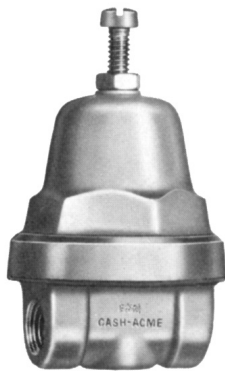


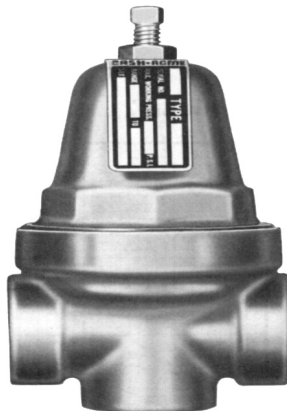


CASH VALVE™ CP SERIES COMPRESSOR PILOT VALVES

Pilot valves for use in rotary screw compressors to control receiver pressure or compressor discharge pressure



Type CP



Type CP2

FEATURES

- Contribute to significant energy savings.
- Lead to quieter compressor operation and reduced wear.
- Brass body and spring chamber, stainless steel seat, phosphor bronze diaphragm, fiber gaskets as standard.
- Type CP2 has a larger seat for increased capacity.
- Vacuum service and reverse acting models available.
- Choice of side inlet/side outlet, side inlet/bottom outlet or side inlet/side outlet/bottom outlet configurations.
- Suitable for adaptation to specialized compressor designs.

GENERAL APPLICATION

The pilot valve regulates the air pressure to a cylinder or diaphragm which positions the control device in the compressor suction line and/or the speed control on engine-driven units. Also for maintaining compressor lube oil circulation.

TECHNICAL DATA^[1]

Materials: Brass, 316 stainless steel
Sizes: ¼, ⅜, ½ in. (8, 10, 15 mm)
Connections: NPTF
Pressure range: 0 to 600 psig (0 to 41.4 barg)
Maximum temperature: 180°F (82°C)

1. Refer to General Specifications Table in page 2 for more information.

CASH VALVE™ CP SERIES COMPRESSOR PILOT VALVES

GENERAL SPECIFICATIONS

Type	Body Material	Spring Chamber Material	Body Size, in. (mm)	Materials		Maximum Inlet Pressure, psig (barg)	Maximum Outlet Pressure, psig (barg)	Temperature, °F (°C)
				Diaphragm	Spring			
CP	Brass or 316 SST	Brass or Aluminum	¼ (8)	Bronze	SST or Steel	600 (41.4)	600 (41.4)	180 (82)
CP2	Brass or 316 SST	Brass or 316 SST	¼ (8)	Bronze	SST	600 (41.4)	600 (41.4)	180 (82)
	Brass	Brass	⅜, ½ (10, 15)	Bronze	SST	600 (41.4)	600 (41.4)	180 (82)
CPR	Brass	Brass or Aluminum	¼ (8)	Bronze	SST	600 (41.4)	600 (41.4)	180 (82)

STANDARD SPRING RANGES, psig (barg)

Type	Spring material	Size, in. (mm)	1	2	3	4	5	6	7
CP	SST	¼ (8)	15 to 65 (1.0 to 4.5)	40 to 100 (2.8 to 6.9)	75 to 175 (5.2 to 12.1)	100 to 250 (6.9 to 17.2)	200 to 400 (13.8 to 27.6)	200 to 600 (13.8 to 41.4)	300 to 600 (20.7 to 41.4)
	Steel	¼ (8)	40 to 90 (2.8 to 6.2)	40 to 125 (2.8 to 8.6)	75 to 175 (5.2 to 12.1)	----	----	----	----
CPR	SST	¼ (8)	100 to 150 (6.9 to 10.3)	75 to 175 (5.2 to 12.1)	100 to 250 (6.9 to 17.2)	140 to 200 (9.7 to 13.8)	200 to 450 (13.8 to 31.0)	300 to 600 (20.7 to 41.4)	----
CP2	SST	¼ to ½ (8 to 15)	0 to 30 (0 to 2.1)	40 to 80 (2.8 to 5.5)	80 to 150 (5.5 to 10.3)	50 to 275 (3.4 to 19.0)	100 to 275 (6.9 to 19.0)	200 to 400 (13.8 to 27.6)	300 to 600 (20.7 to 41.4)

MATERIALS OF CONSTRUCTION

Part description	Materials
Adjusting screw cap	SST
Handwheel	Steel or plastic
Body	Brass or 316 SST
Spring chamber	Brass, Aluminum ¹ , 316 SST
Adjusting spring	SST or steel
Pressure plate	Brass
Diaphragm	Bronze
Diaphragm gasket	Aramid fiber or Polytetrafluoroethylene (PTFE)
Seat ring	SST
Ball seat	SST

1. Available for Types CP and CPR only.

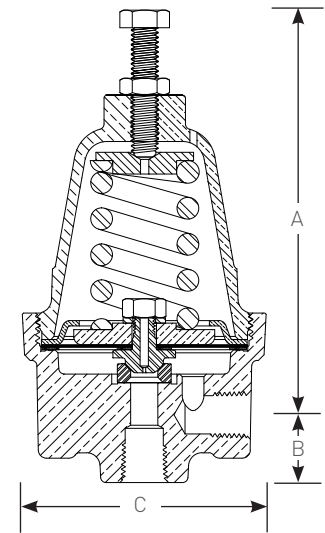
DIMENSIONS

Type	Size, in. (mm)	Connections	Dimensions, in. (mm)			Shipping weight, lbs (kg)
			A	B	C	
CP	¼ (8)	Side inlet; side or bottom outlet	3.33 (84.5)	0.44 (11.2)	2.26 (57.4)	1.13 (0.51)
CPR	¼ (8)		3.13 (79.4)	0.69 (17.6)	2.26 (58.3)	----
CP2	¼ (8)		4.75 (121)	0.75 (19.1)	2.69 (68.3)	2.50 (1.13)
	⅜ (10)		4.50 (114)	0.75 (19.1)	2.69 (68.3)	2.50 (1.13)
	½ (15)	4.75 (121)	1.28 (32.5)	2.69 (68.3)	----	

OPERATION

These valves provide a regulated output pressure that increases at a pre-determined rate as the receiver or compressor discharge pressure increases above the pilot's pressure setting. The pilot is provided to increase the pressure, in straight line fashion, on a ratio of 1 to 1, 2 to 1; or whatever ratio or differential control is required for proper compressor functioning.

For example, if the pilot is to start to open when receiver pressure reaches 100 psi (6.9 bar) and the pilot is operating with a 2 to 1 ratio: the pilot output pressure is 0 psi. On 10 psi (0.7 bar) increase, the pilot will provide a controlled discharge pressure from 0 to 20 psi (0 to 1.4 bar) as the compressor increases from 100 to 110 psi (6.9 to 7.6 bar).



CASH VALVE™ CP SERIES COMPRESSOR PILOT VALVES

FIGURE 1

Performance graph

This graph illustrates the linear output of the Types CP and CP2 valves for a given set point and a variety of ratios and is given in 0.5 psi (0.03 bar) increments.

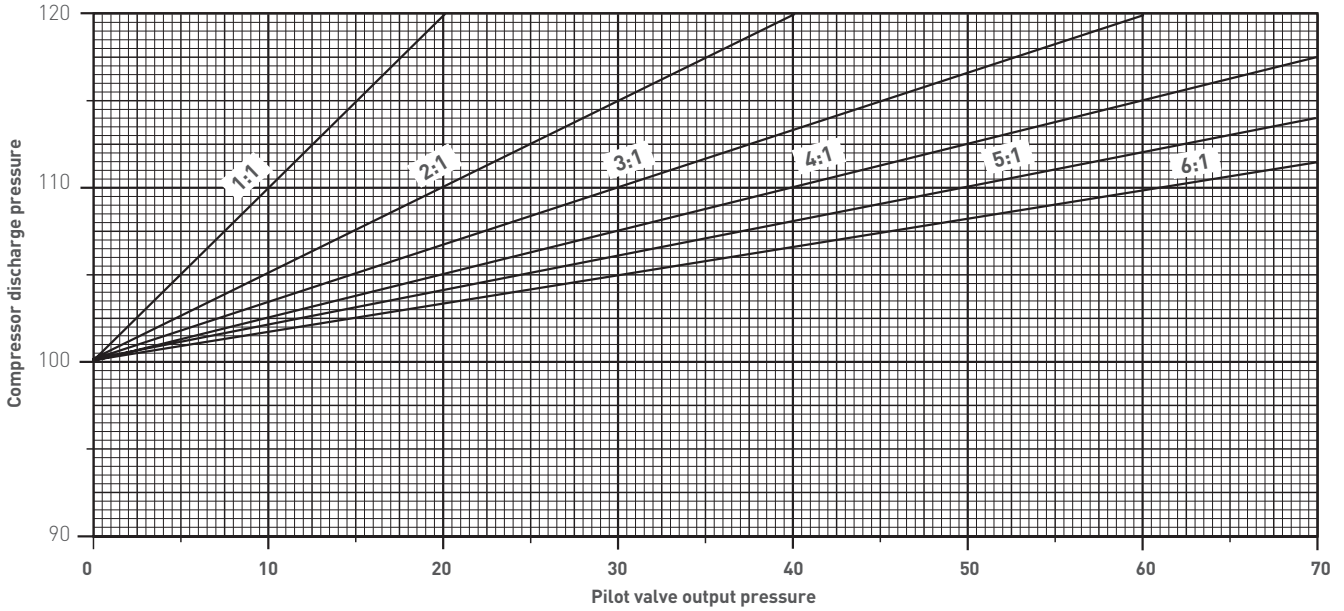
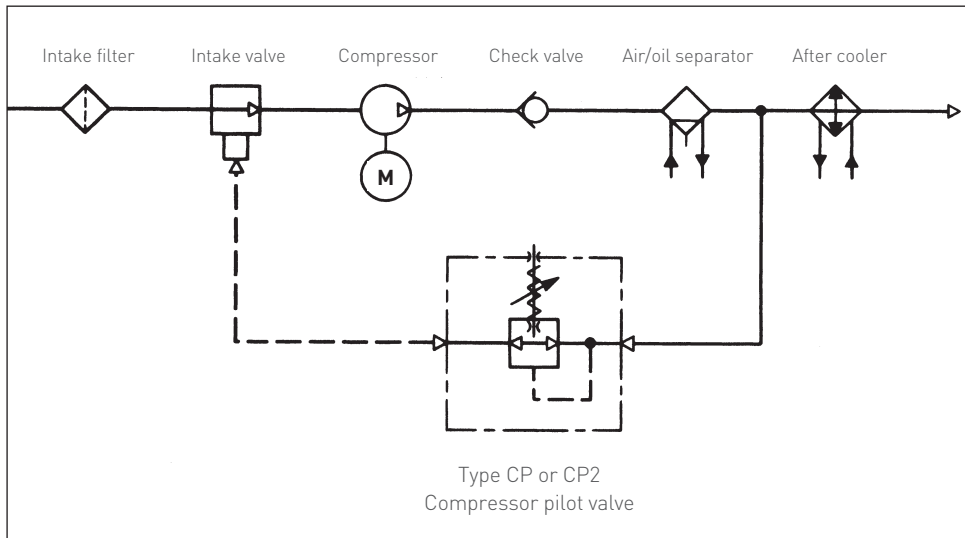


FIGURE 2

Typical rotary screw compressor system schematic

NB: greatly simplified. For specific application details, consult the factory.



Specialized designs

Type CP and CP2 Pilots are suitable for adaptation to specialized compressor designs. For application in special designs, consult your local representative.

CASH VALVE™ CP SERIES COMPRESSOR PILOT VALVES

SELECTION GUIDE

Example:	CP-	Z	A	S	S	010	Z	F	-	01	D	1
Type												
CP-	Type CP valve											
CPV	Type CPV valve (vacuum)											
CP2	Type CP2 valve											
CPR	Type CP valve reverse acting											
Body material												
Z	Brass											
G	SST (Types CP, CP2 in size ¼ in. only)											
Valve size												
A	¼ in. (8 mm)	C	½ in. (15 mm) (Type CP2 only)									
B	⅜ in. (10 mm) (Type CP2 only)											
Connection type												
S	Side inlet - side outlet (SI-SO)	D	Side inlet - side outlet - bottom outlet (SI-SO-B0)									
B	Side inlet - bottom outlet (SI-B0)											
Options												
S	Standard	P	Panel mount									
M	Mounting thread in body	N	No bleed orifice (reverse action only)									
C	Clean out plug (SI-SO-B0 only)											
Output ratio												
010	1.0 to 1 (Types CP or CP2)	023	2.3 to 1 (Type CP2)	038	3.8 to 1 (Type CP2)	114	11.4 to 1 (Type CP2)					
011	1.1 to 1 (Types CP or CP2)	025	2.5 to 1 (Type CP)	041	4.1 to 1 (Type CP)	135	13.5 to 1 (Type CP)					
013	1.3 to 1 (Type CP)	027	2.7 to 1 (Type CP)	044	4.4 to 1 (Type CP)	216	21.6 to 1 (Type CP2)					
016	1.6 to 1 (Type CP2)	028	2.8 to 1 (Type CP2)	050	5.0 to 1 (Type CP2)	RVA	Reverse action (Type CPR)					
017	1.7 to 1 (Type CP)	032	3.2 to 1 (Type CP2)	052	5.2 to 1 (Type CP)	VAC	Vacuum (Type CPV)					
018	1.8 to 1 (Type CP)	033	3.3 to 1 (Type CP)	074	7.4 to 1 (Type CP)							
020	2.0 to 1 (Type CP)	035	3.5 to 1 (Type CP)	105	10.5 to 1 (Type CP2)							
Spring chamber												
A	Aluminum (Types CP, CPV, CPR only)	G	316 SST (Type CP2 in size ¼ in. only)									
Z	Brass											
Adjusting screw												
F	Fillister head (Types CP, CPR, CPV only)	T	T-handle (requires option for panel mount) (Type CP2 only)									
H	Hex head (Type CP only)	W	Handwheel (requires option for panel mount) (Type CP only)									
Design revision												
(-)	Original design											
Variation												
01	Catalog standard											
02	PTFE gaskets											
Spring material												
D	Steel											
E	SST											
Set pressure												
Refer to table on page 2												

VCTDS-00509 © 2017, 2025 Emerson Electric Co. All rights reserved 09/25. Cash Valve is a mark owned by one of the companies in the Emerson Automation Solutions business unit of Emerson Electric Co. The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their prospective owners.

Neither Emerson nor any of its affiliated entities assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use, and maintenance of any product remains solely with the purchaser and end user.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.