

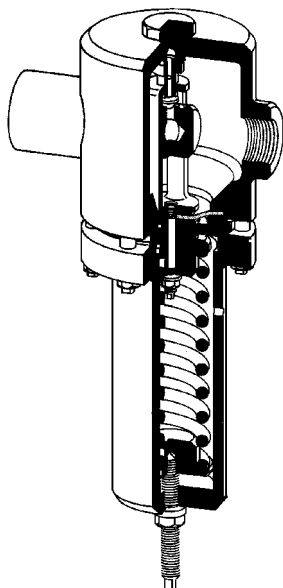
# PRESSURE REDUCING VALVES

High pressure valves for liquids  
and gases up to 80 / 130 / 400 °C

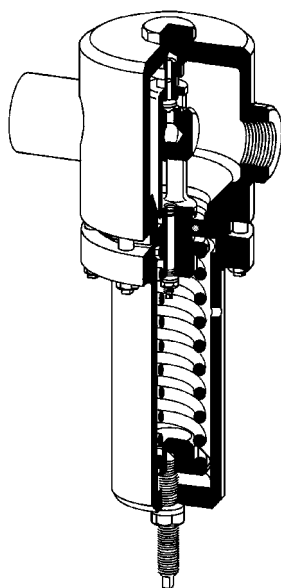
**Type 510, 511, 514  
515, 516, 518**

## EXAMPLES OF DESIGN

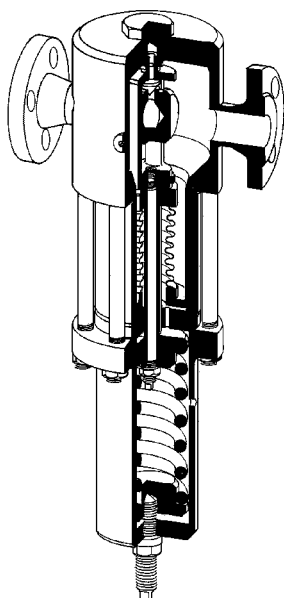
**Type 510 (~ 514)  
diaphragm control**



**Type 510 K (~ 514 K)  
piston control**



**Type 511 B (~ 515 B)  
bellow control**



## TECHNICAL DATA

TYPE 510, 511, 516	adjusting ranges 2 - 100 bar
NOMINAL PRESSURE	PN 315 / 10 - 100
CONNECTION	Type 510 G 3/8 - 2 Type 511 DN 15 - 50 Type 516 welding ends DN 15 - 50
INLET PRESSURE P1	up to 315 bar
OUTLET PRESSURE P2	2* - 100 bar in 10 adjusting ranges
TEMPERATURE	up to 80 / 130 / 400 °C
KVS-VALUE	0,2 - 5,5 m <sup>3</sup> /h
TYPE 514, 515, 518	adjusting ranges 40 - 160 bar
NOMINAL PRESSURE	PN 315 / 160
CONNECTION	Type 514 G 1/2 - 1 Type 515 DN 15 - 25 Type 518 welding ends DN 15 - 50
INLET PRESSURE P1	up to 315 bar
OUTLET PRESSURE P2	40 - 160 bar in 2 adjusting ranges
TEMPERATURE	up to 80 / 130 / 400 °C
KVS-VALUE	0,2 - 2,2 m <sup>3</sup> /h
CONTROL	
DIAPHRAGM	T ≤ 80 / 130 °C, P2: 2 - 20 bar
PISTON	T ≤ 80 / 130 °C, P2: 2 - 160 bar
BELLOW	T up to 400 °C, P2: 2 - 160 bar and for aggressive mediums

\* For set ranges < 2 bar see type 512, 513 and 517

## DESCRIPTION

Pressure reducing valves control the pressure at the outlet side.

The pressure reducers type 510, 511, 514, 515, 516 and 518 are diaphragm, piston or bellow controlled, spring-loaded proportional regulators. Three different connections are available: female ends, flanges and welding ends. For each size three different seats are possible (see sheet DM 510/2.1.021.2). The valve cone is built either as soft seal or as metallic seal. The sealing quality is equal or better than VDI/VDE-guideline 2174.

With depressurized pipeline the spring keeps the valve cone in open position. Under pressure the medium flows from the inlet side through the valve seat into the body and acts on the diaphragm/spring system from the outlet side (outlet pressure).

The outlet pressure to be controlled balances the force of the valve spring (set point) via the diaphragm. As soon as the outlet pressure rises above the set point, the valve cone moves towards the seat causing the flow to be reduced. With decreasing outlet pressure the valve cross section increases. The valve is fully open when the pipeline is depressurized. Clockwise turning of the adjusting screw increases the outlet pressure. The maximum permitted outlet pressure is 1,5 times the set pressure, unless otherwise specified.

If toxic or hazardous media are used the valve must feature a sealed spring cover (including setting spindle seal) fitted with a leakage line connection. When the overflow valve is installed on site a leakage line must be fitted capable of safely draining the escaping medium in case the control valve should become defective.

Mankenberg reserves the right, to alter or improve the designs or specifications of the products described herein without notice.

Special designs on request.

**NOM. PRESS., KVS-VALUES, ADJUSTING RANGES  
PERMISSIBLE REDUCTION RATIO  
SEE SHEET NO. DM 510/2.1.021.2**

# PRESSURE REDUCING VALVES

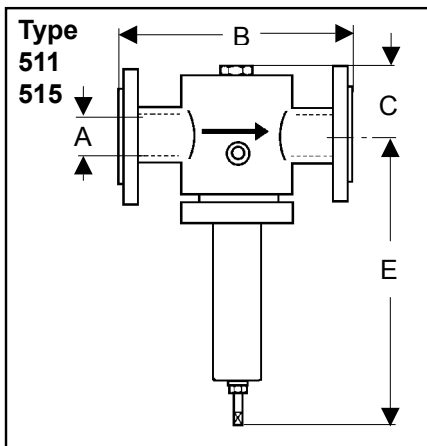
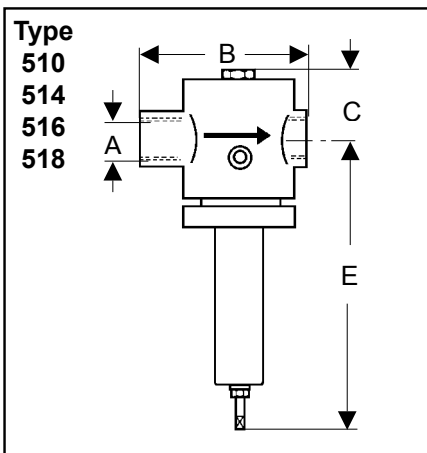


WIR REGELN DAS SCHON.

High pressure valves for liquids  
and gases up to 80 / 130 / 400 °C

**Type 510, 511, 514  
515, 516, 518**

MATERIALS						
NOMINAL DIAMETER	DN 15 - 25 , G 3/8 - 1			DN 32 - 50 , G 1 1/4 - 2		
TEMPERATURE	80 °C	130 °C	400 °C	80 °C	130 °C	400 °C
BODY	C 22.8			steel welded		
SPRING BONNET	CrNiMo-steel steel welded					
INNER PARTS	brass/CrMo/CrNiMo-st		CrNiMo-st	CrMo / CrNiMo-steel		CrNiMo-st
VALVE SEAL	EU	FPM / EPDM / PTFE	CrNiMo-st	EU	FPM / EPDM / PTFE	CrNiMo-st
DIAPHRAGM	CR	FPM / EPDM	-	CR	FPM / EPDM	-
PROTECTION FILM	PTFE (if needed)					
PISTON with O-RING = K	NBR	FPM / EPDM / PTFE	-	NBR	FPM / EPDM / PTFE	-
BELLOW = B	CrNiMo-steel					



DIMENSIONS [mm] type 510, 511, 516					
type	size	nominal diameter (size A)			
		G 3/8 - 1/2 DN 15	G 3/4 - 1 DN 20 - 25	G 1 1/4 - 1 1/2 DN 32 - 40	G 2 DN 50
510	B	140	170	250	250
511	B	220	220	280*	300*
516	B	220	220	acc. to DIN 3202 - S14	
all	C	80	80	110	110
types	E	max. 520	max. 520	max. 800	max. 800

\* with nominal pressure  $\geq$  PN 63 on request

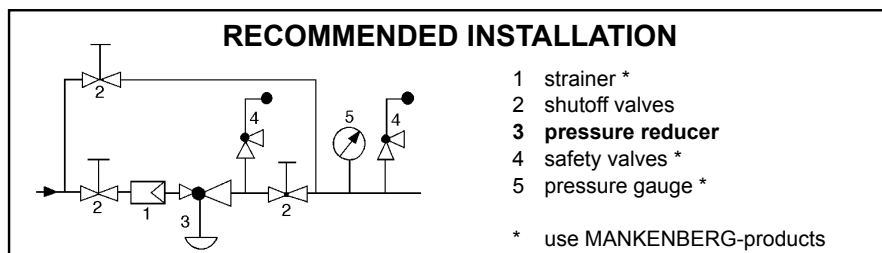
WEIGHTS type 510 [kg]						
nominal diameter G (size A)						
3/8	1/2	3/4	1	1 1/4	1 1/2	2
13	13	14	15	21	21	21

WEIGHTS type 511, 515 (weight of each flange + weight type 510, 514)							
weight of one flange [kg]							
nom. press.	nominal diameter DN (size A)						
PN	15	20	25	32	40	50	
16 - 40	1,5	1,6	1,8	2,4	2,9	3,4	
63	1,7	2,3	3,2		4,8	5,2	
100	1,7	2,3	3,2		4,8	7,7	
160	1,7	2,3	3,2		4,8	8	
250	3		4		7,2	8,8	
315	3,5		5,5		8,7	11,3	

DIMENSIONS type 514, 515, 518	
size	mm
B	220
C	90
E	max. 530

WEIGHT type 514 [kg]		
nominal diameter G (size A)		
1/2	3/4	1
18	19	20

Weights of type 516 - 518 on request



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Special designs on request.