



OPERATING AND MAINTENANCE INSTRUCTIONS/
SPARE PARTS

EDITION 01/2017

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1. General

Every person engaged with installation, supervision, or maintenance of the pilot type HON 658 is requested to read the following leaflets and brochures beforehand:

- Technical Description 658.00 - contains technical data, measurements, and describes function and design.
- General Operating Instructions for Gas Pressure Regulators and Safety Devices - this Honeywell brochure describes installation and operation, and includes general hints on fault finding and repair.
- Operation and Maintenance, Spare Parts 658.20 - contains further details on installation and operation of the pilot HON 658. Maintenance instructions, the spare part drawings and -lists of the main valve are also included.
- The related functional elements are described in separate "Operation and Maintenance, Spare Parts"-leaflets:

filter	HON 905	905.20
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Additionally, the relevant national rules and laws have to be observed (In Germany please refer to the DVGW worksheets G 600, G 459/II, G 491 und G 495).

The frequency of periodical maintenance of the pilot HON 658 should be determined according to the prevailing conditions and the type and composition of the gaseous medium. Therefore, no fixed maintenance intervals can be prescribed. For Germany: At the beginning we recommend to use the maintenance intervals stated in the DVGW worksheet G 495. Then individual maintenance intervals should be determined for every station.

For maintenance all parts are to be cleaned and subjected to a thorough visual inspection. A visual inspection should also occur when the course of operation or functional tests have shown lack of regulating accuracy.

Particular care should be given to the checking of sealings and diaphragms, as well as carrying and moving parts. Damaged parts should be replaced by new ones. The item numbers referred to in the maintenance instructions are identical with those of spare parts drawings and spare parts lists.

We recommend to keep all parts that are specially marked "W" in the spare parts lists in stock for prompt maintenance availability.

1.1 Safety notes

Safety symbols include the following **key words** in these operating instructions

Symbols	Explanation
	risk of human injury
	risk of damaging equipment or environment
	additional information or requirements

2. Special operating instructions

2.1 Adjustment of the load limiting pressure

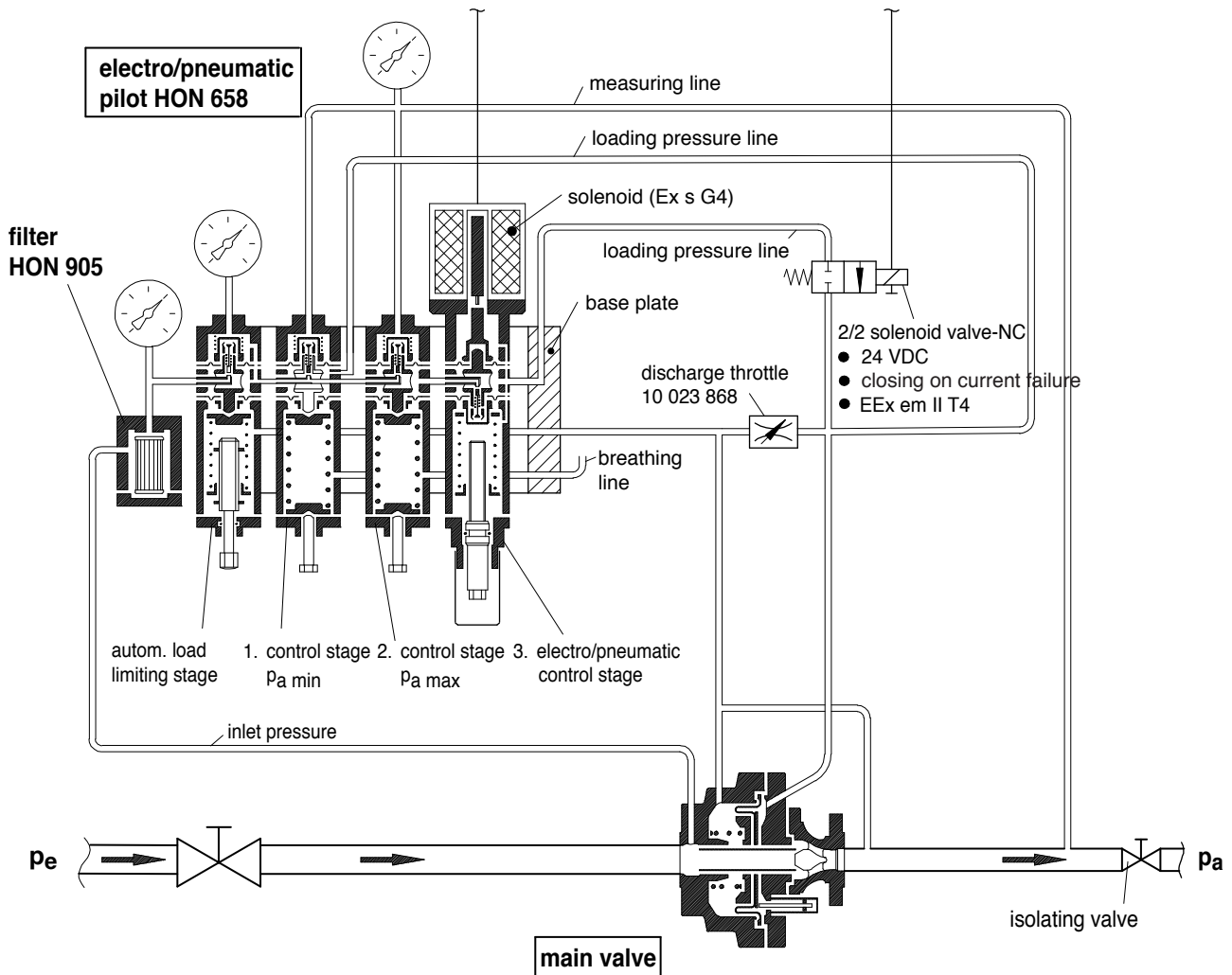
The height of the load limiting pressure influences the regulating characteristics of the device significantly. To achieve a great regulating accuracy the load limiting pressure should be set as high as possible, but without making the regulating line unstable. Lowering the load limiting pressure can dampen regulating over-reactions, but also reduces the max. possible flow.

2.2 Discharge throttle

The dosing screw is delivered with a basic adjustment set by Honeywell and has not to be changed for the normal regulating task.

Note

- The height of the load limiting pressure should be approx. 5 bar to 10 bar above the outlet pressure.



3. Special maintenance instructions

- **Pre-formed diaphragm (119, 169, 219, 505)**

When fitting the diaphragm be sure to observe the correct position of the loop (see spare parts drawings of the pilot units)

- **Diaphragm plate (107, 154, 207, 504)**

When tightening the closing cap (103, 167, 203, 510), hexagon nut (123, 223), and adjusting cap (519), the diaphragm plate should be secured against distortion by key SW24.

- **Adjusting the diaphragm system**

For correct fitting of the diaphragm system into the valve body bring the cross hole of the union piece (122, 158, 222, 509) and the valve body (121, 171, 221, 506) in alignment. Turn the diaphragm system clockwise to the stop, and mark these positions with a pencil. Then turn the diaphragm system into the middle position.

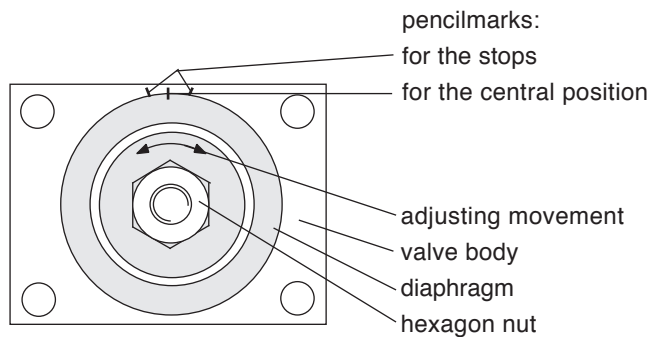
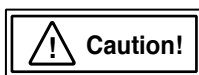


figure 2: diaphragm system

- **Union piece (158)**

Grease the threaded plug of the union piece with LOCTITE and screw it into the metal harmonica connection piston (173) so that the cross hole of the union piece is positioned 0.5 mm to 1 mm below the valve body cross hole (171).



Both cross holes must be in alignment!

- **Valve insert (105, 156, 205, 508)**

Use the adjusting screw (234, 185, 529) to get the diaphragm system in a position that will allow the valve insert to be fitted.

- **Base plate (23, 41, 44)**

The connecting sides of all stages and the base plate must be in alignment.

- **Spindle (604) discharge throttle**

For finding the basic adjustment of the amplifying valve turn the spindle (604) until the spindle groove (607) (filled with black) comes in line with the front edge of the plastic sleeve (606).

3.1 Screw tightening torques **M_A**

Item No.	tightening torques M_A in Nm
176	6
35, 38, 40, 115, 132, 165, 183, 215, 232, 517, 527	12
103, 123, 167, 510, 519	20

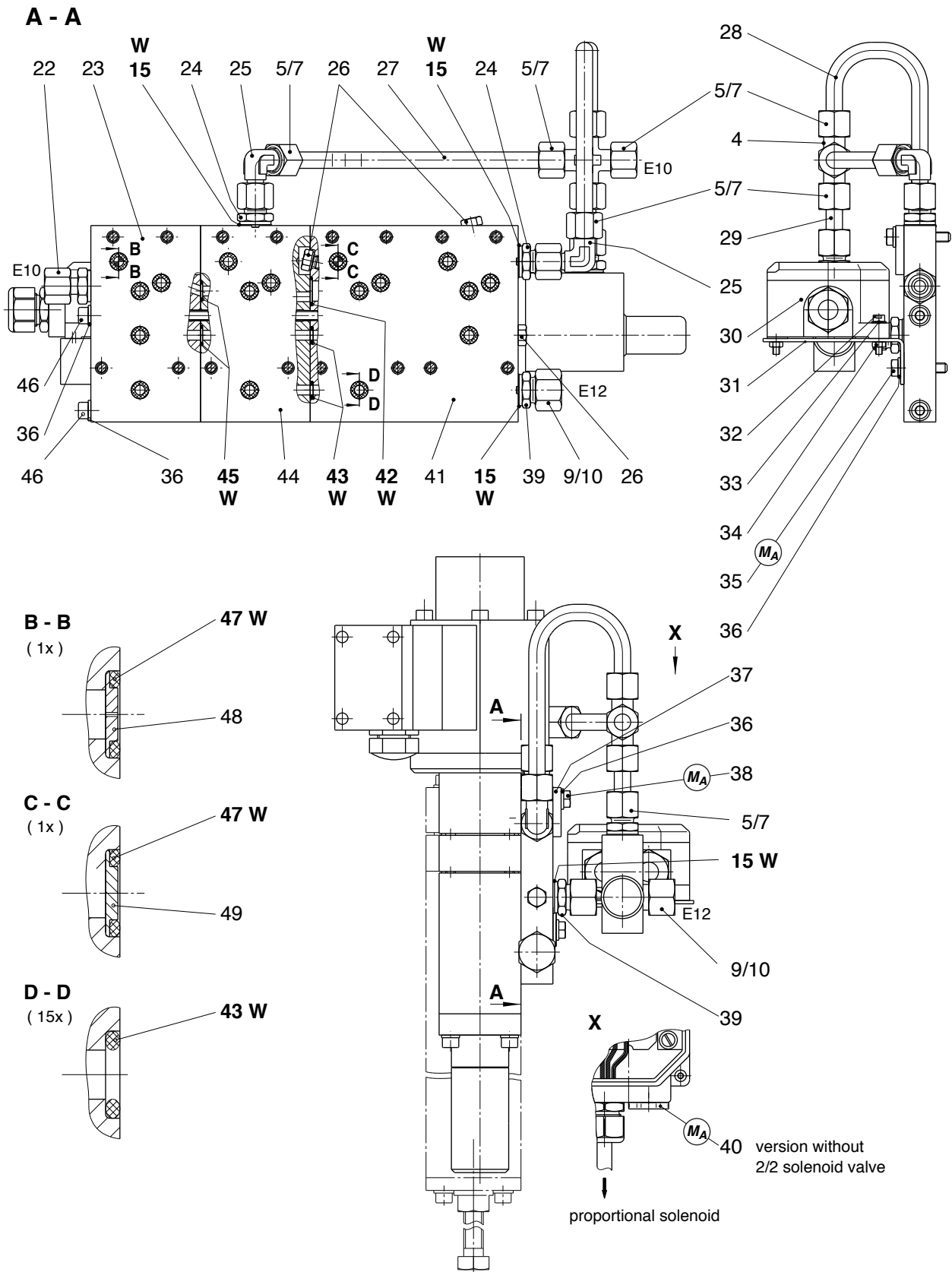
3.2 Lubricants

Parts (to be greased slightly)	lubricant	HON part no.
all o-rings all sliding surfaces	silicone grease	27 081 (0,1 kg)
spring plate recesses (108, 208, 161) threads of cover (130, 230) threads of plate (181)	fitting paste	27 091
all fastening and pipe screws	fitting grease	28 267

3.3 Screw locking

parts (to be greased slightly)	screw locking	HON part no.
thread of locking cap (103, 167, 203, 510) threads of hexagon nut (123, 223) threads of union piece (158) bolt (512) thread of the adjusting cap (519)	LOCTITE	26 688 (0,1 kg)

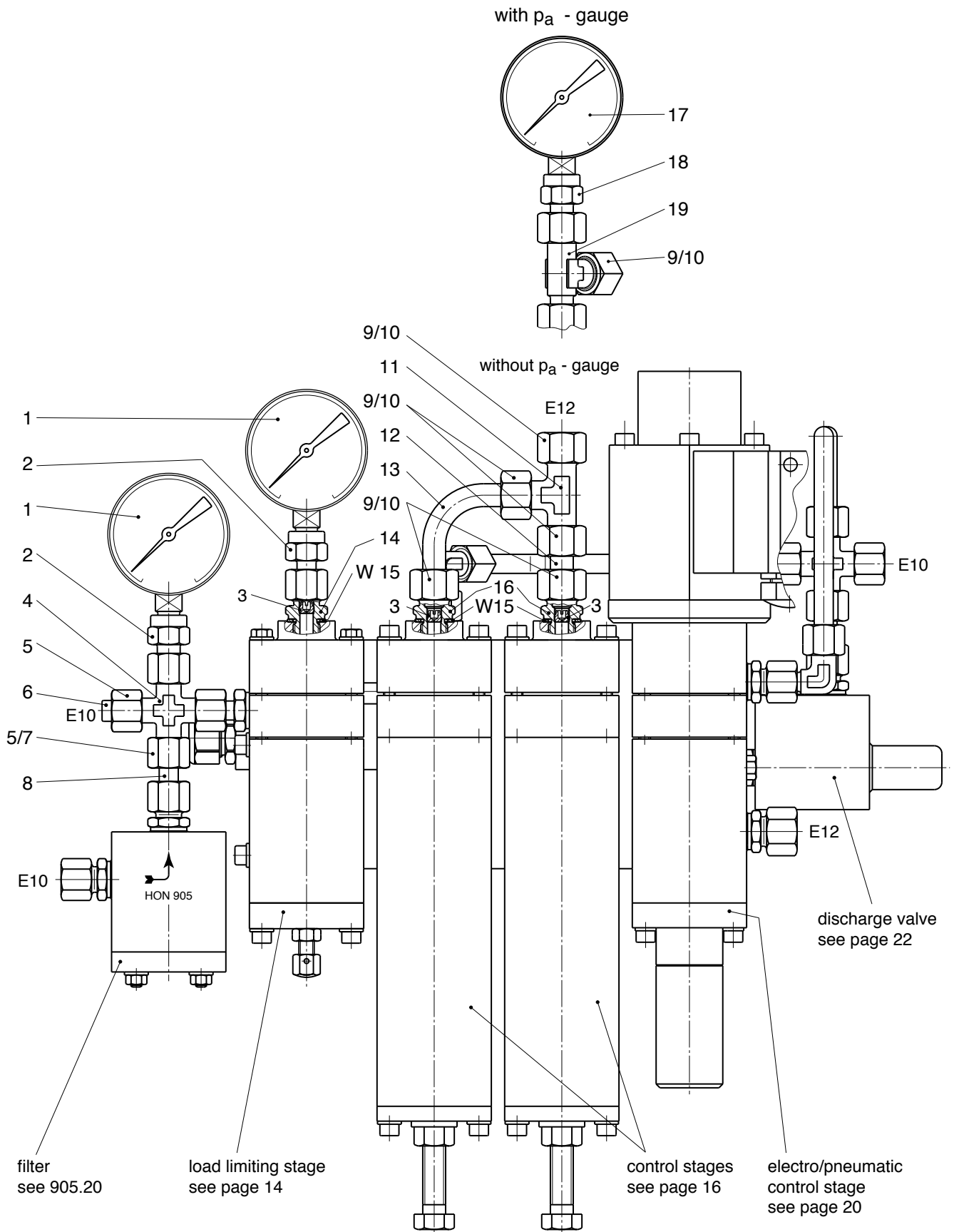
4.1.2 Drawing, base plate Version without solenoid valve



MA Please use values stated in torque table on page 6!

W Parts are to be held in stock for maintenance

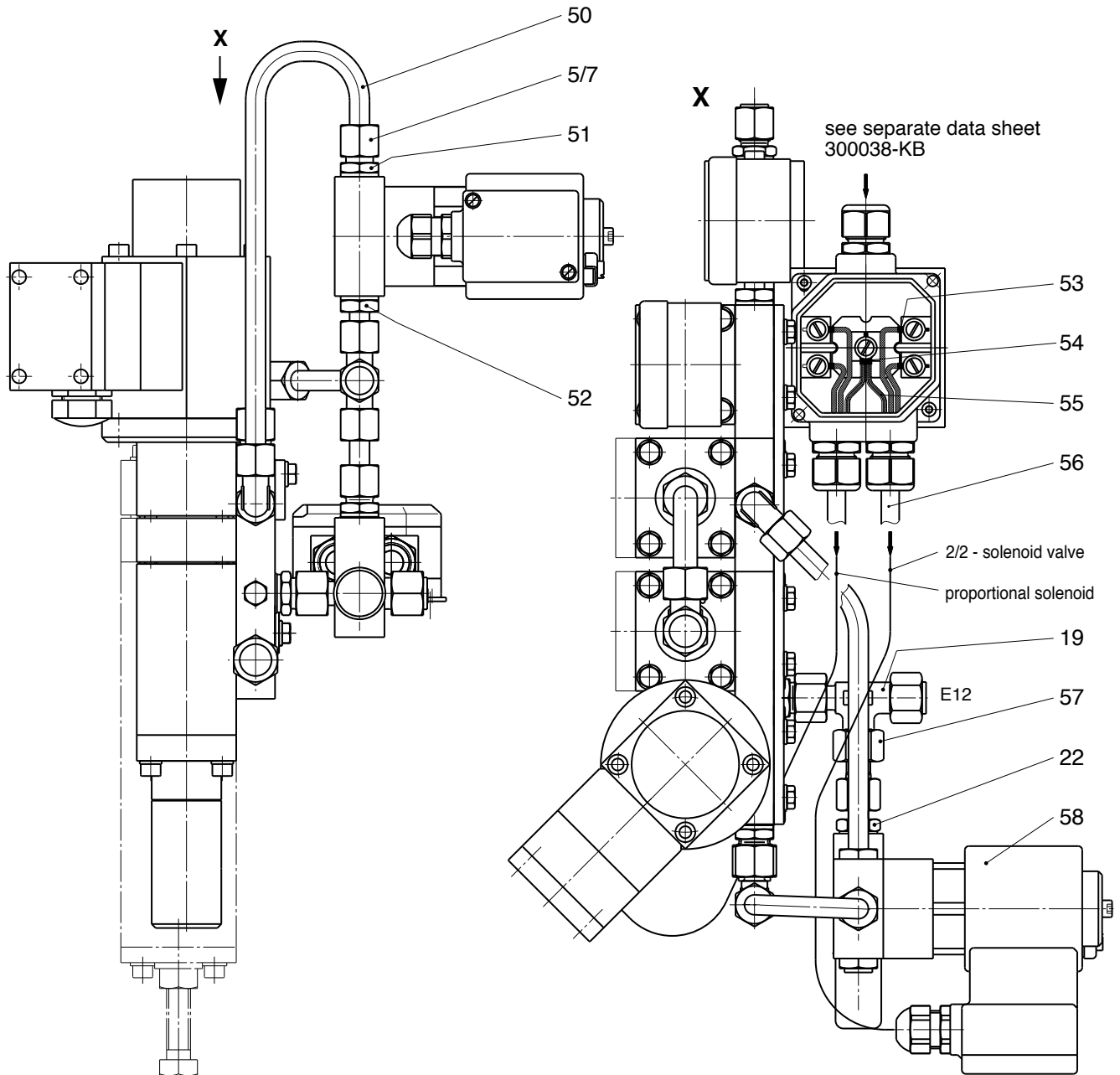
4.1.3 Outlet pressure range $W_h = 20$ bar to 90 bar - with metal harmonica measuring unit
Version without solenoid valve



W Parts to be kept in stock for maintenance

4.1.4 Version with solenoid valve - closing on current failure

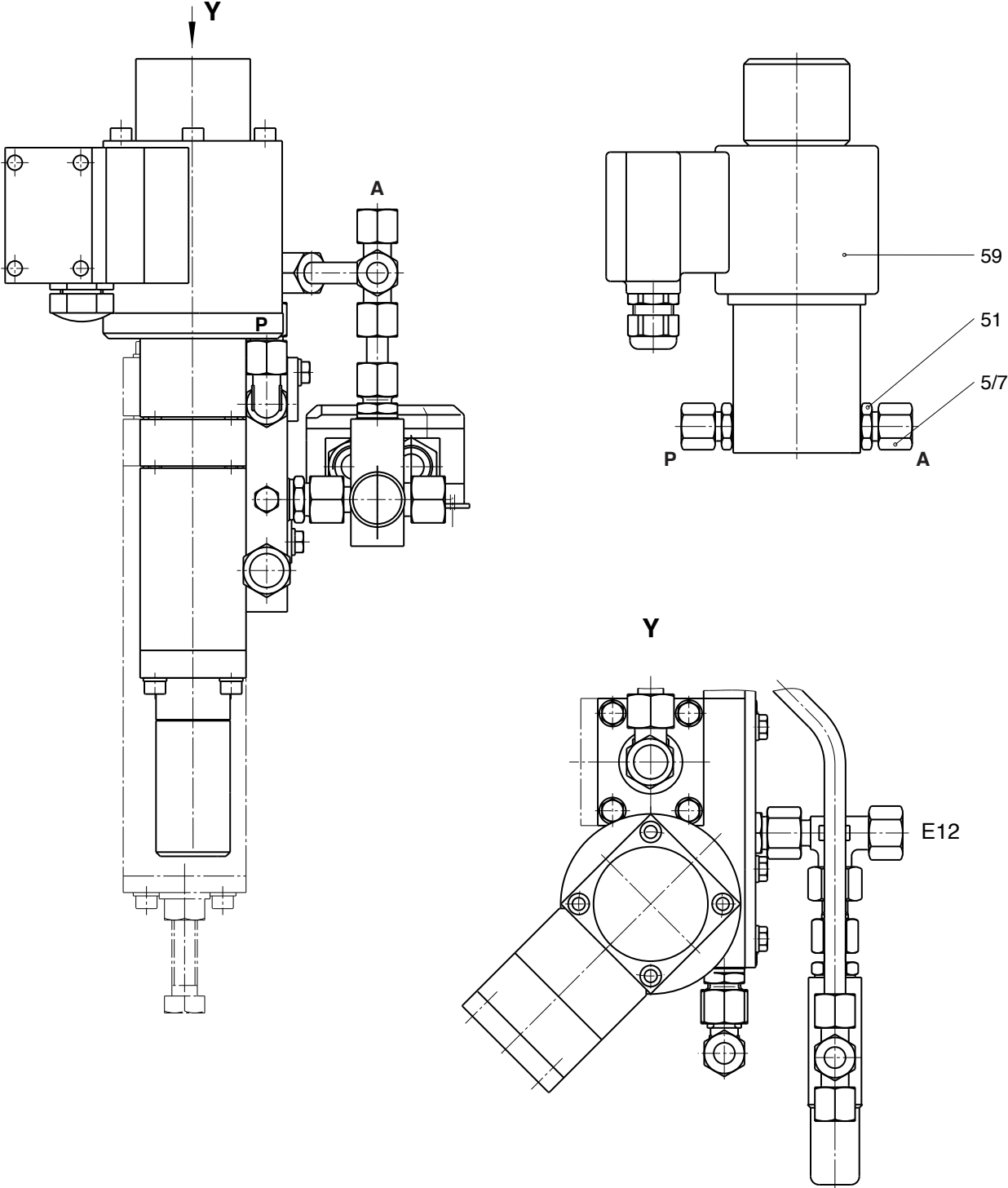
outlet pressure range $W_H = 0,5 \text{ bar to } 90 \text{ bar}$



Parts without item no. see pages 7, 8 and 9

4.1.5 Version with solenoid valve - opening on current failure
outlet pressure range $W_h = 0,5 \text{ bar to } 90 \text{ bar}$

The solenoid valve is delivered separately.



Parts without item no. see pages 7, 8 and 9.

4.2 Spare parts list HON 658

item no.	description	amount	W	material	HON part no.	
					W _h 0,5 to 40 bar	W _h 20 to 90 bar
1	optional without or with pressure gauge					
1	0 bar to 25 bar	2		NSt/Ms	26 284	
1	0 bar to 60 bar	2		NSt/Ms	26 283	
1	0 bar to 100 bar	2		NSt/Ms	26 285	26 285
2	screwed socket	2		St	31 810	31 810
3	dosing screw	3		Ms	10 014 015	10 014 015
4	screwed socket	2		LM	31 609	31 609
5	cap nut	12		St	30 803	30 802
6	locking cone	1		St	32 004	32 004
7	cutting ring	11		St	30 903	30 903
8	straight pipe	1		St	32 101	32 101
9	cap nut	7		St	30 804	30 804
10	cutting ring	7		St	30 904	30 904
11	screwed socket	1		St	31 433	31 433
12	pipe	1		St	32 117	32 117
13	bended pipe	1		St	10 022 178	10 022 178
14	screwed socket	1		St	10 000 714	10 000 174
15	sealing ring	6	W	LM	18 842	18 842
16	screwed socket	2		St	10 009 683	10 009 683
17	optional without or with pressure gauge					
17	W _a 0,5 bar to 2 bar	1		NSt/Ms	26 891	-
17	W _a 1,0 bar to 5 bar	1		NSt/Ms	26 281	-
17	W _a 2,0 bar to 10 bar	1		NSt/Ms	26 314	-
17	W _a 5,0 bar to 20 bar	1		NSt/Ms	26 284	-
17	W _a 20,0 bar to 90 bar	1		NSt/Ms	-	26 285
18	screwed socket	1		St	31 877	31 877
19	screwed socket	2		St	30 608	30 608
22	screwed socket	2		St	30 023	30 023
23	base plate	1		LM	10 000 084	10 000 084
24	screwed socket	2		St	30 111	30 111
25	screwed socket	2		St	31 207	31 207

W Parts are to be held in stock for maintenance

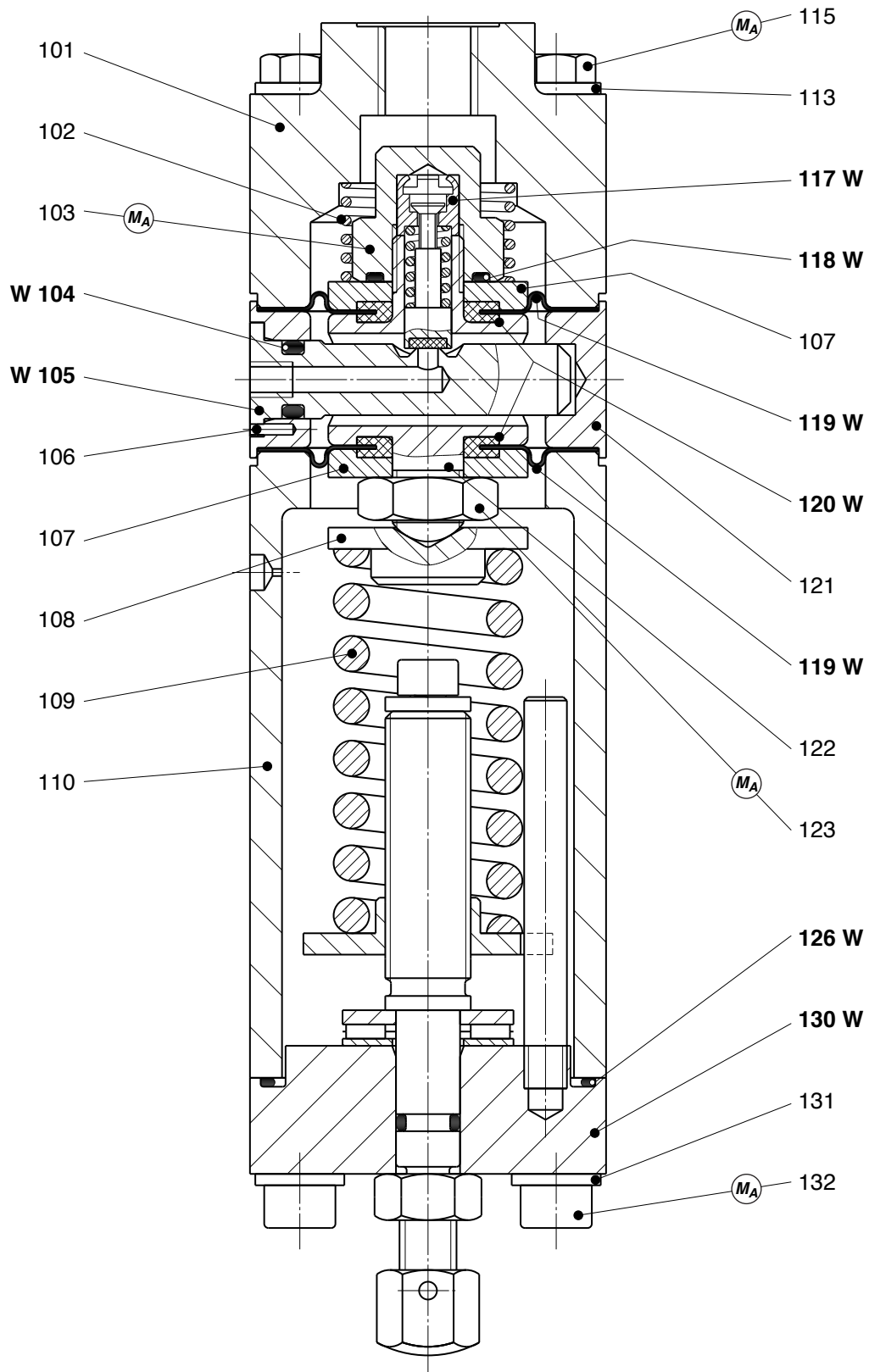
material key

St ... steel	LM ... light metal	SSt ... foam-like plastic material
NSt ... stainless steel	Ms ... brass	K ... plastic material
FSt ... spring steel	Cu ... copper	KG ... rubber-like plastic material
NFSt ... stainless spring steel	Bz ... bronze	KGFP ... rubber-like plastic material with special coating
GS ... cast steel	GLM ... cast light metal	FPM ... rubber-like plastic material
GGG ... spheroidal graphite cast iron	GMs ... cast brass	FP ... special coating
GZn ... cast zinc	AlBz ... aluminium bronze	PGL ... plexiglass
GBz ... cast bronze	NBR ... rubber-like plastic material	

item no.	description	amount	W	material	HON part no.	
					Wh 0,5 to 40 bar	Wh 20 to 90 bar
26	locking screw	3		Ms	10 000 121	10 000 121
27	pipe	1		St	35 505	35 505
28	pipe	1		St	35 505	35 505
29	pipe	1		St	32 124	32 124
30	explosion proof box	1		K	300 038	300 038
31	carriage of explosion proof box	1		St	10 030 155	10 030 155
32	cylinder screw	2		St	10 602	10 602
33	washer	2		St	3 406	3 406
34	hexagon nut	2		St	5 414	5 414
35	hexagon screw	8		St	10 336	10 336
36	washer	18		St	8 279	8 279
37	Lasche	1		LM	10 000 193	10 000 193
38	hexagon screw	8		St	10 024	10 024
39	screwed socket	2		St	30 074	30 074
40	locking screw	1		St	100 031	100 031
41	base plate	1		LM	10 023 866	10 023 866
42	O-ring	1	W	KG	20 332	20 332
43	O-ring	17	W	KG	20 225	20 225
44	base plate	1		LM	10 000 192	10 000 192
45	o-Ring	2	W	KG	20 341	20 341
46	cylinder screw	2		St	10 553	10 553
47	o-Ring	2	W	KG	20 231	20 231
48	washer	1		LM	10 022 218	10 022 218
49	washer	1		LM	10 010 479	10 010 479
50	pipe	1		St	35 505	35 505
51	screwed socket	3		St	32 659	32 659
52	screwed socket	1		St	32 629	32 629
electronic accessories						
53	wire end capsule 1,5	3		K/Cu verzinkt	24 562	24 562
54	wire end capsule 2 x 2,5	1		K/Cu verzinkt	300 041	300 041
55	heat shrink tube	2		K	300 040	300 040
56	wire, temperature resistant	2			300 032	300 032
57	screwed socket	1		St	31 817	31 817
58	2/2-solenoid valve, closing on current failure	1			24 161	24 161
59	2/2-solenoid valve, opening on current failure	1			24 271	24 271

4.3 Stages

4.3.1 Load limiting stage

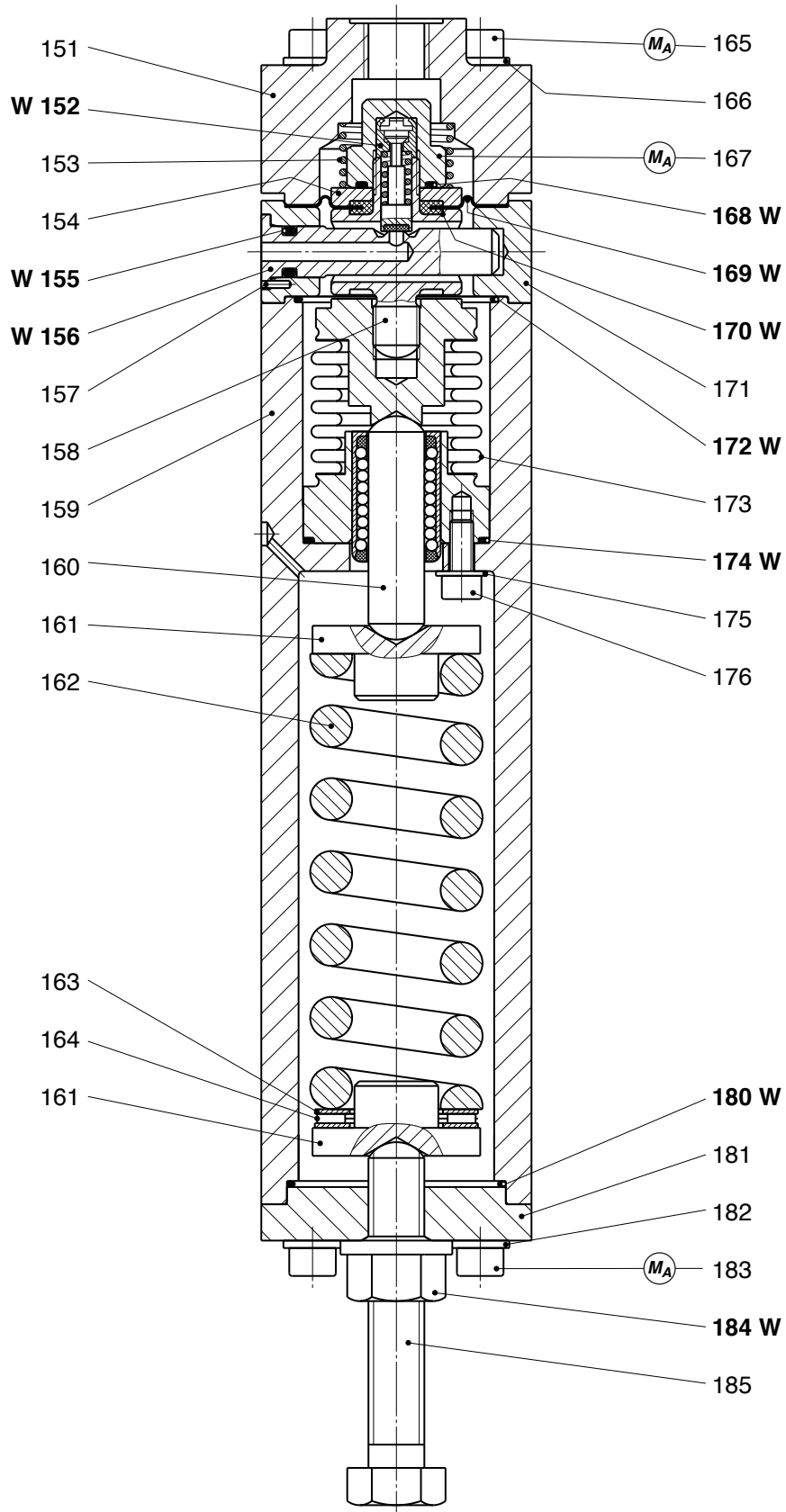


M_A Please use values stated in torque table on page 6!
W Parts are to be held in stock for maintenance.

4.3.2 Load limiting stage

item no.	description	amount	W	material	HON part no.
101	cover	1		LM	10 000 190
102	pressure spring	1		NSt	10 010 463
103	locking cap	1		NSt	10 000 188
104	O-ring	1	W	KG	20 225
105	valve insert	1	W	LM	10 000 061
106	grooved dowel pin	1		ST	17 197
107	diaphragm plate	2		LM	10 000 110
108	spring plate	1		LM	10 000 073
109	pressure spring	1		NFSt	10 000 072
110	spring housing	1		LM	10 000 071
113	washer	4		St	8 279
115	hexagon screw	4		St	10 377
116	washer	4		St	8 279
117	piston, pre-assembled	1	W	NSt/NFSt/KGFP	10 000 186
118	O-ring	1	W	KG	20 332
119	pre-formed diaphragm	2	W	KG	10 000 191
120	sealing insert	2	W	KG	10 000 066
121	valve body	1		LM	10 000 137
122	union piece	1		NSt	10 000 108
123	hexagon nut	1		St	13 114
126	O-ring	1	W	KG	20 293
130	plate, pre-assembled	1		Ms/Al/Bz/NSt...	10 010 480
131	washer	4		St	8 279
132	cylinder screw	4		St	10 150

4.4.1 Control stage with metal harmonica type measuring unit



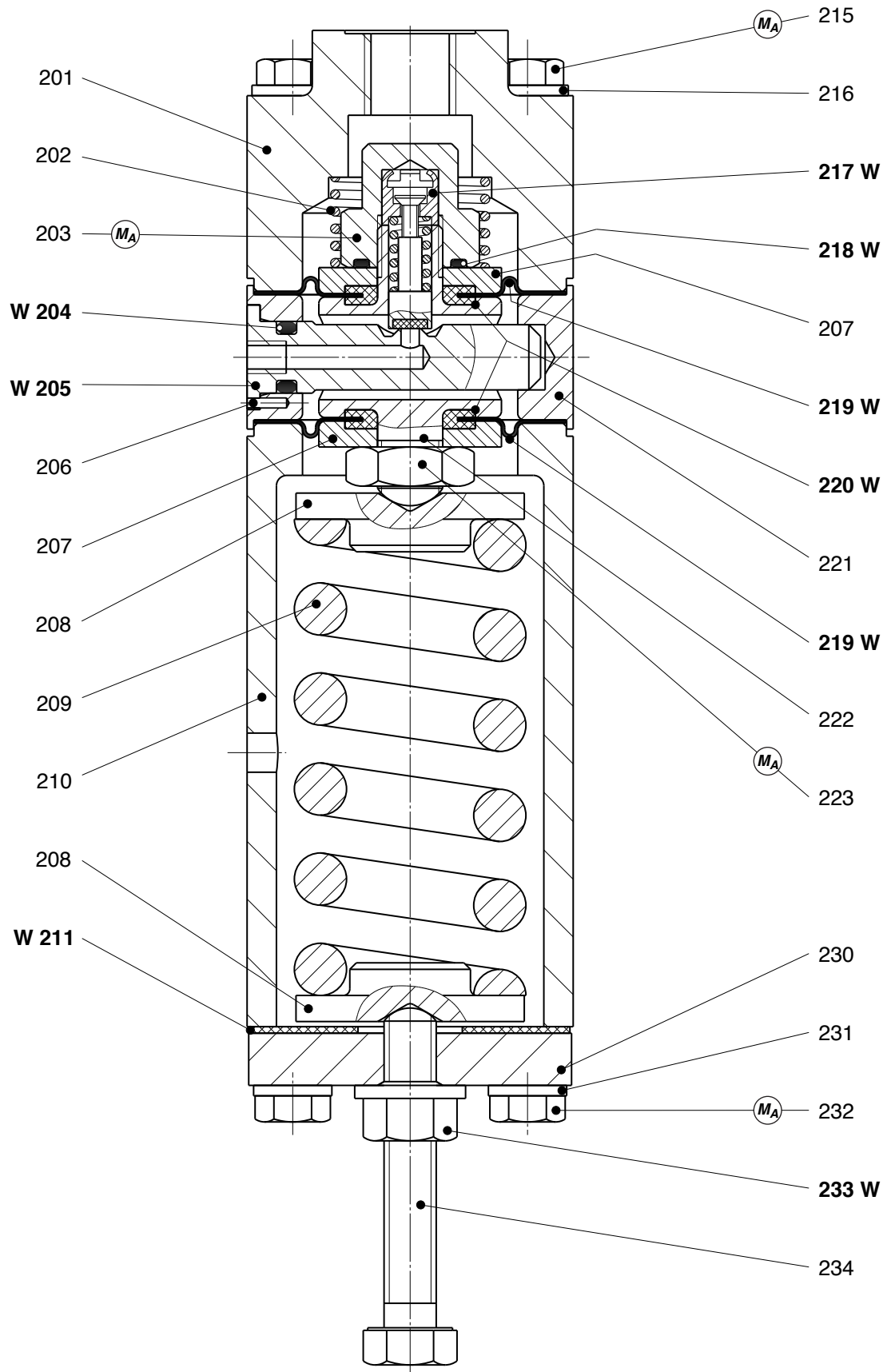
M_A Please use values stated in torque table on page 6!

W Parts are to be held in stock for maintenance.

4.4.2 Control stage with metal harmonica type measuring unit

item no.	description	amount	W	material	HON part no.
151	cover	1		LM	10 011 768
152	piston, pre-assembled	1	W	NSt/NFSt/FPM	10 000 186
153	pressure spring	1		NFSt	10 010 463
154	diaphragm plate	2		LM	10 000 110
155	O-ring	1	W	KG	20 225
156	valve insert	1	W	LM	10 011 775
157	grooved dowel pin	1		St	17 197
158	union piece	1		NSt	10 011 773
159	spring housing	1		LM	10 011 767
160	guide bolt	1		St	10 011 772
161	spring plate	2		NSt	10 011 774
162	pressure spring	1		FSt	10 010 444
163	washer	2		St	26 385
164	needle bearing	1		St	26 384
165	cylinder screw	4		St	10 548
166	washer	4		St	8 279
167	locking cap	1		NSt	10 00 188
168	O-ring	1	W	KG	20 332
169	pre-formed diaphragm	1	W	KG	10 000 191
170	sealing insert	1	W	KG	10 000 066
171	valve body	1		LM	10 011 769
172	O-ring	1	W	KG	20 416
173	metal harmonica, complete	1		NSt/St	10 011 764
174	O-ring	1	W	KG	20 317
175	washer	3		St	6 157
176	cylinder screw	3		St	10 318
180	O-ring	1	W	KG	20 293
181	plate	1		St	10 011 770
182	washer	4		St	8 279
183	cylinder screw	4		St	10 097
184	hexagon collar nut	1	W	St/K	13 145
185	hexagon adjusting screw	1		NSt	10 010 447

4.5.1 Control stage with diaphragm measuring unit

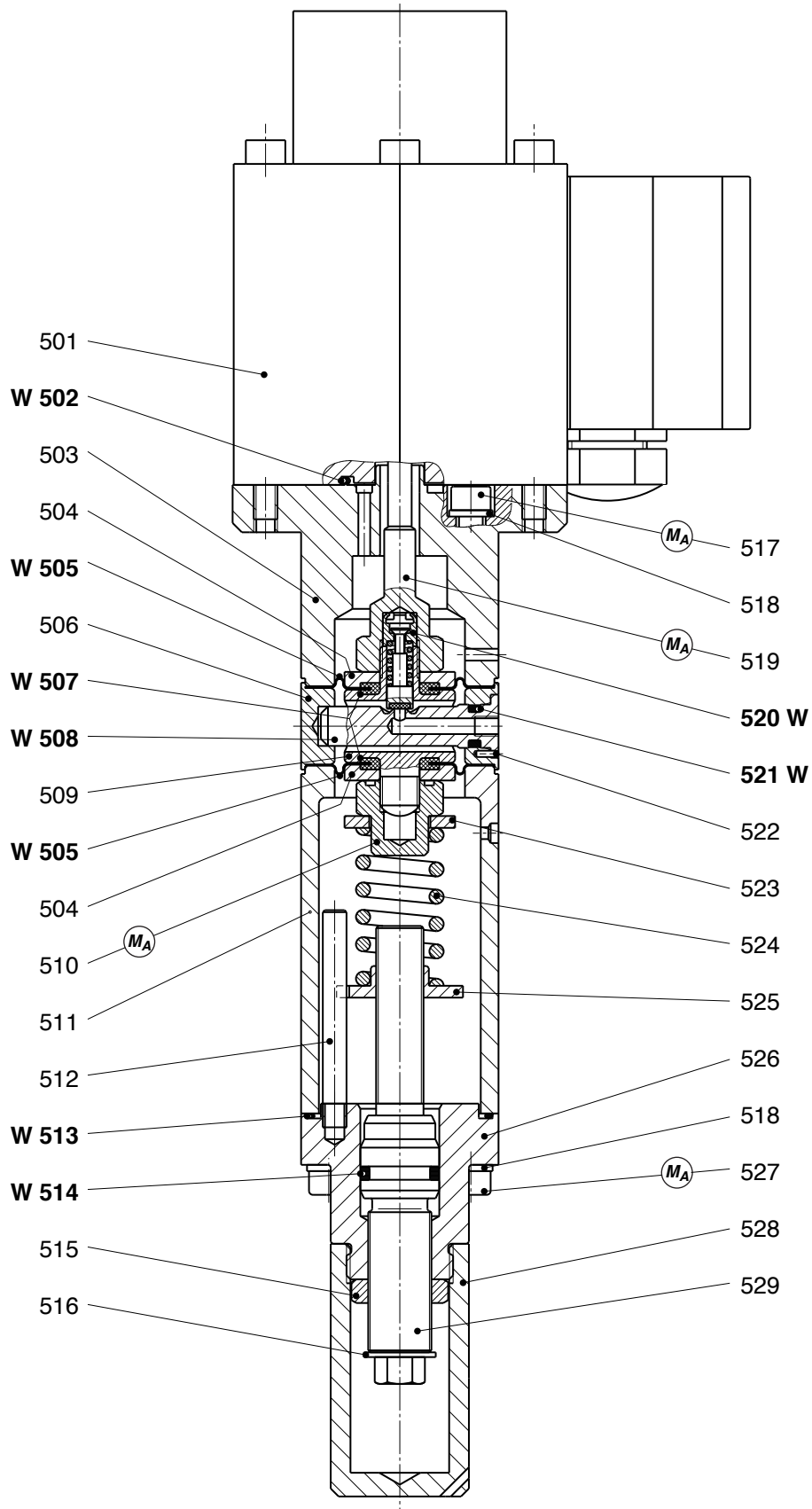


M_A Please use values stated in torque table on page 6!
W Parts are to be held in stock for maintenance.

4.5.2 Control stage with diaphragm measuring unit

item-no.	description	amount	W	material	part no.
201	cover	1		LM	10 000 190
202	pressure spring	1		NSt	10 010 463
203	locking cap	1		NSt	10 000 188
204	O-ring	1	W	KG	20 225
205	valve insert	1	W	LM	10 000 061
206	grooved dowel pin	1		ST	17 197
207	diaphragm plate	2		LM	10 000 110
208	spring plate, at option:				
208	W _a 0,5 bar to 10 bar	2		LM	10 000 114
208	W _a 10 bar to 40 bar	2		LM	10 000 148
209	pressure spring, at option:				
209	W _a 0,5 bar to 2 bar	1		FSt	10 000 156
209	W _a 1,0 bar to 5 bar	1		FSt	10 009 671
209	W _a 2,0 bar to 10 bar	1		FSt	10 000 139
209	W _a 5,0 bar to 20 bar	1		FSt	10 000 115
209	W _a 10,0 bar to 40 bar	1		FSt	10 000 064
210	spring housing	1		LM	10 000 062
211	sealing	1	W	K	10 000 100
215	hexagon screw	4		St	10 377
216	washer	4		St	8 279
217	piston, pre-assembled	1	W	NSt/NFSt/FPM	10 000 186
218	O-ring	1	W	KG	20 332
219	pre-formed diaphragm	2	W	KG	10 000 191
220	sealing insert	2	W	KG	10 000 066
221	valve body	1		LM	10 000 137
222	union piece	1		NSt	10 000 108
223	hexagon nut	1		St	13 114
230	cover	1		St	10 000 116
231	washer	4		St	8 279
232	hexagon screw	4		St	6 493
233	hexagon collar nut	1	W	St/K	13 136
234	hexagon adjusting screw	1		NSt	10 002 795

4.6.1 Electro/pneumatic control stage



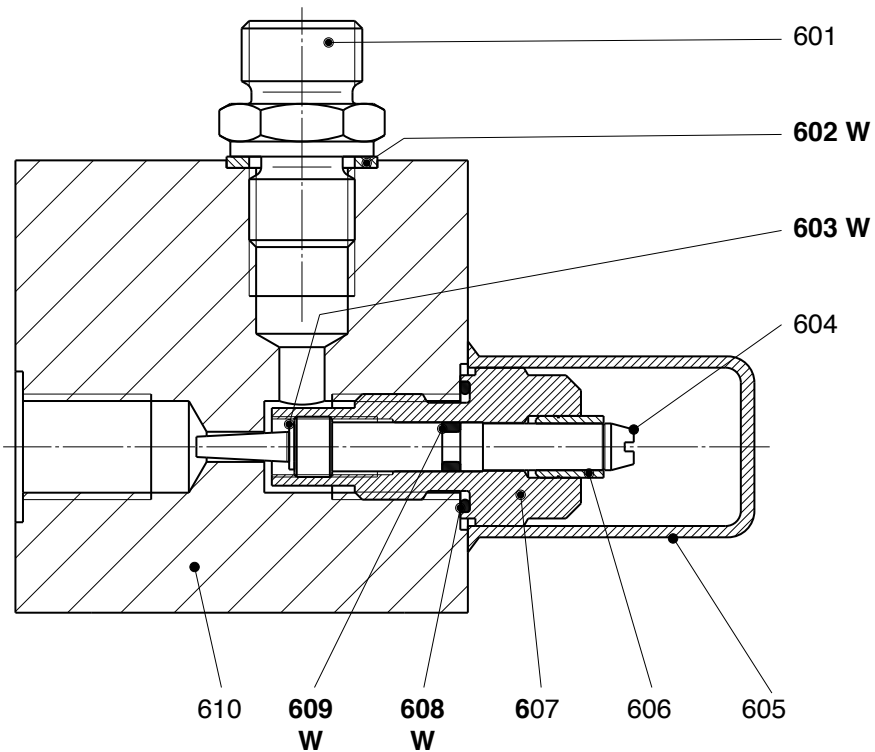
MA Please use values stated in torque table on page 6!

W Parts are to be held in stock for maintenance.

4.6.2 Electro/pneumatic controls stage

item no.	description	amount	W	material	HON part no.
501	proportional solenoid	1			24630
502	O-ring	1	W	KG	20 235
503	diaphragm housing	1		LM	10 023 854
504	diaphragm plate	2		LM	10 000 110
505	pre-formed diaphragm	2	W	KG	10 000 191
506	valve housing	1		LM	10 000 095
507	sealing insert	2	W	KG	10 000 066
508	valve insert	1	W	LM	10 000 061
509	union piece	1		NSt	10 000 108
510	locking cap	1		NSt	10 000 188
511	spring housing	1		LM	10 025 670
512	bolt	1		NSt	10 000 880
513	O-ring	1	W	KG	20 293
514	O-ring	1	W	KG	20 326
515	hexagon nut	1		NSt	10 023 860
516	washer	1		FSt	19 189
517	cylinder screw	4		St	10 550
518	washer	8		St	14 156
519	adjusting cap	1		NSt	10 023 855
520	piston, pre-assembled	1	W	NSt/NFS/FPM	10 000 186
521	O-ring	1	W	KG	20 225
522	grooved dowel pin	1		St	17 197
523	spring disc	1		LM	10 010 557
524	pressure spring	1		FSt	10 001 827
525	spring plate	1		NSt	10 023 858
526	plate	1		AIBz	10 023 857
527	cylinder screw	4		St	10 150
528	closing cap	1		LM	10 010 430
529	hexagon adjusting screw	1		NSt	10 023 856

4.7.1 discharge throttle



4.7.2 Spare parts list

item no.	description	amount	W	material	HON part no.
601	screwed socket	1		St	30 111
602	sealing ring	1	W	LM	18 842
603	locking washer	1	W	FSt	19 065
604	spindle	1		NSt	10 000 145
605	protection cap	1		K	26 343
606	sleeve	1		PGI	10 000 171
607	guiding screw	1		Ms	10 000 144
608	O-ring	1	W	KG	20 332
609	O-ring	1	W	KG	20 283
610	housing	1		LM	19 081 879

W Parts are to be held in stock for maintenance.

4.8 Parts to be held in stock for maintenance work

Item no.	description	amount	HON part no.
15	sealing ring	6	18 842
42	O-ring	1	20 332
43	O-ring	17	20 225
45	O-ring	2	20 341
47	O-ring	2	20 231
Load limiting stage			
104	O-ring	1	20 225
105	valve insert	1	10 000 061
117	piston, pre-assembled	1	10 000 186
118	O-ring	1	20 332
119	pre-formed diaphragm	2	10 000 191
120	sealing insert	2	10 000 066
126	O-ring	1	20 293
Control stage with metal harmonica measuring unit			
152	piston, pre-assembled	1	10 000 186
155	O-ring	1	20 225
156	valve insert	1	10 011 775
168	O-ring	1	20 332
169	pre-formed diaphragm	1	10 000 191
170	sealing insert	1	10 000 066
172	O-ring	1	20 416
174	O-ring	1	20 317
180	O-ring	1	20 293
184	hexagon collar nut	1	13 145
Control stage with diaphragm measuring unit			
204	O-ring	1	20 225
205	valve insert	1	10 000 061
211	sealing	1	10 000 100
217	piston, pre-assembled	1	10 000 186
218	O-ring	1	20 332
219	pre-formed diaphragm	2	10 000 191
220	sealing insert	2	10 000 066
233	hexagon collar nut	1	13 136
Electro/pneumatic control stage			
502	O-ring	1	20 235
505	pre-formed diaphragm	2	10 000 191
507	sealing insert	2	10 000 066
508	valve insert	1	10 000 061
513	O-ring	1	20 293
514	O-ring	1	20 326
520	piston, pre-assembled	1	10 000 186
521	O-ring	1	20 225

For More Information

To learn more about Honeywell's
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