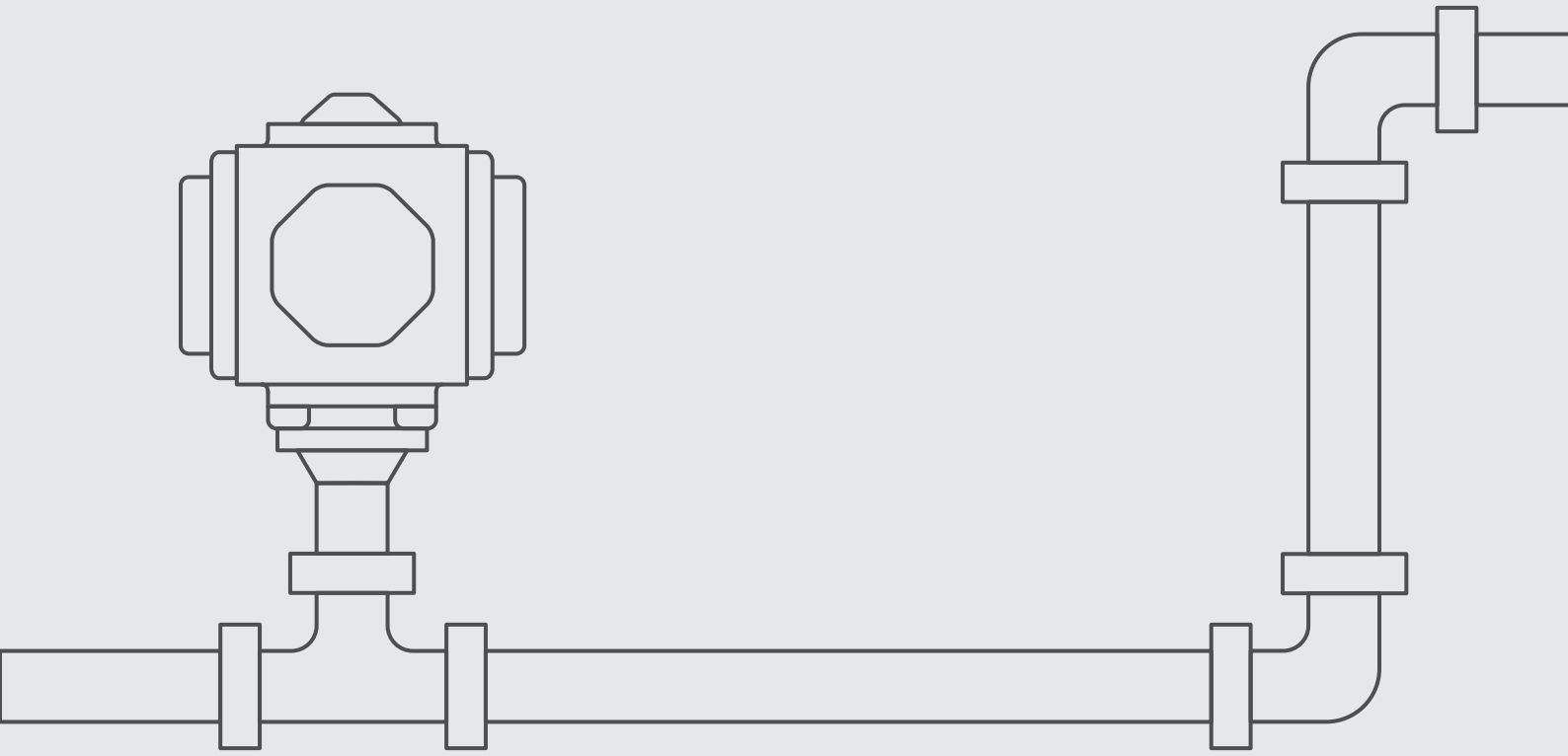
C100 C100M

Actuation

PNEUMATIC ACTUATOR

POWER CompAct
4 PISTONS



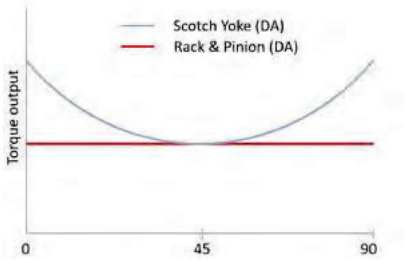
C100 C100M

Power CompAct 4 Pistons Pneumatic Actuator

PATENTED
US 11661848

Four-Pistons Scotch-Yoke design

Habonim patent-pending innovative four-pistons scotch-yoke design combines the benefits of high-power scotch-yoke mechanism to generate maximal power and high Start and End torques, where most valves require it and the balance and compactivity of the four-piston mechanism to provide fast and efficient operation with minimal maintenance.



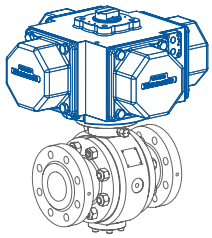
High Start & End Torques

The patent-pending four-pistons scotch-yoke pneumatic actuator provides almost 100% higher power-to-size ratio. In other words, a comparable traditional high-torque scotch-yoke actuator will be twice as big as a Power CompAct unit. The Power CompAct unit is much faster in opening and closing and uses less compressed air to operate.

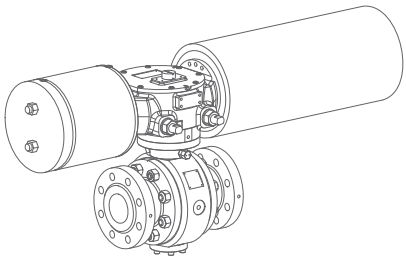
The evenly balanced forces of the four pistons and short travel (short piston) provides un-matching high cycle long life without maintenance for hundreds of thousands of operations.

Main features

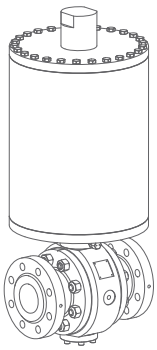
- High torque for smaller size
- High performance and durability
- Space saving
- Utilizing the well proven CompAct technology
- Low air consumption
- Versatile multi optional mounting interface



Power CompAct



Traditional scotch-yoke



Helical



Compact 4-cylinder body

The cube-shaped body is the most compact configuration capable to accommodate 4 pistons.

Drive shaft

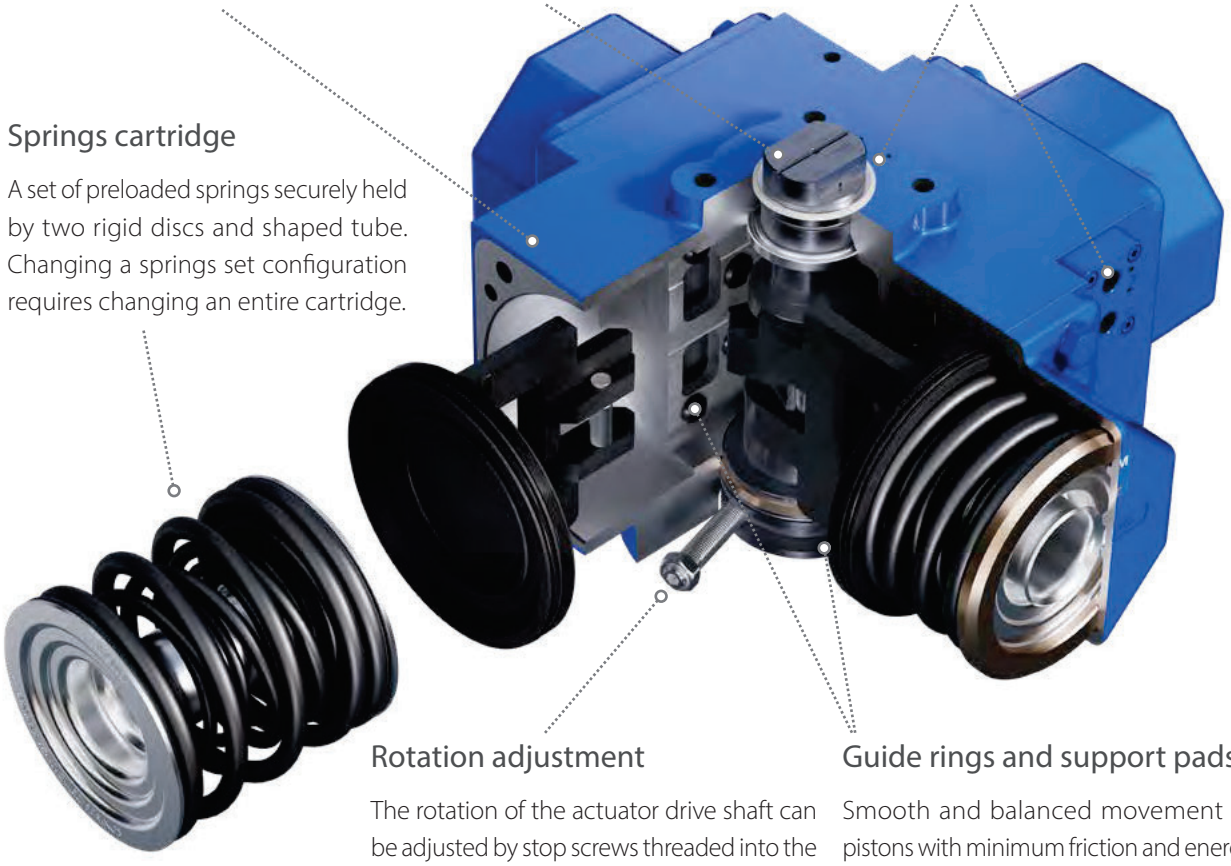
Carbon steel hardened and plated for protection against corrosive environments.

Accessory interfaces

NAMUR VDI/VDE 3845 interfaces for easy mounting of all types of accessories such as solenoid valves, limit switches and positioners.

Springs cartridge

A set of preloaded springs securely held by two rigid discs and shaped tube. Changing a springs set configuration requires changing an entire cartridge.



Rotation adjustment

The rotation of the actuator drive shaft can be adjusted by stop screws threaded into the actuator body, which allows +/-3° of rotational adjustment in both directions of travel.

Guide rings and support pads

Smooth and balanced movement of the pistons with minimum friction and energy loss.

Mounting interface

ISO 5211 interface at the bottom flange with different types of female drives to flexibly fit a variety of valve shafts.





C100 C100M

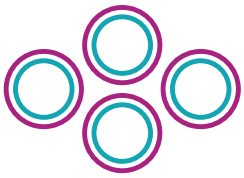
Power CompAct 4 Pistons Pneumatic Actuator

PATENTED
US 11661848

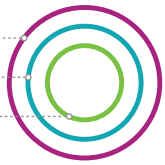
Type	Working temperature C° (F°)	Working Pressure Air, Bar (psi)	Application	Ordering code
Standard	-40 to 100 (-40 to 213)	3.0 (44) to 8.0 (116)	General	Blank
High Temperatures	-20 to 120 (-4 to 250)		General	HT
High Cycle	-20 to 80 (-4 to 176)		Above 1 cycle/minute	HC
Nuclear	-40 to 80 (-40 to 176)		Nuclear use	NU

Spring combinations

Code	Spring combinations
2A2B	
2B	

Code	Spring combinations
2C	
2C3	
3	

Outer
Middle
Inner



Sizing a spring return actuator requires that the torque output at the start and end of both the spring and air drive strokes is greater than the valve torque at that position.

Technical Data

Weight - Spring return		kg	160
		lb	353
Weight - Double Acting		kg	102
		lb	225
Air Consumption per opening stroke actual volume - Spring Return		lit	17.7
		in^3	1073
Air Consumption per full stroke actual volume - Double Acting		lit	34.5
		in^3	2087
Stroke time with ½" solenoid valve, with Cv=3.5 at 5.5 bar (80 psi), with no load	**D/A**	Sec	2
	S/R Open		2.5
	S/R Close		2.5

C100 C100M

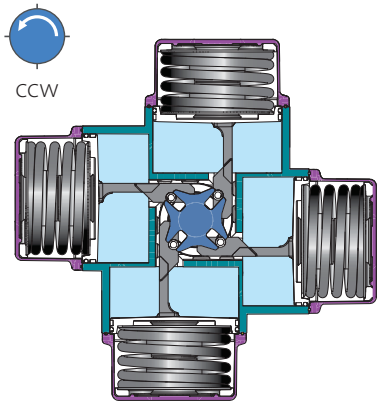
Power CompAct 4 Pistons Pneumatic Actuator

The actuator can be configured for either spring return or double-action operation. In both cases the air supply to drive the pistons flow into Port A of the NAMUR block. Port A is connected to the center chamber, and Port B is connected to the four outside chambers.

Spring return (fail-safe)

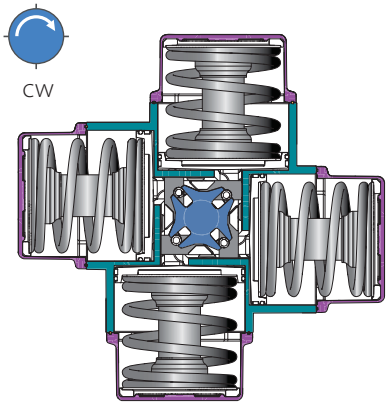
Pressure entering Port A to open:

- Center chamber is pressurized and pistons move outward
- Springs are compressed
- Yoke rotates counterclockwise



Pressure exiting Port A to close:

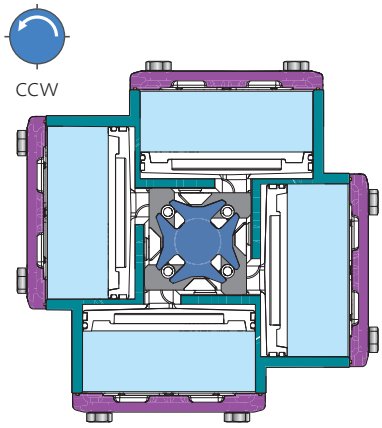
- Air released from center chamber
- Springs drive pistons inward
- Yoke rotates clockwise



Double action (increased torque)

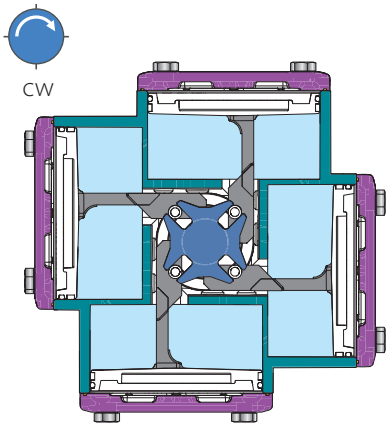
Pressure entering Port A to open:

- Center chamber is pressurized
- Pistons move outward
- Yoke rotates counterclockwise



Pressure entering Port B to close:

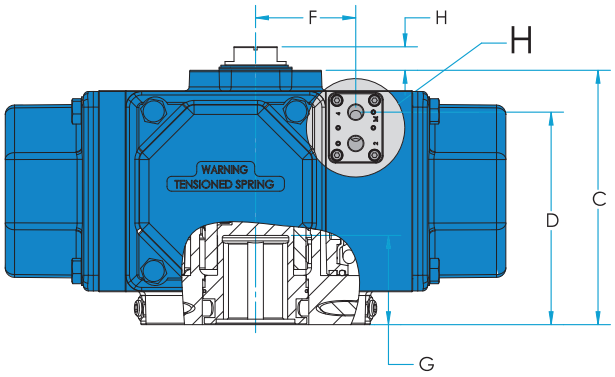
- Outside chambers are pressurized
- Pistons move inward
- Yoke rotates clockwise

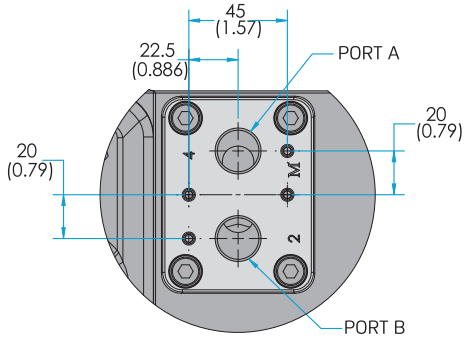


C100 C100M

Power CompAct 4 Pistons Pneumatic Actuator

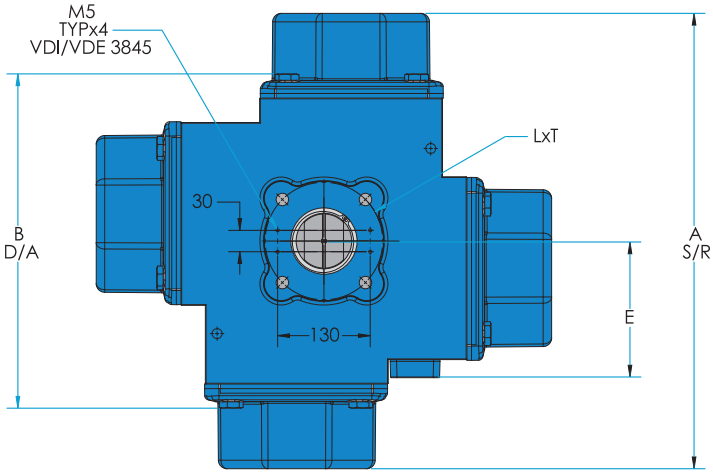
PATENTED
US 11661848

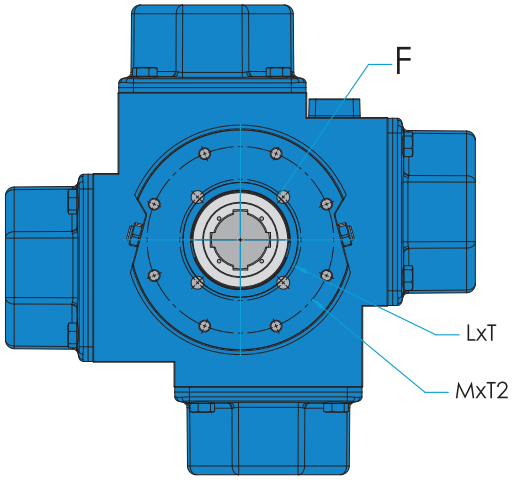


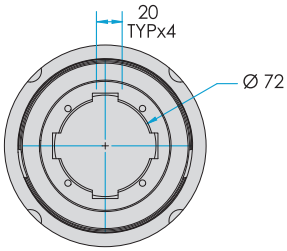


DETAIL H
G-½" ISO FOR METRIC ACTUATOR
½" NPT FOR IMPERIAL ACTUATOR

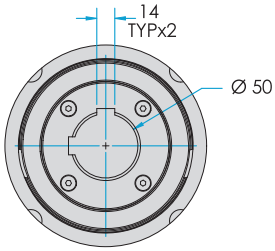
Port A is connected to the center chamber - opening (S/R & D/A)
Port B is connected to the outside chambers - closing (D/A only)



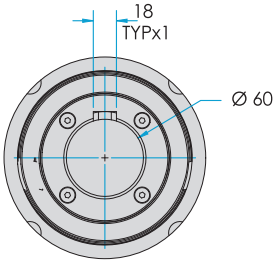




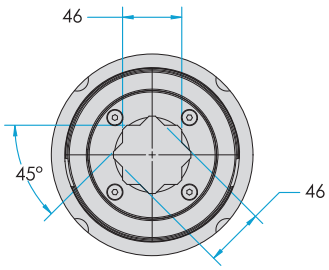
DETAIL F
BUILT-IN
ISO 5211
Ø 72mm KEY SHAFT
MAX 8000Nm



DETAIL F
OPTIONAL ADAPTER
ISO 5211
Ø 50mm KEY SHAFT INSERT
MAX 3000Nm



DETAIL F
OPTIONAL ADAPTER
ISO 5211
Ø 60mm KEY SHAFT INSERT
MAX 4000Nm



DETAIL F
OPTIONAL ADAPTER
ISO 5211
46mm SQUARE SHAFT INSERT
MAX 4000Nm

Actuator Dimensions

Size	A S/R		B D/A		C		D		E		F	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
C100M	640	25.20	470	18.50	325	12.80	272	10.71	190	7.48	128	5.04

Size	G		L PCD		T Thread	M PCD (2)		T2 Thread
	mm	inch	mm	inch	mm	mm	inch	mm
C100M	114	4.49	165 (F16)	6.50 (F16)	M20x30	254 (F25)	10.00 (F25)	M16x30

C100 C100M

Power CompAct 4 Pistons Pneumatic Actuator

C100M SR Torques (Nm)

Size	Spring set	Air stroke position	Air pressure - bar (psi)							Spring torque vs spring stroke position	
			3 (44)	4 (58)	5 (73)	5.5 (80)	6 (87)	7 (102)	8 (116)		
C100M	2A2B	Start	**1800**	**3050**	4200	4700	5350	6400	7330	Start	2500
		Min	**850**	**1600**	2340	2670	3080	3850	4390	Min	1200
		End	**1010**	**2250**	3470	4170	4740	5850	6280	End	**1600**
	2B	Start	1700	**2890**	**4050**	4600	5180	6070	7000	Start	2900
		Min	610	**1380**	**2050**	2480	2890	3580	4110	Min	1390
		End	650	**1630**	**2900**	3400	4020	5220	6130	End	**1900**
	2C	Start		2150	**3370**	**3780**	4330	5280	6340	Start	3250
		Min		960	**1690**	**2050**	2350	3110	3700	Min	1670
		End		1120	**2100**	**2660**	3180	4330	5200	End	**2130**
	2C3	Start		2080	3250	**3890**	**4540**	5500	6610	Start	3750
		Min		900	1640	**1990**	**2400**	3070	3770	Min	1840
		End		1010	2050	**2640**	**3210**	4490	4140	End	**2390**
	3	Start			2400	2950	3560	**4600**	**5620**	Start	4600
		Min			1140	1540	1890	**2580**	**3220**	Min	2090
		End			1200	1890	2410	**3600**	**4790**	End	**2850**

C100 DA Torques (Nm)

Size	Air stroke position	Air pressure - bar (psi)							
		2 (29)	3 (44)	4 (58)	5 (73)	5.5 (80)	6 (87)	7 (102)	8 (116)
C100-DA	Start	2280	3370	4470	5700	6320	6890	7920	8600
	Min	1450	2210	2880	3660	4000	4400	4980	5550
	End	2280	3370	4470	5700	6320	6890	7920	8600

C100M SR Torques (in-lb)

Size	Spring set	Air stroke position	Air pressure - psi (bar)							Spring torque vs spring stroke position	
			40 (2.8)	60 (4.1)	70 (4.8)	80 (5.5)	90 (6)	100 (6.9)	120 (8.3)		
C100M	2A2B	Start	**14869**	**27670**	35686	41599	47351	55836	67309	Start	22127
		Min	**7022**	**14515**	19882	23631	27260	33589	40312	Min	10621
		End	**8343**	**20412**	29484	36908	41953	51037	57667	End	**14161**
	2B	Start	14043	**26218**	**34412**	40713	45847	52957	64279	Start	25667
		Min	5039	**12519**	**17418**	21950	25579	31233	37741	Min	12303
		End	5369	**14787**	**24640**	30093	35580	45541	56290	End	**16816**
	2C	Start		19505	**28634**	**33456**	38324	46064	58218	Start	28765
		Min		8709	**14359**	**18144**	20799	27133	33976	Min	14781
		End		10161	**17843**	**23543**	28145	37776	47750	End	**18852**
	2C3	Start		18870	27614	**34429**	**40182**	47984	60697	Start	33190
		Min		8165	13935	**17613**	**21242**	26784	34619	Min	16285
		End		9163	17418	**23366**	**28411**	39172	38016	End	**21153**
	3	Start			20392	26110	31509	**40132**	**51606**	Start	40713
		Min			9686	13630	16728	**22509**	**29568**	Min	18498
		End			10196	16728	21330	**31408**	**43985**	End	**25225**

C100 DA Torques (in-lb)

Size	Air stroke position	Air pressure - psi (bar)							
		30 (2.1)	40 (2.8)	60 (4.1)	70 (4.8)	80 (5.5)	90 (6)	100 (6.9)	120 (8.3)
C100-DA	Start	21189	27839	40552	48431	55937	60982	69097	78971
	Min	13475	18256	26127	31098	35403	38943	43447	50964
	End	21189	27839	40552	48431	55937	60982	69097	78971

Note:
Minimum torque values of the actuator shall be concidered during the sizing

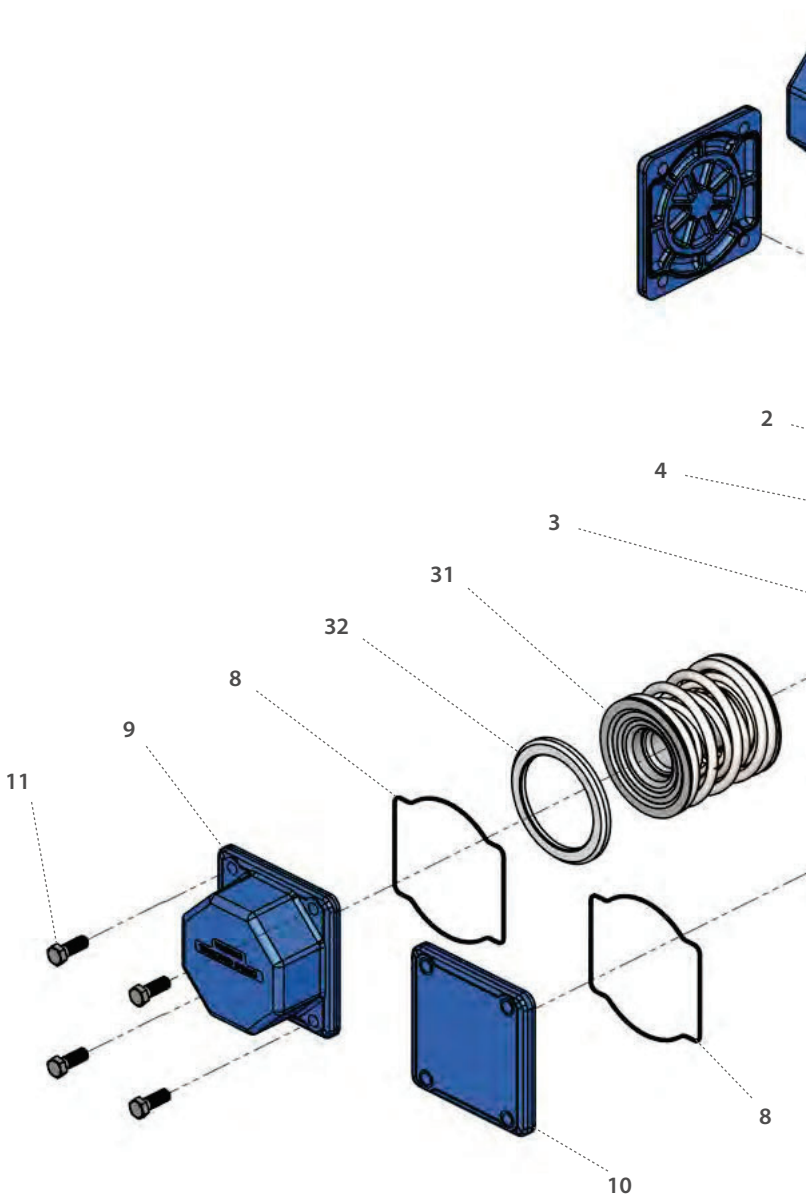
C100 C100M

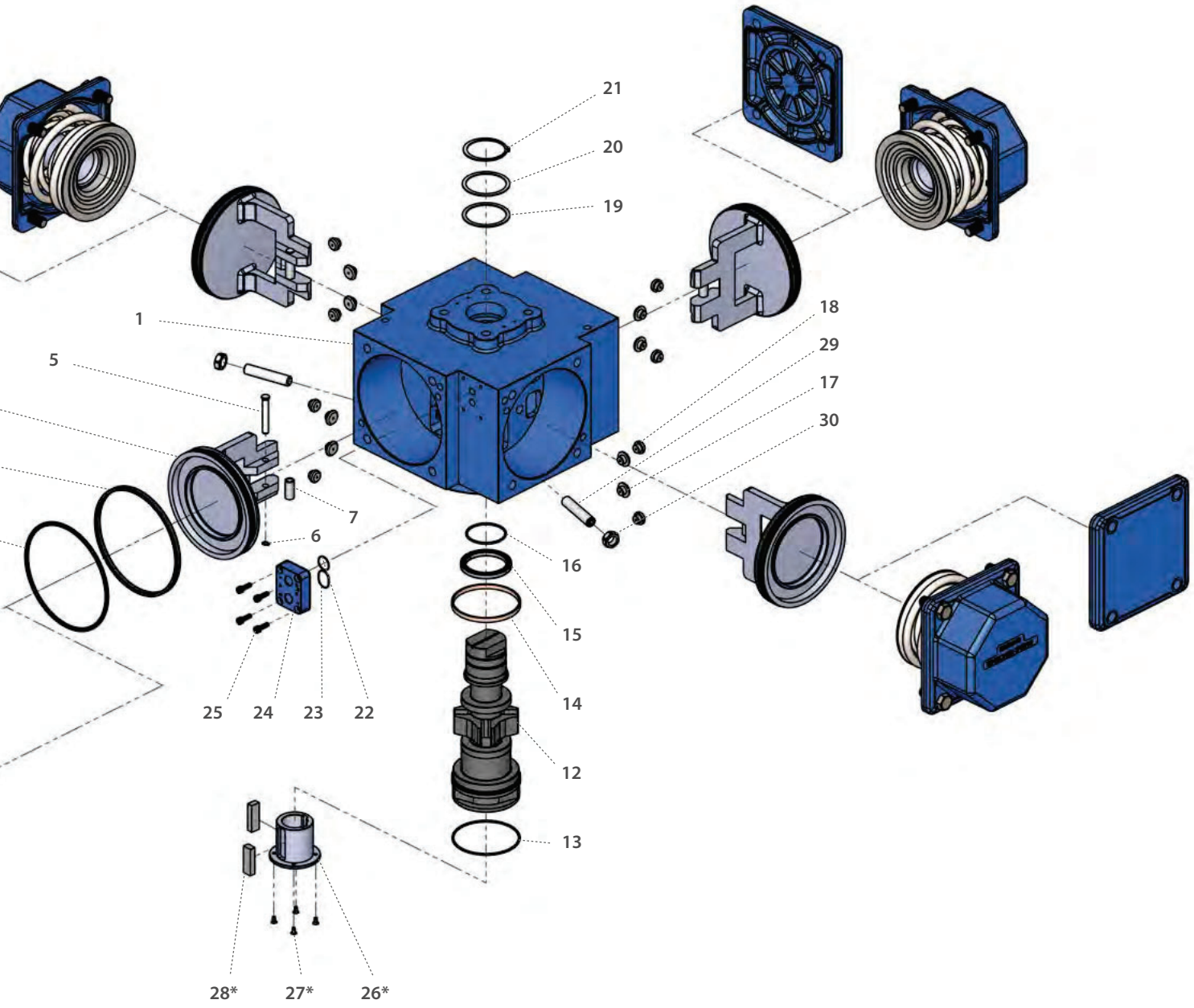
Power CompAct 4 Pistons Pneumatic Actuator

PATENTED
US 11661848

Item	Description	Material specifications	Qty.
1	Body	Acc. Ordering Code	1
2	Piston	Acc. Ordering Code	4
3*	Piston O-Ring	Acc. Ordering Code	4
4*	Piston Guide Ring	Polymer	4
5	Roller Pin	Stainless steel	4
6	Circlip	Stainless steel, spring steel zinc plate	4
7	Roller	Stainless steel	4
8*	Cover O-Ring	Acc. Ordering Code	4
9	Spring Return Cover	Acc. Ordering Code	4
10	Double Acting Cover	Acc. Ordering Code	4
11	Cover Bolt	Stainless steel	16
12	Yoke	Acc. Ordering Code	1
13*	Yoke Lower O-Ring	Acc. Ordering Code	1
14*	Yoke Lower Slide Bearing	Acc. Ordering Code	1
15*	Yoke Upper Ball Bearing	Stainless steel	1
16*	Yoke Upper O-Ring	Acc. Ordering Code	1
17*	Inner Pad	Acc. Ordering Code	8
18*	Outer Pad	Acc. Ordering Code	8
19*	Polymer Disc Bearing	Polymer	1
20*	Metal Disc Bearing	Stainless steel	1
21*	Circlip	Stainless steel, spring steel zinc plated	1
22*	NAMUR Block O-Ring 1	Acc. Ordering Code	1
23*	NAMUR Block O-Ring 2	Acc. Ordering Code	1
24	NAMUR Block	Acc. Ordering Code	1
25	NAMUR Block Screws	Stainless steel	4
26**	Drive Shaft Insert	Stainless steel	1
27**	Drive Shaft Screws	Stainless steel	4
28**	Drive Key	Stainless steel	2
29	Stop Screw	Stainless steel	2
30	Locking Nut	Stainless steel	2
31	Springs Cartridge	Stainless steel, spring steel	8
32	Cartridge Support Ring	Stainless steel	4

* Repair kit components
** Supplied on request, see ordering code

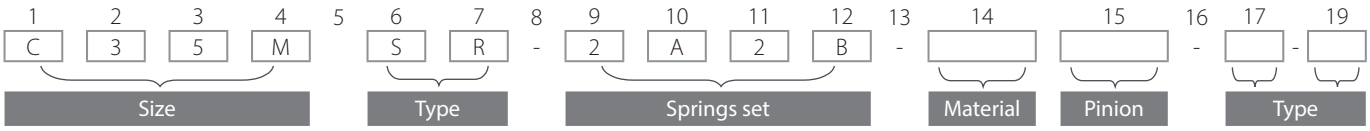



21
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27*
26*

C100

CompAct 4 Pistons Pneumatic Actuator - Ordering Code System

"Standard offer" options are marked with light green background



Size (1-4)	
C100*	Actuator sizes
C100M	

* For DA option only

Type (6-7)	
SR	Spring return
DA	Double acting

Springs set (9-12)	
2A2B	See spring set combinations
2B	
2C	
2C3	
3	

Material / Coating (14)	
Blank	Aluminum
N	Electroless nickel plating
6	S.ST *

* For selected sizes only - consult factory

Pinion (15)	
Blank	C.st
6	S.ST

Type (17-19)	
Blank	Standard
HT	High Temp
HC	High cycle
NU	Nuclear
IIC	ATEC IIC

Available adapters for C100 only		
Part number	Drive Shaft type	Drive Shaft description
MK0000879	**SQ46**	46mm square drive
MK0000877	**D50-KEY14**	Ø50mm shaft, 14mm key drive
MK0000878	**D60-KEY18**	Ø60mm shaft, 18mm key drive



YP0000787 CAT-MAIN-NEW ver04_110123

About Habonim

Ball Valves & Actuators for the most demanding, challenging and hazardous applications are our passion and profession for the last 70 years.

We believe in designing, manufacturing and supplying control and shutoff components and solutions that improves the overall safety, integrity and sustainability of the systems they are installed in.

Designed, manufactured and tested according to the highest standards, our products allow us to partner within systems that flow and control varied gases and liquids in diverse markets especially where extreme temperatures and pressures are involved, hazardous materials are used and system performances are critical.

We are leading in cryogenic ball valve-based control solutions, emergency shutoff and specially designed solutions.

Believing that supplying and developing the most effective, safe and reliable products for the global leaders in the LNG and Gas distribution market continually challenges us to improve our capabilities and products.

Best coping with our prestigious customers' most challenging requirements technically, operationally and commercially is our promise fulfilled for decades.

Performing in Demanding Applications

HABONIM
An ITT Company

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Habonim Israel +972 (0) 4 691 4911 | **Habonim Australia** +65 8127 0221
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