

# Cavity-free piggable Metering Valve Series 28a

## Application:

Stainless steel - valve consisting of a piggable T-piece with intergrated metering ball valve with a recessed ball:

- Nominal diameters DN 50 to DN 150
- Nominal pressure PN 25 / PN 40
- Temperature up to 200°C.

The valve is consists of a main body with intergrated ball valve, and the side body of the metering ball valve. The valves in modular assembly design, have the following special features:

- Inside diameter of pipe, according to DIN 2430
- Seat rings, spring-loaded on one side.
- Floating ball, i.e. sealed by both seat rings
- Control shaft sealed by a V-ring packing loaded by spring washers,
- Blow out proof control shaft,
- Anti static version with conductive shaft bearing,
- Flange with raised face either form B1 or B2 acc. DIN EN 1092-1, clearance-free with special flanges with male face/female face, specially for pigging equipement or specifically designed according to customer requirements,
- Connections for actuators acc. to DIN ISO 5211,

## Versions:

The valve consists of a T-piece, which, because of its unique construction enables completely cavity-free pigging, and performs the following functions according to various versions:

- in 1-Pigging system: - as media inlet,
- in 2-Pigging system: - with optional, special blind flange as end station with media inlet and media outlet,
  - to meter, for additional substances directly into the media flow.

## Special versions:

- with pigging signal strips in automatic systems, for mounting magnetic-inductive pigging sensors,
- with pigging sensors for manual detection,
- with contamination safeguard, to automatically detect leakage from the metering ball valve,
- with a special blind flange, to form an end-station for two-Pig systems.

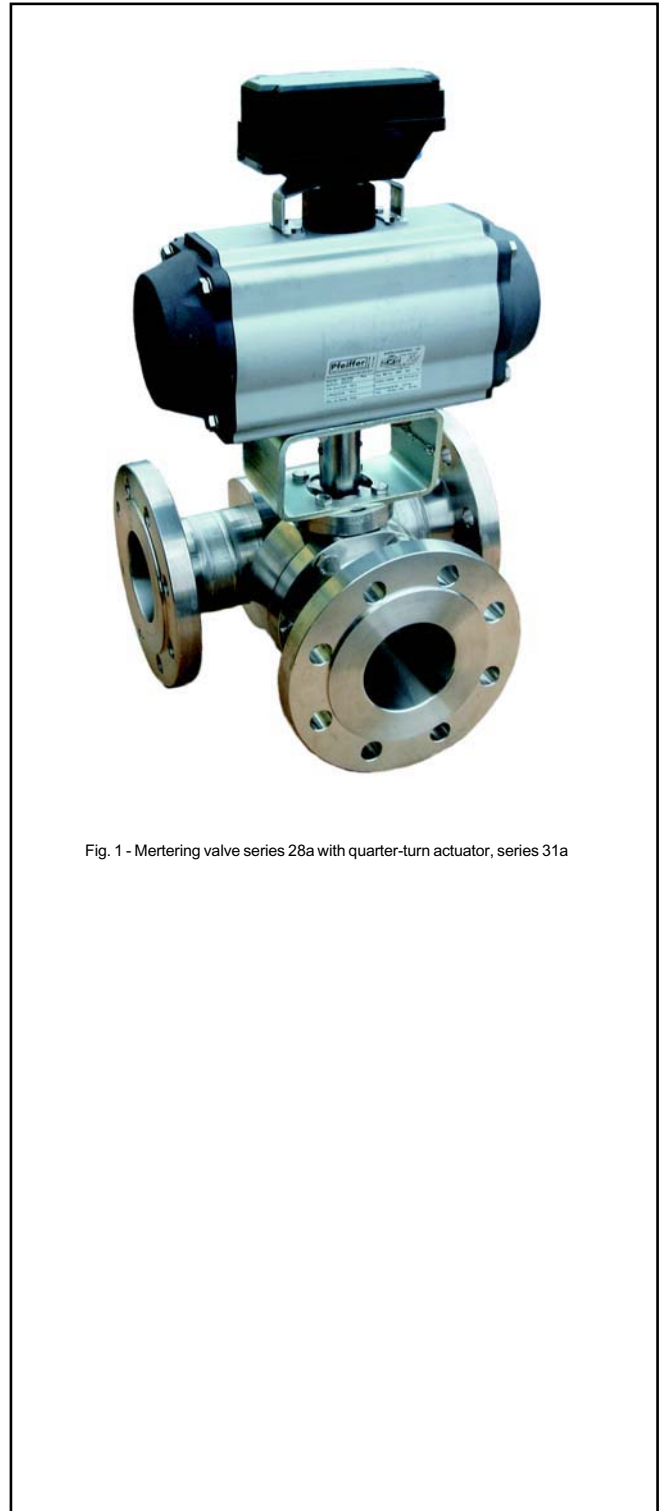


Fig. 1 - Mertering valve series 28a with quarter-turn actuator, series 31a

# Metering valve Series 28a

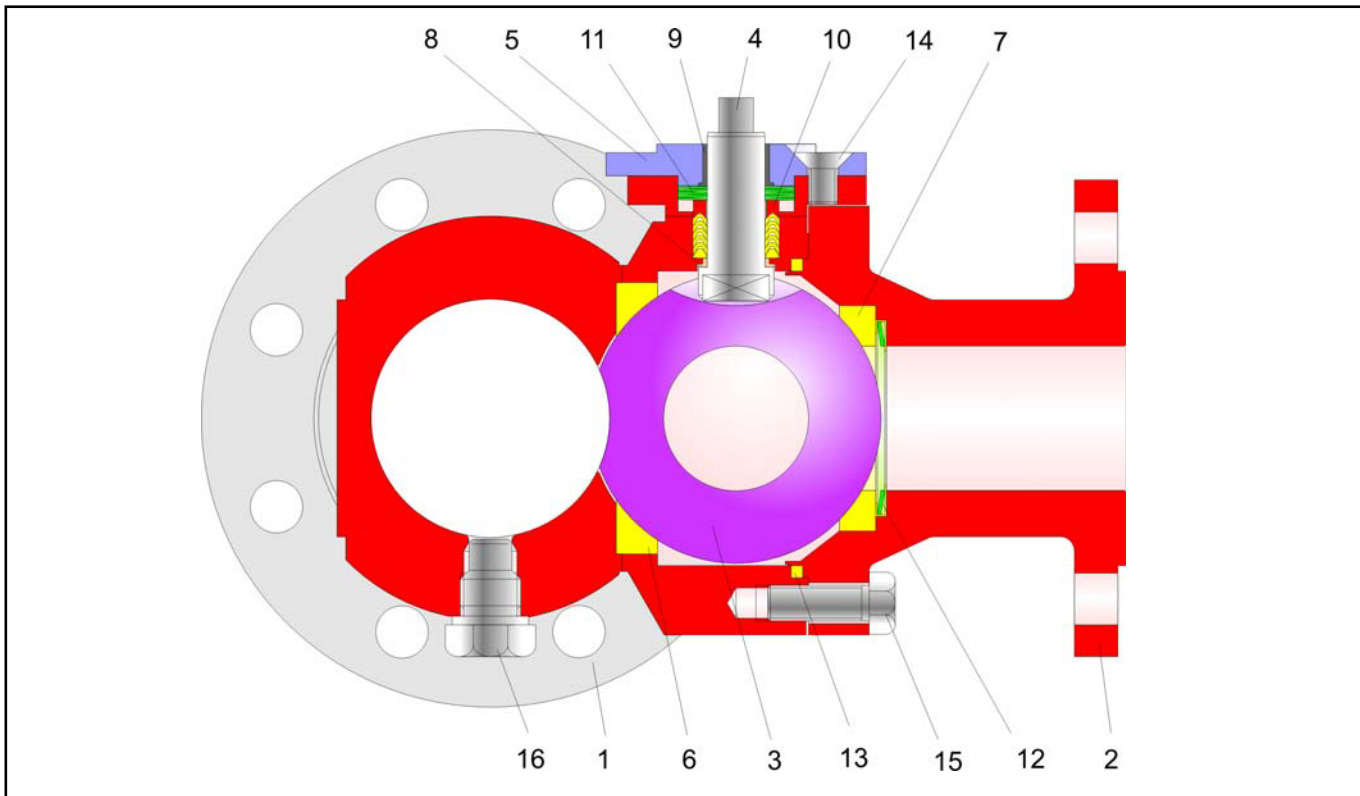


Fig. 2 - Sectional drawing of metering valve series 28a

Pos.	Description	Pos.	Description
1	Main body	9	Bearing sleeve
2	Body	10	V-ring packing
3	Ball	11	Set of spring washers
4	Control shaft	12	Spring washer
5	Stuffing box flange	13	Body sealing
6	Sealing element	14	Screw
7	Sealing ring	15	Screw
8	Bearing bushing	16	Drain plug screw

Table 1 - Part list

## Principle of operation:

The series 28a Metering valves are used for metering the medium in a pig piping system. The shape of the ball, ensures that the pigging pipeline is not constricted.

The ball ( 3 ) with its cylindrical passage, rotates around the middle axis. The opening angle of the ball valve determines the flow rate between the body ( 1 ), and ball passage. The control shaft is externally equipped with a manual gear-box, or optionally with a pneumatic quarter turn actuator. The sealing of the ball ( 3 ) is with interchangeable seat rings ( 6 and 7 ).

The control shaft is sealed with a maintenance free PTFE-V-packing ( 10 ), which is loaded by spring washers (11) located above the packing.

## Additional equipment and mounting parts:

The following accessories are available either separately or in combination for the control valves:

- Hand-lever (90°)
- Manual gear-box ( 90°)
- Control shaft extension (100mm),
- Interchangeable pneumatic and electric quarter-turn actuators,
- Limit switch,
- Solenoid valves,
- Supply air pressure regulator/filter,

Further accessories are available according to customer specifications.



**Note:** Before using the ball valve in hazardous-areas, check whether this is possible according to ATEX 94/9/EG Please refer to operating instructions. <BA 28a>

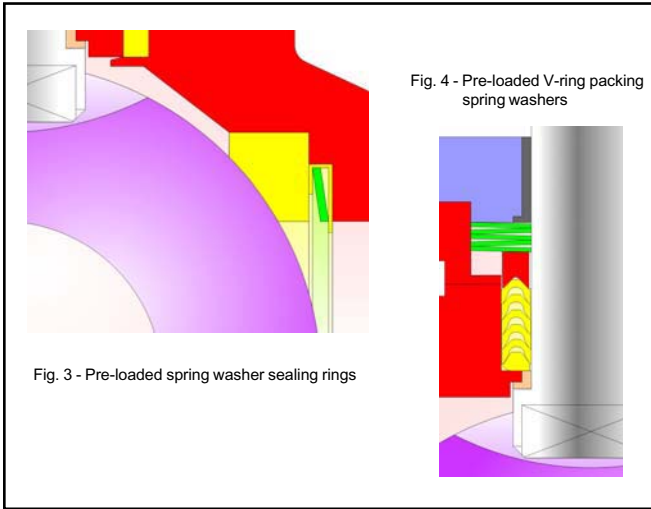


## Fail-safe position:

Because of the valve application in a pigging pipe-system, the safety position „Spring closes“ should be preferred at all times.

- Ball valve with actuator „**Spring closes**“:  
Upon air failure, the metering valve is closed. The valve opens when the signal pressure increases, acting against the force of the springs.

## Advantages of the pre-loaded sealing system:



- maintenance free and self adjusting,
- two active seat rings,
- highest level of sealing effectiveness, even by extreme pressure- and temperature variations,
- longer service life,
- lower torque increase by rising temperature, therefore smaller actuators required for automation.
- **Conclusion:**  
**higher level of efficiency, and economical!**

## General technical Data:

Nominal diameter	DN 50 to DN 150
Nominal pressure	PN 25 / 40
Temperature range	up to 200°C
Ball Sealing	TFM (PTFE)
Leakage rate	Leakage rate A acc. DIN EN 12266-1, Test P12 (Leak rate 1 BO acc. DIN 3230 Part 3)
Flanges	DIN EN 1092-1, various forms
Packing	PTFE - V-ring packing loaded by spring washers

Table 2 - technical data

## Materials:

Main body	1.4571 / 1.4408
Body	1.4571 / 1.4408
Ball	1.4408 / 1.4571
Control shaft	1.4571
Seat ring	TFM (PTFE)
Spring washer	1.4401 lined with white PTFE
Packing	PTFE - V-ring-packing with spring washer, made from 1.8159
lower bearing bushing	PTFE with 25% glass
top bearing bushing	PTFE with 25% carbon
Body gasket	PTFE

Table 3 - Materials

## Optional material combinations:

- Control shaft and ball on request,
- Seat rings in PTFE-compounds,
- Metal sealing system,
- Sealing in graphite.

## Pressure - Temperature - diagram:

The range of application is determined by the pressure-temperature diagram. Process data and medium can affect the values in the diagram.

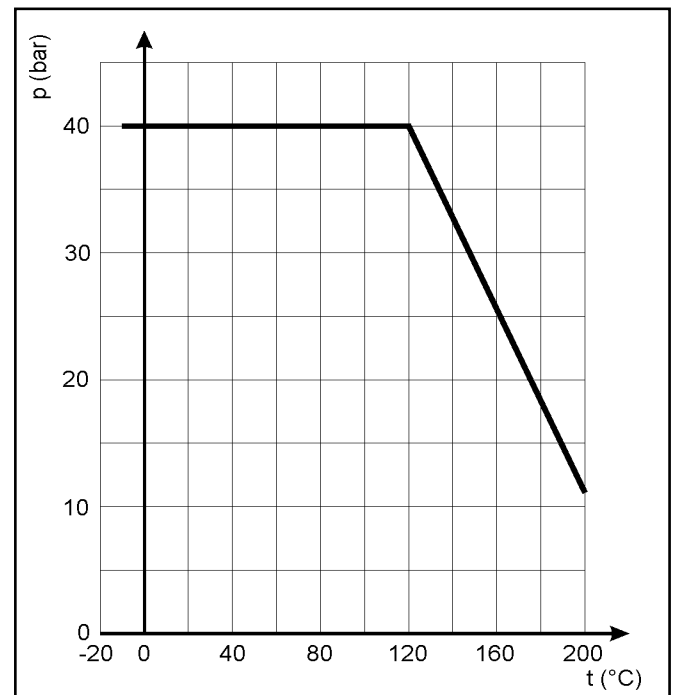


Fig. 5 - Pressure-Temperature-diagram

## Torque and breakaway torques:

DN	Pressure difference $\Delta p$ in bar		Md in Nm	Mdl in Nm							
	0	2		4	6	8	10	16	25		
50	168	369	8	11	11	12	13	14	16	19	25
80	226	497	40	57	63	69	75	81	87	105	141
100	437	961	42	60	66	72	79	85	91	110	148
150	612	1345	59	84	93	101	111	119	128	155	208

Table 4 - max. permissible torque, required torque and breakaway torque

The breakaway torques specified are average values, which were measured with air at 20°C with the corresponding differential pressures.

Operating temperature, process medium, and long operating periods may affect the permissible torque and breakaway torques considerably.

## Dimensions and Weights:

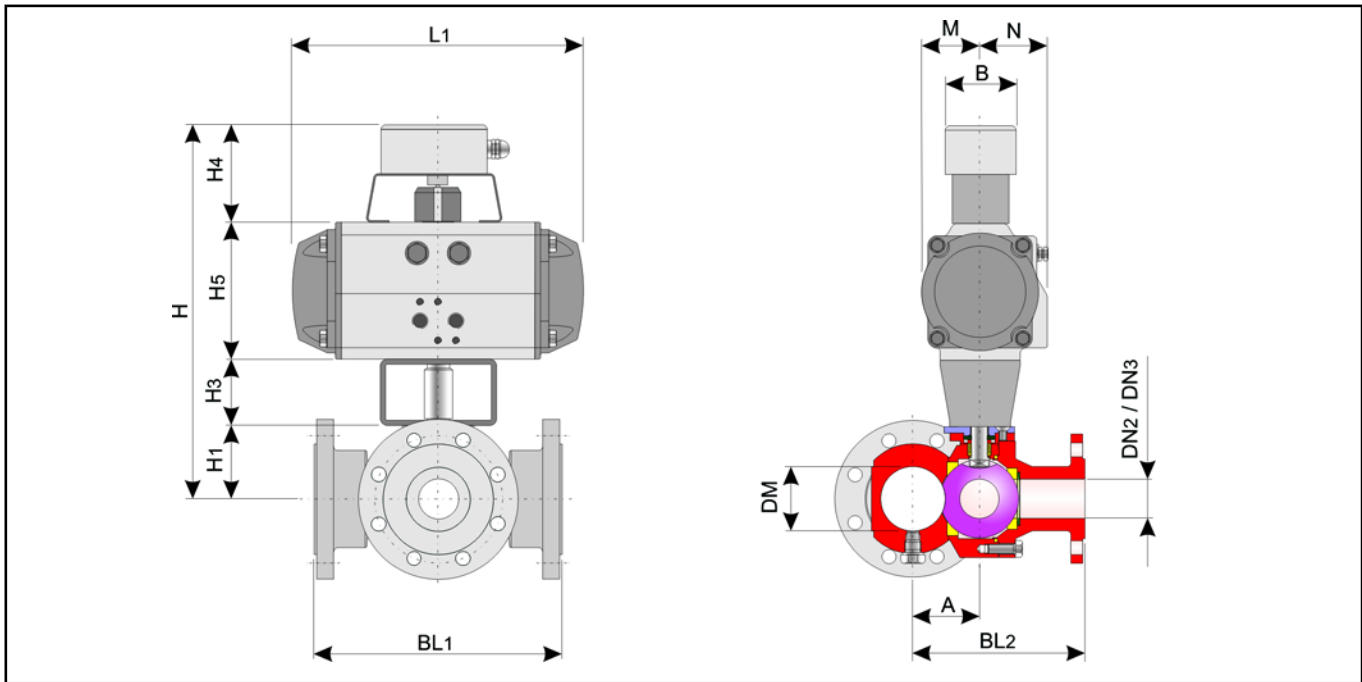


Fig. 6 - Dimensional drawing, Metering valve with AT-quarter-turn actuator Series 31a

DN	50	80	100	150
DM	54.5	82.5	107.1	159.3
OL1	230	310	350	480
OL2	150	220	230	320
A	48	85	94	140
DN2	25	50	50	100
DN3	50	80	80	100
H1	66	92	110	145
Actuator SRP	60-5	220-5	220-5	450-5
H	H1 + H3 + H4 + H5			
H3	60	80	80	80
H4	110	110	110	110
B	80	80	80	80
DIN/ISO Connection	F05	F07	F12	F12
Weight in kg	25	40	55	105

Actuator SRP	60-5	220-5	450-5
L1	210.5	315	408.5
H5	102	145	177
M	42.5	64	80
N	52	77	91.5
Weight SRP	3	9.6	17.5

Fig. 5 - Dimensions in mm and Weight in kg, series 31a Actuator for 5 bar

## Selection and sizing of the metering valve:

1. Determine the required nominal size.
2. Select the valve acc. to Table 2, Table 3 and the pressure-temperature-diagram.
3. Select the actuator acc. to Table 4.
4. Select additional equipment/accessories

## Ordering text:

Metering valve Type: Series 28a,  
 DN . . . . / PN . . . . , poss.. special version  
 Actuator (manufacturer): . . . .  
 Signal pressure: . . . . bar,  
 Limit switch (manufacturer): . . . .  
 Solenoid valve (manufacturer): . . . .  
 Others: . . . .

For your special requirements, please contact our technical sales department.

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Specifications are subject to change without notice