



Medium Pressure Filter

Pi 360

Operating pressure 210 (315) bar, Nominal size up to 300

1. Features

Efficient filters for modern hydraulic systems

- Modular design
- Minimal pressure loss
- Compact design
- Visual / electrical / electronic differential pressure indication
- Threaded ports

Quality filters, easy to service

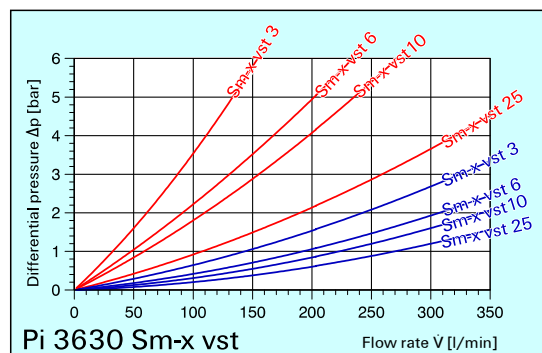
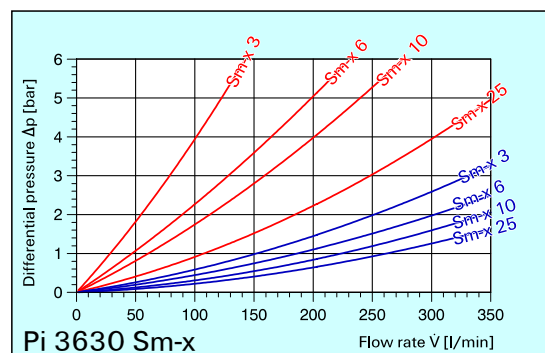
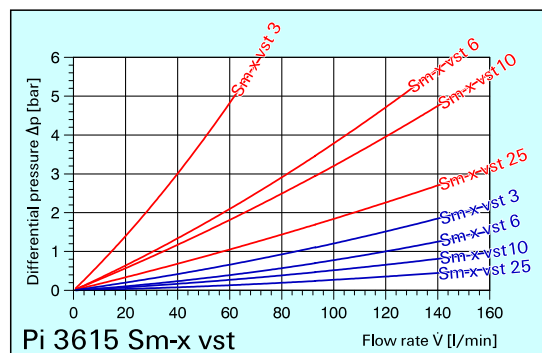
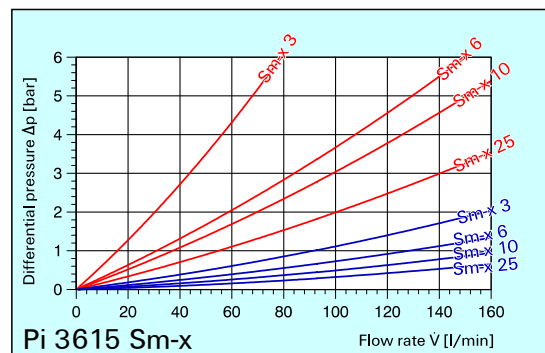
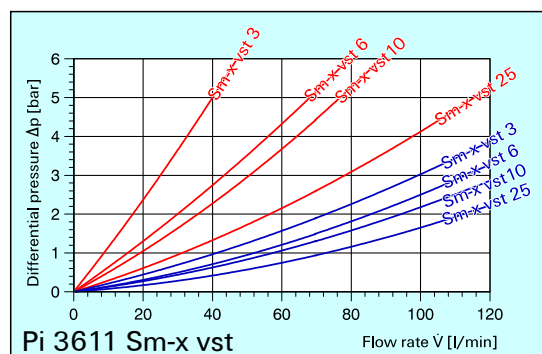
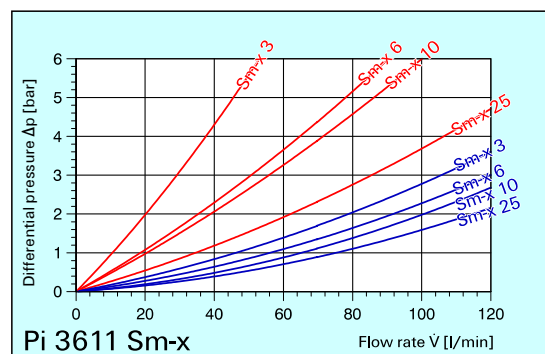
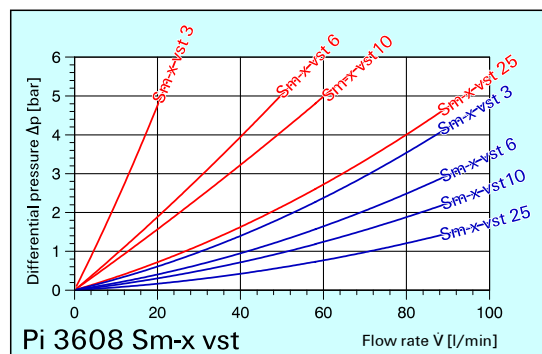
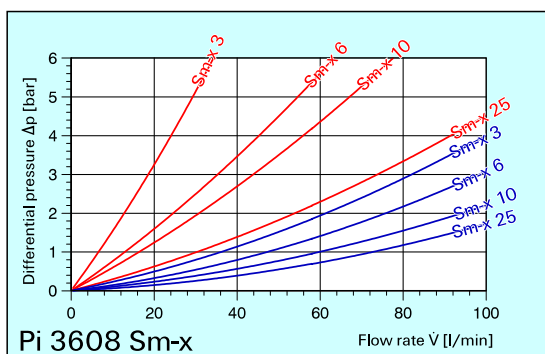
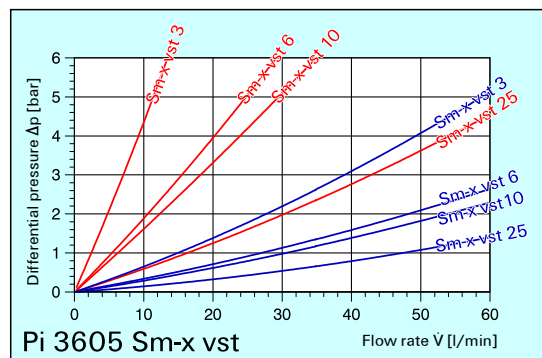
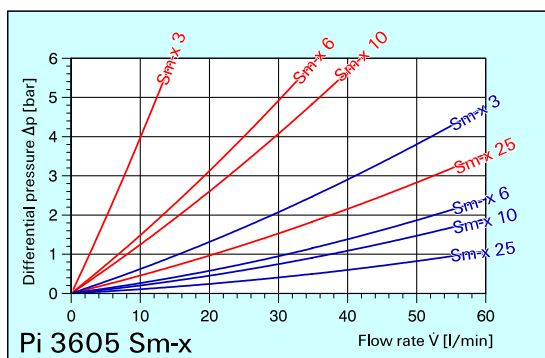
- Highly efficient Sm-x filter elements
- β -rated elements per ISO 4572
- Large dirt holding capacity and high differential pressure stability providing optimum element service life
- 100% bubble-point tested elements

Worldwide sales

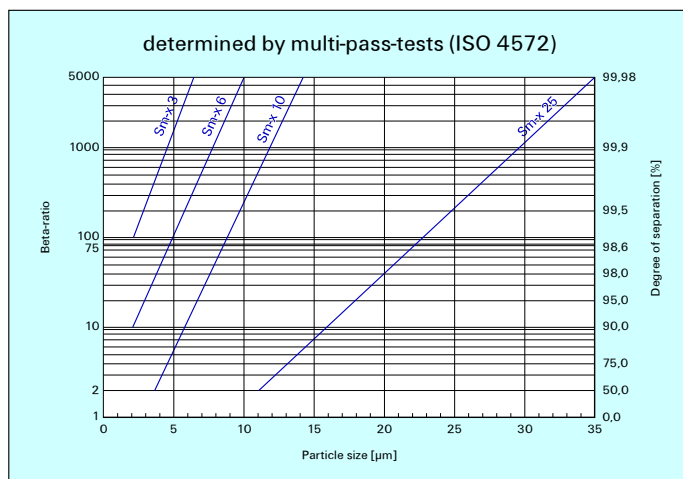


2. Flow rate/pressure drop curve compl. filter

■ 190 mm²/s (25 ° E)
■ 33 mm²/s (4,5 ° E)



3. Separation characteristics



4. Filter performance data

tested according to ISO 4572 (multi-pass-test)

Sm-x-elements
with Δp 20 bar

Sm-x 3 $\beta_3 \geq 75$
 Sm-x 6 $\beta_6 \geq 75$
 Sm-x 10 $\beta_{10} \geq 75$
 Sm-x 25 $\beta_{25} \geq 75$

at 7 bar differential pressure

Sm-x-vst-elements
with Δp 210 bar

Sm-x vst 3 $\beta_3 \geq 75$
 Sm-x vst 6 $\beta_6 \geq 75$
 Sm-x vst 10 $\beta_{10} \geq 75$
 Sm-x vst 25 $\beta_{25} \geq 75$

at 16 bar differential pressure

Example for ordering filters:

1. Housing design $\dot{V} = 80$ l/min,
electrical indication

Type-no. **Pi 3608-15**

Order-no. **766.628.2**

+ 2. Filter element Sm-x vst 3

Type-no. **Pi 2208**

Order-no. **768.020.0**

7. Order numbers

7.1 Housing design

Part number	Type number	Nominal size NG	① Standard *	② With bypass valve and indicator cavity	③ With bypass valve and visual indicator	④ With bypass valve and visual/electrical indicator	⑤ With visual indicator	⑥ With visual/electrical indicator
765.599.6	Pi 3605-60	50						
766.621.7	Pi 3605-11							
766.622.5	Pi 3605-12							
765.604.4	Pi 3605-13							
766.623.3	Pi 3605-14							
766.624.1	Pi 3605-15							
765.600.2	Pi 3608-60	80						
766.625.8	Pi 3608-11							
766.626.6	Pi 3608-12							
765.603.6	Pi 3608-13							
766.627.4	Pi 3608-14							
766.628.2	Pi 3608-15							
765.601.0	Pi 3611-60	110						
766.629.0	Pi 3611-11							
766.630.8	Pi 3611-12							
765.602.8	Pi 3611-13							
773.182.1	Pi 3611-14							
766.631.6	Pi 3611-15							
764.784.5	Pi 3615-60	150						
773.185.4	Pi 3615-11							
766.632.4	Pi 3615-12							
765.598.8	Pi 3615-13							
773.186.2	Pi 3615-14							
773.184.7	Pi 3615-15							
765.597.0	Pi 3630-60	300						
773.189.6	Pi 3630-11							
766.633.2	Pi 3630-12							
764.783.7	Pi 3630-13							
773.190.4	Pi 3630-14							
773.188.8	Pi 3630-15							

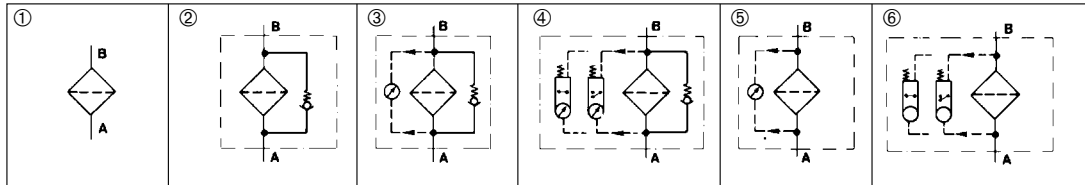
*When using standard filter (without options) collapse pressure of the element may not be exceeded.

5. Test regulations

MAHLE filter elements are manufactured respectively, tested in accordance with the following international standards:

No.	Designation
ISO 2941	Hydraulic-filter elements: Verification of burst resistance
ISO 2942	Hydraulic-filter elements: Determination of fabrication integrity
ISO 2943	Hydraulic-filter elements: Verification of material compatibility with hydraulic fluids
ISO 3723	Hydraulic-filter elements: Method for testing end-cap load
ISO 3724	Hydraulic-filter elements: Verification of flow fatigue characteristics
ISO 3968	Hydraulic-filters: Evaluation of pressure drop versus flow
ISO 4572	Hydraulic-filter elements: Testing of filter performance (multi-pass-test)

6. Symbols



7.2 Filter elements* () = filter surface area [] = type number

inorganic paper								
	Sm-x 3 Δp 20 bar	Sm-x 6 Δp 20 bar	Sm-x 10 Δp 20 bar	Sm-x 25 Δp 20 bar	Sm-x vst 3 Δp 210 bar	Sm-x vst 6 Δp 210 bar	Sm-x vst 10 Δp 210 bar	Sm-x vst 25 Δp 210 bar
	(590 cm ²)	(590 cm ²)	(590 cm ²)	(590 cm ²)	(470 cm ²)	(470 cm ²)	(470 cm ²)	(470 cm ²)
					768.019.2	794.353.3	768.038.2	768.050.7
	768.013.5	794.350.9	768.032.5	768.044.0				
	768.013.5	794.350.9	768.032.5	768.044.0	[Pi 2205]	[Pi 5205]	[Pi 3205]	[Pi 4205]
	768.013.5	794.350.9	768.032.5	768.044.0				
	[Pi 2105]	[Pi 5105]	[Pi 3105]	[Pi 4105]	768.019.2	794.353.3	768.038.2	768.050.7
					768.019.2	794.353.3	768.038.2	768.050.7
	(1150 cm ²)	(1150 cm ²)	(1150 cm ²)	(1150 cm ²)	(900 cm ²)	(900 cm ²)	(900 cm ²)	(900 cm ²)
					768.020.0	794.354.1	768.119.0	768.051.5
	768.014.3	794.351.7	768.034.1	768.045.7				
	768.014.3	794.351.7	768.034.1	768.045.7	[Pi 2208]	[Pi 5208]	[Pi 3208]	[Pi 4208]
	768.014.3	794.351.7	768.034.1	768.045.7				
	[Pi 2108]	[Pi 5108]	[Pi 3108]	[Pi 4108]	768.020.0	794.353.3	768.119.0	768.051.5
					768.020.0	794.353.3	768.119.0	768.051.5
	(1700 cm ²)	(1700 cm ²)	(1700 cm ²)	(1700 cm ²)	(1315 cm ²)	(1315 cm ²)	(1315 cm ²)	(1315 cm ²)
					768.021.8	794.355.8	768.039.0	768.052.3
	768.015.0	794.352.5	768.033.3	768.046.5				
	768.015.0	794.352.5	768.033.3	768.046.5	[Pi 2211]	[Pi 5211]	[Pi 3211]	[Pi 4211]
	768.015.0	794.352.5	768.033.3	768.046.5				
	[Pi 2111]	[Pi 5111]	[Pi 3111]	[Pi 4111]	768.021.8	794.355.8	768.039.0	768.052.3
					768.021.8	794.355.8	768.039.0	768.052.3
	(2350 cm ²)	(2350 cm ²)	(2350 cm ²)	(2350 cm ²)	(2010 cm ²)	(2010 cm ²)	(2010 cm ²)	(2010 cm ²)
					768.022.6	795.512.3	768.040.8	768.053.1
	768.016.8	795.509.9	768.035.8	768.047.3				
	768.016.8	795.509.9	768.035.8	768.047.3	[Pi 2215]	[Pi 5215]	[Pi 3215]	[Pi 4215]
	768.016.8	795.509.9	768.035.8	768.047.3				
	[Pi 2115]	[Pi 5115]	[Pi 3115]	[Pi 4115]	768.022.6	795.512.3	768.040.8	768.053.1
					768.022.6	795.512.3	768.040.8	768.053.1
	(4420 cm ²)	(4420 cm ²)	(4420 cm ²)	(4420 cm ²)	(3800 cm ²)	(3800 cm ²)	(3800 cm ²)	(3800 cm ²)
					768.023.4	795.513.1	768.041.6	768.054.9
	768.017.6	795.510.7	768.036.6	768.048.1				
	768.017.6	795.510.7	768.036.6	768.048.1	[Pi 2230]	[Pi 5230]	[Pi 3230]	[Pi 4230]
	768.017.6	795.510.7	768.036.6	768.048.1				
	[Pi 2130]	[Pi 5130]	[Pi 3130]	[Pi 4130]	768.023.4	795.513.1	768.041.6	768.054.9
					768.023.4	795.513.1	768.041.6	768.054.9

*further elements upon request

8. Specifications

Design:	line mounting filter
Operating pressure:	210 bar*
Test pressure:	275 bar*
Temperature range:	-10 °C to +120 °C
(other temperature ranges on request)	
Bypass opening pressure:	Δp 7 bar
Filter head material:	GGG
Filter bowl material:	CK 15
Material of seals:	NBR / PTFE / CU
Filters compatible with standard mineral oils.	
Please contact us in case of using other media.	
Activating pressure of visual / electrical differential pressure indicator:	Δp 5 bar ± 0,5 bar
Electrical data of contamination indicator:	
Maximum voltage:	230 V ~/=
Maximum current on contact:	2,5 A
Maximum contact load:	60 VA / 40 W
Inrush current:	70 VA
Type of protection:	IP 65 when inserted and secured
Contact:	bistable
Cable connection:	PG 11 Ø 6-10

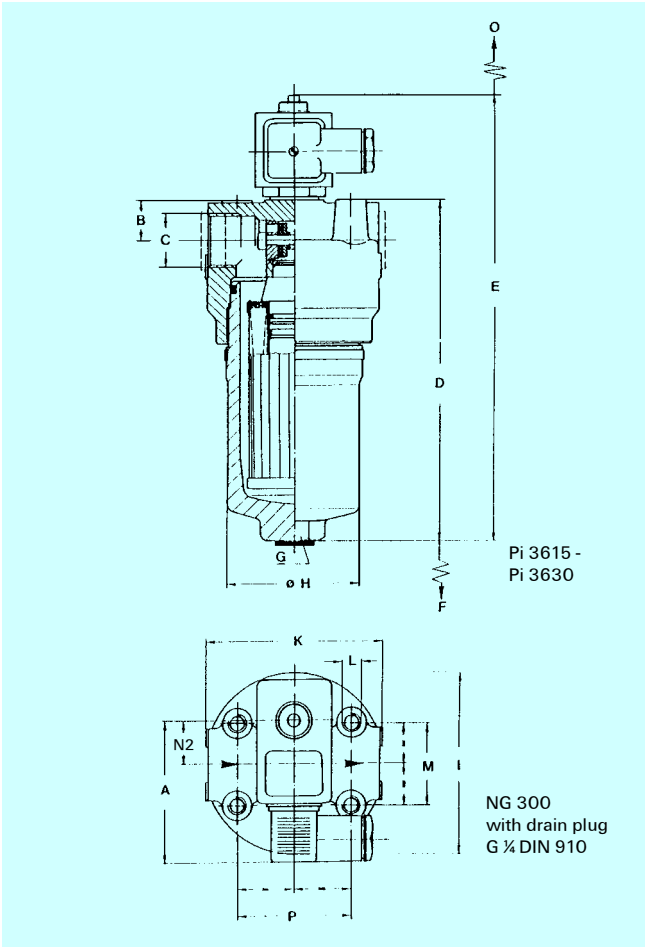
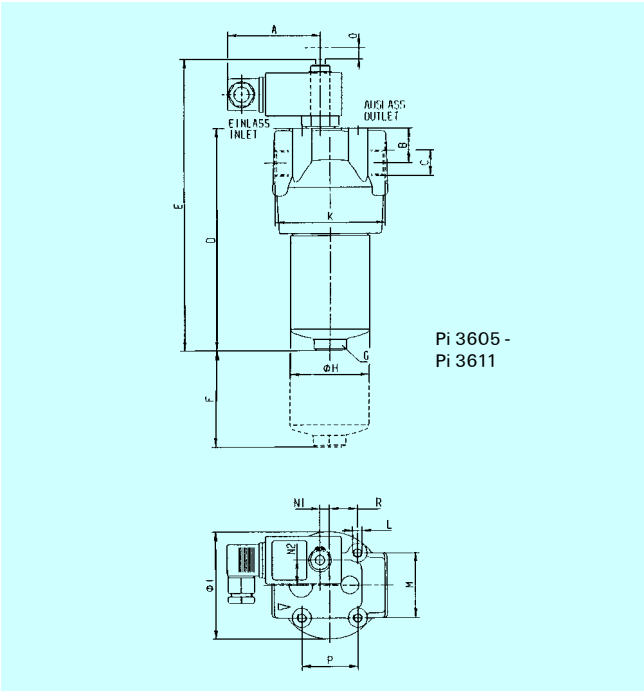
The electrical indicator function can be changed from the Normally Open position to the Normally Closed position or vice versa by inverting the electrical section.

With the inrush current of 70 VA the indicator can trigger small contactors or contactor relays.

Inductivity in the direct current may require the use of a signal suppressor.

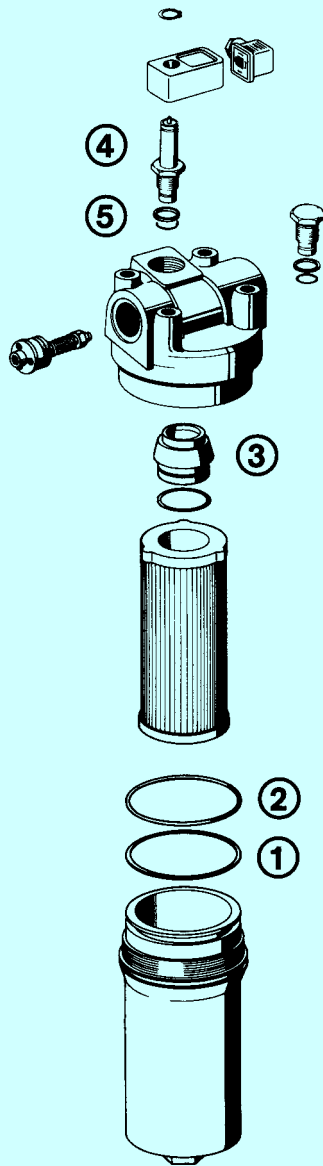
For further information also see our leaflet Contamination indicators.

* Types Pi 3605, Pi 3608 and Pi 3611 have an operating pressure of 315 bar/test pressure 410 bar.



9. Dimensions

Dimensions Type	A	B	C	D	E	F	G SW	H	I	K	L	M	N 1	N 2	O	P	Weight [kg]
Pi 3605	78	31	G ½	187	245	80	27	66	90	92	M8 x16	54	8	21	45	47	4
Pi 3608	78	31	G ¾	265	323	80	27	66	90	92	M8 x16	54	8	21	45	47	4,3
Pi 3611	78	31	G ¾	341	399	80	27	66	90	92	M8 x16	54	8	21	45	47	5
Pi 3615	78	32	G 1 ¼	259	315	110	30	109	137	137	M12 x16	60	—	28	45	80	11,5
Pi 3630	78	32	G 1 ¼	384	440	110	30	109	137	137	M12 x16	60	—	28	45	80	14,0



10. Installation, operating and maintenance instructions

10.1 Filter installation

When installing the filter make sure that sufficient space is available to remove filter element and filter bowl.

Preferable the filter should be installed with the filter bowl pointing downwards.

The contamination indicator must be visible.

10.2 Connecting the electrical contamination indicator

The electrical indicator is connected via a 2-pole appliance plug according DIN 43650 with poles marked 1 and 2.

The electrical section can be inverted to change from Normally Open position to Normally Closed position or vice versa.

10.3 When must the filter element be replaced?

- Filters equipped with visual and electrical contamination indicator:
During cold starts, the indicator may give a warning signal. Depress the red button of the visual indicator once again only after operating temperature has been reached. If the red button immediately pops out again and/or the electrical signal has not switched off after reaching operating temperature, the filter element must be replaced after the end of the shift.
- Filters without contamination indicator: the filter element should be replaced after the trial run or flushing of the system. Afterwards follow instructions of the manufacturer.
- Please always ensure that you have original MAHLE replacement elements in stock: disposable elements (Sm-x) cannot be cleaned.

10.4 Element replacement

- Stop system and relieve filter from pressure.
- Unscrew the filter bowl by turning counter-clockwise. Clean the bowl using a suitable cleaning solvent.
- Remove filter element with a side-to-side motion.
- Check O-ring and back-up ring on the filter bowl for damage. Replace, if necessary.
- Make sure that the part number on the spare element corresponds with the part number of the filter label. Open the plastic bag and push element over the spigot in the filter head. Now remove plastic bag.
- Complete installation by screwing on the bowl, turning clockwise until it comes to a full stop. Back off the bowl $\frac{1}{8}$ turn.

11. Spare parts list

Pos.	Part no. /housing	
	Pi 3605–Pi 3611	Pi 3615–Pi 3630
①	Seal kit	Seal kit
–	NBR 763.715.0	NBR 763.718.4
–	FPM 763.716.8	FPM 763.719.2
③	EPDM 763.717.6	EPDM 763.720.0
④	Contamination indicator	
	visual	visual/electrical
	766.991.4	766.986.4
	Pis 3093/5 bar	Pis 3092/5 bar
⑤	electrical upper part only	
	753.655.0	
	Seal kit for contamination indicator	
⑤	NBR	776.027.5
	FPM	776.028.3
	EPDM	776.029.1

Subject to technical alteration without prior notice.



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