Blohm + Voss Oil Tools

Pipe Handling Equipment

B+V Pneumatic Remote Control Kit for BVE/S 500/2

Pneumatic Remote Control Kit for Elevator **P/N 753370**
Pneumatic Remote Control Kit for Spider **P/N 753375**

Operation and Installation Manual

Original Operation and Installation Manual

Appendix to the Technical Documentation for the BVES 500/2

B+V Pneumatic Remote Control Kit

Installation Manual PN 75753370-D Rev 02 May 2014

Blohm + Voss Oil Tools GmbH

Blohm+Voss

SAFETY INSTRUCTIONS

for Control Units [Elevator/Power Slips]

OUR goal is to produce tools that help you work safely and efficiently.
The most important safety device for this tool is YOU.
YOUR good judgement is the best protection against injury.

Maintenance Hazards

⚠ **Always remember** to shut down all rig supply and get in safe condition before starting maintenance work on the control units.

⚠ **Always plan** maintenace on a regular basis. Note and file checks as shown in inspection/check table.

Operation Hazards

⚠ **Practice safety** at all times when operating/ maintaining the control unit. Always wear your personal protective equipment (PPE e.g. gloves, hard hat, eye protection,…)

⚠ **Never** operate the control units open. All Flaps and locks must be closed and secured for operation.

⚠ **Keep in mind** that the control unit is purchased and designed as a separate supporting tool.

Therefore make sure that a proper Interlock system is installed and in operation.

⚠ **Inter Lock** control setting

Elevator		Power Slip		Control
Holds weight Doors closed	+	Weightless Slips UP	→	1. Doors locked 2. Slips enabled
Weightless Doors closed	+	Holds weight Slips DOWN	→	1. Doors enabled 2. Slips locked
Weightless Doors open	+	Holds weight Slips DOWN	→	1. Doors enabled 2. Slips locked
Holds weight Doors closed	+	Weightless Slips DOWN	→	1. Doors locked 2. Slips enabled

Inspection / Check table

Task / Interval	Daily	Monthly	2 Year
1. Visual check for damages	☑	☑	☑
2. Visual check for leakage and hose condition	!	!	!
3. Check fastener , couplings and screws for corrosion	☑	☑	☑
4. Perform a function test and display check	☑	☑	☑
5. Visual check for leakage inside control unit	☒	!	!
6. Check all cable connections	☒	!	!
7. Full Inspection [see below]	☒	☒	!

☑ Necessary ☒ Not necessary ! Safety task!
Take out of service and repair!

Full Inspection

- Check all Component condition and function
- Replace bad/worn components
- Perform a 100% pressure test (hydraulic devices) for 5 minutes and check for leakage
- Check all connections for proper installation

⚠ **NOTE** Rig operations may have different time schedules, replace hose and cable after 5 years at latest. Double check with rig superintendent.

⚠ **Mandatory** The locking cannot be unset/overwritten by giving a control unit command.

FORUM™ B+V Oil Tools

DO NOT DISCARD - GIVE TO OPERATOR

Legal disclaimer

All information in this Installation Instructions has been provided according to the best knowledge of the provider, but without guarantee. This Installation Instructions is based on the most recent production information available at the time of printing. Depending on continuous technical improvements (ISO 9001), Blohm + Voss Oil Tools reserves the right to make any changes to the construction and specifications without further notice. The values specified in this operating manual represent the nominal values of a series-produced device. Values may vary slightly in the case of individual devices.

We are grateful for suggestions and critic regarding this documentation or the product itself.

Printed in Germany.

Table of content

1 Scope of this Document

The intense of this document is to describe the B+V Pneumatic Remote Control Kit for BVES 500/2 Spider or Elevators. This manual covers the standard product plus common options that are available.

The design, materials, and workmanship incorporated in the construction of Blohm + Voss Oil Tools equipment makes them capable of giving long, trouble-free service. The life and satisfactory service of any mechanical unit, however, is enhanced and extended by correct application, proper installation, periodic inspection, condition monitoring and careful maintenance. This instruction manual was prepared to assist operators in understanding the construction and the correct methods of installing, operating, and maintaining the Blohm + Voss Oil Tools equipment.

Blohm + Voss Oil Tools GmbH shall not be liable for physical injury, damage, or delays caused by a failure to observe the instructions for installation, operation, and maintenance contained in this manual.

When installed in potentially explosive atmospheres, the instructions that follow the Ex symbol must be followed. Personal injury and/or equipment damage may occur if these instructions are not followed. If there is any question regarding these requirements or if the equipment is to be modified, please contact a Blohm + Voss Oil Tools GmbH representative before proceeding. Warranty is valid only when genuine Blohm + Voss Oil Tools GmbH parts are used.

Generally the Blohm + Voss Oil Tools equipment has been designed for safe and reliable operation when properly used and maintained in accordance with instructions contained in this manual.
The Blohm + Voss Oil Tools equipment is used for pipe handling in the drilling platforms; some models are a pressure containing devices with rotating parts that can be hazardous. Operators and maintenance personnel must realize this and follow safety measures. Blohm + Voss Oil Tools shall not be liable for physical injury, damage or delays caused by a failure to observe the instructions in this manual.

ATTENTION!

SAFE OPERATION!

This Installation Manual is only applied and valid for the affected devices shown on title page.

This manual must be read and understood before installation and start-up.

ATTENTION!

SAFE OPERATION!

This Technical Documentation is a supplement to the Manual BVE/S 500/2 It is only be used together with the Manual BVE/S 500-1.

Refer to the last revision of the original manual of your BEVS 500/2.

1.1 Description of Device

Generally B+V Control Units are designed as an addition to the BVES 500/2 to provide the device with the use of a feed-back signal. This allows the spider/elevator usage with hydraulic-pneumatic interlock systems. The remote control kit enables a remote control the spider/elevator from the driller cabin or by means of interlock unit.

The content of delivery for the B+V Pneumatic Remote Control Kit covers all necessary items for installation

2 Safety

2.1 General

Throughout this manual the words **WARNING, CAUTION, ATEX**, and **NOTE** are used to indicate procedures or situations which require special operator attention:

WARNING Operating procedure, practice, etc. which, if not correctly followed, could result in personal injury or loss of life.

CAUTION Operating procedure, practice, etc. which, if not followed, could result in damage or destruction of equipment.

NOTE Operating procedure, condition, etc. which is essential to observe.

EXPLOSION PREVENTION
In order to reduce the possibility of accidental explosions in atmospheres containing explosive gasses and/or dust, the instructions under the ATEX symbol must be closely followed. ATEX certification is a specification enforced in Europe for non-electrical and electrical equipment installed in Europe. The usefulness of the ATEX requirements are not limited to Europe, and are useful guidelines for equipment installed in any potentially explosive environment.

If equipment is to be installed in a potentially explosive atmosphere and these procedures are not followed, personal injury or equipment damage from an explosion may result.

Particular care must be taken when electrical power source to the equipment is energized

SPECIAL ATEX CONSIDERATIONS
All installation and operation instructions in this manual must be strictly adhered to. In addition, care must be taken to ensure that the equipment is properly maintained.

2.2 Personal protective equipment (PPE)

	**WEAR SAFETY HELMET!**
	**WEAR SAFETY GLOVES!**
	**WEAR SAFETY BOOTS!**
	WEAR SAFETY GOOGLES!

2.3 Specific safety instructions

- ▲ Release the pressure in all lines prior to any maintenance and repair work.
  To do this:
  - ▲ Lower all pressure controlled attachments to the ground.
- ▲ Ai escaping under high pressure can penetrate the skin and cause serious injuries. Always consult a doctor immediately even if the wound seems insignificant – otherwise serious infections could set in!
- ▲ Air flowing out of high pressure lines can cause malfunctions and severe injuries or damage to property. Interrupt work immediately if slack nuts or damaged hoses and lines are detected.
- ▲ Replace the hose or line if one of the problems mentioned below is detected.
  - ▲ Worn or torn shells or uncovered reinforcement branches.
  - ▲ Expanded shells in several positions.
  - ▲ Entangled or crushed movable parts.
  - ▲ Foreign bodies jammed or stuck in protective layers.

Replace hoses at least every 6 years from the date of manufacture, even if they do not seem to be damaged.
In this respect, we recommend that you observe all the relevant safety regulations for pressure lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country

2.4 Operating Hazards

WARNING Danger of personal injury!
Caution when checking pressure lines, especially when searching for leaks. Air escaping under high pressure can penetrate the skin and cause serious injuries. Always shut off the pressure supply, relieve hose pressure, and disconnect the tool from its supply source when not in use

- Never weld or solder damaged or leaking pressure lines and screw connections.
- Replace damaged parts with new ones!
- Never search for leaks with your bare hands, but wear protective gloves!
- Use paper or wood to check for minor leaks. Never use an unprotected light or naked flame!
- •Have damaged flexible lines replaced by authorised workshops only!

WARNING Whipping hoses can cause serious injury!
Always check for damaged or loose hoses or fittings.

- Do not exceed maximum specified hydraulic pressures.
- Always wear eye protection when working with hydraulic hoses.

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2.5 Workplace Hazards

- To slip/trip/fall are major causes of serious injury or death. Be aware of excess hose left on the walking or work surface.
- Maintain a balanced body position and secure footing.

2.6 Maintenance Hazards

- Improper welding and/or re-machining of cast alloy heat treated steel can cause personal injury, property damage, or death.
- Always wear eye, head and hand protection when performing maintenance on the slip system. Failure to wear the proper protective equipment may cause serious injury.

3 Description

An additional feed-back signal allows to use the spider / elevator with hydraulic-pneumatic interlock systems. The remote control kit makes possible to control the spider/elevator from the driller cabin or by means of interlock unit.

Even older spider/elevators can be retrofitted with the feed-back signal.

The feed-back signal is pneumatic one and it checks actual position of slips. Feed-back sensor (pneumatic valve) can be adjusted in this way, so that the right feed-back signal is only given if the pipe is gripped properly by the slip segments.

The remote control kit contains small pneumatic cylinder, which controls the 3/2 ways valve.

It enables to open/close remote operated

This manual is valid for following Remote Control Kits

- Pneumatic Remote Control Kit for Elevator P/N 752890
- Pneumatic Remote Control Kit for Spider P/N 752895

This manual covers several different Blohm + Voss Oil Tools models that are all common in use and operation. Most assembly, disassembly, and inspection procedures are the same for all models. However, where there are differences, they are called out separately within the manual.

3.1 Remote control kit assembly content

Name	P/N
Remote control assembly for Elevator and Spider	752830
Feedback assembly for Elevator and Spider	753350
Cover assembly for Elevator and Spider	753380
Pneumatic assembly for Elevator	753371
Pneumatic assembly for Spider	753376
Side back plate with pneumatic connection for Elevator	753373
Side back plate with pneumatic connection for Spider	753378

3.2 Operational environment

The Pneumatic Remote Control Kit is designed and constructed for use in the oil drilling industry on ships and platforms.

The machine meets the requirements of the Directive 94/9/EC (ATEX) for explosion protection.

The corresponding ATEX certificates can be found in the appendix.

The normal operation of the Elevator and the Spider must be performed by two persons, as there is no feedback for "slip down" and “slip up” in the type series. Also eye contact must be maintained between the operator to ensure always one of the two devices is closed and the tubing or pipe section held. The remote control kit enables the Elevator and Spider operation by one person.
The Necessary control unit must process the feedback "slip down" and must provide an interlock system on display. The interlock system prevents the simultaneous opening of Elevator and Spider.

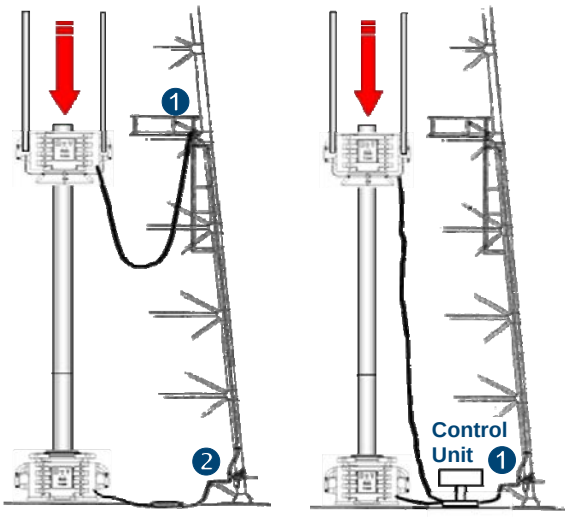

Figure 1 Normal Operation and operation with control unit overview

4 Changeover Elevator

4.1 Preparation of Elevator

1. Disconnect pneumatic hose
2. Disassemble back plate, side back plate and foot pedal

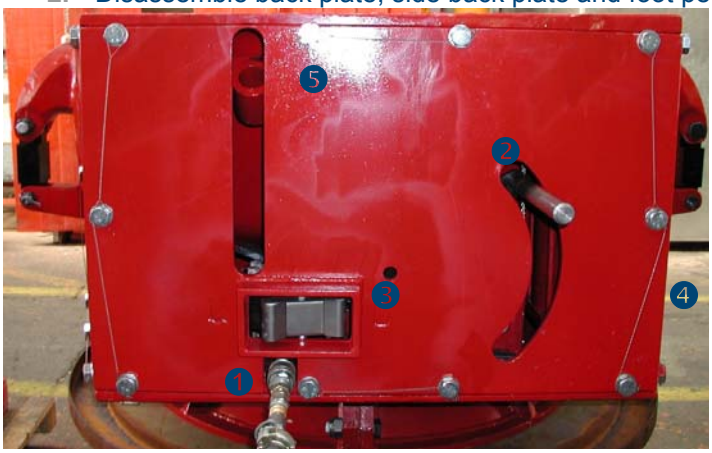

Figure 2 Elevator view

❶ Pneumatic hose
❷ Hold
❸ Foot Pedal
❹ Side back plate
❺ Back plate

3. Disassemble upper bolt for pneumatic cylinder

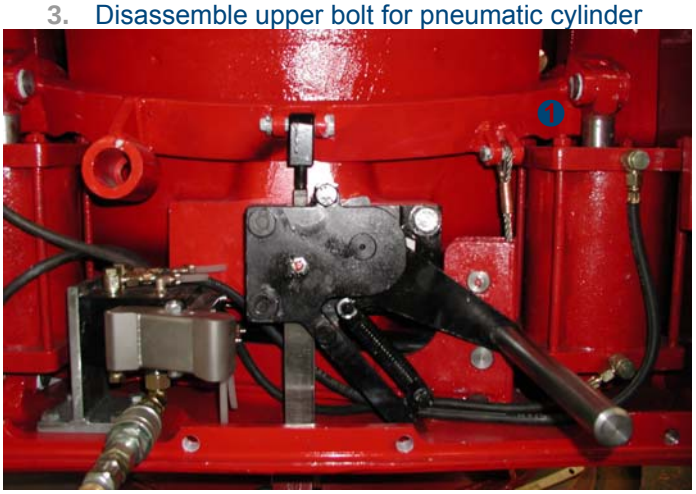

Figure 3 pneumatic cylinder

❶ Upper bolt

4.2 Pneumatic Remote Kit Installation

1. Install Cylinder eye with Signal bar for Feedback Valve
2. Install Holder with Feedback valve

Figure 4 Cylinder eye with Signal bar for Feedback Valve

❶ Fitting screw ❷ Nut

❸ Signal Plate

3. Install Holder with Feedback valve and hoses.

WARNING! The Holder plate has to be installed with hexagon screws and spring lock washers The Screws must be proper tightened. Tighten screw

Figure 5 Remote Control Assembly

❶ Hexagon fit Bolts and Spring washers ❷ Feedback holder

❸ Feedback valve ❹❺ Feedback hose 1/2

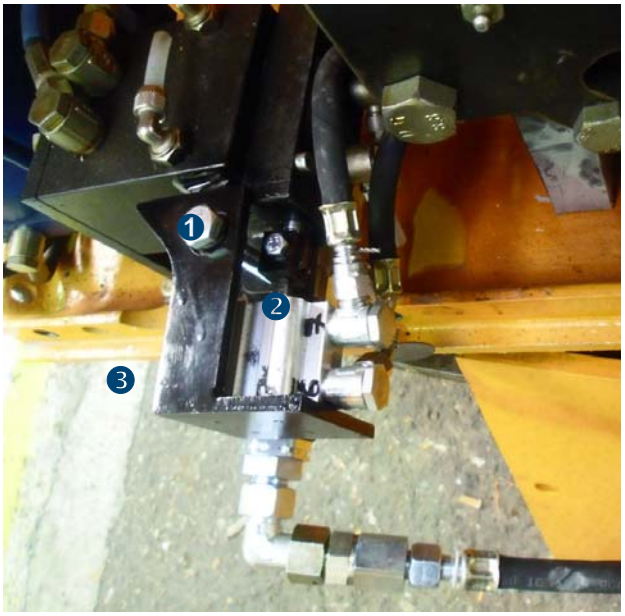

Figure 6 Remote Control Assembly

❶ Holder ❷ Cylinder bracket

❸ Cylinder holder

4. Install Pneumatic hoses as shown in drawing.

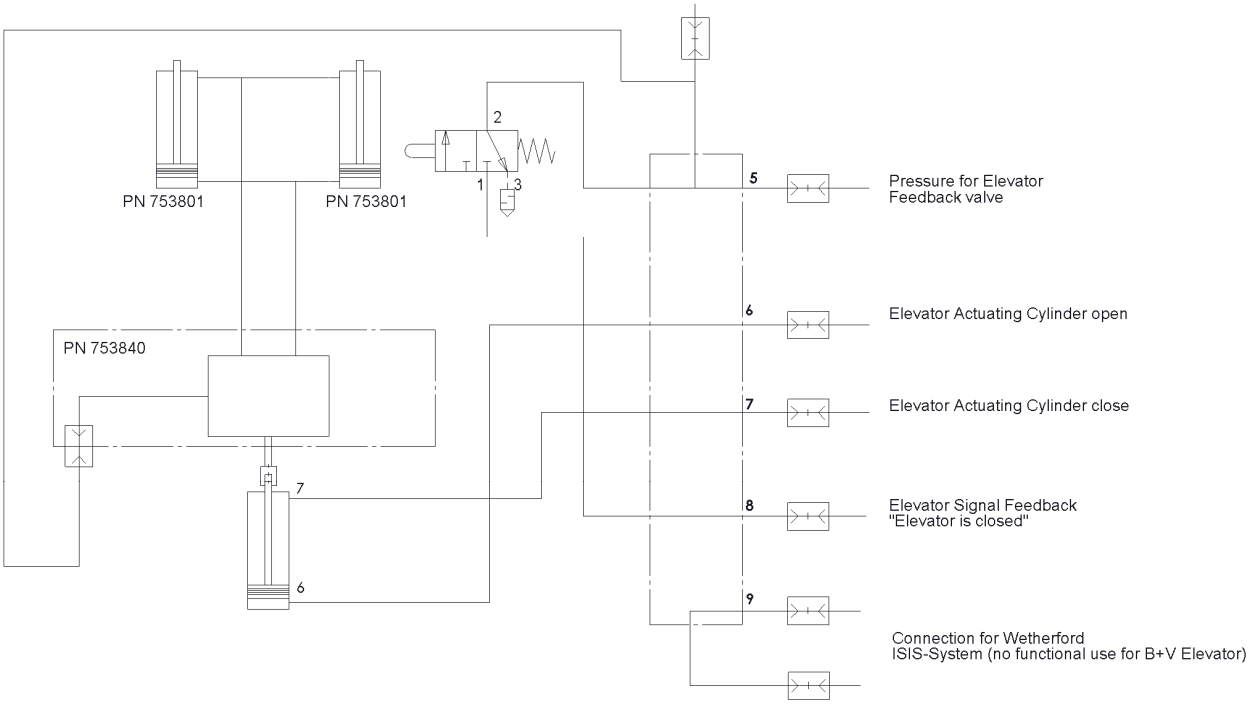

Figure 7 Hose connection overview

5. The hoses are numbered.
Connect the corresponding hose to the manifold block.

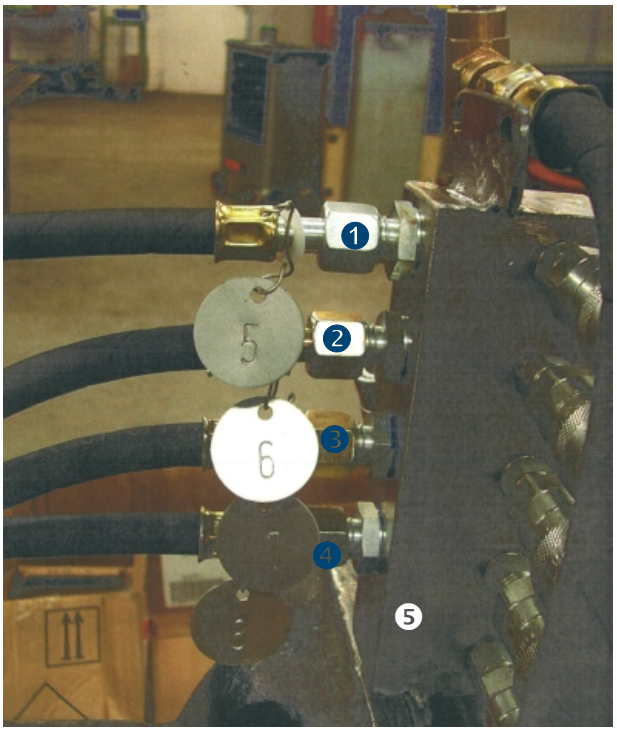

Figure 8 Elevator Remote Kit view

❶	Hose 5	❷	Hose 6
❸	Hose 7	❹	Hose 8
❺	Manifold block		

WARNING! Pass all pneumatic hoses behind the spring rod if needed bind them together with cable clips.

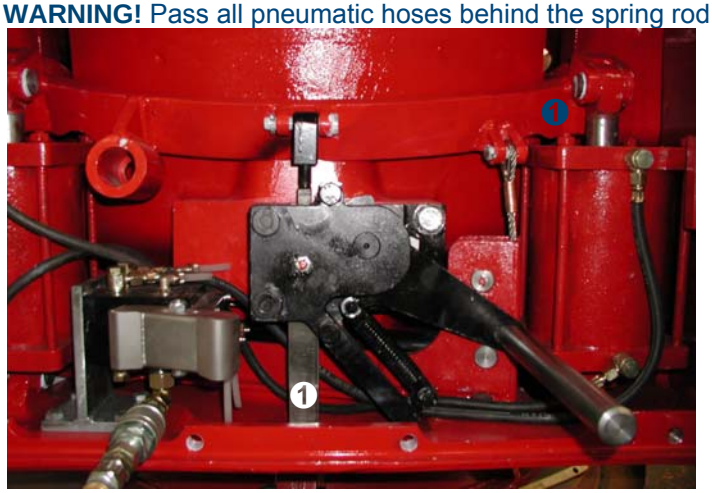

Figure 9 pneumatic cylinder

❶ Spring rod

6. Install Side back plate with pneumatic connections.

Figure 10 Elevator Remote Kit Connection view

❶	Side back Plate	❷	Back plate
❸	Brake Locking	❹	Slip Cylinder Connection
❺	Pneumatic Connection Plate		

7. Install Back plate
8. Lock brake assembly
9. Connect pneumatic hose for Slip cylinder

ATTENTION!

SAFETY NOTE!
Remote operation without break locking can damage the Elevator /Spider.
Make Sure That the break handle is located in the middle position and secured by the lock-fork before each operation.

5 Changeover Spider

5.1 Preparation of Spider

10. Disconnect pneumatic hose
11. Disassemble back plate, side back plate and foot pedal

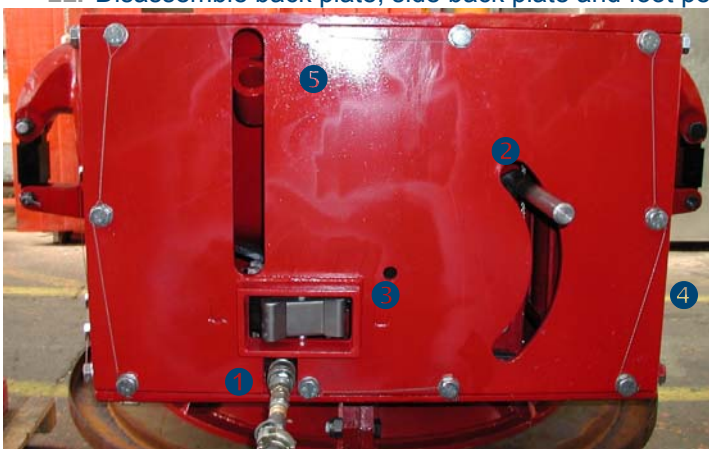

Figure 11 Elevator view

❶	Pneumatic hose	❷	Hold
❸	Foot Pedal	❹	Side back plate
❺	Back plate		

12. Disassemble upper bolt for pneumatic cylinder

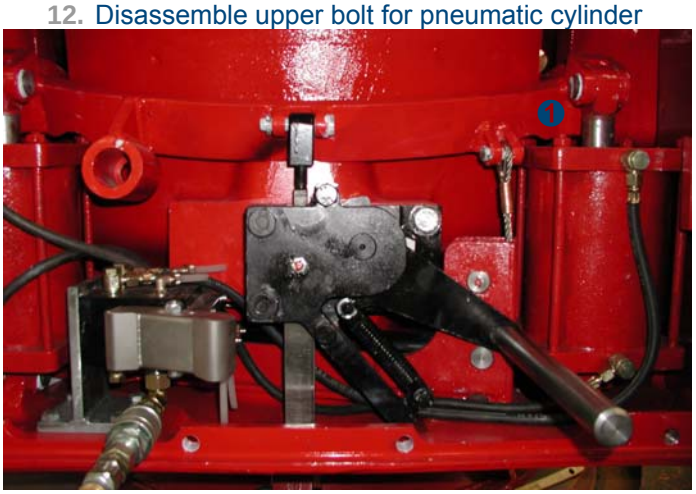

Figure 12 pneumatic cylinder

❶ Upper bolt

5.2 Pneumatic Remote Kit Installation

13. Install Cylinder eye with Signal bar for Feedback Valve
14. Install Holder with Feedback valve

Figure 13 Cylinder eye with Signal bar for Feedback Valve

❶ Fitting screw ❷ Nut

❸ Signal Plate

15. Install Holder with Feedback valve and hoses.

WARNING! The Holder plate has to be installed with hexagon screws and spring lock washers The Screws must be proper tightened. Tighten screw

Figure 14 Remote Control Assembly

❶ Hexagon fit Bolts and Spring washers ❷ Feedback holder

❸ Feedback valve ❹❺ Feedback hose 1/2

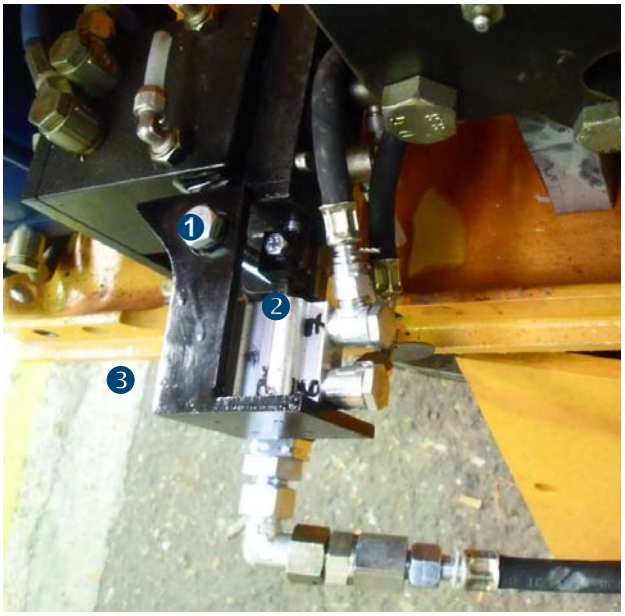

Figure 15 Remote Control Assembly

❶ Holder ❷ Cylinder bracket

❸ Cylinder holder

16. Install Pneumatic hoses as shown in drawing.

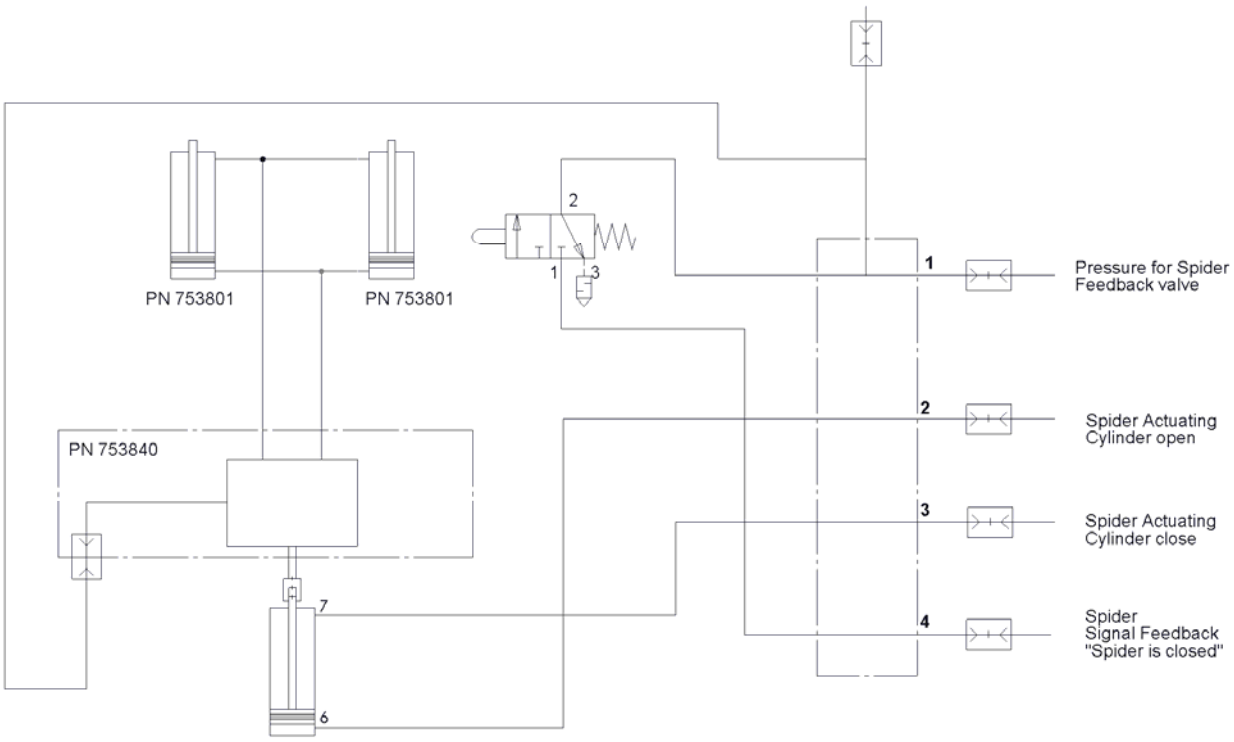

Figure 16 Hose connection overview

17. The hoses are numbered.
Connect the corresponding hose to the manifold block.

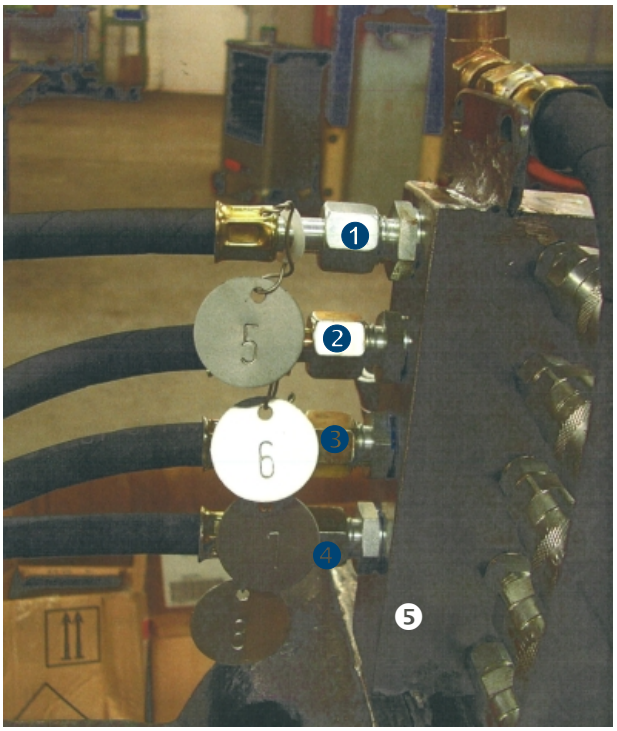

Figure 17 Elevator Remote Kit view

❶	Hose 1	❷	Hose2
❸	Hose 3	❹	Hose 4
❺	Manifold block		

WARNING! Pass all pneumatic hoses behind the spring rod if needed bind them together with cable clips.

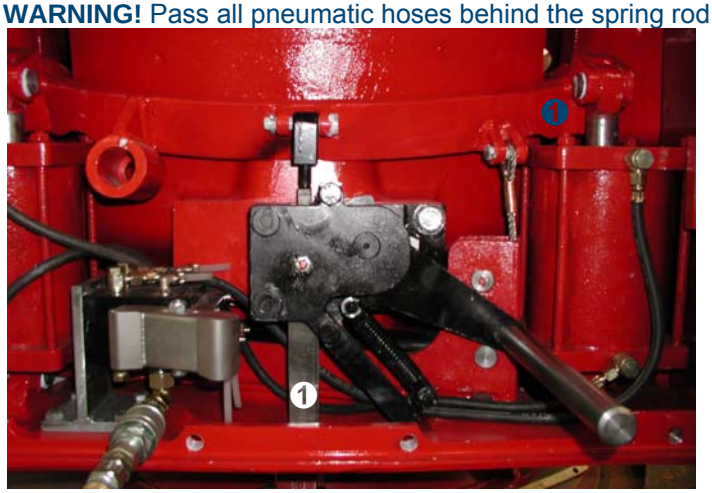

Figure 18 pneumatic cylinder

❶ Spring rod

18. Install Side back plate with pneumatic connections.

Figure 19 Elevator Remote Kit Connection view

❶	Side back Plate	❷	Back plate
❸	Brake Locking	❹	Slip Cylinder Connection
❺	Pneumatic Connection Plate		

19. Install Back plate
20. Lock brake assembly
21. Connect pneumatic hose for Slip cylinder

ATTENTION!

SAFETY NOTE!
Remote operation without break locking can damage the Elevator /Spider.
Make Sure That the break handle is located in the middle position and secured by the lock-fork before each operation.

6 Feedback signal adjustment

The Feedback Assembly is actuated when the Slips are set and gives a signal to connection 4 for Spider and 8 for Elevator (Signal "SLIPS SET")

The Valve and signal plate are adjustable mounted. For adjustment / installation move the plate and signal plate in a way that the valve is actuated by the signal plate properly. Now tighten the screws to secure the plate.

Figure 20 Feedback signal adjustment

❶ Signal Plate ❷ Feedback valve

7 Connecting the BVE/S 500/2 to existing control units

The BVES 500 frame 2 can be used as elevator or spider and be connected to existing unit.
There is a connection box on the right side of BVES (looking from behind).
On the box you can find the connection number and description of the device SPIDER or ELEVATOR

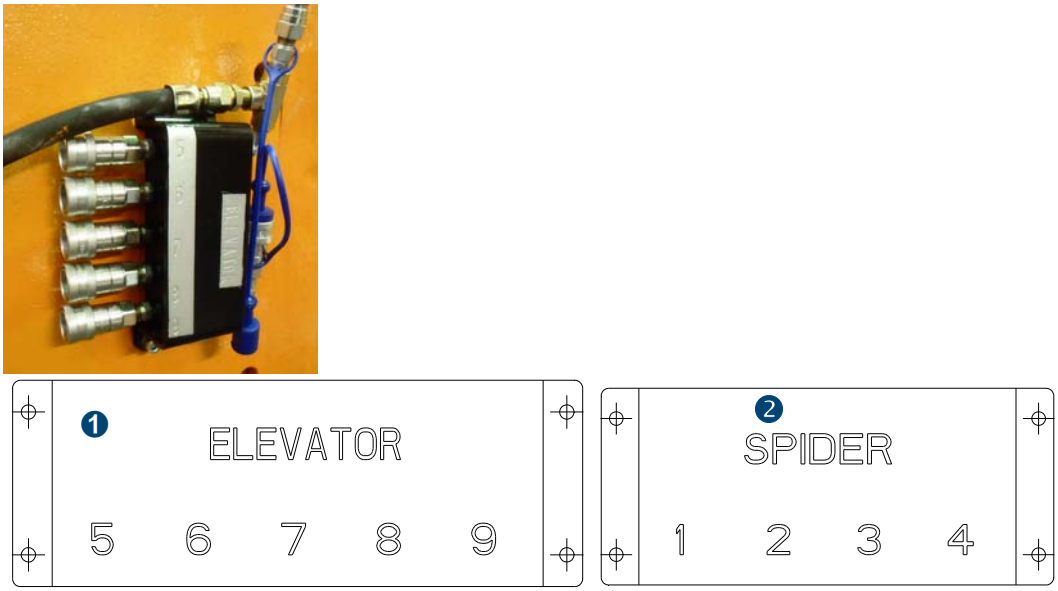

Figure 21 Feedback signal adjustment

❶ Connection manifold elevator ❷ Connection manifold spider

A detailed description of the control unit connection must be found in the manual of the control unit. (Third party document)

After the BVES 500 has been connected, the break should be moved into middle position and secured with the lock-fork.
In this way it is easy to recognise that the BVES is used in remote modus.

Figure 22 **B**reak handle and fork position during remote operation

ATTENTION!

SAFETY NOTE!
A hazard for personnel will be created and the equipment could be damaged!

Never use the BVES in remote operation without moving the break to the middle position and fixing be means of the lock- fork!

8 Drawings and parts list of components

8.1 752890 Pneumatic Remote control kit for Elevator

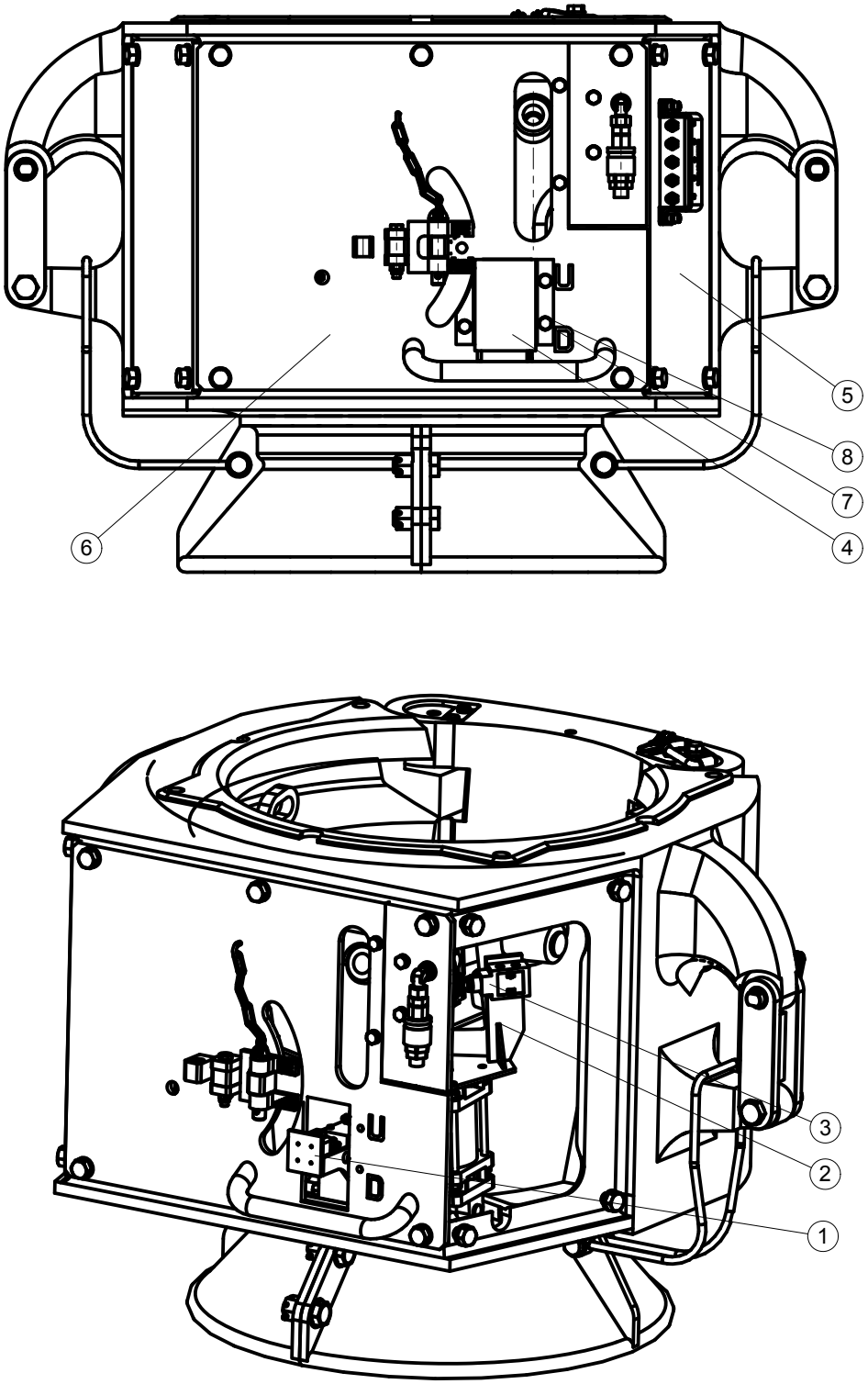

Figure 23 752890 Pneumatic Remote control kit for Elevator

Part List 752890 Pneumatic Remote control kit for Elevator

Pos	Qty.	P/N	Description
1	1	752830	Pneumatic assembly for remote control …
2	1	752850	Signal assembly for BVES 500 frame 2
3	1	752870	Pneumatic assembly for Remote control kit
4	1	752880	Cover assembly for pneumatic remote kit
5	1	752881	Side plate assembly for remote control
6	1	752125	Equipment for Remote Operation …
7	3	613823	Screw
8	3	613547	Lock Washer

8.2 752890 Pneumatic Remote control kit for Spider

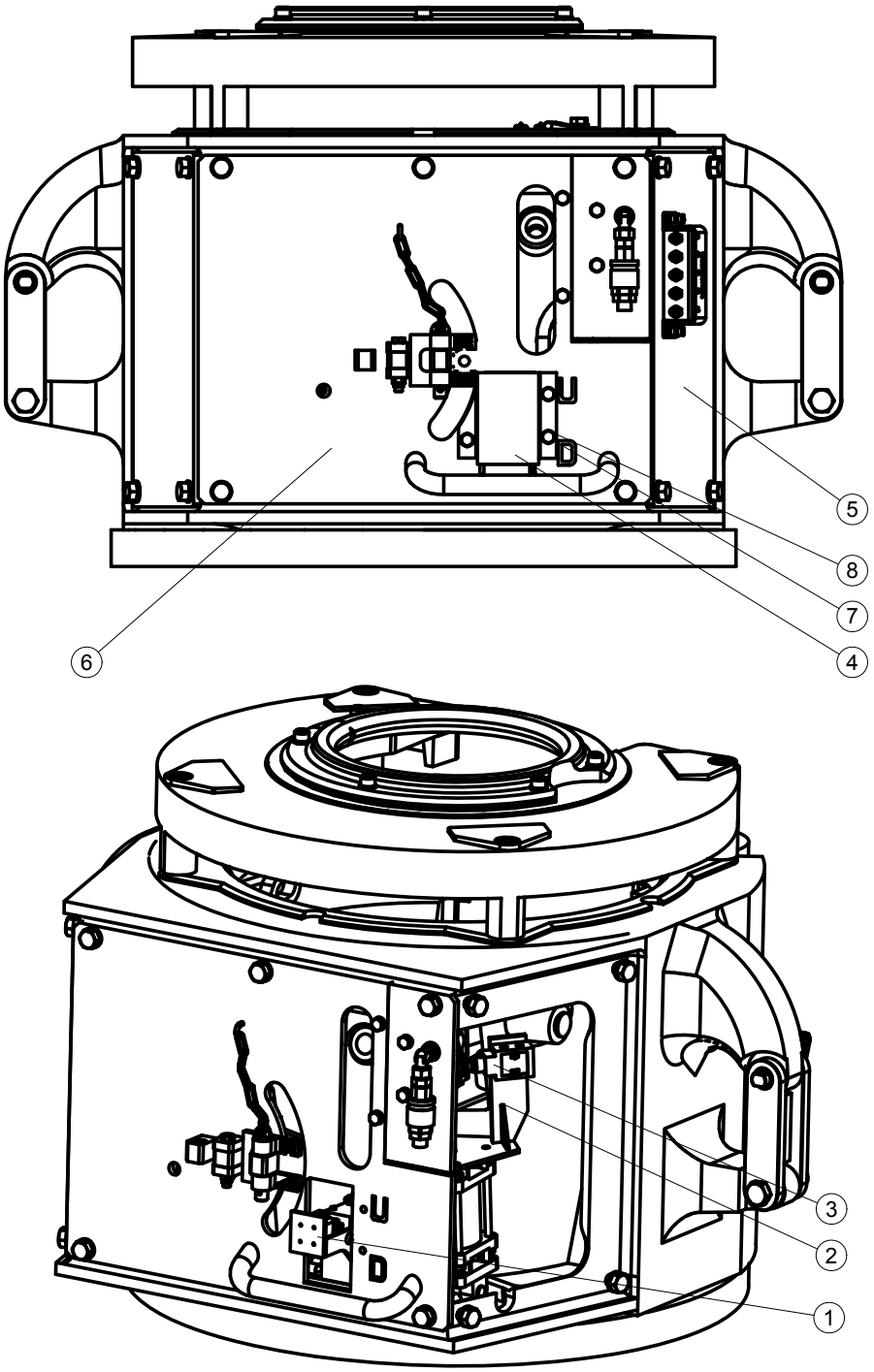

Figure 24 752890 Pneumatic Remote control kit for Spider

Part List 752890 Pneumatic Remote control kit for Spider

Pos	Qty.	P/N	Description
1	1	752830	Pneumatic assembly for remote control …
2	1	752850	Signal assembly for BVES 500 frame 2
3	1	752871	Pneumatic assembly for Remote control kit
4	1	752880	Cover assembly for pneumatic remote kit
5	1	752882	Side plate assembly for remote control
6	1	752125	Equipment for Remote Operation …
7	3	613823	Screw
8	3	613547	Lock Washer

8.3 752830 Remote control assembly

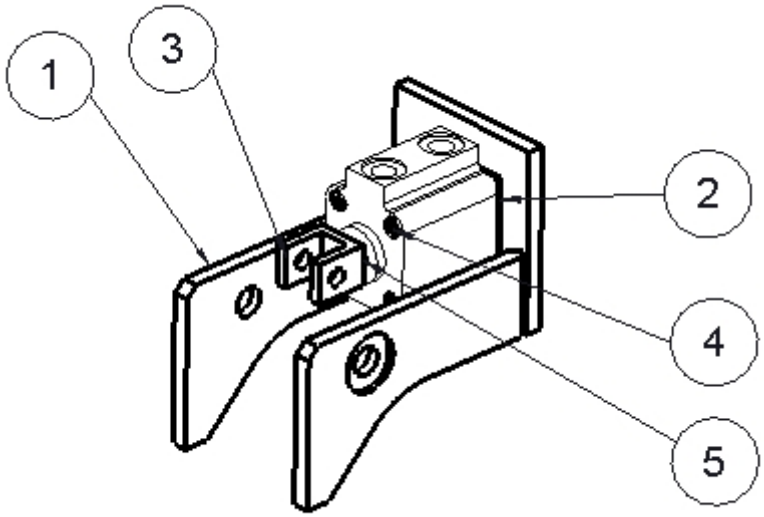

Figure 25 752830 Remote control assembly

Part List 752830 Remote control assembly

Pos	Qty.	P/N	Description
1	1	752839	Valve holder
2	1	752844	Spacer
3	1	752843	Bracket
4	4	752838	Screw
5	1	752843-2	Nut

8.4 753350 Feedback assembly

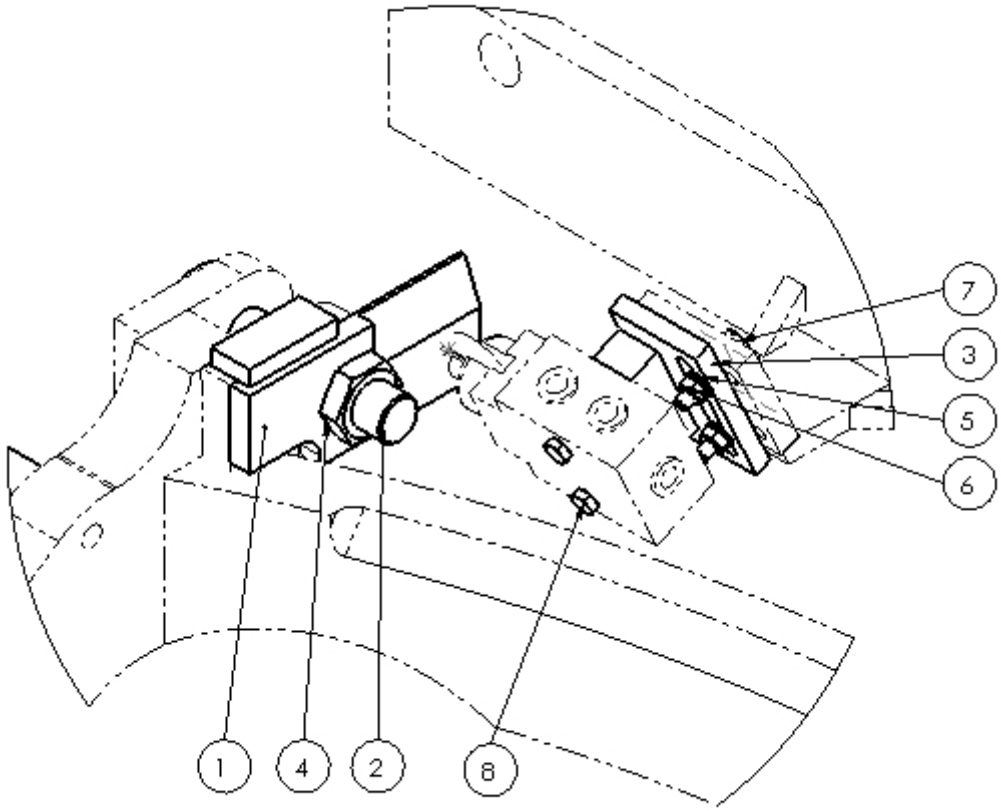

Figure 26 753350 Feedback assembly

Part List 753350 Feedback assembly

Pos	Qty.	P/N	Description
1	1	753351	Signal plate
2	1	753352	Fitting screw
3	1	753353	Valve mounting
4	1	752137-2	Nut
5	2	755248	Washer
6	2	755251	Nut
7	2	617548	Screw
8	2	726009	Screw

8.5 753380 Cover plate assembly

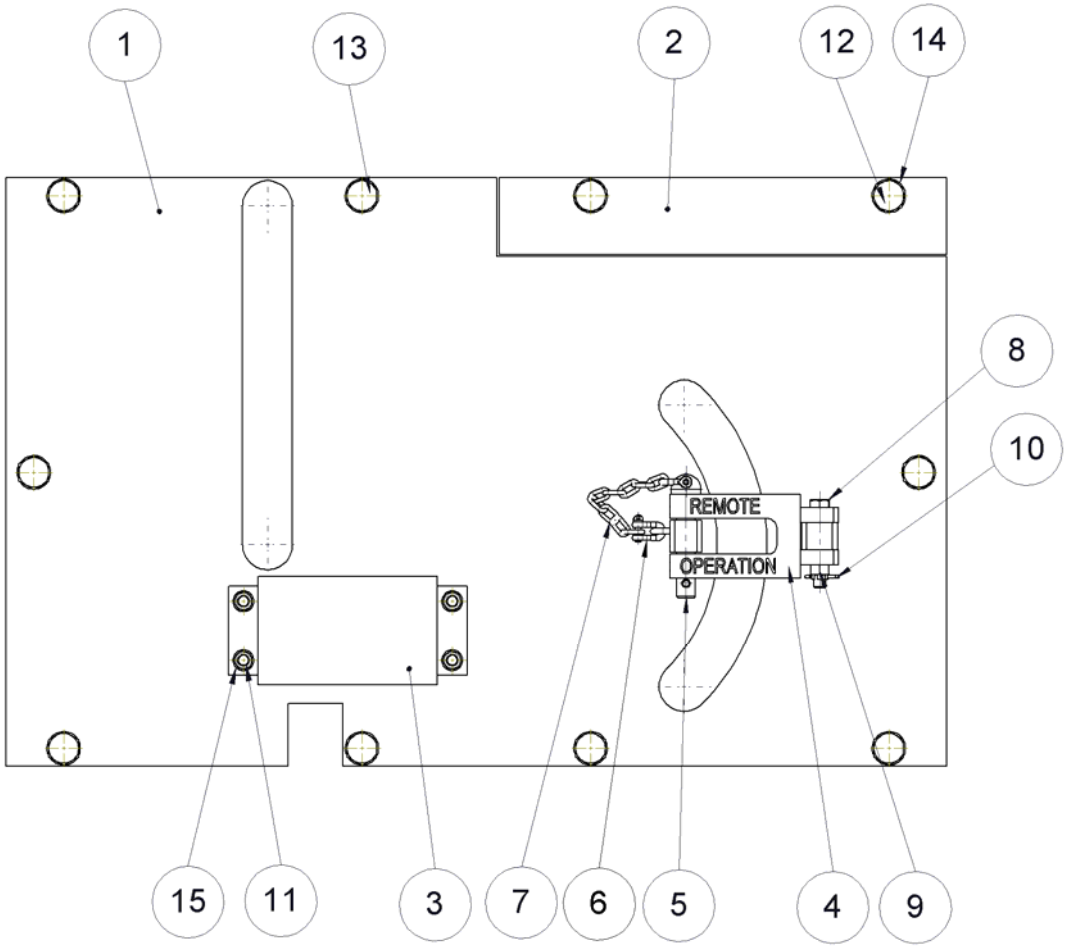

Figure 27 753380 Cover plate assembly

Part List 753380 Cover plate assembly

Pos	Qty.	P/N	Description
1	1	753381	Back plate assembly
2	1	753382	Holder for Feedback assy.
3	1	753384	Cover
4	1	753016-3	Fixing for Brake assy.
5	1	645176	Locking pin
6	2	645037-1	Shackle
7	1	660414-4	Chain
8	1	752311	Screw
9	1	650218-2	Castle nut
10	1	80340-1	Cotter pin
11	4	641596	Screw
12	2	753385	Bolt
13	8	753018	Screw
14	10	752327	Spring lock washer
15	4	613547	Spring lock washer

8.6 753373 Side back plate assembly for Elevator

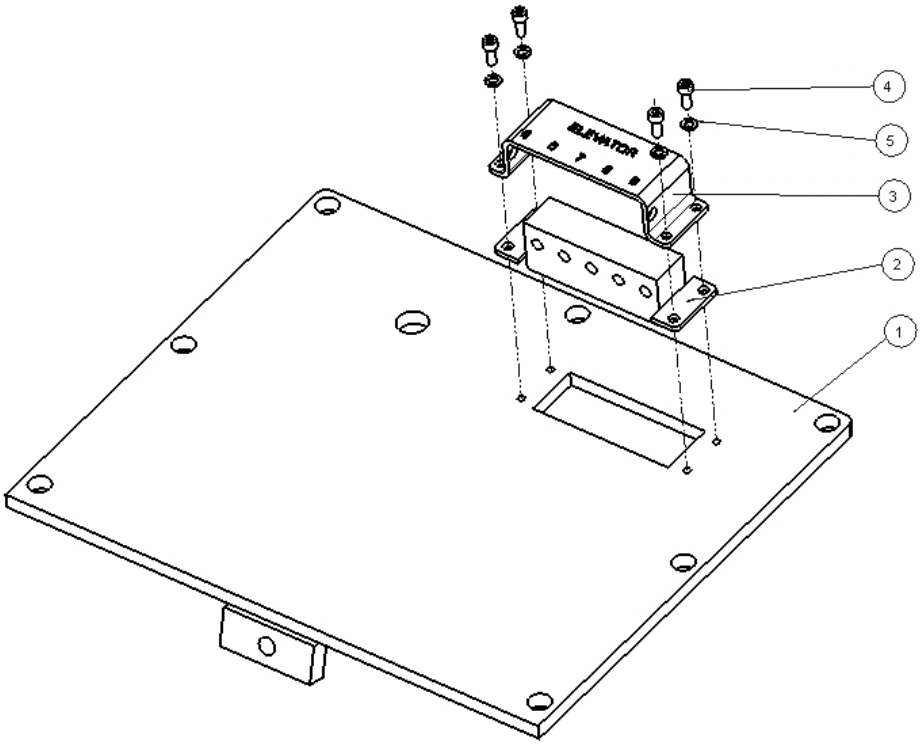

Figure 28 753373 Side back plate assembly for Elevator

Part List 753373 Side back plate assembly for Elevator

Pos	Qty.	P/N	Description
1	1	753017-2	Side back plate right
2	1	753387	Manifold block
3	1	753372	Housing connector
4	4	645685	Lock washer
5	4	613640	Cap screw

8.7 753378 Side back plate assembly for Spider

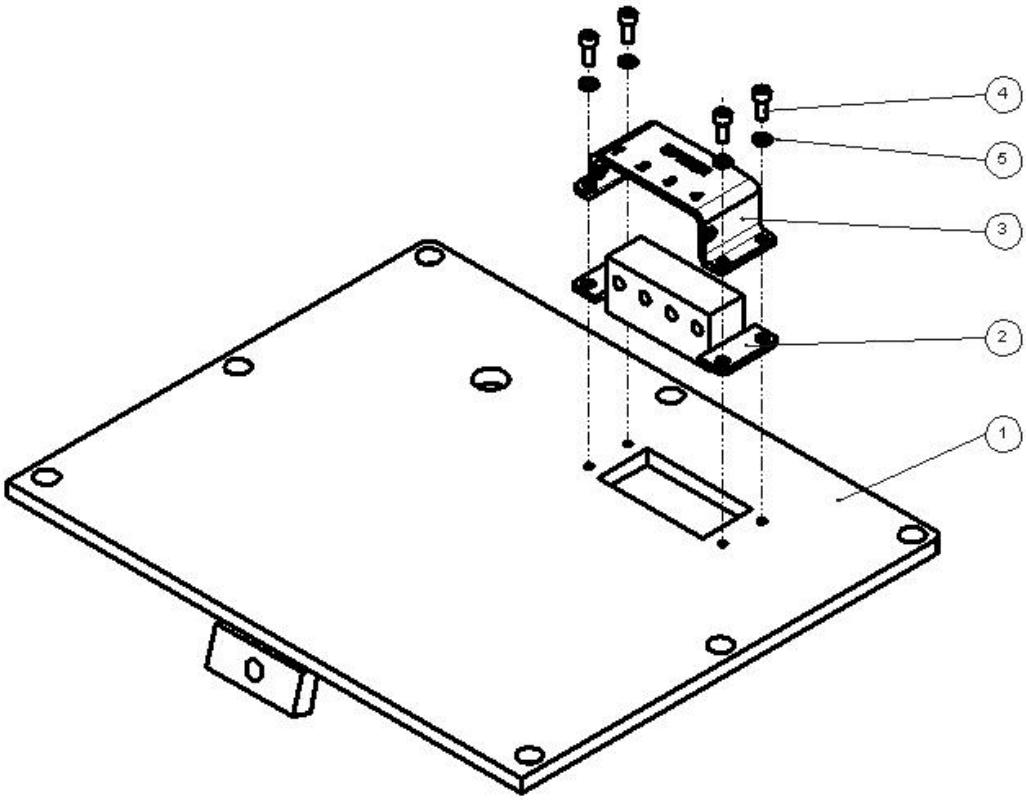

Figure 29 **753378 Side back plate assembly for Spider**

Part List 753378 Side back plate assembly for Spider

Pos	Qty.	P/N	Description
1	1	753017-3	Side back plate right
2	1	753393	Manifold block
3	1	753377	Housing connector
4	4	645685	Lock washer
5	4	613640	Cap screw

8.8 753371 Pneumatic assembly for Elevator

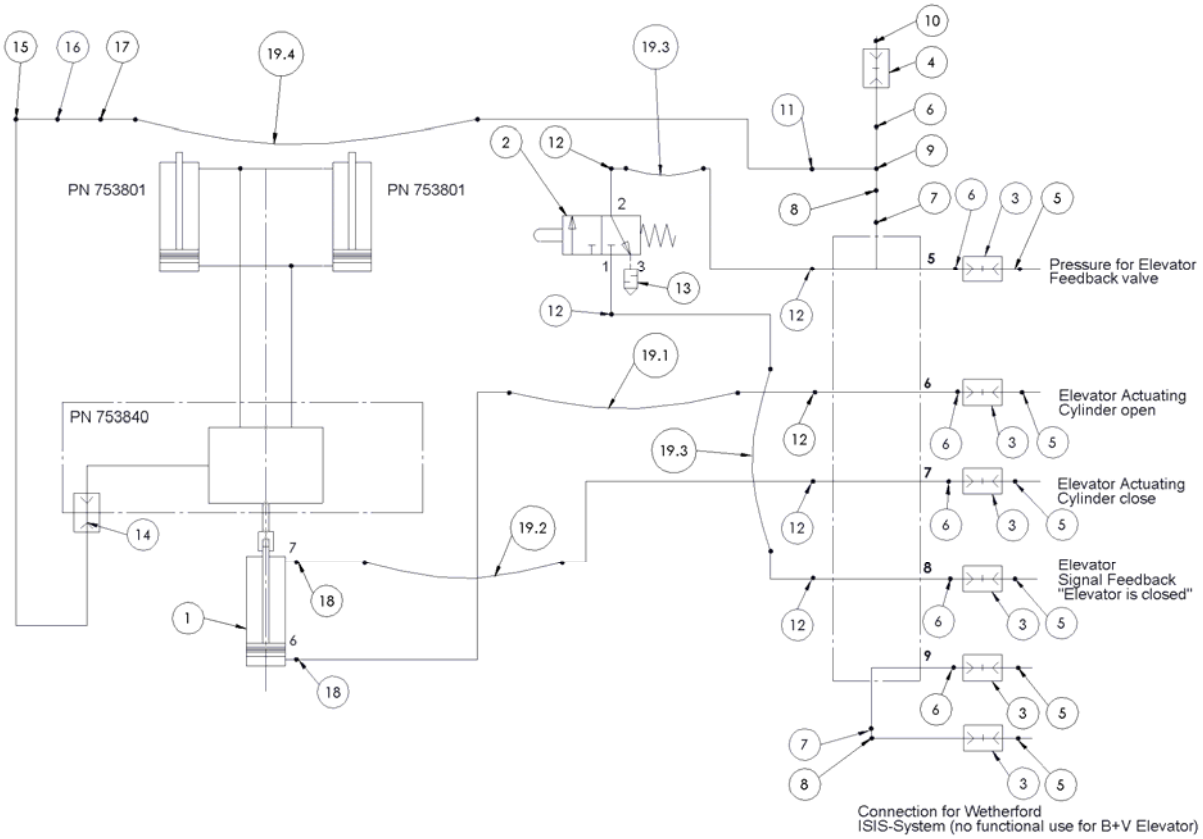

Figure 30 753371 Pneumatic assembly for Elevator

Part List 753371 Pneumatic assembly for Elevator

Pos	Qty.	P/N	Description
1	1	752840	Pneumatic cylinder
2	1	612660	3/2-Way-Valve II
3	6	646311	Quick Disconnection 1/4" Female;
4	1	646312	Quick Disconnection 1/4" Male
5	6	646311-1	Protection plug
6	6	753374	Adapter
7	2	613946	straight connection
8	2	753379	Adjustable stud elbow
9	1	753386	T-Connection
10	1	646312-1	Protection cap
11	1	612984	Adapter NPT-JIC;DN 10, 3/8"NPT - 9/16-18
12	6	612944	Straight Connection 8L-1/4"
13	1	612661	Absorber II
14	1	752827	Clutch-Coupling
15	1	752808	90 degree Street Elbow
16	1	752829	Adapter
17	1	612059	Straight Coupling
18	2	775094-2	90 degree Fitting
19	1	753391	Set hose assemblies for BVE 500-2;pneumatic

8.9 753376 Pneumatic assembly for Spider

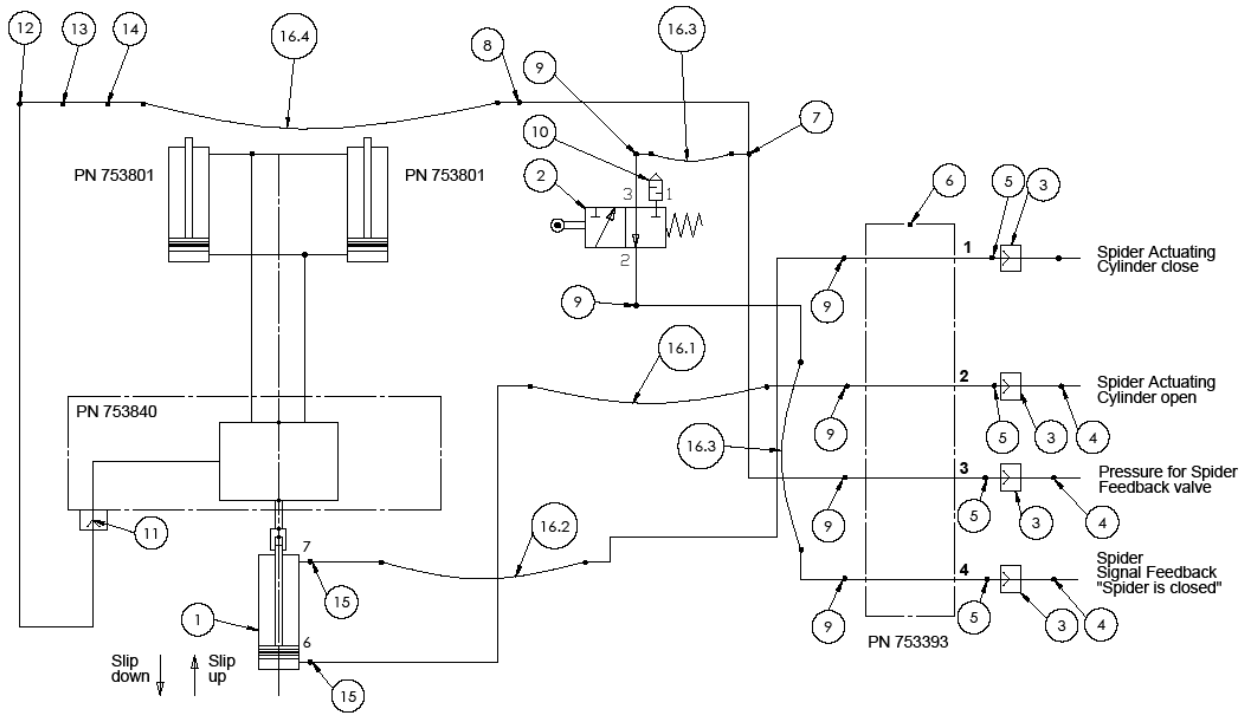

Figure 31 **753376 Pneumatic assembly for Spider**

Part List 753376 Pneumatic assembly for Spider

Pos	Qty.	P/N	Description
1	1	752840	Pneumatic cylinder
2	1	612660	3/2-Way-Valve II
3	4	646311	Quick Disconnection 1/4" Female;
4	1	646312	Quick Disconnection 1/4" Male
5	4	646311-1	Protection plug
6	5	753374	Adapter
7	1	613946	straight connection
8	1	753379	Adjustable stud elbow
9	1	753386	T-Connection
10	1	646312-1	Protection cap
11	1	612984	Adapter NPT-JIC;DN 10, 3/8"NPT - 9/16-18
12	6	612944	Straight Connection 8L-1/4"
13	1	612661	Absorber II
14	1	752827	Clutch-Coupling
15	1	752808	90 degree Street Elbow
16	1	752829	Adapter
17	1	612059	Straight Coupling
18	2	775094-2	90 degree Fitting
19	1	753391	Set hose assemblies for BVE 500-2;pneumatic

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Revision History

Rev.:	Chapter	Description	Date
01	All	Initial Release	21.,02.2012 ROK
02	All	Update	02.05.2014 ROK,MH