



# COMPACT 4 PISTON PNEUMATIC ACTUATOR

13 DIFFERENT SIZES

**COMPACT**  
PNEUMATIC ACTUATOR



**HABONIM**  
Industrial Valves & Actuators

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## Proven Advantage

The **COMPACT** is a quarter turn rack & pinion pneumatic actuator that is patented worldwide.

The superiority of the **COMPACT** actuator over single and double rack & pinion actuator designs, results from the four pistons which generate torque around a centrally located pinion, thereby giving more than double the torque achieved by these other designs.

The increased number of pistons in the actuator allows their diameter to be reduced while maintaining its high torque. This also allows the overall size of the actuator to be reduced and become more **COMPACT**.



## Space Saving, Fast Acting

The **COMPACT** has four small cylinders, each located on one of the four sides of a cube. At a given air pressure, the **COMPACT** can produce the same torque output as double piston actuators, using smaller diameter pistons and a narrower pinion. A narrower pinion results in a shorter piston travel, which permits a **COMPACT**, space saving mechanism and fast acting travel from one position to the next.

## Superior Corrosion Resistance

The body and covers are anodized internally and externally, providing protection against ingress of corrosive atmosphere. Giving more than 336 hours of life in a salt spray bath.

An external epoxy base layer and a second polyurethane paint provides additional protection against aggressive environments. Optional Electroless Nickel Coating of body, covers and pistons.



## Less Air Consumption

The **COMPACT** actuator saves energy; it gives maximum torque for minimum air consumption. The small piston diameter of the **COMPACT** actuator shortens the pistons stroke and thus serves to minimize the volume of air required for generating specific torque.



## Balanced Forces

The cube-shaped configuration of the **COMPACT** positions the pistons so that each piston develops thrust along its own axis, rather than the off-axis thrust, that results from the geometry of most other actuator configurations. Piston side loading, caused by off-axis thrust, does not occur, thus resulting in less stress on the seals.



## Nested Springs

The **COMPACT** four-spring chambers can use up to three different spring sizes, which are nested between the covers and pistons and are aligned by centering rings. Each spring is wound in the opposite direction to its neighbor to avoid entanglement. As there are four cylinders, there are many more spring combination possibilities than with double piston actuators. This results in better solutions for any air supply pressure required. Special painting of the springs provides higher corrosion resistance to the environment, giving more than 250 hours of life in a salt spray bath.



## Spring cartridge

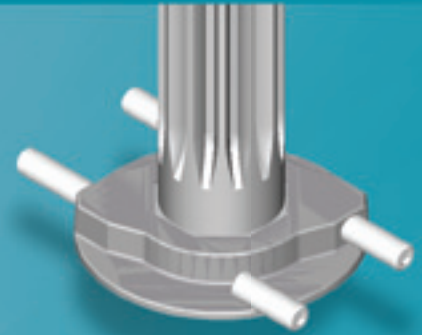
The modified spring set design improves the torque characteristics of the **COMPACT** actuator. A spring cartridge actuator is used only in the C30M, C35M, C45M, C60M and the C75M actuator. Modifications include deeper covers to allow sufficient volume for the spring cartridge, thereby increasing the overall dimensions of the actuator. The spring cartridge is comprised of a shaped tube, in which the extended springs have been preloaded, and held safely in place by two rigid discs. Changing a spring set configuration in this design requires changing a complete cartridge.

## Less Wear

With its unique 4-piston design, the **COMPACT** achieves a more uniform load distribution than do single and double piston actuators, therefore greatly reducing gear wear at the points of contact between rack and pinion. The force-balanced piston with its shorter stroke prevents uneven wear of O-rings, gear and pistons. This eliminates the need for bearings and reduces the number of soft parts, thereby resulting in longer maintenance schedules and low cost of repair kits. The high surface finish of the four cylinder is protected from wear due to the hardened surface created by the anodizing treatment.

## Limit Stop

The pinion and stop rotation can be adjusted by four large diameter adjustable set screws diametrically opposed and threaded into the actuator body. Each opposing pair of screws exerts simultaneous and equal forces on opposite sides of the stop when the rotation limit is reached, thus, no off-center forces are generated. The stop allows for  $\pm 5^\circ$  of rotational adjustment in both directions of travel. Any intermediate position can be achieved with a longer set of stop screws. This feature is built into the actuator stop mechanism and eliminates the need for additional plates and screws. The stop material is St.St. for better wear and corrosion resistance.



## Indicator & Puck



A highly visible indicator with flow direction arrows is snapped to the pinion providing easy identification of valve position. The indicator snap-on arrows allow true positioning of any type of valve porting.

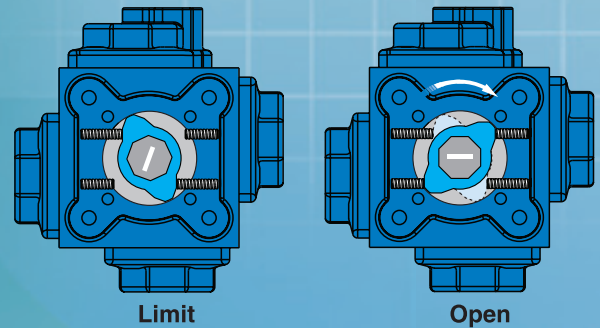
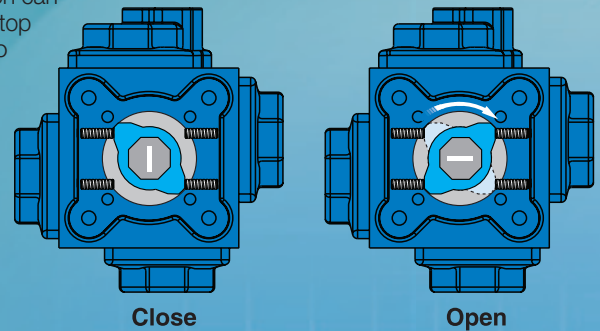
A puck with three position signaling inserts and a highly visible indicator with flow direction arrows is bolted to the pinion to provide a cost effective option for valve monitoring.



## Pinion

The pinion has a double-square female drive on its bottom plane for accepting the ISO 5211 or DIN 3337 coupling options. The top plane has the Namur slot for attachment to switches or positioners. There is a machined flat below the Namur interface to provide for manual operation of the actuator by use of a wrench.

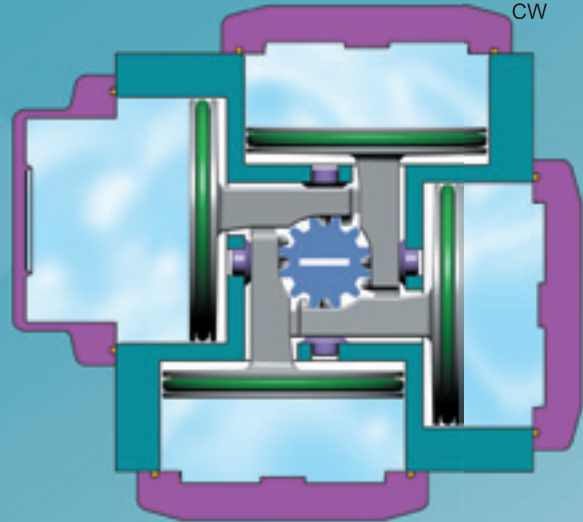
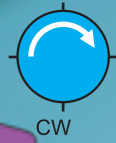
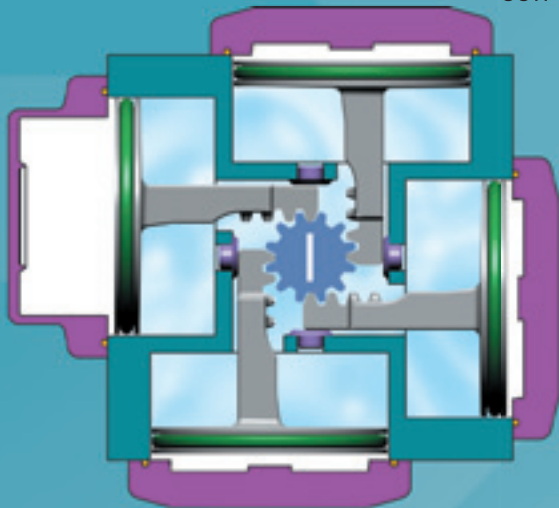
The pinion is made from carbon steel with EN plating which gives a hard wearing surface with added protection against corrosive environments.



The **COMPACT** actuator transforms the linear motion of its pneumatic pistons into rotary motion via 4 gear racks that drive the central pinion. Air Supply, to drive the pistons, flows into port A of the NAMUR cover: Port A is connected to the center chamber and port B is connected to the four outside chambers.



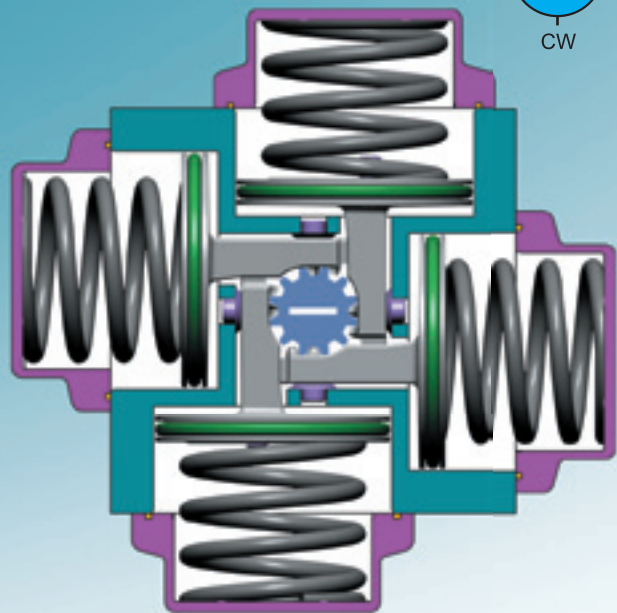
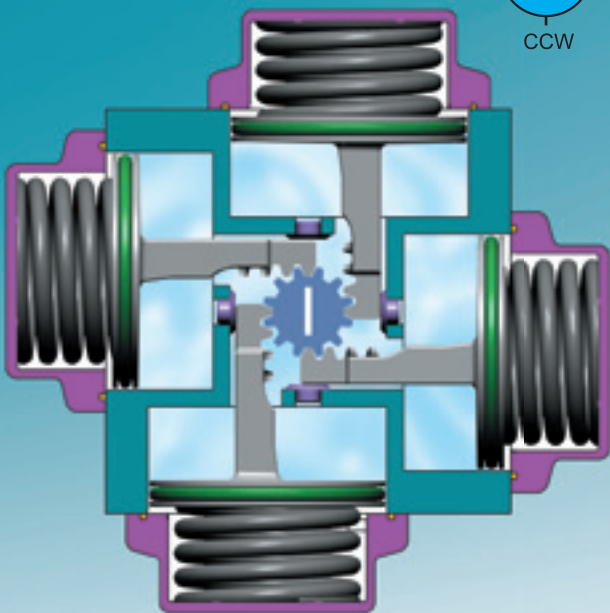
### Double Acting



**Pressure entering Port A to open:**  
Center chamber pressurized. Pistons move outward.  
Pinion rotates counter clockwise.

**Pressure entering Port B to close:**  
Outside chambers pressurized. Pistons move inward.  
Pinion rotates clockwise.

### Spring Return

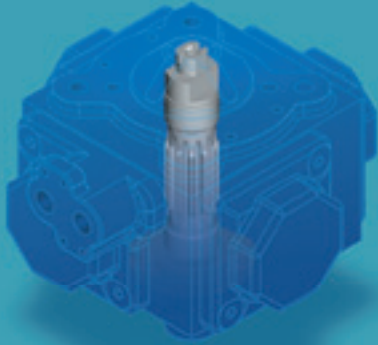


**Pressure entering Port A to open:**  
Center chamber pressurized. Pistons move outward.  
Springs are compressed. Pinion rotates counter clockwise.

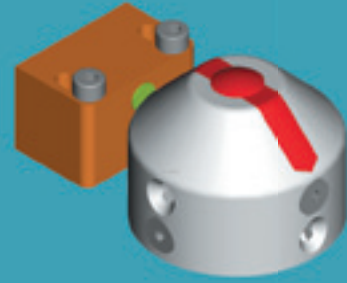
**Pressure exiting Port A to close:**  
Air released from center chamber. Springs drive pistons inward. Pinion rotates clockwise.



# MAIN FEATURES

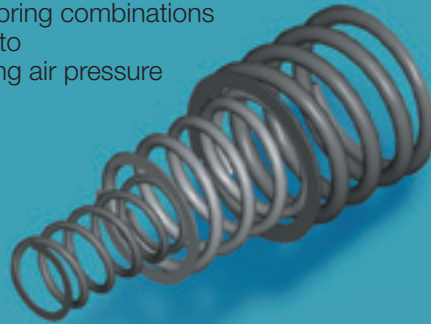


**NAMUR** output drive for limit switches and positioners



**NAMUR VDI/VDE 3845** connection to limit switches

**Springs** painted for protection and fitted coaxially in a chambers various spring combinations available to suit varying air pressure



**Rugged** body construction, anodized and with double layer coating for protection against corrosion

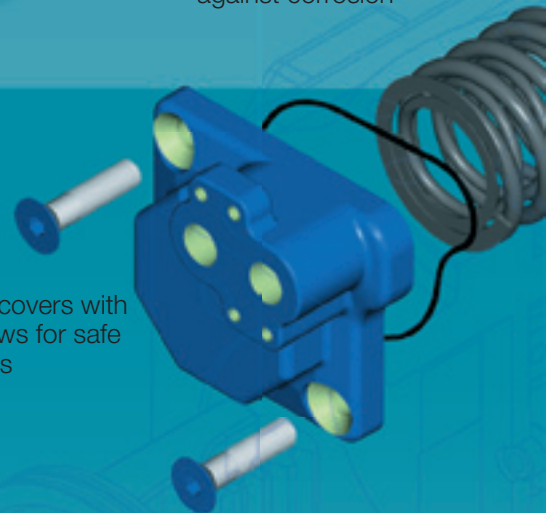


**Smaller** in overall size compared to double piston actuators

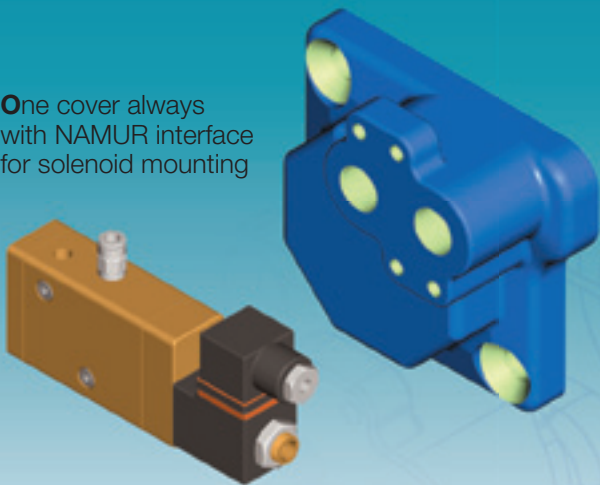


**Spring cartridge**  
The modified spring set design improves the torque characteristics of the **COMPACT** actuator

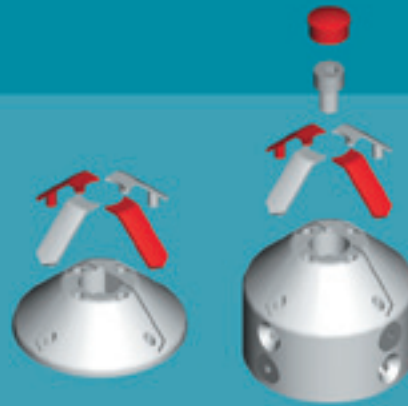
**Spring return** covers with extended screws for safe relief of springs



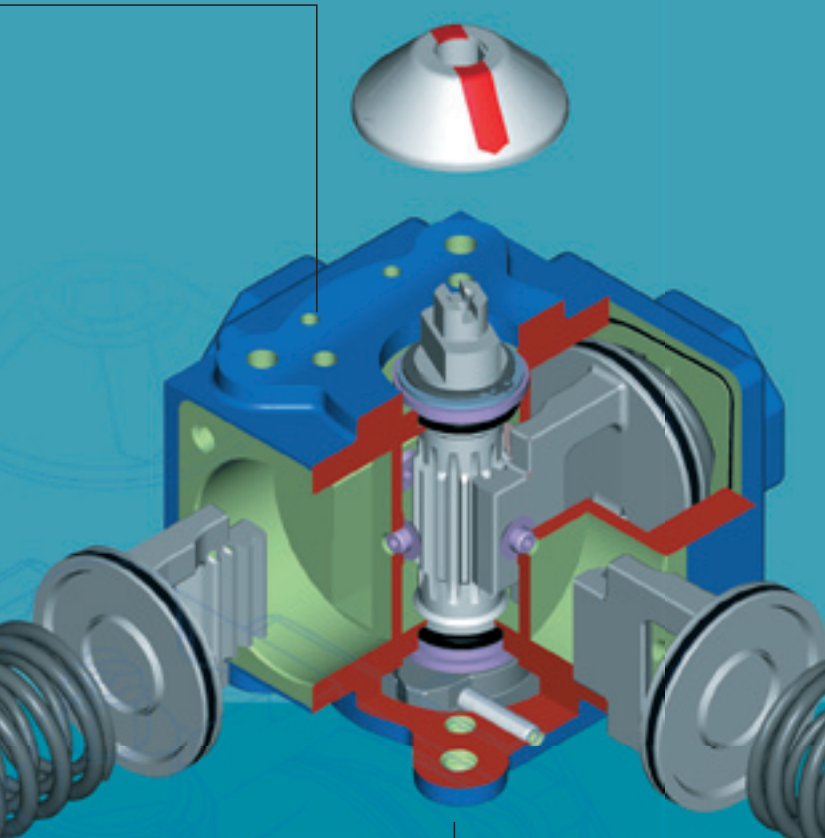
**One cover** always with NAMUR interface for solenoid mounting



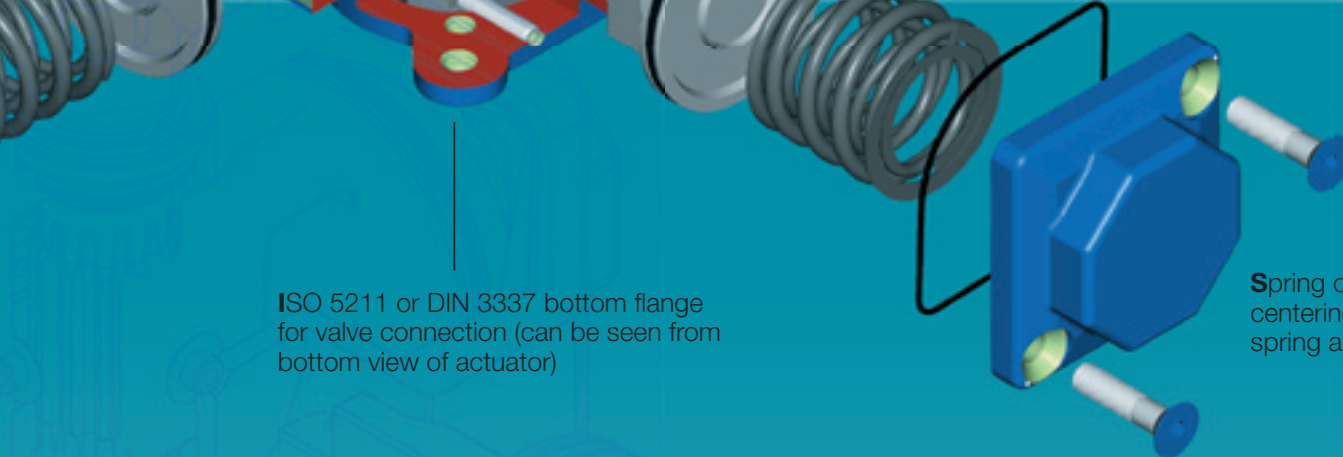
Limit stop for open-close and intermediate positions



**Visible position indicator** with coloured arrows and a high profile puck for limit switches



**4 pistons symmetrically driving a central pinion** with a balanced construction eliminates side loads

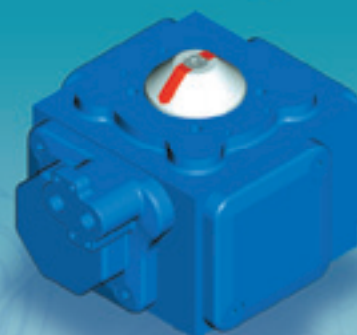


**ISO 5211 or DIN 3337 bottom flange** for valve connection (can be seen from bottom view of actuator)

**Spring covers with centering rings** for spring alignment



**Patented 4-piston actuator** provides double the torque output than a dual piston actuator



**COMPACT** size with flat covers for double acting applications and minimum air consumption

# Double Acting

## TORQUE METRIC CHART (Nm)

### Spring Return

SIZE	Operating Pressure (bar)						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
C15	10	14	17	19	21	24	27
C20	18	25	32	35	38	45	51
C25	39	52	65	72	79	92	105
C30	62	84	107	119	130	153	176
C35	114	151	190	208	226	265	304
C45	222	297	371	408	445	519	593
C60	527	703	879	967	1,055	1,230	1,406
C75	974	1,299	1,624	1,786	1,948	2,273	2,596

SIZE	Spring Set	Air Stroke - bar (psi)														Spring Stroke	
		3.0 (44)		4 (58)		5 (73)		5.5 (80)		6 (87)		7 (102)		8 (116)			
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
C15	1A	<b>7</b>	<b>4</b>	10	7	13	11	15	12	17	14	20	17	24	21	6	3
	1B			<b>8</b>	<b>4</b>	<b>12</b>	<b>8</b>	13	10	15	11	18	14	22	18	9	5
	1B2					10	5	<b>12</b>	<b>7</b>	<b>13</b>	<b>9</b>	16	11	20	15	12	7
	2									11	6	<b>14</b>	<b>8.5</b>	<b>18</b>	<b>12</b>	15	9
C20	2A			<b>16</b>	<b>10</b>	22	16	26	19	29	22	35	29	41	35	15	9
	2A2B			14	7	<b>20</b>	<b>13</b>	24	16	27	19	33	26	39	32	18	11
	2B					18	10	<b>22</b>	<b>13</b>	<b>25</b>	<b>17</b>	31	23	38	29	21	13
	2C							19	10	<b>22</b>	<b>13</b>	<b>28</b>	<b>19</b>	35	25	25	16
C25	3									19	9	24	15	<b>30</b>	<b>21</b>	29	19
	2A	<b>23</b>	<b>11</b>	36	23	49	36	55	42	62	49	75	62	88	74	28	16
	2A2B			<b>33</b>	<b>19</b>	46	32	53	39	60	45	73	58	86	70	32	18
	2B					<b>43</b>	<b>27</b>	50	34	57	41	70	53	83	66	36	21
C30	2C					38	18	<b>45</b>	<b>24</b>	<b>52</b>	<b>31</b>	64	44	77	56	47	27
	3									47	21	<b>60</b>	<b>34</b>	<b>73</b>	<b>46</b>	57	31
	2A	36	19	57	40	80	62	91	73	102	84	125	107	148	129	42	26
	2A2B			<b>52</b>	<b>30</b>	75	52	86	63	98	74	120	96	143	118	53	31
C30M	2B			48	18	<b>70</b>	<b>43</b>	81	54	93	65	115	87	138	109	62	36
	2C					64	25	<b>73</b>	<b>39</b>	<b>85</b>	<b>50</b>	107	72	130	94	78	44
	3									75	33	<b>98</b>	<b>55</b>	<b>120</b>	<b>77</b>	96	54
	2A	27	19	48	40	70	62	81	73	92	84	113	106	135	128	42	34
C35	2A2B	21	12	<b>42</b>	<b>33</b>	64	55	75	67	85	77	107	99	129	121	49	40
	2B			36	26	<b>57</b>	<b>48</b>	69	60	79	70	101	92	123	114	56	46
	2C					48	36	<b>59</b>	<b>47</b>	<b>69</b>	<b>58</b>	91	80	113	102	69	57
	3									58	44	<b>80</b>	<b>66</b>	<b>102</b>	<b>88</b>	83	68
C35M	2A	<b>75</b>	<b>39</b>	111	74	150	112	168	129	186	147	224	184	262	221	74	38
	2A2B	64	26	<b>100</b>	<b>62</b>	139	99	157	117	175	134	213	171	251	208	87	49
	2B			92	44	<b>130</b>	<b>82</b>	148	99	166	117	204	154	242	191	105	58
	2C							<b>133</b>	<b>68</b>	<b>151</b>	<b>86</b>	189	123	227	160	137	73
C35M	3									135	63	<b>173</b>	<b>100</b>	<b>211</b>	<b>137</b>	161	89
	2A	54	42	89	77	126	114	143	131	160	148	197	185	234	223	70	57
	2A2B	43	28	<b>78</b>	<b>63</b>	115	110	132	117	149	134	186	171	223	209	85	69
	2B			67	49	<b>104</b>	<b>86</b>	121	103	139	120	176	157	213	195	99	80
C45	2C					86	65	<b>103</b>	<b>82</b>	<b>120</b>	<b>99</b>	157	136	194	173	122	100
	3									102	76	<b>139</b>	<b>114</b>	<b>176</b>	<b>151</b>	146	119
	2A	134	60	208	132	280	203	317	239	353	275	426	346	499	417	159	86
	2A2B			<b>197</b>	<b>113</b>	269	184	306	219	342	255	415	326	488	397	179	97
C45M	2B			179	82	<b>252</b>	<b>153</b>	288	188	325	224	398	295	471	366	212	115
	2C					223	102	<b>260</b>	<b>137</b>	<b>296</b>	<b>173</b>	369	244	442	315	265	144
	3									268	122	<b>341</b>	<b>193</b>	<b>414</b>	<b>264</b>	318	173
	2A	90	60	<b>162</b>	<b>131</b>	232	201	267	236	302	271	373	342	443	412	134	107
C45M	2A2B	110	83	<b>181</b>	<b>154</b>	251	225	286	260	321	295	392	365	462	436	160	127
	2B			142	107	<b>213</b>	<b>177</b>	248	213	283	248	353	318	424	388	184	147
	2C					180	136	<b>215</b>	<b>171</b>	<b>250</b>	<b>206</b>	321	277	391	347	228	182
	3									216	163	<b>286</b>	<b>234</b>	<b>357</b>	<b>304</b>	273	218
C60	2A	<b>328</b>	<b>160</b>	501	329	675	498	762	583	848	667	1021	835	1194	1004	360	194
	2A2B			<b>478</b>	<b>285</b>	651	454	738	538	824	623	997	791	1170	960	406	218
	2B			<b>442</b>	<b>221</b>	<b>615</b>	<b>390</b>	702	475	789	559	961	727	1134	896	473	254
	2C					548	268	<b>635</b>	<b>352</b>	<b>721</b>	<b>437</b>	894	605	1067	774	600	323
C60M	3									657	322	<b>830</b>	<b>490</b>	<b>1003</b>	<b>659</b>	720	388
	2A	212	148	379	315	546	483	630	566	714	650	880	816	1047	983	371	304
	2A2B	<b>259</b>	<b>203</b>	<b>426</b>	<b>370</b>	593	537	677	621	760	704	927	871	1094	1038	314	255
	2B			333	261	<b>500</b>	<b>428</b>	583	512	667	595	833	762	1000	929	429	353
C75	2C					411	321	<b>495</b>	<b>404</b>	<b>578</b>	<b>488</b>	744	654	912	821	542	447
	3									502	393	<b>668</b>	<b>559</b>	<b>835</b>	<b>726</b>	642	527
	2A	<b>614</b>	<b>345</b>	935	657	1255	969	1414	1124	1574	1280	1894	1592	2212	1902	615	350
	2A2B			891	582	1211	894	1370	1049	1530	1205	1850	1517	2168	1827	693	395
C75M	2B			820	461	1140	773	1299	928	1459	1084	1779	1396	2097	1706	819	467
	2C					1025	576	1184	632	1344	887	1664	1199	1982	1509	1024	584
	3									1229	691	1549	1003	1867	1313	1229	700
	2A	<b>480</b>	<b>360</b>	789	668	1098	977	1252	1131	1406	1285	1714	1594	2021	1900	596	468
C75M	2A2B	406	269	<b>715</b>	<b>578</b>	1024	887	1177	1041	1331	1195	1640	1503	1947	1810	691	547
	2B			641	488	<b>949</b>	<b>797</b>	1103	951	1257	1104	1566	1413	1873	1720	786	624
	2C					799	606	<b>953</b>	<b>760</b>	<b>1107</b>	<b>913</b>	1415	1222	1722	1529	986	783
	3									959	726	<b>1268</b>	<b>1035</b>	<b>1575</b>	<b>1342</b>	1184	938



# Double Acting

## TORQUE IMPERIAL CHART (in-lb) Spring Return

SIZE	Operating Pressure (psi)						
	40	60	70	80	90	100	120
C15	81	125	149	172	188	207	244
C20	146	229	271	311	351	390	468
C25	317	476	555	639	723	802	961
C30	505	769	914	1,052	1,190	1,334	1,611
C35	928	1,382	1,624	1,848	2,073	2,311	2,780
C45	1,807	2,719	3,170	3,622	4,074	4,525	5,429
C60	4,289	6,436	7,511	8,585	9,659	10,725	12,872
C75	7,926	11,893	13,877	15,856	17,834	19,819	23,767

SIZE	Spring Set	Air Stroke - psi (bar)														Spring Stroke	
		40 (2.8)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		120 (8.3)			
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
C15	1A	<b>56</b>	<b>32</b>	92	64	110	93	133	106	156	128	174	148	220	192	53	27
	1B			<b>73</b>	<b>37</b>	<b>102</b>	<b>68</b>	115	89	137	101	156	121	201	165	80	44
	1B2					85	42	<b>106</b>	<b>62</b>	<b>119</b>	<b>82</b>	139	95	183	137	106	62
	2									101	55	<b>121</b>	<b>74</b>	<b>165</b>	<b>110</b>	133	80
C20	2A			<b>146</b>	<b>92</b>	187	136	230	168	266	201	304	252	375	320	133	80
	2A2B			128	64	<b>170</b>	<b>110</b>	212	142	247	174	286	226	357	293	159	97
	2B					<b>153</b>	<b>85</b>	<b>195</b>	<b>115</b>	229	156	269	200	348	266	186	115
	2C							168	89	<b>201</b>	<b>119</b>	<b>243</b>	<b>165</b>	320	229	221	142
	3									174	82	208	130	<b>275</b>	<b>192</b>	257	168
C25	2A	185	89	330	211	416	306	487	372	568	449	651	538	806	677	248	142
	2A2B			<b>302</b>	<b>174</b>	390	272	469	345	549	412	633	503	787	641	283	159
	2B					<b>365</b>	<b>229</b>	443	301	522	375	607	460	760	604	319	186
	2C					322	153	<b>398</b>	<b>212</b>	<b>476</b>	<b>284</b>	555	382	705	513	416	239
	3									430	192	<b>521</b>	<b>295</b>	<b>668</b>	<b>421</b>	504	274
C30	2A	290	153	522	366	679	526	805	646	934	769	1085	928	1355	1181	372	230
	2A2B			<b>476</b>	<b>275</b>	636	441	761	558	897	677	1041	833	1309	1080	469	274
	2B			439	165	<b>594</b>	<b>365</b>	717	478	851	595	998	755	1263	998	549	319
	2C					543	212	<b>646</b>	<b>345</b>	<b>778</b>	<b>458</b>	928	625	1190	861	690	389
	3									687	302	<b>850</b>	<b>477</b>	<b>1099</b>	<b>705</b>	850	478
C30M	2A	217	153	439	366	594	526	717	646	842	769	980	920	1236	1172	372	301
	2A2B	169	97	<b>385</b>	<b>302</b>	543	467	664	593	778	705	928	859	1181	1108	434	354
	2B			330	238	<b>484</b>	<b>407</b>	611	531	723	641	876	798	1126	1044	496	407
	2C					407	306	<b>522</b>	<b>416</b>	<b>632</b>	<b>531</b>	790	694	1035	934	611	504
	3									531	403	<b>694</b>	<b>573</b>	<b>934</b>	<b>806</b>	735	602
C35	2A	603	314	1016	677	1273	950	1487	1142	1703	1346	1944	1596	2399	2023	655	336
	2A2B	515	209	<b>916</b>	<b>568</b>	1180	840	1389	1035	1602	1227	1848	1484	2298	1904	770	434
	2B			842	403	<b>1103</b>	<b>696</b>	1310	876	1520	1071	1770	1336	2216	1749	929	513
	2C							<b>1177</b>	<b>602</b>	<b>1382</b>	<b>787</b>	1640	1067	2078	1465	1212	646
	3									1236	577	<b>1501</b>	<b>868</b>	<b>1932</b>	<b>1254</b>	1425	788
C35M	2A	434	338	815	705	1069	967	1266	1159	1465	1355	1709	1605	2142	2042	620	504
	2A2B	346	225	<b>714</b>	<b>577</b>	976	933	1168	1035	1364	1227	1614	1484	2042	1913	752	611
	2B			613	449	<b>883</b>	<b>730</b>	1071	912	1273	1099	1527	1362	1950	1785	876	708
	2C					730	552	<b>912</b>	<b>726</b>	<b>1099</b>	<b>906</b>	1362	1180	1776	1584	1080	885
	3									934	696	<b>1206</b>	<b>989</b>	<b>1611</b>	<b>1382</b>	1292	1053
C45	2A	1078	483	1904	1208	2376	1723	2805	2115	3232	2518	3696	3002	4568	3818	1407	761
	2A2B			<b>1804</b>	<b>1035</b>	2283	1561	2708	1938	3131	2335	3601	2829	4468	3635	1584	858
	2B			1639	751	<b>2139</b>	<b>1298</b>	2549	1664	2975	2051	3453	2560	4312	3351	1876	1018
	2C					1892	866	<b>2301</b>	<b>1212</b>	<b>2710</b>	<b>1584</b>	3202	2117	4047	2884	2345	1274
	3									2454	1117	<b>2959</b>	<b>1675</b>	<b>3790</b>	<b>2417</b>	2814	1531
C45M	2A	724	483	1483	1199	1969	1706	2363	2089	2765	2481	3236	2967	4056	3772	1186	947
	2A2B	885	668	<b>1657</b>	<b>1410</b>	2130	1909	2531	2301	2939	2701	3401	3167	4230	3992	1416	1124
	2B			1300	980	<b>1808</b>	<b>1502</b>	2195	1885	2591	2270	3063	2759	3882	3552	1628	1301
	2C					1528	1154	<b>1903</b>	<b>1513</b>	<b>2289</b>	<b>1886</b>	2785	2403	3580	3177	2018	1611
	3									1978	1492	<b>2481</b>	<b>2030</b>	<b>3268</b>	<b>2783</b>	2416	1929
C60	2A	2639	1287	4587	3012	5728	4226	6744	5160	7764	6107	8859	7245	10931	9192	3186	1717
	2A2B			<b>4376</b>	<b>2609</b>	5525	3853	6531	4761	7544	5704	8650	6863	10712	8789	3593	1929
	2B			4047	2023	<b>5219</b>	<b>3310</b>	6213	4204	7223	5118	8338	6308	10382	8203	4186	2248
	2C					4650	2274	<b>5620</b>	<b>3115</b>	<b>6601</b>	<b>4001</b>	7757	5249	9769	7086	5310	2859
	3									6015	2948	<b>7201</b>	<b>4251</b>	<b>9183</b>	<b>6033</b>	6372	3434
C60M	2A	1706	1191	3470	2884	4634	4099	5576	5009	6537	5951	7635	7080	9585	9000	3283	2690
	2A2B	2084	1633	<b>3900</b>	<b>3387</b>	5032	4557	5991	5496	6958	6445	8043	7557	10016	9503	2779	2257
	2B			3049	2390	<b>4243</b>	<b>3632</b>	5160	4531	6107	5447	7228	6611	9155	8505	3797	3124
	2C					3488	2724	<b>4381</b>	<b>3575</b>	<b>5292</b>	<b>4468</b>	6455	5674	8350	7516	4797	3956
	3									4596	3598	<b>5796</b>	<b>4850</b>	<b>7645</b>	<b>6647</b>	5682	4664
C75	2A	4940	2776	8560	6015	10650	8223	12514	9947	14410	11719	16433	13813	20251	17413	5443	3098
	2A2B			<b>8157</b>	<b>5328</b>	10277	7587	12125	9284	14007	11032	16051	13162	19848	16727	6133	3496
	2B			7507	4221	<b>9674</b>	<b>6560</b>	11496	8213	13357	9924	15435	12112	19198	15619	7248	4133
	2C					8698	4888	<b>10478</b>	<b>5593</b>	12305	8121	14438	10403	18146	13815	9062	5168
	3									<b>11252</b>	<b>6326</b>	<b>13440</b>	<b>8703</b>	<b>17093</b>	<b>12021</b>	10877	6195
C75M	2A	3862	2896	7223	6116	9318	8291	11080	10009	12872	11764	14871	13830	18503	17395	5275	4142
	2A2B	3266	2164	<b>6546</b>	<b>5292</b>	8690	7527	10416	9213	12186	10940	14229	13041	17825	16571	6115	4841
	2B			5868	4468	<b>8054</b>	<b>6764</b>	9762	8416	11508	10107	13587	12260	17148	15747	6956	5522
	2C					6781	5143	<b>8434</b>	<b>6726</b>	<b>10135</b>	<b>8359</b>	12277	10603	15765	13998	8726	6930
	3									8780	6647	<b>11002</b>	<b>8980</b>	<b>14419</b>	<b>12286</b>	10478	8301

## Technical Data

Actuator size		Unit	C15	C20	C25	C30	C30M	C35	C35M	C45	C45M	C60	C60M	C75	C75M
Weight Spring Return	Kg	1.1	1.9	3.5	5	6.1	9	10.4	15	16.7	35	39.4	64	72	
	Lb	2.4	4.2	7.7	11	13.4	19.8	22	33.1	37.4	77.2	86	141.1	158	
Weight Double Acting	Kg	0.9	1.5	2.6	4.4	-	7.1	-	11	-	26	-	51	-	
	Lb	1.98	3.3	6.2	9.7	-	15.7	-	24.3	-	57.3	-	112.4	-	
Air Consumption per stroke Actual Volume	ccw	Litre	0.07	0.12	0.25	0.44	0.44	0.74	0.74	1.33	1.33	3.2	3.2	5.76	5.76
	cw		0.09	0.15	0.33	0.54	-	0.8	-	1.33	-	3.2	-	5.76	-
	Total		0.16	0.27	0.58	0.98	-	1.54	-	2.66	-	6.4	-	11.52	-
Air Consumption per stroke Actual Volume	ccw	In <sup>3</sup>	4.3	7.3	15	27	27	45	45	81	81	195	195	351	351
	cw		5.5	9.2	20	33	-	49	-	81	-	195	-	351	-
	Total		9.8	16.5	35	60	-	94	-	162	-	391	-	703	-
Stroke Time with S.V. with 0.9 Cv at 80 psi	D/A	Sec.	0.1	0.13	0.2	0.24	-	0.4	-	0.75	-	1.5	-	2.5	-
	S/R Open		0.1	0.15	0.23	0.29	0.3	0.54	0.6	1	1.1	2.2	2.4	3.7	4
	S/R Close		0.15	0.15	0.23	0.28	0.28	0.48	0.5	0.77	0.8	1.6	1.6	2.9	2.9

### Pressure Range:

20-120 PSI (1.5 - 8 bar) for DA actuators  
30-120 PSI (2- 8 bar) for SR actuators

### Operating Temperature:

Buna N: -20°C to 80°C (-4°F to 176°F)  
Viton: -20°C to 120°C (-4°F to 250°F)  
EPDM: -40°C to 80°C (-40°F to 176°F)  
LT NBR FX428: -60°C to 100°C (-67°F to 213°F)

### Operating COMPACT with Gas

Upon special request the 4-piston COMPACT actuator can be operated with other gaseous media besides air.  
For technical support in selecting special actuators for gases other than air please consult the Habonim engineering team.

## NAMUR & ISO Interface

### NAMUR VDI/VDE 3845

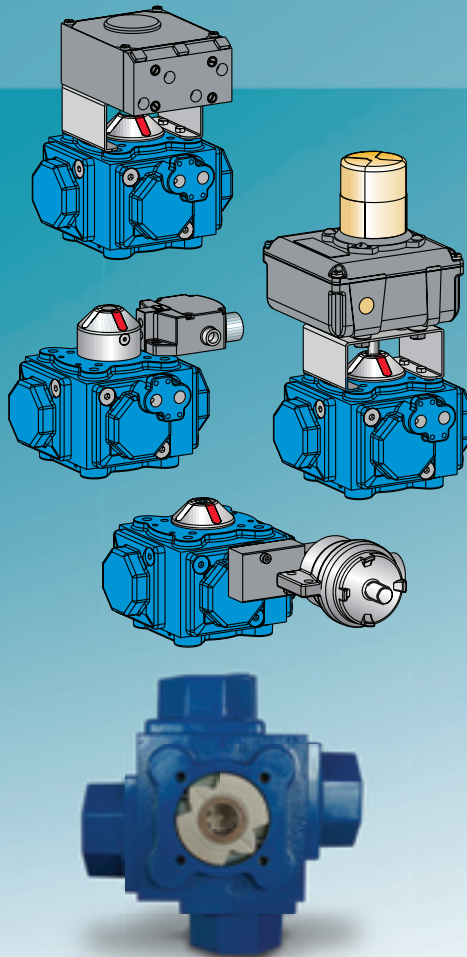
This standard provides for a range of accessories such as limit switches, pucks, indicators and positioners which have VDI/VDE interface to be easily mounted onto the actuator top face.

### NAMUR Solenoid Mounting

One of the four covers of the actuator incorporates a pad for solenoid mounting according to the NAMUR international standard. Solenoids of any brand, conforming to the NAMUR interface can be directly mounted to the actuators. This simplifies the installation of solenoids and eliminates additional piping. It also allows quick actuation response as pressurized air supply is available at the port entrance.

### ISO 5211 or DIN 3337

The actuator bottom flange is in accordance with ISO 5211 (or DIN 3337) international standard and incorporates a star shaped female drive for flexibility to fit various valve output shafts. The valve can be attached by a bracket or mounted directly onto the actuator, using one of the various ISO hole patterns.



## Spring Combinations

OUTER  
MIDDLE  
INNER



### C15 ONLY

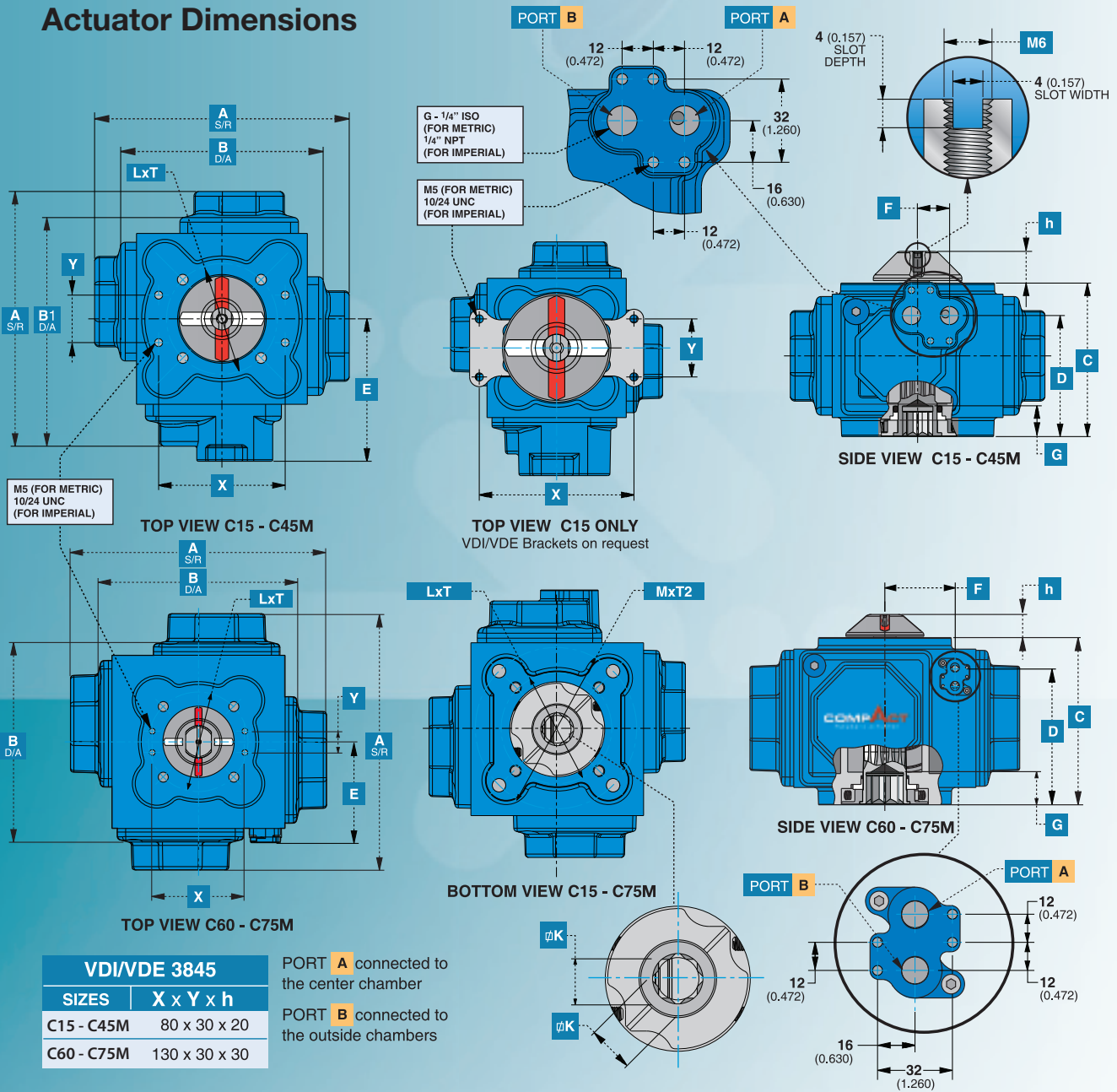
Code	Spring Combinations
1A	
1B	
1B2	
2	

### C20-C75M

Code	Spring Combinations
2AB	
2A	
2A2B	
2B	
2A3	
2C	
2C3	
3	

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.

# Actuator Dimensions



VDI/VDE 3845		
SIZES	X x Y x h	
C15 - C45M	80 x 30 x 20	
C60 - C75M	130 x 30 x 30	

**PORT A** connected to the center chamber  
**PORT B** connected to the outside chambers

SIZE	A S/R		B D/A		B1 D/A		C		D		E		F		G		Øk		L PCD		T Thread		M PCD (2)		T2	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
C15	110	4.31	86	3.39	97.8	3.85	68.8	2.71	50.8	2	66	2.6	16	0.63	13.5	0.53	9	0.35	50 (F05)	1.97 (F05)	M6x8	1/4"X0.314	-	-	-	-
C20	131	5.17	102	4.03	117	4.6	80.5	3.17	61.5	2.42	77.2	3.04	16.5	0.65	15	0.59	11	0.43	50 (F05)	1.97 (F05)	M6x8	1/4"X0.314	70 (F07)	2.76 (F07)	M8x11	5/16"X0.43
C25	161	6.34	132	5.24	147	5.79	97	3.82	76.5	3.01	90	3.54	20	0.79	19.5	0.77	14	0.55	70 (F07)	2.76 (F07)	M8x9	5/16"X0.354	102 (F10)	4.02 (F10)	M10X11	3/8"X0.43
C30	186	7.33	151	5.94	169	6.64	116	4.58	93.4	3.68	105	4.15	22.3	0.88	22	0.87	17	0.67	70 (F07)	2.76 (F07)	M8x11	5/16"X0.43	102 (F10)	4.02 (F10)	M10X12	3/8"X0.47
C30M	216	8.50	-	-	-	-	116	4.58	93.4	3.68	120	4.72	22.3	0.88	22	0.87	17	0.67	70 (F07)	2.76 (F07)	M8x11	5/16"X0.43	102 (F10)	4.02 (F10)	M10X12	3/8"X0.47
C35	222	8.74	182	7.15	202	7.94	135	5.31	102	4.02	114	4.48	22.5	0.89	26	1.02	22	0.87	102 (F10)	4.02 (F10)	M10x13	3/8"X0.51	-	-	-	-
C35M	256	10.07	-	-	-	-	135	5.31	102	4.02	131	5.15	22.5	0.89	26	1.02	22	0.87	102 (F10)	4.02 (F10)	M10x13	3/8"X0.51	-	-	-	-
C45	269	10.59	221	8.7	245	9.65	164	6.46	127	5.00	147	5.79	31	1.22	33	1.3	27	1.06	125 (F12)	4.92 (F12)	M12x15	1/2"X0.59	102" (F10)	4.02" (F10)	M10X15	3/8"X0.59
C45M	303	11.93	-	-	-	-	164	6.46	127	5.00	164	6.45	31	1.22	33	1.3	27	1.06	125 (F12)	4.92 (F12)	M12x15	1/2"X0.59	102" (F10)	4.02" (F10)	M10X15	3/8"X0.59
C60	360	14.17	285	11.22	-	-	218	8.58	180	7.09	141	5.57	94	3.7	43	1.69	36	1.42	140 (F14)	5.51 (F14)	M16x18	5/8"X0.71	-	-	-	-
C60M	390	15.35	-	-	-	-	218	8.58	180	7.09	141	5.57	94	3.7	43	1.69	36	1.42	140 (F14)	5.51 (F14)	M16x18	5/8"X0.71	-	-	-	-
C75	437	17.2	342	13.46	-	-	270	10.63	223	8.76	166	6.54	110	4.33	43	1.69	36	1.42	140 (F14)	5.51 (F14)	M16x18	5/8"X0.71	-	-	-	-
C75M	467	18.38	-	-	-	-	270	10.63	223	8.76	166	6.54	110	4.33	43	1.69	36	1.42	140 (F14)	5.51 (F14)	M16x18	5/8"X0.71	-	-	-	-

\* The C45 bottom PCD can be either F12 or F10, but not both. The standard is F12. When ordering C45 with F10 you must add it to the code.

## NAMUR & ISO Interface

An extensive range of accessories such as Solenoids, Positioners and Limit Switches are available for direct mounting to the **COMPACT** actuator. As standard, all accessories which have connections that comply with ISO 5211 or DIN 3337 and VDI/VDE 3845 (NAMUR) mounting can be connected to the actuator.



## Safety Features

The **COMPACT** safety features are built in and ensure a secure and safe operation whereby assembly and dismantling of the actuator becomes a simple task. Long cover bolts for spring return actuators relieve the spring load before they disengage from their threads. Before pistons can be removed, the stop screw must be released and the pinion removed, thus ensuring that any trapped pressure in the body will escape and will not become a hazard.



## Quality

The **COMPACT** is manufactured under ISO 9001 certification. All body and cover castings are identified by a stamped heat code.

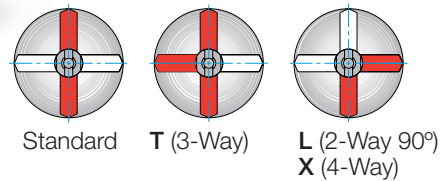
## Dome

The Dome is a weatherproof enclosure for the **COMPACT** pneumatic actuator and a variety of ancillary equipment, and represents a cost effective alternative to stainless steel actuators and all of the stainless ancillary equipment required in those applications.

The Dome is ideal for very corrosive environments with frequent caustic wash-downs, as well as clean antiseptic applications where mostly stainless equipment is required. The Dome can be mounted on any quarter turn valve, Ball, Butterfly or Plug.



## Flow Directions



## How to Order

When ordering the COMPACT series actuator, please give all the information as specified below.

SIZE		TYPE	SPRINGS SET			THREADS	INDICATOR	OPTIONS	
C15	C45	<b>SR</b> - Spring Return	C15	C20 to C75M		Imperial	Default Standard White with Red arrows	V	Viton O-rings
C20	C45M	<b>DA</b> - Double Acting	1B	2A	2C		D Red with White arrows	E	EPDM O-rings
C25	C60		1B2	2A2B	3		P Puck	N	Electroless Nickel Plating
C30	C60M		2	2B			Flow	U	UHMWPE
C30M	C75		For more details of spring set combinations see page 10				Default Straight	LT	FX428 special NBR compound for low temperature
C35	C75M						T 3-Way	RFS	Reverse Fail Safe for CCW rotation
C35M							L 2-Way 90 Deg		
							X 4-way		

### Examples:

**C35 SR 2C-N** Size C35, spring return, 2C spring set, metric thread, standard indicator, electroless nickel coating.

**C60 DA I-DT-E** Size C60, double acting, imperial thread, indicator red with white arrows, flow 3-Way, EPDM O-rings.

In accordance with our policy to strive for continuous improvement of the product, we reserve the right to alter the dimensions, technical data and information included in this catalogue when required.  
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