Mechlight
Pro 50

Original instructions
2016-12-01

EN

CE

movomech
Weightless applications

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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.

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Revision list

Edition	#	Designation	Pages
2011-10-01	0	First edition	-
2012-04-12	1	Specific maintenance instruction as appendix.	-
2012-12-01	2	Specific maintenance instruction added in manual p. 21.	21
2013-10-01	3	New spare part structure for cylinders (cylinder + pin) p. 20. Added article number for cylinder gable p. 20.	20
2014-05-01	4	New layout. Added version Automotive p. 20-21 and pneumatics with slow speed function p. 24-25. Added installation instruction p. 29 and operator instruction p. 30. Updated maintenance instruction p. 34-35.	11, 20-21, 24-25 29, 30, 34-35
2014-11-01	5	New hose bracket at rod copler p. 14.	14
2015-10-01	6	New layout. Added revision list s. 3. Corrected length measure p. 7. Updated all pneumatic drawings p. 16-25. Corrected spare part list p. 30.	2, 7, 16-25 30
2016-05-01	7	Corrected misspellings EN.	-
2016-12-01	8	Changed FRL unit p. 26, 30. New cylinders p. 8-9, 30.	8-9, 26, 30

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

Easy and smooth handling

Mechlight Pro is an ergonomic and functional lightweight lifter for loads up to 50 kg. The lifter allows free rotation around its lift axle = a great advantage for assembly work where else hoses and accessories may risk being damaged!

Easy to integrate

Mechlight Pro is advantageously installed in a rail system or onto a pillar or wall mounted jib crane. At the tool adapter, a pneumatic gripper tool and its control units can be easily integrated. Even a simple mechanical tool provides an easy and ergonomic handling.

Several pneumatics versions

Each material handling situation requires its own pneumatics solution. Mechlight Pro is available in several pneumatics versions: equilibrated for 1 or 2 loads, or in a balanced version for balancing a range of varying loads.

Standard vs. Automotive

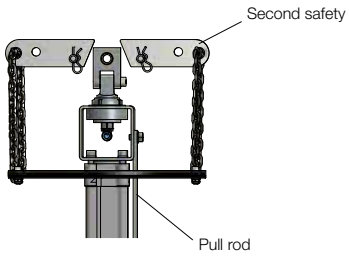
Mechlight Pro is available in two versions: Standard and Automotive.

Mechlight Pro in standard version is the natural solution for material handling and general lifting in the traditional industry.

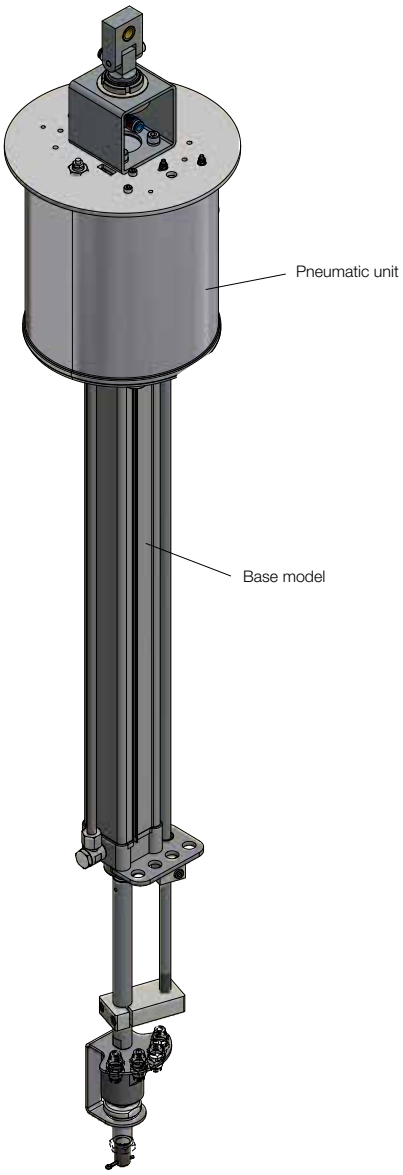
For more demanding environments where reliability and performance beyond the normal required, such as in assembly processes in the automotive industry, we offer a variant Automotive equipped with added safety features.

Many applications

Typical applications for Mechlight Pro is for example handling of components in the manufacturing industry, light vehicle parts assembly work or picking from conveyors and roller conveyors.



Version Automotive



Version Standard

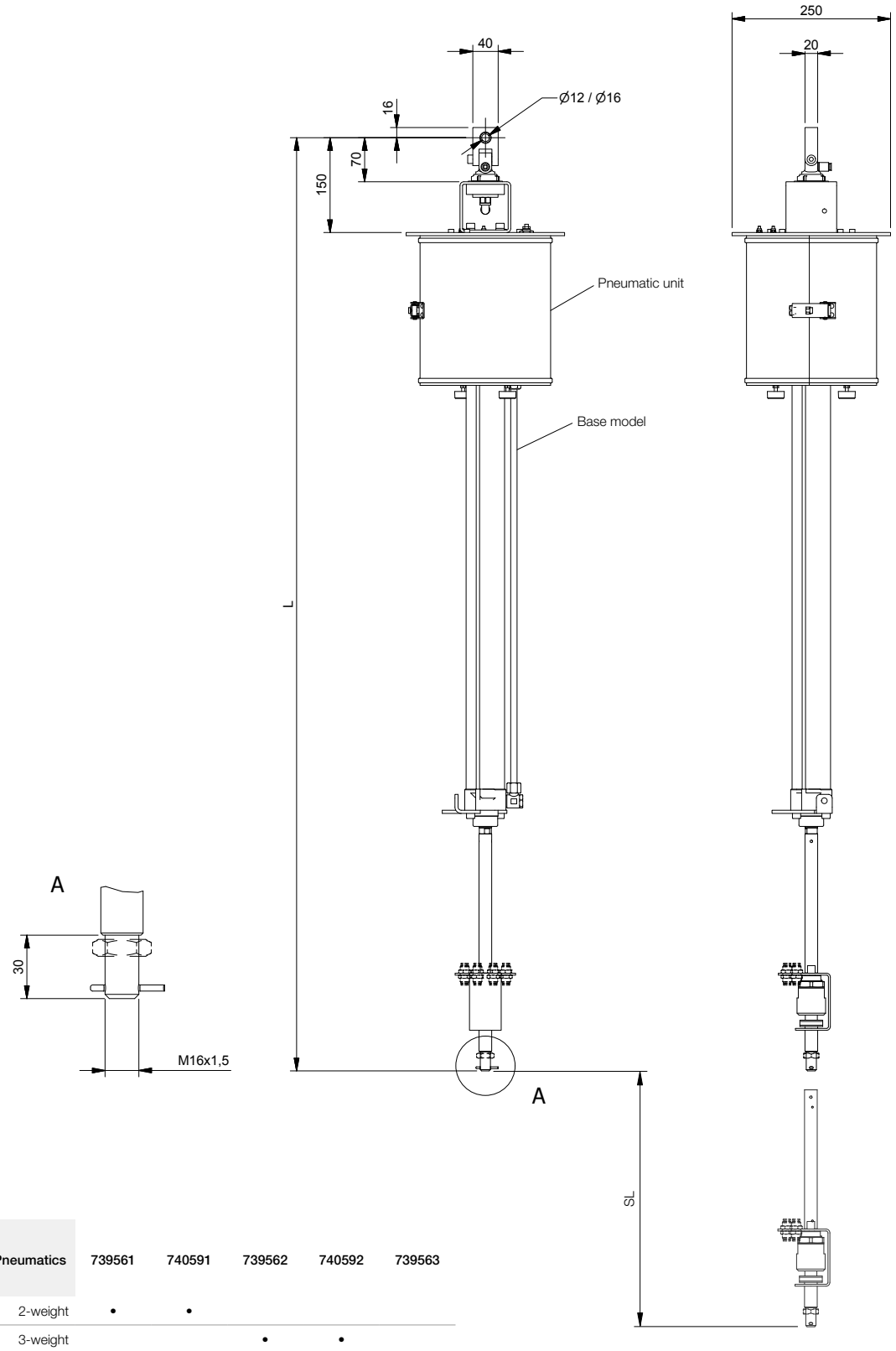
Technical data		Mechlight Pro 50
Max load	kg	40[1]/50
Max moment	Nm	0
Max tare weight	kg	23 (27)[2]
Stroke SL	mm	400 -1200
Length L	mm	SL+669
Rotation	°	0-360[3]
Lifting speed	m/min	0-40

1 Applies to pneumatic version "Balanced"
2 Standard (Automotive)
3 Unlimited

Media & Environment		Mechlight Pro 50
Medium		air, non-lubricated (40 µm)[1]
Work pressure	bar	4,5-6[2]
Air consumption	l_n/m_{SL}	9,8 (at 5 bar)
Work temperature	°C	5-40 (indoor use)
Noise level	dB (A)	<70

1 To Mechlight Pro: 0,01 µm, FRL unit is included.
2 The lifting unit is prepared for an incoming air pressure of 5 bar unless stated otherwise in the specification.

2.1 Overview



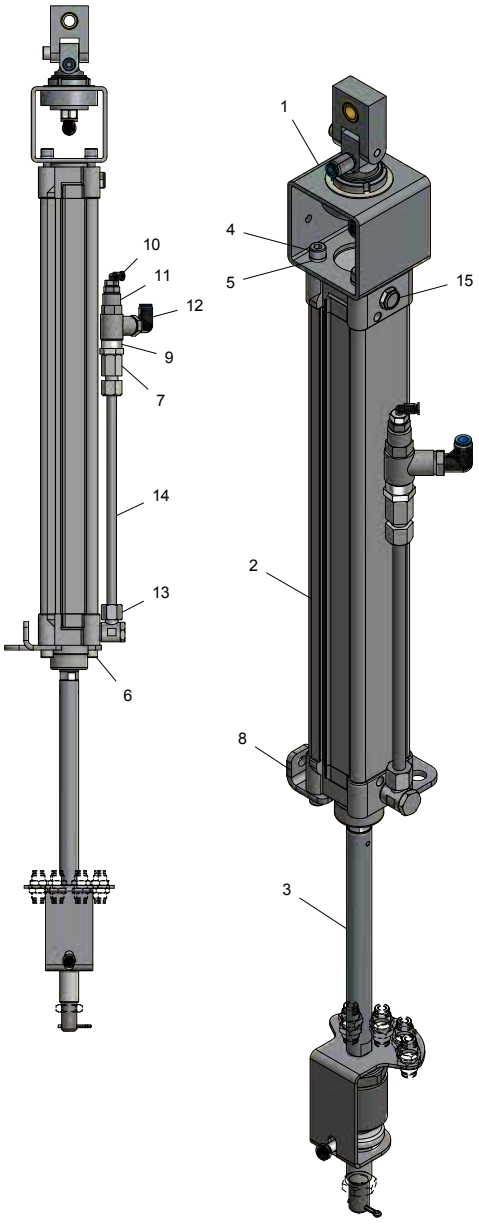
Pneumatics	739561	740591	739562	740592	739563
2-weight	•	•			
3-weight			•	•	
Balanced					•
Slow speed function		•		•	

Base model		*Standard* *Automotive*	739500 740580	739501 740581	739502 740582	739503 740583	739504 740584	739505 740585
Stroke SL	mm		400	600	800	1000	1200	400-1200
Length L	mm		1069	1269	1469	1669	1869	SL+669

3. Sub-assemblies

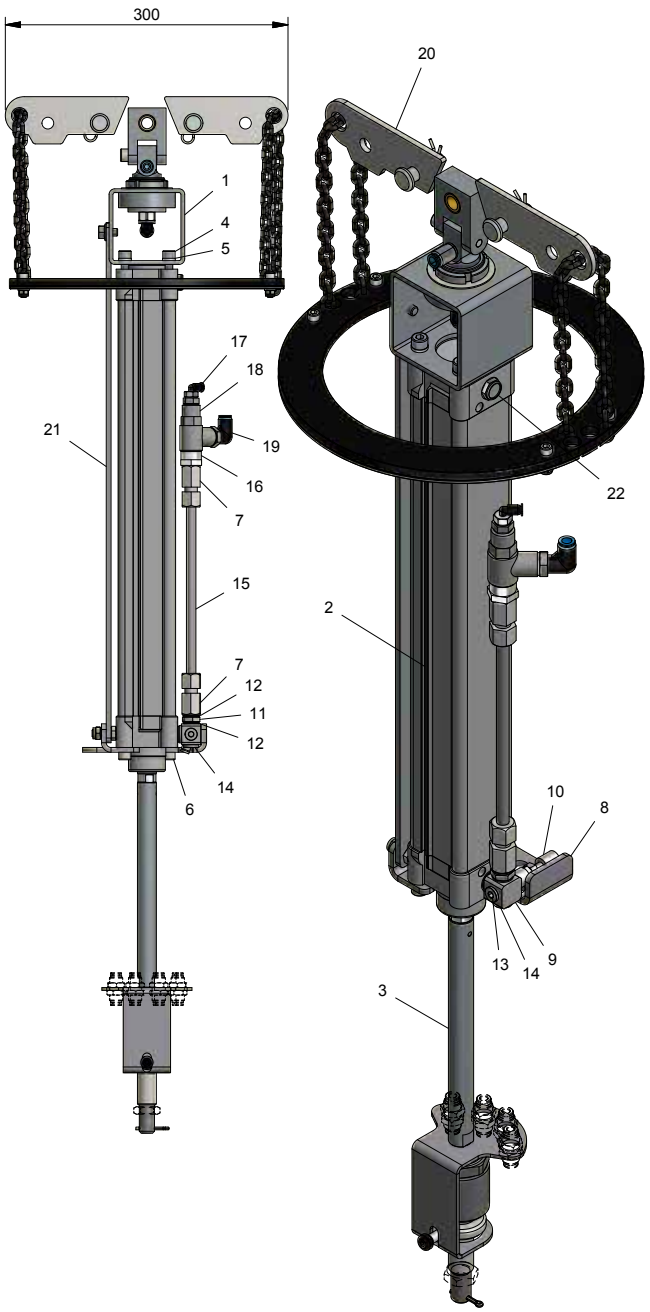
3.1 Base models

	73950x	Base model - standard		
#	Article nr.	Designation		Quantity
1	732530	Cylinder bracket		1
2	*1	Cylinder	R	1
3	740914	Tool adapter		1
4	731333	Screw MC6S M8x30		4
5	738257	Locking washer M8 8.7x13.5x2.5		4
6	731402	MC6S M8x20 Hex socket head cap screw		3
7	732506	Joint for hydraulic pipe 1/4”-10		1
8	741693	Upper hose bracket		1
9	732505	Reducing fitting 1/4”-3/4”		1
10	739513	Push-in L fitting G1/8”-4		1
11	731571	Non-return valve G3/8”	R	1
12	739543	Push-in L fitting G3/8”-8		1
13	732511	Banjo fitting 1/4”-10		1
14	*2	Air pipe, L=L1		1
15	731364	Filter	S	1



Base model		**739500**	**739501**	**739502**	**739503**	**739504**	**739505**
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898
Article nr.	*2	739583	739584	739585	739586	739547	739548
Length L1	mm	255	455	655	855	1055	SL-145
Weight	kg	6,9	8,3	9,6	11,0	12,3	0,0068SL+4,2

	74058x	Base model - automotive		
#	Article nr.	Designation		Quantity
1	732530	Cylinder bracket		1
2	*1	Cylinder	R	1
3	740914	Tool adapter		1
4	731333	Screw MC6S M8x30		4
5	738257	Locking washer M8 8.7x13.5x2.5		4
6	731402	MC6S M8x20 Hex socket head cap screw		3
7	732506	Joint for hydraulic pipe 1/4"-10		2
8	741693	Upper hose bracket, AM		1
9	741685	T-piece		1
10	741686	Throttle/check valve R1/8"	R	1
11	739210	Double fitting		1
12	739292	Sealing ring G1/4"		3
13	739233	Plug G1/8"		1
14	739234	Plug G1/8"-P10		1
15	*2	Air pipe, L=L1		1
16	732505	Reducing fitting 1/4"-3/4"		1
17	739513	Push-in L fitting G1/8"-4		1
18	731571	Non-return valve G3/8"	R	1
19	739543	Push-in L fitting G3/8"-8		1
20	739520	Second safety		1
21	*3	Pull rod, L=L2		1
22	731364	Filter	S	1

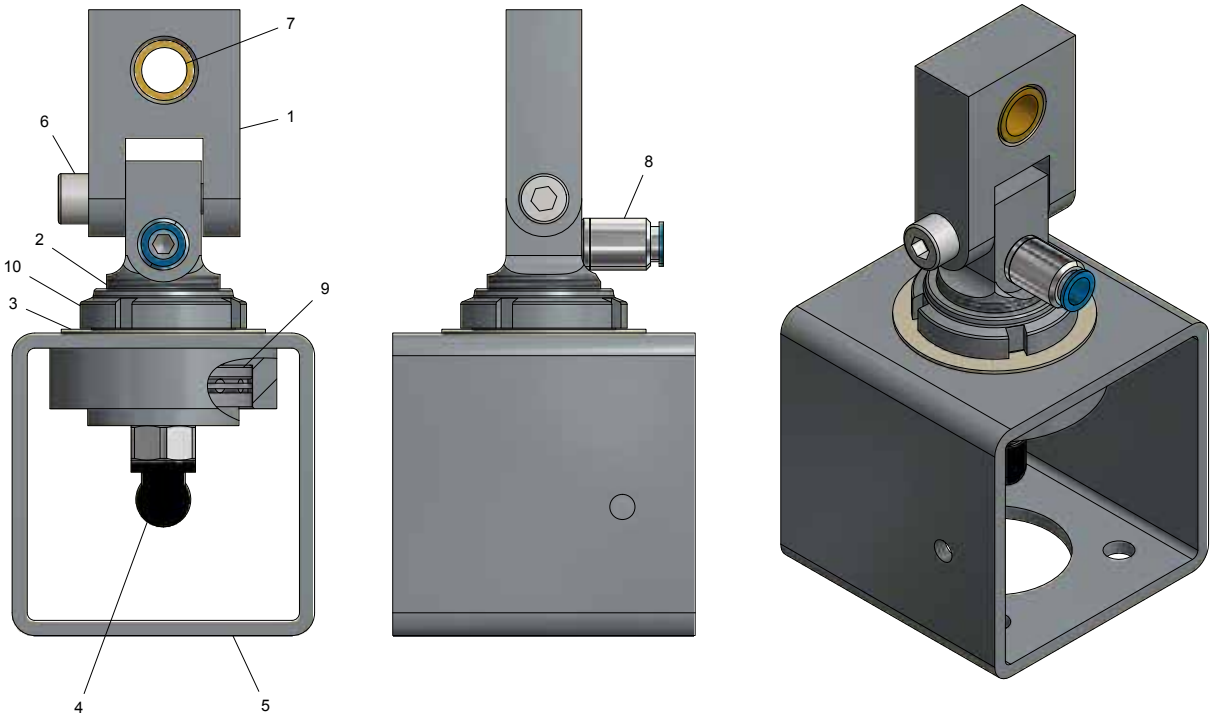


Base model		740580	740581	740582	740583	740584	740585
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898
Article nr.	*2	741687	741688	741689	741670	741691	740588
Length L1	mm	210	410	610	810	1010	SL-190
Article nr.	*3	739530	739531	739532	739533	739534	739535
Length L2	mm	550	750	950	1150	1350	SL+150
Weight	kg	9,0	10,5	12	13,5	15	0,0075SL+6

R: spare part S: wear part

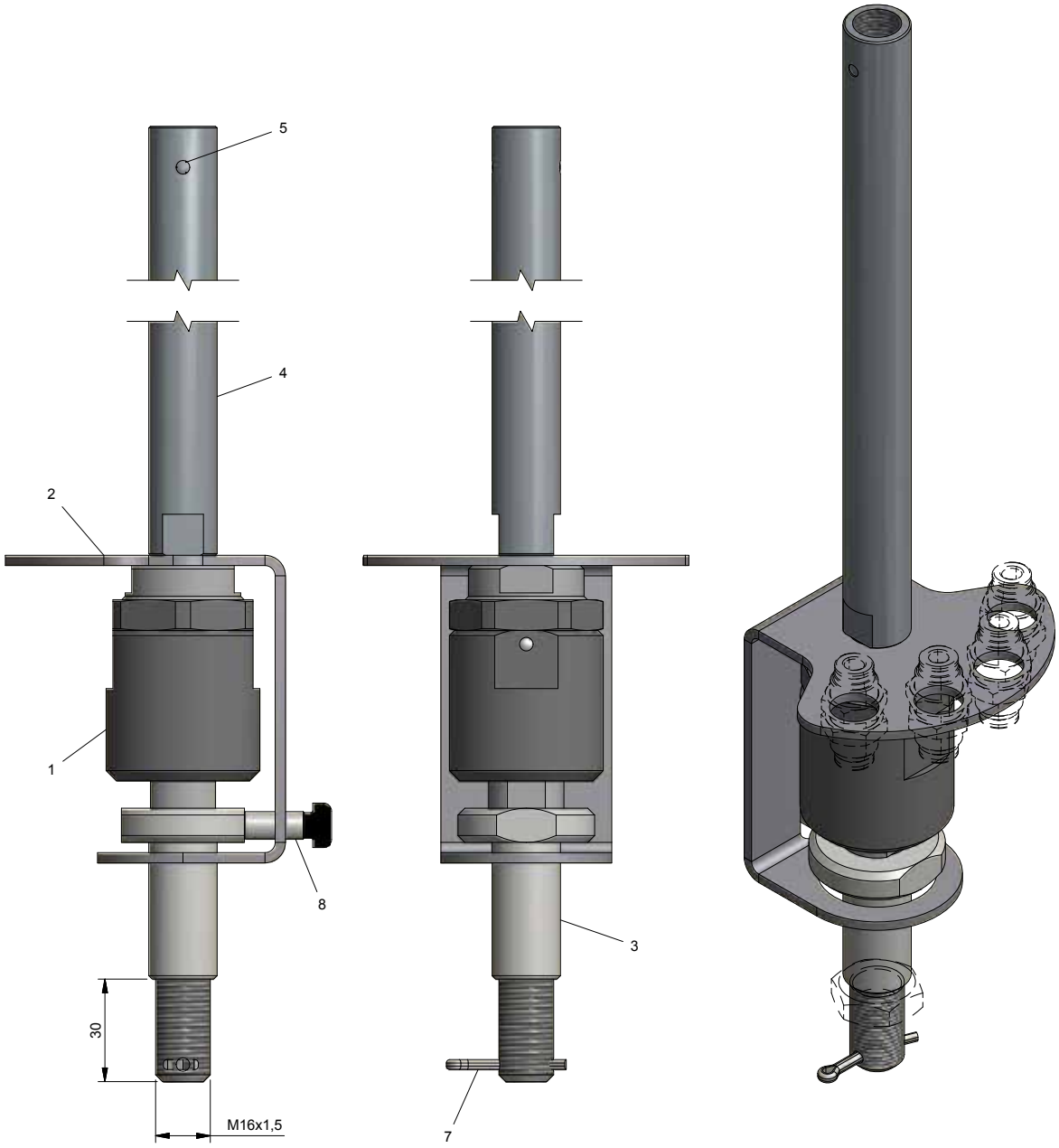
	732530	Cylinder bracket	
#	Article nr.	Designation	Quantity
1	732535	Bracket for trolley	1
2	732534	Shaft	1
3	732497	Slide bearing washer D=32/54 h=1,5	1
4	732499	Elbow fitting 1/4”-8	1
5	732531	Bracket	1
6	740919	Screw MC6S M8x40 (modif.)	1
7	732504	Bushing (for LHB trolley)	1
8	732852	Straight fitting G1/8”-8	1
9	732496	Thrust bearing	1
10	738368	Shaft nut M30x1,5	1

- When the lifting unit is installed in trolleys of type LHB, the enclosed bushing ø12 is used. It is not used when installed in a trolley of type AHB1-2.



	739554	Cabinet body	
#	Article nr.	Designation	Quantity
1	739506	Upper plate	1
2	739507	Plastic guiding	1
3	739509	Shim	2
4	739511	Bracket for pneumatics	2

	740914	Tool adapter		
#	Article nr.	Designation		Quantity
1	739515	Rod coupler	R	1
2	740911	Hose bracket		1
3	740913	Shaft extension		1
4	739538	Distance for spiral hose		1
5	738286	Grooved pin 4x20	R	1
6	730429	Grooved pin 4x40		1
7	730234	Split pin 3,2x25		1
8	735412	Fitting bolt M6 8x20		1

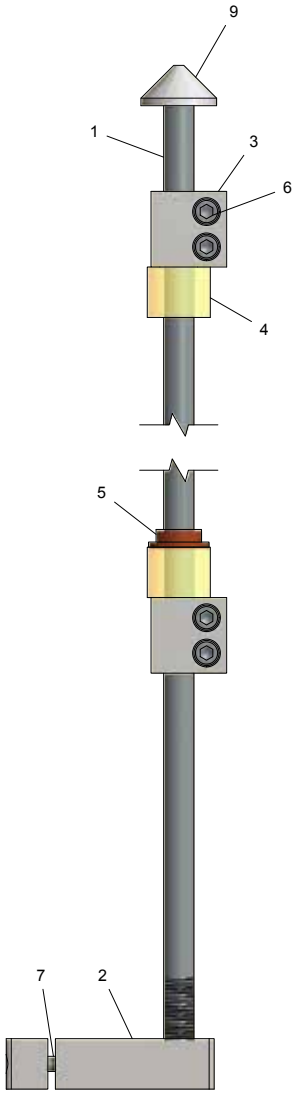


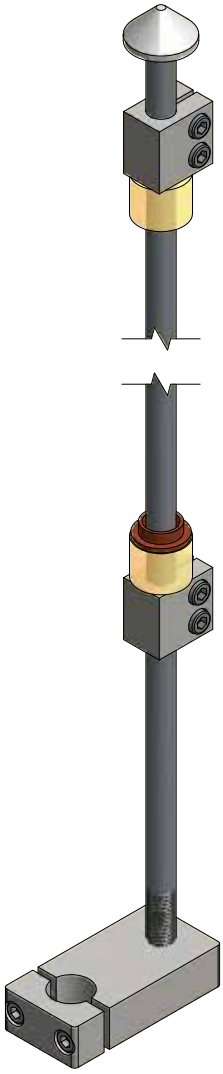
	739520	Second safety	
#	Article nr.	Designation	Quantity
1	739521	Chain bracket	2
2	739522	Upper ring	1
3	739523	Lower ring	1
4	741068	Chain (33 links)	2
5	730280	Screw MC6S M6x20	4
6	730268	Washer BRB 6,4x12x1.5	4
7	730273	Locking nut M6	4
8	730208	Clevis pin 12x40	2
9	730209	Spring cotter	2

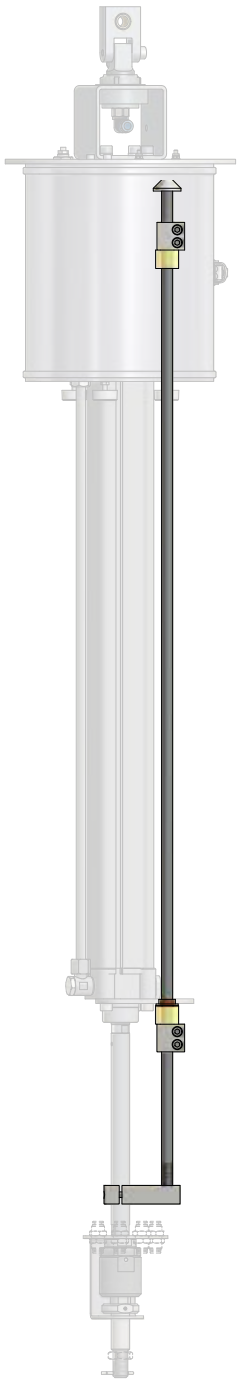
4. Accessories

4.1 Stroke limiter

	739518	Stroke limiter		
#	Article nr.	Designation		Quantity
1	739524	Round bar, L=L1		1
2	739570	Clamp		1
3	732970	Adjustable stop		2
4	732971	Shock absorber	S	2
5	739571	Bushing with flange 15x18x5		1
6	730266	Screw MC6S M6x16		4
7	731675	Screw MC6S M6x35		2
9	741309	Conical plug		1







Stroke SL		**400**	**600**	**800**	**1000**	**1200**	**400-1200**
Length L1	mm	710	910	1110	1310	1510	SL+310
Weight	kg	1,5	1,6	1,7	1,9	2,0	0,00065SL+1,24

R: spare part S: wear part

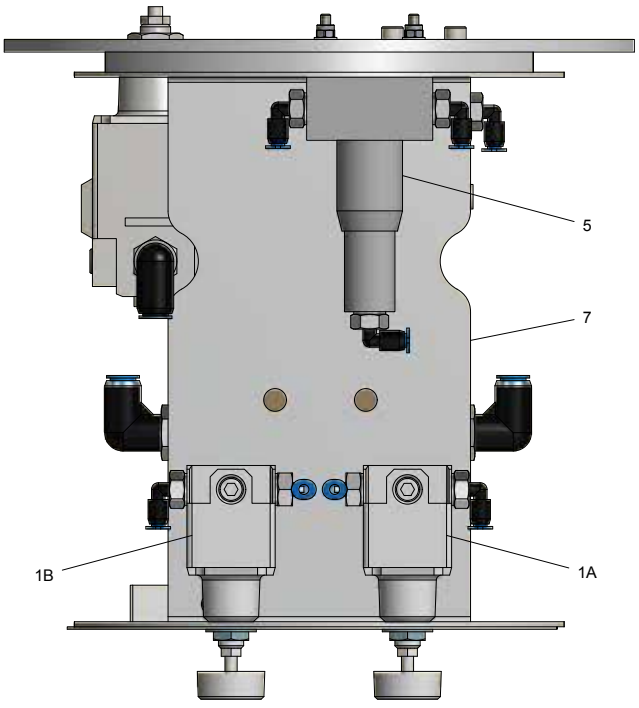
5. Pneumatic configurations

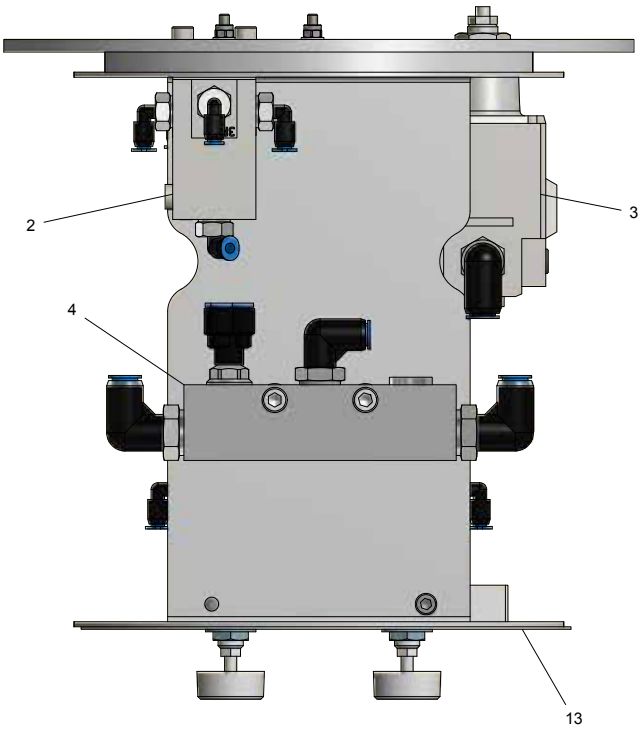
Overview

5.1 Pneumatics: 2-weight

	739561	2-weight		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	2
2	738125	3/2 valve monostable	R	1
3	731583	Precision regulator	R	1
4	739552	Distribution block		1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
7	739554	Cabinet body		1
8	739545	Spiral hose, triple	R	1
(9)	*1	Cylinder	R	1
(10)	731364	Filter	S	1
11	735350	Air preparation unit		1
12	739525	Cabinet cover		1
13	739546	Cover plate		1
(20)	741686	Throttle/check valve R1/8”	R	n1

n1: Standard: 0 Automotive: 1

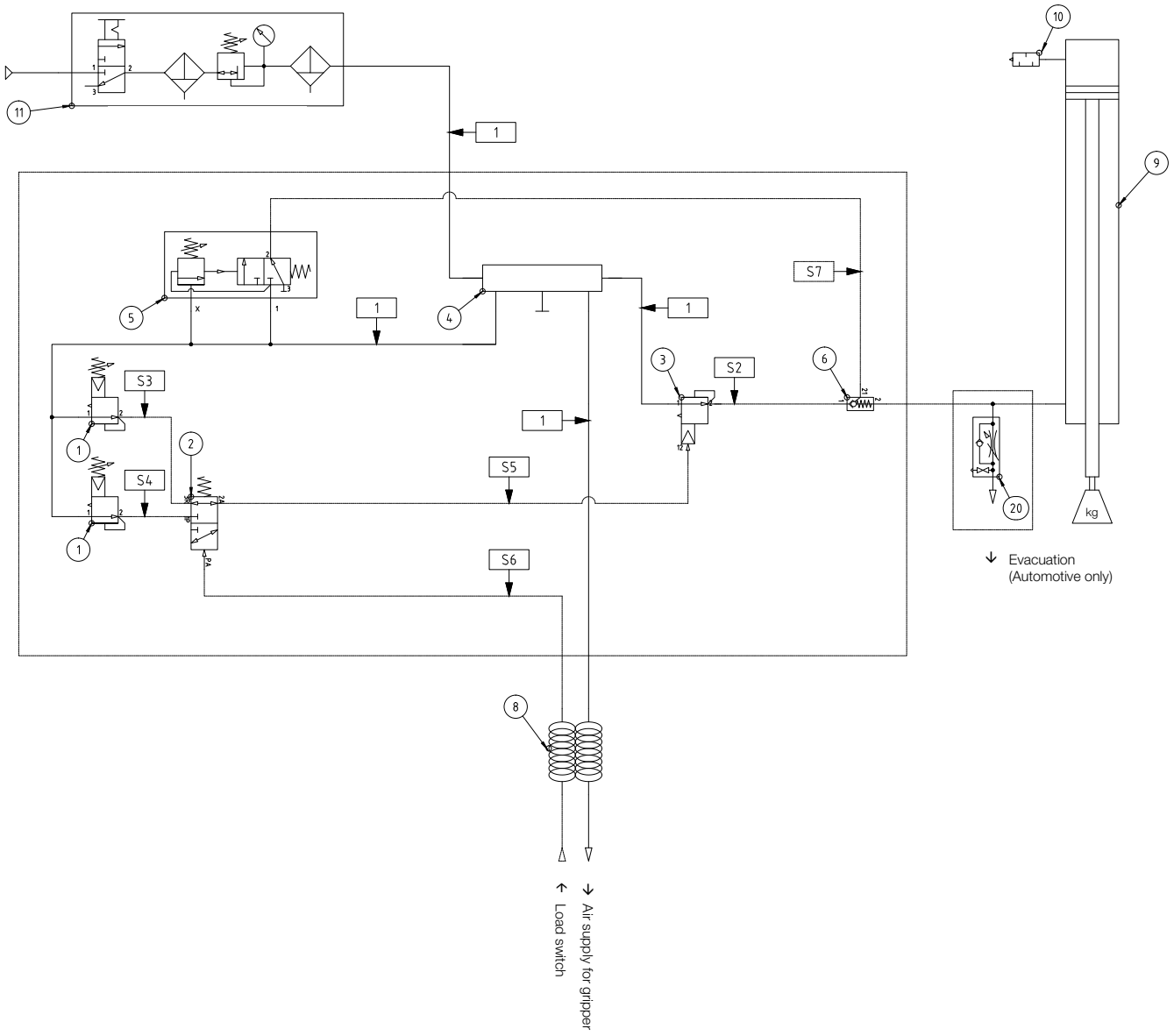




Base model	*Standard*	**739500**	**739501**	**739502**	**739503**	**739504**	**739505**
	Automotive	**740580**	**740581**	**740582**	**740583**	**740584**	**740585**
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898

R: spare part S: wear part

Position	Designation / Function
1A	Precision regulator / Without load
1B	Precision regulator / With load
3	Precision regulator / Main regulator



- Balanced 2-weight: handling of one balanced load; with an external actuator the operator selects ”Load”, or ”Without load”.

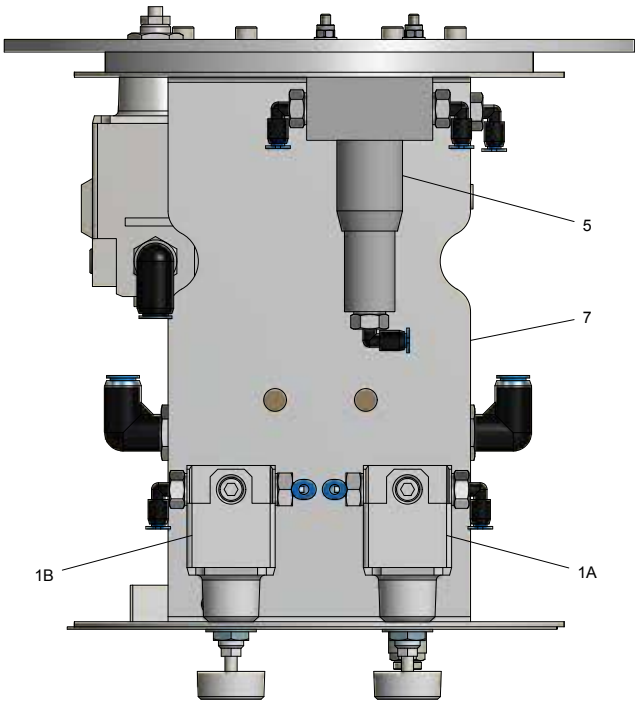
Pneumatics		**739561**
Weight	kg	5,5

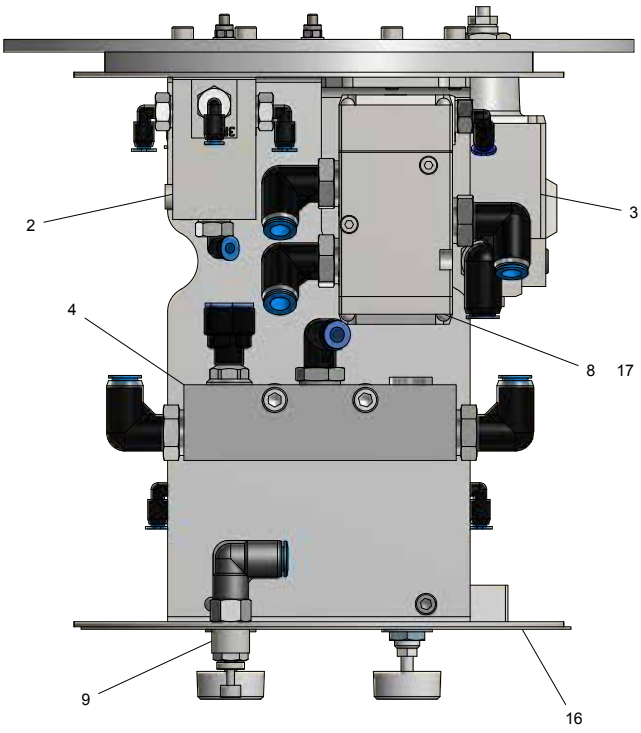
R: spare part S: wear part

5.2 Pneumatics: 2-weight with slow speed function

	740591	2-weight slow speed function		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	2
2	738125	3/2 valve monostable	R	1
3	731583	Precision regulator	R	1
4	739552	Distribution block		1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
7	739554	Cabinet body		1
8	739551	3/2 valve NC	R	1
9	739550	Flow control valve	R	1
(10)	741686	Throttle/check valve R1/8”	R	n1
11	739545	Spiral hose, triple	R	1
(12)	*1	Cylinder	R	1
(13)	731364	Filter	S	1
14	735350	Air preparation unit		1
15	739525	Cabinet cover		1
16	739546	Cover plate		1
17	739512	Bracket		1

n1: Standard: 0 Automotive: 1

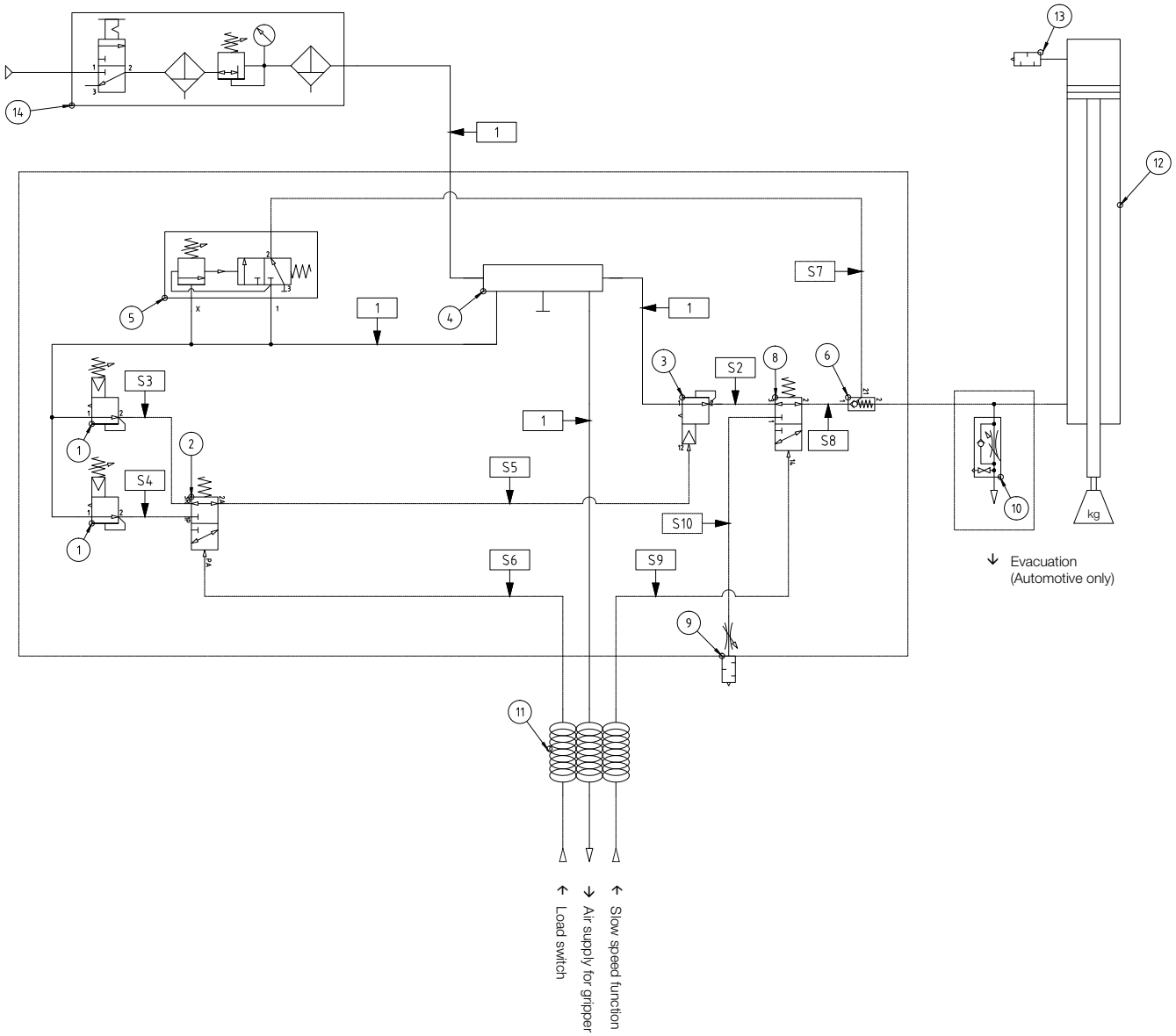




Base model	*Standard*	**739500**	**739501**	**739502**	**739503**	**739504**	**739505**
	Automotive	**740580**	**740581**	**740582**	**740583**	**740584**	**740585**
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898

R: spare part S: wear part

Position	Designation / Function
1A	Precision regulator / Without load
1B	Precision regulator / With load
3	Precision regulator / Main regulator
8	3/2 valve / Slow speed function
10	Trottle/check valve / Evacuation valve



- Balanced 2-weight with slow speed function: handling of one balanced load; with an external actuator the operator selects ”Load”, or ”Without load”.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.
- The system is also equipped with an evacuation valve which enables a manual evacuation of the pressure in the cylinder if the air supply is lost.

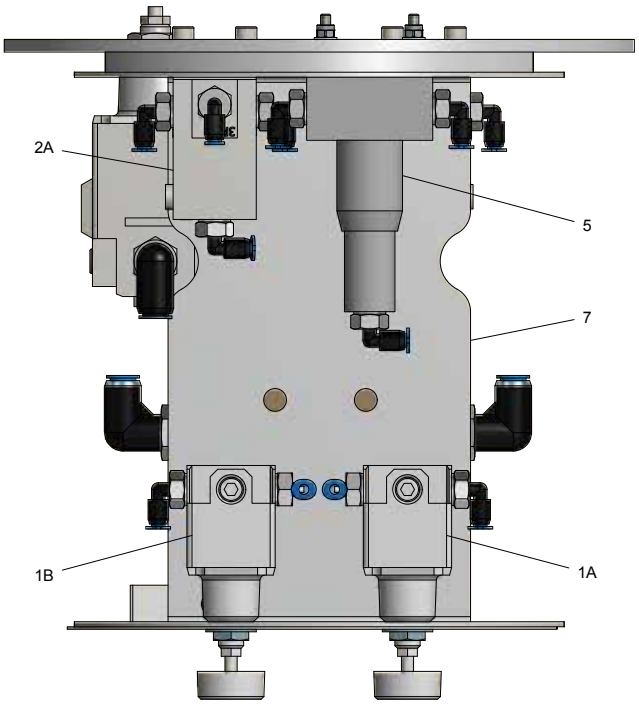
Pneumatics		740591
Weight	kg	7,0

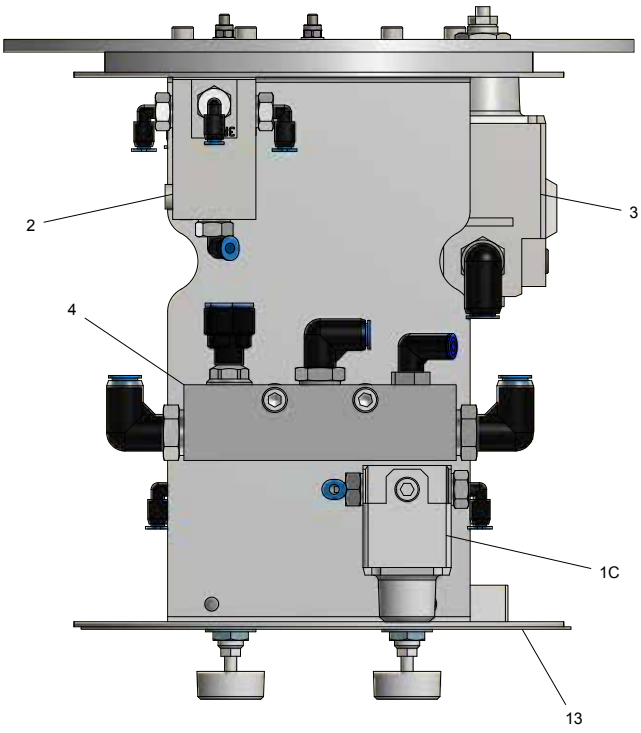
R: spare part S: wear part

5.3 Pneumatics: 3-weight

	739562	3-weight		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	3
2	738125	3/2 valve monostable	R	2
3	731583	Precision regulator	R	1
4	739552	Distribution block		1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
7	739554	Cabinet body		1
8	739545	Spiral hose, triple	R	1
(9)	*1	Cylinder	R	1
(10)	731364	Filter	S	1
11	735350	Air preparation unit		1
12	739525	Cabinet cover		1
13	739546	Cover plate		1
(20)	741686	Throttle/check valve R1/8”	R	n1

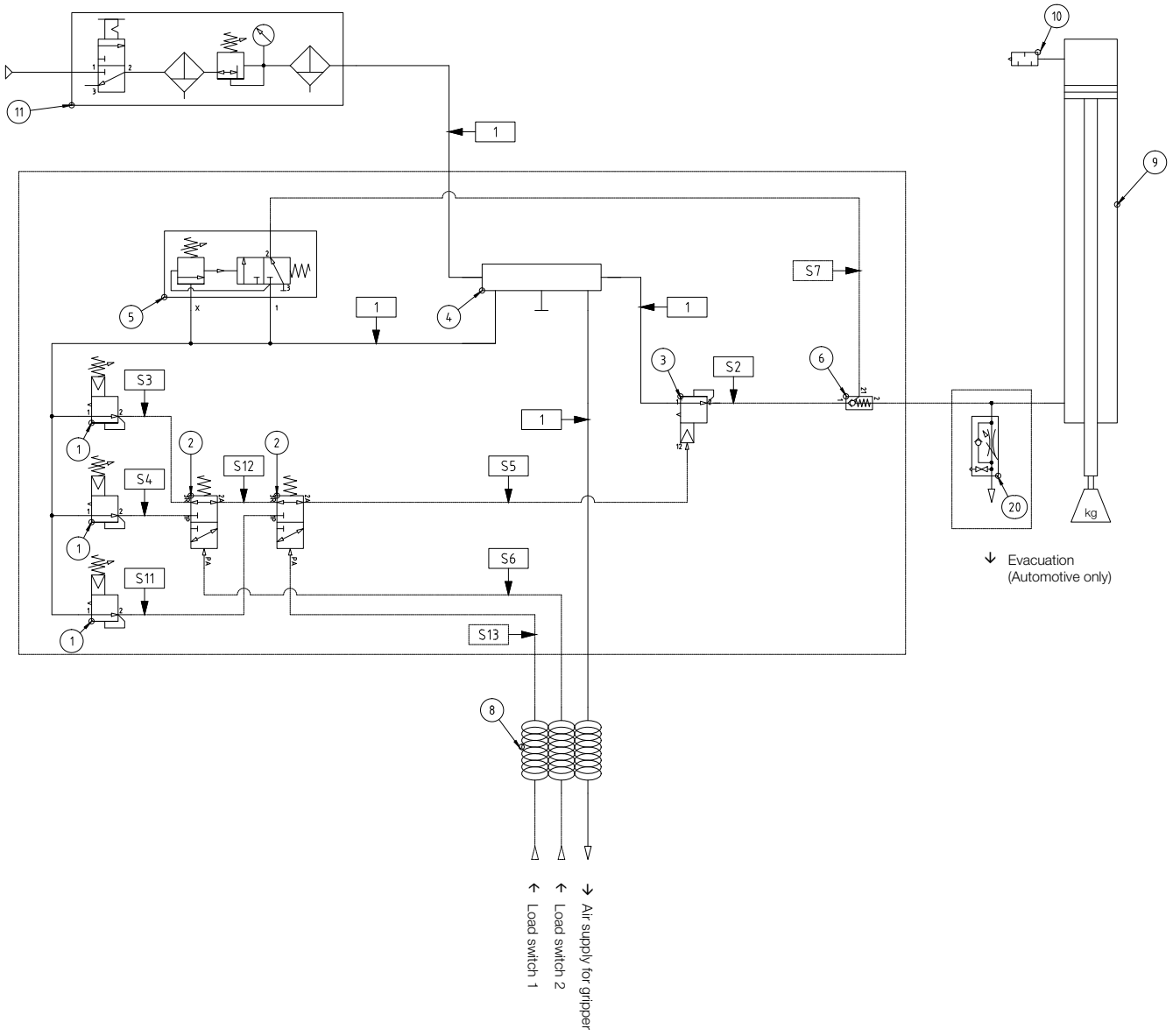
n1: Standard: 0 Automotive: 1





Base model	*Standard*	**739500**	**739501**	**739502**	**739503**	**739504**	**739505**
	Automotive	**740580**	**740581**	**740582**	**740583**	**740584**	**740585**
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898

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



- Balanced 3-weight: handling of two balanced loads; with external actuator the operator selects ”Load 1”, ”Load 2” or ”Without load”.

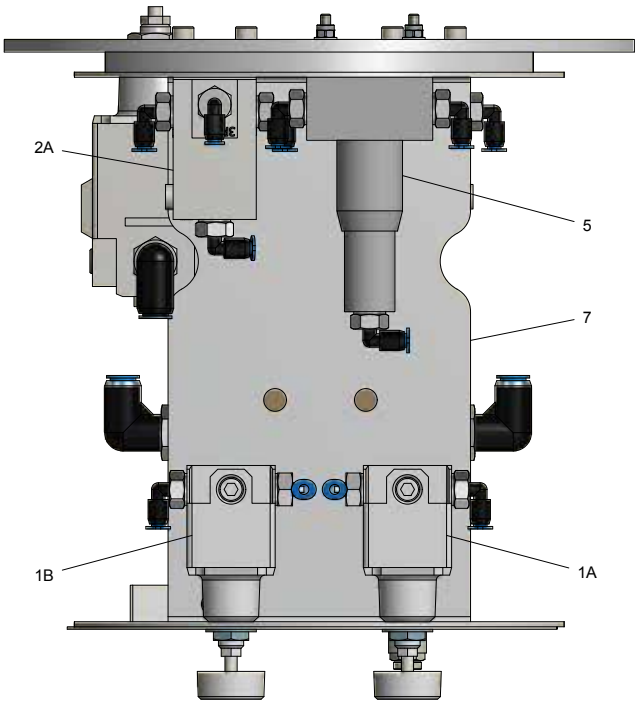
Pneumatics	739562
Weight kg	6,5

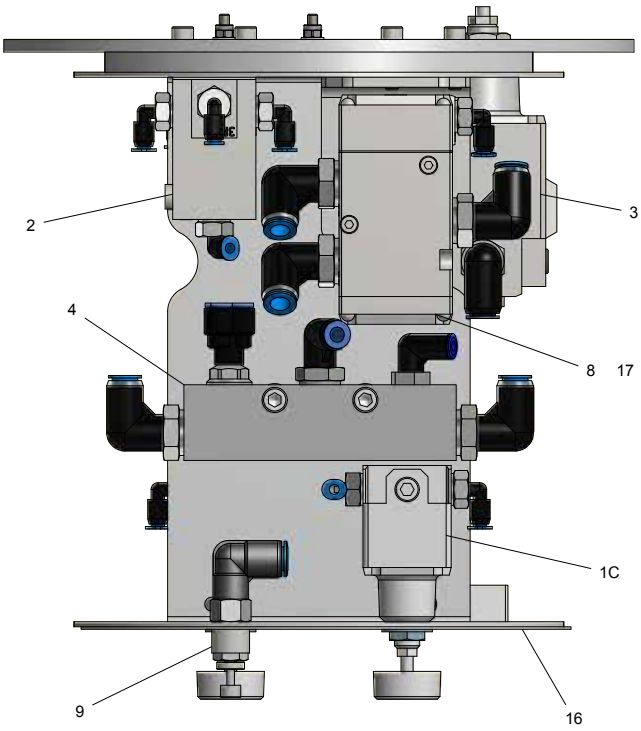
R: spare part S: wear part

5.4 Pneumatics: 3-weight with slow speed function

	740592	3-weight slow speed function		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	3
2	738125	3/2 valve monostable	R	2
3	731583	Precision regulator	R	1
4	739552	Distribution block		1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
7	739554	Cabinet body		1
8	739551	3/2 valve NC	R	1
9	739550	Flow control valve	R	1
(10)	741686	Throttle/check valve R1/8”	R	n1
11	739545	Spiral hose, triple	R	1
(12)	*1	Cylinder	R	1
(13)	731364	Filter	S	1
14	735350	Air preparation unit		1
15	739525	Cabinet cover		1
16	739546	Cover plate		1
17	739512	Bracket		1
18	736313	Spiral hose, single	R	1

n1: Standard: 0 Automotive: 1

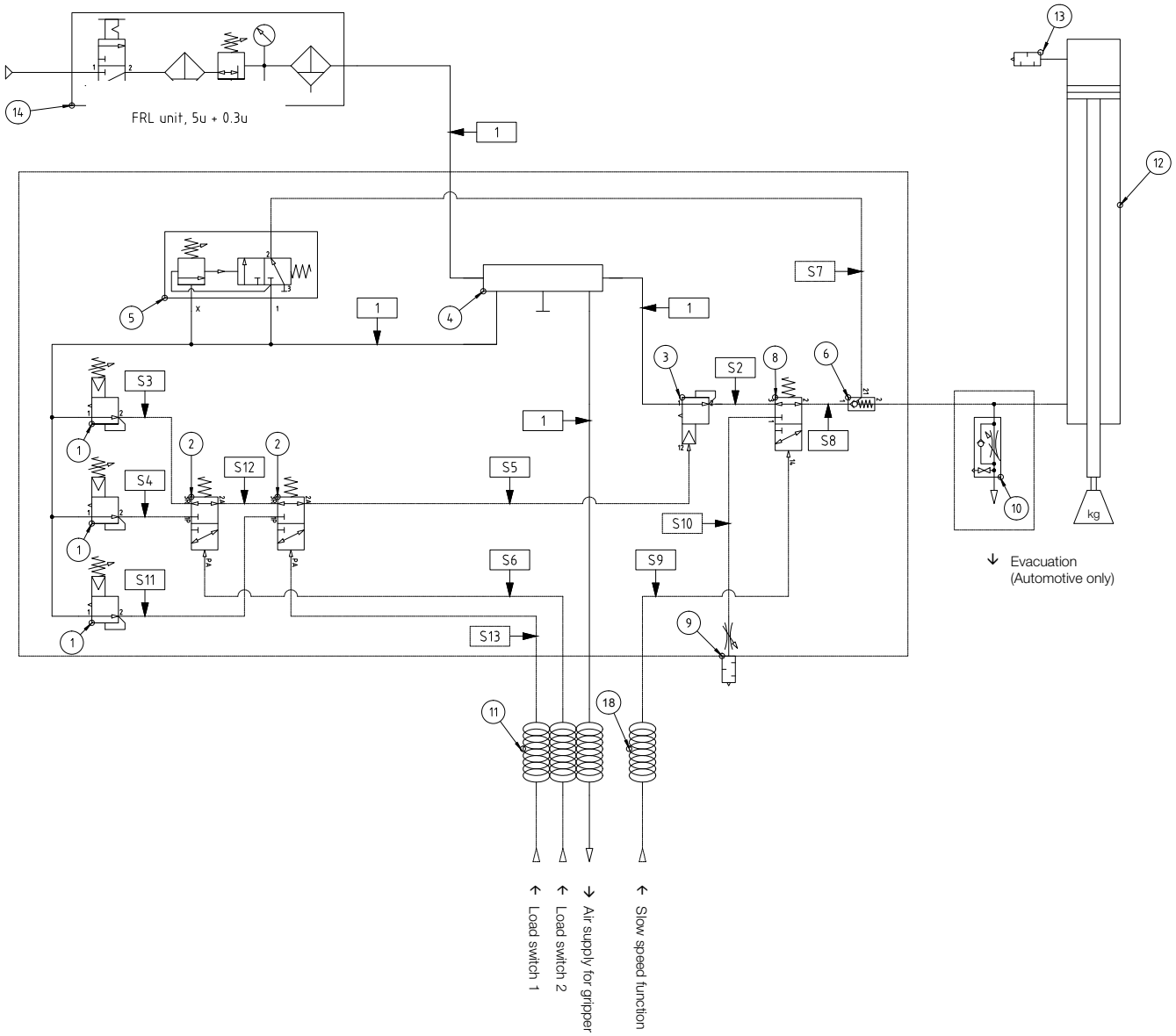




Base model	*Standard*	**739500**	**739501**	**739502**	**739503**	**739504**	**739505**
	Automotive	**740580**	**740581**	**740582**	**740583**	**740584**	**740585**
Stroke SL	mm	400	600	800	1000	1200	400-1200
Article nr.	*1	742893	742894	742895	742896	742897	742898

R: spare part S: wear part

Position	Designation / Function
1A	Precision regulator / Without load
1B	Precision regulator / With load 1
1C	Precision regulator / With load 2
3	Precision regulator / Main regulator
8	3/2 valve / Slow speed function
10	Trottle/check valve / Evacuation valve



- Balanced 3-weight with slow speed function: handling of two balanced loads; with an external actuator the operator selects ”Load 1”, ”Load 2” or ”Without load”.
- The system is equipped with lowering function for a controlled lowering. Functional conditions are configured by the customer, and depend on the specific application.
- The system is also equipped with an evacuation valve which enables a manual evacuation of the pressure in the cylinder if the air supply is lost.

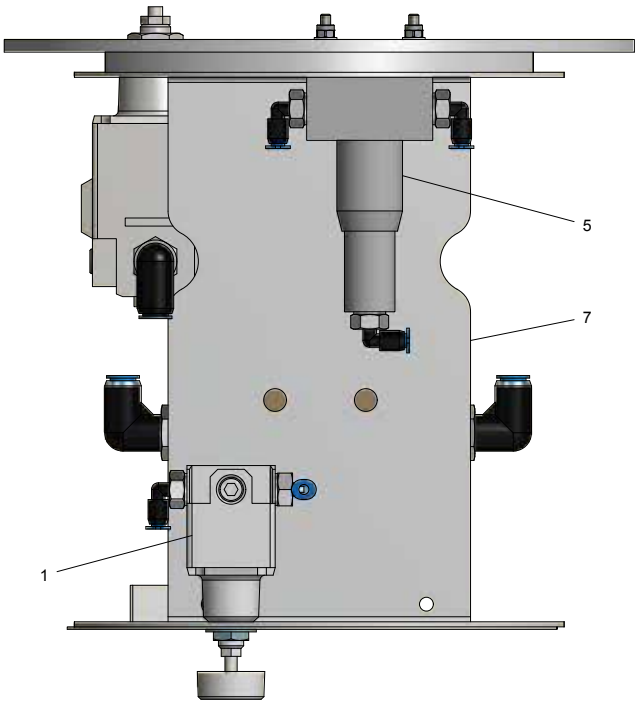
Pneumatics	740592
Weight kg	8,0

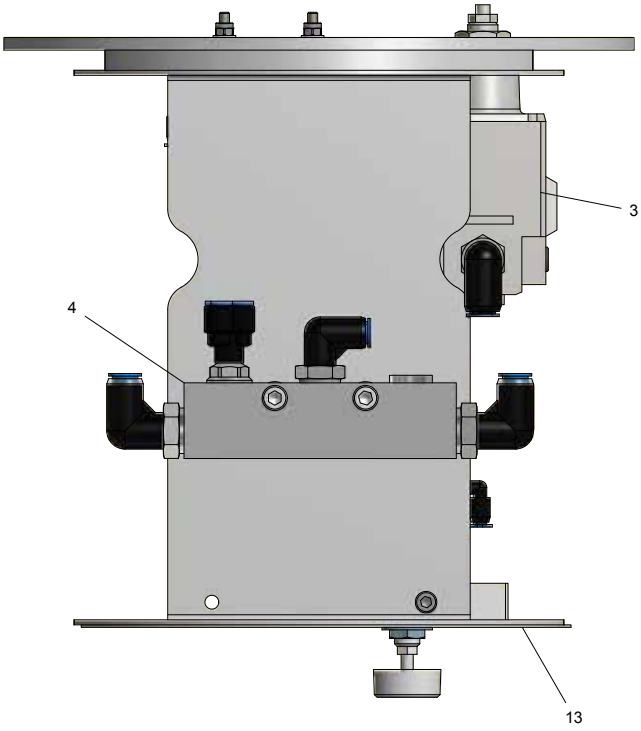
R: spare part S: wear part

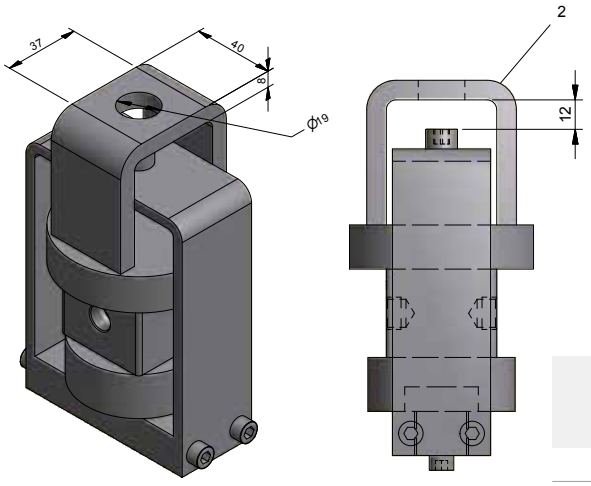
5.5 Pneumatics: balanced

	739563	Balanced		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	1
2	738258	Pneumatic load sensor	R	1
3	731583	Precision regulator	R	1
4	739552	Distribution block		1
5	739553	Pressure guard	R	1
(6)	731571	Non-return valve	R	1
7	739554	Cabinet body		1
8	740589	Spiral hose, 4x	R	1
(9)	*1	Cylinder	R	1
(10)	731364	Filter	S	1
11	735350	Air preparation unit		1
12	739525	Cabinet cover		1
13	739546	Cover plate		1
(20)	741686	Throttle/check valve R1/8”	R	n1

n1: Standard: 0 Automotive: 1





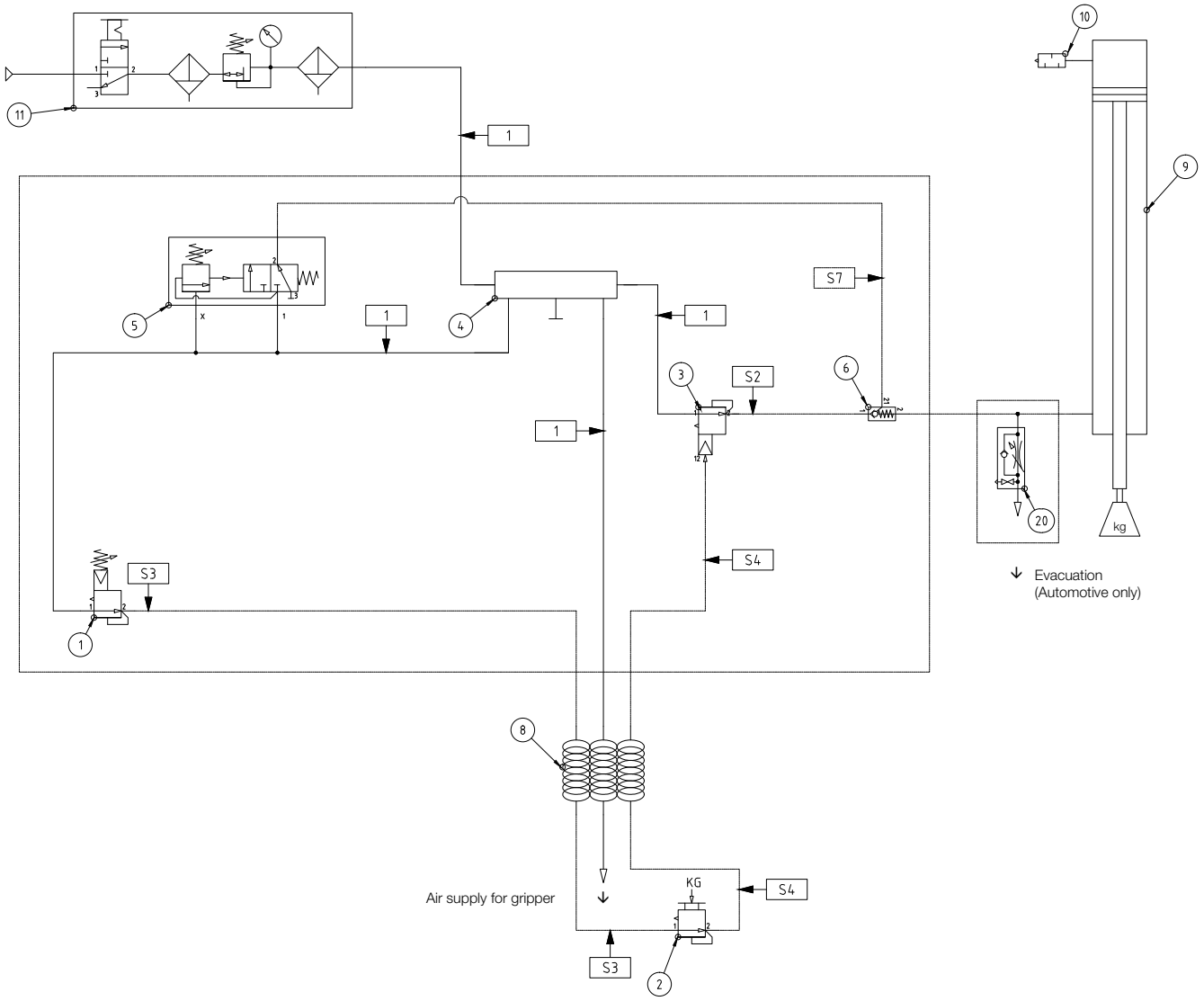


738258

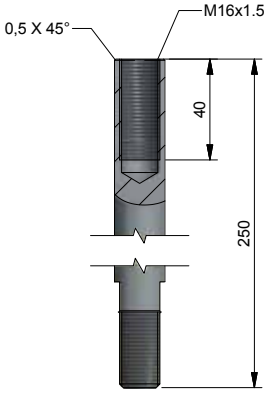
Base model		Standard	739500	739501	739502	739503	739504	739505
		Automotive	740580	740581	740582	740583	740584	740585
Stroke SL	mm		400	600	800	1000	1200	400-1200
Article nr.	*1		742893	742894	742895	742896	742897	742897

R: spare part S: wear part

Position	Designation / Function
1	Precision regulator / Max load
2	Load sensor / Load regulation
3	Precision regulator / Main regulator



- Balanced: handling of varying loads with a pneumatic load sensor. The load sensor attachment needs to be adapted for the project-specific gripper.
- Maximum load: 40 kg
- Pneumatic load sensor 738258 is included in pneumatics 739563 and is delivered unmounted.
- The pneumatic load sensor is installed between the distance for spiral hose and the gripper tool.
- In order to enable mounting 738258 on the base model, it is required that the distance 739538 in tool adapter 740914 is replaced by a project-specific version (not included), whose length and lower design are adapted to the function and design of the gripper tool. Its upper design is shown in the picture right.



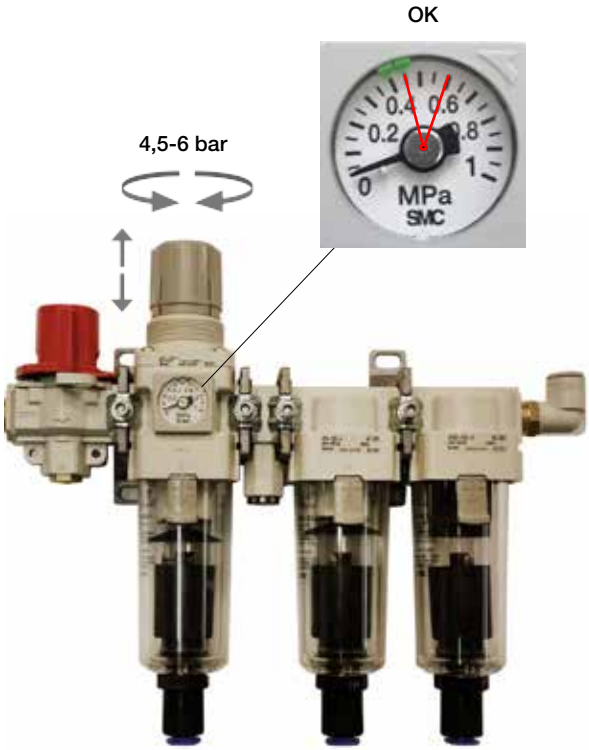
739538

Pneumatics		**739563**
Weight	kg	7,5

R: spare part S: wear part

5.6 Air preparation unit

	743057	FRL unit (C)		
#	Article nr.	Designation		Quantity
1	730671	Filter	S	2
2	742427	Submicro filter 0,01 µm	S	1



6. Installation and commissioning

Mechlight Pro is advantageously installed in Movomech rail system Mechrail or crane Mechcrane.

When the lifting unit is installed in trolleys of type LHB, the enclosed bushing ø12 is used. It is not used when installed in a trolley of type AHB1-2.

Mechllght Pro must be used only with clean, filtered air, and is mounted in combination with an air preparation unit.

Regarding the functionality of the gripper tool, see its documentation.

Initial adjustment: 2-weight

1. Install Mechlight 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.
4. Turn on the air supply.
5. Adjust the regulator ‘without load’ (L0) to balance the load. The load should not sink or rise.
6. 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

1. Install Mechlight 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.
4. Turn on the air supply.
5. Adjust the regulator ‘without load’ (L0) to balance the load. The load should not sink or rise.
6. 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.
7. 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: slow speed function

1. Install Mechlight Pro according to the instructions for 2-weight or 3-weight.
2. Screw in the flow control valve completely.
3. Grip the load with the gripper tool.
4. Give a signal on S9.
5. Screw out the flow control valve until desired lowering speed is reached.
6. Remove the signal from S9.

Initial adjustment: balanced

1. Install Mechlight 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.

7. User instructions

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

- its configuration with or without a gripper tool
- 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 Mechlight Pro, must be accompanied by a specific operating instruction for the particular application, taking into account the mentioned factors.

2-weight

2-weight Mechline Pro is used for handling a fixed load level, i.e. handing with ‘no load’ or with ‘load’. When the lifting unit receives a pneumatic signal for load switching (see pneumatic diagram), the load is equilibrated and the operator can handle the object/gripper in a so-called “weightless” state.

3-weight

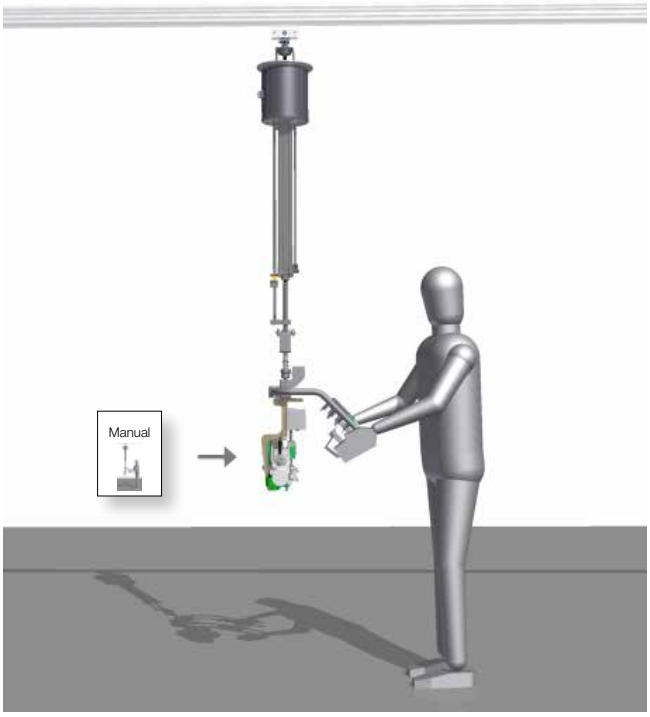
3-weight Mechline Pro is used for handling two fixed load levels, i.e. handing with ‘no load’, with ‘load 1’ and with ‘load 2’. When the lifting unit receives a pneumatic signal for load switching (see pneumatic diagram), the load is equilibrated and the operator can handle the object/gripper in a so-called “weightless” state.

Slow speed function

The pneumatic versions 2-weight and 3-weight can be equipped with a slow speed function for controlled lowering. Functional conditions are configured by the customer, and the user instructions depend on the specific application.

Balanced

Balanced Mechlight Pro is used for handling varying loads with a pneumatic load sensor.



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 cofirmed 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.

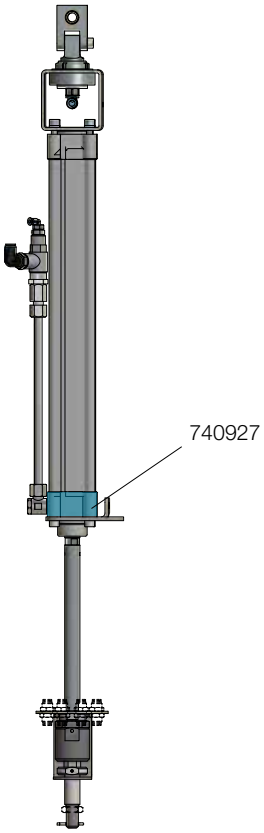
Keep the equipment and area on and adjacent to the workplace cleaned.

8.1 Recommended spare parts / wear parts

	7xxxxx	Grundmodell - Standard / AM		
#	Artikel-Nr.	Benennung	SL	Anzahl
2	742433	Zylinder 742893 + 738286	400	1
2	742434	Zylinder 742894 + 738286	600	1
2	742435	Zylinder 742895 + 738286	800	4
2	742436	Zylinder 742896 + 738286	1000	4
2	742437	Zylinder 742897 + 738286	1200	3
2	742438	Zylinder 742898 + 738286	-	1

	740914	Tool adapter		
#	Article nr.	Designation		Quantity
1	739515	Rod coupler	R	1
5	738286	Grooved pin 4x20	R	1

	739518	Stroke limiter		
#	Article nr.	Designation		Quantity
4	732971	Shock absorber	S	2



	739561/-2	2-/3-weight		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	2
2	738125	3/2 valve monostable	R	1
3	731583	Precision regulator	R	1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
8	739545	Spiral hose, triple	R	1
(10)	731364	Filter	S	1
(20)	741686	Throttle/check valve R1/8”	R	n1

n1: Standard: 0 Automotive: 1

	740591/-2	2-/3-weight slow speed function		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	2
2	738125	3/2 valve monostable	R	1
3	731583	Precision regulator	R	1
5	739553	Pressure guard	R	1
6	731571	Non-return valve	R	1
8	739551	3/2 valve NC	R	1
9	739550	Flow control valve	R	1
(10)	741686	Throttle/check valve R1/8”	R	n1
11	739545	Spiral hose, triple	R	1
(13)	731364	Filter	S	1

n1: Standard: 0 Automotive: 1

	739563	Balanced		
#	Article nr.	Designation		Quantity
1	738124	Precision regulator	R	1
2	738258	Pneumatic load sensor	R	1
3	731583	Precision regulator	R	1
5	739553	Pressure guard	R	1
(6)	731571	Non-return valve	R	1
8	740589	Spiral hose, 4x	R	1
(10)	731364	Filter	S	1
(20)	741686	Throttle/check valve R1/8”	R	n1

n1: Standard: 0 Automotive: 1

	743057	FRL unit (C)		
#	Article nr.	Designation		Quantity
1	730671	Filter	S	2
2	742427	Submicro filter 0,01 µm	S	1

R: spare part S: wear part

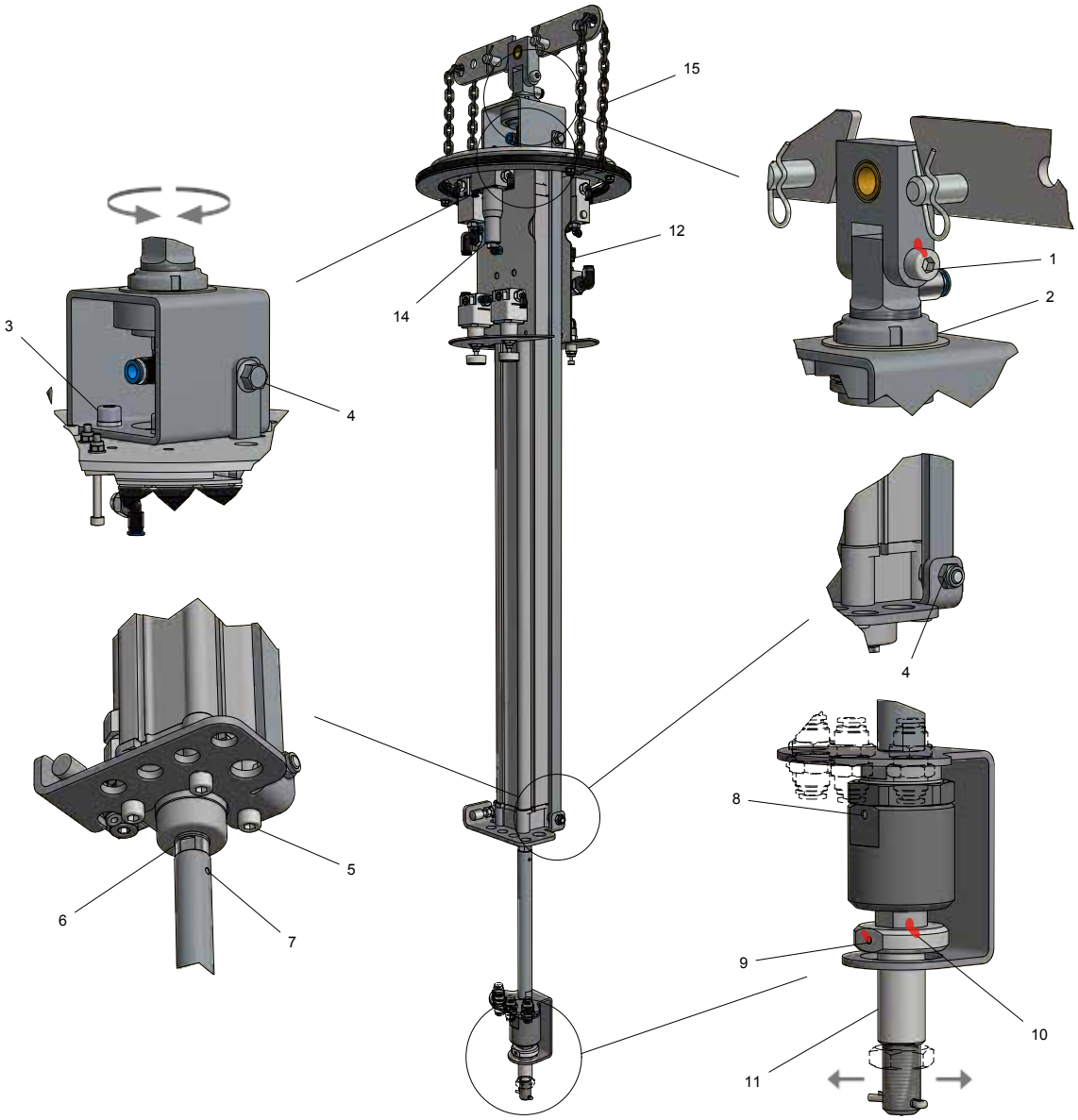
8.2 Service record — Mechlight Pro 50

ID:	Client/ place:	Interval in months when 1-3 shifts	Interval in months when >3 shifts	The service record shall be kept by the client/user.	1/1
Service by:	Date:				
👁 Visual inspection, examine whether the product exhibits damages				* If applicable.	
👂 Auditory inspection, examine whether the product exhibits discordant sound				The service must be performed considering the maintenance safety instruction.	
✋ Physical inspection, examine whether the product exhibits damages					
🛠 Mechanical inspection, examine wheter the product exhibits decomposition, instruments is needed					

No	Product	Inspection	Interval in months when 1-3 shifts	Interval in months when >3 shifts	Inspector Dept. / Sign.	Comment
1	Base model	👁 👂 ✋ 🛠 General overview.	4	3		
1.1	Fasteners	👁 ✋ 🛠	4	3		
2	Pneumatic	👁 👂 ✋ 🛠 General overview.	4	3		
2.1	Fasteners	👁 ✋ 🛠	4	3		
2.2	Hoses	👁 👂 ✋ 🛠 Check hoses and fittings.	4	3		
2.3	Filter 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”.	1	1		
2.4	Micro 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”. Filter element is replaced when the pressure drop across the filter reaches 0.1 MPa, and at least once a year.	1	1		
3	Control unit*	👁 👂 ✋ General overview.	1	1		
3.1	- Button - Turning button - Sensor - Throttle - Speed handle	👁 👂 ✋ Test: drive the lifter in all applicable situations.	1	1		
4	Tool adapter	👁 👂 ✋ 🛠 General overview.	4	3		
4.1	Rod coupler	👁 👂 ✋ 🛠 See maintenance instruction.	4	3		

8.3 Maintenance instruction

Below is a supplementary description complementing the service protocol.

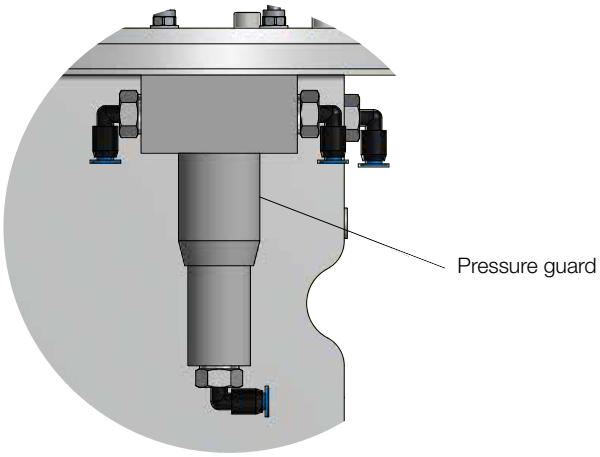


1. Make sure the mounting bolt is not loose or damaged. It has a red mark.
2. Check that the top rotation runs smoothly and unhindered. Also check that it does not have too much play, which could indicate wear or misalignment.
3. Verify that the screws (4 pcs) of the cylinder bracket are not loose. They should be tightened to 24 Nm.
4. Base models Automotive:
   Verify that the screws of the pull rod (upper and lower) are tightened with a torque of 24 Nm.
5. Check the screws of the upper pneumatic bracket are tightened with a torque of 24 Nm.
6. Check that there is no leakage around the piston rod.
7. Check that the pin is mounted in the piston rod and is undamaged.
8. Check that the pin is mounted in the rod coupler and is undamaged.
9. Check that the stop screw is mounted in the shaft extension, and tightened. It has a red mark.
10. Check that the shaft extension is not loose or damaged. It has a red mark.
11. Rotate and tilt the bottom part of the rod coupler, listen for ratteling or noise from inside the component. If the rod coupler emits abnormal noise, it must be replaced.
12. Check all hoses/pipes for leaks and damage. Disregard the “normal leakage points” (small holes on the side of the regulators).
13. Do a quick air evacuation and ensure that the load does not fall.
14. Restore the air supply and check that the load does not drop. If the load drops, adjust the pressure switch according to specific instructions in the manual.
15. Base models Automotive:
    Check if the “second safety” device show signs of wear. Also check that it moves freely and does not get stuck in something in the surrounding environment.

8.4 Adjustment of pressure guard 739553

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 guard.

1. Lower the air pressure level on the FRL unit with approx. 0.5 bar (e.g. from 5 to 4.5 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 Replacement of cylinder

For cylinder replacement, a specific instruction is supplied with the components.
Contact Movomech for more information.

8.6 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 of, 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 4.5 bar (no more than 6 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 vertical working range limit out of position	Check whether stroke limiter is out of position. Reset to correct position.
Irregular, jerky or slow 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.
	Dirty filter	Clean or replace filter.
	The piston rod or the cylinder tube is damaged	Replace cylinder. See external instruction.
Load ascends/descends	Regulator(s) are inaccurate	Adjust setting.
	Air leakage	Seal leakage.
	Air leakage in cylinder due to worn seals	Replace cylinder gable. See external instruction.
The load drops when air supply is shut off	Pressure guard is inaccurate or defect	Adjust setting or replace. See specific instruction.

* [illegible]

9. EC certificate

CE EC declaration of conformity of the machinery

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

Manufacturer
Movomech AB
Box 9083
S-291 09 Kristianstad
Sweden

Tel: +46 (0)44 28 29 00
Fax: +46 (0)44 28 29 28
E-mail: info@movomech.se
Web: www.movomech.com

Representative for documentation
Arne Ask
Movomech AB

hereby declares that the machinery

Designation	Machine type	Version
Mechlight Pro	Lifting unit	50

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: 2014-01-01

Arne Ask, CEO
Movomech AB

movomech
Weightless applications

Movomech AB
Kabelvägen 9
SE-291 62 Kristianstad
SWEDEN

Phone +46 (0)44 28 29 00
Fax +46 (0)44 28 29 28
E-mail info@movomech.se
Web www.movomech.com