

Rotary Valves

- For continuous discharge of powders and granulates
- Five design variations are offered



Rotary Valve

The Niro rotary valve consists of a tapered housing and rotor, with gear and motor drive. The tapered design enables quick and precise adjustment of the clearance between the rotor and housing. The required clearance depends upon the nature of the particulate material (e.g. powder, granules, pellets, agglomerates), operating temperatures and pressures. There is easy cleaning accessibility and no special tools are required for maintenance.

The Niro rotary valve is applicable for the discharge of particulate material from dryers and solids handling equipment, and for coarse dosing to solid to solid and solid to liquid systems. The valve is delivered in two sizes, 200 and 347, referring to the inside diameter of the powder inlet.

Five design variations are offered:

- Standard • Air-purged • Gastight • Flame/explosion-proof • Sanitary •



Standard

The rotor can be simply removed from the housing by opening the side hinged end cover. This gives easy cleaning accessibility to all powder contact surfaces.

Air-purged (code AP)

The above standard design is equipped with the possibility to supply a very small amount of air or inert gas into the double oil seal ring to purge the gap between the sealing lip and shaft. Used when extra precaution must be taken to prevent any trace of a lubricant passing down the shaft from the gear box (air consumption 0.1-0.2 m³/h, max. 0.05 bar).



Gastight (code GT)

The above air-purged design is equipped with a fixed end cover fastened with Allen screws to secure gastight performance. The valve is pressure tested at 0.5 bar and is used on closed cycle (inert gas) dryers.

Flame/explosion-proof (code EX)

The features of the gastight model have been retained, but the end cover is specially reinforced, and the rotor has more vanes to ensure a multi-vane contact with the housing surface at all times. The valve is used for handling combustible powders. It has approved flame trap characteristics, and a pressure shock resistance at the inlet of 10 bar.



Sanitary (code SA)

The drive of the standard design has been modified so that the drive unit is separated from the product contact area. It is impossible for lubricant to contaminate the product. Oil seals can be inspected during operation, since the shaft between drive and valve housing is visible from the outside. All product contact seals can be replaced without removing the drive unit from the valve housing. Product contact surfaces are self-draining for a better CIP operation, and the finish is at least grit 150.

Drive specification

- a) Flanged motor (6 pole, 0.37 kW) of special design supplied by Niro:
920 rpm at 50 Hz or 1100 rpm at 60 Hz
3×220 V or 3×380/440 V
Not available for GT and EX valve models.
- b) Foot mounted motor, similar to above specification, however, motor can be supplied by end-user, if required. Where speed adjustment is necessary, frequency control equipment is used.
- c) The gear box is a planetary design giving a motor speed of 25 rpm at 50 Hz and 30 rpm at 60 Hz.

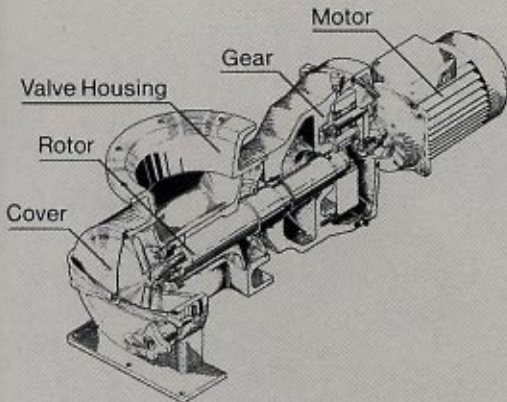
Materials of construction

The valve can be supplied with the housing and rotor in four material combinations. Selection depends upon the product handled.

Matr. code	Material specification	
	Housing	Rotor
SAT	Stainless steel (AISI 316)	Aluminium (BS 1490/LM 6)
SST	Stainless steel (AISI 316)	Stainless steel (AISI 304)
AAT	Aluminium (BS 1490/LM 6)	Aluminium (BS 1490/LM 6)
AST	Aluminium (BS 1490/LM 6)	Stainless steel (AISI 304)

S = Stainless steel, A = Aluminium, T = Tapered rotor

Type and size



Capacity

The capacity of the rotary valve is calculated from the equation:

$$\frac{\text{Theoretical capacity} \times \text{actual speed} \times \text{filling degree}}{25}$$

where

theoretical capacity at valve speed 25 rpm = 5.4 m³/h (200 size)
34 m³/h (347 size)

The filling degree depends upon the flowability of the product, valve speed, and pressure drop over the valve. For a typical filling degree of 55%, the operating product flow is 3 m³/h (size 200) and 19 m³/h (size 347). Niro can advise if higher filling degrees are possible with a given product application.

Type	Valve size	Total weight of valve kg	Design pressure bar
Standard	SAT-200	75	0.4
	SST-200	78	0.4
	AAT-200	55	0.4
	AST-200	58	0.4
	SAT-347	131	0.2
	SST-347	134	0.2
	AAT-347	88	0.2
	AST-347	91	0.2
	SAT-200-B	72	0.4
	SST-200-B	75	0.4
	AAT-200-B	57	0.4
	AST-200-B	60	0.4
SAT-347-B	128	0.2	
SST-347-B	131	0.2	
AAT-347-B	85	0.2	
AST-347-B	87	0.2	
Air-purged	AST-200/AP	58	0.4
	AST-347/AP	90	0.2
	AST-200-B/AP	60	0.4
	AST-347-B/AP	87	0.2
Gastight	SAT-200-B/GT	72	5
	SST-200-B/GT	75	5
	SAT-347-B/GT	128	2
	SST-347-B/GT	131	2
Flame/-EX.proof	SST-200-B/EX	75	5
	SST-347-B/EX	131	2
Sanitary	SST-347-B/SA	156	0.2
	SST-347-SA	159	0.2

B = Bracket for foot mounted motor.

