



Rotary Actuator

IC Series

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Code Guide

Actuator Model Code

Example:

IC10 - 25 - 360 - Q F Y J - E

1

2

3

4

5

6

7

1 Series	IC10	IC20	IC30	IC40
2 Torque (output Torque/100) in Nm	2, 3, 6, 10, 16, 27	5, 9, 16, 27, 72	19, 28, 47, 73, 105, 140, 180, 240	28, 50, 67
3 Angle (other angles available)	180°, 360°	180°	180°, 360°	220°
4 Output	Q front flange	Q front flange S double flange	Q front flange S double flange Z shaft output	H spindle
5 Mount	H rear flange	D foot M straddle	D foot H rear flange Q front flange D rail	Q front flange
6 Counter-balance Valve	Y with valve W without valve	Y with valve W without valve	Y with valve W without valve	Y with valve W without valve
7 Thread Pattern	BLANK metric E imperial	BLANK metric E imperial	BLANK metric E imperial	BLANK metric E imperial

Series Overview

Operation Information for Standard Series

IC10 Series

Rotation	180°, 360°
Max Drive Torque	180 - 2700NM
Max Holding Torque	630 - 9400NM
Max Moment	560 - 11200NM
Mounting	Flange

IC10 Series



IC20 Series

Rotation	180°
Max Drive Torque	500 - 4200 NM
Max Holding Torque	1300 - 10500 NM
Max Straddle Moment	2500 - 31600 NM
Max Cantilever Moment	1360 - 15800 NM
Mounting	Foot

IC20 Series



IC30 Series

Rotation	180°, 360°
Max Drive Torque	1900 - 24000 NM
Max Holding Torque	4900 - 59000 NM
Max Straddle Moment	19200 - 256000 NM
Max Cantilever Moment	5200 - 72900 NM
Mounting	Foot, Flange

IC30 Series



IC40 Series

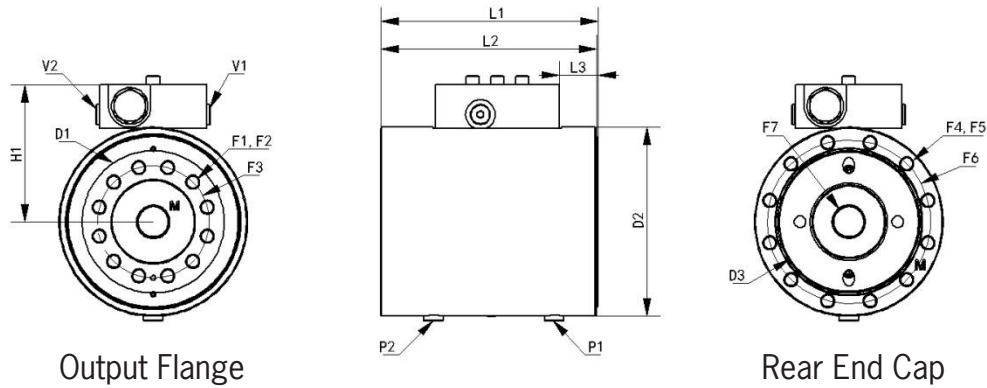
Rotation	200°, 220°
Max Drive Torque	2800 - 6700 NM
Max Holding Torque	6100 - 14300 NM
Max Straddle Moment	4200 - 10100 NM
Mounting	Foot

IC40 Series



IC10 Series

Technical Data

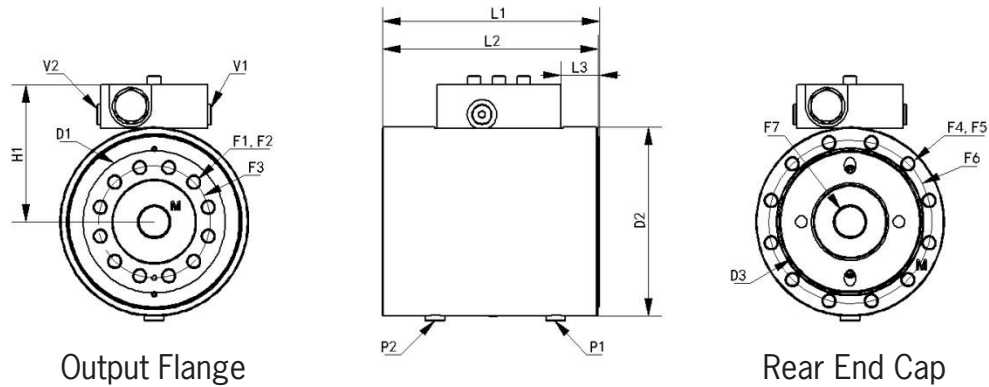


IC10 Series - Imperial (Metric)							
Model		2	3	6	10	16	27
Drive Torque	in-lbs at 3,045psi (Nm at 21MPa)	1,590 (180)	2,830 (320)	5,310 (600)	8850 (1,000)	14,160 (1,600)	23,890 (2,700)
Holding Torque	in-lbs at 3,045psi (Nm at 21MPa)	5,570 (630)	10,620 (1,200)	16,810 (1,900)	33,630 (3,800)	50,440 (5,700)	89,190 (9,400)
Max Cantilever Moment	in-lbs (Nm)	4,950 (560)	8,850 (1,000)	19,470 (2,200)	49,560 (5,600)	79,650 (9,000)	99,120 (11,200)
Radial Capacity	lbs (kg)	1,980 (900)	2,970 (1,350)	4,070 (1,850)	7,930 (3,600)	10,970 (4,980)	14,770 (6,700)
Axial Capacity	lbs (kg)	1,980 (900)	2,970 (1,350)	4,070 (1,850)	7,930 (3,600)	10,970 (4,980)	14,770 (6,700)
Displacement	180° cu in (cc)	3.9 (63.9)	7.4 (121)	11.7 (192)	22.3 (365)	33.7 (552)	55.8 (914)
	360° cu in (cc)		14.8 (243)	23.4 (384)	44.7 (733)	67.4 (1,105)	111.6 (1,829)
Weight	180° lbs (kg)	14.1 (6.4)	22.0 (10)	31.3 (14.2)	57.3 (26)	95.5 (43.3)	125.7 (57)
	360° lbs (kg)		28.2 (12.8)	42.3 (19.2)	77.2 (35)	120.2 (54.5)	183.0 (83)
D1 Mounting Dia	in (mm)	3.0 (77.2)	3.5 (89)	4.0 (102)	5.0 (127)	5.8 (148)	7.3 (185)
D2 Housing Dia	in (mm)	3.9 (100)	4.7 (119)	5.3 (135)	6.7 (170)	7.8 (198)	8.9 (226)

* Specific chart for reference only, please consult drawing for actual value and tolerance.

IC10 Series (Continued)

Technical Data

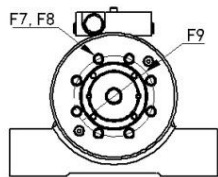


IC10 Series - Imperial (Metric)							
Model		2	3	6	10	16	27
F1 Tapped Hole	in (mm)	5/16"-18 UFC (M8 X 1.25)	5/16"-18 UFC (M8 X 1.25)	3/8"-16 UFC (M10 X 1.5)	1/2"-13 UFC (M12 X 1.75)	1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)
F2 No. Tapped Holes	QTY	8	8	12	12	12	12
F3 Bolt Circle Diameter, Shaft	in (mm)	2.125 (54)	2.875 (73)	3.125 (80)	4.0 (102)	5.0 (127)	5.5 (140)
F4 Tapped Hole	in (mm)	5/16"-18 UFC (M8 X 1.25)	5/16"-18 UFC (M8 X 1.25)	3/8"-16 UFC (M10 X 1.5)	1/2"-13 UFC (M12 X 1.75)	1/2"-13 UFC (M12 X 1.75)	1/2"-13 UFC (M12 X 1.75)
F5 No. Tapped Holes	QTY	8	8	12	12	12	12
F6 Bolt Circle Diameter, Housing	in (mm)	3.386 (86)	4.055 (103)	4.605 (117)	5.940 (151)	6.885 (175)	7.990 (203)
F7 Dia of Mount	in (mm)	0.6 (14.3)	0.7 (17)	0.8 (21.4)	1.4 (35.7)	1.8 (45.7)	2.6 (66.7)
H1 Center Line to Valve Top	in (mm)	3.1 (80)	3.5 (90)	3.9 (98)	4.5 (115)	5.1 (129)	5.6 (143)
L1 Length	180° in (mm)	5.5 (140)	5.6 (143)	6.1 (156)	7.2 (184)	8.8 (224)	9.5 (241)
	360° in (mm)		7.4 (189)	8.3 (212)	10.1 (258)	12.1 (311)	13.5 (346)
L2 Length	180° in (mm)	5.4 (138)	5.6 (142)	6.1 (154)	7.2 (182)	8.7 (221)	9.4 (239)
	360° in (mm)		7.4 (188)	8.3 (211)	10.1 (256)	12.1 (308)	13.5 (344)
L3 Distance to Valve	180° in (mm)	1.0 (25.4)	1.1 (26.9)	1.1 (27.7)	1.1 (27.9)	1.5 (38.6)	1.7 (43.9)
	360° in (mm)		0.9 (22.6)	1.0 (24.6)	1.7 (42.7)	2.4 (60.2)	2.8 (70.4)
P1 P2 Oil Port, Housing		ISO-11926 SAE Series. Sizes are 7/16. (ISO-1179-1 BSPP 'G' Series. Sizes are 1/8.) See drawing for details.					
V1 V2 Oil Port, Valve		ISO-11926 SAE Series. Sizes are 7/16. (ISO-1179-1 BSPP 'G' Series. Sizes are 1/8.) See drawing for details.					

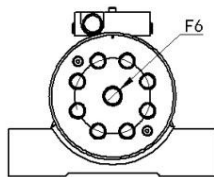
* Specific chart for reference only, please consult drawing for actual value and tolerance.

IC20 Series

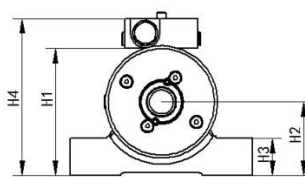
Technical Data



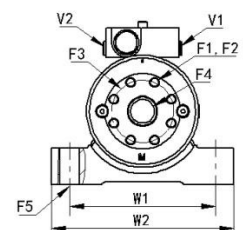
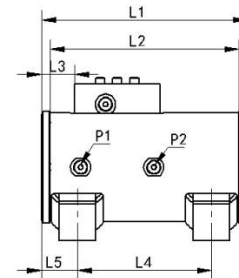
Rear End Cap



Output Flange



Rear End Cap



Output Flange

IC20 Series - Imperial (Metric)						
Model		5	9	16	27	42
Drive Torque	in-lbs at 3,045psi (Nm at 21MPa)	4,420 (500)	7,960 (900)	14,160 (1,600)	23,710 (2,680)	37,170 (4,200)
Holding Torque	in-lbs at 3,045psi (Nm at 21MPa)	11,500 (1,300)	21,240 (2,400)	38,940 (4,400)	62,840 (7,100)	92,930 (10,500)
Max Straddle Moment	in-lbs (Nm)	22,120 (2,500)	39,820 (4,500)	90,270 (10,200)	145,150 (16,400)	279,680 (31,600)
Max Cantilever Moment	in-lbs (Nm)	12,030 (1,360)	21,940 (2,480)	47,970 (5,420)	100,010 (11,300)	139,840 (15,800)
Radial Capacity	lbs (kg)	3,040 (1,380)	4,690 (2130)	9,230 (4,190)	12,300 (5,580)	21,010 (9,530)
Axial Capacity	lbs (kg)	1,100 (500)	1,490 (680)	2,200 (1,000)	3,080 (1,400)	3,900 (1,770)
Displacement	180° cu in (cc)	8.1 (132)	14.3 (234)	26.6 (436)	44.3 (726)	65.3 (1,070)
Weight	180° lbs (kg)	27.6 (12.5)	37.5 (17)	66.1 (30)	112.4 (51)	169.8 (77)

* Specific chart for reference only, please consult drawing for actual value and tolerance.

IC20 Series (Continued)

Technical Data

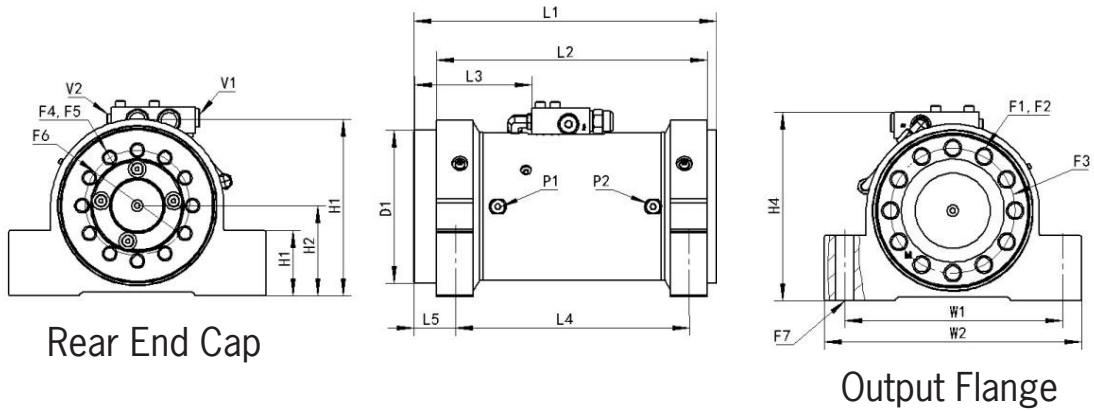
IC20 Series - Imperial (Metric)						
Model		5	9	16	27	42
D1 Mounting Dia	in (mm)	4.1 (104)	4.6 (117)	5.6 (142)	6.7 (170)	7.7 (196)
D2 Housing Dia	in (mm)	4.0 (101)	4.5 (114)	5.5 (139)	6.5 (165)	7.5 (191)
F1 Tapped Hole	in (mm)	3/8"-16 UFC (M10 X 1.5)	3/8"-16 UFC (M10 X 1.5)	1/2"-13 UFC (M12 X 1.75)	3/4"-10 UFC (M20 X 2.5)	3/4"-10 UFC (M20 X 2.5)
F2 No. Tapped Holes	QTY	6	8	8	8	10
F3 Bolt Circle Diameter, Shaft	in (mm)	2.1 (53.9)	2.6 (65)	3.3 (85)	4.0 (102)	4.8 (121)
F4 Shaft Through Hole Dia	in (mm)	3/4" UFC (M20)	1" UFC (M24)	1" UFC (M24)		
F5 Foot Tapped Hole	in (mm)	5/8" UFC (M16)	3/4" UFC (M20)	1" UFC (M24)	1" UFC (M24)	1 1/4" UFC (M30)
F6 Shaft Through Hole Dia	in (mm)				1"-8 UFC. (M24 X 3)	1 1/4"-7 UFC (M30 X 3.5)
F7 Flange Tapped Hole	in (mm)				1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)
F8 No. of Tapped Holes	QTY				8	10
F9 Pitch of Tapped Hole	in (mm)				4.3 (108)	4.8 (121)

IC20 Series - Imperial (Metric)						
Model		5	9	16	27	42
H1 Height Without Counterbalance Valve	in (mm)	4.7 (119)	5.3 (135)	6.2 (158)	7.6 (193)	8.6 (218)
H2 Height of Center Shaft	in (mm)	2.6 (66)	3.0 (76.2)	3.4 (85.9)	4.3 (108)	4.8 (121)
H3 Foot Height	in (mm)	1.4 (34.3)	1.5 (38.1)	1.8 (44.5)	2.5 (63.5)	2.8 (70)
H4 Total Height	in (mm)	5.7 (146)	6.4 (163)	7.3 (185)	8.7 (220)	9.6 (245)
L1 Total Length	in (mm)	7.4 (188)	8.5 (216)	9.8 (248)	11.7 (298)	13.3 (337)
L2 Length Without Flange	in (mm)	6.8 (173)	7.8 (197)	9.0 (229)	10.9 (276)	12.4 (314)
L3 Dist. Between Flange and Counterbalance Valve	in (mm)	1.3 (32)	1.4 (34.5)	1.8 (44.7)	1.9 (48.8)	1.9 (49)
L4 Mounting Length	in (mm)	4.4 (111)	5.5 (140)	6.0 (152)	7.2 (184)	8.5 (216)
L5 Flange Mounting Hole	in (mm)	1.5 (37.9)	1.5 (37.6)	1.9 (47)	2.3 (57.2)	2.4 (60.5)
W1 Mounting Width	in (mm)	5.7 (145)	6.0 (152)	7.8 (197)	8.7 (222)	10.5 (267)
W2 Overall Width	in (mm)	7.0 (178)	7.5 (191)	9.8 (248)	11.0 (279)	13.0 (330)
P1 P2 Oil Port, Housing		ISO-11926 SAE Series. Sizes are 7/16. See drawing for details.				
V1 V2 Oil Port, Valve		ISO-11926 SAE Series. Sizes are 7/16. See drawing for details.				

*Specific chart for reference only, please consult drawing for actual value and tolerance.

IC30 Series

Technical Data



IC30 Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
Drive Torque	in-lbs at 3,045psi (Nm at 21MPa)	16,810 (1,900)	24,780 (2,800)	41,590 (4,700)	64,610 (7,300)	92,930 (10,500)	123,910 (14,000)	159,310 (18,000)	212,410 (24,000)
Holding Torque	in-lbs at 3,045psi (Nm at 21MPa)	43,360 (4,900)	60,180 (6,800)	106,200 (12,000)	159,310 (18,000)	230,110 (26,000)	309,770 (35,000)	407,130 (46,000)	522,190 (59,000)
Max Cantilever Moment	in-lbs (Nm)	46,020 (5,200)	62,840 (7,100)	105,320 (11,900)	162,850 (18,400)	261,090 (29,500)	343,400 (38,800)	494,750 (55,900)	645,210 (72,900)
Max Straddle Moment	180° in-lbs (Nm)	118,590 (13,400)	149,570 (16,900)	272,600 (30,800)	423,060 (47,800)	664,690 (75,100)	875,330 (98,900)	1,155,020 (130,500)	1,504,620 (170,000)
	360° in-lbs (Nm)	169,930 (19,200)	217,720 (24,600)	401,820 (45,400)	630,170 (71,200)	986,850 (111,500)	1,292,200 (146,000)	1,749,790 (197,700)	2,270,210 (256,500)
Radial Capacity	lbs (kg)	3,960 (1,800)	5,070 (2,300)	7,930 (3,600)	11,020 (5,000)	14,990 (6,800)	18,070 (8,200)	22,040 (10,000)	26,010 (11,800)
Axial Capacity	lbs (kg)	3,080 (1,400)	3,960 (1,800)	5,950 (2,700)	7,930 (3,600)	9,920 (4,500)	13,000 (5,900)	14,990 (6,800)	18,070 (8,200)

* Specific chart for reference only, please consult drawing for actual value and tolerance.

IC30 Series (Continued)

Technical Data

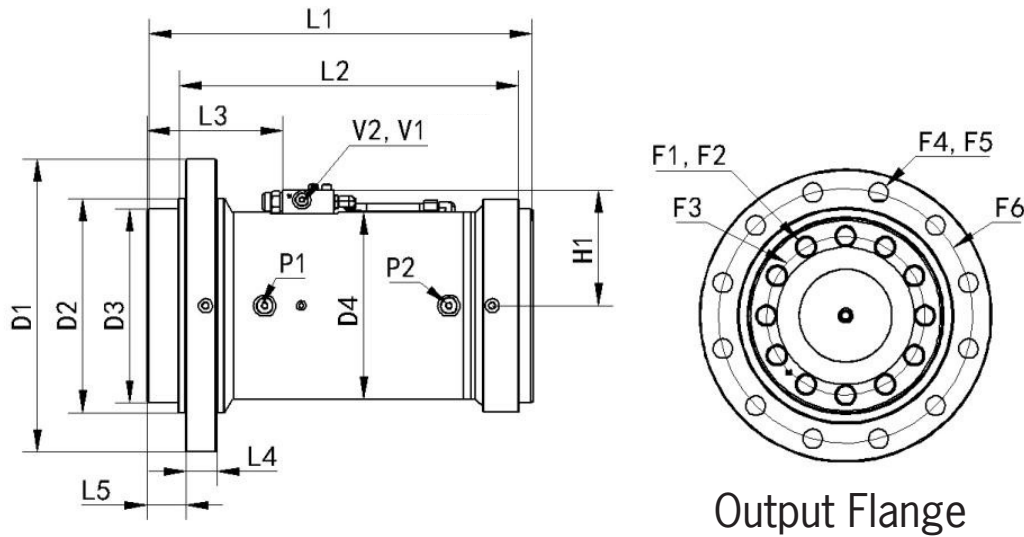
IC30 Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
Displacement	180° cu in (cc)	30.0 (492)	42.0 (688)	72.0 (1,180)	114.1 (1,870)	163.5 (2,680)	216.0 (3,540)	283.8 (4,650)	366.1 (6,000)
	360° cu in (cc)	59.8 (980)	84.8 (1,390)	144.0 (2,360)	228.2 (3,740)	327.1 (5,360)	432.0 (7,080)	568.7 (9,320)	732.3 (12,000)
Weight	180° lbs (kg)	70 (34.5)	110 (50)	150 (72.5)	240 (110)	350 (160)	480 (220)	610 (280)	790 (360)
	360° lbs (kg)	100 (45.5)	130 (63.4)	220 (100)	300 (140)	440 (200)	630 (290)	810 (370)	1,000 (455)
D1 Mounting Dia	in (mm)	5.5 (139)	6.1 (155)	7.2 (183)	8.2 (209)	9.2 (234)	10.4 (263)	11.3 (288)	12.2 (310)
D2 Housing Dia	in (mm)	5.5 (140)	6.0 (152)	7.0 (178)	8.0 (203)	9.0 (229)	10.0 (254)	11.0 (279)	12.0 (305)
F1 Tapped Hole	in (mm)	1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)	3/4"-10 UFC (M20 X 2.5)	7/8"-9 UFC (M22 X 2.5)	1"-8 UFC (M24 X 3)	1 1/8"-7 UFC (M27 X 3)	1 1/8"-7 UFC (M27 X 3)	1 1/4"-7 UFC (M30 X 3.5)
F2 No. Tapped Holes	QTY	12	12	12	12	12	12	12	12
F3 Bolt Circle Diameter, Shaft	in (mm)	4.5 (115)	4.9 (125)	5.9 (150)	6.7 (170)	7.7 (195)	8.5 (215)	9.4 (240)	10.0 (255)
F4 Flange Tapped Hole	in (mm)	3/8"-16 UFC (M10 X 1.5)	1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)	3/4"-10 UFC (M20 X 2.5)	7/8"-9 UFC (M22 X 2.5)	1"-8 UFC (M24 X 3)	1"-8 UFC (M27 X 3)	1 1/8"-7 UFC (M30 X 3.5)
F5 No. Tapped Holes	QTY	12	12	12	12	12	12	12	12
F6 Bolt Circle Diameter, End Cap	in (mm)	4.3 (108)	4.7 (120)	5.2 (133)	5.9 (150)	6.7 (170)	7.5 (190)	8.3 (210)	9.1 (230)
F7 Dia of Mounting Hole	in (mm)	5/8" UFC (M16)	3/4" UFC (M20)	7/8" UFC (M22)	1" UFC (M24)	1 1/8" UFC (M27)	1 1/4" UFC (M30)	1 3/8" UFC (M36)	1 3/8" UFC (M36)

IC30 Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
H1 Height Without Counterbalance Valve	in (mm)	6.1 (156)	7.3 (186)	8.3 (212)	9.4 (240)	10.9 (276)	12.0 (305)	12.9 (327)	14.3 (362)
H2 Center Height Hole	in (mm)	3.1 (80)	3.7 (94.9)	4.3 (108)	4.8 (122)	5.5 (140)	6.1 (154)	6.5 (165)	7.2 (184)
H3 Foot Height	in (mm)	1.9 (48)	2.8 (70)	3.1 (78)	3.5 (88)	4.1 (105)	4.3 (110)	4.7 (120)	5.3 (135)
H4 Total Height	in (mm)	7.0 (179)	7.9 (201)	8.9 (226)	10.7 (271)	11.1 (283)	12.2 (310)	13.1 (334)	14.4 (366)
L1 Total Length	180° in (mm)	11.7 (298)	12.7 (323)	14.4 (365)	16.3 (413)	18.7 (475)	20.6 (524)	21.7 (551)	23.6 (600)
	360° in (mm)	16.8 (427)	18.5 (470)	21.2 (538)	24.2 (615)	27.8 (705)	30.6 (776)	32.9 (836)	35.7 (906)
L2 Length Without Flange	180° in (mm)	10.3 (261)	11.3 (286)	12.7 (323)	14.3 (363)	17.0 (431)	18.2 (463)	19.4 (493)	21.0 (534)
	360° in (mm)	15.4 (392)	17.0 (433)	19.5 (496)	22.2 (565)	26.0 (661)	28.1 (715)	30.5 (775)	33.2 (843)
L3 Dist. Between Flange and Counterbalance Valve	180° in (mm)	3.0 (75.2)	5.3 (134)	5.6 (143)	5.1 (130)	6.0 (152)	7.3 (185)	7.7 (196)	8.7 (221)
	360° in (mm)	5.9 (149)	6.2 (157)	7.8 (197)	9.1 (232)	10.5 (267)	12.1 (308)	13.3 (338)	14.7 (374)
L4 Mounting Length	180° in (mm)	9.0 (229)	9.8 (248)	11.1 (281)	12.4 (314)	14.7 (374)	15.7 (400)	16.8 (426)	18.1 (460)
	360° in (mm)	14.1 (358)	15.6 (395)	17.9 (454)	20.3 (516)	23.8 (604)	25.7 (652)	27.9 (708)	30.2 (766)
L5 Flange Mounting Hole	180° in (mm)	1.5 (38.1)	1.7 (43.9)	2.0 (50)	2.2 (56.9)	2.4 (59.9)	2.9 (74.2)	3.0 (75.9)	3.1 (80)
W1 Mounting Width	in (mm)	7.5 (190)	9.1 (230)	10.2 (260)	11.8 (300)	13.4 (340)	15.0 (380)	16.1 (410)	17.7 (450)
W2 Total Width	in (mm)	8.7 (222)	10.6 (268)	12.2 (310)	13.8 (350)	15.7 (400)	17.6 (447)	19.1 (484)	20.9 (530)
P1 P2 Oil Port, Housing		ISO-11926 SAE Series. Sizes vary from 7/16 to 3/4. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/4 to 1/2.) See drawing for details.							
V1 V2 Oil Port, Valve		ISO-11926 SAE Series. Sizes vary from 7/16 to 3/4. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/4 to 1/2.) See drawing for details.							

*Specific chart for reference only, please consult drawing for actual value and tolerance.

IC30 Flange Mounting Series

Technical Data



IC30 Flange Mounting Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
Drive Torque	in-lbs at 3,045psi (Nm at 21MPa)	16,810 (1,900)	24,780 (2,800)	41,590 (4,700)	64,610 (7,300)	92,930 (10,500)	123,910 (14,000)	159,310 (18,000)	212,410 (24,000)
Holding Torque	in-lbs at 3,045psi (Nm at 21MPa)	43,360 (4,900)	60,180 (6,800)	106,200 (12,000)	159,310 (18,000)	230,110 (26,000)	309,770 (35,000)	407,130 (46,000)	522,190 (59,000)
Max cantilever moment	in-lbs (Nm)	46,020 (5,200)	62,840 (7,100)	105,320 (11,900)	162,850 (18,400)	261,090 (29,500)	343,400 (38,800)	494,750 (55,900)	645,210 (72,900)
Max straddle moment	180° in-lbs (Nm)	118,590 (13,400)	149,570 (16,900)	272,600 (30,800)	423,060 (47,800)	664,690 (75,100)	875,330 (98,900)	1,155,020 (130,500)	1,504,620 (170,000)
	360° in-lbs (Nm)	169,930 (19,200)	217,720 (24,600)	401,820 (45,400)	630,170 (71,200)	986,850 (111,500)	1,292,200 (146,000)	1,749,790 (197,700)	2,270,210 (256,500)
Radial capacity	lbs (kg)	3,960 (1,800)	5,070 (2,300)	7,930 (3,600)	11,020 (5,000)	14,990 (6,800)	18,070 (8,200)	22,040 (10,000)	26,010 (11,800)
Axial capacity	lbs (kg)	3,080 (1,400)	3,960 (1,800)	5,950 (2,700)	7,930 (3,600)	9,920 (4,500)	13,000 (5,900)	14,990 (6,800)	18,070 (8,200)

*Specific chart for reference only, please consult drawing for actual value and tolerance.

IC30 Flange Mounting Series (Continued)

Technical Data

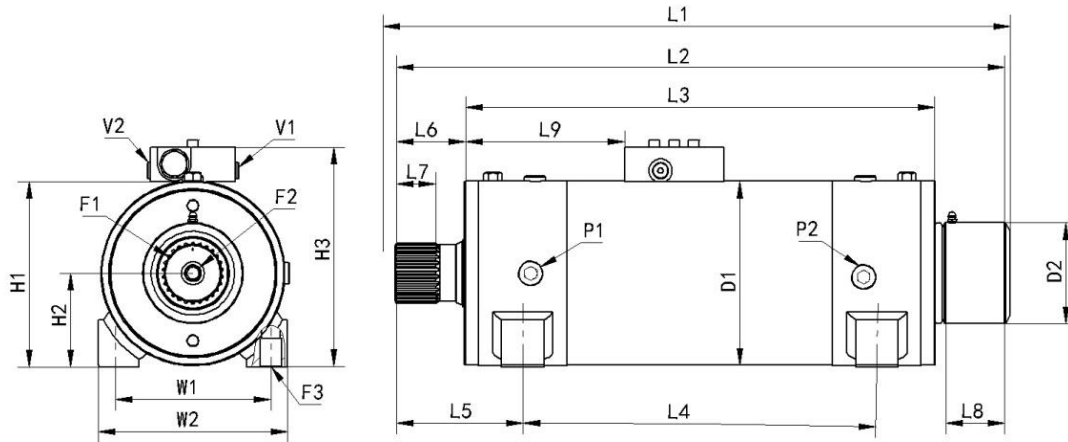
IC30 Flange Mounting Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
Displacement	180° cu in (cc)	30.0 (492)	42.0 (688)	72.0 (1180)	114.1 (1870)	163.5 (2,680)	216.0 (3,540)	283.8 (4,650)	366.1 (6,000)
	360° cu in (cc)	59.8 (980)	84.8 (1,390)	144.0 (2,360)	228.2 (3,740)	327.1 (5,360)	432.0 (7,080)	568.7 (9,320)	732.3 (12,000)
Weight	180° lbs (kg)	70 (34.5)	110 (50)	150 (72.5)	240 (110)	350 (160)	480 (220)	610 (280)	790 (360)
	360° lbs (kg)	100 (45.5)	130 (63.4)	220 (100)	300 (140)	440 (200)	630 (290)	810 (370)	1,000 (455)
D1 Total Flange Dia	in (mm)	7.9 (200)	9.3 (235)	11.0 (280)	12.4 (315)	14.0 (355)	15.6 (396)	17.4 (442)	18.7 (475)
D2 Pilot Dia	in (mm)	5.9 (150)	6.9 (175)	8.1 (205)	9.1 (230)	10.2 (260)	11.4 (290)	12.4 (315)	13.4 (340)
D3 Mounting Disk	in (mm)	5.5 (139)	6.1 (155)	7.2 (183)	8.2 (209)	9.2 (234)	10.4 (263)	11.3 (288)	12.2 (310)
D4 Housing Dia	in (mm)	5.5 (140)	6.0 (152)	7.0 (178)	8.0 (203)	9.0 (229)	10.0 (254)	11.0 (279)	12.0 (305)
F1 Tapped Hole	in (mm)	1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)	3/4"-10 UFC (M20 X 2.5)	7/8"-9 UFC (M22 X 2.5)	1"-8 UFC (M24 X 3)	1 1/8"-7 UFC (M27 X 3)	1 1/8"-7 UFC (M27 X 3)	1 1/4"-7 UFC (M30 X 3.5)
F2 No. Tapped Holes	QTY	12	12	12	12	12	12	12	12
F3 Bolt Circle Diameter, Shaft	in (mm)	4.5 (115)	4.9 (125)	5.9 (150)	6.7 (170)	7.7 (195)	8.5 (215)	9.4 (240)	10.0 (255)
F4 Flange Tapped Hole	in (mm)	3/8"-16 UFC (M10 X 1.5)	1/2"-13 UFC (M12 X 1.75)	5/8"-11 UFC (M16 X 2)	3/4"-10 UFC (M20 X 2.5)	7/8"-9 UFC (M22 X 2.5)	1"-8 UFC (M24 X 3)	1 1/8"-7 UFC (M27 X 3)	1 1/8"-7 UFC (M27 X 3)
F5 No. Tapped Holes	QTY	12	12	12	12	12	12	12	12
F6 Bolt Circle Diameter, Housing	in (mm)	6.9 (175)	8.1 (206)	9.6 (245)	10.8 (275)	12.2 (310)	13.6 (345)	15.0 (380)	16.1 (410)

IC30 Flange Mounting Series - Imperial (Metric)									
Model		19	28	47	73	105	140	180	240
H1 Center Line to Valve Top	in (mm)	3.9 (99.1)	4.2 (106)	4.6 (118)	5.2 (131)	5.7 (144)	6.1 (156)	6.7 (169)	7.2 (182)
L1 Total Length	180° in (mm)	11.7 (298)	12.7 (323)	14.4 (365)	16.3 (413)	18.7 (475)	20.6 (524)	21.7 (551)	23.6 (600)
	360° in (mm)	16.8 (427)	18.5 (470)	21.2 (538)	24.2 (615)	27.8 (705)	30.6 (776)	32.9 (836)	35.7 (906)
L2 Length Without Flange	180° in (mm)	10.3 (261)	11.3 (286)	12.7 (323)	14.3 (363)	17.0 (431)	18.2 (463)	19.4 (493)	21.0 (534)
	360° in (mm)	15.4 (392)	17.0 (433)	19.5 (496)	22.2 (565)	26.0 (661)	28.1 (715)	30.5 (775)	33.2 (843)
L3 Dist. Between Flange and Counterbalance Valve	180° in (mm)	3.0 (75.2)	5.3 (134)	5.6 (143)	5.1 (130)	6.0 (152)	7.3 (185)	7.7 (196)	8.7 (221)
	360° in (mm)	5.9 (149)	6.2 (157)	7.8 (197)	9.1 (232)	10.5 (267)	12.1 (308)	13.3 (338)	14.7 (374)
L4 Mounting Flange Thickness	in (mm)	1.0 (25.2)	1.0 (26)	1.2 (31)	1.3 (33)	1.6 (40)	1.7 (42)	1.8 (46)	2.0 (52)
L5 Outer Flange to Inner Flange	in (mm)	1.1 (27)	1.3 (32)	1.4 (35)	1.7 (42)	1.6 (40)	2.1 (53)	2.1 (54)	2.2 (56)
P1 P2 Oil Port, Housing		ISO-11926 SAE Series. Sizes vary from 7/16 to 3/4. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/4 to 1/2.) See drawing for details.							
V1 V2 Oil Port, Valve		ISO-11926 SAE Series. Sizes vary from 7/16 to 3/4. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/4 to 1/2.) See drawing for details.							

*Specific chart for reference only, please consult drawing for actual value and tolerance.

IC40 Series

Technical Data



IC40 Series - Imperial (Metric)				
Model		28	50	67
Drive Torque	in-lbs at 3,045psi (Nm at 21MPa)	24,780 (2,800)	44,250 (5,000)	59,290 (6,700)
Holding Torque	in-lbs at 3,045psi (Nm at 21MPa)	53,980 (6,100)	93,810 (10,600)	126,560 (14,300)
Standard Rotation		220°	220°	200°
Max Straddle Moment	in-lbs at 3,045psi (Nm at 21MPa)	37,170 (4,200)	67,260 (7,600)	89,390 (10,100)
Radial Capacity	lbs (kg)	4,490 (2,040)	6,900 (3,130)	8,590 (3,900)
Axial Capacity	lbs (kg)	4,490 (2,040)	6,900 (3,130)	8,590 (3,900)
Displacement	cu in (cc)	47.3 (775)	83.0 (1,360)	100.7 (1,650)
Weight	lbs (kg)	70 (33.6)	120 (58)	160 (75)

* Specific chart for reference only, please consult drawing for actual value and tolerance.

IC40 Series (Continued)

Technical Data

IC40 Series - Imperial (Metric)				
Model		28	50	67
D1 Housing Dia	in (mm)	5.5 (140)	6.5 (165)	7.0 (178)
D2 Optional Spline Adapter Dia	in (mm)	3.1 (80)	3.5 (89.9)	3.9 (98.3)
F1 Shaft Spline	in (mm)	For metric and imperial dimensions, see drawing.		
F2 Shaft Spline Mounting Hole	in (mm)	1/2"-13 UFC (M12 X 1.75)	1/2"-13 UFC (M12 X 1.75)	5/6"-18 UFC (M12 X 1.75)
F3 Foot Mounting Hole	in (mm)	5/8"-11 UFC (M16 X 2)	3/4"-10 UFC (M20 X 2.5)	7/8"-9 UFC (M22 X 2.5)
H1 Height Without Counterbalance Valve	in (mm)	5.9 (150)	6.9 (176)	8.0 (203)
H2 Center Height Hole	in (mm)	2.9 (73.2)	3.3 (83.9)	4.0 (102)
H3 Total Height	in (mm)	6.8 (173)	7.7 (196)	8.7 (220)

IC40 Series - Imperial (Metric)				
Model		28	50	67
L1 Total Length With Optional Adapter	in (mm)	17.0 (431)	22.1 (561)	23.9 (608)
L2 Total Length Without Optional Adapter	in (mm)	16.4 (417)	21.5 (546)	22.8 (579)
L3 Total Length Without Rotation	in (mm)	13.2 (335)	16.6 (422)	17.5 (445)
L4 Length of Foot Mounting	in (mm)	10.4 (265)	12.6 (320)	12.6 (320)
L5 Mounting Hole to End of Shaft	in (mm)	3.0 (75.1)	4.4 (113)	5.1 (130)
L6 Shaft Extension	in (mm)	1.6 (40.9)	2.4 (61.9)	2.7 (67.6)
L7 Spline Length	in (mm)	0.8 (20.6)	1.6 (40)	1.9 (49)
L8 Length of Optional Adapter	in (mm)	1.3 (32.5)	2.1 (52.6)	2.4 (60.5)
W1 Length of Foot Mounting	in (mm)	4.1 (104)	5.5 (140)	5.9 (150)
W2 Overall Width	in (mm)	5.2 (133)	6.7 (170)	8.0 (203)
P1 P2 Oil Port, Housing		ISO-11926 SAE Series. Sizes vary from 7/16 to 9/16. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/8 to 1/4.) See drawing for details.		
V1 V2 Oil Port, Valve		ISO-11926 SAE Series. Sizes vary from 7/16 to 9/16. (ISO-1179-1 BSPP 'G' Series. Sizes vary from 1/8 to 1/4.) See drawing for details.		

*Specific chart for reference only, please consult drawing for actual value and tolerance.

Helac Drop-In Replacement

IC10 Series	
ICFP Number	Helac Part Number
IC10-003-180-QHWJ-E	L10-3.0-E-RF-180-S1-O-H
IC10-003-360-QHWJ-E	L10-3.0-E-RF-360-S1-O-H
IC10-006-180-QHWJ-E	L10-5.5-E-RF-180-S1-O-H
IC10-006-360-QHWJ-E	L10-5.5-E-RF-360-S1-O-H
IC10-010-180-QHWJ-E	L10-9.5-E-RF-180-S1-O-H
IC10-010-360-QHWJ-E	L10-9.5-E-RF-360-S1-O-H
IC10-016-180-QHWJ-E	L10-15-E-RF-180-S1-O-H
IC10-016-360-QHWJ-E	L10-15-E-RF-360-S1-O-H
IC10-027-180-QHWJ-E	L10-25-E-RF-180-S1-O-H
IC10-027-360-QHWJ-E	L10-25-E-RF-360-S1-O-H
IC10-003-180-QHYJ-E	L10-3.0-E-RF-180-S1-C-H
IC10-003-360-QHYJ-E	L10-3.0-E-RF-360-S1-C-H
IC10-006-180-QHYJ-E	L10-5.5-E-RF-180-S1-C-H
IC10-006-360-QHYJ-E	L10-5.5-E-RF-360-S1-C-H
IC10-010-180-QHYJ-E	L10-9.5-E-RF-180-S1-C-H
IC10-010-360-QHYJ-E	L10-9.5-E-RF-360-S1-C-H
IC10-016-180-QHYJ-E	L10-15-E-RF-180-S1-C-H
IC10-016-360-QHYJ-E	L10-15-E-RF-360-S1-C-H
IC10-027-180-QHYJ-E	L10-25-E-RF-180-S1-C-H
IC10-027-360-QHYJ-E	L10-25-E-RF-360-S1-C-H

IC20 Series	
ICFP Number	Helac Part Number
IC20-005-180-QDWJ-E	L20-4.5-E-FT-180-S1-O-H
IC20-009-180-QDWJ-E	L20-8.2-E-FT-180-S1-O-H
IC20-016-180-QDWJ-E	L20-15-E-FT-180-S1-O-H
IC20-027-180-QDWJ-E	L20-25-E-FT-180-S1-O-H
IC20-042-180-QDWJ-E	L20-39-E-FT-180-S1-O-H
IC20-005-180-QDYJ-E	L20-4.5-E-FT-180-S1-C-H
IC20-009-180-QDYJ-E	L20-8.2-E-FT-180-S1-C-H
IC20-016-180-QDYJ-E	L20-15-E-FT-180-S1-C-H
IC20-027-180-QDYJ-E	L20-25-E-FT-180-S1-C-H
IC20-042-180-QDYJ-E	L20-39-E-FT-180-S1-C-H
IC20-005-180-SDWJ-E	L20-4.5-E-FT-180-S2-O-H
IC20-009-180-SDWJ-E	L20-8.2-E-FT-180-S2-O-H
IC20-016-180-SDWJ-E	L20-15-E-FT-180-S2-O-H
IC20-027-180-SDWJ-E	L20-25-E-FT-180-S2-O-H
IC20-042-180-SDWJ-E	L20-39-E-FT-180-S2-O-H
IC20-005-180-SDYJ-E	L20-4.5-E-FT-180-S2-C-H
IC20-009-180-SDYJ-E	L20-8.2-E-FT-180-S2-C-H
IC20-016-180-SDYJ-E	L20-15-E-FT-180-S2-C-H
IC20-027-180-SDYJ-E	L20-25-E-FT-180-S2-C-H
IC20-042-180-SDYJ-E	L20-39-E-FT-180-S2-C-H

IC30 Series	
ICFP Number	Helac Part Number
IC30-019-180-QDWJ-E	L30-17-E-FT-180-S1-O-H
IC30-019-360-QDWJ-E	L30-17-E-FT-360-S1-O-H
IC30-028-180-QDWJ-E	L30-25-E-FT-180-S1-O-H
IC30-028-360-QDWJ-E	L30-25-E-FT-360-S1-O-H
IC30-047-180-QDWJ-E	L30-42-E-FT-180-S1-O-H
IC30-047-360-QDWJ-E	L30-42-E-FT-360-S1-O-H
IC30-073-180-QDWJ-E	L30-65-E-FT-180-S1-O-H
IC30-073-360-QDWJ-E	L30-65-E-FT-360-S1-O-H
IC30-105-180-QDWJ-E	L30-95-E-FT-180-S1-O-H
IC30-105-360-QDWJ-E	L30-95-E-FT-360-S1-O-H
IC30-140-180-QDWJ-E	L30-125-E-FT-180-S1-O-H
IC30-140-360-QDWJ-E	L30-125-E-FT-360-S1-O-H
IC30-180-180-QDWJ-E	L30-165-E-FT-180-S1-O-H
IC30-180-360-QDWJ-E	L30-165-E-FT-360-S1-O-H
IC30-240-180-QDWJ-E	L30-215-E-FT-180-S1-O-H
IC30-240-360-QDWJ-E	L30-215-E-FT-360-S1-O-H
IC30-019-180-QQWJ-E	L30-17-E-FF-180-S1-O-H
IC30-019-360-QQWJ-E	L30-17-E-FF-360-S1-O-H
IC30-028-180-QQWJ-E	L30-25-E-FF-180-S1-O-H
IC30-028-360-QQWJ-E	L30-25-E-FF-360-S1-O-H
IC30-047-180-QQWJ-E	L30-42-E-FF-180-S1-O-H
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IC30-073-180-QQWJ-E	L30-65-E-FF-180-S1-O-H
IC30-073-360-QQWJ-E	L30-65-E-FF-360-S1-O-H
IC30-105-180-QQWJ-E	L30-95-E-FF-180-S1-O-H
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IC30-180-180-QQWJ-E	L30-165-E-FF-180-S1-O-H
IC30-180-360-QQWJ-E	L30-165-E-FF-360-S1-O-H
IC30-240-180-QQWJ-E	L30-215-E-FF-180-S1-O-H
IC30-240-360-QQWJ-E	L30-215-E-FF-360-S1-O-H
IC30-019-180-QDYJ-E	L30-17-E-FT-180-S1-C-H
IC30-019-360-QDYJ-E	L30-17-E-FT-360-S1-C-H
IC30-028-180-QDYJ-E	L30-25-E-FT-180-S1-C-H
IC30-028-360-QDYJ-E	L30-25-E-FT-360-S1-C-H
IC30-047-180-QDYJ-E	L30-42-E-FT-180-S1-C-H
IC30-047-360-QDYJ-E	L30-42-E-FT-360-S1-C-H
IC30-073-180-QDYJ-E	L30-65-E-FT-180-S1-C-H
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IC30-180-360-QDYJ-E	L30-165-E-FT-360-S1-C-H
IC30-240-180-QDYJ-E	L30-215-E-FT-180-S1-C-H
IC30-240-360-QDYJ-E	L30-215-E-FT-360-S1-C-H
IC30-019-180-QQYJ-E	L30-17-E-FF-180-S1-C-H

Helac Drop-In Replacement

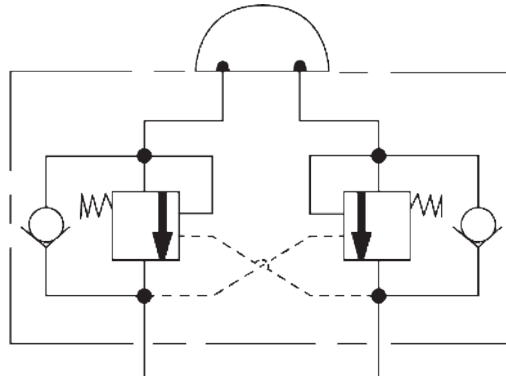
IC30 Series (Cont.)	
ICFP Number	Helac Part Number
IC30-019-360-QQYJ-E	L30-17-E-FF-360-S1-C-H
IC30-028-180-QQYJ-E	L30-25-E-FF-180-S1-C-H
IC30-028-360-QQYJ-E	L30-25-E-FF-360-S1-C-H
IC30-047-180-QQYJ-E	L30-42-E-FF-180-S1-C-H
IC30-047-360-QQYJ-E	L30-42-E-FF-360-S1-C-H
IC30-073-180-QQYJ-E	L30-65-E-FF-180-S1-C-H
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IC30-240-360-QQYJ-E	L30-215-E-FF-360-S1-C-H
IC30-019-180-SDWJ-E	L30-17-E-FT-180-S2-O-H
IC30-019-360-SDWJ-E	L30-17-E-FT-360-S2-O-H
IC30-028-180-SDWJ-E	L30-25-E-FT-180-S2-O-H
IC30-028-360-SDWJ-E	L30-25-E-FT-360-S2-O-H
IC30-047-180-SDWJ-E	L30-42-E-FT-180-S2-O-H
IC30-047-360-SDWJ-E	L30-42-E-FT-360-S2-O-H
IC30-073-180-SDWJ-E	L30-65-E-FT-180-S2-O-H
IC30-073-360-SDWJ-E	L30-65-E-FT-360-S2-O-H
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IC30-028-360-QQWJ-E	L30-25-E-FF-360-S2-O-H
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IC30-105-360-QQWJ-E	L30-95-E-FF-360-S2-O-H
IC30-140-180-QQWJ-E	L30-125-E-FF-180-S2-O-H
IC30-140-360-QQWJ-E	L30-125-E-FF-360-S2-O-H
IC30-180-180-QQWJ-E	L30-165-E-FF-180-S2-O-H
IC30-180-360-QQWJ-E	L30-165-E-FF-360-S2-O-H
IC30-240-180-QQWJ-E	L30-215-E-FF-180-S2-O-H
IC30-240-360-QQWJ-E	L30-215-E-FF-360-S2-O-H
IC30-019-180-SDYJ-E	L30-17-E-FT-180-S2-C-H
IC30-019-360-SDYJ-E	L30-17-E-FT-360-S2-C-H
IC30-028-180-SDYJ-E	L30-25-E-FT-180-S2-C-H

IC30 Series (Cont.)	
ICFP Number	Helac Part Number
IC30-028-360-SDYJ-E	L30-25-E-FT-360-S2-C-H
IC30-047-180-SDYJ-E	L30-42-E-FT-180-S2-C-H
IC30-047-360-SDYJ-E	L30-42-E-FT-360-S2-C-H
IC30-073-180-SDYJ-E	L30-65-E-FT-180-S2-C-H
IC30-073-360-SDYJ-E	L30-65-E-FT-360-S2-C-H
IC30-105-180-SDYJ-E	L30-95-E-FT-180-S2-C-H
IC30-105-360-SDYJ-E	L30-95-E-FT-360-S2-C-H
IC30-140-180-SDYJ-E	L30-125-E-FT-180-S2-C-H
IC30-140-360-SDYJ-E	L30-125-E-FT-360-S2-C-H
IC30-180-180-SDYJ-E	L30-165-E-FT-180-S2-C-H
IC30-180-360-SDYJ-E	L30-165-E-FT-360-S2-C-H
IC30-240-180-SDYJ-E	L30-215-E-FT-180-S2-C-H
IC30-240-360-SDYJ-E	L30-215-E-FT-360-S2-C-H
IC30-019-180-SQYJ-E	L30-17-E-FF-180-S2-C-H
IC30-019-360-SQYJ-E	L30-17-E-FF-360-S2-C-H
IC30-028-180-SQYJ-E	L30-25-E-FF-180-S2-C-H
IC30-028-360-SQYJ-E	L30-25-E-FF-360-S2-C-H
IC30-047-180-SQYJ-E	L30-42-E-FF-180-S2-C-H
IC30-047-360-SQYJ-E	L30-42-E-FF-360-S2-C-H
IC30-073-180-SQYJ-E	L30-65-E-FF-180-S2-C-H
IC30-073-360-SQYJ-E	L30-65-E-FF-360-S2-C-H
IC30-105-180-SQYJ-E	L30-95-E-FF-180-S2-C-H
IC30-105-360-SQYJ-E	L30-95-E-FF-360-S2-C-H
IC30-140-180-SQYJ-E	L30-125-E-FF-180-S2-C-H
IC30-140-360-SQYJ-E	L30-125-E-FF-360-S2-C-H
IC30-180-180-SQYJ-E	L30-165-E-FF-180-S2-C-H
IC30-180-360-SQYJ-E	L30-165-E-FF-360-S2-C-H
IC30-240-180-SQYJ-E	L30-215-E-FF-180-S2-C-H
IC30-240-360-SQYJ-E	L30-215-E-FF-360-S2-C-H

IC40 Series	
ICFP Number	Helac Part Number
IC40-030-220-HDWJ-E	T20-25-E-FT-220-S1-O-H
IC40-050-220-HDWJ-E	T20-45-E-FT-220-S1-O-H
IC40-067-220-HDWJ-E	T20-60-E-FT-220-S1-O-H
IC40-028-220-HDYJ-E	T20-25-E-FT-220-S1-C-H
IC40-050-220-HDYJ-E	T20-45-E-FT-220-S1-C-H
IC40-067-220-HDYJ-E	T20-60-E-FT-220-S1-C-H
IC40-030-22-OHWJ-E	T30-27-E-FT-220-S1-O-H

Counterbalance Valve Block

IC10, IC20, IC30 Series



Optional factory mounted counterbalance valves prevent rotation in the event of a hydraulic line failure, control rotation when loads go over center, and protect the actuator against excessive torque loads. Counterbalance valves may also be purchased separately and added at a later time. Spare parts for the counterbalance valve are available.

Counterbalance Valve Guide	
Part Number	Application
ZM0021260A Aluminum 6061	IC10-002-series
	IC10-003-series
	IC10-006-series
	IC10-010-series
	IC10-016-series
	IC10-027-series
	IC20-005-series
	IC20-009-series
	IC20-016-series
	IC30-019-series
ZM0021270 Steel 1045	IC30-090-series
	IC20-027-series
	IC20-042-series
ZM0021280 Steel 1045	IC30-028-series
	IC30-047-series
	IC30-073-series
	IC30-105-series
	IC30-140-series
	IC30-180-series
	IC30-240-series
	IC30-285-series

21260A Counterbalance Valve Block

Manufactured from aluminum, the valve blocks are bolted to a flat mounting pad on the actuator housing. Three bolts secure the valve block to the actuator. See each individual series page for specific valve locations.

The pilot ratio is 3:1. The valves are set to relieve at 3,300 psi (228 bar).

21270 Counterbalance Valve Block

Manufactured from steel, the valve blocks are bolted to a flat mounting pad on the actuator housing. Three bolts secure the valve block to the actuator. See each individual series page for specific valve locations.

The pilot ratio is 3:1. The valves are set to relieve at 3,300 psi (228 bar).

21280 Counterbalance Valve Block

Manufactured from steel, the valve blocks are bolted to a flat mounting pad on the actuator housing. Valve locations and plumbing routing differ among sizes. See each individual series page for specific valve locations.

The pilot ratio is 3:1. The valves are set to relieve at 3,625 psi (250 bar).

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