



OCTOPUS

STEERING CYLINDER DATA
REV: NEW 24 SEP 2003



TABLE 1							
COMMON STEERING CYLINDER DATA							
TELEFLEX							
	PART NUMBER	MODEL NUMBER	BORE DIA. Inches (mm)	SHAFT DIA. Inches (mm)	STROKE Inches (mm)	AREA SQUARE Sq.in. (cm)	VOLUME CUBIC In (cc)
SEASTAR CAPILANO INBOARD	HC5349/55	BA150-7	1.50 (38.1)	.625 (15.9)	7.0 (178)	1.46 (9.4)	10.2 (167)
	HC5350/56	BA175-7	1.75 (44.4)	.625 (15.9)	7.0 (178)	1.96 (12.7)	13.7 (225)
	HC5351/57	BA200-7	2.00 (50.8)	.625 (15.9)	7.0 (178)	3.14 (20.2)	18.9 (310)
	HC5378/79	**BA200-11	2.00 (50.8)	.625 (15.9)	11.0 (279)	3.14 (20.2)	29.7 (486)
SEASTAR INBOARD	HC5312	BA125-7ATM	1.25 (31.7)	.500 (12.7)	7.0 (178)	1.03 (6.7)	7.2 (118)
	HC5313	BA135-7ATM	1.37 (34.9)	.625 (15.9)	7.0 (178)	1.18 (7.6)	8.3 (135)
	HC5314	BA150-7ATM	1.50 (38.1)	.625 (15.9)	7.0 (178)	1.46 (9.4)	10.2 (167)
	HC5318	BA150-7AT	1.50 (38.1)	.625 (15.9)	7.0 (178)	1.46 (9.4)	10.2 (167)
	HC5319	BA175-7AT	1.75 (44.4)	.750 (19.0)	7.0 (178)	1.96 (12.7)	13.7 (225)
STERN DRIVE	HC5326	BA150-7EM	1.50 (38.1)	.625 (15.9)	7.0 (178)	1.46 (9.4)	10.2 (167)
	HC5328	*125-8EM (rod side)	1.25 (31.7)	.500 (12.7)	8.0 (203)	1.03 (6.7)	8.3 (135)
	HC5329	*125-8EM (no rod side)	same	n/a	same	1.23 (7.9)	9.8 (161)
	HC5331	*125-8EM	same	n/a	same	same	same
	HC5330	BA-125-8EMV	1.25 (31.7)	.500 (12.7)	8.0 (203)	1.03 (6.7)	8.3 (135)
OUTBOARD	HC5345	FRONT MOUNT PIVOTING	1.34 (34.0)	.750 (19.0)	8.0 (203)	0.82 (5.3)	7.8 (128)
	HC5342/0	FRONT MOUNT STANDARD	1.262 (32.0)	.750 (19.0)	1.00 (254)	0.82 (5.3)	7.8 (128)
	HC5365	FRONT MOUNT COMPACT	1.338 (34.0)	.750 (19.0)	7.0 (178)	0.97 (6.3)	6.87 (111)
	HC5370	*SIDE MOUNT (rod side)	1.25 (31.7)	.500 (12.7)	8.0 (203)	1.03 (6.7)	8.25 (135)
	same	*SIDE MOUNT (no rod side)	same	n/a	same	1.23 (7.9)	9.8 (161)
	HC5380	*SPLASHWELL MOUNT (rod side)	1.25 (31.7)	.500 (12.7)	9.0 (228)	1.03 (6.7)	9.3 (152)
	same	*SPLASHWELL MOUNT (no rod side)	same	n/a	same	1.23 (7.9)	11.0 (181)
Note	* Denotes Unbalanced Cylinder - Pump Requires Addition of OC17SUK01 Unbalanced Valve. ** Denotes Cylinder Volume Greater than Recommended for Type 1 Pump. Use Type 2 Pump or Consult Factory for Larger Pumpset Options.						

STEERING CYLINDER DATA (continued)

TABLE 2						
COMMON STEERING CYLINDER DATA						
HYNAUTIC						
DESCRIPTION	MODEL NUMBER	BORE DIA. Inches (mm)	SHAFT DIA. Inches (mm)	STROKE Inches (mm)	AREA SQUARE Sq.in. (cm)	VOLUME CUBIC In (cc)
BRASS CYLINDER UNIVERSAL MOUNT	K-1-B	1.50 (38.1)	.750 (19.0)	9.0 (228)	1.33 (8.6)	12.1 (198)
	K-1-C	1.50 (38.1)	.750 (19.0)	9.0 (228)	1.33 (8.6)	12.1 (198)
	K-2-B	1.75 (44.4)	.750 (19.0)	9.0 (228)	1.96 (12.7)	17.6 (288)
	K-2-C	1.75 (44.4)	.750 (19.0)	9.0 (228)	1.96 (12.7)	17.6 (288)
	**K-3-B	2.00 (50.8)	.875 (22.2)	9.0 (228)	2.69 (17.4)	23.1 (379)
	**K-3-C	2.00 (50.8)	.875 (22.2)	9.0 (228)	2.69 (17.4)	23.1 (379)
	**K-4-B	2.00 (50.8)	.875 (22.2)	12.0 (305)	2.69 (17.4)	30.5 (500)
	**K-4-C	2.00 (50.8)	.875 (22.2)	12.0 (305)	2.69 (17.4)	30.5 (500)
	*K-5 (rod side)	1.75 (44.4)	.875 (22.2)	9.0 (228)	1.80 (11.6)	15.9 (260)
	*K-5 (no rod side)	same	n/a	same	2.40 (15.5)	21.6 (354)
	**K-8	2.50 (63.5)	1.00 (25.4)	9.5 (241)	4.12 (26.6)	39.2 (642)
	**K-9	2.50 (63.5)	1.00 (25.4)	14.5 (368)	4.12 (26.6)	59.8 (980)
BRASS CYLINDER FIXED MOUNT	K-22	1.50 (38.1)	.750 (19.0)	10.0 (254)	1.33 (8.6)	13.3 (218)
	K-27	1.50 (38.1)	.750 (19.0)	10.0 (254)	1.33 (8.6)	13.3 (218)
	K-28	1.50 (38.1)	.750 (19.0)	12.0 (305)	1.33 (8.6)	16.0 (262)
	K-29	1.50 (38.1)	.750 (19.0)	12.0 (305)	1.33 (8.6)	16.0 (262)
BRASS CYLINDER PIVOT MOUNT	**K-31	2.0 (50.8)	.875 (22.2)	10.0 (254)	2.54 (16.4)	25.5 (418)
ALUMINUM CYLINDER BASE MOUNT	K-6	1.50 (38.1)	.875 (22.20)	7.8 (196)	1.17 (7.5)	9.0 (147)
ALUMINUM CYLINDER ENGINE MOUNT	K-7	1.50 (38.1)	.750 (19.0)	9.5 (241)	1.32 (8.5)	12.5 (205)
	K-10	1.25 (31.8)	.750 (19.0)	9.5 (241)	0.79 (5.1)	7.5 (123)
ALUMINUM CYLINDER BALL JOINT	*K-11 (rod side)	1.25 (31.7)	.562 (14.3)	9.0 (228)	0.98 (6.3)	9.0 (148)
	*K-11 (no rod side)	same	n/a	same	1.23 (7.9)	11.0 (180)
	*K-12 (rod side)	1.25 (31.7)	.562 (14.3)	7.0 (178)	0.98 (6.3)	7.0 (115)
	*K-11 (no rod side)	same	n/a	same	1.23 (7.9)	8.6 (141)
	K-18	1.25 (31.7)	.562 (14.3)	7.0 (178)	0.98 (6.3)	7.0 (115)
	K-19	1.25 (31.7)	.562 (14.3)	9.0 (228)	0.98 (6.3)	9.0 (148)
ALUMINUM CYLINDER TUBE MOUNT	*K-13 (rod side)	1.25 (31.7)	.562 (14.3)	9.0 (228)	1.23 (7.9)	11.0 (180)
	*K-13 (no rod side)	same	n/a	same	0.98 (6.3)	7.0 (115)
	*K-14 (rod side)	1.25 (31.7)	.562 (14.3)	7.0 (178)	1.23 (7.9)	8.6 (141)
	*K-14 (no rod side)	same	n/a	same	0.98 (6.3)	7.0 (115)
ALUMINUM CYLINDER UNIVERSAL MOUNT	K-51	1.50 (38.1)	.625 (15.9)	7.0 (178)	1.46 (9.4)	10.2 (167)
Notes	* Denotes Unbalanced Cylinder - Pump Requires Addition of OC17SUK03 Unbalanced Valve. ** Denotes Cylinder Volume Greater than Recommended for Type 1 Pump. Use Type 2 Pump or Consult Factory for Larger Pumpset Options.					

STEERING CYLINDER DATA (continued)

TABLE 3

COMMON STEERING CYLINDER DATA

HYDRAFLEX

DESCRIPTION	MODEL NUMBER	BORE DIA. Inches (mm)	SHAFT DIA. Inches (mm)	STROKE Inches (mm)	AREA SQUARE Sq.in. (cm)	VOLUME CUBIC In (cc)
INBOARD STEERING LD SERIES	I-B116	1.26 (32.0)	.550 (14.0)	7.0 (178)	1.00 (6.5)	7.0 (116)
	I-B173	1.56 (39.7)	.750 (19.0)	7.0 (178)	1.48 (9.5)	10.5 (173)
	I-B222	1.56 (39.7)	.750 (19.0)	9.0 (228)	1.48 (9.5)	13.5 (222)
INBOARD STEERING HD SERIES	I-B293	1.90 (50.0)	.787 (20.0)	7.0 (178)	2.56 (16.5)	17.9 (293)
	**I-B378	1.90 (50.0)	.787 (20.0)	9.0 (228)	2.56 (16.5)	23.0 (377)
	**I-B648	2.36 (60.0)	1.00 (25.0)	11.0 (279)	3.60 (23.2)	39.5 (648)
STERNDRIVE STEERING	IO-B133	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.1 (132)
	*IO-133S (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.1 (132)
	*IO-133S (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
	*IO-133L (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.1 (132)
	*IO-133L (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
OUTBOARD STEERING FRONT MOUNT CYLINDERS	PMAXQM	1.50 (38.0)	0.87 (22.0)	7.5 (190)	1.17 (7.57)	8.8 (144)
	OB-BFM	1.26 (32.0)	0.71 (18.0)	9.5 (241)	0.85 (5.50)	8.1 (132)
OUTBOARD STEERING SIDE MOUNT CYLINDERS	*OB-SM (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.1 (132)
	*OB-SM (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
Notes	* Denotes Unbalanced Cylinder - Pump Requires Addition of OC17SUK01 Unbalanced Valve. ** Denotes Cylinder Volume Greater than Recommended for Type 1 Pump. Use Type 2 Pump or Consult Factory for Larger Pumpset Options.					

STEERING CYLINDER DATA (continued)

TABLE 4

COMMON STEERING CYLINDER DATA

ULTRAFLEX

DESCRIPTION	MODEL NUMBER	BORE DIA. Inches (mm)	SHAFT DIA. Inches (mm)	STROKE Inches (mm)	AREA SQUARE Sq.in. (cm)	VOLUME CUBIC In (cc)
INBOARD STEERING LD SERIES	UC116-I	1.26 (32.0)	.550 (14.0)	7.0 (178)	1.00 (6.5)	7.0 (116)
	UC168-I	1.57 (40.0)	.787 (20.0)	7.0 (178)	1.47 (9.4)	10.3 (168)
	UC215-I	1.57 (40.0)	.787 (20.0)	9.0 (228)	1.47 (9.4)	13.1 (215)
STERNDRIVE STEERING	UC133-IOB	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.0 (132)
	*UC133-IOS (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.0 (132)
	*UC133-IOS (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
	*UC133-IOL (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.0 (132)
	*UC133-IOL (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
OUTBOARD STEERING FRONT MOUNT CYLINDERS	UC128-OBF	1.37 (35.0)	0.79 (20.0)	7.8 (198)	1.00 (6.5)	7.8 (128)
OUTBOARD STEERING SIDE MOUNT CYLINDERS	*UC132-OBS (rod side)	1.26 (32.0)	.550 (14.0)	8.0 (203)	1.00 (6.5)	8.0 (132)
	*UC132-OBS (no rod side)	same	n/a	same	1.25 (8.0)	10.0 (164)
Notes	* Denotes Unbalanced Cylinder - Pump Requires Addition of OC17SUK03 Unbalanced Valve.					

STEERING CYLINDER DATA (continued)

TABLE 5						
COMMON STEERING CYLINDER DATA						
HYDRIVE						
DESCRIPTION	MODEL NUMBER	BORE DIA. Inches (mm)	SHAFT DIA. Inches (mm)	STROKE Inches (mm)	AREA SQUARE Sq.in. (cm)	VOLUME CUBIC In (cc)
OBKIT1	210BH	1.37 (35.0)	.625 (16.0)	8.0 (204)	1.17 (7.5)	9.3 (154)
PROKIT	212BH	1.37 (35.0)	.625 (16.0)	7.0 (178)	1.17 (7.5)	8.2 (134)
OBKIT2	210T	1.37 (35.0)	.625 (16.0)	8.0 (204)	1.17 (7.5)	9.3 (154)
OBKIT3	*210TSE (rod side)	1.37 (35.0)	.625 (16.0)	8.0 (204)	1.17 (7.5)	9.3 (154)
	*210TSE (no rod side)	same	n/a	same	1.77 (11.4)	11.9 (195)
SPORTKIT	212T	1.00 (25.4)	.500 (12.7)	8.0 (203)	0.60 (3.9)	4.8 (78)
OBKIT5	216FM	1.37 (35.0)	.750 (19.0)	8.0 (203)	1.05 (6.7)	8.4 (137)
IBKIT1	210	1.37 (35.0)	.625 (16.0)	8.0 (204)	1.17 (7.5)	9.3 (154)
IBKIT2	*210TSE (rod side)	1.37 (35.0)	.625 (16.0)	8.0 (204)	1.17 (7.5)	9.3 (154)
	*210TSE (no rod side)	same	n/a	same	1.77 (11.4)	11.9 (195)
SPORTKIT2	212	1.00 (25.4)	.500 (12.7)	7.0 (178)	0.60 (3.9)	4.1 (68)
IBKIT3	216	1.37 (35.0)	.750 (19.0)	8.0 (203)	1.05 (6.7)	8.4 (137)
IBKIT4	213	1.50 (38.1)	.750 (19.0)	8.0 (203)	1.32 (8.5)	10.7 (175)
HEAVY DUTY HYDRIVE 2000 SERIES	313	1.50 (38.1)	.750 (19.0)	9.0 (229)	1.32 (8.5)	11.9 (196)
	314	1.78 (45.2)	.875 (22.2)	10.0 (254)	1.89 (12.2)	18.9 (310)
	316	1.37 (35.0)	.750 (19.0)	8.0 (204)	1.05 (6.8)	8.4 (137)
	150-9	1.50 (38.1)	.875 (22.2)	9.0 (229)	1.17 (7.5)	10.5 (172)
	150-12	1.50 (38.1)	.875 (22.2)	12.0 (305)	1.17 (7.5)	14.0 (229)
	175-10	1.75 (44.5)	.875 (22.2)	10.0 (254)	1.80 (11.6)	18.0 (296)
	**175-12	1.75 (44.5)	.875 (22.2)	12.0 (305)	1.80 (11.6)	21.6 (355)
	**200-12	2.00 (50.8)	1.00 (25.4)	12.0 (305)	2.36 (15.2)	28.2 (463)
	***200-15	2.00 (50.8)	1.00 (25.4)	15.0 (381)	2.36 (15.2)	35.3 (579)
	***250-12	2.50 (63.5)	1.00 (25.4)	12.0 (305)	4.12 (26.6)	49.5 (811)
***250-15	2.50 (63.5)	1.00 (25.4)	15.0 (381)	4.12 (26.6)	61.8 (1014)	
Notes	<p>* Denotes Unbalanced Cylinder - Pump Requires Addition of OC17SUK03 Unbalanced Valve.</p> <p>** Denotes Cylinder Volume Greater than Recommended for Type 1 Pump. Use Type 2 Pump or Consult Factory for Larger Pumpset Options.</p> <p>*** Denotes Cylinder Volume Greater than Recommended for Type 2 Pump. Consult Factory for Larger Pumpset Options.</p>					

STEERING CYLINDER DATA (continued)

TABLE 6

FORMULAE FOR CALCULATING EFFECTIVE CYLINDER VOLUME

NOMENCLATURE

EFFECTIVE CYLINDER VOLUME = ECV
 ROD VOLUME = RV
 CYLINDER VOLUME = CV
 STROKE = S

CYLINDER INSIDE DIAMETER = CD
 ROD DIAMETER = RD
 CYLINDER AREA = CA
 ROD AREA = RA

BALANCED CYLINDERS

ECV = CV minus RV

UNBALANCED CYLINDERS (rod side)

ECV = CV minus RV

UNBALANCED CYLINDERS (no rod side)

ECV = CV

WHERE:

$CV = CA \times S$

$RV = RA \times S$

$CA = \frac{3.142 \times CD \times CD}{4}$

$RA = \frac{3.142 \times RD \times RD}{4}$

EXAMPLE 1:

THE EFFECTIVE VOLUME OF A BALANCED CYLINDER WITH A 12 INCH STROKE - 1.75 INCH DIAMETER INSIDE CYLINDER - 0.75 DIAMETER ROD

$CA = \frac{3.142 \times 1.75 \times 1.75}{4}$

$RA = \frac{3.142 \times .75 \times .75}{4}$

CA = 2.406 sq in

RA = 0.442 sq in

CV = 2.406 x 12

RV = 0.442 x 12

CV = 28.872 cu in

RV = 5.304 cu in

ECV= 28.872 - 5.304

ECV = 23.568 cubic inches

EXAMPLE 2:

THE EFFECTIVE VOLUME OF AN UBALANCED CYLINDER WITH A 12 INCH STROKE - 1.75 INCH DIAMETER INSIDE CYLINDER - 0.75 DIAMETER ROD

ROD SIDE

(same as example above)

ECV = 23.568 cubic inches

NO ROD SIDE

ECV = CV

ECV = 28.872 cubic inches