MK608UBS Series

Threaded or Flanged Connections Carbon Steel, Stainless Steel & Alloy Construction

The MK608UBS Series are spring loaded, direct-operated, pressure relief valves used downstream of pressure regulators to protect the downstream system from over pressure. Their main function is to regulate the inlet pressure.

They can also be used as back pressure regulators as they have good throttling characteristics. They are available in 1/2" through 2" (DN15 through DN50) body sizes. These regulators have a compact design and construction such to sustain rugged use and their construction makes them easy to install and to maintain.

Special Construction

MK608UBS regulators are also available in special configurations:

- Exotic materials in short lead times (e.g. duplex, super-duplex, alloy steel, monel, inconel, etc)
- Differential versions (with single or double diaphragm) for applications where the differential pressure between two spots hasto be controlled and maintained constant
- Vacuum breaker

Features

- Flow to close design
- Available with ISA face to face dimensions
- From 5 to 9 different Cv's for each size to assure high accuracy in regulation
- Metal or soft seat (featuring leakage from II to VI)
- Internal pressure sensing (external upon request)
- Packingless construction (available only with internal pressure sensing)
- Wide range of actuators according to the requested regulation range
- Wide range of elastomeric diaphragms or in AISI 316
- Fully sealed construction available (suitable for dangerous media; ATEX compliant)

Pressure Regulator

MK608UBS

JORDANVALVE

Jordan Valve a division of Richards Industries
3170 Wasson Road • Cincinnati, OH 45209
513.533.5600 • 800.543.7311 • 513.871.0105 (f)
info@richardsind.com • www.jordanvalve.com

Specifications

Function: Relief/ Backpressure/ Differential

Line Sizes: 1/2" up to 2" (DN15 - DN50)

End Connections:
- Threaded (F-NPT or GAS/ BS)
- Flanged (ANSI or PN)

Seat: Single

Max Rating: ANSI 600

CV: From 0.031 up to 35

Body Material:
- Carbon Steel
- Stainless Steel
- "Exotic" Materials

Trim Material:
- Stainless Steel (std)
- "Exotic" Materials

Diaphragms:
- Polychloroprene
- EPDM
- FKM
- Stainless Steel
- Other

Max Inlet Pressure: 754 psig (52 barg)

Regulated Pressure Range: 0.017 - 754 psig (0.0012 - 52 barg)

Min/ Max Temperature: -320.8°F/ 572°F (-196°C/ 300°C)

Specifications, Cont.

Table 1 - Fluid Applications

Gas	Air, inert gas, CO_2, CO, hydrocarbons, O_2, H_2, F, NH_3, firgorific gas.
Steam/Vapour	Steam H_2O, alcoholic steams, organic steams, sulphuric acid
Liquids	Water, aqueous solutions, hydrocarbons, hydrocarbons, alcohol, lubricating oils, diathermic oils, solvents, frigorific fluids, acrylic compounds

Table 2 - Capacities

Nozzle	Body Size									
	1/2" (DN15)		3/4" (DN20)		1" (DN25)		1-1/2" (DN40)		2" (DN50)	
1	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)	0.031 (0,027)
5	0.60 (0,52)	0.20 (0,17)	0.60 (0,52)	0.20 (0,17)	0.60 (0,52)	0.20 (0,17)	0.60 (0,52)	0.20 (0,17)	0.60 (0,52)	0.20 (0,17)
8	1.7 (1,5)	0.33 (0,29)	1.7 (1,5)	0.33 (0,29)	1.7 (1,5)	0.33 (0,29)	1.7 (1,5)	0.33 (0,29)	1.7 (1,5)	0.33 (0,29)
10	2.5 (2,2)	0.40 (0,35)	2.5 (2,2)	0.40 (0,35)	2.5 (2,2)	0.40 (0,35)	2.5 (2,2)	0.40 (0,35)	2.5 (2,2)	0.40 (0,35)
12	3.4 (2,9)	0.50 (0,43)	3.4 (2,9)	0.50 (0,43)	3.4 (2,9)	0.50 (0,43)	3.4 (2,9)	0.50 (0,43)	3.4 (2,9)	0.50 (0,43)
16			6.5 (5,6)	0.90 (0,78)	6.5 (5,6)	0.90 (0,78)	7.0 (6,1)	0.90 (0,78)	7.0 (6,1)	0.90 (0,78)
20					8.7/ 7.5* (7,5/ 6,5*)	1.4 (1,2)	9.0/ 7.7* (7,8 / 6,7*)	1.4 (1,2)	9.0/ 7.7* (7,8 / 6,7*)	9.0/ 7.7* (7,8 / 6,7*)
35							19/ 15* (16,4/ 13*)	3.0 (2,6)	19/ 15* (16,4/ 13*)	3.0 (2,6)
45									35/ 28* (30/ 24*)	5.5 (4,8)

Cv (Kv) for all body sizes with **elastomer diaphragm**

Cv (Kv) for all body sizes with **metal diaphragm**

*Reduced Cv (Kv) for actuator 100

Table 3 - Actuator Operating Ranges

Actuators	Actuator Spring Ranges	Maximum Allowable Pressure
100	65.3 to 667.2 Psig (4,5 to 46,0 Barg)	754.2 Psig (52 Barg)
120	37.7 to 427.9 Psig (2,6 to 29,5 Barg)	478.7 Psig (33 Barg)
130	24.5 to 320.5 Psig (1,7 to 22,1 Barg)	362.6 Psig (25 Barg)
140	10.15 to 133.4 Psig (0,7 to 9,2 Barg)	145 Psig (10 Barg)
220	1.4 to 39.2 Psig (0,094 to 2,7 Barg)	43.5 Psig (3 Barg)
360	0.04 to 12.2 Psig (0,0025 to 0,84 Barg)	14.5 Psig (1 Barg)
515*	0.02 to 3.3 Psig (0,0012 to 0,23 Barg)	3.6 Psig (0,25 Barg)

*For tank blanketing application.

Specifications, Cont.

Table 4 - Material Combination

	Body			
	Carbon Steel (AF1/AS1)	Full Carbon Steel (AF2/AS2)	316 SS (IF2/IS2)	Full 316 SS (IF3/IS3)
	-32°F ≤ T ≤ 392°F	-20°F ≤ T ≤ 482°F	-20°F ≤ T ≤ 482°F	-320°F ≤ T ≤ 482°F
	(0°C ≤ T ≤ 200°C)	(-29°C ≤ T ≤ 250°C)	(-29°C ≤ T ≤ 250°C)	(-196°C ≤ T ≤ 250°C)
Body	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Blinhead	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Gaskets Set	See Table 5			
Trim				
Disc (standard)	See Table 6			
Seat	ASME A-479 316	ASME A-479 316	ASME A-479 316	ASME A-479 316
Plug	ASME A-479 316	ASME A-479 316	ASME A-479 316	ASME A-479 316
Guide	17-4 PH	17-4 PH	ASME A-479 304	ASME A-479 304
Actuator				
Spring case	ASME SA-278 35	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M
Actuator diaphragm case	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Spring	ASTM A-401	ASTM A-401	ASTM A-401	ASTM A-313 316
Diaphragm	See Table 7			

Note: SS = Stainless Steel

Table 5 - Temperature Range for Flat Gaskets

Materials	Temperature Limits
Polytetrafluoroethylene (PTFE)	-328 to 482°F (-200 to 250°C)
No asbestos	-58 to 392°F (-50 to 200°C)
Graphite + AISI 316	-328 to 1022°F (-200 to 500°C)

Table 6 - Temperature Range and Inlet Pressure Limits for Disc Material

Materials	Temperature Limits	Maximum Pressure
Fluoroelastomer (FKM-FPM)	-14 to 392°F (-10 to 200°C)	580psig (40barg)
Polytetrafluoreothylene (PTFE)	-328 to 482°F (-200° to 250°C)	2900psig (200barg)
Stainless Steel	-321 to 851°F (-196 to 455°C)	4060psig (280barg)

Specifications, Cont.

Table 7 - Temperature Range for Diaphragms

Materials	Temperature Limits
Chloroprene (CR)	-4 to 194°F (-20 to 90°C)
NBR	-13 to 194°F (-25 to 90°C)
HNBR	5 to 248°F (-15 to 120°C)
Fluorocarbon (FKM-FPM)	14 to 392°F (-10 to 200°C)
Ethylene-Propylene (EPDM)	-31 to 320°F (-35 to 160°C)
Tetrafluoroethylene/propylene (TFE/P)	41 to 392°F (5 to 200°C)
Silicone (VMQ)	-58 to 300°F (-50 to 150°C)
Fluorosilicone (FVMQ)	-58 to 300°F (-50 to 150°C)
Stainless Steel	-321 to 851°F (-196 to 455°C)

Table 8 - Temperature Ranges for O-Rings

Materials	Temperature Limits
Polytetrafluoroethylene (PTFE)	-328 to 482°F (-200 to 250°C)
Fluorocarbon (FKM-FPM)	14 to 392°F (-10 to 200°C)

Table 9 - Temperature Ranges for Metal Parts

Materials	Temperature Limits
Cast Iron	32 to 449.6°F (0 to 200°C)
Carbon Steel	-20 to 797°F (-29 to 425°C)
Stainless Steel	-321 to 851°F (-196 to 455°C)

Specifications, Cont.

Table 10 - Spring Ranges

		Minimum Set Pressure		Maximum Set Pressure	
	Name	Psig	Barg	Psig	Barg
100	4BIS	65	4,5	126	8,7
	6	105	7,2	203	14,0
	7	151	10,4	314	21,6
	8	211	14,6	334	23,0
	9	319	22,0	502	34,6
	9BIS	397	27,4	550	37,9
	10	494	34,1	604	41,7
	10BIS	548	37,8	667	46,0
120	4BIS	37	2,6	59	4,1
	6	56	3,8	95	6,6
	7	77	5,3	147	10,1
	8	105	7,3	156	10,8
	9	156	10,8	235	16,2
	9BIS	193	13,3	258	17,8
	10	238	16,4	283	19,5
	10BIS	263	18,1	428	29,5
130	4BIS	25	1,7	44	3,0
	6	39	2,7	71	4,9
	7	55	3,8	110	7,6
	8	76	5,2	116	8,0
	9	113	7,8	175	12,1
	9BIS	141	9,7	192	13,2
	10	174	12,0	211	14,5
	10BIS	193	13,3	320	22,1
140	4BIS	10	0,7	19	1,3
	6	16	1,1	31	2,1
	7	23	1,6	47	3,3
	8	32	2,2	50	3,5
	9	48	3,3	75	5,2
	9BIS	60	4,1	83	5,7
	10	74	5,1	91	6,3
	10BIS	82	5,7	133	9,2
220	2BIS	1.36	0,094	1.8	0,12
	3	1.54	0,106	3.0	0,20
	4	1.84	0,127	3.4	0,24
	4BIS	2.1	0,144	5.4	0,37
	6	3.8	0,26	8.7	0,60
	7	5.8	0,40	13.4	0,93
	8	8.4	0,58	14.3	0,99
	9	13	0,89	21.5	1,5
	9BIS	16	1,1	23.6	1,6
	10	20	1,4	25.9	1,8
	10BIS	23	1,6	38.7	2,7
360	1*	0.036	0,0025	0.21	0,014
	1BIS	0.22	0,015	0.25	0,018
	2BIS	0.27	0,019	0.56	0,039
	3	0.33	0,023	0.92	0,063
	4	0.42	0,029	1.1	0,073
	4BIS	0.50	0,035	1.7	0,12
	6	1.0	0,071	2.7	0,19
	7	1.6	0,11	4.2	0,29
	8	2.4	0,17	4.4	0,31
	9	3.9	0,27	6.7	0,46
	9BIS	4.9	0,34	7.3	0,50
	10	6.2	0,43	8.0	0,55
	10BIS	6.9	0,48	12.2	0,84
515	1*	0.017	0,0012	0.11	0,0077
	1BIS	0.09	0,0059	0.14	0,010
	2BIS	0.12	0,0080	0.30	0,021
	3	0.15	0,0100	0.50	0,034
	4	0.20	0,014	0.6	0,04
	4BIS	0.24	0,016	0.9	0,06
	6	0.5	0,036	1.5	0,10
	7	0.9	0,06	2.3	0,16
	8	1.3	0,09	2.4	0,17
	9	2.1	0,14	3.3	0,23

Spring ranges are based on the following assumptions:

- Stroke from setpoint is ±3mm
- Offset max 20% for minimum set pressure
- Low unbalancing forces on the plug

If different operating conditions are required please contact factory.

*Thin diaphragm (FKM 0,18mm) and upside down installation.

Specifications, Cont.

Table 11 - Weights | Actuators: 100, 120, 130, 140

	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	36.8 lbs (16,7 kg)	36.4 lbs (16,6 kg)	38.6 lbs (17,5 kg)	40.8 lbs (18,5 kg)
3/4" (DN20)	36.8 lbs (16,7 kg)	37.5 lbs (17 kg)	39.7 lbs (18 kg)	43 lbs (19,5 kg)
1" (DN25)	36.6 lbs (16,6 kg)	38.6 lbs (17,5 kg)	40.8 lbs (18,5 kg)	44.1 lbs (20 kg)
1-1/2" (DN40)	36.4 lbs (16,5 kg)	44.3 lbs (20,1 kg)	47.4 lbs (21,5 kg)	52.9 lbs (24 kg)
2" (DN50)	40.8 lbs (18,5 kg)	48.5 lbs (22 kg)	50.9 lbs (23,1 kg)	58 lbs (26,3 kg)

Table 12 - Weights | Actuator: 220

	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	41 lbs (18,6 kg)	40.8 lbs (18,5 kg)	43 lbs (19,5 kg)	45.2 lbs (20,5 kg)
3/4" (DN20)	41 lbs (18,6 kg)	41.9 lbs (19 kg)	44.1 lbs (20 kg)	47.4 lbs (21,5 kg)
1" (DN25)	40.8 lbs (18,5 kg)	43 lbs (19,5 kg)	45.2 lbs (20,5 kg)	48.5 lbs (22 kg)
1-1/2" (DN40)	45.4 lbs (20,6 kg)	48.7 lbs (22,1 kg)	51.8 lbs (23,5 kg)	57.3 lbs (26 kg)
2" (DN50)	45.2 lbs (20,5 kg)	52.9 lbs (24 kg)	55.3 lbs (25,1 kg)	62,4 lbs (28,3 kg)

Table 13 - Weights | Actuator: 360

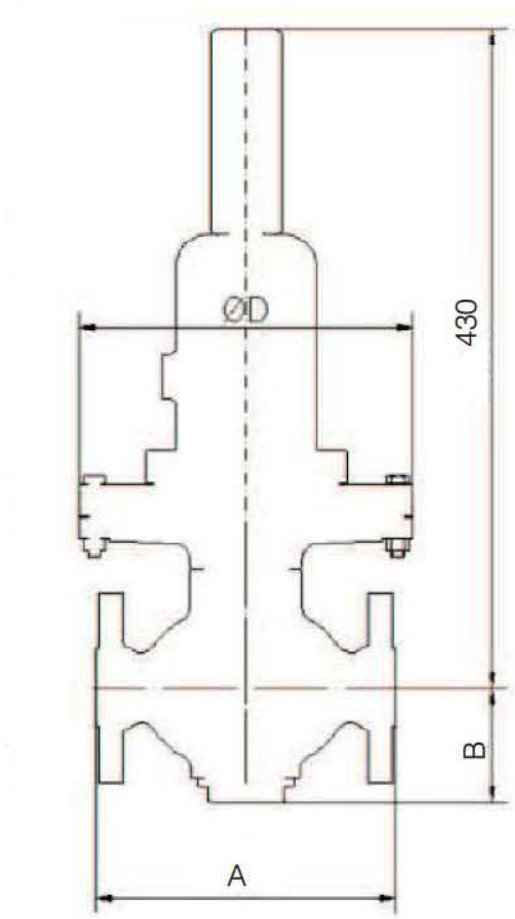
	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	73.9 lbs (33,5 kg)	73.6 lbs (33,4 kg)	75.8 lbs (34,4 kg)	78 lbs (35,4 kg)
3/4" (DN20)	73.9 lbs (33,5 kg)	74.7 lbs (33,9 kg)	76.9 lbs (34,9 kg)	80.3 lbs (36,4 kg)
1" (DN25)	73.6 lbs (33,4 kg)	75.8 lbs (34,4 kg)	78 lbs (35,4 kg)	81.4 lbs (36,9 kg)
1-1/2" (DN40)	78.3 lbs (35,5 kg)	81.6 lbs (37 kg)	84.7 lbs (38,4 kg)	92.2 lbs (40,9 kg)
2" (DN50)	78 lbs (35,4 kg)	85.8 lbs (38,9 kg)	88.2 lbs (40 kg)	95.2 lbs (43.2 kg)

Table 14 - Weights | Actuator: 515

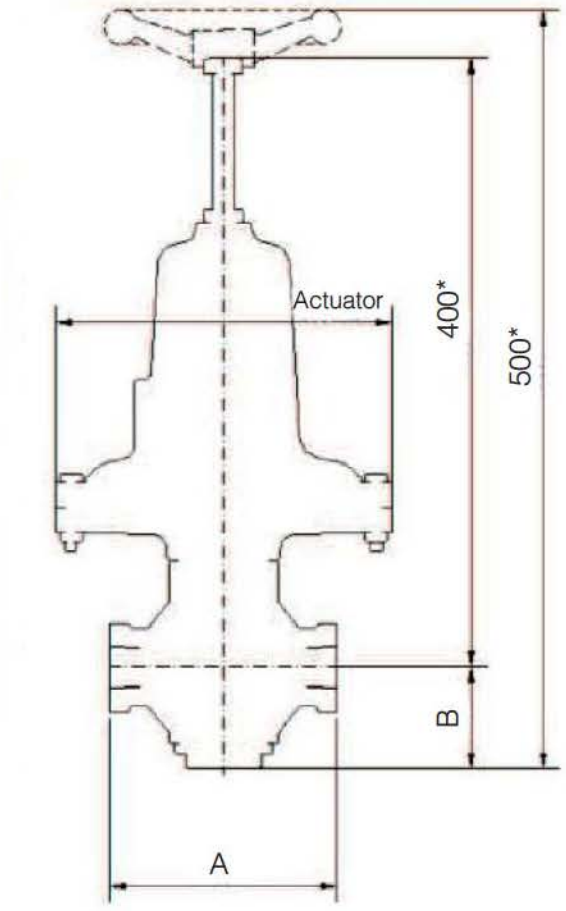
	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	52.5 lbs (23,8 kg)	52.3 lbs (23,7 kg)	54.5 lbs (24,7 kg)	56.7 lbs (25,7 kg)
3/4" (DN20)	52.5 lbs (23,8 kg)	53.4 lbs (24,2 kg)	55.6 lbs (25,2 kg)	58.9 lbs (26,7 kg)
1" (DN25)	52.3 lbs (23,7 kg)	54.5 lbs (24,7 kg)	56.7 lbs (25,71 kg)	60 lbs (27,2 kg)
1-1/2" (DN40)	56.9 lbs (25,8 kg)	60.2 lbs (27,3 kg)	63.3 lbs (28,7 kg)	68.8 lbs (31,2 kg)
2" (DN50)	56.7 lbs (25,7 kg)	64.4 lbs (29,2 kg)	66.8 lbs (30,3 kg)	73.9 lbs (33,5 kg)

Dimensions

MK608UBS flanged valve dimensional drawings



MK608UBS threaded valve dimensional drawing



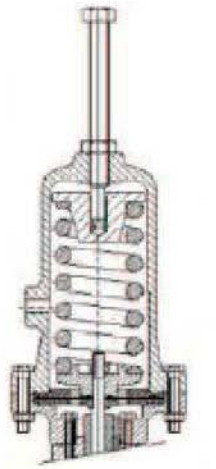
*The dimension may change according to setting

Table 15- Body Sizes and Face to Face Dimensions

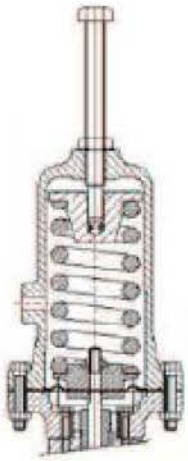
Size (DN)	Flanged						Threaded	
	Face to Face Dimensions						NPT-F GAS-F Con. BSP-F	
	ANSI Connections				Connections			
	150	300	600	150/300/600	PM 16 PN 25 PN 40			
	A			B	A	B	A	B
1/2" (DN15)	7-1/4" (184mm)	7-1/2" (190mm)	8" (203mm)	3" (75mm)	6-1/4" (160mm)	3-3/4" (66mm)	5-1/8" (130mm)	3-3/4" (66mm)
3/4" (DN20)	7-1/4" (184mm)	7-1/2" (194mm)	8-1/8" (206mm)					
1" (DN25)	7-1/4" (184mm)	7-3/4" (197mm)	8-1/4" (210 mm)					
1-1/2" (DN40)	8-3/4" (222mm)	9-1/2" (235mm)	10" (251mm)		3-1/4" (185mm)	3-1/4" (82mm)	6-3/4" (170mm)	3-1/4" (82mm)
2" (DN50)	10" (254mm)	10-1/2" (267mm)	10-1/2" (267mm)					

MK608UBS Actuators

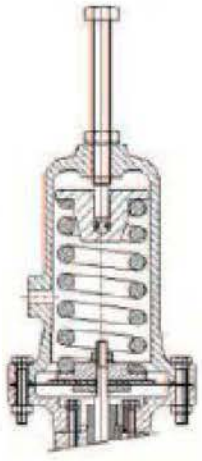
Actuator 100/120



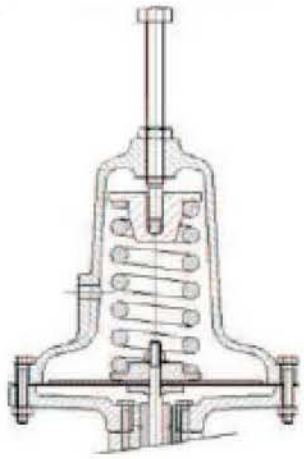
Actuator 130



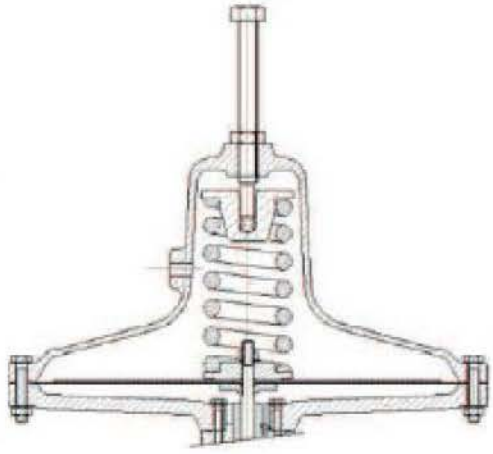
Actuator 140



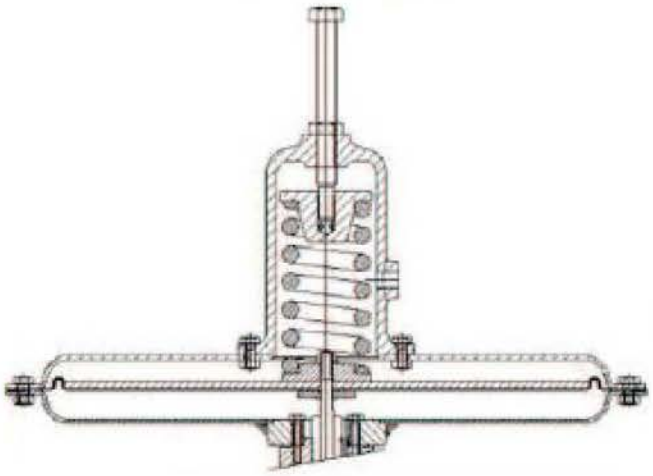
Actuator 220



Actuator 360



Actuator 515



MK608UBS Actuators:
The above drawings show all our available actuators, which are perfectly interchangeable the one with the others according to desired pressure regulation (please refer also to Tab. 3). The table below shows the actuators dimensions.

Table 16 - Actuator Dimensions

Actuator	Surface	Outer Diameter
	in^2 (cm^2)	mm
100	1.5 (9,7)	132
120	3.2 (20,7)	132
130	4.3 (27,8)	132
140	10 (64,5)	140
220	35.1 (226,5)	220
360	113.2 (730,1)	360
515	208.6 (1346)	480

JORDANVALVE
Jordan Valve a division of Richards Industries
3170 Wasson Road • Cincinnati, OH 45209
513.533.5600 • 800.543.7311 • 513.871.0105 (f)
info@richardsind.com • www.jordanvalve.com