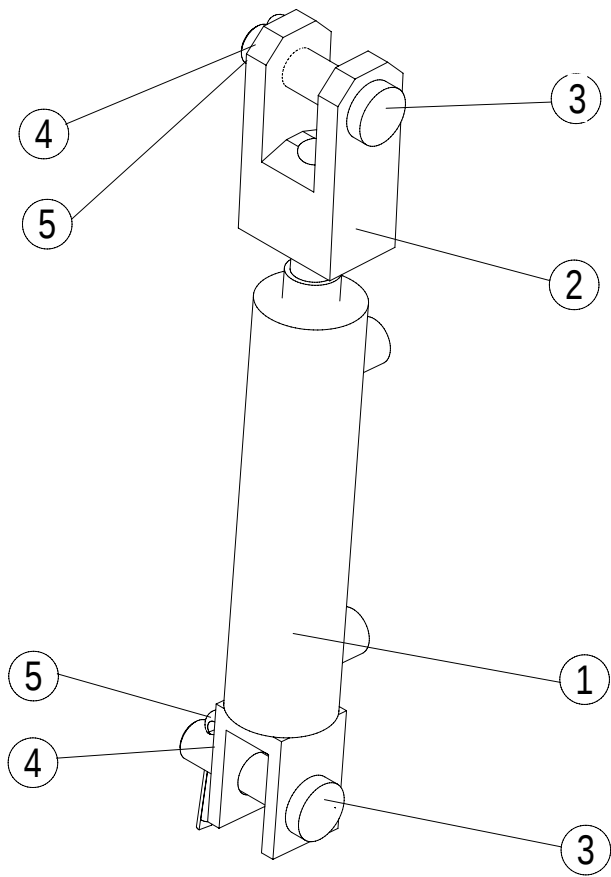
752133 Signal Bar Assembly



752133 Parts List

Pos.	Qty	Part. No.	Description
1	1	752133-1	Block for signal bar
2	1	752135	Signal plate
3	1	752134	Signal rod
4	2	612515	Grease nipple

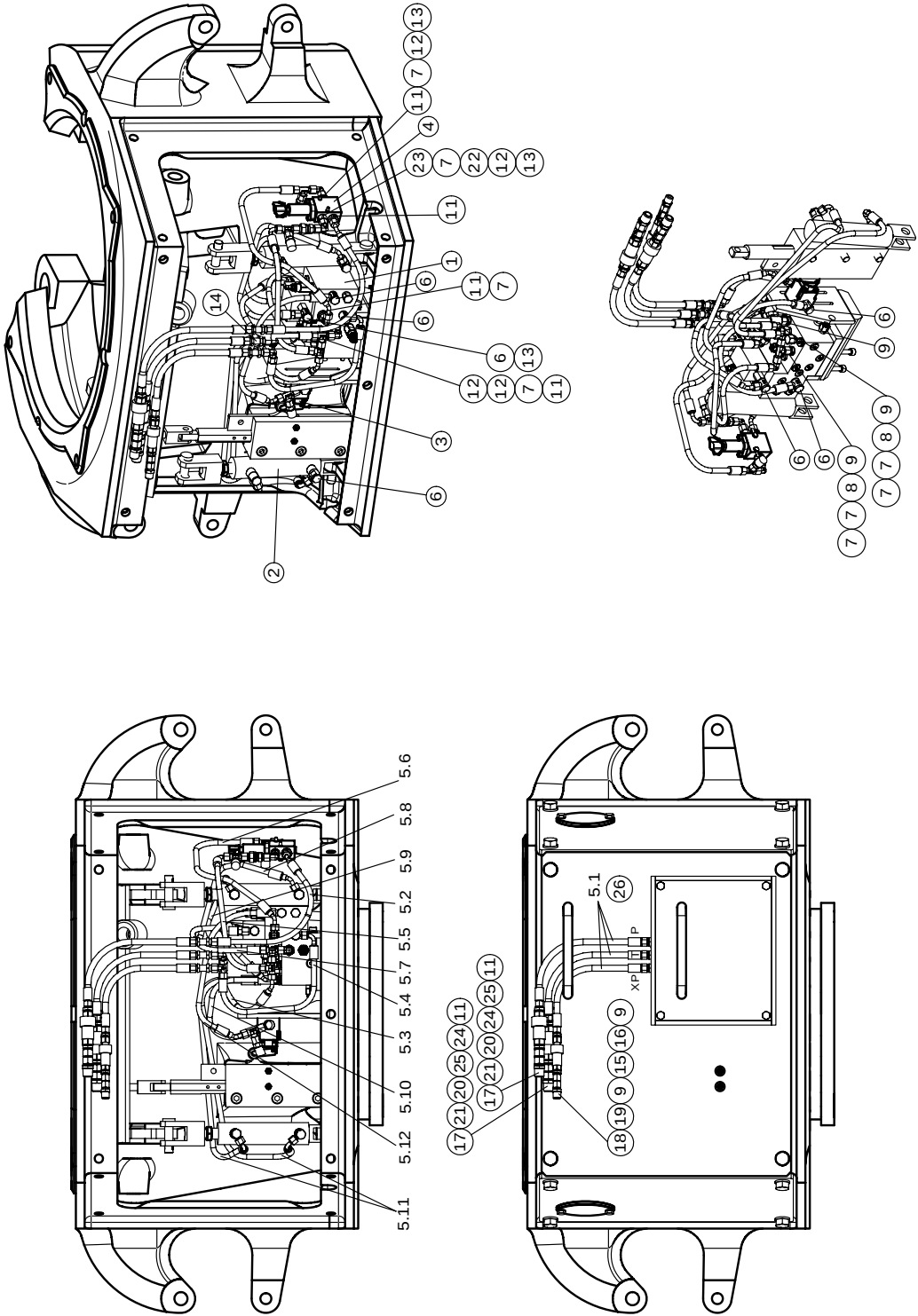
752136 Hydraulic Cylinder Assembly



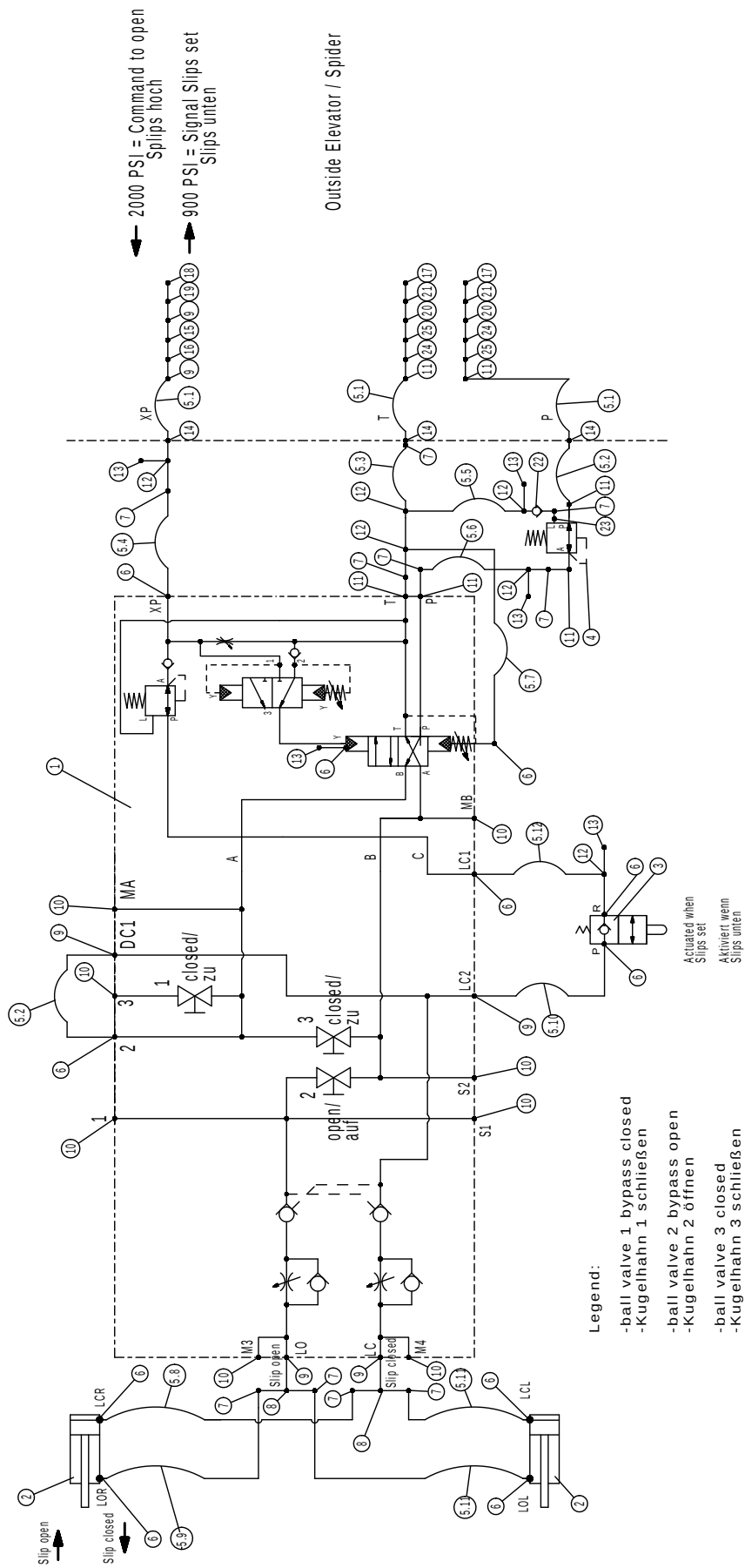
752136 Parts List

Pos.	Qty	Part. No.	Description
1	1	752137	Hydraulic cylinder
2	1	752137-1	Hydraulic cylinder Head for BVES 500-1
3	1	80250-1	Pin
4	1	80250-2	Washer
5	1	80250-3	Cotter Pin

752140-VC Hydraulic Assembly



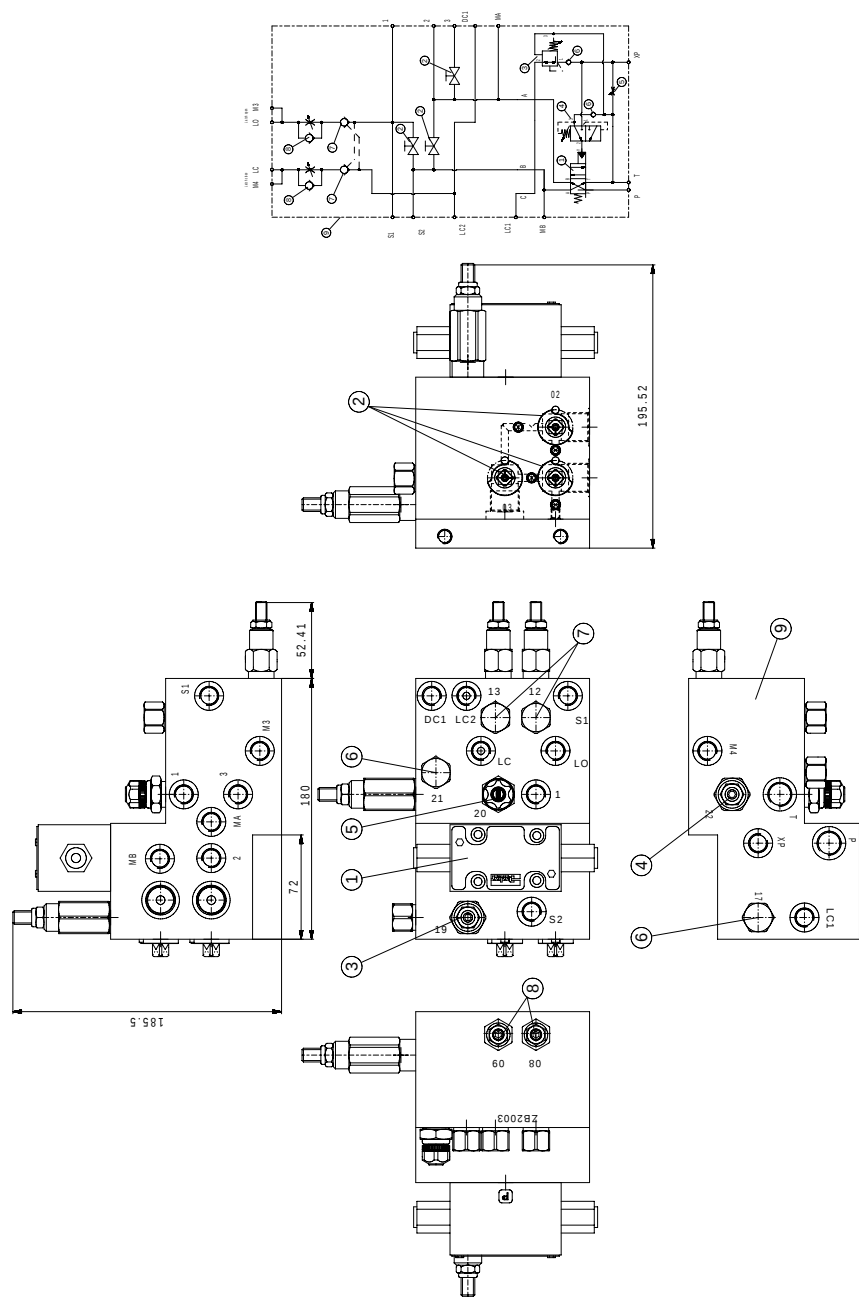
752140-VC Hydraulic Assembly



752140-VC Parts lists

Pos.	Qty	Part Number	Description
1	1	645307	Left hydraulic block assembly for SD elevator
2	2	752136	Hydraulic cylinder Assembly;for BVE/S 500
3	1	775088	Directional Poppet Valve
4	1	645156	Valve
5	1	752150	Set Hydraulic Hose Assemblies for BVES;50
6	11	613945	Swivelling Screw Fitting;(replaces 612664
7	11	645096	L-Adapter
8	2	645104	T-Connection
9	6	612944	Straight Connection 8L-1/4"
10	8	612929	Blind screw
11	6	613943	Fitting
12	6	645095	T-Connection
13	5	755361	Pressure Coupling
14	3	645105	Straight Bulkhead Coupling
15	1	1014-F	Quick connect coupling 1/4 female
16	1	1014-M	Quick connect coupling 1/4 male
17	2	645116	Direct Pipe Fitting
18	1	645117	Direct Pipe Fitting
19	1	612945	Straight Connection 8L-8L
20	2	755373	Straight Male Stud Coupling
21	2	755364	Swivel Reducer
22	1	645110	Check Valve
23	1	613946	straight connection
24	2	1038-F	Quick connect coupling 3/8 female
25	2	1038-M	Quick connect coupling 3/8 male
26	1	755355	Plastic protective coil sleeve

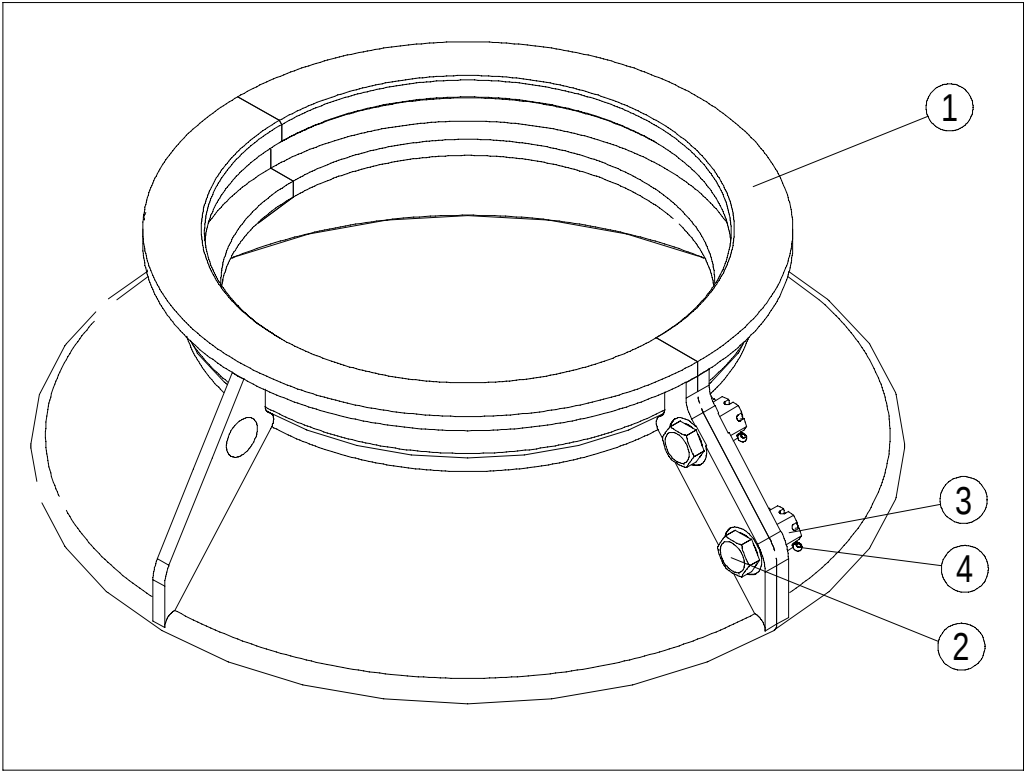
645307 Hydraulic Block



645307 Parts list

Pos.	Qty	Part Number	Description
1	1	2013	Control Valve
2	3	2006	Installation Kit 3 way ball Valve
3	1	2017	Reducing / Relieving 3 Prt direct acting
4	1	2038	Directional Valve with internal drain to Port 3
5	1	2005	Adjustable flow control
6	2	2008	Check Valve
7	2	2001	Pilot to open check 3 Port Valve...
8	2	2000	Fully adjustable needle Valve with reverse flow check
9	1	645307-1	Hydraulic Block vor Varco Contol System

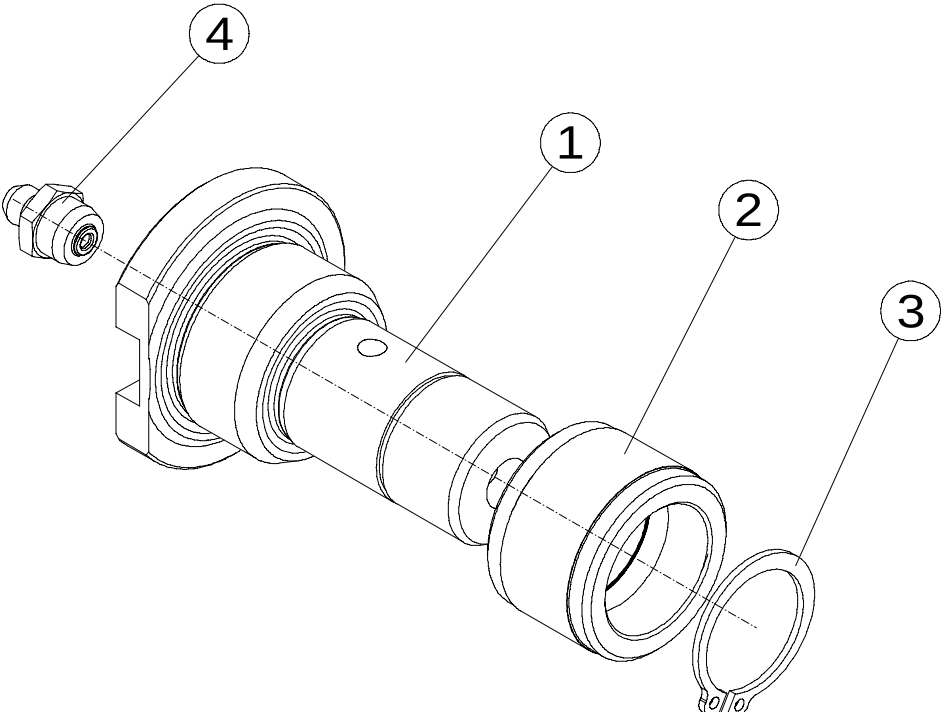
752600 Casing Guide Bell Assembly /Elevator



752600 Parts list

Pos.	Qty	Part no.	Description
1	1	752601	Bell
2	4	752329	Screw
3	4	752330	Nut
4	4	752331	Cotter Pin

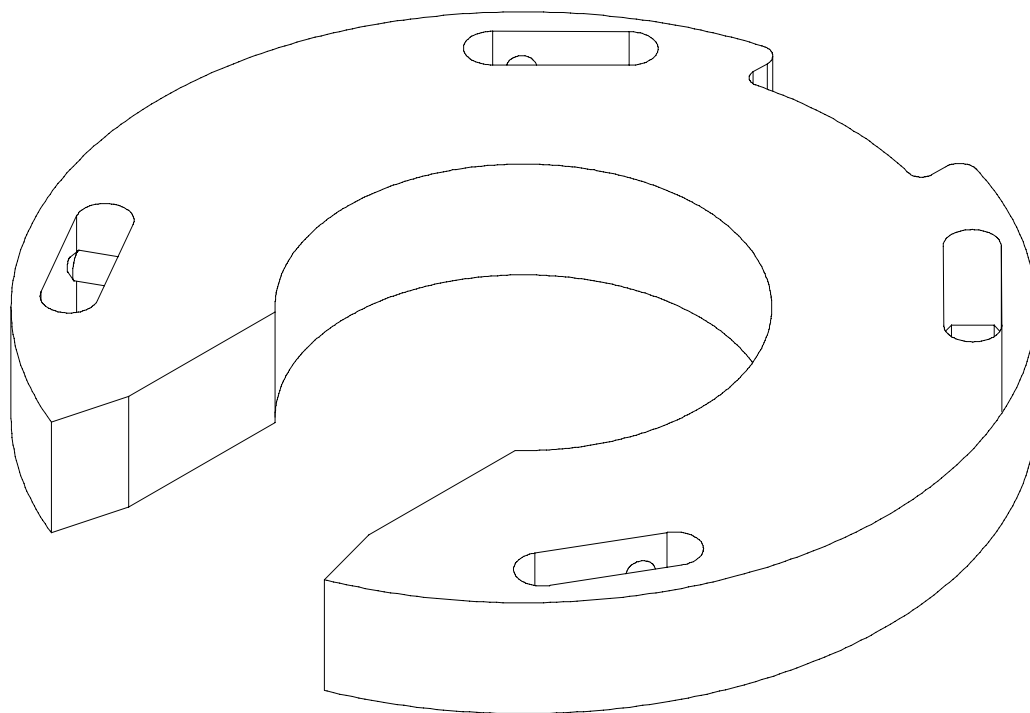
752108 Slip Retainer Pin Assembly



752108 Parts list

Pos.	Qty	Part. No.	Description
1	1	752209	Retainer Pin
2	1	752210	Roller
3	1	752313	Retainer Ring
4	1	70064	Grease Nipple

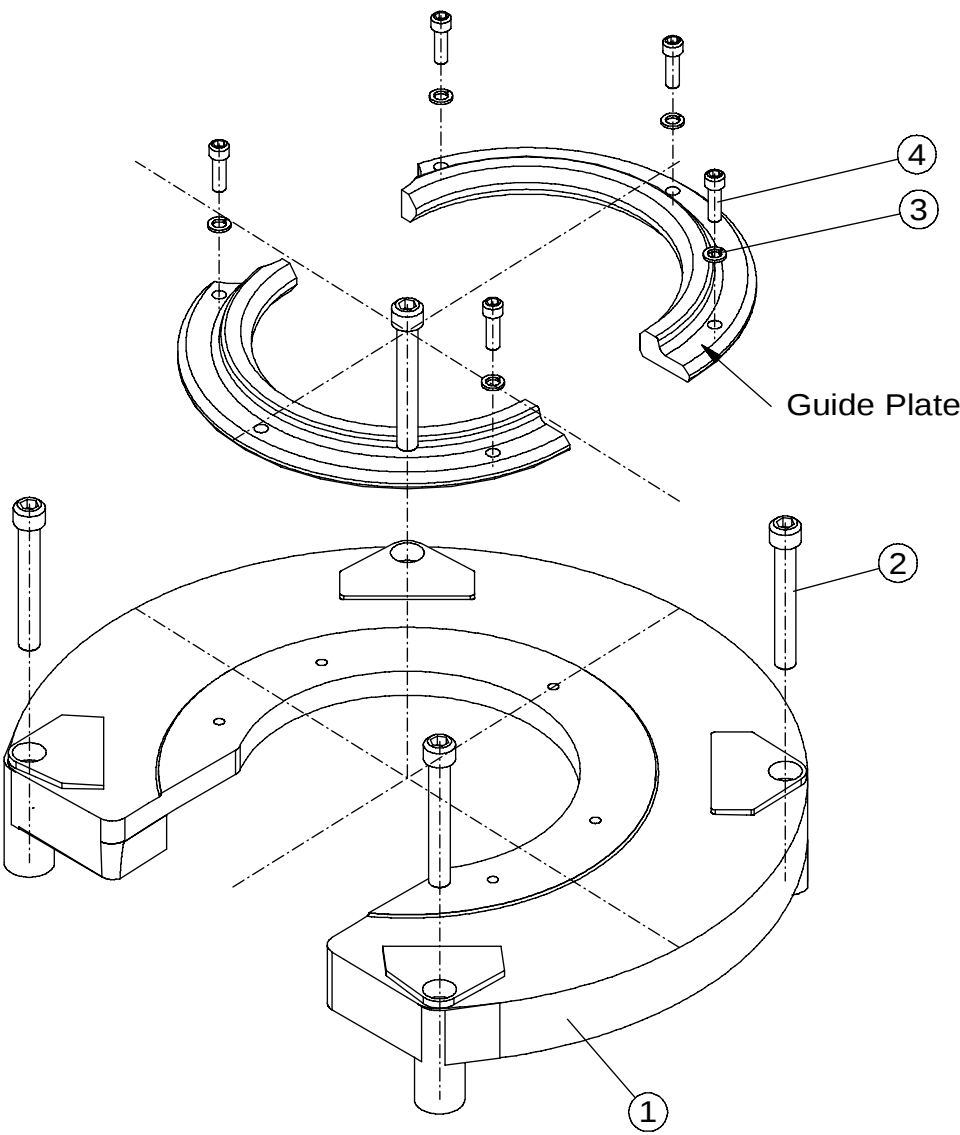
752765 Spider Adapter Plate for Rotary Table



752765 Parts list

Part no.	RT Size
752765	37.1/2"

752700 Upper Guard Guide Assembly / Spider

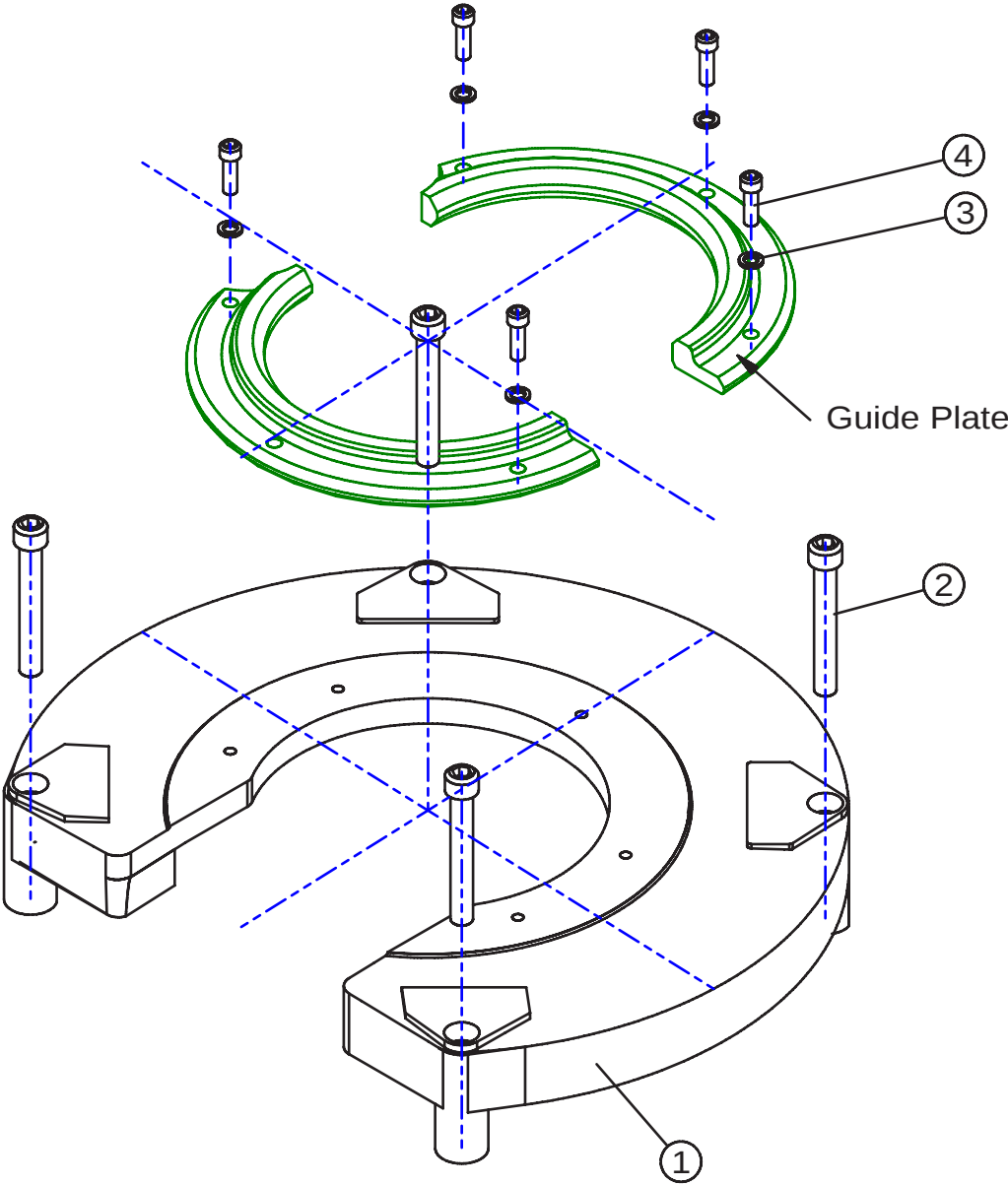


752700 Parts list

Pos.	Qty	Part no.	Description
1	1	752701	Upper Guard
2	4	752332	Screw
3	5	752325	Lock Washer
4	5	752333	Screw

For GUIDE PLATES, see chapter SIZE COMPONENTS.

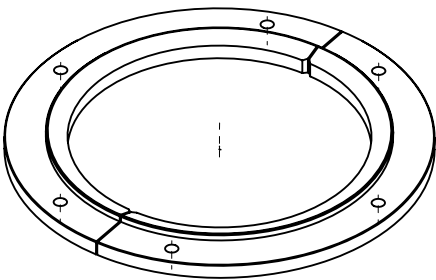
752700 Upper Guard Guide Assembly / Spider



752700 Parts list

Pos.	Qty	Part No.	Description
1	1	752701	Upper Guard
2	4	752332	Screw
3	5	752325	Lock Washer
4	5	752333	Screw

Upper Guard Guide Plate / Spider

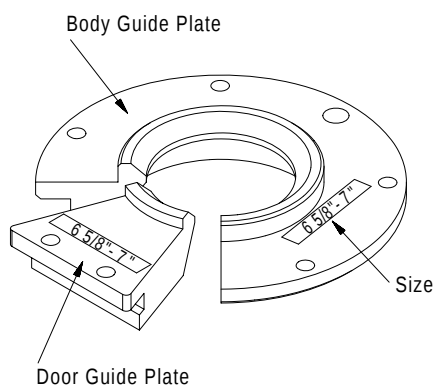


Parts list Upgrated Upper Guard Plate / Spider

Part no.	Pipe Size
752710	4.1/2"
752715	5"-5.1/2"
752720	6.5/8"-7"
752725	7.5/8"-7.3/4"
752730	8.5/8"
752735	9.5/8"-9.7/8"
752740	10.3/4"
752745	11.3/4"-11.7/8"
752755	12.3/4"
752760	13.3/8"-13.5/8"
752770	14"

The Upgrated Upper Guard Plate is a design modification with new diameters.
For replacement parts please order the upgrated Upper Guard Plates.
Do not mix new and previous Upper Guard Plates.

Guide Plate Assembly / Elevator (Body Guide Plate and Door Guide Plate)

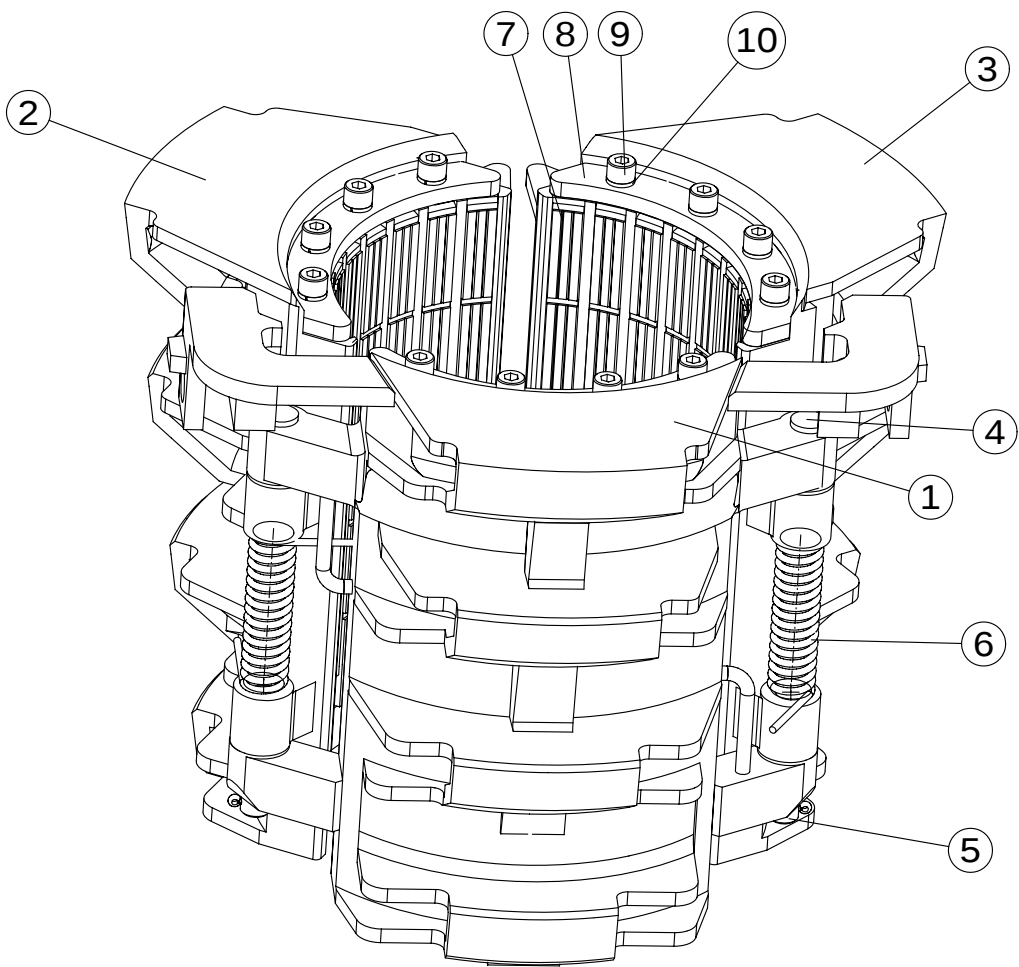


Parts list Upgrated Guide Plate Assembly / Elevator

Part no.	Description	Pipe size	PN Body Plate	PN Door Plate
752930	Guide Plate Ass.	4.1/2"	752930-1	752930-2
752935	Guide Plate Ass.	5"-5.1/2"	752935-1	752935-2
752940	Guide Plate Ass.	6.5/8"-7"	752940-1	752940-2
752945	Guide Plate Ass.	7.5/8"-7.3/4"	752945-1	752945-2
752965	Guide Plate Ass.	8.5/8"	752965-1	752965-2
752970	Guide Plate Ass.	9.5/8"-9.7/8"	752970-1	752970-2
752975	Door Guide Plate	10.3/4"	752975-1	752975-2
752980	Door Guide Plate	11.3/4"-11.7/8"	752980-1	752980-2
752985-2	Door Guide Plate	12.3/4"	-----	752985-2
752990-2	Door Guide Plate	13.3/8"	-----	752990-2
752995-2	Door Guide Plate	14"	-----	752995-2

The Upgrated Guide Plate Assembly is a design modification with new diameters. For replacement parts please order the upgrated Guide Plate Assemblies. Do not mix new and previous Guide Plate Assemblies.

Slip Assembly



Parts Lists Slip Assemblies

Pos.	Qty	Part no.	Part no.	Part no.	Description
		5.1/2"x4.1/2" PN. 752510	5.1/2"x5" PN. 752500	5.1/2"x5.1/2" PN. 752490	
1	1	752491	752491	752491	Center Slip Segment 5.1/2"
2	1	752492	752492	752492	Left Slip Segment 5.1/2"
3	1	752493	752493	752493	Right Slip Segment 5.1/2"
4	2	752221-1	752221-1	752221-1	Hinge Pin
5	2	752404	752404	752404	Hinge Pin Cotter
6	2	752405	752405	752405	Spring
7	45	350905	350506	350107	Inserts Updated
8	3	752496	752496	752496	Insert Retainer
9	6	752324	752324	752324	Cap Screw
10	6	752325	752325	752325	Lock Washer

The Upgraded Insert design has an improved contact area.
For replacement parts please order the upgraded inserts.
Do not mix new and previous Inserts.

Pos.	Qty	Part no.	Part no.	Part no.	Part no.	Description
		7.5/8"x6.5/8" PN. 752480	7.5/8"x7" PN. 752470	7.5/8"x7.3/4" PN. 752465	7.5/8"x7.5/8" PN. 752460	
1	1	752461	752461	752461	752461	Center Slip Segment 7.5/8"
2	1	752462	752462	752462	752462	Left Slip Segment 7.5/8"
3	1	752463	752463	752463	752463	Right Slip Segment 7.5/8"
4	2	752221-1	752221-1	752221-1	752221-1	Hinge Pin
5	2	752404	752404	752404	752404	Hinge Pin Cotter
6	2	752405	752405	752405	752405	Spring
7	75	350909	350610	350011	350111	Inserts Upgraded
8	3	752466	752466	752466	752466	Insert Retainer
9	6	752324	752324	752324	752324	Cap Screw
10	6	752325	752325	752325	752325	Lock Washer

Pos.	Qty	Part no.	Part no.	Description
		9.5/8"x8.5/8" PN. 752450	9.5/8"x9.5/8" PN. 752440	
1	1	752441	752441	Center Slip Segment 9.5/8"
2	1	752442	752442	Left Slip Segment 9.5/8"
3	1	752443	752443	Right Slip Segment 9.5/8"
4	2	752221-1	752221-1	Hinge Pin
5	2	752404	752404	Hinge Pin Cotter
6	2	752405	752405	Spring
7	90	350911	350111	Inserts Upgraded
8	3	752446	752446	Insert Retainer
9	9	752324	752324	Cap Screw
10	9	752325	752325	Lock Washer

Pos.	Qty	Part no.	Part no.	Part no.	Description
		10.1/4"x9.7/8" PN. 752370	10.3/4"x9.5/8" PN. 752360	10.3/4"x10.3/4" PN. 752350	
1	1	752351	752351	752351	Center Slip Segment 9.5/8"
2	1	752352	752352	752352	Left Slip Segment 9.5/8"
3	1	752353	752353	752353	Right Slip Segment 9.5/8"
4	2	752221-1	752221-1	752221-1	Hinge Pin
5	2	752404	752404	752404	Hinge Pin Cotter
6	2	752405	752405	752405	Spring
7	90	350811	351011	350111	Inserts Upgraded
8	3	752354	752354	752354	Insert Retainer
9	9	752324	752324	752324	Cap Screw
10	9	752325	752325	752325	Lock Washer

The Upgraded Insert design has an improved contact area.
For replacement parts please order the upgraded inserts.
Do not mix new and previous Inserts.

Pos.	Qty	Part no.	Part no.	Part no.	Description
		11.3/4"x10.3/4" PN. 752430	11.3/4"x11.7/8" PN. 752425	11.3/4"x11.3/4" PN. 752420	
1	1	752421	752421	752421	Center Slip Segment 11.3/4"
2	1	752422	752422	752422	Left Slip Segment 11.3/4"
3	1	752423	752423	752423	Right Slip Segment 11.3/4"
4	2	752221-1	752221-1	752221-1	Hinge Pin
5	2	752404	752404	752404	Hinge Pin Cotter
6	2	752405	752405	752405	Spring
7	105	350912	350012	350112	Inserts Upgraded
8	3	752426	752426	752426	Insert Retainer
9	9	752324	752324	752324	Cap Screw
10	9	752325	752325	752325	Lock Washer

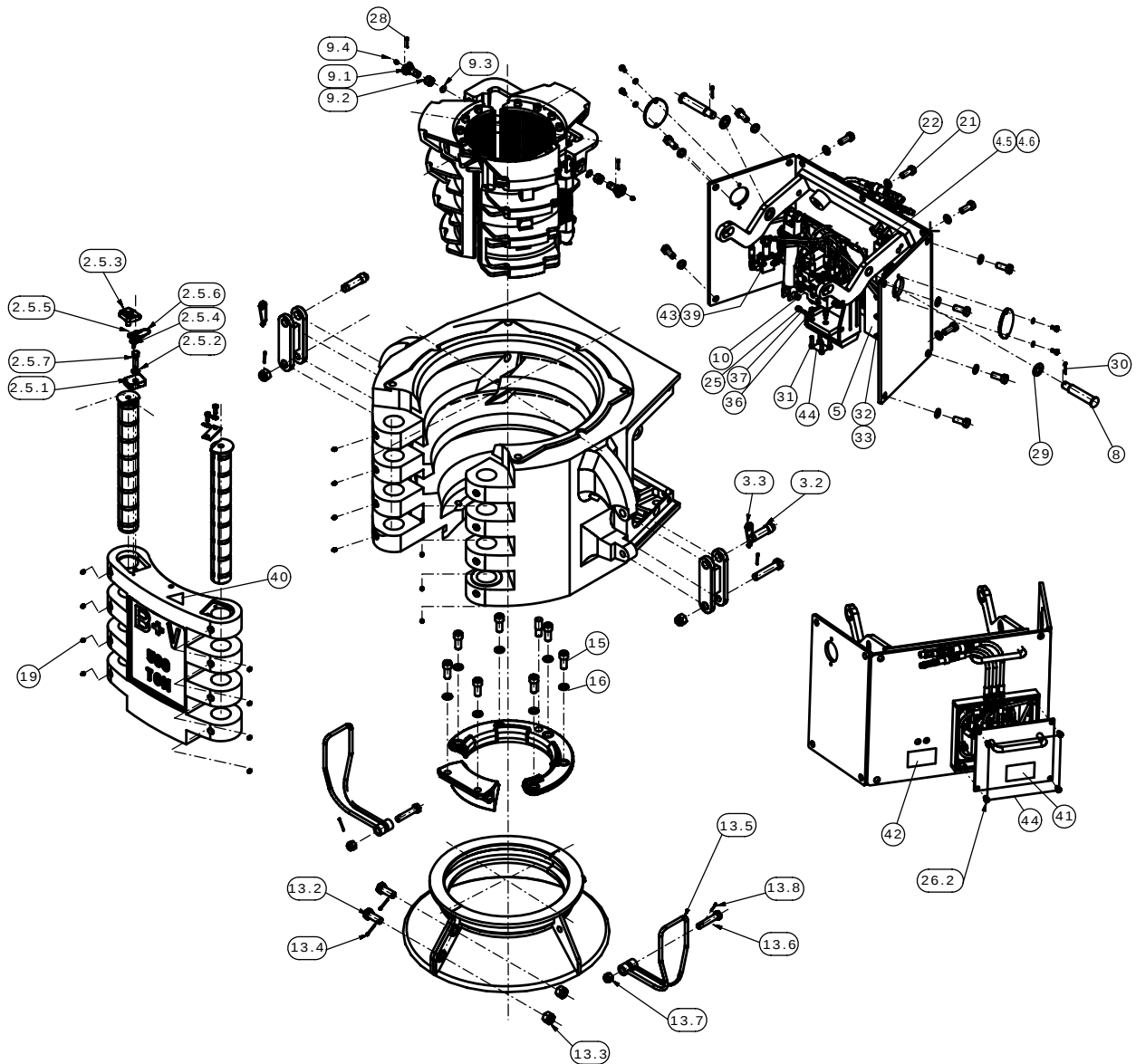
Pos.	Qty	Part no.	Part no.	Description
		13.3/8"x12.3/4" PN. 752410	13.3/8"x13.3/8" PN. 752400	
1	1	752401	752401	Center Slip Segment 13.3/8"
2	1	752402	752402	Left Slip Segment 13.3/8"
3	1	752403	752403	Right Slip Segment 13.3/8"
4	2	752221-1	752221-1	Hinge Pin
5	2	752404	752404	Hinge Pin Cotter
6	2	752405	752405	Spring
7	135	350612	350112	Inserts Upgraded
8	3	752406	752406	Insert Retainer
9	12	752324	752324	Cap Screw
10	12	752325	752325	Lock Washer

Pos.	Qty	Part no.	Part no.	Part no.	Part no.	Description
		14"x14" PN. 752390	14"x13.5/8" PN. 752385	14"x13.3/8" PN. 752380	14"x12.3/4" PN. 752375	
1	1	752391	752391	752391	752391	Center Slip Segment 14"
2	1	752392	752392	752392	752392	Left Slip Segment 14"
3	1	752393	752393	752393	752393	Right Slip Segment 14"
4	2	752221-1	752221-1	752221-1	752221-1	Hinge Pin
5	2	752404	752404	752404	752404	Hinge Pin Cotter
6	2	752405	752405	752405	752405	Spring
7	135	350113	350413	350612	350112	Inserts Upgraded
8	3	752407	752407	752407	752407	Insert Retainer
9	12	752408	752408	752408	752408	Cap Screw
10	12	725102	725102	725102	725102	Lock Washer

The Upgraded Insert design has an improved contact area.
For replacement parts please order the upgraded inserts.
Do not mix new and previous Inserts.

Spare Parts for one year operation

752000-Y-H-RSP Elevator Spare Parts

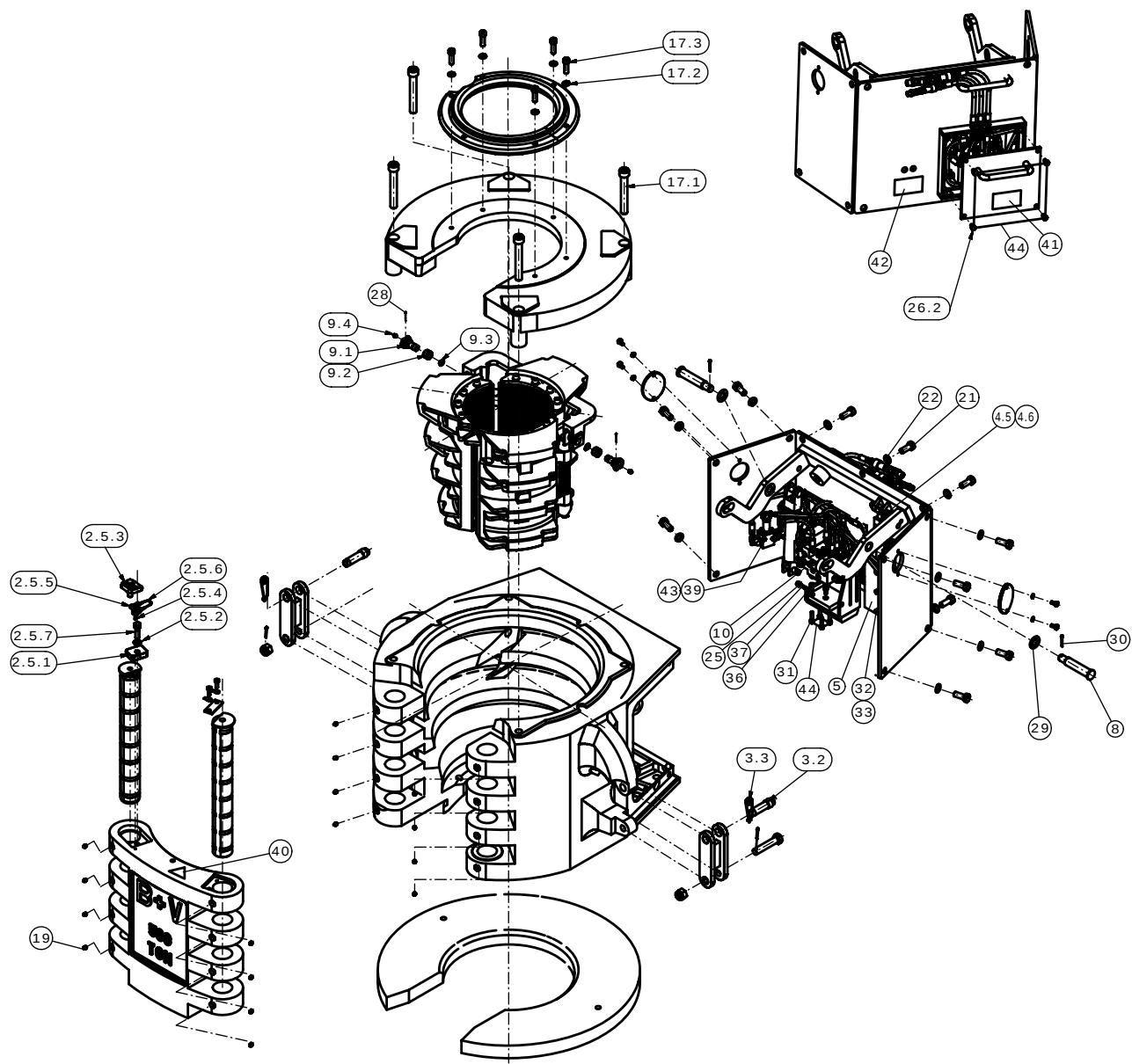


Part List Elevator hydraulic operated-RSP

Position	Qty.	Part No.	Description
2.5.1	2	752205	Plate
2.5.2	2	612554-1	Screw
2.5.3	2	553468	Lifting Eye
2.5.4	2	645037-2	Shackle
2.5.5	4	660414-1	Eye Screw
2.5.6	2	645037	Rope
2.5.7	2	615879	Washer

Position	Qty.	Part No.	Description
3.2	2	752202	Link Block Pin
3.3	2	752301	Safety Spring
4.5	2	752311	Yoke Eye Bolt Pin
4.6	2	752312	Lock Nut
5.1	1	752133-1	Block for signal bar
5.2	1	752135	Signal Plate
5.3	1	752134	Signal rod
5.4	2	612515	Grease Nippel
8	2	752220	Yoke Pivot Pin
9.1	2	752209	Retainer Pin
9.2	2	752210	Roller
9.3	2	752313	Retaining Ring
9.4	2	70064	Grease Nipple
10	1	752140-VC-RSP	Hydraulic Spare Parts
13.2	4	752329	Screw
13.3	4	752330	Nut
13.4	4	752331	Cotter Pin
13.5	2	752336	Security Handle
13.6	2	752337	Screw
13.7	2	752338	Castel Nut
13.8	2	752339	Cotter Pin
15	7	752308	Cap screw
16	7	752309	Lock Washer
19	18	70064	Grease Fitting
21	13	752326	Cap Screw
22	13	752327	Lock Washer
25	6	752119	Lock Washer
26.2	4	613899	Screw
28	2	752322	Cotter Pin
29	2	752321	Yoke Pivot Pin Washer
30	2	752314	Cotter Pin
31	4	752832	Screw
32	3	752323	Screw
33	3	752325	Lock Washer
36	2	612666	Cap Screw
37	2	612697	Cap Screw
39	2	613783	Safety Sheet
40	2	671640	Warning sign "Hands"
41	2	671638	Warning Sign
42	2	671642	Sticker Grease Daily
43	2	752129	Screw
44	2m	671052	Safety Wire

752000-Y-H-RSP Spider Spare Parts



Parts list Spider hydraulic operated RSP

Position	Qty.	Part No.	Description
2.5.1	1	752205	Plate
2.5.2	1	612554-1	Screw
2.5.3	1	553468	Lifting Eye
2.5.4	2	645037-2	Shackle
2.5.5	2	660414-1	Eye Screw
2.5.6	1	645037	Rope
2.5.7	1	615879	Washer
3.2	2	752202	Link Block Pin
3.3	2	752301	Safety Spring
4.5	1	752311	Yoke Eye Bolt Pin
4.6	1	752312	Lock Nut
5.1	1	752133-1	Block for signal bar
5.2	1	752135	Signal Plate
5.3	1	752134	Signal rod
5.4	2	612515	Greas Nippel
8	2	752220	Yoke Pivot Pin
9.1	2	752209	Retainer Pin
9.2	2	752210	Roller
9.3	2	752313	Retaining Ring
9.4	2	70064	Grease Nipple
10	1	752140-VC-RSP	Hydraulic Spare Parts
17.1	4	752332	Screw
17.2	5	752325	Lock Washer
17.3	5	752333	Screw
19	18	70064	Grease Fitting R1/8"
21	13	752326	Cap Screw
22	13	752327	Lock Washer
25	6	752119	Lock Washer
26.2	4	613899	Screw
28	2	752322	Cotter Pin
29	2	752321	Yoke Pivot Pin Washer
30	2	752314	Cotter Pin
31	4	752832	Screw
32	3	752323	Screw
33	3	752325	Lock Washer
36	2	612666	Cap Screw
37	2	612697	Cap Screw
39	2	613783	Safety Sheet
40	2	671640	Warning sign "Hands"
41	2	671638	Warning Sign
42	2	671642	Sticker Grease Daily
43	2	752129	Screw
44	2m	671052	Safety Wire

752140-VC-RSP Hydraulic Spare Parts

Pos.	Quantity	Part no.	Description
1	1	645307	Hydraulic Block
2	2	752137	Hydraulic Cylinder
3	1	775088	Valve
4	1	645156	Pressure Control Valve
5	1	752150	Set Hose Assemblies for BVES 500-1-VC
15	1	1014-F	1/4 Quick connect coupling female
16	1	1014-M	1/4 Quick connect coupling male
22	1	645110	Check Valve
24	2	1038-F	3/8 Quick connect coupling female
25	2	1038-M	3/8 Quick connect coupling male
26	1	755355	Plastic protective coil sleeve