

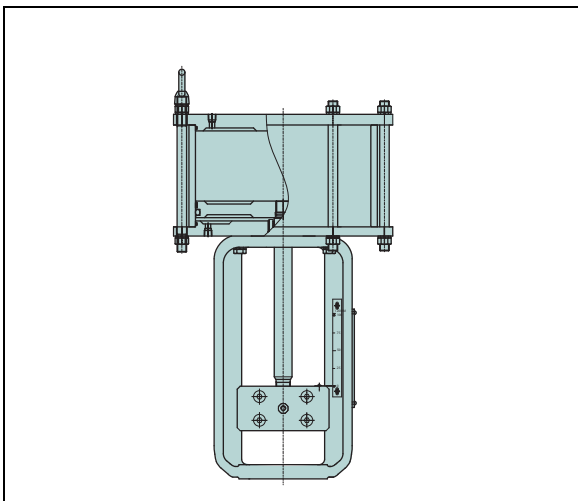
Series VC Pneumatic cylinder actuators

Metso's Neles series VC actuators are exclusively developed for linear valves. The VC double acting cylinder type actuators are designed for use in both modulating control and on-off service. They provide heavy duty and reliable operation and are well suited for many different kind of applications. The high performance internal coating resists wear and corrosion and the replaceable inner parts guarantee a long life cycle.

When "stay put" failure mode is required, a double acting actuator with lock up valve is the correct choice. If another failure mode is required, a double acting actuator with transfer valve and a volume tank should be selected. The series VC pneumatic cylinder actuators offers a built-in volume chamber or independent volume tank to provide failure in either the open or closed position. The built-in volume chamber provides minimum one time stroking when the instrument air fails.

Construction

- Heavy duty actuator designed for linear modulating control and on/off applications.
- Heavy duty piston rod and cylinder are guided by anti-corrosive cylinder with self lubricating piston seal which ensures efficient operation and improves the transfer of energy to the valve stem.
- The actuators incorporate three stages of internal and external corrosion resistance coating against severe weather, chemical and petroleum environments.
- Optional handwheel for manual operation.
- Optional volume tank or built-in volume chamber.



Sizes #30, #40, #50, #60, #70, #80
VC Cylinder actuators without handwheel

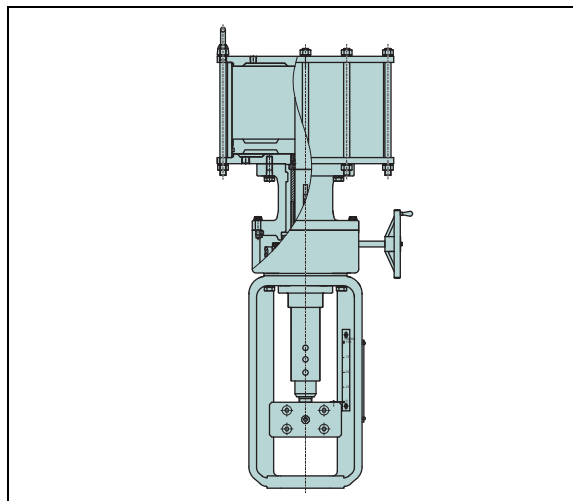


Simple and cost effective

A specially designed piston and cylinder in the main actuator drive module ensures simple and accurate alignment of modules when assembling the actuator or performing maintenance.

Accessories and control devices

A variety of accessories are available including Neles positioners and limit switches, solenoid valves, transducers, relays, boosters and volume tanks and built-in volume chambers etc.



Sizes #30, #40, #50, #60, #70, #80
VC Cylinder actuators with handwheel

VC Cylinder actuators design details

VC Specifications

Actuator size	Effect area		Volume		Actuator stem size (Φ)		Maximum stroke		Thrust at pressure				Max. allowable pressure	
	cm ²	inch ²	dm ³	inch ³	mm	inch	mm	inch	Pressure		Thrust		pressure	
									bar	psi	N	lbs	bar	psi
#30	687	106	8.2	500.3	40.0	1.58	120	4.72	4.0	58	26930	6148	10.0	145
									6.0	86	40396	9116		
									8.5	121	57227	12826		
#40	1151	178	20.7	1262.0	55.0	2.17	180	7.09	4.0	58	45119	10324		
									6.0	86	67679	15308		
									8.5	121	95878	21538		
#50	1816	282	32.6	1999.4	55.0	2.17	180	7.09	4.0	58	71187	16356		
									6.0	86	106781	24252		
									8.5	121	151273	34122		
#60	2650	411	63.6	3883.9	55.0	2.17	240	9.45	4.0	58	103880	23838		
									6.0	86	155820	35346		
									8.5	121	220745	49731		
#70	3116	483	74.8	4564.4	65.0	2.56	240	9.45	4.0	58	122147	28014		
									6.0	86	183220	41538		
									8.5	121	259563	58443		
#80	4229	656	118.4	7229.1	65.0	2.56	280	11.02	4.0	58	165777	38048		
									6.0	86	248665	56416		
									8.5	121	352276	79376		

- *. Note:
 1. Maximum stroke: Available to extend according to the required specifications.
 2. The volume is based on above maximum stroke.
 3. The thrust values are not included other considerable factors.

VC Stroking times

Size	Stroke (mm)	ND Model	Stroking time (Sec.)			
			Case-1		Case-2	
			Load	Vent	Load	Vent
# 30	60	ND 9206	6	7	8	9
	80	ND 9206	8	8	10	10
	100	ND 9206	10	10	12	12
# 40	80	ND 9206	8	10	11	12
	100	ND 9206	10	11	12	13
	120	ND 9206	11	12	14	15
# 50	100	ND 9206	13	13	16	16
	120	ND 9206	15	14	18	18
	140	ND 9206	17	16	20	19
# 60	120	ND 9206	18	16	22	22
	140	ND 9206	21	19	26	24
	180	ND 9206	25	21	30	28
# 70	140	ND 9206	20	19	29	24
	180	ND 9206	24	22	34	28
	240	ND 9206	28	27	40	36
# 80	180	ND 9206	31	30	42	38
	240	ND 9206	35	31	48	42
	280	ND 9206	39	34	54	46

- Note:
 1. Mounted with ND 9200 smart positioners and air set only
 2. Case-1: when applied B72G-2AS-980 air set
 Case-2: when applied YT-200BN210 air set
 3. Air supply pressure: 6.0 barg
 4. Stroking time accuracy: ± 10%

VC Temperature ranges

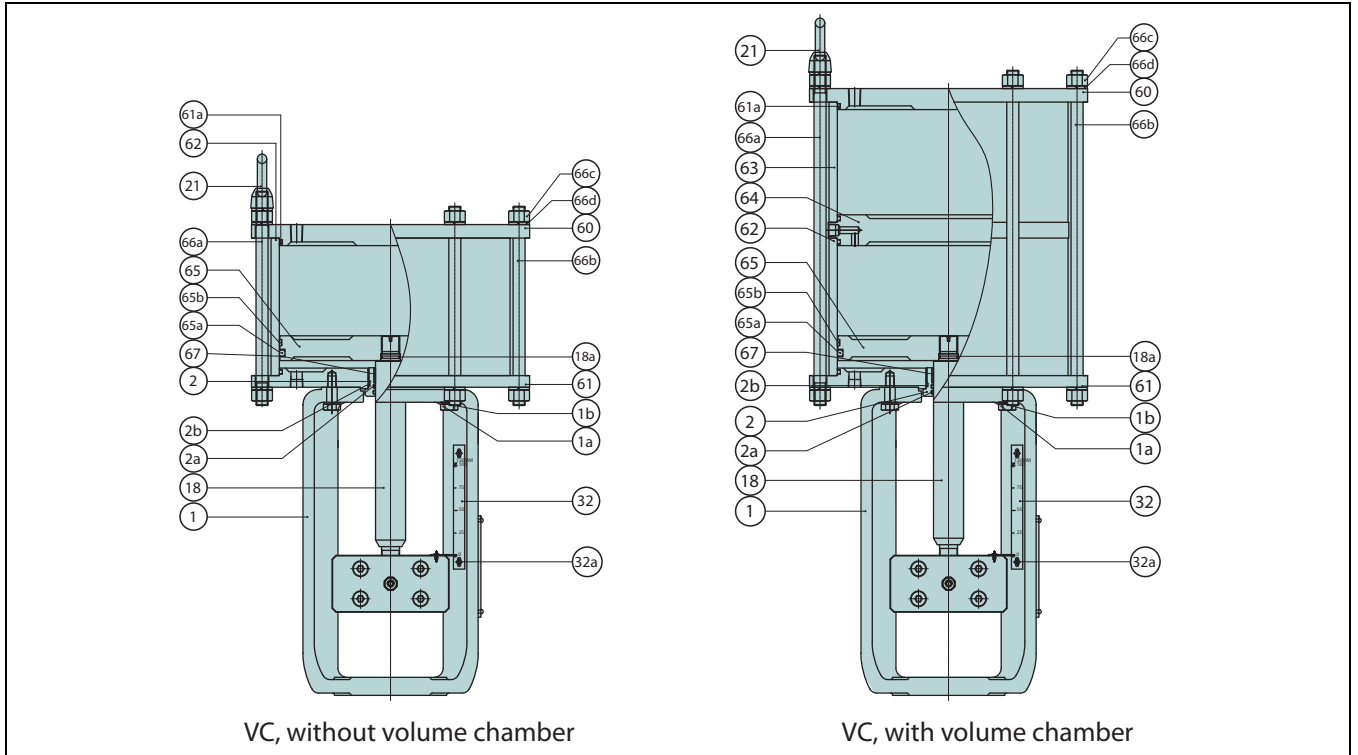
Description	Standard VC	Low. Temp. VC
Temp. range	-20 °C to 70 °C	-40 °C to 70 °C
Type code ref.	A, E	L

- Note:
 1. Temperature: Ambient temperature
 2. Type code reference: Please see in page 6 (materials).
 3. Other low temperature ranges: Please contact Metso

VC Air supply connections

Standard	3/8" NPT for VC #30 1/2" NPT for VC #40, #50, #60, #70 & #80
Optional	3/4" and others

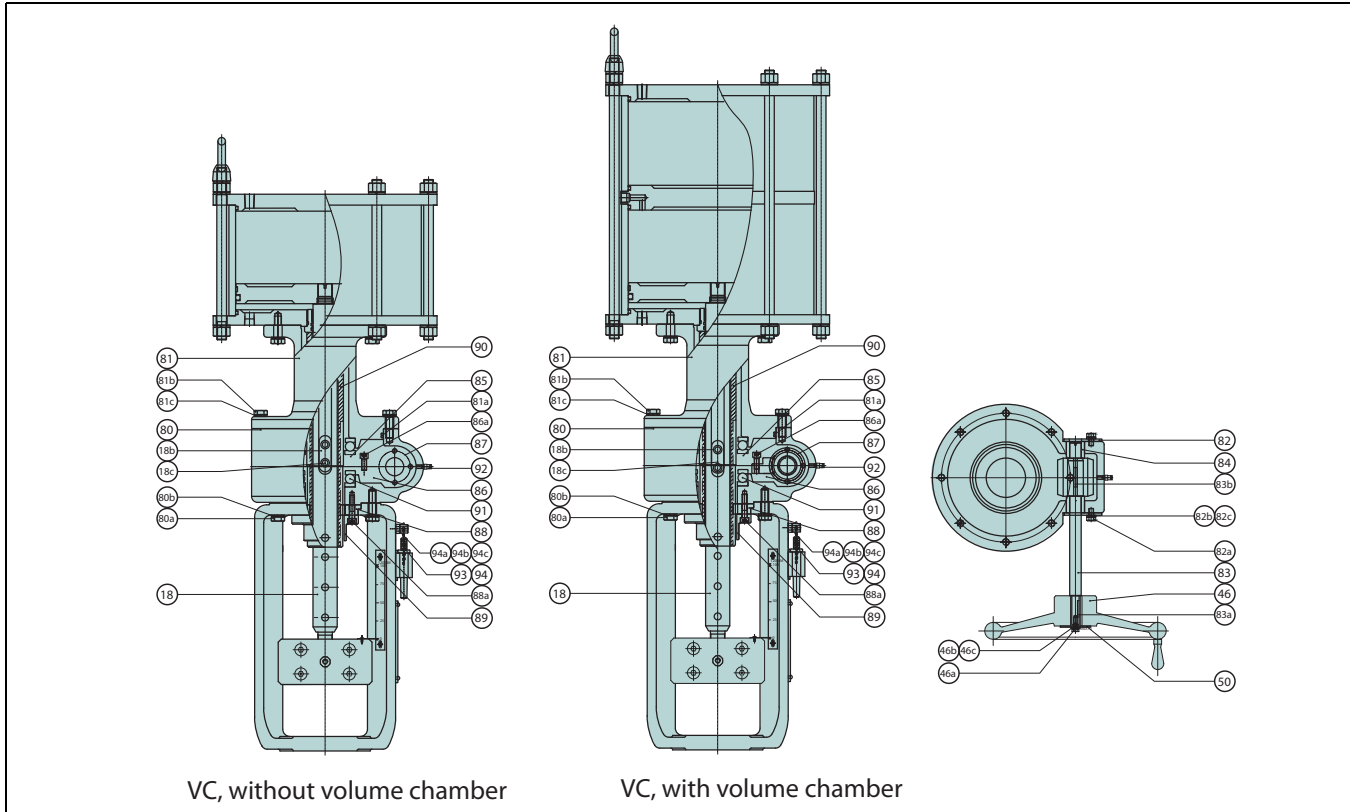
VC, actuator constructions without handwheel



Standard VC, parts and materials without handwheel

Part No.	Description	Material
1	YOKE	ASTM A216 Gr. WCB
1a	HEXAGON SCREW	ISO 3506 A2-70
1b	SPRING WASHER	AISI 304
2	STEM GUIDE	BRASS
2a	O-RING	NITRILE, NBR
2b	O-RING	NITRILE, NBR
18	TOP STEM	ASTM A564 Gr. 630+HCr
18a	O-RING	NITRILE, NBR
21	LIFTING EYE NUT	JIS G3101-SS400
30	IDENTIFICATION PLATE	AISI 304
30a	RIVET	AISI 304
32	INDICATOR	AISI 304
32a	ROUND HEAD SCREW	AISI 304
60	TOP COVER	JIS G3101-SS400+Zn
61	BOTTOM COVER	JIS G3101-SS400+Zn
61a	O-RING	NITRILE, NBR
62	PISTON CYLINDER	JIS G3101-SS400+HCr
63	CHAMBER CYLINDER	JIS G3101-SS400+HCr
64	MIDDLE PLATE	JIS G3101-SS400+Zn
65	PISTON	ASTM B209 ALLOY 6061
65a	O-RING	NITRILE, NBR
65b	WEAR RING	CORBON GRAPHITE
66a	TIE ROD	JIS G3101-SS400
66b	TIE ROD	JIS G3101-SS400
66c	HEXAGON NUT	ISO 3506 A2-70
66d	SPRING WASHER	ISO 3506 A2-70
67	DU DRY BEARING	AISI 304+PTFE+Pb

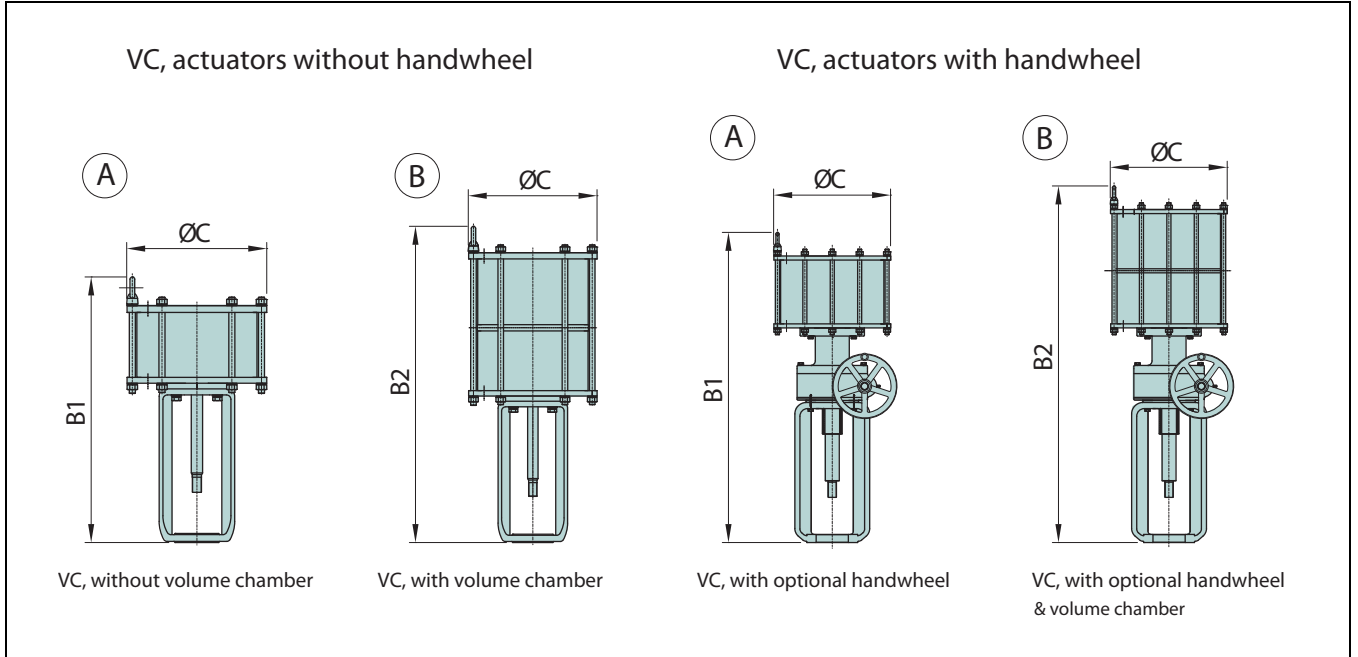
VC, actuator constructions with handwheel



Standard VC, parts and materials with handwheel

Part No.	Description	Material
18b	KEY	AISI 304+HCr
18c	SOCKET HEAD SCREW	ISO 3506 A2-70
46	HANDLE	G5501-FC20+HCr
46a	HEXAGON SCREW	ISO 3506 A2-70
46b	WASHER	AISI 304
46c	WASHER	AISI 304
50	HANDLE INDICATOR	ALUMINUM
80	GEAR BOX CASE	ASTM A216 Gr.WCB
80a	HEXAGON SCREW	ISO 3506 A2-70
80b	WASHER	AISI 304
81	GEARBOX COVER	ASTM A216 Gr.WCB
81a	O-RING	NITRILE, NBR
81b	HEXAGON SCREW	ISO 3506 A2-70
81c	SPRING WASHER	AISI 304
82	GEAR BOX SIDE COVER	AISI 304
82a	SOCKET HEAD SCREW	ISO 3506 A2-70/80
82b	SPRING WASHER	AISI 304
82c	WASHER	AISI 304
83	HANDLE SHAFT	AISI 304
83a	KEY	JIS G4051-S45C
83b	KEY	JIS G4051-S45C
84	SHAFT BUSHING	BRASS
85	GEAR CHUCK	JIS G4051-S45C
86	WORM WHEEL	JIS G4051-S45C
86a	SOCKET HEAD SCREW	ISO 3506 A2-70/80
87	WORM	JIS G4051-S45C
88	LIMITER	JIS G3101-SS400
88a	SOCKET HEAD SCREW	ISO 3506 A2-70
89	PIPE COVER	AISI 304
90	GEAR PIPE	AISI 316L
91	BEARING	JIS G3101-SS400
92	OIL NIPPLE	BRASS
93	TAPER PIN	ASTM A564 Gr.630+HCr
94	TAPER CHAIN	STAINLESS STEEL
94a	TAPER PIN HOLDER	AISI 304
94b	HEXAGON NUT	ISO 3506 A2-70
94c	SPLIT PIN	CARBON STEEL+ZINC
95	TAPER PIN HOLDER	AISI 304

VC cylinder actuator dimensions



VC actuators without handwheel

(UNIT: mm)

Stroke (mm)	#30			#40			#50		
	°C	370		°C	460		°C	560	
	B1	Weight (kg)		B1	Weight (kg)		B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B
40	640	92	115	810	120	148	810	186	234
	760			935			935		
50	650	94	118	820	123	152	820	189	237
	790			965			965		
60	660	97	121	830	126	155	830	192	242
	820			995			995		
70	670	100	124	840	128	159	840	195	246
	850			1025			1025		
80	680	103	127	850	131	162	850	198	251
	880			1055			1055		
90	690	106	130	860	134	166	860	201	256
	910			1085			1085		
100	700	108	133	870	137	173	870	203	261
	940			1115			1115		
120	720	114	139	890	142	177	890	209	270
	1000			1175			1175		
140				910	148	184	910	215	279
				1235			1235		
180				950	159	198	950	227	298
				1355			1355		

VC actuators with handwheel

(UNIT: mm)

Stroke (mm)	#30			#40			#50		
	°C	370		°C	460		°C	560	
	B1	Weight (kg)		B1	Weight (kg)		B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B
40	930	134	157	1095	180	208	1095	246	294
	1055			1220			1220		
50	940	137	160	1105	183	212	1105	249	299
	1085			1250			1250		
60	950	139	163	1115	186	215	1115	252	303
	1115			1280			1280		
70	960	142	167	1125	188	219	1125	255	308
	1145			1310			1310		
80	970	144	170	1135	191	222	1135	258	313
	1175			1340			1340		
90	980	147	173	1145	194	226	1145	261	318
	1205			1370			1370		
100	990	150	176	1155	197	230	1155	263	322
	1235			1400			1400		
120	1010	155	183	1175	202	237	1175	269	332
	1295			1460			1460		
140				1195	208	244	1195	275	341
				1520			1520		
180				1235	219	258	1235	287	360
				1640			1640		

VC actuators without handwheel

(UNIT: mm)

Stroke (mm)	#60			#70			#80		
	°C	660		°C	710		°C	820	
	B1	Weight (kg)		B1	Weight (kg)		B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B
100	954	255	344	955	322	438	951	378	519
	1199			1203			1207		
120	974	262	355	975	330	450	974	386	531
	1259			1263			1267		
140	994	269	365	995	338	461	994	394	543
	1319			1323			1327		
180	1034	283	386	1035	354	484	1034	410	567
	1439			1443			1447		
240	1094	303	417	1095	377	518	1094	435	604
	1619			1623			1627		
280							1134	451	628
							1747		

VC actuators with handwheel

(UNIT: mm)

Stroke (mm)	#60			#70			#80		
	°C	660		°C	710		°C	820	
	B1	Weight (kg)		B1	Weight (kg)		B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B
100	1239	315	404	1240	368	502	1289	438	579
	1484			1488			1542		
120	1259	322	415	1260	376	514	1309	446	591
	1544			1548			1602		
140	1279	329	425	1280	384	525	1329	454	603
	1604			1608			1662		
180	1319	343	446	1320	400	548	1369	470	627
	1724			1728			1782		
240	1379	363	477	1380	423	582	1429	495	664
	1904			1908			1962		
280							1469	511	688
							2082		

HOW TO ORDER

Pneumatic cylinder actuator, linear type, series VC

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
VC	C	30	X	080	B	V	A	K	X	X	B	V	-

ACTUATOR CONSTRUCTIONS

1.	ACTUATOR SERIES					
VC	Pneumatic Cylinder actuator, Linear type					
2.	FUNCTION CODE					
C	Double acting (Springless)					
Y	Special					
3.	ACTUATOR SIZE					
Outline dimension						
30	Ø370 mm					
40	Ø460 mm					
50	Ø560 mm					
60	Ø660 mm					
70	Ø710 mm					
80	Ø820 mm					
YY	Special					
4.	SPRING RANGE					
X	Not applicable					
Y	Special					
5.	STROKE					
	VC_30	VC_40	VC_50	VC_60	VC_70	VC_80
040	O	O	O	O	O	O
050	O	O	O	O	O	O
060	O	O	O	O	O	O
070	O	O	O	O	O	O
080	O	O	O	O	O	O
090	O	O	O	O	O	O
100	O	O	O	O	O	O
120	O	O	O	O	O	O
140	-	O	O	O	O	O
180	-	O	O	O	O	O
240	-	-	-	O	O	O
280	-	-	-	-	-	O
YYY	Contact Metso for special stroke					

MATERIALS

6.	ACTUATOR CASE MATERIAL	
B	JIS G3101-SS400 (ASTM A-36)	
Y	Special	
7.	PISTON MATERIAL	
V	ASTM B209 ALLOY 6061 T6	
Y	Special	
8.	SEAL MATERIAL	
A	Nitrile rubber	
Optional seal application		
L	Low temp. NBR	
Y	Special	
9.	BOLTING MATERIAL	
K	Stainless steel	
Y	Special	

OTHERS

10.	POSITION LIMITATION	
X	Not applicable	
Optional application		
M	Mechanical stopper	
Y	Special	
11.	EXTERNAL OVERRIDE OPTION	
X	Not applicable	
A	Handwheel	
12.	AIR SUPPLY CONNECTION	
	Connection size	Actuator size
B	3/8" NPT	VC_30
C	1/2" NPT	VC_40/50/60/70/80
Optional air supply connection		
D	3/4" NPT	VC_70/80
Y	Special	
13.	OPTIONS	
X	Not applicable	
V	Volume chamber	
Y	Special	
14.	ACTUATOR DESIGN APPLICATION	
-	Original type	

Subject to change without prior notice.

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