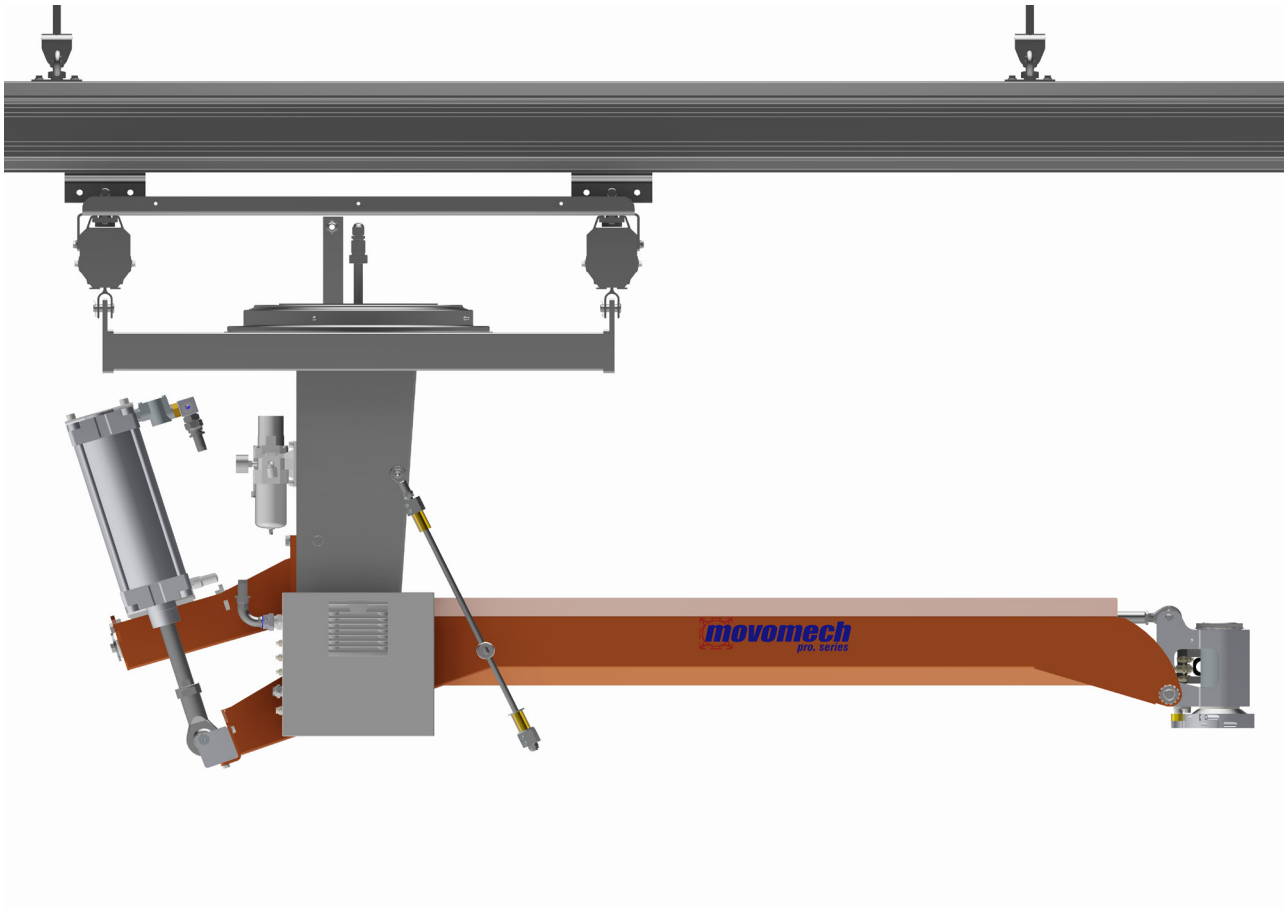


Mechspace Pro

150

Original instructions EN
2016-01-01 CE



LIFT-O-FLEX

MOBI-Crane  Voyager

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Although the greatest care was taken regarding the information in this catalogue, we assume no responsibility for any errors. We reserve the right to make changes.

The illustrations in the catalogue represent the described products, but the delivered goods may differ in some respects from the illustrations.

The right is reserved to make changes in design and dimensions compared with the information in the catalogue in order not to prevent development of designs, material and manufacturing methods.

The customer is reminded that in the purchase of Movomech's products for application on the job or elsewhere, there is supplementary, current information that could not be included in the catalogue in terms of recommendations on each product's suitability regarding different combinations of Movomech's comprehensive product line.

All relevant information must be provided to the persons who are responsible for the application of the product.

1. Safety

Movomech's equipment is manufactured in accordance with the latest technological advances, and according to the latest applicable European standards and directions. The aim of this documentation is to provide the user with practical instructions for safe operation and simple maintenance of the equipment.

Anyone who deals with the installation of the equipment (including related equipment), operational procedure, use, maintenance, and/or repair functions must have read and understood:

- the instruction manual,
- the safety regulations, and
- the safety instructions for each individual section.

In order to avoid misuse and to ensure the reliable operation of the products, we recommend that the instruction manual is always available to the user/operator.

Intended usage

The equipment is intended exclusively for transportation, lifting and lowering of load. Any other use, including the towing of a load and the transportation of passengers, is prohibited (see below for more examples). Movomech does not accept responsibility for damage caused by such use. All risks are the sole responsibility of the user.

The equipment may only be used in perfect technical condition by trained staff, and in accordance with current safety and work protection regulations. Furthermore, the user must observe operational and maintenance conditions contained in the instruction manual. Severe personal injury and damage to equipment can be caused by:

- removal of covers and casings,
- non-professional installation of equipment,
- incorrect usage, or
- insufficient maintenance.

Prohibited usage

Certain types of activities and operations are prohibited, as in specific circumstances they can cause personal injury as well as permanent damage to the construction. For example:

- It is prohibited to convey passengers using the equipment.
- Never transport suspended loads above anyone's head.
- Never drop a suspended load, and make sure it is lifted in a straight line.
- Never loosen secured or fastened loads by using the equipment.
- Do not overload.
- Do not leave a suspended load unattended.

General safety aspects

The instruction manual should always be kept within easy reach of the equipment. It contains important safety information and sections that relate to guidelines, norms, and regulations. Failure to follow the safety regulations in this instruction manual may result in personal injury or death.

In addition to the instruction manual, generally applicable regulations and rules must be followed and adhered to in order to avoid accidents and protect the environment. This also applies to regulations relating to the handling of products dangerous to the environment and the use of personal safety equipment.

As regards all work associated directly or indirectly with the equipment, the user must follow and adhere to all the above regulations as well as current work protection and safety regulations. In spite of this, a life-threatening risk still prevails in cases where the equipment is used and operated by non-trained or non-instructed staff in a non-professional or non-intended way.

The user should supplement the instruction manual with instructions that consider the nature of the operation, e.g. company organisation, work procedures, and number of staff.

The members of staff who are assigned to work with the equipment must have read the instruction manual prior to undertaking any work, and he/she should pay particular attention to the chapters containing safety instructions. It is too late once work has commenced. This applies in particular to members of staff who are working with the equipment on a temporary basis, e.g. for maintenance purposes.

When convenient, the staff should be tested on their knowledge of the manual's contents that relate to safety and accident awareness.

The user is responsible for ensuring that the equipment is used only when it is in perfect condition and that all applicable and relevant safety regulations and requirements are followed.

The equipment should be taken out of operation immediately if functional damage or defects are discovered.

Personal safety equipment should be used as and when necessary, or when required by regulations.

Safety and warning devices, such as signs, stickers and labels must not be removed or made illegible.

All safety and warning devices on or adjacent to the equipment should be complete and maintained in a legible/functional condition.

All changes, extensions or reconstruction that may affect safety are forbidden without written permission from Movomech. This also applies to assembly and adjustment of safety equipment and welding of structural parts.

Spare parts must comply with Movomech's stated technical requirements. This compliance is guaranteed when original spare parts are used. The intervals prescribed or stated in the instruction manual for regular testing/inspection must be adhered to!

Staff selection and qualifications

Reliable staff must carry out work with/on the equipment. Regulations that apply to under-age persons must be followed.

The user is responsible for supplying necessary training and instructions to those that he/she employs, including professionals and/or apprentices.

It is recommended that the user draws up instructions and guidelines relating to the causes of errors, communicates these to the relevant staff, and posts directions on appropriate and clearly visible places.

It is recommended that the user makes sure that the knowledge of the staff is adequate as regards the following points, prior to the operation of the construction:

- knowledge of the contents of the instruction manual,
- knowledge of the safety and user regulations contained therein,
- and knowledge of applicable work protection regulations.

Only trained and instructed staff should be permitted to work with the equipment. Parameters relating to use, maintenance, and installation should be clarified.

Safety instructions for usage

The only persons allowed to work on the electrical equipment are competent staff members who work in accordance with regulations and standards for high-voltage equipment.

No persons under the influence of drugs, alcohol or medication which affects their ability to react, are allowed to use, maintain, or repair the construction.

All stated actions and instructions relating to work protection and issues relating to general safety and protection of workers that should be carried out or studied prior to, during or following operation must be followed to the letter. Failure to do so may result in fatal accidents.

The equipment should be stopped or taken out of operation at the time of detection of faults relating to work protection and operational accessibility.

Safety equipment must not be deactivated, altered or used in a way that conflicts with applicable regulations.

Appropriate actions must be taken to ensure safe operation and functional conditions for the user.

The equipment should only be used when all protective and safety equipment, such as detachable guards and emergency stop devices, are in place and in working order.

Any type of modification and alteration of the equipment is prohibited. However, this does not apply to lesser changes that do not affect the strength, operational safety or work protection, or to actions which promote an increased level of safety.

The fundamental responsibility for these changes lies with the user. If in doubt, contact Movomech for written approval of the actions prior to implementation.

The equipment should be stopped and locked immediately when functional faults occur. Faults should be corrected immediately!

Following an "emergency stop" the user has to wait for the cause of the disruption to be repaired and for an assurance that there is no further danger before he/she reconnects the equipment and resumes operation.

The equipment should be disconnected immediately in the following cases:

- when electrical equipment, cables and/or insulation material is damaged, or
- when work protection equipment is damaged.

Specific local circumstances or applications may lead to situations that were unknown at the time of writing this document. In such cases, the user must ensure safe operation and disconnect the equipment until measures to maintain safe operation have been carried out in conjunction with Movomech or other authorised party.

Ensure that no one can become injured when they use the equipment prior to connecting/activating the equipment.

If the user notices the presence of persons who may become injured during operation, the operation should be discontinued immediately and must not be resumed until these persons have left the dangerous area.

The user must make sure that the equipment is in a perfect and operationally safe condition prior to all operations using the equipment.

The user should carry out all prescribed safety measures and make sure that automated procedures are completed when the equipment is disconnected (e.g. when there are deficiencies as regards operational and personal safety, an emergency situation exists, repair or maintenance is being carried out, damage is noticed or at the completion of work).

Work with the equipment is only allowed when the operator has been instructed to do so by his superior, and if the operator has knowledge of the equipment and its function.



2. Technical data

Flexible and ergonomic

Mechspace Pro 150 is pneumatic moment absorbing lifter that is easy to manoeuvre and provides ergonomic freedom of movement within a large working area.

Mechspace Pro 150 is the natural choice where the working reach is of high importance, as for example when the operator is working under a protruding roof, inside a vehicle or in a working area with restricted accessibility.

The moment absorbing features gives important advantages for complex material handling operations, and for gripping and rotation of eccentric loads.

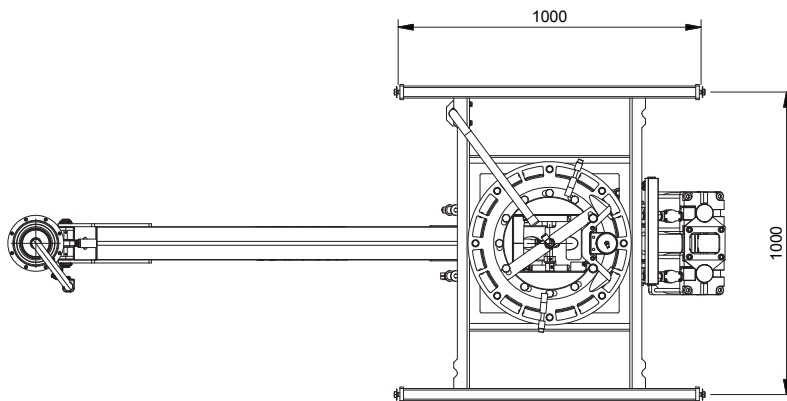
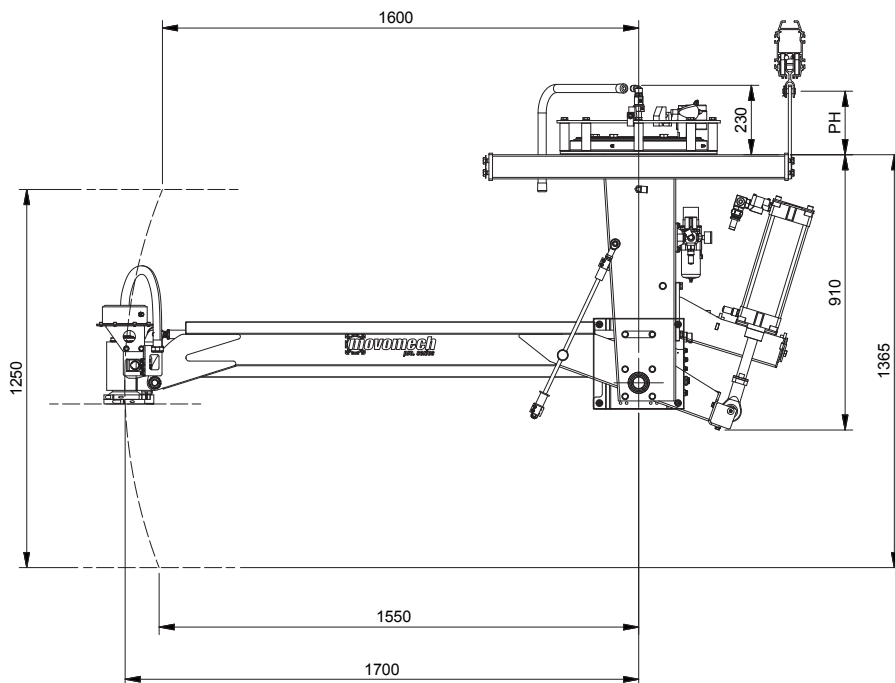
Several pneumatic versions and options

Mechlift Pro 150 can be pilot controlled for handling various loads, or be equipped with a balancing function for one or more loads up to 150 kg. It can be fitted with standardised or customized grippers, and with accessories such as rotation units, brake units and tooling fixtures.

Many application areas

Typical application areas for Mechspace Pro 150 are handling of various types of automotive parts such as vehicle doors, sunroofs, seats, windshields, hoods, etc.

2.1 Overview



Technical data		Mechspace Pro 150
Max load	kg	150 ¹
Max moment	Nm	1500
Max tare weight	kg	200
Stroke SL	mm	1250
Top rotation	°	0-310/360 ²
Adapter rotation	°	0-330/360 ²
Lifting speed	m/min	0-20
Width c/c	mm	1000
Standard colour	RAL	2009 (orange)

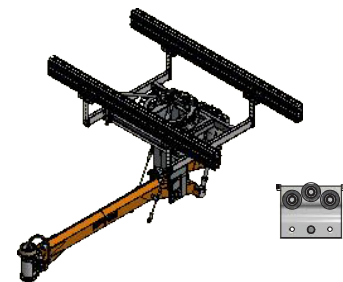
¹ See section 2.2

² By removing rotation stops

Media & Environment		Mechspace Pro 150
Medium		air, non-lubricated (40 µm) ¹
Work pressure	bar	5,5-7
Air consumption	l _v /stroke	16 (at 6 bar) ⁴
Work temperature	°C	5-40 (indoor use)
Noise level	dB (A)	<70

³ To Mechspace Pro: 0,3 µm, FRL unit is included

⁴ At max load

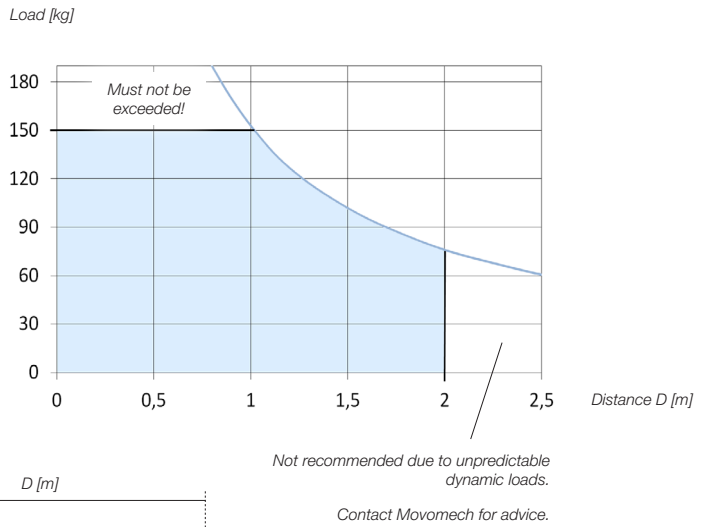
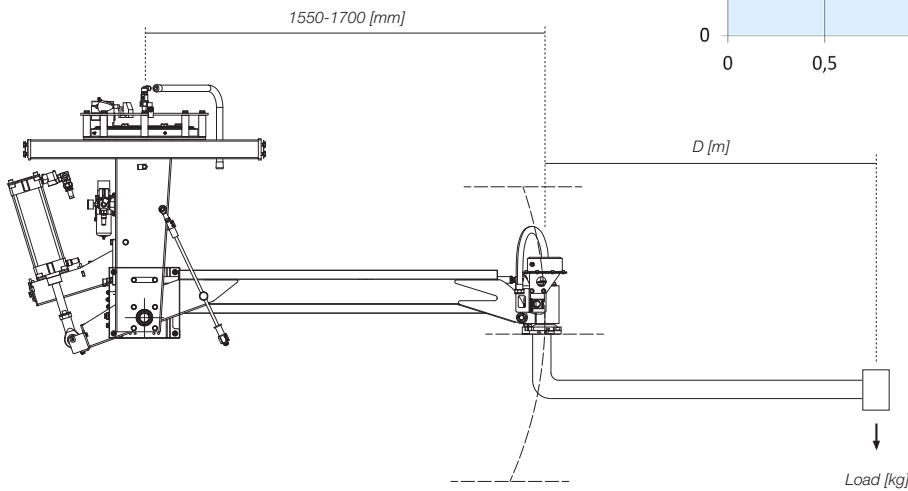


- Trolleys with minimized play is recommended.

2.2 Load diagram

Mechspace Pro 150/150P can operate with loads within the shaded diagram area.

Max torque at tool adapter is 1500 Nm. Max load at the tool adapter is a total of 150 kg (includes tool arm, gripper tool, handled object, etc).



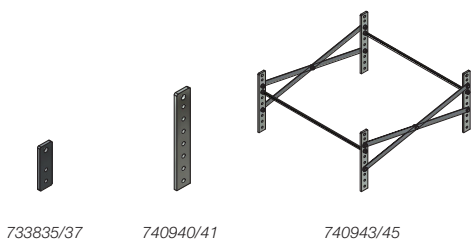
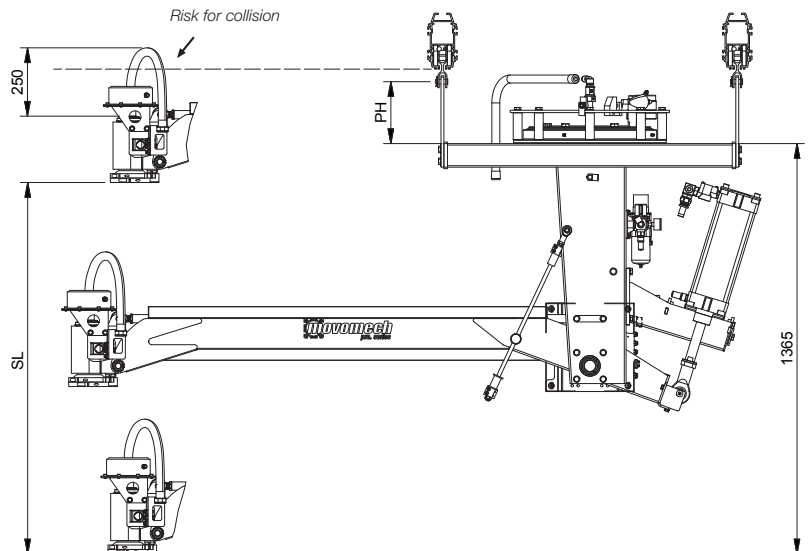
Work pressure	4 bar	5 bar	6 bar	7 bar
Max load kg	100	150	150	150

2.3 Lowering for front brake

When Mechspace Pro 150 is equipped with a front brake, the lifter must be lowered in order to avoid collision with the crane when utilizing a full stroke.

The table below gives the recommended suspension height PH as a function of the stroke SL.

Stroke SL	Height PH	Art. Nr.
0-1000 mm	50	733835/37
0-1040 mm	90	740940/41
0-1080 mm	130	740940/41
0-1120 mm	170	740940/41
0-1160 mm	210	740940/41
0-1200 mm	250	740943/45
0-1240 mm	290	740943/45
0-1250 mm	310	740943/45

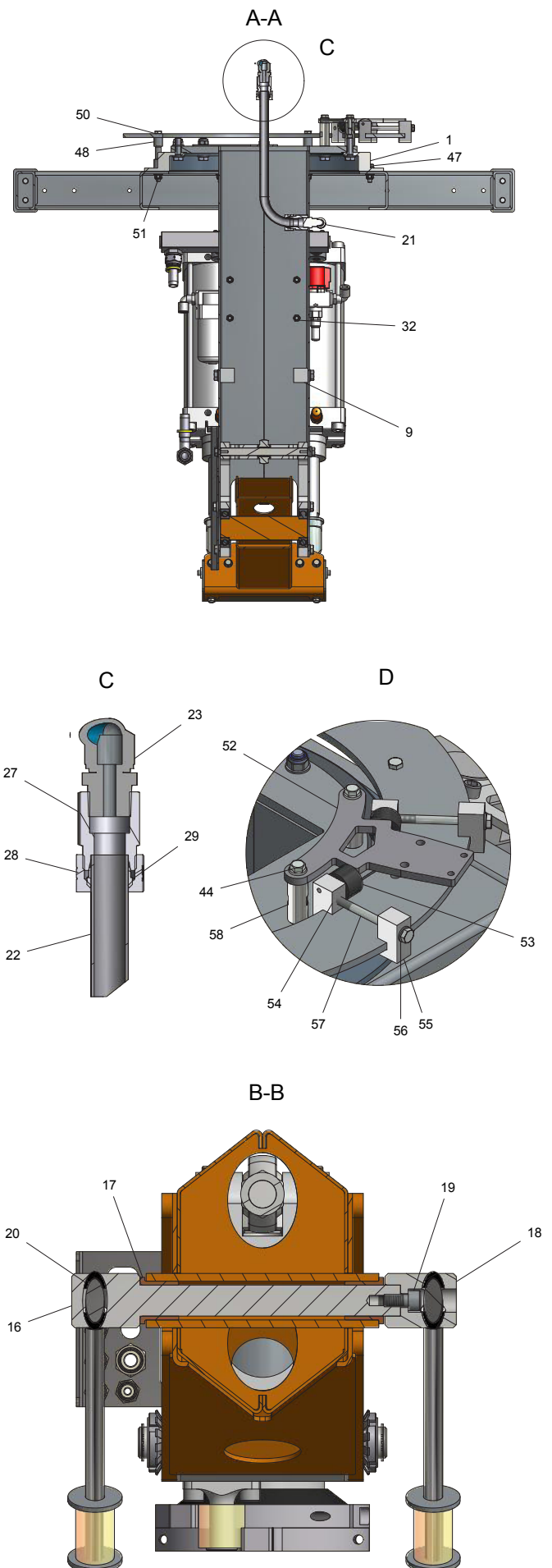


Suspension	733835	733837	740940	740941	740943	740945
Height PH mm	50	50	90-210	90-210	250-370	250-370
ØA mm	16,5	20,5	16,5	20,5	16,5	20,5
Fits trolley	AHB1.1-2	AHB3	AHB1.1-2	AHB3	AHB1.1-2	AHB3
Total weight kg	2,4	2,4	4,4	4,4	11	11

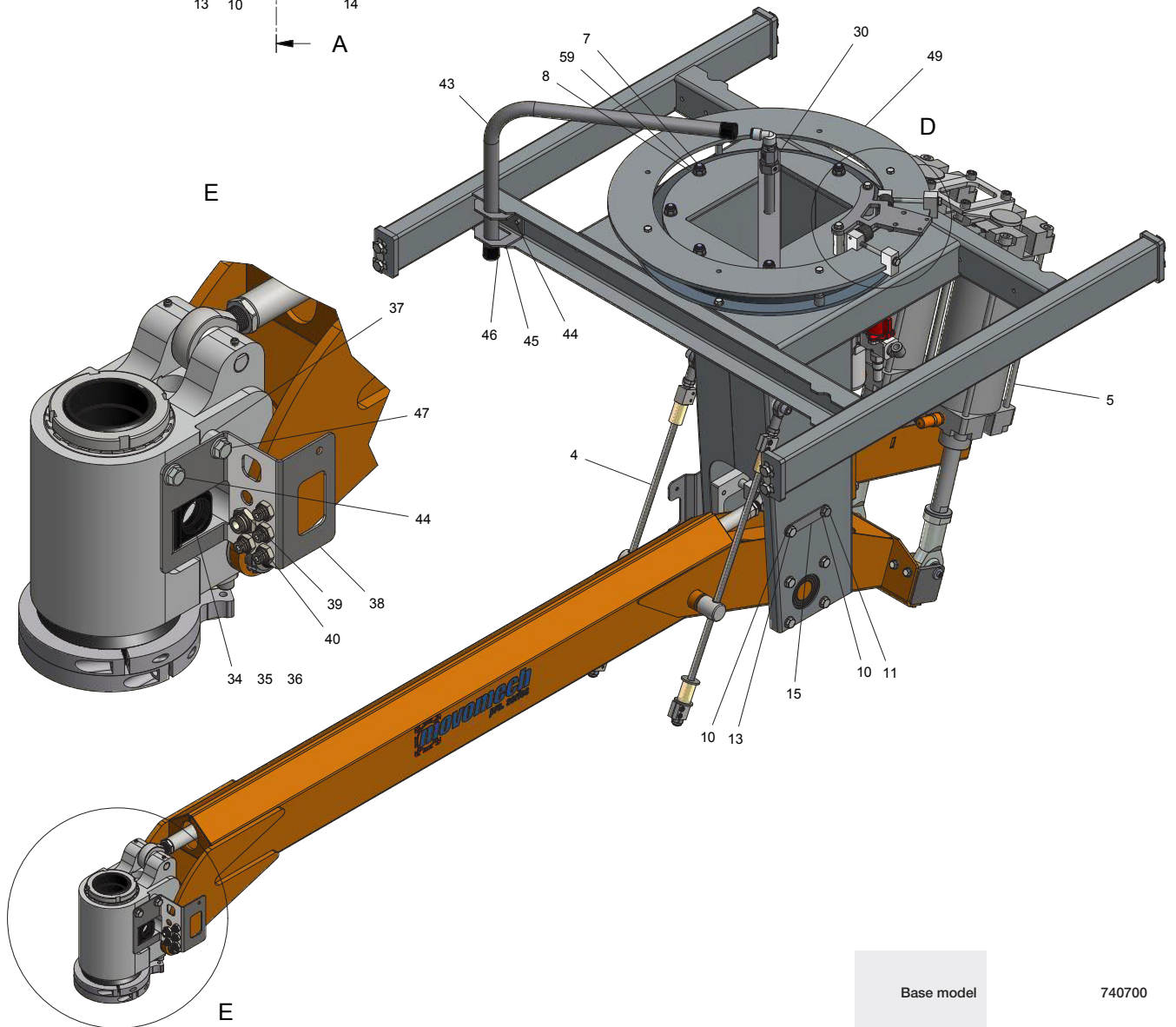
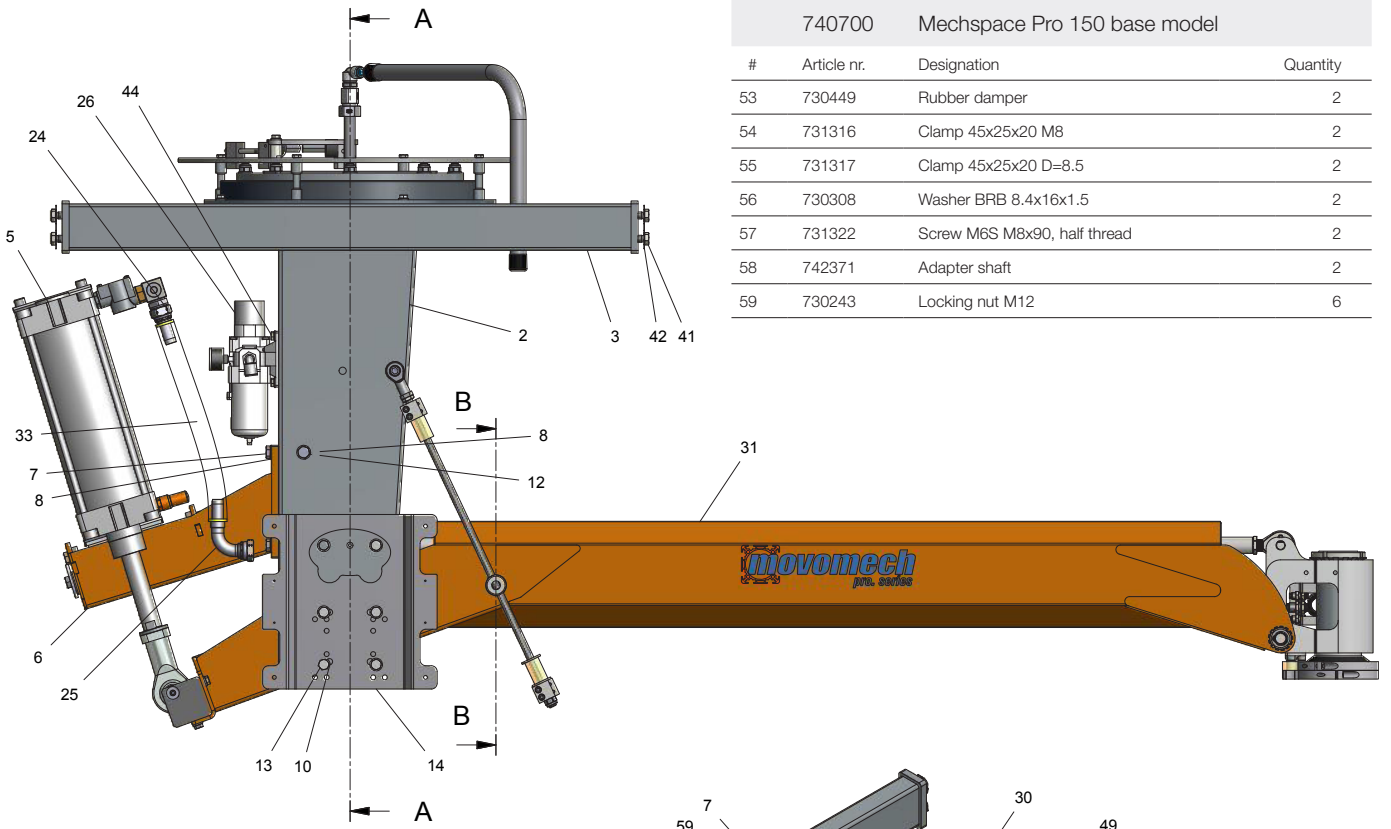
3. Sub-assemblies

3.1 Cross units

#	Article nr.	Designation	Quantity
740700 Mechspace Pro 150 base model			
1	741895	Swivel ring	1
2	742398	Main body assembly	1
3	731346	Cross unit, steel c/c 1000	1
4	740764	Stroke limiter	2
5	740737	Cylinder unit	1
6	740770	Bracket	1
7	730227	Screw M6S M12x40, full thread	12
8	730244	Washer BRB 13x24x2	18
9	740790	Nut plate	2
10	730549	Washer BRB 10,5x22x2	12
11	733341	Screw M6S M10x40, full thread	2
12	730255	Screw M6S M12x30, full thread	2
13	731325	Screw M6S M10x25, full thread	10
14	740430	Bracket for cabinet	1
15	741389	Plate	1
16	740767	Axle	1
17	739097	Bushing with flange 20/25x25-30x3	2
18	740766	Sleeve	1
19	731800	Screw MC6S M8x16	1
20	739099	Bushing 12/16x10	4
21	741348	Push-in L-fitting Ø12	3
22	741700	Connection pipe	1
23	731636	Push-in L-fitting rotatable 1/2"-12	1
24	741385	Hydraulic connection 3/4" straight	1
25	741386	Hydraulic connection 3/4" elbow	1
26	741718	FRL unit (B) 1/2"	1
27	741719	Adapter 1/2"-Ø18	2
28	741720	Cutting ring nut Ø18	2
29	741721	Cutting ring Ø18	2
30	742370	Pipe support	1
31	740754	Manipulator arm assembly	1
32	730117	Locking nut M8	4
33	741388	Hydraulic hose 3/4" blue L=370	1
34	730963	Cable fitting M20	1
35	730249	Screw MC6S M6x12	1
36	730273	Locking nut M6	1
37	740743	Washer for front brake	1
38	740758	Bracket for pneumatics	1
39	739272	Push-in connector 8-8	1
40	739270	Push-in connector 4-4	4
41	731347	Screw M6S M12x25, full thread	8
42	736170	Securing plate	4
43	741885	Hose conduit	1
44	730219	Screw M6SZ M8x20	9
45	740980	Pipe bracket	1
46	740981	End seal for tube	2
47	736083	Screw M6SZ M8x30	5
48	741899	Distance sleeve 18/9	4
49	742750	Brake disc	1
50	731323	Screw M6S M8x100, half thread	4
51	741071	Nut M6MF M8 Nyloc	8
52	742753	Bracket for brake caliper	1



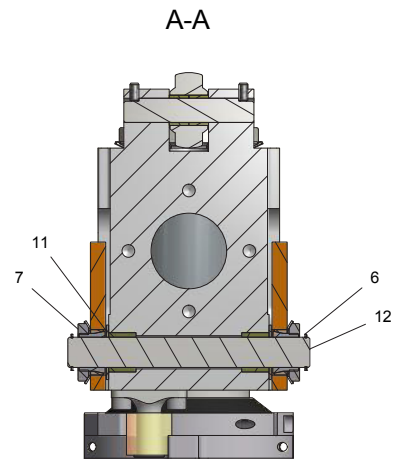
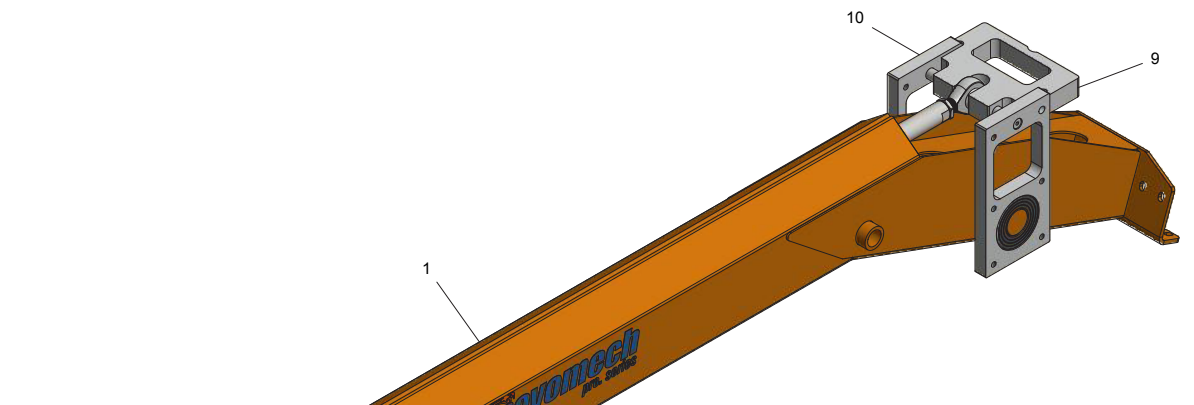
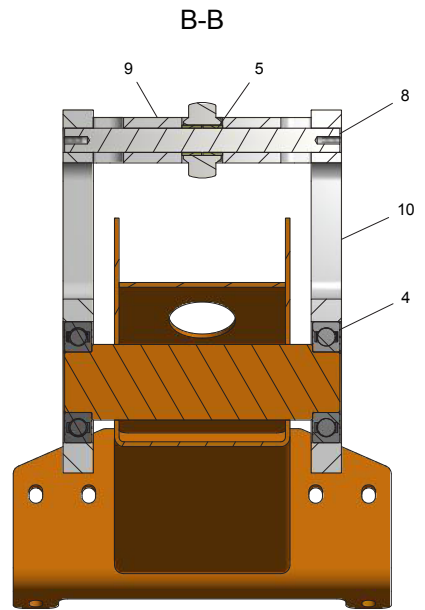
740700 Mechspace Pro 150 base model			
#	Article nr.	Designation	Quantity
53	730449	Rubber damper	2
54	731316	Clamp 45x25x20 M8	2
55	731317	Clamp 45x25x20 D=8.5	2
56	730308	Washer BRB 8.4x16x1.5	2
57	731322	Screw M6S M8x90, half thread	2
58	742371	Adapter shaft	2
59	730243	Locking nut M12	6



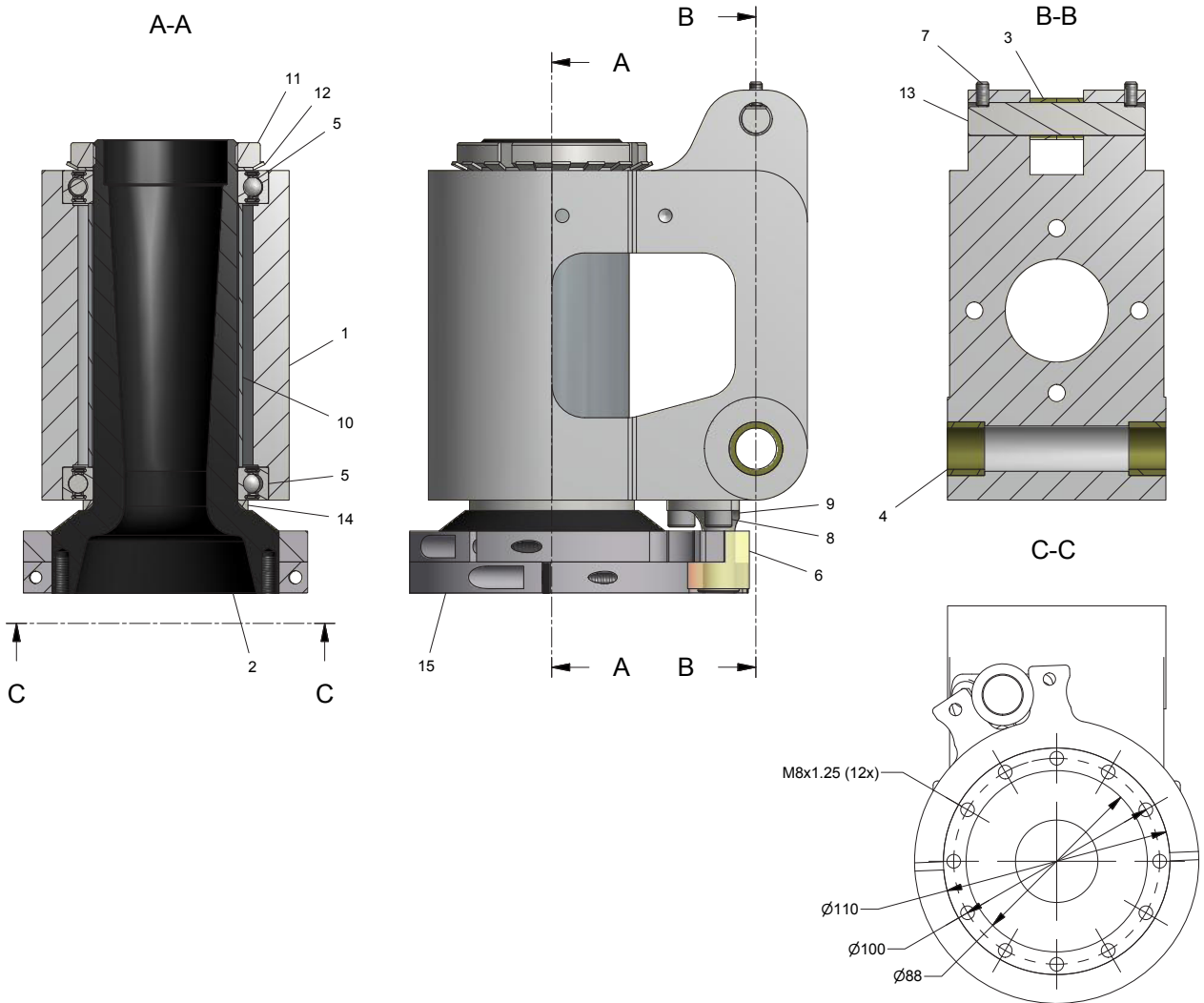
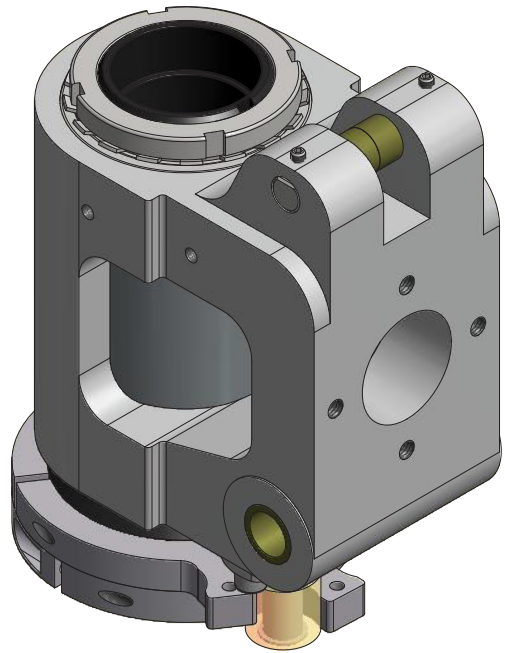
Base model	740700
Weight kg	155

R: spare part S: wear part

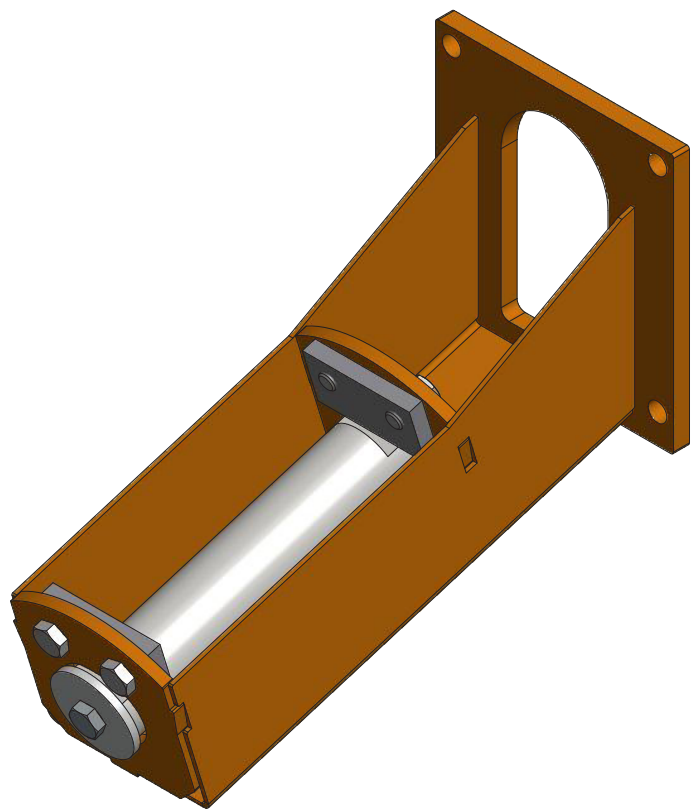
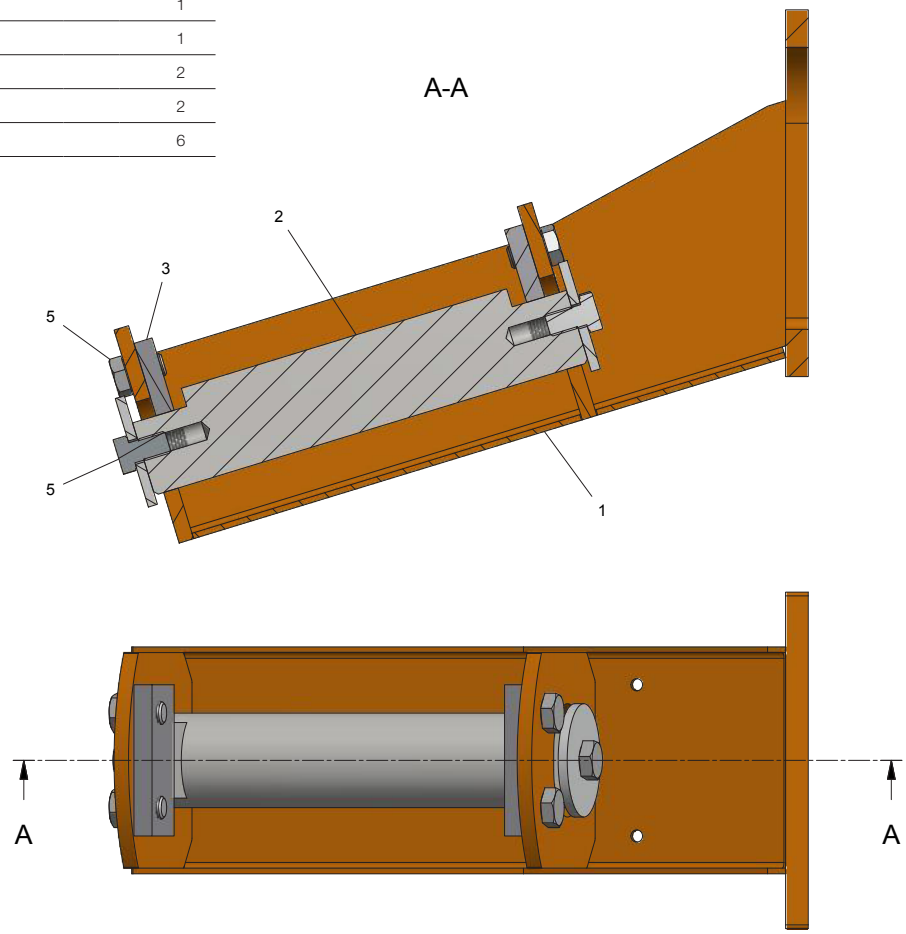
740754 Manipulator arm assembly			
#	Article nr.	Designation	Quantity
1	740787	Manipulator arm, painted	1
2	740744	Tool adapter	1
3	740782	Pull rod, L=1600	1
4	740760	Ball bearing	R 2
5	738962	Needle bearing	R 2
6	731649	Retaining ring Ø20	2
7	739067	Clamping element	2
8	740761	Shaft	1
9	740762	Bracket for pull rod	1
10	740763	Bearing plate	2
11	739071	Slide washer 20/36x1,5	2
12	741415	Shaft	1



740744 Tool adapter			
#	Article nr.	Designation	Quantity
1	740745	Housing	1
2	740746	Main shaft	1
3	738962	Needle bearing	R 2
4	739069	Needle bearing	R 2
5	740752	Ball bearing	R 2
6	739059	Rubber damper 30/16x28	S 1
7	739072	Screw MP6SS M6x12	2
8	730727	Screw MC6S M8x25	3
9	740748	Shaft for damper	1
10	740749	Sleeve	1
11	740750	Shaft nut KM 14	1
12	740751	Locking washer MB 14	1
13	739063	Shaft	1
14	740753	Spacer	1
15	740783	Rotation limiter (2 parts)	2

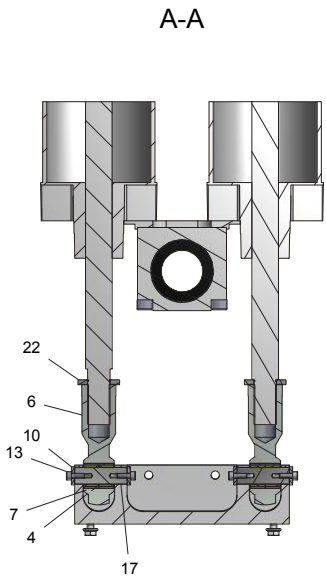
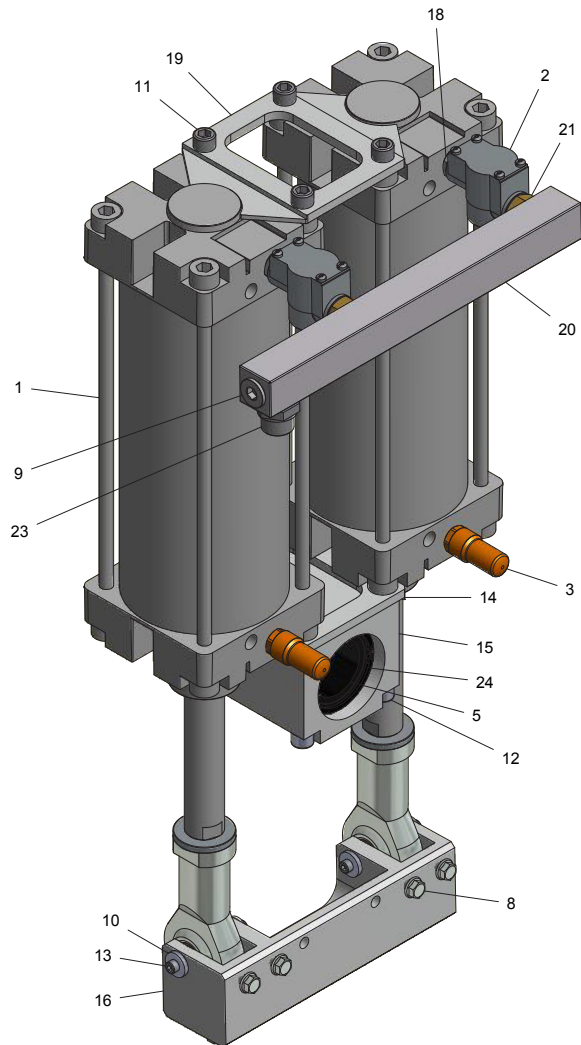
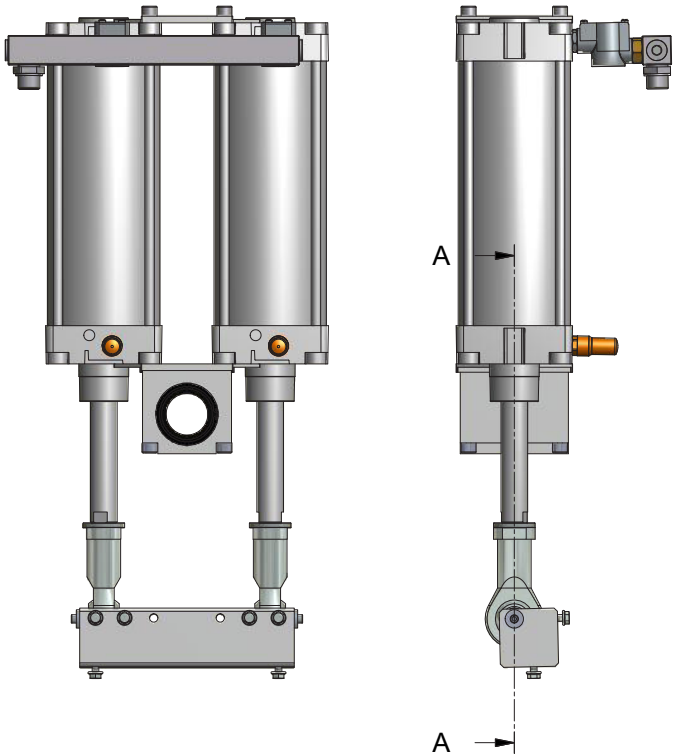


740770		Bracket	
#	Article nr.	Designation	Quantity
1	740789	Bracket, painted	1
2	740772	Shaft	1
3	740771	Plate	2
4	740773	Washer	2
5	730484	Screw M6S M12x20, full thread	6

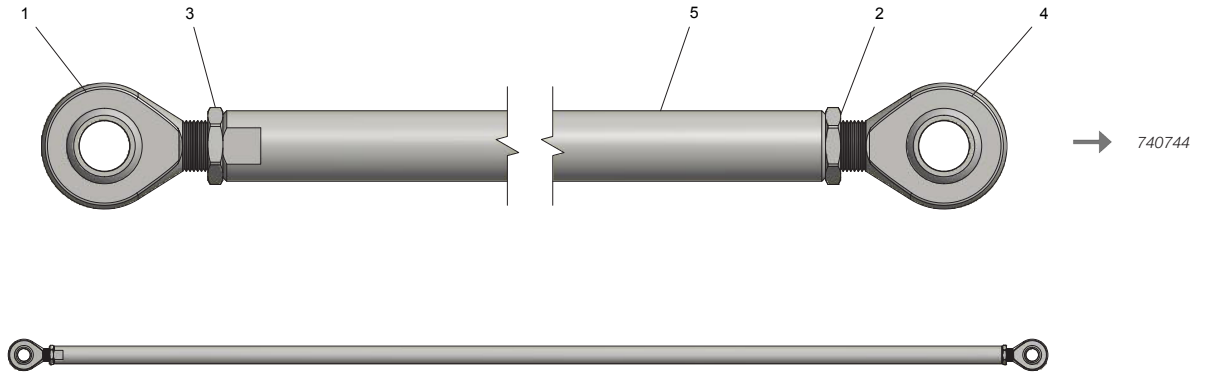


740737 Cylinder unit

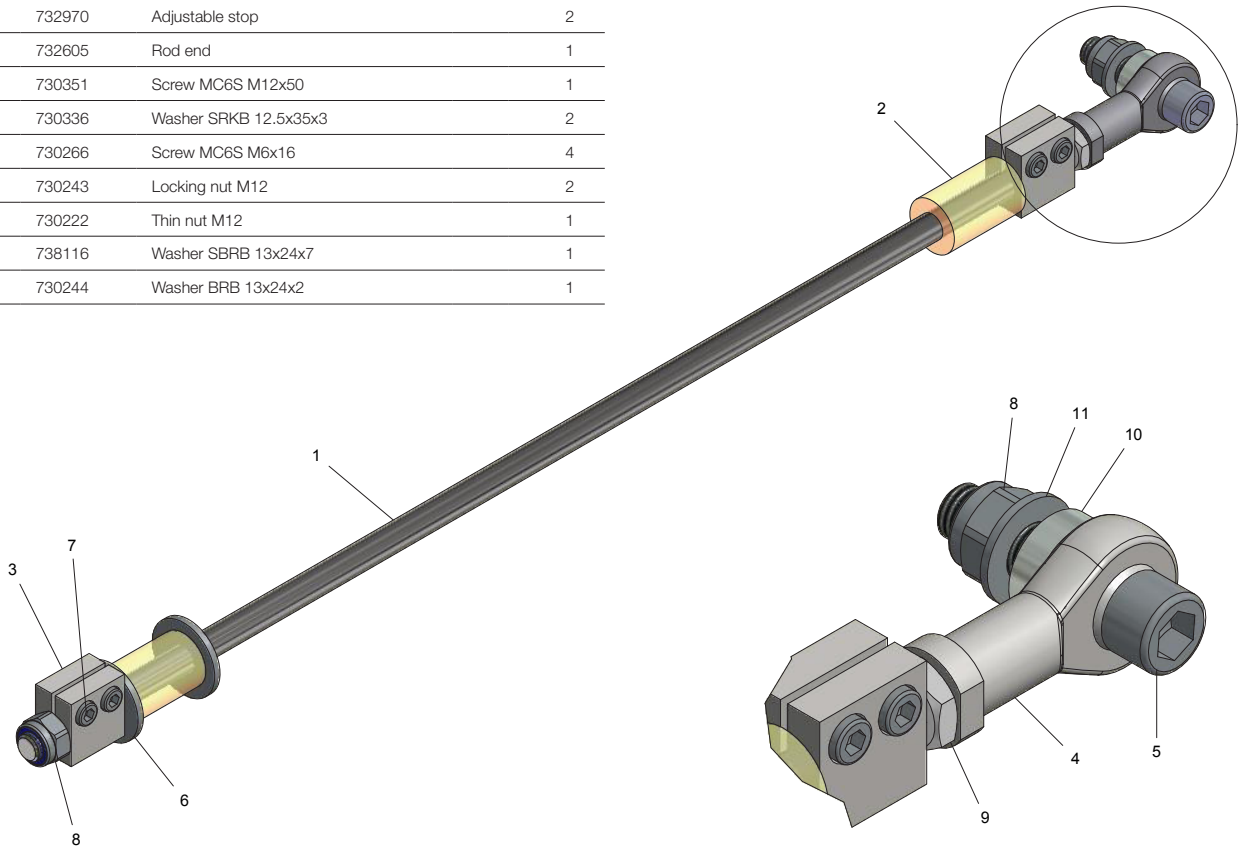
#	Article nr.	Designation	Quantity
1	740736	Pneumatic cylinder Ø125-250	2
2	739816	Piloted non-return valve 1/2"	2
3	740375	Silencer 1/2"	2
4	739069	Needle bearing	R 4
5	740742	Linear bearing	R 1
6	738361	Rod end	2
7	738365	Sleeve 30/26x36	2
8	730219	Screw M6SZ M8x20	6
9	739236	Screw plug G1/2	2
10	731542	Washer 6,4x22x4	4
11	732898	Screw MC6S M12x30	4
12	740668	Screw MC6S M12x120	4
13	730266	Screw MC6S M6x16	4
14	740738	Plate	1
15	740739	Bearing housing	1
16	740740	Bracket for rod end	1
17	740741	Shaft	2
18	734845	Barrel nipple 1/2"	2
19	740769	Upper plate	1
20	740784	Air passage	1
21	740785	Double nipple 1/2"-1/2"	2
22	741053	Washer	2
23	741387	Adapter 3/4"-1/2"	1
24	741884	Retaining ring Ø75	2



740782		Pull rod, L=1600	
#	Article nr.	Designation	Quantity
1	739088	Rod end, RH thread	1
2	739089	Nut ML6M M20x1.5, LH thread	1
3	739091	Nut ML6M M20x1.5, RH thread	1
4	739092	Rod end, LH thread	1
5	740759	Tube	1

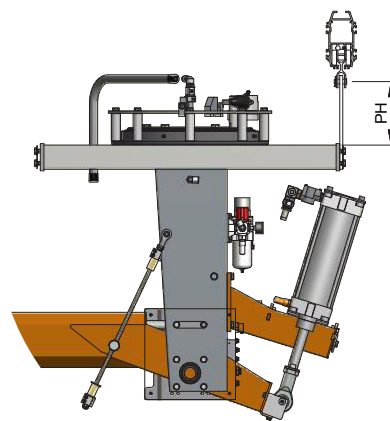
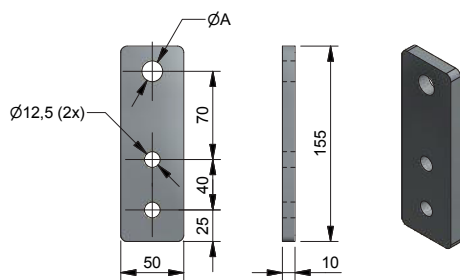


740764		Stroke limiter	
#	Article nr.	Designation	Quantity
1	740768	Round bar	1
2	739094	Rubber damper 25/12x40	S
3	732970	Adjustable stop	2
4	732605	Rod end	1
5	730351	Screw MC6S M12x50	1
6	730336	Washer SRKB 12.5x35x3	2
7	730266	Screw MC6S M6x16	4
8	730243	Locking nut M12	2
9	730222	Thin nut M12	1
10	738116	Washer SBRB 13x24x7	1
11	730244	Washer BRB 13x24x2	1



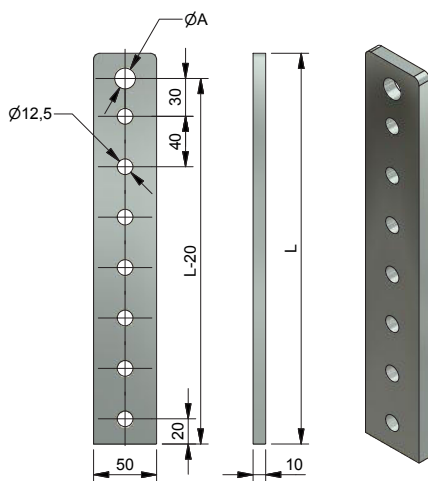
3.2 Suspensions

73383x Pendulum PH 50



Suspension	733835	733837
ØA mm	16,5	20,5
PH mm	50	50
Fits trolley	AHB1.1-2	AHB3
Weight/pc kg	0,6	0,6

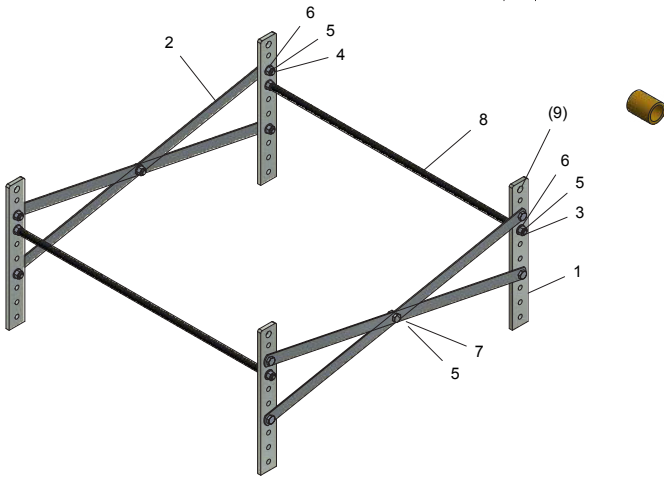
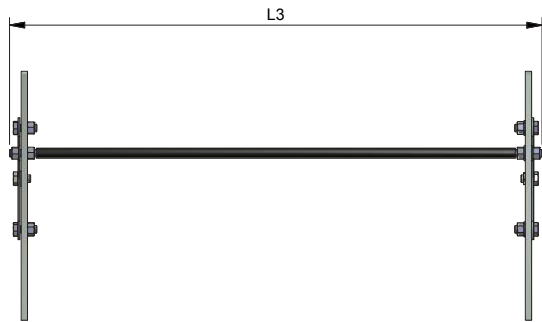
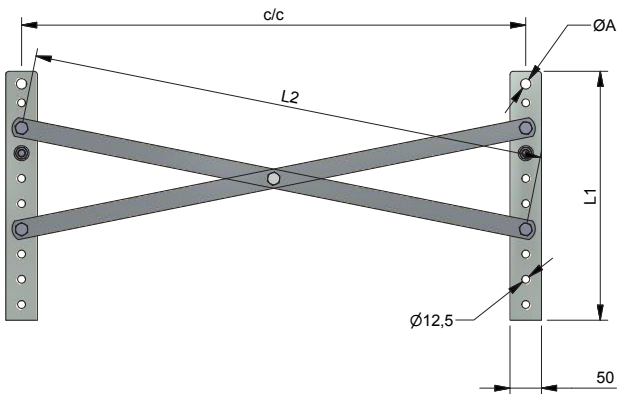
74xxxx Suspension PH 90-210



Suspension
ØA
Fits trolley
Weight/pc uncut

Height PH
Length L

74xxxx		Pendulum 4x PH 250-370	
#	Article nr.	Designation	Quantity
1	*1	Pendulum 90-490 D=ØA L=L1	4
2	*2	Cross brace c/c=L2	4
3	*3	Threaded bar M12 L=L3	2
4	730255	Screw M6S M12x30, full thread	8
5	730726	Nut M6M M12	18
6	730244	Washer BRB 13x24x2	18
7	730484	Screw M6S M12x20, full thread	2
8	732267	Cable protection hose L=L3	2
9	732504	Bushing 12/16x20	N1



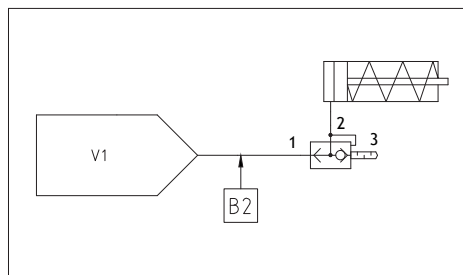
Suspension	
	c/c
	ØA
	Fits trolley
	Article nr.
	Article nr.
	Length L2
	Article nr.
	Length L3
	Quantity N1
	Weight uncut

Height PH	
	Length L1

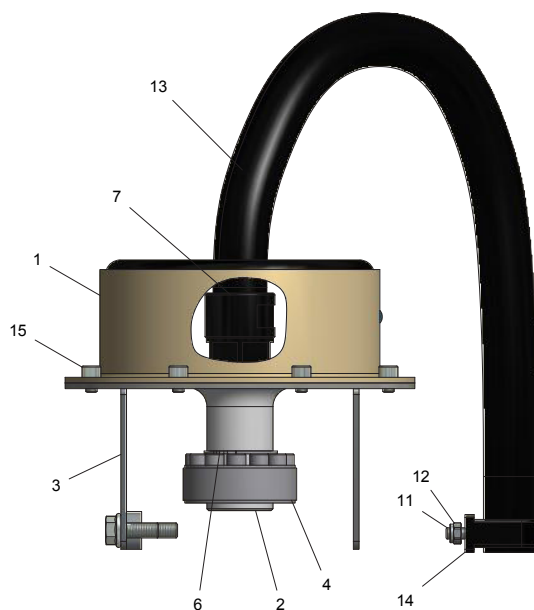
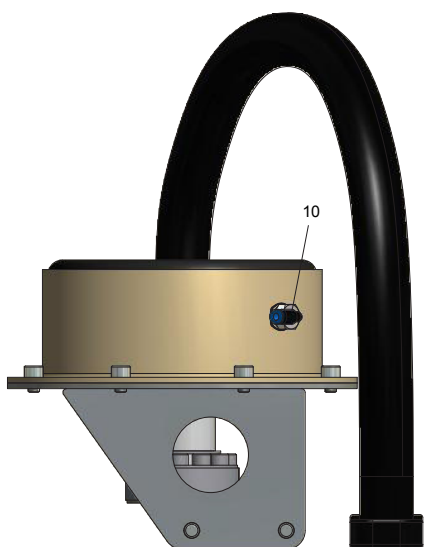
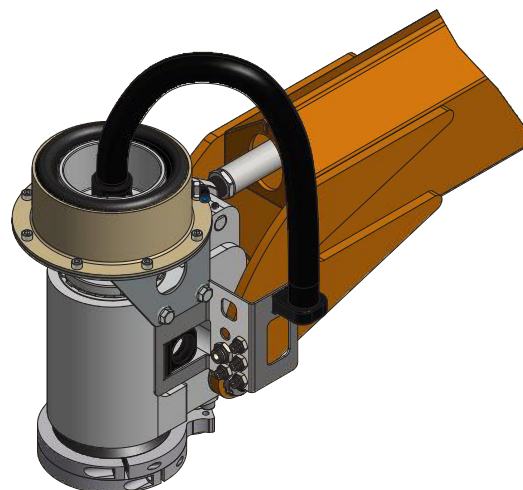
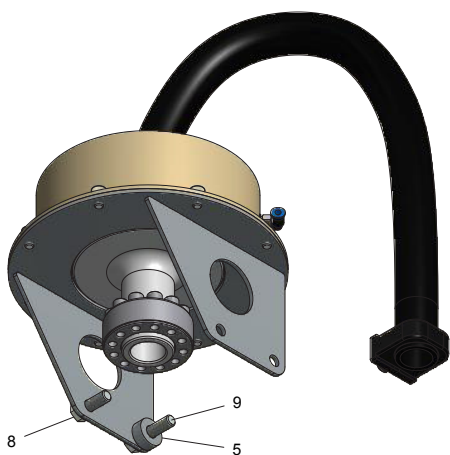
4. Accessories

4.1 Rotation brakes

740755		Front brake		
#	Article nr.	Designation	Quantity	
1	731494	Brake unit	R	1
2	740757	Brake drum		1
3	740732	Brake bracket		1
4	740756	Clamping element		1
5	740168	Sleeve 20/9x8		1
6	742152	Retaining ring Ø35		1
7	734080	Cable fitting M25		1
8	730219	Screw M6SZ M8x20		1
9	736083	Screw M6SZ M8x30		1
10	739513	Push-in L-fitting G1/8"-4		1
11	730249	Screw MC6S M6x12		1
12	730273	Locking nut M6		1
13	730960	Cable protection hose L=550		1
14	730963	Cable fitting M20		1
15	731486	Screw MC6S M6x8		8

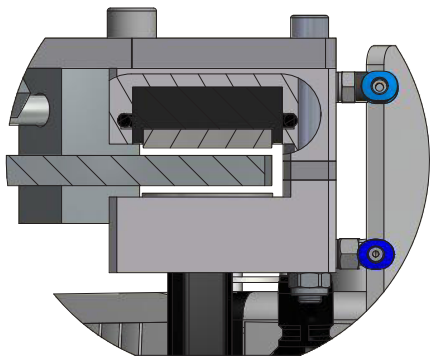
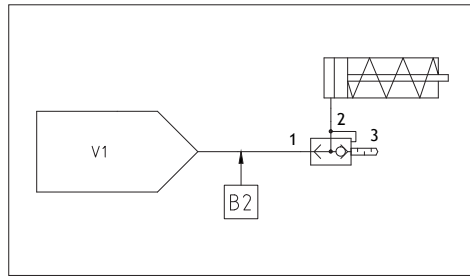


- See also section 2.2 regarding suspension.

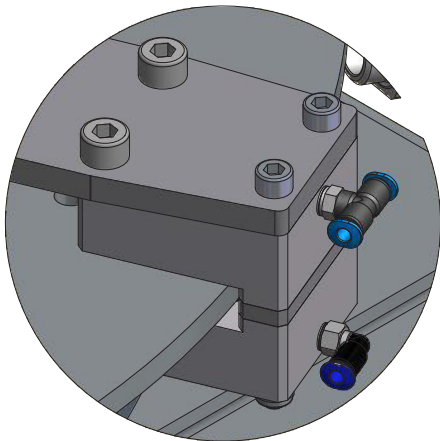
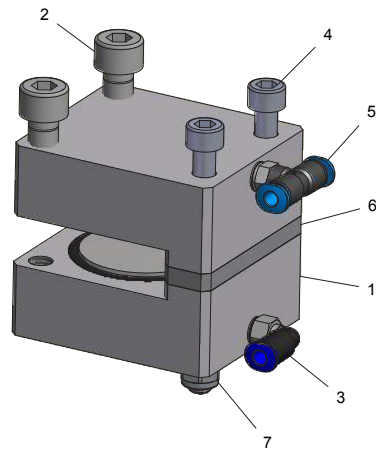


Front brake	740755
Weight kg	5,9

742708		Brake unit		
#	Article nr.	Designation	Quantity	
1	742709	Brake caliper, sub-assy	R	2
2	730727	Screw MC6S M8x25		2
3	732373	Push-in L-fitting M5-4		1
4	735501	Screw MC6S M6x70		2
5	741361	Push-in T fitting M5-4		1
6	741898	Shim washer		1
7	730273	Locking nut M6		2



A

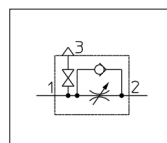


Brake unit		742708
Weight	kg	0,4

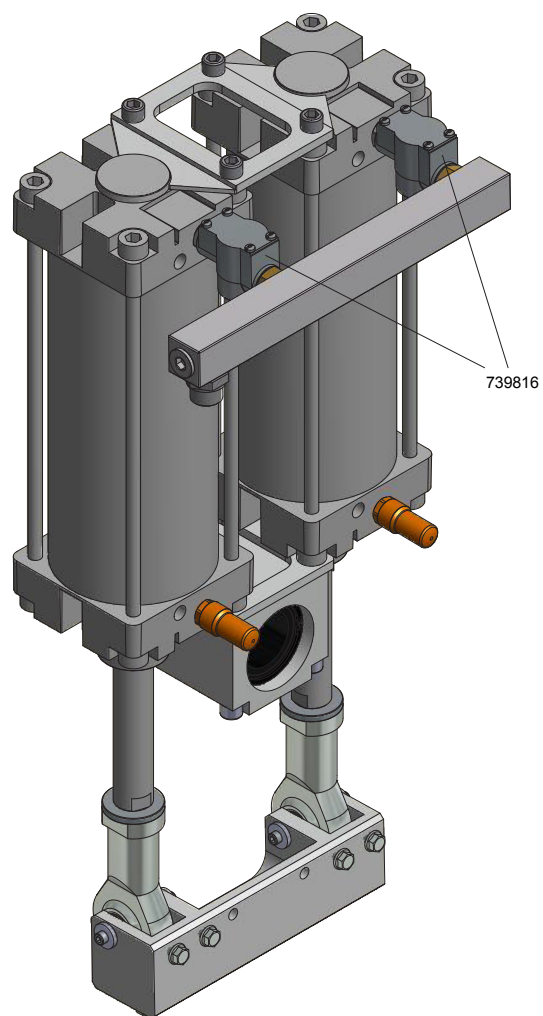
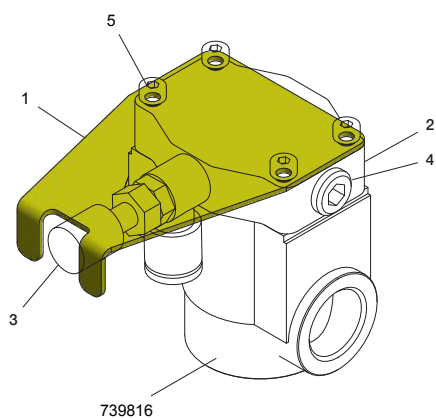
R: spare part S: wear part

4.2 Manual pressure release

741803		Manual pressure release kit	
#	Article nr.	Designation	Quantity
1	741806	Protection plate	1
2	741804	Cover	1
3	741807	Speed control valve with pressure release	R 1
4	734715	Plug 1/8", hex socket	1
5	735595	Screw MC6S M4x25	4



- Optional kit for the base model.
- Facilitates venting of Mechspace Pro prior to repair and maintenance work.



5. Pneumatic configurations

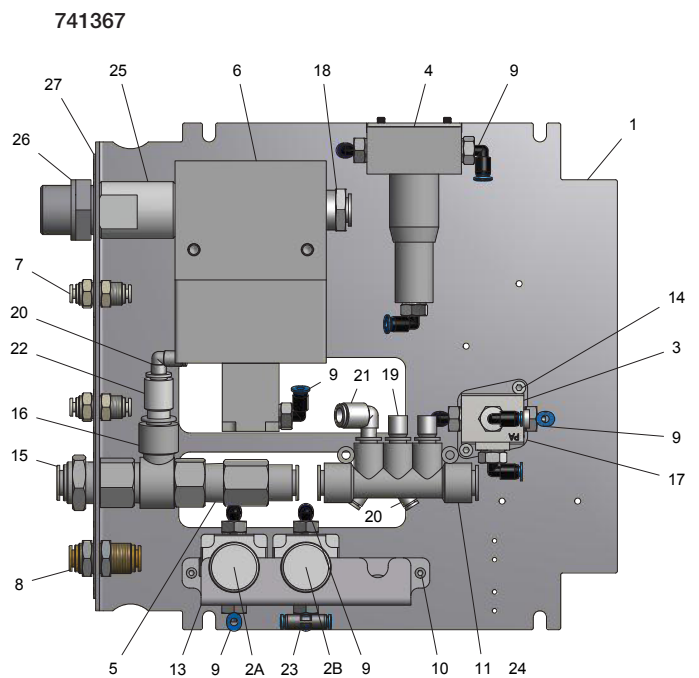
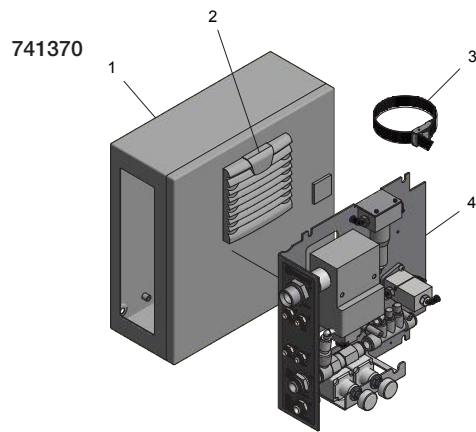
Overview

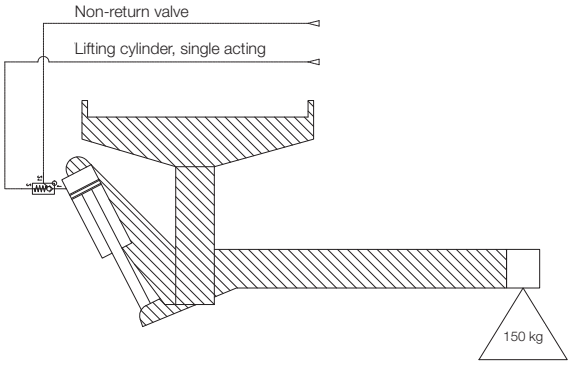
5.1	Pneumatics: 2-weight	22
5.2	Pneumatics: 2-weight automotive	24
5.3	Pneumatics: 2-weight with slow speed function	26
5.4	Pneumatics: 2-weight automotive with slow speed function	28
5.5	Pneumatics: 3-weight	30
5.6	Pneumatics: 3-weight automotive	32
5.7	Pneumatics: 3-weight with slow speed function	34
5.8	Pneumatics: 3-weight automotive with slow speed function	36
5.9	Pneumatics: pilot control.....	38
5.10	Pneumatics: pilot control with slow speed function.....	40
5.11	Air preparation unit.....	42
5.12	Control unit: Load cell (parallelogram).....	43

5.1 Pneumatics: 2-weight

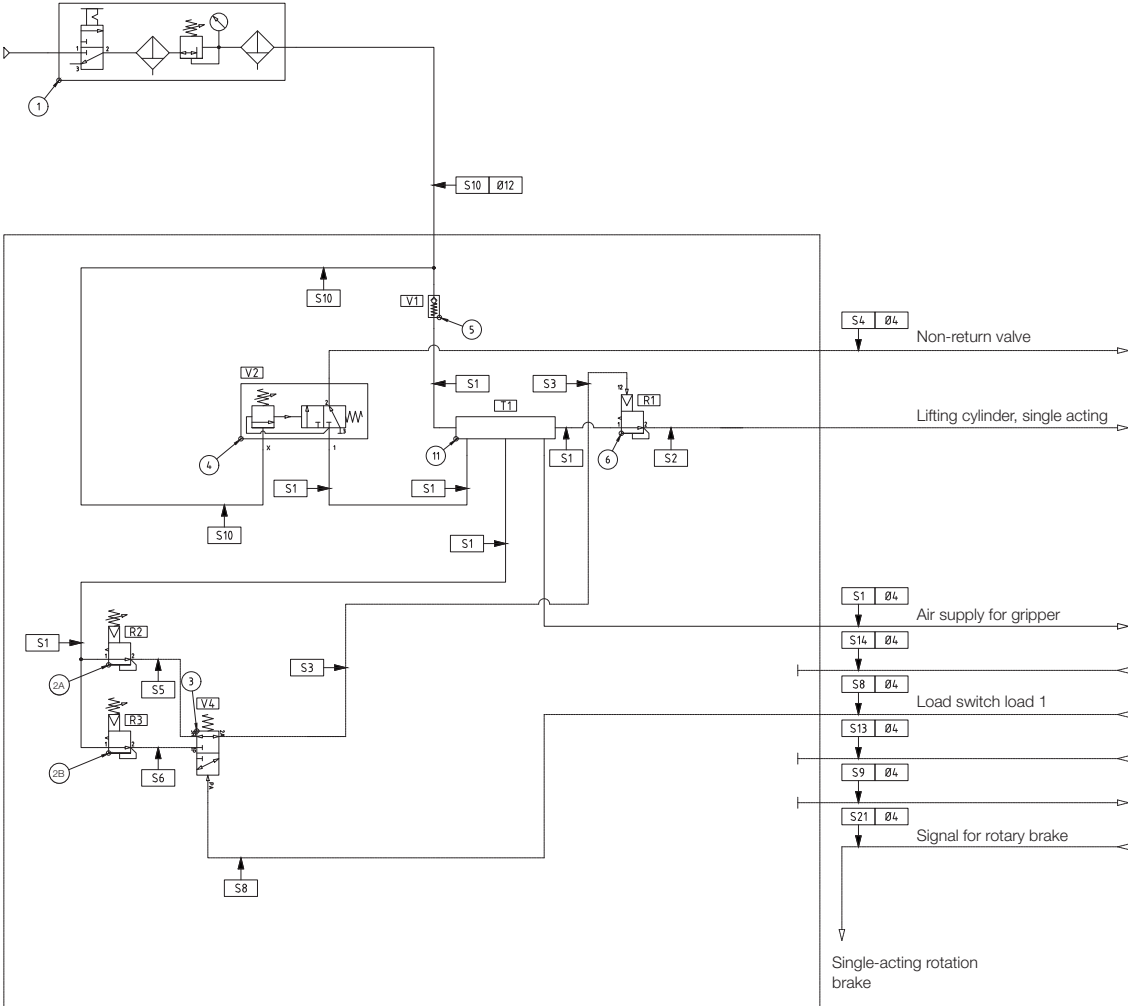
741370 2-weight			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741367	2-weight, pre-mounted	1

741367 2-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 2
3	738125	3/2 valve monostable	R 1
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	4
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	12
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	2
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	2
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	1
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	1
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741380	Sign plate 2-weight	1





Position	Designation / Function
6	Precision regulator / Main regulator
2A	Precision regulator / Without load
2B	Precision regulator / With load



- Two different load levels can be handled by activating "load 0" or "load 1".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.

Pneumatics	741370
Weight kg	4,7

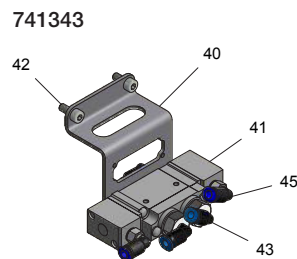
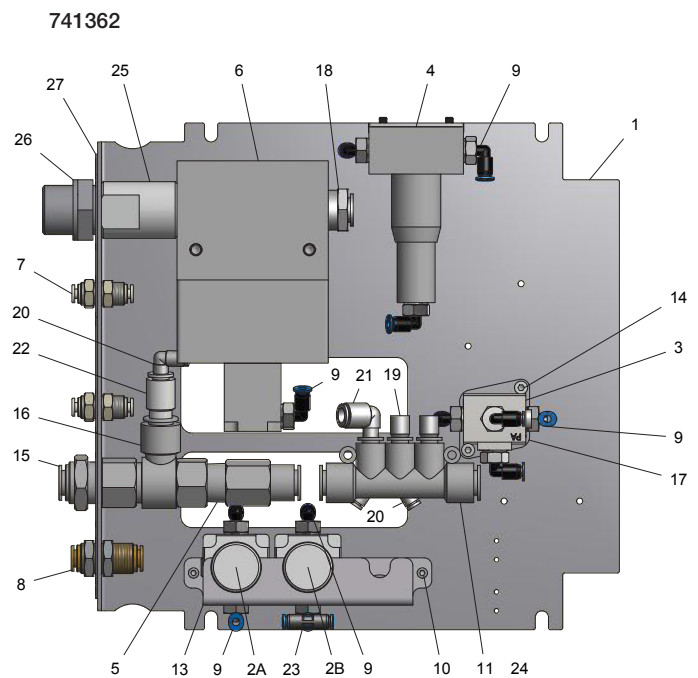
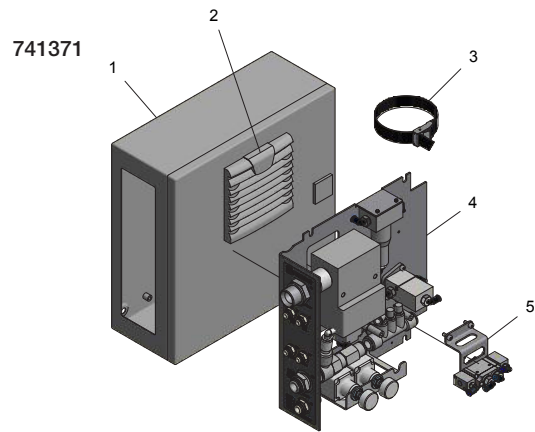
R: spare part S: wear part

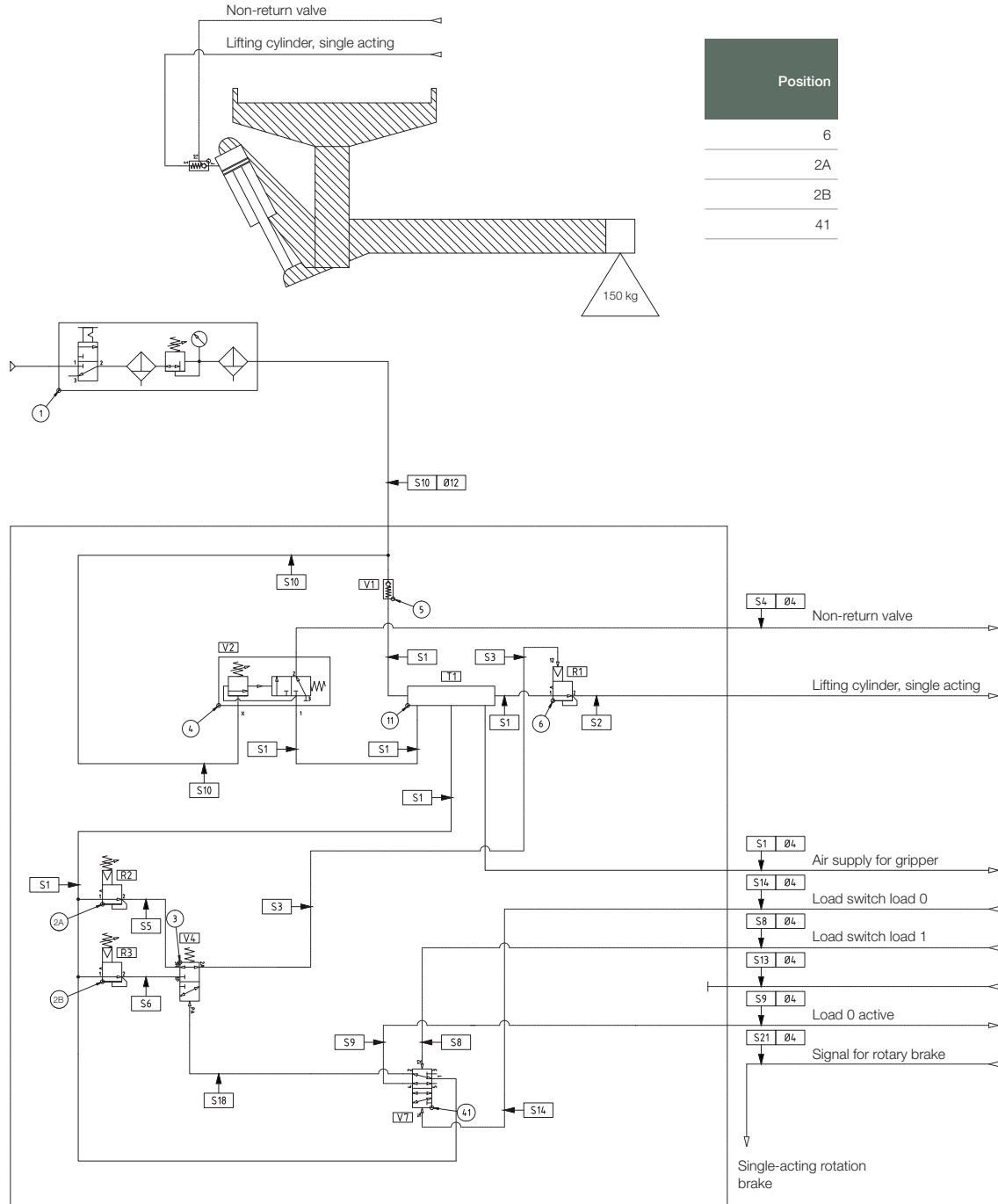
5.2 Pneumatics: 2-weight automotive

741371 2-weight AM			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741367	2-weight, pre-mounted	1
5	741343	Automotive 2-weight	1

741367 2-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 2
3	738125	3/2 valve monostable	R 1
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	4
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	12
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	2
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	2
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	1
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	1
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741380	Sign plate 2-weight	1

741343 Automotive 2-weight			
#	Article nr.	Designation	Quantity
40	741345	Bracket	1
41	741359	5/2 valve, bistable	R 1
42	730528	Screw MC6S M4x10	2
43	739513	Push-in L-fitting G1/8"-4	3
45	732373	Push-in L-fitting M5-4	2





Position
6
2A
2B
41

- Two different load levels can be handled by activating "load 0" or "load 1".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The load is switched by a bistable valve, ie. load alternation is done by impulse signals.

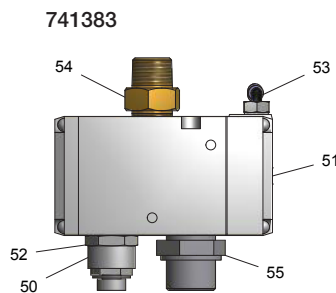
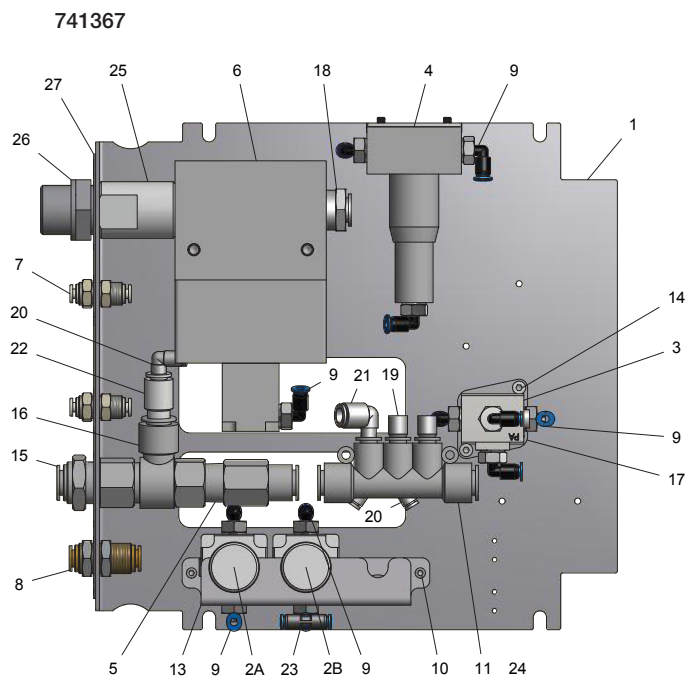
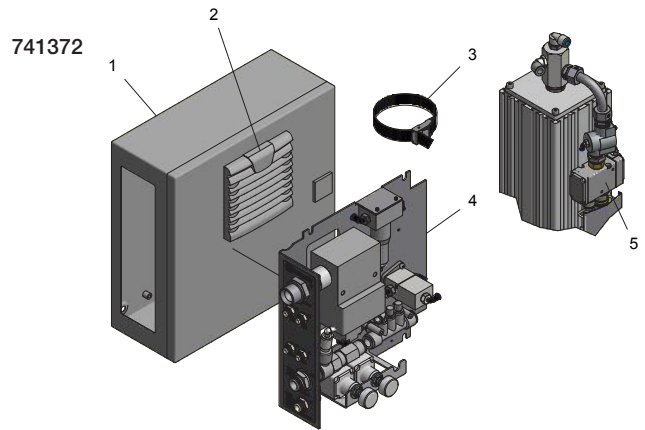
Pneumatics	741371
Weight kg	4,8

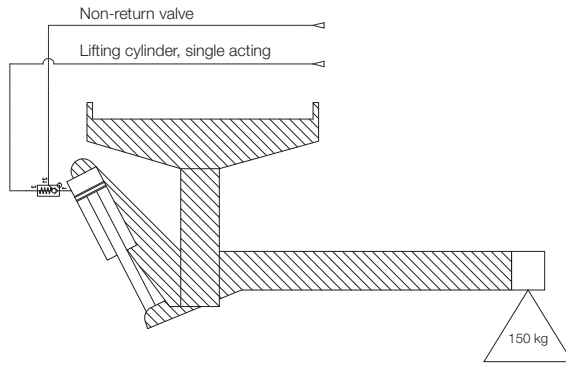
5.3 Pneumatics: 2-weight with slow speed function

741372		2-weight slow speed function	
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741367	2-weight, pre-mounted	1
5	741383	Slow speed function	1

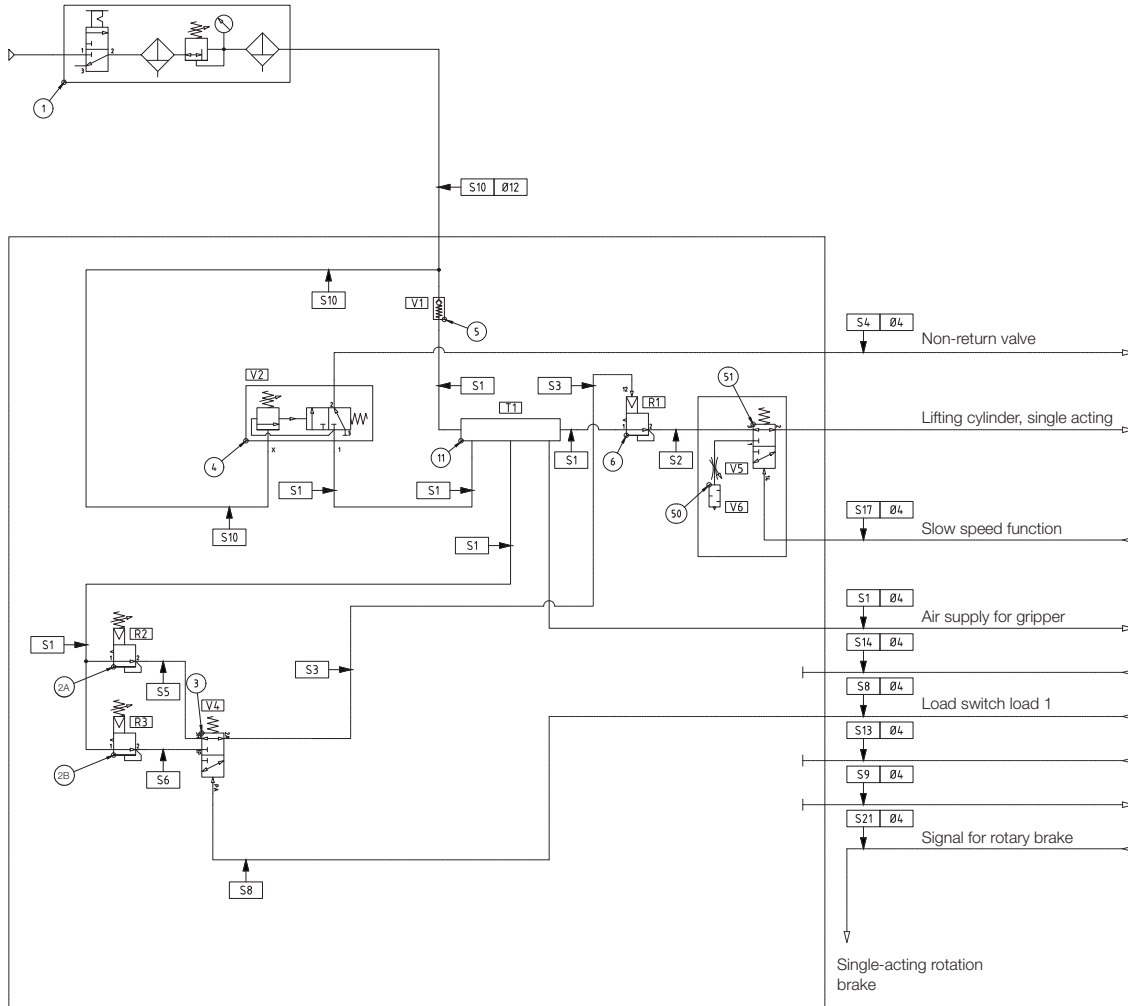
741367		2-weight, pre-mounted	
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 2
3	738125	3/2 valve monostable	R 1
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	4
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	12
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	2
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	2
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	1
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	1
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741380	Sign plate 2-weight	1

741383		Slow speed function	
#	Article nr.	Designation	Quantity
50	741358	Metering valve with silencer 3/8"	R 1
51	741366	3/2 valve NC	R 1
52	739231	Reducing nipple 1/2"-3/8"	1
53	739513	Push-in L-fitting G1/8"-4	1
54	740785	Double nipple 1/2"-1/2"	1
55	741387	Adapter 3/4"-1/2"	1





Position	Designation / Function
6	Precision regulator / Main regulator
2A	Precision regulator / Without load
2B	Precision regulator / With load
51	3/2 valve / Slow speed function



- Two different load levels can be handled by activating "load 0" or "load 1".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.

Pneumatics	741372
Weight kg	4,8

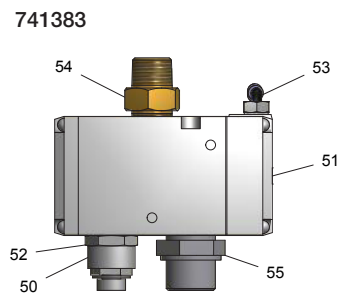
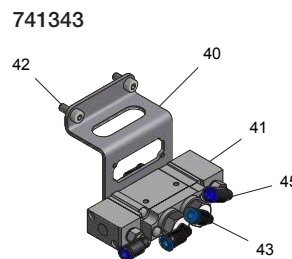
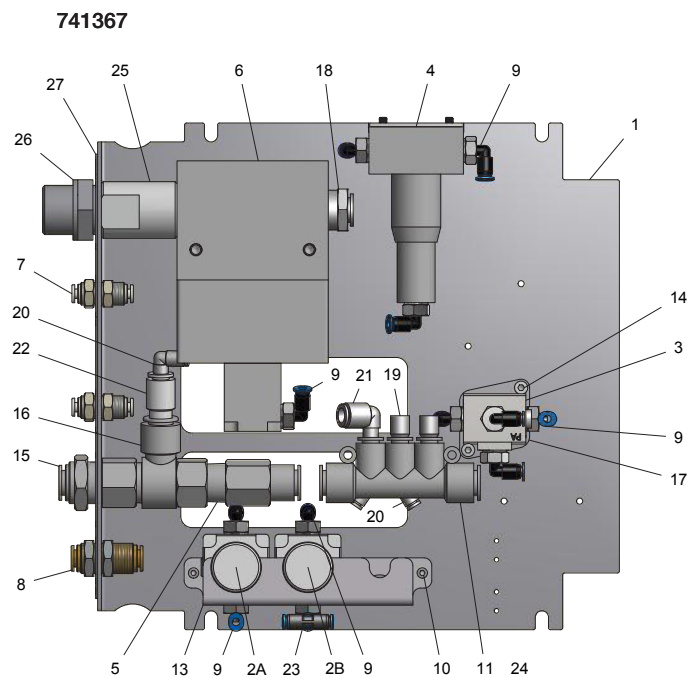
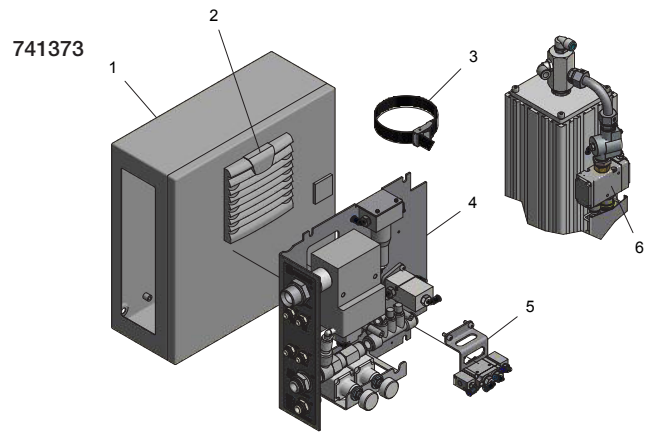
R: spare part S: wear part

5.4 Pneumatics: 2-weight automotive with slow speed function

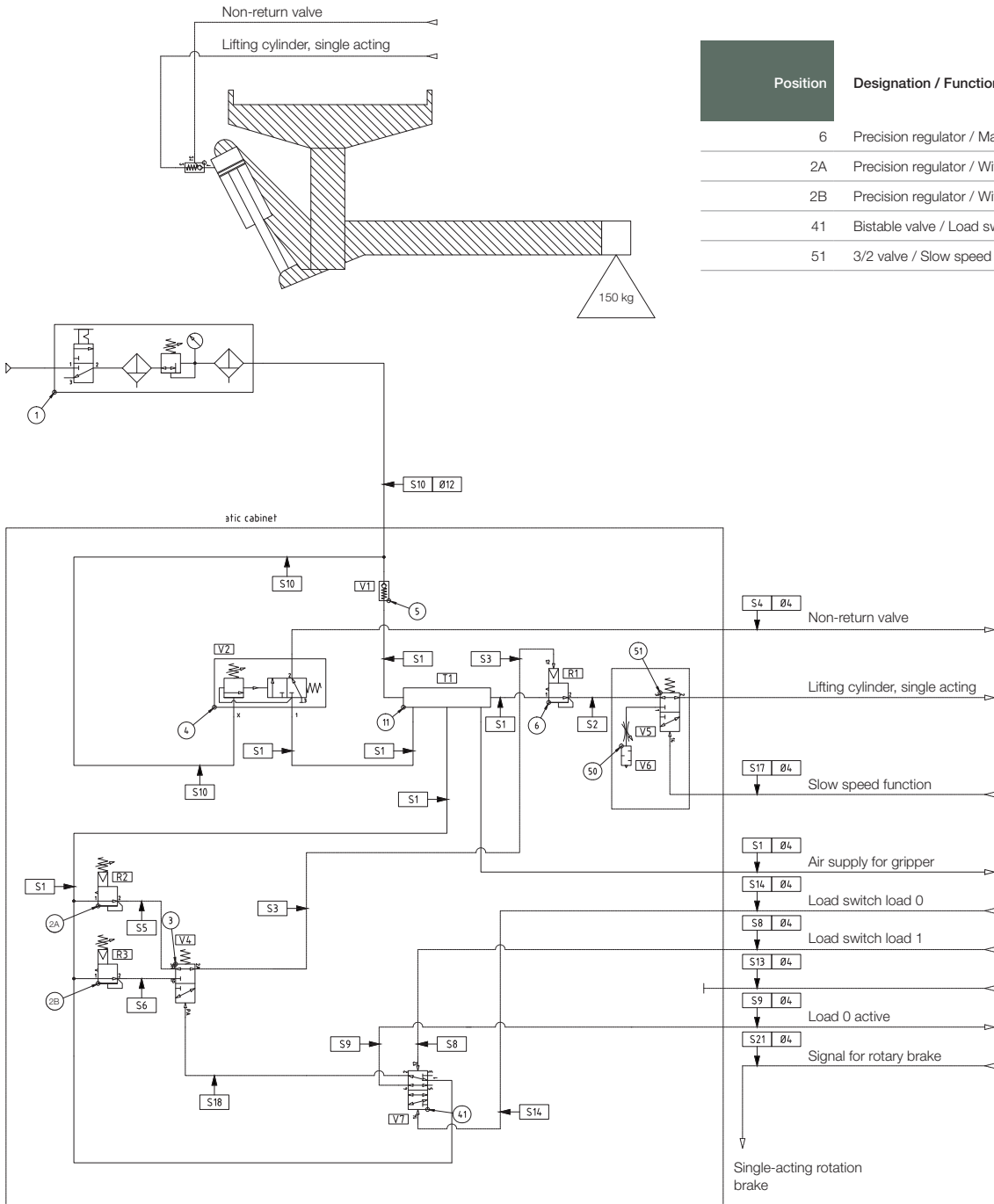
741373 2-weight AM slow speed function			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741367	2-weight, pre-mounted	1
5	741343	Automotive 2-weight	1
6	741383	Slow speed function	1

741367 2-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 2
3	738125	3/2 valve monostable	R 1
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	4
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	12
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	2
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	2
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	1
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	1
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741380	Sign plate 2-weight	1

741343 Automotive 2-weight			
#	Article nr.	Designation	Quantity
40	741345	Bracket	1
41	741359	5/2 valve, bistable	R 1
42	730528	Screw MC6S M4x10	2
43	739513	Push-in L-fitting G1/8"-4	3
45	732373	Push-in L-fitting M5-4	2



741383 Slow speed function			
#	Article nr.	Designation	Quantity
50	741358	Metering valve with silencer 3/8"	R 1
51	741366	3/2 valve NC	R 1
52	739231	Reducing nipple 1/2"-3/8"	1
53	739513	Push-in L-fitting G1/8"-4	1
54	740785	Double nipple 1/2"-1/2"	1
55	741387	Adapter 3/4"-1/2"	1



Position	Designation / Function
6	Precision regulator / Main regulator
2A	Precision regulator / Without load
2B	Precision regulator / With load
41	Bistable valve / Load switch
51	3/2 valve / Slow speed function

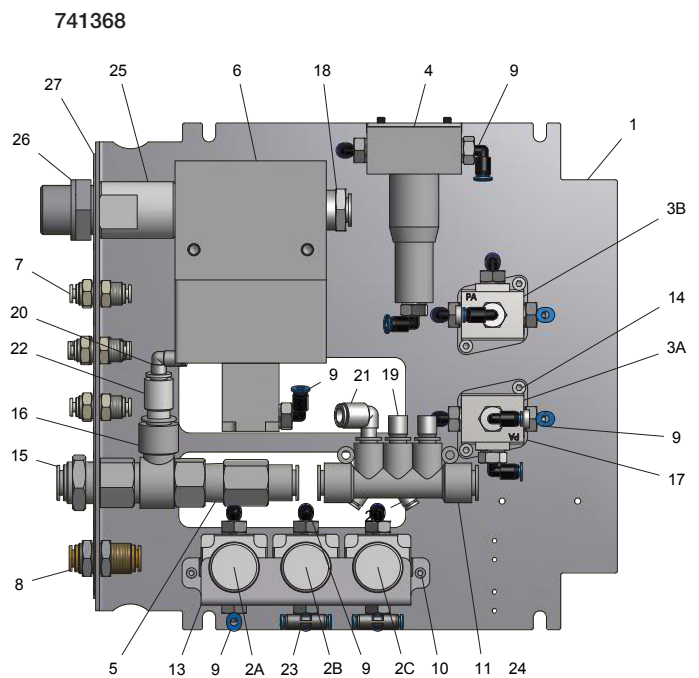
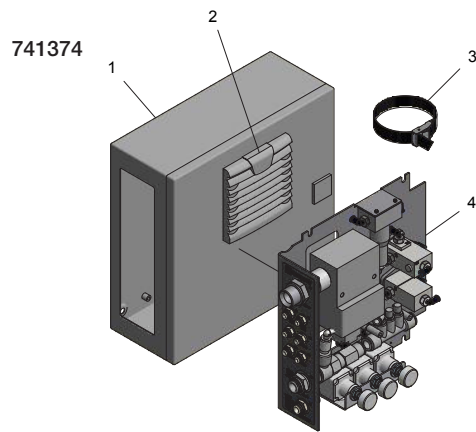
- Two different load levels can be handled by activating "load 0" or "load 1".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The load is switched by a bistable valve, ie. load alternation is done by impulse signals.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.

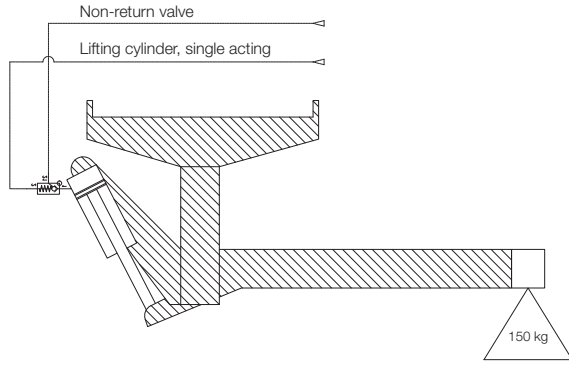
Pneumatics	741373
Weight kg	4,9

5.5 Pneumatics: 3-weight

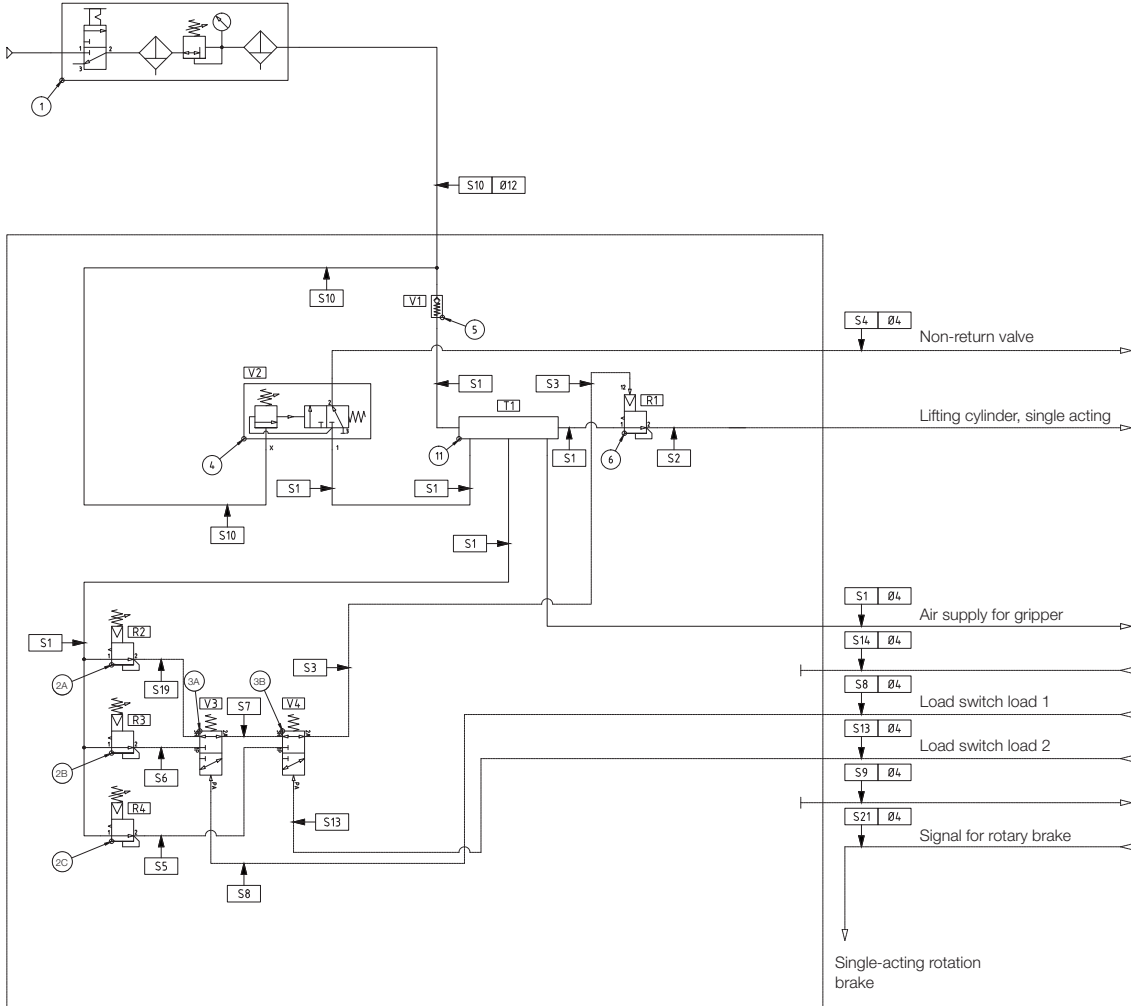
741374 3-weight			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741368	3-weight, pre-mounted	1

741368 3-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 3
3	738125	3/2 valve monostable	R 2
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	6
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	18
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	4
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	4
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	2
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	2
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741381	Sign plate 3-weight	1





Position	Designation / Function
6	Precision regulator / Main regulator
2A	Precision regulator / Without load
2B	Precision regulator / With load 1
2C	Precision regulator / With load 2



- Three different load levels can be handled by activating "load 0", "load 1" or "load 2".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.

Pneumatics	741334
Weight	kg 5,7

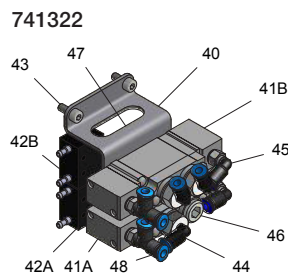
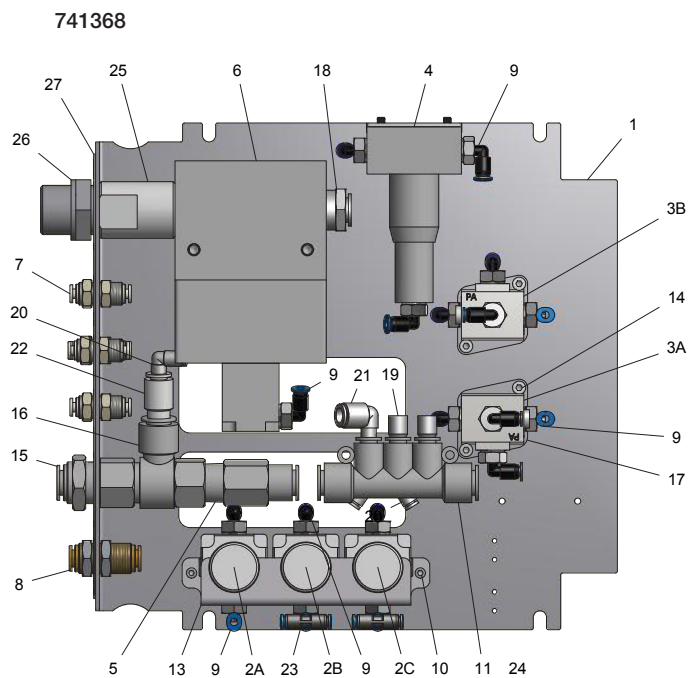
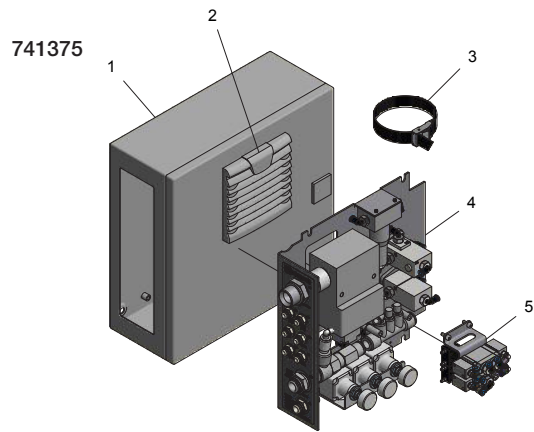
R: spare part S: wear part

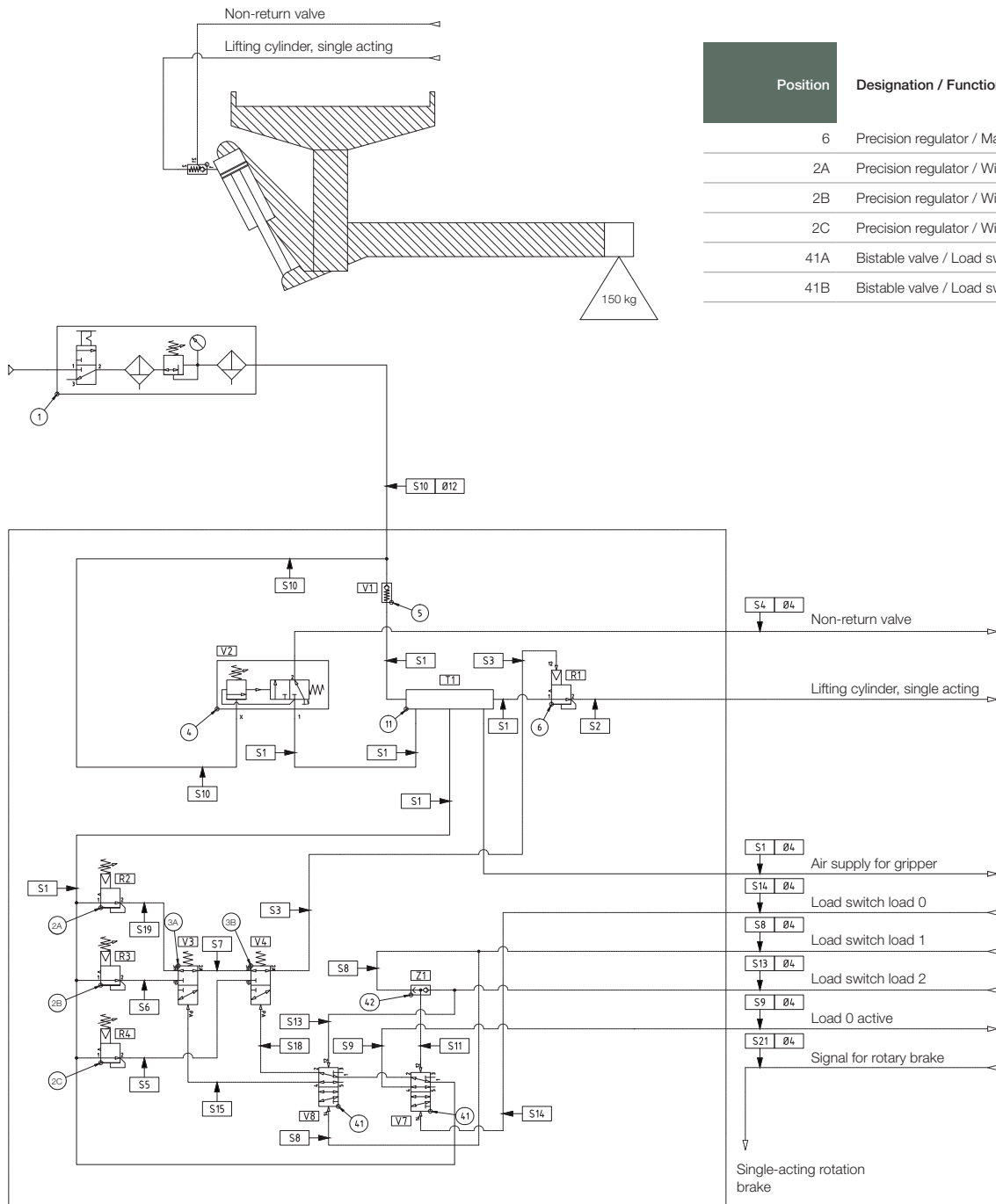
5.6 Pneumatics: 3-weight automotive

741375 3-weight AM			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741368	3-weight, pre-mounted	1
5	741322	Automotive 3-weight	1

741368 3-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 3
3	738125	3/2 valve monostable	R 2
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	6
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	18
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	4
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	4
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	2
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	2
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741381	Sign plate 3-weight	1

741322 Automotive 3-weight			
#	Article nr.	Designation	Quantity
40	741345	Bracket	1
41	741359	5/2 valve, bistable	R 2
42	732669	OR gate	R 2
43	730528	Screw MC6S M4x10	2
44	739513	Push-in L-fitting G1/8"-4	5
45	732373	Push-in L-fitting M5-4	2
46	734715	Plug 1/8", hex socket	1
47	739259	Push-in Y-fitting Ø4	2
48	739287	Push-in T-fitting M5-4	2





- Three different load levels can be handled by activating "load 0", "load 1" or "load 2".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The load is switched by bistable valves, ie. load alternation is done by impulse signals.

Pneumatics

741375

Weight kg

5,9

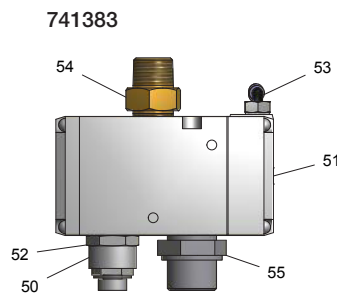
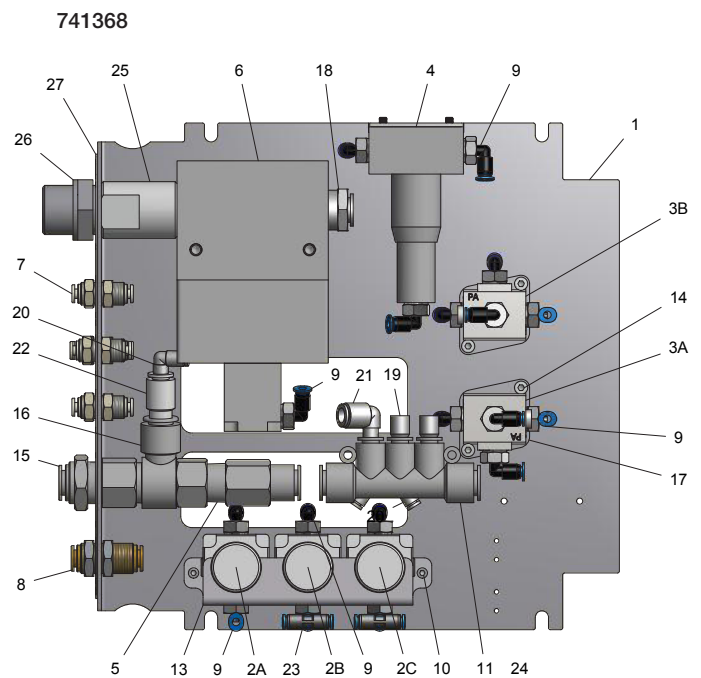
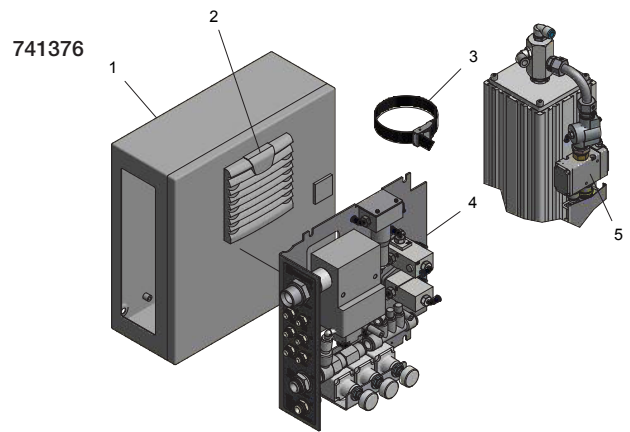
R: spare part S: wear part

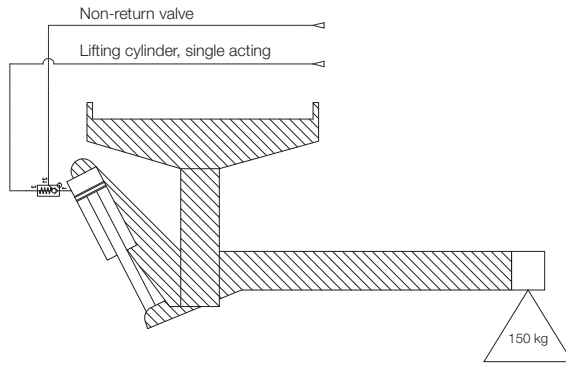
5.7 Pneumatics: 3-weight with slow speed function

741376 3-weight slow speed function			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741368	3-weight, pre-mounted	1
5	741383	Slow speed function	1

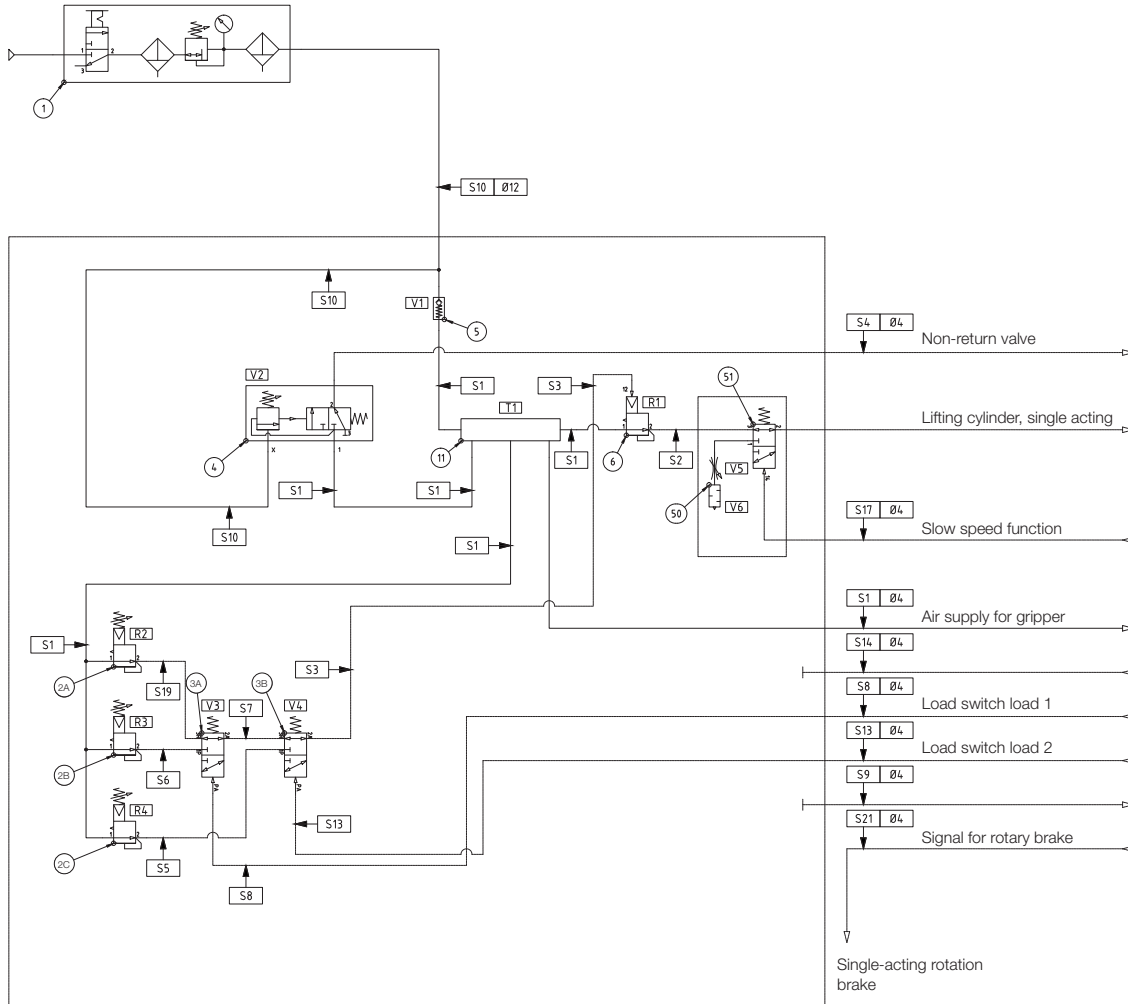
741368 3-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 3
3	738125	3/2 valve monostable	R 2
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	6
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	18
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	4
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	4
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	2
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	2
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741381	Sign plate 3-weight	1

741383 Slow speed function			
#	Article nr.	Designation	Quantity
50	741358	Metering valve with silencer 3/8"	R 1
51	741366	3/2 valve NC	R 1
52	739231	Reducing nipple 1/2"-3/8"	1
53	739513	Push-in L-fitting G1/8"-4	1
54	740785	Double nipple 1/2"-1/2"	1
55	741387	Adapter 3/4"-1/2"	1





Position	Designation / Function
6	Precision regulator / Main regulator
2A	Precision regulator / Without load
2B	Precision regulator / With load 1
2C	Precision regulator / With load 2
S1	3/2 valve / Slow speed function



- Three different load levels can be handled by activating "load 0", "load 1" or "load 2".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.

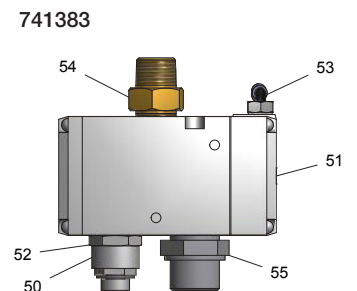
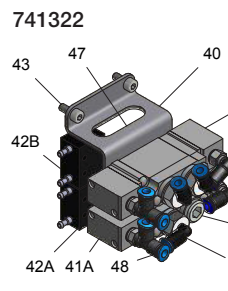
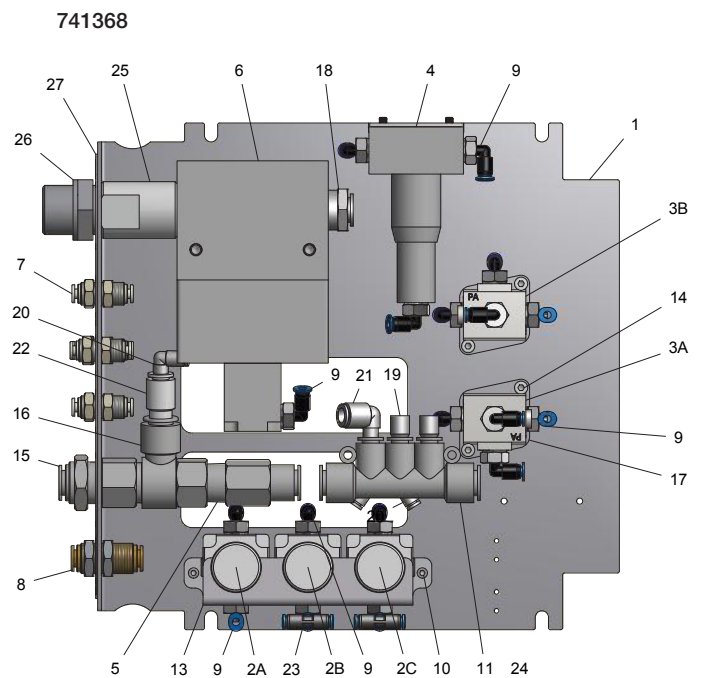
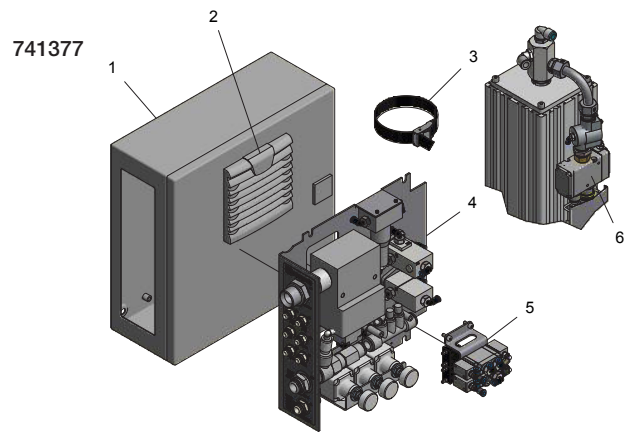
Pneumatics	741376
Weight kg	5,8

5.8 Pneumatics: 3-weight automotive with slow speed function

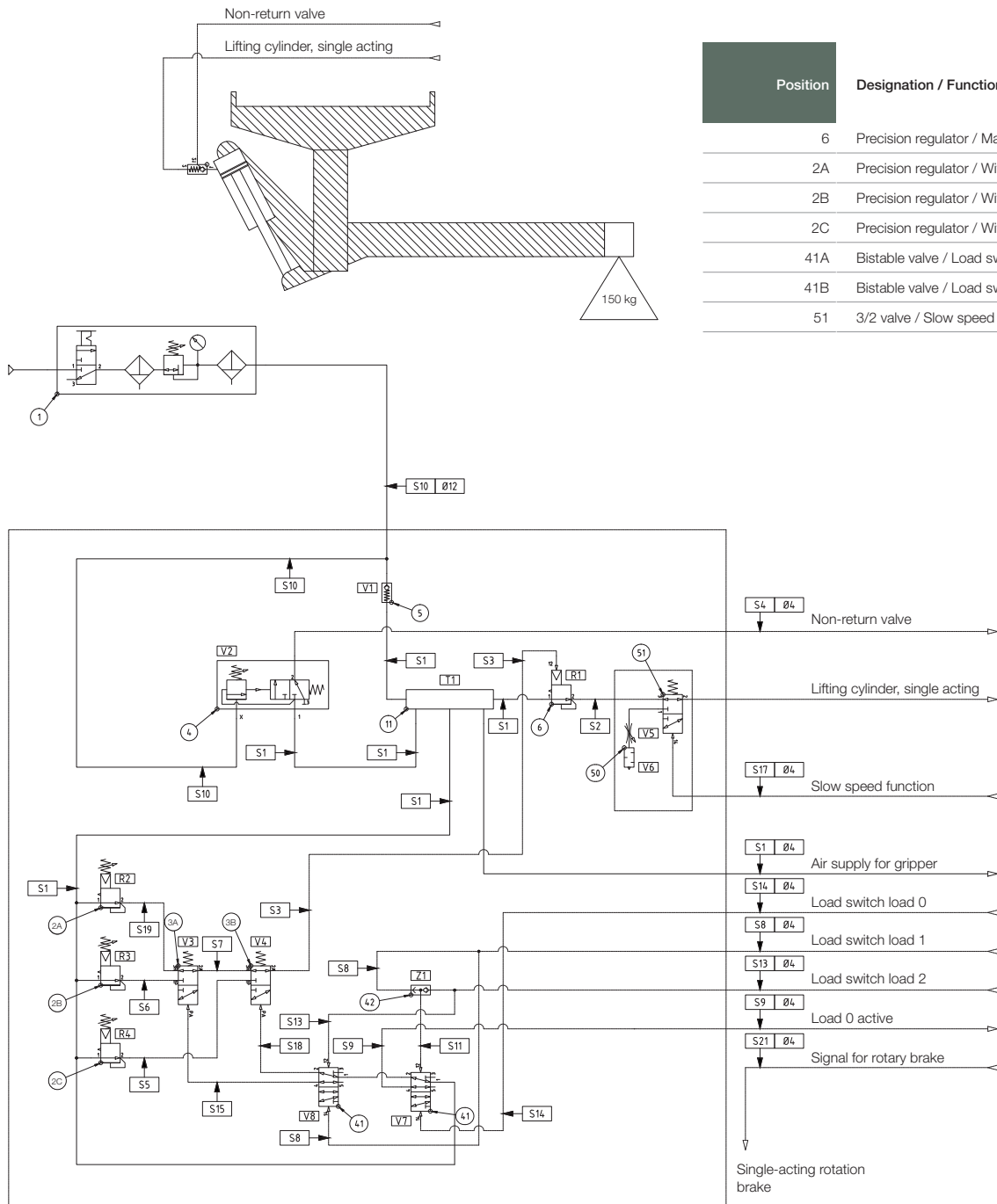
741377 3-weight AM slow speed function			
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741368	3-weight, pre-mounted	1
5	741322	Automotive 3-weight	1
6	741383	Slow speed function	1

741368 3-weight, pre-mounted			
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	738124	Precision regulator	R 3
3	738125	3/2 valve monostable	R 2
4	739553	Pressure guard	R 1
5	739597	Non-return valve	R 1
6	740797	Precision regulator	R 1
7	739270	Push-in connector 4-4	6
8	739272	Push-in connector 8-8	1
9	739513	Push-in L-fitting G1/8"-4	18
10	733679	Screw MC6S M3x10	2
11	739592	Manifold fitting	1
12	730820	Screw MF6S M5x12	4
13	739776	Bracket	1
14	730528	Screw MC6S M4x10	4
15	740798	Push-in connector 12-12	1
16	740799	L-fitting female Ø12	1
17	741310	Bracket	2
18	741349	Straight push-in fitting Ø12	1
19	741350	Blanking plug Ø8	3
20	741351	Push-in L-fitting Ø8-4	3
21	741352	Push-in L-fitting Ø8-8	1
22	741353	Straight push-in fitting Ø12-8	1
23	741355	Push-in T-fitting Ø4	2
24	735595	Screw MC6S M4x25	2
25	741384	Adapter int.-ext. thread 1/2"	1
26	741387	Adapter 3/4"-1/2"	1
27	741381	Sign plate 3-weight	1

741322 Automotive 3-weight			
#	Article nr.	Designation	Quantity
40	741345	Bracket	1
41	741359	5/2 valve, bistable	R 2
42	732669	OR gate	R 2
43	730528	Screw MC6S M4x10	2
44	739513	Push-in L-fitting G1/8"-4	5
45	732373	Push-in L-fitting M5-4	2
46	734715	Plug 1/8", hex socket	1
47	739259	Push-in Y-fitting Ø4	2
48	739287	Push-in T-fitting M5-4	2



741383 Slow speed function			
#	Article nr.	Designation	Quantity
50	741358	Metering valve with silencer 3/8"	R 1
51	741366	3/2 valve NC	R 1
52	739231	Reducing nipple 1/2"-3/8"	1
53	739513	Push-in L-fitting G1/8"-4	1
54	740785	Double nipple 1/2"-1/2"	1
55	741387	Adapter 3/4"-1/2"	1



- Three different load levels can be handled by activating "load 0", "load 1" or "load 2".
- The first load level ("load 0") is adjusted for counterbalancing the mobile part of the lifter incl. gripper tool.
- The load is switched by a bistable valve, ie. load alternation is done by impulse signals.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.

Pneumatics

741377

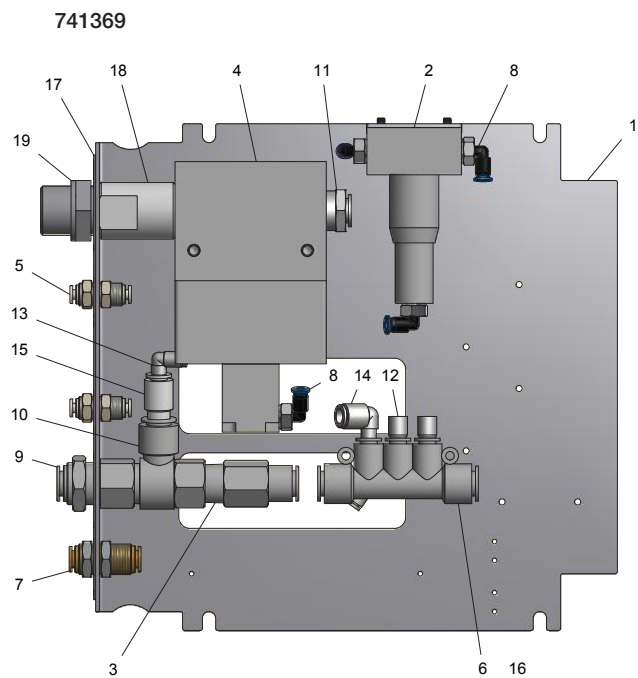
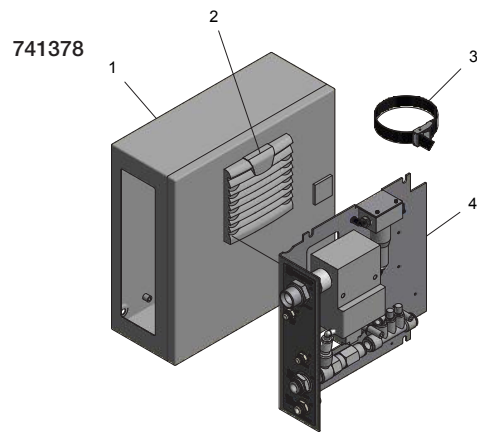
Weight kg 6,0

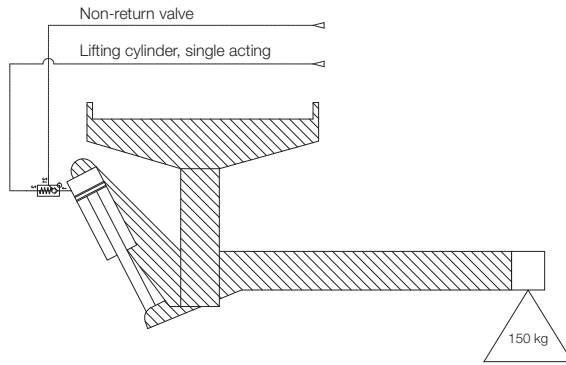
R: spare part S: wear part

5.9 Pneumatics: pilot control

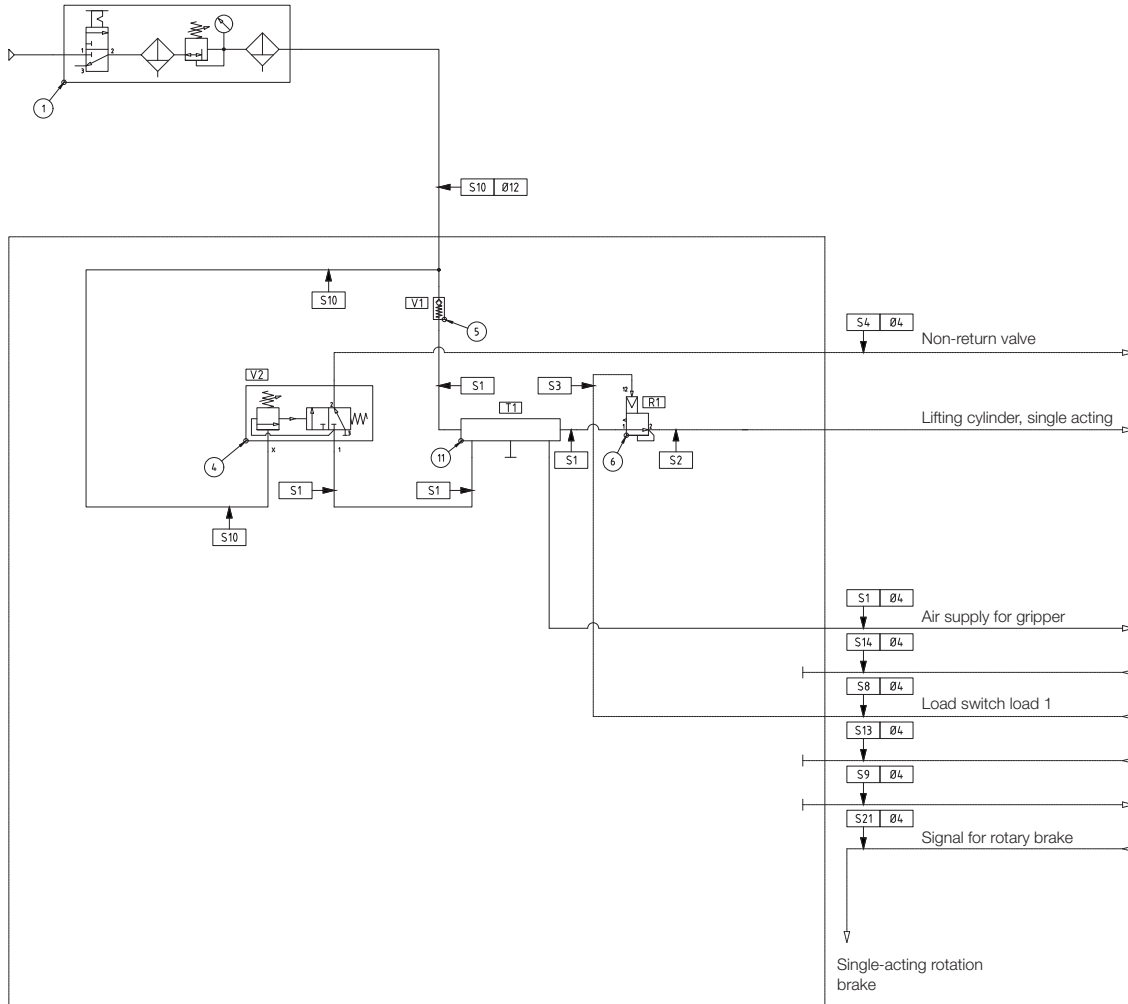
741378		Pilot control	
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741369	Pilot control, pre-mounted	1

741369		Pilot control, pre-mounted	
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	739553	Pressure guard	R 1
3	739597	Non-return valve	R 1
4	740797	Precision regulator	R 1
5	739270	Push-in connector 4-4	2
6	739592	Manifold fitting	1
7	739272	Push-in connector 8-8	1
8	739513	Push-in L-fitting G1/8"-4	4
9	740798	Push-in connector 12-12	1
10	740799	L-fitting female Ø12	1
11	741349	Straight push-in fitting Ø12	1
12	741350	Blanking plug Ø8	4
13	741351	Push-in L-fitting Ø8-4	2
14	741352	Push-in L-fitting Ø8-8	1
15	741353	Straight push-in fitting Ø12-8	1
16	735595	Screw MC6S M4x25	2
17	741382	Sign plate, pilot control	1
18	741384	Adapter int.-ext. thread 1/2"	1
19	741387	Adapter 3/4"-1/2"	1





Position	Designation / Function
4	Precision regulator / Main regulator



- Different load levels are handled steplessly.
- A load sensing device or a manually controlled device provides an analog signal to a pressure regulator for the conversion of the load level.

Pneumatics		741378
Weight	kg	3,0

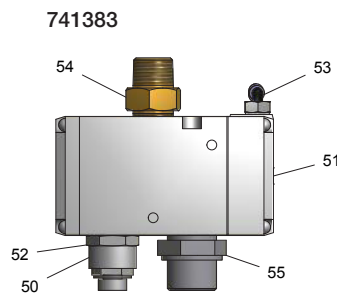
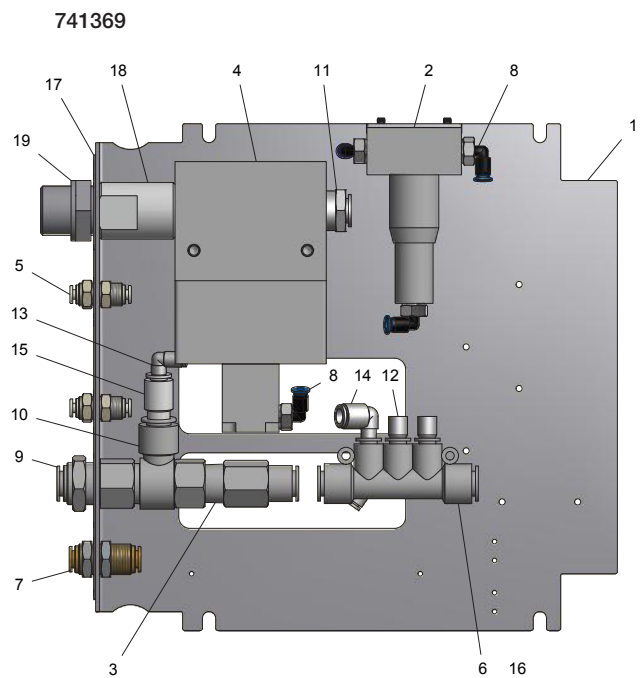
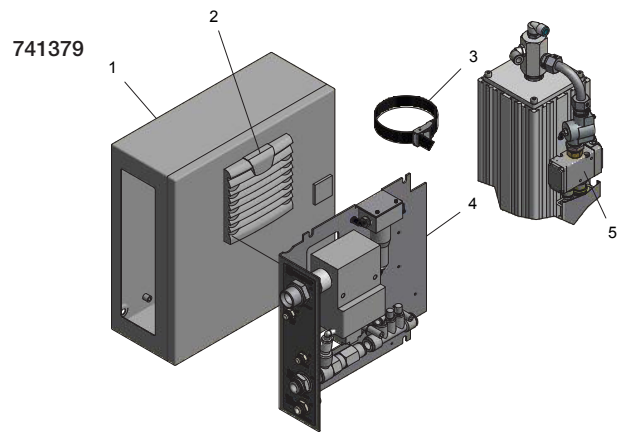
R: spare part S: wear part

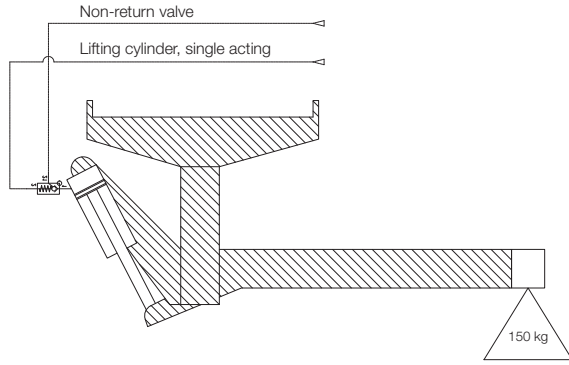
5.10 Pneumatics: pilot control with slow speed function

741379		Pilot control slow speed function	
#	Article nr.	Designation	Quantity
1	741324	Pneumatic cabinet	1
2	740796	Filter	S 1
3	730499	Safety strap Ø90	1
4	741369	Pilot control, pre-mounted	1
5	741383	Slow speed function	1

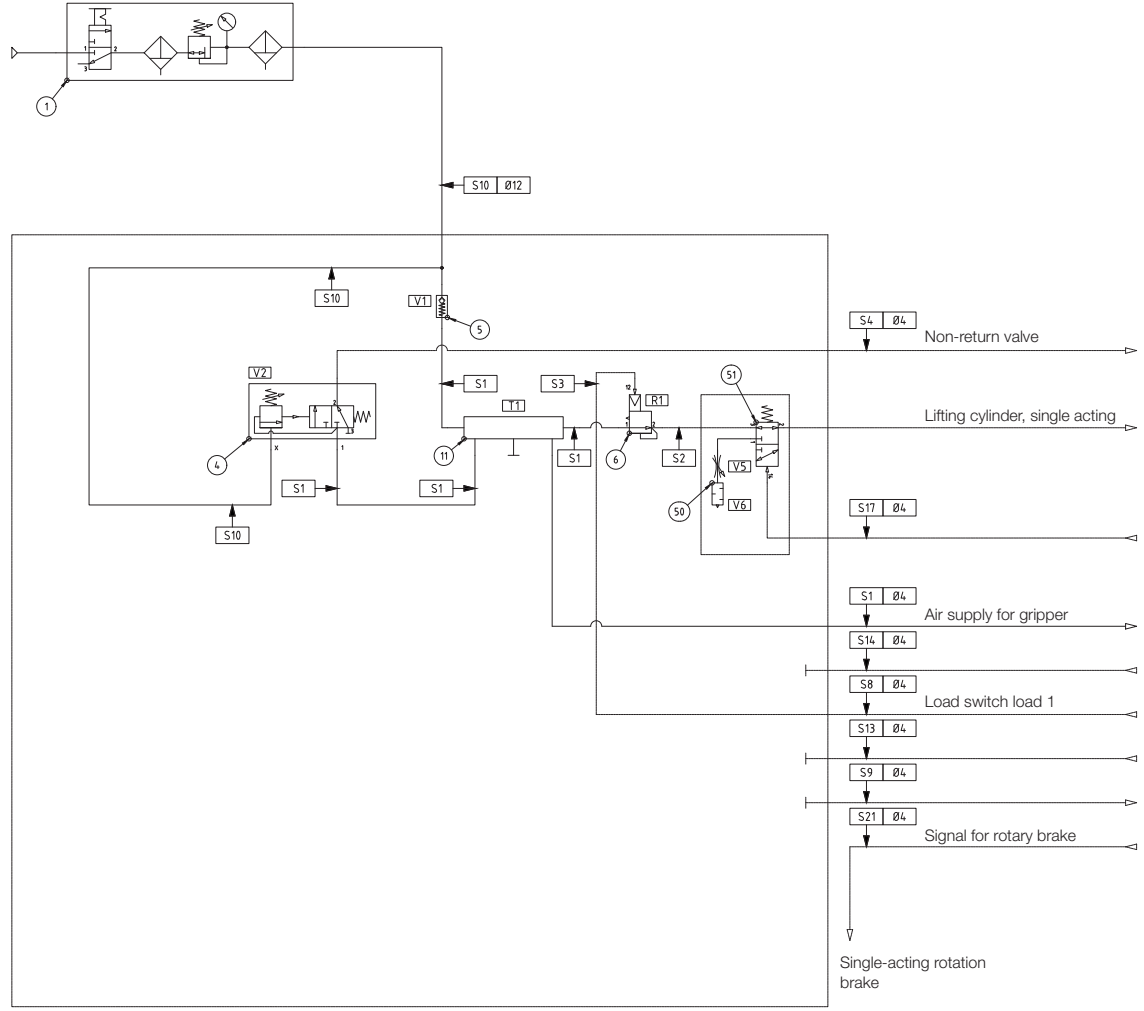
741369		Pilot control, pre-mounted	
#	Article nr.	Designation	Quantity
1	741365	Mounting plate	1
2	739553	Pressure guard	R 1
3	739597	Non-return valve	R 1
4	740797	Precision regulator	R 1
5	739270	Push-in connector 4-4	2
6	739592	Manifold fitting	1
7	739272	Push-in connector 8-8	1
8	739513	Push-in L-fitting G1/8"-4	4
9	740798	Push-in connector 12-12	1
10	740799	L-fitting female Ø12	1
11	741349	Straight push-in fitting Ø12	1
12	741350	Blanking plug Ø8	4
13	741351	Push-in L-fitting Ø8-4	2
14	741352	Push-in L-fitting Ø8-8	1
15	741353	Straight push-in fitting Ø12-8	1
16	735595	Screw MC6S M4x25	2
17	741382	Sign plate, pilot control	1
18	741384	Adapter int.-ext. thread 1/2"	1
19	741387	Adapter 3/4"-1/2"	1

741383		Slow speed function	
#	Article nr.	Designation	Quantity
50	741358	Metering valve with silencer 3/8"	R 1
51	741366	3/2 valve NC	R 1
52	739231	Reducing nipple 1/2"-3/8"	1
53	739513	Push-in L-fitting G1/8"-4	1
54	740785	Double nipple 1/2"-1/2"	1
55	741387	Adapter 3/4"-1/2"	1





Position	Designation / Function
4	Precision regulator / Main regulator
51	3/2 valve / Slow speed function



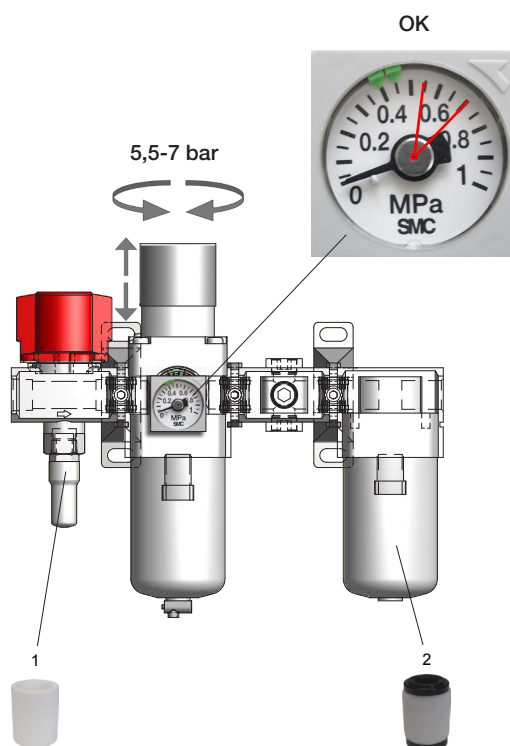
- Different load levels are handled steplessly.
- A load sensing device or a manually controlled device provides an analog signal to a pressure regulator for the conversion of the load level.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.

Pneumatics		741379
Weight	kg	3,1

R: spare part S: wear part

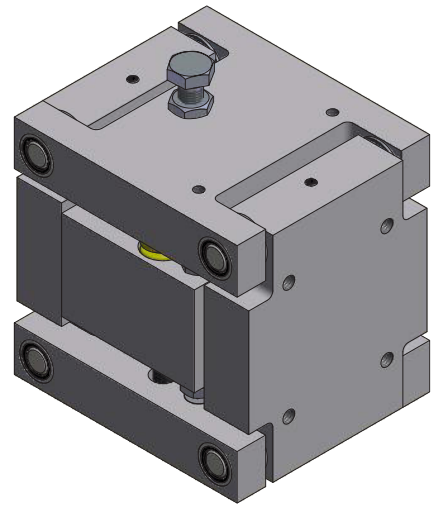
5.11 Air preparation unit

#	Article nr.	Designation	Quantity
1	742408	Filter	S 1
2	735351	Micro filter 0,3 µm	S 1

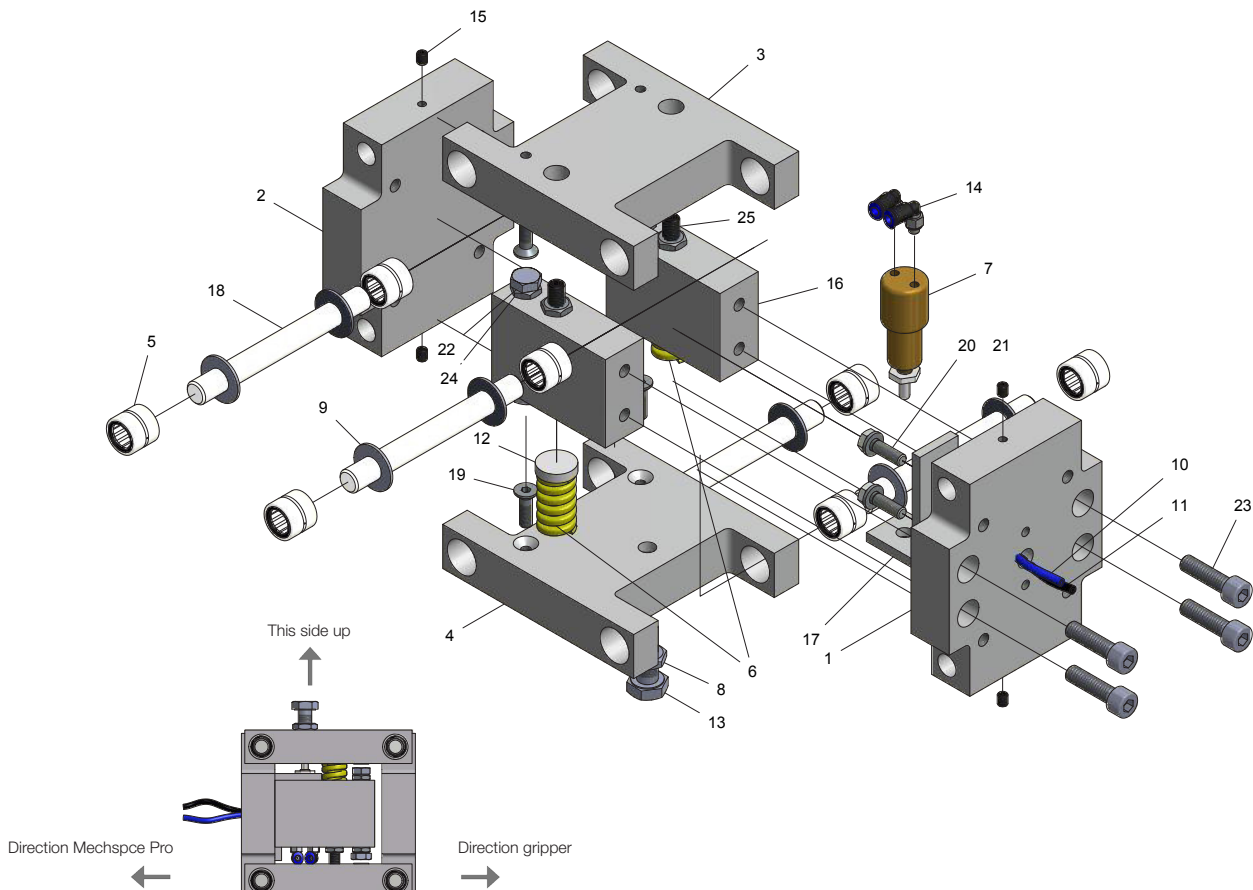


5.12 Control unit: Load cell (parallelogram)

#	Article nr.	Designation	Quantity
	741889	Load cell (parallelogram)	
1	740879	Rear part	1
2	740880	Front part	1
3	741890	Bottom part	1
4	741891	Upper part	1
5	741892	Needle bearing	8
6	742206	Spring D=20 d=10 L0=32	2
7	731383	Pilot regulator	R 1
8	731375	Screw M10x1.25, fine thread	1
9	731380	Slide washer 12/24x1,5	8
10	736141	Hose Ø4/2 blue	0,5
11	730673	Hose Ø4/2 black	0,5
12	731400	Distance	2
13	731401	Screw M10x1,25x30	1
14	732373	Push-in L-fitting M5-4	2
15	733649	Screw MP6SS M5x6	4
16	740013	Spring bracket	2
17	740014	Angle bracket	1
18	740017	Shaft	4
19	730250	Screw MF6S M6x20	4
20	730265	Screw M6S M6x20, full thread	2
21	730268	Washer BRB 6,4x12x1,5	2
22	731319	Screw M6S M8x25, full thread	4
23	731333	Screw MC6S M8x30	4
24	731337	Nut ML6M M8	6
25	731373	Screw MSK6SS M8x35	2



- A pneumatic load cell (parallelogram) is used for handling varying loads in combination with pneumatic configuration: pilot control.
- When using a parallelogram: note that manual influence on the lifter to generate a lifting or lowering movement can only be performed on the part of the lift arm that resides on the lifter side of the parallelogram.
- Max. allowed load is 70 kg!
- Operating range variable load: 50 kg (max. 40 kg recommended).



6. Installation and commissioning

6.1 Mechanical installation

Mechspace Pro is advantageously installed in Movomech aluminium rail system Mechrail.

1. Verify that the rail system is dimensioned for the total load including dynamic effects.
2. Check that end stops are mounted in all end points on the track and crane.
3. Install suspensions on Mechspace Pro if they are not already mounted.
4. Lock all rotation stops at top and bottom.
5. Raise Mechspace Pro by clamping the cross unit using a forklift, or by winch/hoist.
6. Install the suspensions into the trolleys.

6.2 Pneumatic installation

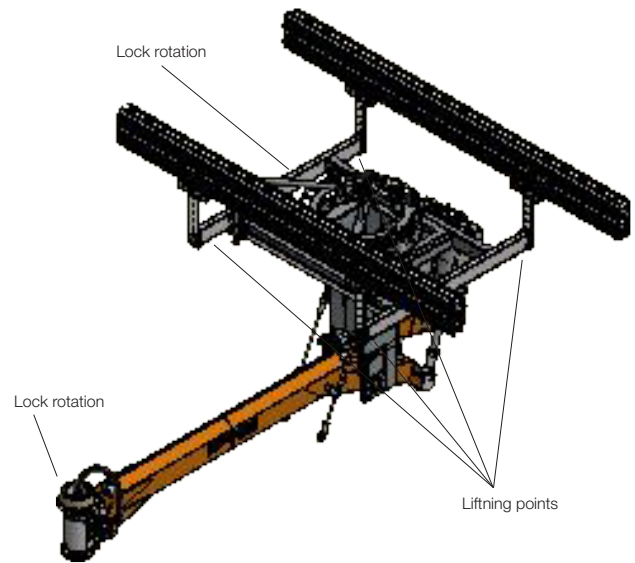
Mechspace Pro must be used only with clean, filtered air (0.3 µm), and is delivered with an air preparation unit.

Initial adjustment: 2 weight (incl. automotive)

1. Install Mechspace Pro, install the gripper tool and check all mechanical fixings and pneumatic connections.
2. Plug in the air connection, the signal for load switching and eventual air supply to the gripper tool.
3. Verify that the screw knobs of both regulators are in their lowest position. Turn on the air supply.
4. Adjust the regulator 'without load' (L0) to balance the load. The load should not sink or rise.
5. Grip the load with the tool and generate the lifter's signal for load switching. Adjust the regulator 'load' (L1) to balance the load. The load should not sink or rise.

Initial adjustment: 3 weight (incl. automotive)

1. Install Mechspace Pro, install the gripper tool and check all mechanical fixings and pneumatic connections.
2. Plug in the air connection, the signal for load switching and eventual air supply to the gripper tool.
3. Verify that the screw knobs of all regulators are in their lowest position. Turn on the air supply.
4. Adjust the regulator 'without load' (L0) to balance the load. The load should not sink or rise.
5. Grip the first load with the tool and generate the lifter's signal for load switching. Adjust the regulator 'load 1' (L1) to balance the load. The load should not sink or rise.
6. Grip the second load with the tool and generate the lifter's signal for load switching. Adjust the regulator 'load 2' (L2) to balance the load. The load should not sink or rise.



Initial adjustment: pilot control

For adjustment of control unit, see project-specific instructions.

1. Install Mechspace Pro, install the gripper tool and check all mechanical fixings and pneumatic connections.
2. Plug in the air connection and eventual air supply to the gripper tool.

Initial adjustment: slow speed function

1. Install Mechspace Pro according to the instructions for 2 weight, 3 weight or pilot control.
2. Screw in the flow control valve completely.
3. Grip the load with the gripper tool.
4. Give a signal on S17.
5. Screw out the flow control valve until desired lowering speed is reached.
6. Remove the signal from S17.

Initial adjustment: gripping tool

For the functionality of the gripping tool, see its documentation.

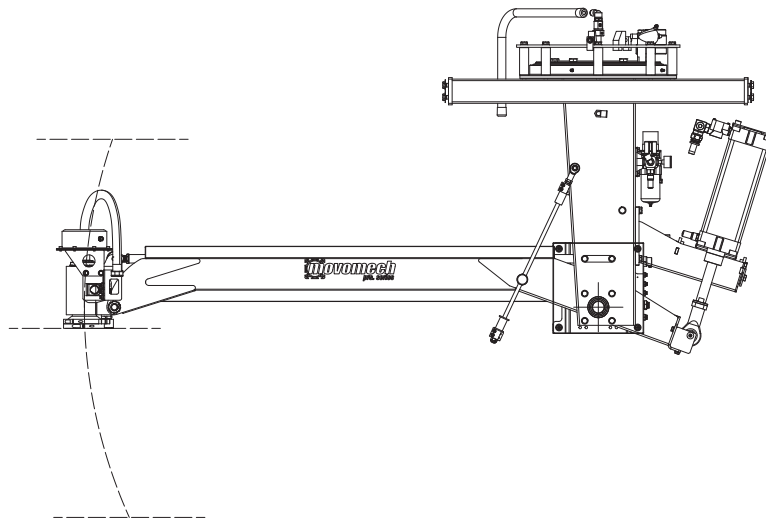
7. User instructions

Mechspace Pro is intended for use in combination with a gripping tool for a smooth and ergonomic material handling.

The operation of pneumatic Mechspace Pro is largely dependent on its specific application:

- its pneumatic configuration
- gripper design and functionality
- characteristics and variability of the handled object
- the surrounding work environment
- intended work pace as well as usage frequency

A complete workstation, including Mechspace Pro, must be accompanied by a specific operating instruction for the particular application, taking into account the mentioned factors.



8. Service, maintenance & running

A general review and functional control tests are performed on a regular basis during commissioning.

All service and maintenance shall be recorded. The user should make sure that material for the purpose is easily available.

NOTE: Make sure that damaged components are replaced immediately in order to avoid possible personal and material damage.

Keep the equipment and area on and adjacent to the workplace cleaned. This is important for the comfort and well-being of personnel and facilitates service and maintenance. Dirt gives a clear indication of the equipment not being properly maintained, which may possibly affect the remaining guarantees on the equipment.

Maintenance safety instructions

The prescribed procedures and service intervals, including those concerning the replacement of parts/accessories, are described in the instruction manual and must be followed. Professionals are the only persons who are allowed to carry out such procedures.

Staff members with appropriate competence and authority are the only persons who are allowed to carry out mechanical and electrical repair and maintenance work. Unauthorised persons should be prohibited to work with machines and devices inside the equipment.

The equipment should be disconnected and secured against unintentional or unauthorised use, including reconnection, during all repair and maintenance work.

It should be confirmed that the equipment is free from voltage before any work on electric equipment is commenced.

Make sure that:

- moving parts are stationary and locked, and that
- moving parts cannot move accidentally during maintenance work.

Use safe and environmentally friendly maintenance products and spare parts!

Directions for work during operation

The user or the "authorised person" must, in each individual case, ensure that the work in question can be carried out without any risk of personal injury because of specific local conditions.

To prevent accidents, only approved and suitable tools and aids may be used during maintenance, adjustment and repair work.

Do not touch rotating parts. Maintain an adequate safe distance between yourself and the machinery to prevent clothes, limbs and hair from becoming caught.

Avoid the occurrence of naked flame, extreme heat (e.g. welding) and sparks in the presence of volatile cleaning materials and nearby inflammable or heat-sensitive materials (e.g. wood, plastics, oils, fats and electric equipment). This can result in fire hazard, harmful gases and damaged insulation.

Directions for work with pneumatic equipment

The equipment should be stopped immediately on discovery of faults related to the air supply.

Work on pneumatic equipment or parts must only be carried out by authorised staff.

The parts on which inspection, maintenance and repair work is to be carried out should be disconnected from the air supply.



Keep the equipment and area on and adjacent to the workplace cleaned.

8.1 Recommended spare parts / wear parts

740754 Manipulator arm assembly				
#	Article nr.	Designation		Quantity
4	740760	Ball bearing	R	2
5	738962	Needle bearing	R	2

740744 Tool adapter				
#	Article nr.	Designation		Quantity
3	738962	Needle bearing	R	2
4	739069	Needle bearing	R	2
5	740752	Ball bearing	R	2
6	739059	Rubber damper 30/16x28	S	1

740737 Cylinder unit				
#	Article nr.	Designation		Quantity
4	739069	Needle bearing	R	4
5	740742	Linear bearing	R	1

740764 Stroke limiter				
#	Article nr.	Designation		Quantity
2	739094	Rubber damper 25/12x40	S	2

742708 Brake unit				
#	Article nr.	Designation		Quantity
1	742709	Brake caliper, sub-assy	R	2

740755 Front brake				
#	Article nr.	Designation		Quantity
1	731494	Brake unit	R	1

741803 Manual pressure release kit				
#	Article nr.	Designation		Quantity
3	741807	Speed control valve with pressure release	R	1

741889 Load cell (parallelogram)				
#	Article nr.	Designation		Quantity
7	731383	Pilot regulator	R	1

741370-9 2-weight / 3-weight / Pilot control				
#	Article nr.	Designation		Quantity
1	741324	Pneumatic cabinet		1
2	740796	Filter	S	1
3	730499	Safety strap Ø90		1
4	741367	2-weight, pre-mounted		1

741367 2-weight, pre-mounted				
#	Article nr.	Designation		Quantity
2	738124	Precision regulator	R	2
3	738125	3/2 valve monostable	R	1
4	739553	Pressure guard	R	1
5	739597	Non-return valve	R	1
6	740797	Precision regulator	R	1

741368 3-weight, pre-mounted				
#	Article nr.	Designation		Quantity
2	738124	Precision regulator	R	3
3	738125	3/2 valve monostable	R	2
4	739553	Pressure guard	R	1
5	739597	Non-return valve	R	1
6	740797	Precision regulator	R	1

741369 Pilot control, pre-mounted				
#	Article nr.	Designation		Quantity
2	739553	Pressure guard	R	1
3	739597	Non-return valve	R	1
4	740797	Precision regulator	R	1

741343 Automotive 2-weight				
#	Article nr.	Designation		Quantity
41	741359	5/2 valve, bistable	R	1

741322 Automotive 3-weight				
#	Article nr.	Designation		Quantity
41	741359	5/2 valve, bistable	R	2
42	732669	OR gate	R	2

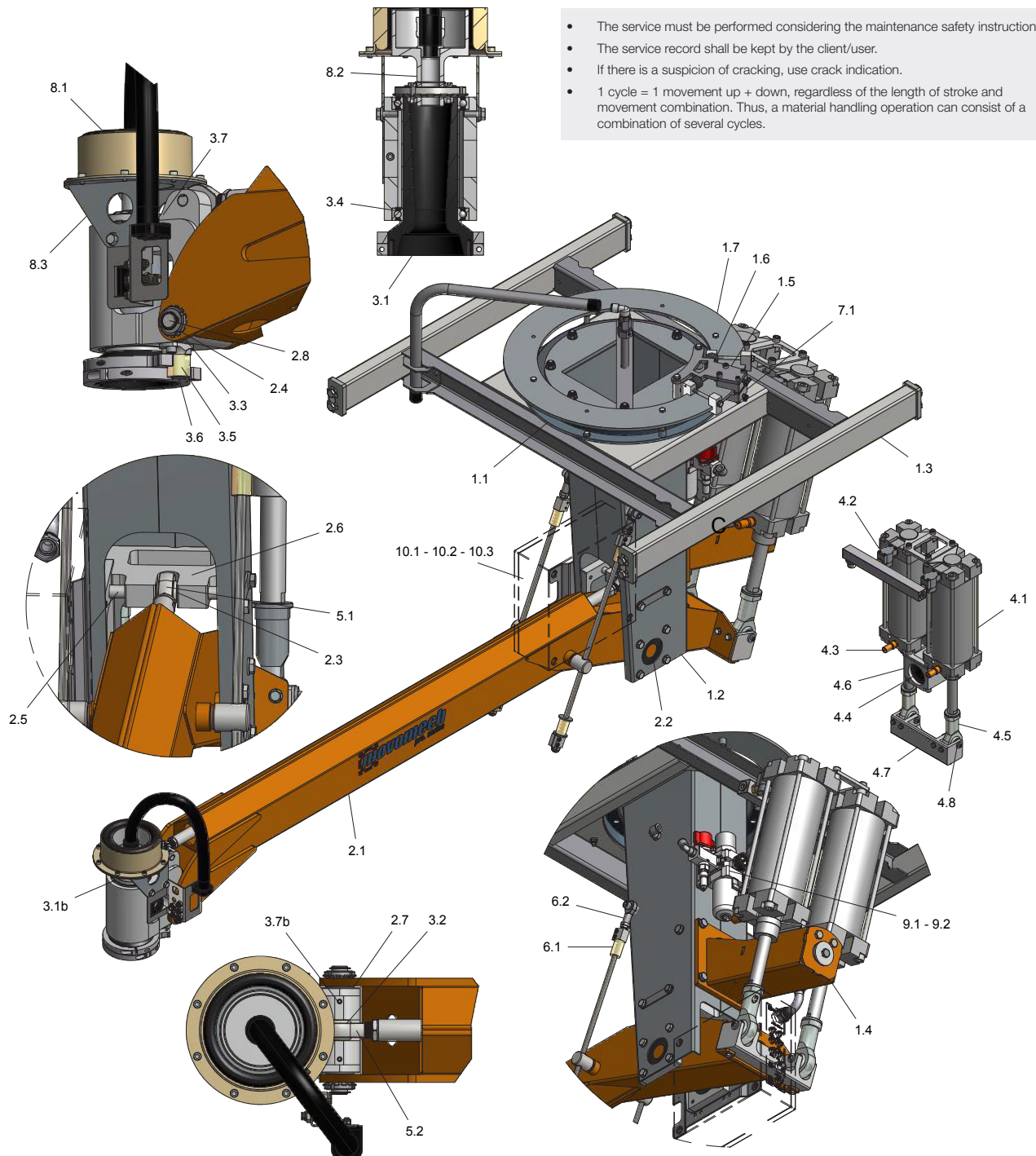
741383 Slow speed function				
#	Article nr.	Designation		Quantity
50	741358	Metering valve with silencer 3/8"	R	1
51	741366	3/2 valve NC	R	1

741718 FRL unit (B) 1/2"				
#	Article nr.	Designation		Quantity
1	742408	Filter	S	1
2	735351	Micro filter 0,3 µm	S	1

8.2 Service record – Mechspace Pro 150 pneumatic

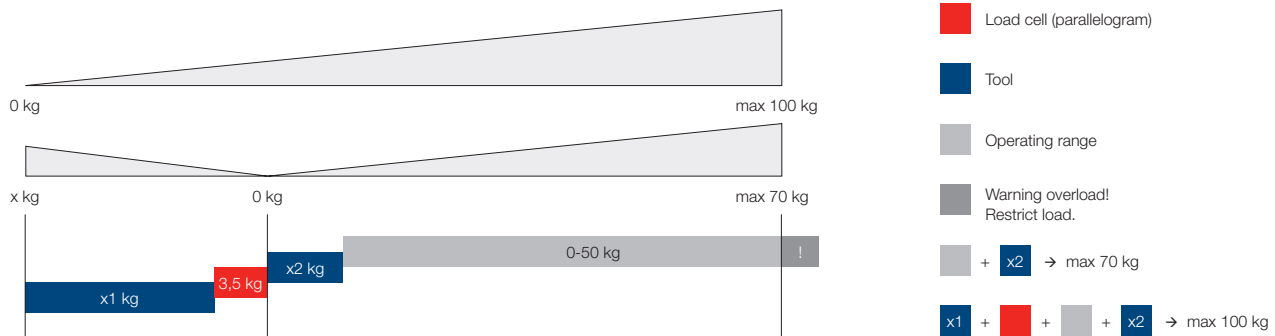
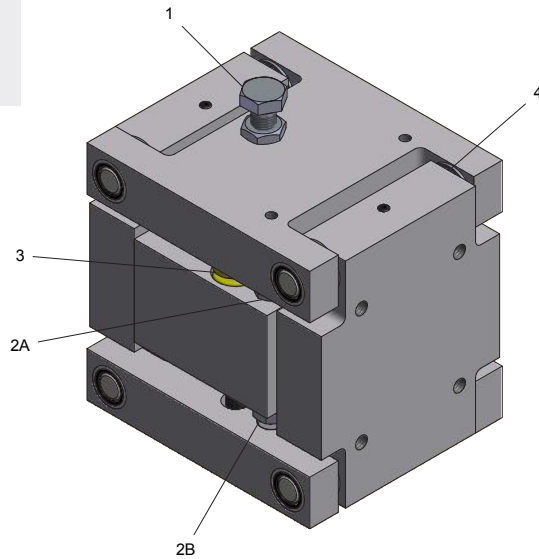
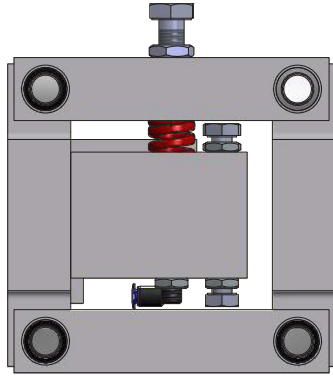
ID:			Client / location:			Service by:			Date:				
#	Article nr.	Designation	Action	Interval									
				R/N	P/M	1 month	1 year	100 000	500 000	1 000 000	2 000 000		
	740700	Mechspace Pro 150 base model											
1.1	741895	Swivel ring	Verify free movement without glitches.	N	M						Control		
1.2	742398	Main body assembly	Check for cracks or deformations.	N	M					Control			
1.3	731346	Cross unit, steel (incl. suspension)	Check for cracks or deformations.	N	M					Control			
1.4	740770	Bracket	Check for cracks or deformations.	N	M					Control			
1.5	742753	Bracket for brake	Check for cracks or deformations.	N	M					Control			
1.6	730449	Rubber damper	Check for wear and tear. Replace when needed.	N	M					Control			
1.7	742750	Brake disc	Check for wear and tear.	N	M					Control			
	740754	Manipulator arm assembly											
2.1	740787	Manipulator arm, painted	Check for cracks or deformations.	N	M					Control			
2.2	740760	Ball bearing	Verify free movement without glitches.	N	M					Control		Replace	
2.3	738962	Needle bearing	Check for glitches.	N	M								
2.4	739067	Clamping element	Verify that the locking tabs are in locked position, that the shaft (3.7) is fixed sideways and centered. Correct fastening torque is 70 Nm.	N	M					Control		Replace	
2.5	740761	Shaft		N	M							Replace	
2.6	740762	Bracket for pull rod	Check for cracks or deformations.	N	M					Control			
2.7	739071	Slide washer 20/36x1.5	Check for wear and tear. Verify that the washer can move freely.	N	M					Control		Replace	
2.8	741415	Shaft		N	M							Replace	
	740744	Tool adapter											
3.1	740746	Main shaft	Check for wear and tear. Verify that the KM nut of the rotation (3.1b) is not loose and that the locking tabs remain in locked position.	N	M	Control							Replace
3.2	738962	Needle bearing	Check for glitches.	N	M					Control		Replace	
3.3	739069	Needle bearing	Verify free movement without glitches.	N	M					Control		Replace	
3.4	740752	Ball bearing	Verify free movement without glitches. Check ev. looseness in the tool adapter by trying to turn the adapter from side to side when the air is turned off. No glitches may occur.	N	M					Control		Replace	
3.5	739059	Rubber damper 30/16x28	Check for wear and tear. Replace when needed.	N	M					Control			
3.6	740748	Shaft for damper	Check for wear and tear.	N	M					Control		Replace	
3.7	739063	Shaft	Check that the shaft is centered and that set screws (3.7b) are tightened.	N	M							Replace	
	740737	Cylinder unit											
4.1	740736	Pneumatic cylinder Ø125-250	Verify movement and listen for abnormal noise.	N	M					Control		Replace	
4.2	739816	Piloted non-return valve 1/2"	Make a functional test by shutting off incoming air supply. The arm should then remain in a fixed position without falling or rising.	N	M					Control		Replace	
4.3	740375	Silencer 1/2"	Listen for abnormal noise.	N	M					Control		Replace	
4.4	740742	Linear bearing	Verify free movement without glitches.	N	M					Control		Replace	
4.5	738361	Rod end	Verify free movement without glitches.	N	M					Control		Replace	
4.6	740739	Bearing housing	Check for wear and tear.	N	M					Control		Replace	
4.7	740740	Bracket for rod end	Check for cracks or deformations.	N	M					Control		Replace	
4.8	740741	Shaft		N	M							Replace	
	740782	Pull rod, L=1600											
5.1	739088	Rod end, RH thread	Verify free movement without glitches.	N	M					Control		Replace	
5.2	739092	Rod end, LH thread	Verify free movement without glitches.	N	M					Control		Replace	
	740764	Stroke limiter											
6.1	739094	Rubber damper 25/12x40	Check for wear and tear. Replace when needed.	N	M					Control			
6.2	732605	Rod end	Verify free movement without glitches.	N	M					Control		Replace	
	742708	Brake unit											
7.1	742709	Brake caliper, sub-assy	Check for wear and tear. Replace when needed.	N	M					Control			
	740755	Front brake											
8.1	731494	Brake unit	Check for wear and tear. Replace when needed.	N	M					Control			
8.2	740757	Brake drum	Check for cracks or deformations.	N	M					Control			
8.3	740732	Brake bracket	Check for cracks or deformations.	N	M					Control			

#	Article nr.	Designation	Action	Interval									
				R/N	P/M	1 mån	1 år	100 000	500 000	1 000 000	2 000 000		
	741718	FRL unit (B) 1/2"											
9.1	742408	Filter (regulator with manual drainage)	Open the blowdown valve from time to time to blow out collected condensate; the liquid should not come in contact with the vortex disc. Do not allow the liquid level to exceed: "Max drain level".	N	M	Control				Replace			
9.2	735351	Micro filter 0,3 µm (regulator with manual drainage)	Open the blowdown valve from time to time to blow out collected condensate. Do not allow the liquid level to exceed: "Max drain level". * The filter element is replaced when the pressure drop across the filter reaches 0.1 MPa, and at least once a year.	N	M	Control	Replace*			Replace			
	7413xx	Pneumatics											
10.1	740797	Precision regulator	Verify function.	N	M							Replace	
10.2	739553	Pressure guard		N	M							Replace	
10.3	-	Pneumatic components	Check pneumatic hoses visually for damage or folds, and listen for leaks. Check that pneumatic cabinet and its door are securely fastened.	R	M	Control							
	7xxxxx	General											
11.1	-	Fasteners	Inspect all accessible fasteners that they are not loose or damaged.	N	M				Control				
11.2	-	Function	Perform trial motion for both lift and rotation. Go from end to end in a smooth slow motion. There should be low level resistance throughout the motion. No jerks or irregularities should be noticed.	R	M	Control							



8.3 Setting of balance function in load cell (parallelogram)

- Max. allowed load in parallelogram is 70 kg!
- Operating range variable load: 50 kg (max. 40 kg recommended).
- The load cell has a default setting upon delivery and does normally not require adjustment.



Initial settings

1.1 Preparations for setting

1. Check and ensure that the air pressure is set at 5.5 bar.
2. Check and ensure that the washers (4) can rotate freely.
3. The springs (3) must be set parallel.
4. Ensure that there is no load in the tool.
5. Check that the lock nuts on the maximum load screws 2A are loose and can be moved freely.
6. Screw the four screws 2A and 2B in as far as possible so that the parallelogram can move up and down freely.
7. Place the heaviest load in the tool.

1.2 Balancing

1. Check that the lock nut on the adjusting screw (1) is loose and can be moved freely.
2. Carefully adjust the adjusting screw (1): in to obtain more lifting power, out to obtain less lifting power.
3. Find the setting that requires the same effort from the operator to raise or lower the lifting device.
4. Check that the lifting device does not tend to rise or fall of its own accord.
5. Tighten the lock nut and check that the setting has not changed.

1.3 Setting maximum load

1. Ensure that the very heaviest intended load is located in the tool.
2. Unscrew the two "maximum load" screws 2A until the screw heads are exactly touching the stop.
3. Tighten both lock nuts and check that the setting has not changed.

1.4 Setting no load

This setting is sensitive and it is important that it is done carefully to obtain the correct behaviour from the manipulator.

1. Ensure that there is no load in the tool.
2. Unscrew the two lower "no load" screws 2B and find the setting that allows the tool to become balanced.
3. Check that the setting has been done correctly by testing movement upwards and downwards a number of times and release the manipulator.
4. Verify that the lifting device does not tend to rise or fall of its own accord.
5. Unscrew the other of the two lower "no load" screws 2B to the same distance as the first one.
6. Tighten both lock nuts and check that the setting has not changed.

Readjustment of load cell (parallelogram)

2.1 Preparation for readjustment

Since external factors can affect the behaviour of the lifting device, subsequent readjustment may become necessary.

1. Check and ensure that the air pressure is set at 5.5 bar.
2. Check and ensure that the washers (4) can rotate freely.
3. The springs (3) must be set parallel.
4. If the lifting device moves by itself without a load in the tool, see section 2.2
5. If the lifting device moves by itself with a load in the tool, see section 2.3

2.2 Without load

This setting is sensitive and it is important that it be done carefully to obtain the correct behaviour from the lifting device.

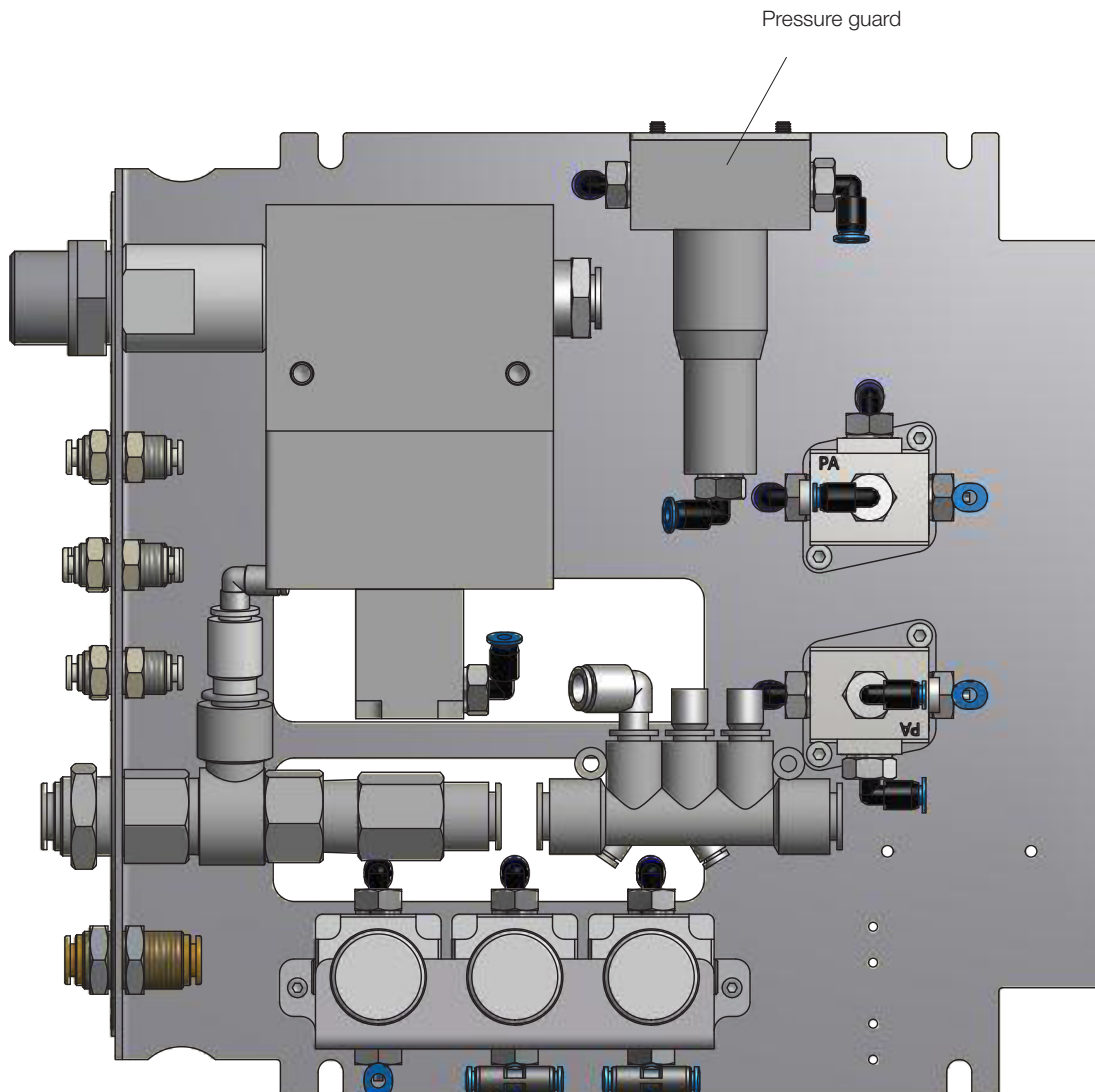
1. Release both lock nuts on the "no load" screws 2B.
2. Screw in one of the two lower "no load" screws 2B and with the other find the setting that allows the tool to become balanced.
3. Check that the lifting device does not tend to rise or fall by itself.
4. Tighten the lock nuts and check that the setting has not changed.
5. Unscrew the other of the two lower "no load" screws 2B to the same distance as the first one.
6. Tighten the lock nut and check that the setting has not changed.
7. Check that the lifting device does not tend to rise or fall by itself.

2.3 With load

1. Ensure that the very heaviest intended load is located in the tool.
2. Adjust as per section 1.2
3. Check that the lifting device can lift both light and heavy loads.
4. If necessary, also adjust in accordance with section 1.3

- With screws 2A and 2B, aim at getting the same distance upwards and downwards between lock nut and screw.

8.4 Adjustment of pressure guard



If the incoming air pressure changes, or if the load falls when the air pressure is lost, it may be necessary to adjust the pressure switch.

1. Lower the air pressure level on the FRL unit with approx. 0.5 bar (e.g. from 6 to 5.5 bar).
2. Remove the pneumatic hose from port 2 on the pressure guard.
3. Carefully adjust the pressure guard until it closes, i.e. until it no longer lets any air through at port 2.
4. Secure the adjustment of the pressure guard.
5. Remount the pneumatic hose on port 2.
6. Turn up the air pressure level on the FRL unit with 0.5 bar to the original level.
7. Shut off the air supply and switch it on again.
8. The load should now be balanced. If not, repeat the above steps but lower the air pressure with 0.7 bar instead, etc.

8.5 Troubleshooting

Type of problem	Probable cause	Action
No hoisting motion up/down	Air supply is turned off	Check whether the air supply for some reason has been turned off, and make sure no risk of injury appears when restoration of the air supply. Some procedures may only be performed by authorized maintenance staff. Restore the air supply. At least 5.5 bar (no more than 7 bar).
	Clogged filter	Clean or replace filter.
	The hoist is exposed to mechanical obstacle	Check whether some part of the hoist or tool including any object, are stuck in other equipment. Remove mechanical obstacle.
	Defective control unit*	Check whether the hoist is supplied with air. Inspect the control unit. Some procedure may be performed by authorized maintenance staff. Repair control unit.
	Defective equipment* that serve as condition	Check whether external equipment serving as conditions are defect. Repair equipment.
Incorrect operating range	Equipment serving as rotational working range limit out of position	Check whether the rotation limiters are out of position. Reset to correct position.
	Equipment serving as vertical working range limit out of position	Check whether the stroke limiter is out of position. Reset to correct position.
Irregular or jerky hoisting motion up/down	The hoist is exposed to mechanical obstacle	Check whether some part of the hoist or tool including any object, are stuck in other equipment. Remove mechanical obstacle.
	Defective bearings	Check whether the bearings are damaged. Replace bearings.
	Dirty filter in cylinder	Clean or replace filter.
Load ascends/descends	Regulator(s) are inaccurate	Adjust setting.
	Air leakage	Seal leakage.
The load drops when air supply is shut off	Pressure guard is inaccurate or defect	Adjust setting or replace.

* Repair by a specialist.

9. EC certificate

CE EC declaration of conformity of the machinery

TRANSLATION
(according to 2006/42/EC, annex 2A)

Manufacturer

RonI
8001 Tower Point Drive
Charlotte, NC 28227
USA

Tel: 866-543-8635
Fax: 866-543-9532
E-Mail: Info@RonI.com
Web: www.RonI.com

Representative for documentation

RonI

hereby declares that the machinery

Designation

Mechspace Pro

Machine type

Lifting unit

Version

70, 70P, 150, 150P

complies to all applicable regulations in

Machinery Directive 2006/42/EC

EMC Directive 2004/108/EC

and that standards and/or technical specifications as described below are applied.

Machinery Directive
SS-EN-ISO 12100:2010

EMC Directive

Low Voltage Directive

Place: Kristianstad

Date: 2014-04-01



LIFT-O-FLEX

MOBI-Crane Voyager

10. Revisions

Revision list			
Edition	#	Designation	Pages
2015-03-01	0	First edition	-
2016-01-01	1	New swivel ring, updated cross unit (p. 8, 48). New brake unit (p.19). Updated pneumatic drawings (p. 22-41). Updated spare parts list (p. 47).	8, 19, 48 22-41, 47

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LIFT-O-FLEX

MOBI-Crane  