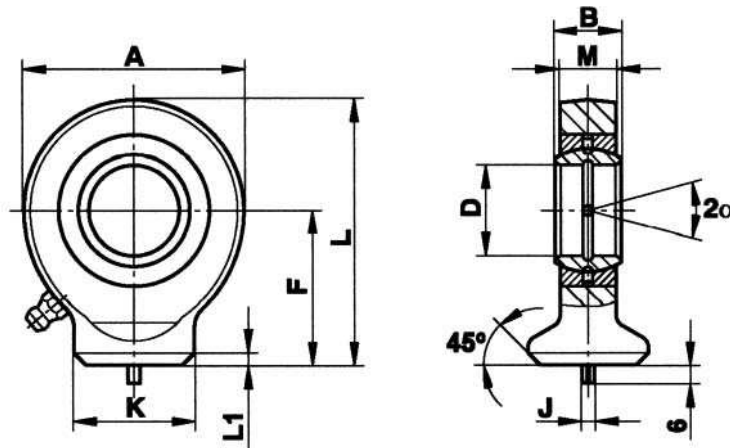


# Hydraulic Rod Ends

## Type E Rod End Weld-on



### Series FS...C

Ametric Part Number	Size (D)	B	M	A	F	L	L1	K	J	Static load C kN	Dynamic load C kN	Pivoting angle	Weight g
FS 10 C	10	9	7	29	24	38.5	2.0	15.0	3	15.6	8.1	12	40
FS 12 C	12	10	8	34	27	44.0	2.0	17.5	3	21.6	10.8	11	65
FS 15 C	15	12	10	40	31	51.0	2.5	21.0	4	32.0	17.0	8	120
FS 17 C	17	14	11	46	35	58.0	3.0	24.0	4	40.0	21.2	10	180
FS 20 C	20	16	13	53	38	64.5	3.0	27.5	4	54.0	30.0	9	250
FS 25 C	25	20	17	64	45	77.0	4.0	33.5	4	72.0	48.0	7	450
FS 30 C	30	22	19	73	51	87.5	4.0	40.0	4	95.0	62.0	6	675
FS 35 C	35	25	21	82	61	102.0	4.0	47.0	4	125.0	80.0	6	950
FS 40 C	40	28	23	92	69	115.0	5.0	52.0	4	156.0	100.0	7	1400
FS 45 C	45	32	27	102	77	128.0	5.0	58.0	6	208.0	127.0	7	1910
FS 50 C	50	35	30	112	88	144.0	6.0	62.0	6	250.0	156.0	6	2650
FS 60 C	60	44	38	135	100	167.5	8.0	70.0	6	390.0	245.0	6	4600
FS 70 C	70	49	42	160	115	195.0	10.0	80.0	6	510.0	315.0	6	7000
FS 80 C	80	55	47	180	141	231.0	10.0	95.0	6	620.0	400.0	6	10800

For Weld-on to piston Rod Ends

Rod Ends series E to DIN ISO 12240-4, type S with circular surface for weld-on. Spherical Plain Bearings are regreasable and fixed through caulking on both sides.

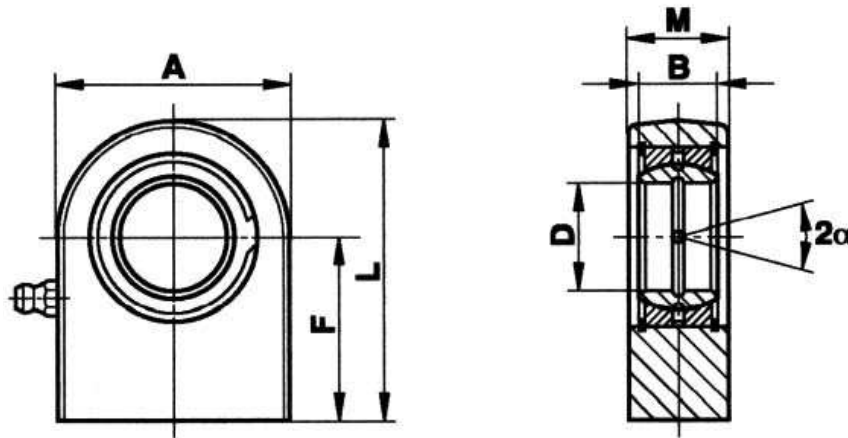
### Materials:

**Housing:** St 52-3, forged

**Bearing:** Steel on steel bearing GE...E, requiring lubrication also available with bearing GE...FO or GE...LO

**Greasing:** up to size 12 not regreasable  
 from size 16-20 fitted with grease hole in housing  
 from size 25 fitted with hydraulic grease nipples to DIN 71412

# Hydraulic Rod Ends Rectangular Weld-on



## Series FS...N

Ametric Part Number	Size (D)	B	M	A	F	L	Static load C kN	Dynamic load C kN	Pivoting angle	Weight g
FS 20 N	20	16	19	50	38	63,0	67,0	30	9	325
FS 25 N	25	20	23	55	45	72,5	69,5	48	7	500
FS 30 N	30	22	28	65	51	83,5	118,0	62	6	825
FS 35 N	35	25	30	83	61	102,5	196,0	80	6	1475
FS 40 N	40	28	35	100	69	119,0	300,0	100	7	2480
FS 45 N	45	32	40	110	77	132,0	380,0	127	7	3450
FS 50 N	50	35	40	123	88	149,5	440,0	156	6	4450
FS 60 N	60	44	50	140	100	170,0	570,0	245	6	7130
FS 70 N	70	49	55	164	115	197,0	695,0	315	6	10700
FS 80 N	80	55	60	180	141	231,0	780,0	400	6	15100
FS 90 N	90	60	65	226	150	263,0	1340,0	490	5	23400
FS 100 N	100	70	70	250	170	295,0	1500,0	610	7	33100
FS 110 N	110	70	80	295	185	332,5	2160,0	655	6	48500
FS 120 N	120	85	90	360	210	390,0	3250,0	950	6	79500

For Weld-on to cylinder bottoms

Rod Ends with rectangular surface for Weld-on. Spherical Plain Bearings are regreasable and fixed with snap rings.

## Materials:

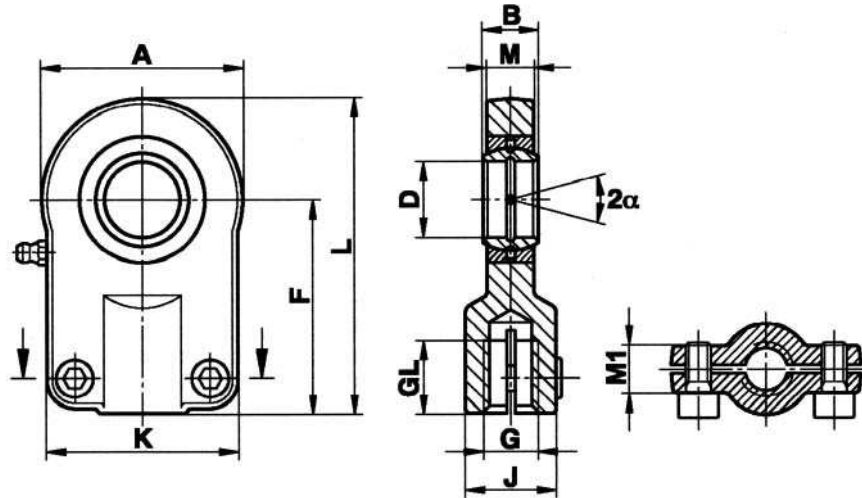
Housing: St 52-3, forged

Bearing: Steel on steel bearing GE...E, requiring lubrication

Greasing: fitted with hydraulic grease nipples to DIN 71412

# Hydraulic Rod Ends

## ISO 8133



### Series FPR...S

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dynamic load C	Pivoting	Weight g
FPR 12 S	12	10	8	13	35	42	59,5	35	17	M 10x1,25	15	10	17,0	10,8	11	150
FPR 16 S	16	14	11	13	45	48	70,5	45	21	M 12x1,25	17	10	28,5	21,1	10	250
FPR 20 S	20	16	13	17	55	58	85,5	55	25	M 14x1,5	19	25	42,5	30,0	9	430
FPR 25 S	25	20	17	17	65	68	100,5	62	30	M 16x1,5	23	25	67,0	48,0	7	730
FPR 30 S	30	22	19	19	80	85	125,0	77	36	M 20x1,5	29	49	108,0	62,0	6	1300
FPR 40 S	40	28	23	23	100	105	155,0	90	45	M 27x2	37	49	156,0	100,0	7	2300
FPR 50 S	50	35	30	30	120	130	190,0	105	55	M 33x2	46	86	245,0	156,0	6	4400
FPR 60 S	60	44	38	38	160	150	230,0	134	68	M 42x2	57	210	380,0	245,0	6	8400
FPR 80 S	80	55	47	47	205	185	287,5	156	90	M 48x2	64	410	585,0	400,0	6	15600
FPR 100 S	100	70	57	57	240	240	360,0	190	110	M 64x3	86	710	865,0	610,0	6	28000

### Series FPL...S

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dynamic load C	Pivoting	Weight g
FPL 12 S	12	10	8	13	35	42	59,5	35	17	M 10x1,25	15	10	17,0	10,8	11	150
FPL 16 S	16	14	11	13	45	48	70,5	45	21	M 12x1,25	17	10	28,5	21,1	10	250
FPL 20 S	20	16	13	17	55	58	85,5	55	25	M 14x1,5	19	25	42,5	30,0	9	430
FPL 25 S	25	20	17	17	65	68	100,5	62	30	M 16x1,5	23	25	67,0	48,0	7	730
FPL 30 S	30	22	19	19	80	85	125,0	77	36	M 20x1,5	29	49	108,0	62,0	6	1300
FPL 40 S	40	28	23	23	100	105	155,0	90	45	M 27x2	37	49	156,0	100,0	7	2300
FPL 50 S	50	35	30	30	120	130	190,0	105	55	M 33x2	46	86	245,0	156,0	6	4400
FPL 60 S	60	44	38	38	160	150	230,0	134	68	M 42x2	57	210	380,0	245,0	6	8400
FPL 80 S	80	55	47	47	205	185	287,5	156	90	M 48x2	64	410	585,0	400,0	6	15600
FPL 100 S	100	70	57	57	240	240	360,0	190	110	M 64x3	86	710	865,0	610,0	6	28000

For use in standard Hydraulic Cylinders 160 bar to ISO 6020/2

Rod Ends, fastened by hexagon socket head cap screw to DIN 912-12.9. Spherical Plain Bearings, regreaseable, fixed through caulking on both sides

### Materials:

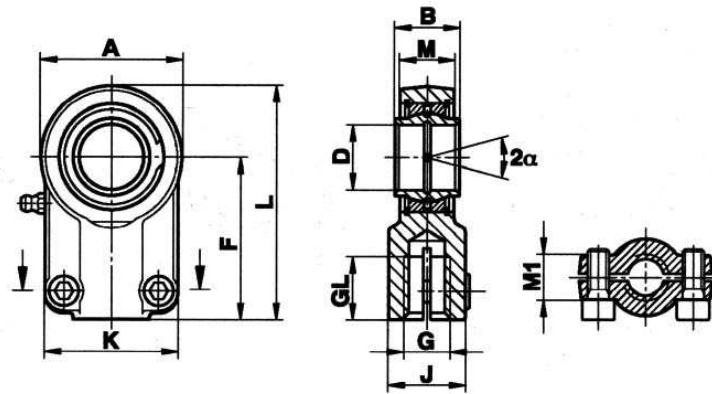
**Housing:** Heat-treated steel to C45, forged

**Bearing:** Steel on steel bearing GE...E, requiring lubrication

**Greasing:** Size 12 not regreaseable  
 from size 16-20 fitted with grease hole in housing  
 from size 25 fitted with hydraulic grease nipples to DIN 71412

# Hydraulic Rod Ends

## CETOP ISO 6982



### Series FPR...CE

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dy-namic load C	Pivot-ing	Weight g
FPR 12 CE	12	12	11,0	15,0	32,0	38	54,0	32	16	M 12x1,25	17	6	24,5	10,8	4	100
FPR 16 CE	16	16	13,8	15,0	40,0	44	64,0	40	21	M 14x1,5	19	10	36,5	17,6	4	210
FPR 20 CE	20	20	17,8	18,7	47,0	52	75,0	47	25	M 16x1,5	23	25	48,0	30,0	4	350
FPR 25 CE	25	25	21,9	19,0	58,0	65	96,0	54	30	M 20x1,5	29	25	78,0	48,0	4	620
FPR 32 CE	32	32	27,9	22,0	71,0	80	118,5	66	38	M 27x2	37	49	114,0	67,0	4	1170
FPR 40 CE	40	40	33,0	26,0	90,0	97	146,1	80	47	M 33x2	46	49	204,0	100,0	4	2150
FPR 50 CE	50	50	41,0	32,0	109,0	120	179,6	96	58	M 42x2	57	86	310,0	156,0	4	440
FPR 63 CE	63	63	53,0	38,0	132,0	140	211,6	114	70	M 48x2	64	210	430,0	255,0	4	7600
FPR 70 CE	70	70	57,0	42,0	155,0	160	245,0	135	80	M 56x2	81	210	540,0	315,0	4	10100
FPR 80 CE	80	80	67,0	48,0	169,3	180	270,6	148	90	M 64x3	86	410	695,0	400,0	4	14500
FPR 90 CE	90	90	72,0	52,0	185,0	195	296,0	160	100	M 72x3	91	410	750,0	490,0	4	17500
FPR 100 CE	100	100	85,0	62,0	211,4	210	322,7	178	110	M 80x3	96	710	1060,0	610,0	4	28000
FPR 110 CE	110	110	88,0	62,0	235,0	235	364,0	190	125	M 90x3	106	710	1200,0	655,0	4	32000
FPR 125 CE	125	125	103,0	72,0	263,5	260	405,7	200	135	M 100x3	113	710	1430,0	950,0	4	46400
FPR 160 CE	160	160	130,0	82,0	326,0	310	488,0	250	165	M 125x4	126	710	2200,0	1370,0	4	81000
FPR 200 CE	200	200	162,0	102,0	418,0	390	620,0	320	215	M 160x4	161	1500	3650,0	2120,0	4	174000

### Series FPL...CE

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dy-namic load C	Pivot-ing	Weight g
FPL 12 CE	12	12	11,0	15,0	32,0	38	54,0	32	16	M 12x1,25	17	6	24,5	10,8	4	100
FPL 16 CE	16	16	13,8	15,0	40,0	44	64,0	40	21	M 14x1,5	19	10	36,5	17,6	4	210
FPL 20 CE	20	20	17,8	18,7	47,0	52	75,0	47	25	M 16x1,5	23	25	48,0	30,0	4	350
FPL 25 CE	25	25	21,9	19,0	58,0	65	96,0	54	30	M 20x1,5	29	25	78,0	48,0	4	620
FPL 32 CE	32	32	27,9	22,0	71,0	80	118,5	66	38	M 27x2	37	49	114,0	67,0	4	1170
FPL 40 CE	40	40	33,0	26,0	90,0	97	146,1	80	47	M 33x2	46	49	204,0	100,0	4	2150
FPL 50 CE	50	50	41,0	32,0	109,0	120	179,6	96	58	M 42x2	57	86	310,0	156,0	4	440
FPL 63 CE	63	63	53,0	38,0	132,0	140	211,6	114	70	M 48x2	64	210	430,0	255,0	4	7600
FPL 70 CE	70	70	57,0	42,0	155,0	160	245,0	135	80	M 56x2	81	210	540,0	315,0	4	10100
FPL 80 CE	80	80	67,0	48,0	169,3	180	270,6	148	90	M 64x3	86	410	695,0	400,0	4	14500
FPL 90 CE	90	90	72,0	52,0	185,0	195	296,0	160	100	M 72x3	91	410	750,0	490,0	4	17500
FPL 100 CE	100	100	85,0	62,0	211,4	210	322,7	178	110	M 80x3	96	710	1060,0	610,0	4	28000
FPL 110 CE	110	110	88,0	62,0	235,0	235	364,0	190	125	M 90x3	106	710	1200,0	655,0	4	32000
FPL 125 CE	125	125	103,0	72,0	263,5	260	405,7	200	135	M 100x3	113	710	1430,0	950,0	4	46400
FPL 160 CE	160	160	130,0	82,0	326,0	310	488,0	250	165	M 125x4	126	710	2200,0	1370,0	4	81000
FPL 200 CE	200	200	162,0	102,0	418,0	390	620,0	320	215	M 160x4	161	1500	3650,0	2120,0	4	174000

Mounting dimensions to DIN 24333-24336 and ISO 6020/1, ISO 6022

Rod Ends Cetop, recommendation RP 58H for standard Hydraulic Cylinders, fastened by hexagon socket head cap screws to DIN 912-12.9. Spherical Plain Bearings, regreasable, fixed with snap rings.

### Materials:

**Housing:** Heat-treated steel to C45, forged

**Bearing:** Steel on steel bearing GE...LO, requiring lubrication

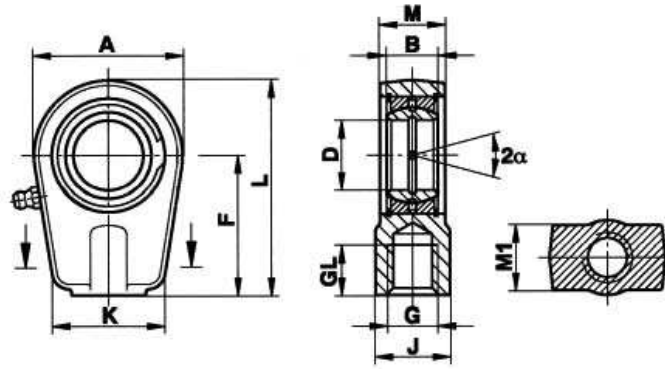
**Greasing:** Size 12 is not regreasable  
from size 16 fitted with hydraulic grease nipples to DIN 71412

 **American Metric® Corporation**

GROUP: 069

1-069-072303

# Hydraulic Rod Ends Short Thread



## Series FPR...N

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Static load C kN	Dynamic load C kN	Pivoting angle	Weight g
FPR 20 N	20	16	19	21	56	50	80,0	46	25	M 16x1,5	17	72	30	9	400
FPR 25 N	25	20	23	21	56	50	80,0	46	25	M 16x1,5	17	72	48	7	475
FPR 30 N	30	22	28	26	64	60	94,0	50	32	M 22x1,5	23	106	62	6	700
FPR 35 N	35	25	30	28	78	70	112,0	66	40	M 28x1,5	29	153	80	6	1150
FPR 40 N	40	28	35	33	94	85	135,0	76	49	M 35x1,5	36	250	100	7	2075
FPR 50 N	50	35	40	37	116	105	168,0	90	61	M 45x1,5	46	365	156	6	3575
FPR 60 N	60	44	50	46	130	130	200,0	120	75	M 58x1,5	59	400	245	6	6200
FPR 70 N	70	49	55	51	154	150	232,0	130	86	M 65x1,5	66	540	315	6	9200
FPR 80 N	80	55	60	55	176	170	265,0	160	105	M 80x2	81	670	400	6	13200
FPR 90 N	90	60	65	60	206	210	323,0	180	124	M 100x2	101	980	490	5	19600
FPR 100 N	100	70	70	65	231	235	360,7	200	138	M 110x2	111	1120	610	7	26310
FPR 110 N	110	70	80	74	265	265	408,2	220	152	M 120x3	125	1700	655	6	39200
FPR 120 N	120	85	90	84	340	310	490,0	300	172	M 130x3	135	2900	950	6	78000

## Series FPL...N

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Static load C kN	Dynamic load C kN	Pivoting angle	Weight g
FPL 20 N	20	16	19	21	56	50	80,0	46	25	M 16x1,5	17	72	30	9	400
FPL 25 N	25	20	23	21	56	50	80,0	46	25	M 16x1,5	17	72	48	7	475
FPL 30 N	30	22	28	26	64	60	94,0	50	32	M 22x1,5	23	106	62	6	700
FPL 35 N	35	25	30	28	78	70	112,0	66	40	M 28x1,5	29	153	80	6	1150
FPL 40 N	40	28	35	33	94	85	135,0	76	49	M 35x1,5	36	250	100	7	2075
FPL 50 N	50	35	40	37	116	105	168,0	90	61	M 45x1,5	46	365	156	6	3575
FPL 60 N	60	44	50	46	130	130	200,0	120	75	M 58x1,5	59	400	245	6	6200
FPL 70 N	70	49	55	51	154	150	232,0	130	86	M 65x1,5	66	540	315	6	9200
FPL 80 N	80	55	60	55	176	170	265,0	160	105	M 80x2	81	670	400	6	13200
FPL 90 N	90	60	65	60	206	210	323,0	180	124	M 100x2	101	980	490	5	19600
FPL 100 N	100	70	70	65	231	235	360,7	200	138	M 110x2	111	1120	610	7	26310
FPL 110 N	110	70	80	74	265	265	408,2	220	152	M 120x3	125	1700	655	6	39200
FPL 120 N	120	85	90	84	340	310	490,0	300	172	M 130x3	135	2900	950	6	78000

Mounting dimensions to DIN 24333-24336 and ISO 6020/1, ISO 6022

Rod Ends Cetop, recommendation RP 58H for standard Hydraulic Cylinders, fastened by hexagon socket head cap screws to DIN 912-12.9. Spherical Plain Bearings, regreasable, fixed with snap rings.

## Materials:

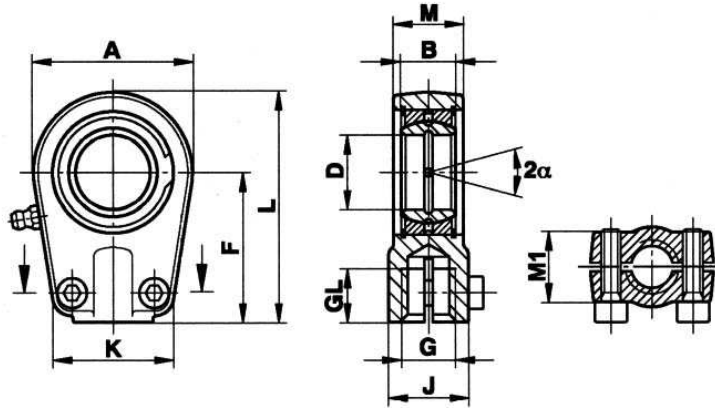
**Housing:** Heat-treated steel to C45, forged

**Bearing:** Steel on steel bearing GE...LO, requiring lubrication

**Greasing:** Size 12 is not regreasable  
from size 16 fitted with hydraulic grease nipples to DIN 71412

# Hydraulic Rod Ends

## Short Thread Hexagon



### Series FPR...U

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dy-namic load C	Pivot-ing	Weight g
FPR 20 U	20	16	19	21	56	50	80,0	46	25	M 16x1,5	17	25	72	30	9	400
FPR 25 U	25	20	23	21	56	50	80,0	46	25	M 16x1,5	17	25	72	48	7	475
FPR 30 U	30	22	28	26	64	60	94,0	50	32	M 22x1,5	23	25	106	62	6	700
FPR 35 U	35	25	30	28	78	70	112,0	66	40	M 28x1,5	29	49	153	80	6	1150
FPR 40 U	40	28	35	33	94	85	135,0	76	49	M 35x1,5	36	49	250	100	7	2075
FPR 50 U	50	35	40	37	116	105	168,0	90	61	M 45x1,5	46	86	365	156	6	3575
FPR 60 U	60	44	50	46	130	130	200,0	120	75	M 58x1,5	59	210	400	245	6	6200
FPR 70 U	70	49	55	51	154	150	232,0	130	86	M 65x1,5	66	210	540	315	6	9200
FPR 80 U	80	55	60	55	176	170	265,0	160	105	M 80x2	81	410	670	400	6	13200
FPR 90 U	90	60	65	60	206	210	323,0	180	124	M 100x2	101	410	980	490	5	19600
FPR 100 U	100	70	70	65	231	235	360,7	200	138	M 110x2	111	710	1120	610	7	26310
FPR 110 U	110	70	80	74	265	265	408,2	220	152	M 120x3	125	710	1700	655	6	39200
FPR 120 U	120	85	90	84	340	310	490,0	300	172	M 130x3	135	710	2900	950	6	78000

### Series FPL...U

Ametric Part Number	Size (D)	B	M	M1	A	F	L	K	J	G	GL	Torque Nm	Static load C kN	Dy-namic load C	Pivot-ing	Weight g
FPL 20 U	20	16	19	21	56	50	80,0	46	25	M 16x1,5	17	25	72	30	9	400
FPL 25 U	25	20	23	21	56	50	80,0	46	25	M 16x1,5	17	25	72	48	7	475
FPL 30 U	30	22	28	26	64	60	94,0	50	32	M 22x1,5	23	25	106	62	6	700
FPL 35 U	35	25	30	28	78	70	112,0	66	40	M 28x1,5	29	49	153	80	6	1150
FPL 40 U	40	28	35	33	94	85	135,0	76	49	M 35x1,5	36	49	250	100	7	2075
FPL 50 U	50	35	40	37	116	105	168,0	90	61	M 45x1,5	46	86	365	156	6	3575
FPL 60 U	60	44	50	46	130	130	200,0	120	75	M 58x1,5	59	210	400	245	6	6200
FPL 70 U	70	49	55	51	154	150	232,0	130	86	M 65x1,5	66	210	540	315	6	9200
FPL 80 U	80	55	60	55	176	170	265,0	160	105	M 80x2	81	410	670	400	6	13200
FPL 90 U	90	60	65	60	206	210	323,0	180	124	M 100x2	101	410	980	490	5	19600
FPL 100 U	100	70	70	65	231	235	360,7	200	138	M 110x2	111	710	1120	610	7	26310
FPL 110 U	110	70	80	74	265	265	408,2	220	152	M 120x3	125	710	1700	655	6	39200
FPL 120 U	120	85	90	84	340	310	490,0	300	172	M 130x3	135	710	2900	950	6	78000

Mounting dimensions to DIN 24333-24336 and ISO 6020/1, ISO 6022

Rod Ends Cetop, recommendation RP 58H for standard Hydraulic Cylinders, fastened by hexagon socket head cap screws to DIN 912-12.9. Spherical Plain Bearings, regreasable, fixed with snap rings.

### Materials:

**Housing:** Heat-treated steel to C45, forged

**Bearing:** Steel on steel bearing GE...LO, requiring lubrication

**Greasing:** Size 12 is not regreasable  
from size 16 fitted with hydraulic grease nipples to DIN 71412

# Metric Hydraulic Components



- **Metric Tube Fittings**

Series L (light series): 6-42mm tube OD  
Series S (heavy series): 6-38mm tube OD

Series L: up to 250 Bar (3600 psi)  
Series S: up to 630 Bar (9000 psi)

- **Metric Seamless Tubing**

Material: St 37.4 (acc. DIN 1630)  
Also available:  
AISI 316/316 L (AISI 316 Ti upon request)

- **High Pressure Ball Valves**

Up to 800 Bar (11600 psi)  
NPT, BSP, DIN 2353 and SAE-flange

- **Quick Release Couplings**

Swivel joints, check valves and throttle valves

- **Pressure Gauges**

0-1000 Bar (14500 psi)  
NPT & BSPP - threads

- **Test Couplings and Hose Assemblies**

Up to 630 Bar (9135 psi)

- **Hydraulic Hose Fittings**

Up to SAE 100 R 15  
3/16 - 2 inches

- **Pipe, Tube and Hose Clamps**

Up to 8 5/8 inches - tube OD  
For metric or UNC - bolts

- **Machines for Tube Assemblies**

Metal circular saw  
Bending machine

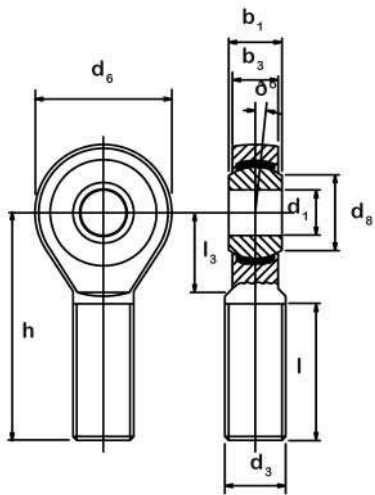
and more...

# Metric Rod Ends

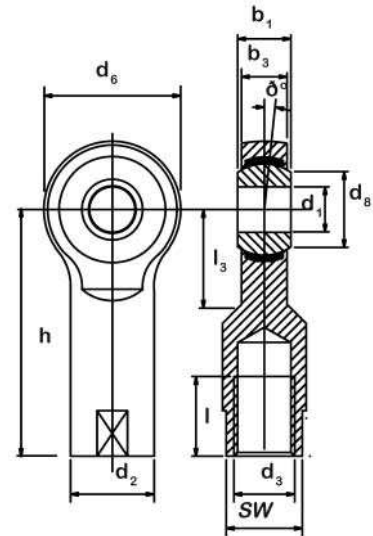
## Heavy Duty Rod Ends with Integral Spherical Bearing

Self-lubricating  
Adapter Size According  
DIN 648 Series E

Race: Teflon® Type



SA..E  
External Thread



SI..E  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand												Dynamic	Static
SA 6 E	SAL 6 E	6	M 6	20	8.0	6	4	36	18	11	6.5	0.016	3.6	8.2
SA 8 E	SAL 8 E	8	M 8	24	10.2	8	6	42	22	12	8.0	0.028	5.8	12.9
SA 10 E	SAL 10 E	10	M 10	28	13.2	9	7	48	26	15	6.0	0.050	8.6	17.6
SA 12 E	SAL 12 E	12	M 12	34	14.9	10	8	54	28	15	5.0	0.086	11.4	24.5
SA 15 ES	SAL 15 ES	15	M 14	40	18.4	12	10	63	34	18	4.5	0.140	17.6	36.0
SA 17 ES	SAL 17 ES	17	M 16	46	20.7	14	11	69	36	23	5.5	0.190	22.0	45.0
SA 20 ES	SAL 20 ES	20	M 20x1.5	53	24.2	16	13	78	43	25	4.5	0.320	31.5	60.0
SA 25 ES	SAL 25 ES	25	M 24x2	64	29.3	20	17	94	53	32	3.5	0.560	51.0	83.0
SA 30 ES	SAL 30 ES	30	M 30x2	73	34.2	22	19	110	65	35	3.0	0.890	66.5	110.0
SA 35 ES	SAL 35 ES	35	M 36x3	82	39.8	25	21	140	82	38	3.5	1.400	112.0	146.0
SA 40 ES	SAL 40 ES	40	M 39x3	92	45.0	28	23	150	86	42	3.5	1.800	140.0	180.0
SA 45 ES	SAL 45 ES	45	M 42x3	102	50.8	32	27	163	94	50	4.0	2.610	180.0	240.0
SA 50 ES	SAL 50 ES	50	M 45x3	112	56.0	35	30	185	107	60	3.0	3.450	220.0	290.0
SA 60 ES	SAL 60 ES	60	M 52x3	135	66.8	44	38	210	115	70	3.5	5.900	345.0	450.0
SA 70 ES	SAL 70 ES	70	M 56x4	160	77.9	49	42	235	125			8.200	440.0	585.0
SA 80 ES	SAL 80 ES	80	M 64x4	180	89.4	55	47	270	140			12.000	570.0	710.0

### Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand														Dynamic	Static
SI 6 E	SIL 6 E	6	10.0	M 6	20	8.0	6	4	30	12	11	6.5	11	0.021	3.6	8.2
SI 8 E	SIL 8 E	8	12.5	M 8	24	10.2	8	6	36	16	12	8.0	13	0.038	5.8	12.9
SI 10 E	SIL 10 E	10	15.0	M 10	28	13.2	9	7	43	20	13	6.0	17	0.060	8.6	17.6
SI 12 E	SIL 12 E	12	17.5	M 12	34	14.9	10	8	50	22	15	5.0	19	0.096	11.4	24.5
SI 15 ES	SIL 15 ES	15	21.0	M 14	40	18.4	12	10	61	29	18	4.5	22	0.180	17.6	36.0
SI 17 ES	SIL 17 ES	17	24.0	M 16	46	20.7	14	11	67	33	20	5.5	27	0.220	22.0	45.0
SI 20 ES	SIL 20 ES	20	27.5	M 20x1.5	53	24.2	16	13	77	38	23	4.5	32	0.350	31.5	60.0
SI 25 ES	SIL 25 ES	25	33.5	M 24x2	64	29.3	20	17	94	48	30	3.5	36	0.640	51.0	83.0
SI 30 ES	SIL 30 ES	30	40.0	M 30x2	73	34.2	22	19	110	56	32	3.0	41	0.930	66.5	110.0
SI 35 ES	SIL 35 ES	35	47.0	M 36x3	82	39.8	25	21	125	60	38	3.5	50	1.300	112.0	146.0
SI 40 ES	SIL 40 ES	40	52.0	M 39x3	92	45.0	28	23	142	65	42	3.5	55	2.000	140.0	180.0
SI 45 ES	SIL 45 ES	45	58.0	M 42x3	102	50.8	32	27	145	65	50	4.0	60	2.500	180.0	240.0
SI 50 ES	SIL 50 ES	50	62.0	M 45x3	112	56.0	35	30	160	68	60	3.0	65	3.500	220.0	290.0
SI 60 ES	SIL 60 ES	60	70.0	M 52x3	135	66.8	44	38	175	70	70	3.5	75	5.550	345.0	450.0
SI 70 ES	SIL 70 ES	70	80.0	M 56x4	160	77.9	49	42	200	80			85	8.600	440.0	585.0
SI 80 ES	SIL 80 ES	80	95.0	M 64x4	180	89.4	55	47	230	85			100	12.000	570.0	710.0

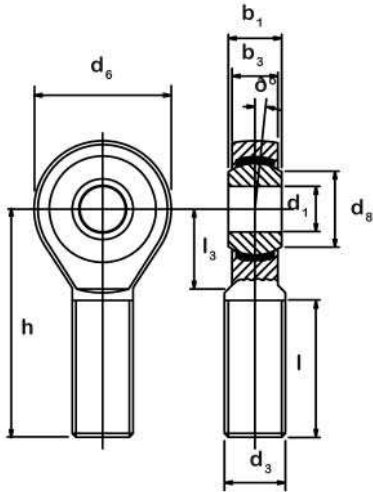


# Metric Rod Ends

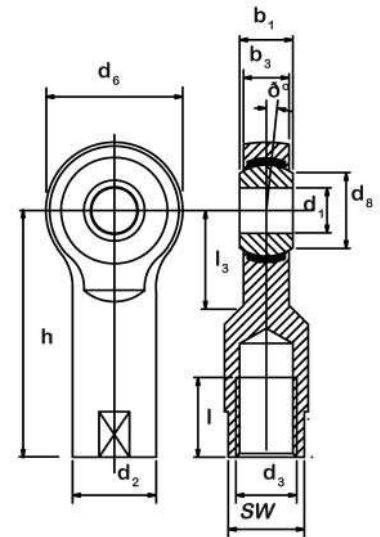
Heavy Duty Rod Ends  
with Integral Spherical Bearing  
for Pneumatic Cylinders

Self-lubricating  
Adapter Size According  
DIN 648 Series E  
with Cetop RP 103 P Threads

Race: Teflon® Type



SA..E  
External Thread



SI..E  
Internal Thread

## External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand												Radial	Axial
SA 10 E-F	SAL10E-F	10	M 10	28	13.2	9	7	48	26	15	6.0	0.050	8.6	17.6
SA 12 E-F	SAL12E-F	12	M 12	34	14.9	10	8	54	28	15	5.0	0.086	11.4	24.5

## Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand														Radial	Axial
SI 10 E-F	SIL10E-F	10	15.0	M 10	28	13.2	9	7	43	20	15	6.0	17	0.060	8.6	17.6
SI 12 E-F	SIL12E-F	12	17.5	M 12	34	14.9	10	8	50	22	15	5.0	19	0.096	11.4	24.5

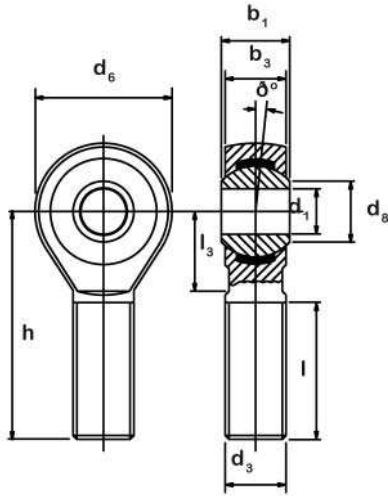
Note: An "F" at the end on a part number indicates a fine thread according to cetop RP 10H.

# Metric Rod Ends

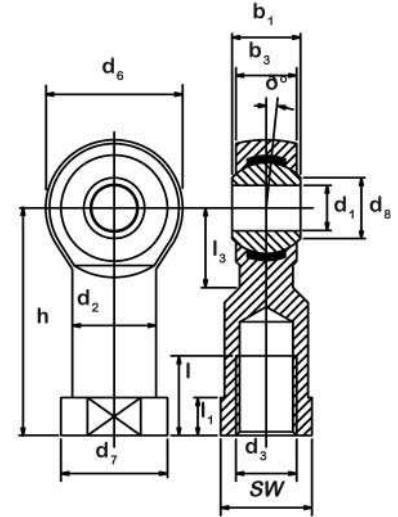
## Heavy Duty Rod Ends with Integral Spherical Bearing

Self-lubricating  
Adapter Size According  
~ DIN 648 Series K

Race: Teflon® Type



SA..K  
External Thread



SI..K  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand												Radial	Axial
SA 5 K	SAL 5 K	5	M 5	18	7.7	8	6	33	20	9	12	0.013	7.5	4.3
SA 6 K	SAL 6 K	6	M 6	20	8.9	9	7	36	22	10	11	0.020	9.3	6.0
SA 8 K	SAL 8 K	8	M 8	24	10.4	12	9	42	25	13	12	0.033	16.7	11.0
SA 10 K	SAL 10 K	10	M 10	28	12.9	14	11	48	29	15	12	0.056	23.4	17.4
SA 12 K	SAL 12 K	12	M 12	32	15.4	16	12	54	33	17	13	0.087	32.0	23.5
SA 14 K	SAL 14 K	14	M 14	36	16.8	19	14	60	38	19	14	0.129	41.9	20.8
SA 16 K	SAL 16 K	16	M 16	42	19.3	21	15	66	40	22	14	0.189	52.7	32.0
SA 18 K	SAL 18 K	18	M 18x1.5	46	21.8	23	17	72	44	24	14	0.267	63.8	38.6
SA 20 K	SAL 20 K	20	M 20x1.5	50	24.3	25	18	78	47	26	14	0.348	78.1	43.8
SA 22 K	SAL 22 K	22	M 22x1.5	54	25.8	28	20	84	51	28	15	0.443	97.2	52.6
SA 25 K	SAL 25 K	25	M 24x2	60	29.6	31	22	94	58	32	15	0.600	122.1	61.4
SA 30 K	SAL 30 K	30	M 30x2	70	34.8	37	25	110	71	37	15	1.030	168.4	81.6
SA 35 K	SAL 35 K	35	M 36X2	80	37.7	43	28	125	77			1.600	205.7	100.8
SA 40 K	SAL 40 K	40	M 42X2	90	44.2	49	35	142	78			2.570	297.1	124.0

### Internal Thread

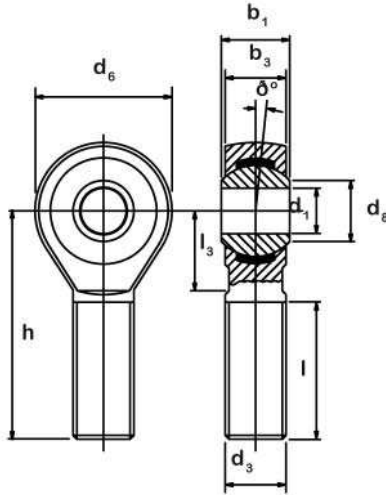
Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand														Radial	Axial
SI 5 K	SIL 5 K	5	9.0	M 5	18	7.7	8	6	27	10	9	12	9	0.018	7.5	8.0
SI 6 K	SIL 6 K	6	10.0	M 6	20	8.9	9	7	30	12	10	11	11	0.027	9.3	8.9
SI 8 K	SIL 8 K	8	12.5	M 8	24	10.4	12	9	36	16	13	12	13	0.046	16.7	14.1
SI 10 K	SIL 10 K	10	15.0	M 10	28	12.9	14	11	43	20	15	12	17	0.076	23.4	19.3
SI 12 K	SIL 12 K	12	17.5	M 12	32	15.4	16	12	50	22	17	13	19	0.115	32.0	23.5
SI 14 K	SIL 14 K	14	20.0	M 14	36	16.8	19	14	57	25	19	14	22	0.170	41.9	20.8
SI 16 K	SIL 16 K	16	22.0	M 16	42	19.3	21	15	64	28	22	14	22	0.230	52.7	32.0
SI 18 K	SIL 18 K	18	25.0	M 18x1.5	46	21.8	23	17	71	32	24	14	27	0.320	63.8	38.6
SI 20 K	SIL 20 K	20	27.5	M 20x1.5	50	24.3	25	18	77	33	26	14	32	0.415	78.1	43.8
SI 22 K	SIL 22 K	22	30.0	M 22x1.5	54	25.8	28	20	84	37	28	15	32	0.540	97.2	52.6
SI 25 K	SIL 25 K	25	33.5	M 24x2	60	29.6	31	22	94	42	32	15	36	0.750	122.1	62.4
SI 30 K	SIL 30 K	30	40.0	M 30x2	70	34.8	37	25	110	51	37	15	41	1.130	168.4	81.6
SI 35 K	SIL 35 K	35	46.0	M 36x2	80	37.7	43	28	125	56			50	1.600	205.7	100.8
SI 40 K	SIL 40 K	40	57.0	M 42x2	90	44.2	49	35	142	60			60	2.770	297.1	124.0

# Metric Rod Ends

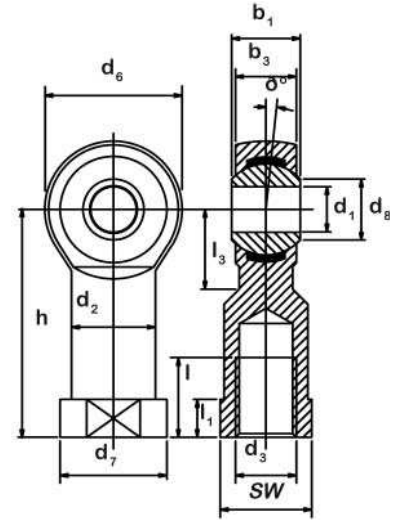
Heavy Duty Rod Ends  
with Integral Spherical Bearing  
for Pneumatic Cylinders

Self-lubricating  
Adapter Size According  
~ DIN 648 Series K  
with Cetop RP 103 P Threads

Race: Teflon® Type



SA..K  
External Thread



SI..K  
Internal Thread

## External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand												Radial	Axial
SA 5 K-F	SAL 5 K-F	5	M 5	18	7.7	8	6	33	20	9	7.5	0.013	7.5	4.3
SA 6 K-F	SAL 6 K-F	6	M 6	20	8.9	9	7	36	22	12	6.5	0.020	9.3	6.0
SA 8 K-F	SAL 8 K-F	8	M 8	24	10.4	12	9	42	25	15	7.5	0.033	16.7	11.0
SA 10 K-F	SAL 10 K-F	10	M 10	28	12.9	14	11	48	29	15	8.0	0.056	23.4	17.4
SA 12 K-F	SAL 12 K-F	12	M 12	32	15.4	16	12	54	33	19	8.0	0.087	32.0	23.5
SA 14 K-F	SAL 14 K-F	14	M 14	36	16.8	19	14	60	38	20	9.5	0.129	41.9	20.8
SA 16 K-F	SAL 16 K-F	16	M 16	42	19.3	21	15	66	40	22	8.5	0.189	52.7	32.0
SA 20 K-F	SAL 20 K-F	20	M 20x1.5	50	24.3	25	18	78	47	28	9.0	0.348	78.1	43.8
SA 25 K-F	SAL 25 K-F	25	M 24x2	60	29.6	31	22	94	58	30	10.0	0.600	122.1	61.4
SA 30 K-F	SAL 30 K-F	30	M 30x2	70	34.8	37	25	110	71	35	10.5	1.030	168.4	81.6
SA 35 K-F	SAL 35 K-F	35	M 36x2	80	37.7	43	28	125	77			1.600	205.7	100.8
SA 40 K-F	SAL 40 K-F	40	M 42x2	90	44.2	49	35	142	78			2.570	297.1	124.0

## Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand														Radial	Axial
SI 5 K-F	SIL 5 K-F	5	9.0	M 4	18	7.7	8	6	27	10	10	7.5	9	0.018	7.5	8.0
SI 6 K-F	SIL 6 K-F	6	10.0	M 6	20	8.9	9	7	30	12	10	6.5	11	0.027	9.3	8.9
SI 8 K-F	SIL 8 K-F	8	12.5	M 8	24	10.4	12	9	36	16	12	7.5	13	0.046	16.7	14.1
SI 10 K-F	SIL 10 K-F	10	15.0	M 10x1.25	28	12.9	14	11	43	20	15	8.0	17	0.076	23.4	19.3
SI 12 K-F	SIL 12 K-F	12	17.5	M 12x1.25	32	15.4	16	12	50	22	16	8.0	19	0.115	32.0	23.5
SI 14 K-F	SIL 14 K-F	14	20.0	M 14	36	16.8	19	14	57	25	20	9.5	22	0.170	41.9	20.8
SI 16 K-F	SIL 16 K-F	16	22.0	M 16x1.5	42	19.3	21	15	64	28	22	8.5	22	0.230	52.7	32.0
SI 22 K-F	SIL 22 K-F	22	30.0	M 22x1.5	54	25.8	28	20	84	37	26	10.0	32	0.540	97.2	52.6
SI 25 K-F	SIL 25 K-F	25	33.5	M 24x2	60	29.6	31	22	94	42	30	10.0	36	0.750	122.1	62.4
SI 30 K-F	SIL 30 K-F	30	40.0	M 27x2	70	34.8	37	25	110	51	35	10.5	41	1.130	168.4	81.6
SI 35 K-F	SIL 35 K-F	35	46.0	M 36x2	80	37.7	43	28	125	56			50	1.600	205.7	100.8
SI 40 K-F	SIL 40 K-F	40	57.0	M 42x2	90	44.2	49	35	142	60			60	2.770	297.1	124.0

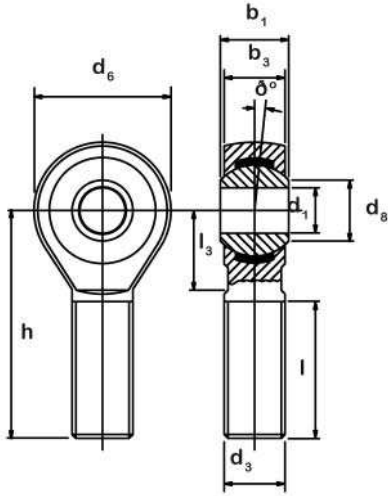
Note: An "F" at the end on a part number indicates a fine thread according to cetop RP 10H.

# Metric Rod Ends

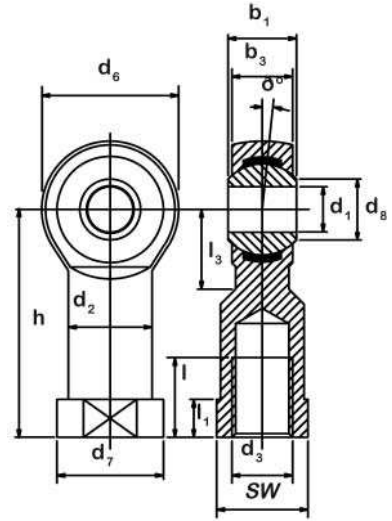
Heavy Duty on Rod Ends  
with Integral Spherical Bearing

Self-lubricating  
Adapter Size According  
~ DIN 648 Series K

Race: Bronze



SA..KW  
External Thread



SI..KW  
Internal Thread

## External Thread

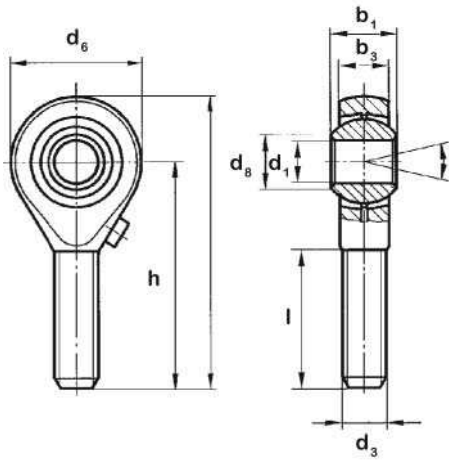
Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	Weight kg	Load Rating (kN)	
R.Hand	L.Hand										Dynamic	Static
SA 2 KW	SAL 2 KW	2	M 2	9	3.6	5	4	20	12	0.003	1.1	0.6
SA 3 KW	SAL 3 KW	3	M 3	14	5.1	6	5	26	15	0.006	1.8	1.5
SA 5 KW	SAL 5 KW	5	M 5	18	7.7	8	6	33	20	0.013	3.3	4.3
SA 6 KW	SAL 6 KW	6	M 6	20	8.9	9	7	36	22	0.020	4.3	6.0
SA 8 KW	SAL 8 KW	8	M 8	24	10.4	12	9	42	25	0.033	7.1	11.0
SA 10 KW	SAL 10 KW	10	M 10	28	12.9	14	11	48	29	0.056	10.0	17.4
SA 12 KW	SAL 12 KW	12	M 12	32	15.4	16	12	54	33	0.087	13.3	23.5
SA 14 KW	SAL 14 KW	14	M 14	36	16.8	19	14	60	38	0.129	17.1	20.8
SA 16 KW	SAL 16 KW	16	M 16	42	19.3	21	15	66	40	0.189	21.4	32.0
SA 18 KW	SAL 18 KW	18	M 18x1.5	46	21.8	23	17	72	44	0.267	26.2	38.6
SA 20 KW	SAL 20 KW	20	M 20x1.5	50	24.3	25	18	78	47	0.348	31.4	43.8
SA 22 KW	SAL 22 KW	22	M 22x1.5	54	25.8	28	20	84	51	0.443	38.1	52.6
SA 25 KW	SAL 25 KW	25	M 24x2	60	29.6	31	22	94	58	0.600	47.1	62.4
SA 30 KW	SAL 30 KW	30	M 30x2	70	34.8	37	25	110	71	1.030	63.5	81.6
SA 35 KW	SAL 35 KW	35	M 36x2	80	37.7	43	28	125	77	1.600	80.0	100.8
SA 40 KW	SAL 40 KW	40	M 42x2	90	44.2	49	35	142	78	2.550	115.5	124.0

## Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	d <sub>7</sub>	SW	Weight kg	Load Rating (kN)	
R.Hand	L.Hand													Dynamic	Static
SI 2 KW	SIL 2 KW	2	3.8	M 2	9	3.6	5	4	16	7	12	4	0.003	1.1	3.0
SI 3 KW	SIL 3 KW	3	5.0	M 3	14	5.1	6	5	21	10	13	6	0.006	1.8	4.1
SI 5 KW	SIL 5 KW	5	9.0	M 5	18	7.7	8	6	27	10	16	9	0.018	3.3	8.0
SI 6 KW	SIL 6 KW	6	10.0	M 6	20	8.9	9	7	30	12	19	11	0.027	4.3	8.9
SI 8 KW	SIL 8 KW	8	12.5	M 8	24	10.4	12	9	36	16	22	13	0.046	7.1	14.1
SI 10 KW	SIL 10 KW	10	15.0	M 10	28	12.9	14	11	43	20	25	17	0.076	10.0	19.3
SI 12 KW	SIL 12 KW	12	17.5	M 12	32	15.4	16	12	50	22	27	19	0.115	13.3	23.5
SI 14 KW	SIL 14 KW	14	20.0	M 14	36	16.8	19	14	57	25	31	22	0.170	17.1	20.8
SI 16 KW	SIL 16 KW	16	22.0	M 16	42	19.3	21	15	64	28	34	22	0.230	21.4	32.0
SI 18 KW	SIL 18 KW	18	25.0	M 18x1.5	46	21.8	23	17	71	32	37	27	0.320	26.2	38.6
SI 20 KW	SIL 20 KW	20	27.5	M 20x1.5	50	24.3	25	18	77	33	42	32	0.415	31.4	43.8
SI 22 KW	SIL 22 KW	22	30.0	M 22x1.5	54	25.8	28	20	84	37	46	32	0.540	38.1	52.6
SI 25 KW	SIL 25 KW	25	33.5	M 24x2	60	29.6	31	22	94	42	50	36	0.750	47.1	62.4
SI 30 KW	SIL 30 KW	30	40.0	M 30x2	70	34.8	37	25	110	51	51	41	1.130	63.5	81.6
SI 35 KW	SIL 35 KW	35	46.0	M 36x2	80	37.7	43	28	125	56	50	50	1.600	80.0	100.8
SI 40 KW	SIL 40 KW	40	57.0	M 42x2	90	44.2	49	35	142	60	60	60	2.770	115.5	124.0

# Metric Rod Ends

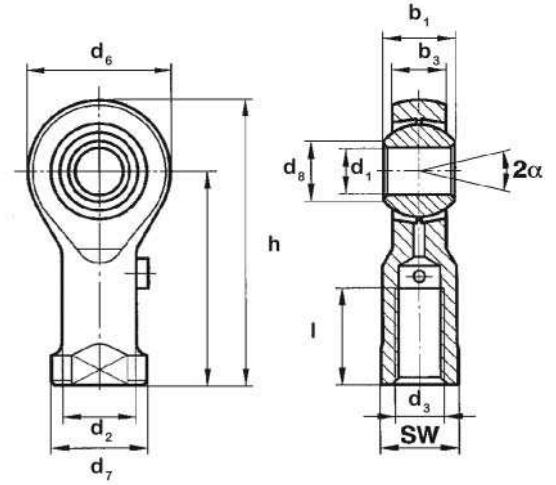
## Standard Duty Rod Ends with Spherical Bearing



GA..K  
External Thread

Grease Fitting  
Adapter Size According  
~ DIN 648 Series K

Race: Bronze  
Suited for axial loads



GI..K  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	Weight kg	Load Rating (kN)	
R.Hand	L.Hand										Dynamic	Static
SA 5 KW	SAL 5 KW	5	M 5	18	7.7	8	6	33	20	0.013	2.5	4.3
SA 6 KW	SAL 6 KW	6	M 6	20	8.9	9	7	36	22	0.020	3.2	6.0
SA 8 KW	SAL 8 KW	8	M 8	24	10.4	12	9	42	25	0.033	5.4	11.0
SA 10 KW	SAL 10 KW	10	M 10	28	12.9	14	11	48	29	0.056	7.5	17.4
SA 12 KW	SAL 12 KW	12	M 12	32	15.4	16	12	54	33	0.087	10.0	25.3
SA 14 KW	SAL 14 KW	14	M 14	36	16.8	19	14	60	36	0.129	12.9	24.5
SA 16 KW	SAL 16 KW	16	M 16	42	19.3	21	15	66	40	0.189	16.1	36.4
SA 18 KW	SAL 18 KW	18	M 18x1.5	46	21.8	23	17	72	44	0.267	19.6	43.1
SA 20 KW	SAL 20 KW	20	M 20x1.5	50	24.3	25	18	78	47	0.348	23.6	49.5
SA 22 KW	SAL 22 KW	22	M 22x1.5	54	25.8	28	20	84	51	0.443	28.6	57.3
SA 25 KW	SAL 25 KW	25	M 24x2	60	29.6	31	22	94	57	0.600	35.4	67.8
SA 28 KW	SAL 28 KW	28	M 27x2	66	32.2	35	24	103	62	0.870		
SA 30 KW	SAL 30 KW	30	M 30x2	70	34.8	37	25	110	66	1.060		

### Internal Thread

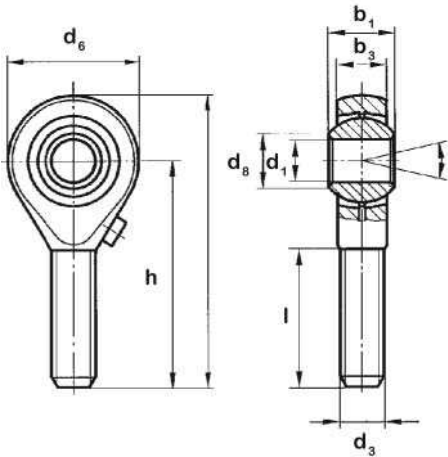
Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	d <sub>7</sub>	SW	Weight kg	Load Rating (kN)	
R.Hand	L.Hand													Dynamic	Static
SI 5 KW	SIL 5 KW	5	9.0	M 5	18	7.7	8	6	27	10	12	9	0.018	2.5	9.9
SI 6 KW	SIL 6 KW	6	10.0	M 6	20	8.9	9	7	30	12	13	11	0.027	3.2	11.9
SI 8 KW	SIL 8 KW	8	12.5	M 8	24	10.4	12	9	36	16	16	13	0.046	5.4	17.1
SI 10 KW	SIL 10 KW	10	15.0	M 10	28	12.9	14	11	43	20	19	17	0.076	7.5	21.4
SI 12 KW	SIL 12 KW	12	17.5	M 12	32	15.4	16	12	50	22	22	19	0.115	10.0	27.1
SI 14 KW	SIL 14 KW	14	20.0	M 14	36	16.8	19	14	57	25	25	22	0.170	12.9	24.5
SI 16 KW	SIL 16 KW	16	22.0	M 16	42	19.3	21	15	64	28	27	22	0.230	16.1	37.1
SI 18 KW	SIL 18 KW	18	25.0	M 18x1.5	46	21.8	23	17	71	32	31	27	0.320	19.6	43.1
SI 20 KW	SIL 20 KW	20	27.5	M 20x1.5	50	24.3	25	18	77	33	34	32	0.415	23.6	49.5
SI 22 KW	SIL 22 KW	22	30.0	M 22x1.5	54	25.8	28	20	84	37	37	32	0.540	28.6	57.3
SI 25 KW	SIL 25 KW	25	33.5	M 24x2	60	29.6	31	22	94	42	42	36	0.750	35.4	67.8
SI 28 KW	SIL 28 KW	28	37.0	M 27x2	66	32.2	35	24	103	41	46	41	1.120		
SI 30 KW	SIL 30 KW	30	40.0	M 30x2	70	34.8	37	25	110	45	50	46	1.350		

# Metric Rod Ends

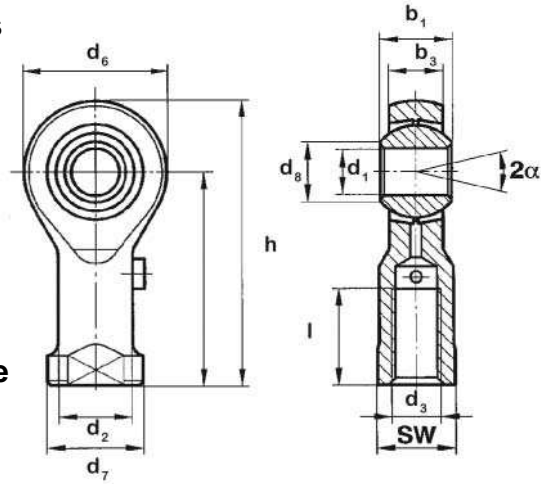
Extra Heavy Duty Rod Ends  
with Spherical Bearing

Grease Fitting  
Adapter Size According  
~ DIN 648 Series K

Race: High Strength Bronze  
Suited for High Pressure  
and High Tension Loads



GAXS..K  
External Thread



GIXS..K  
Internal Thread

## External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	Weight kg	Load Rating (kN)	
R.Hand	L.Hand										Dynamic	Static
SA 5 KW	SAL 5 KW	5	M 5x0.8	18	7.7	8	6	33	20	0.013		
SA 6 KW	SAL 6 KW	6	M 6	20	8.9	9	7	36	22	0.020	4.3	9.8
SA 8 KW	SAL 8 KW	8	M 8	24	10.4	12	9	42	25	0.033	7.1	19.5
SA 10 KW	SAL 10 KW	10	M 10	28	12.9	14	11	48	29	0.056	10.0	31.4
SA 12 KW	SAL 12 KW	12	M 12	32	15.4	16	12	54	33	0.087	13.3	42.2
SA 14 KW	SAL 14 KW	14	M 14	36	16.8	19	14	60	38	0.129	17.1	56.9
SA 16 KW	SAL 16 KW	16	M 16	42	19.3	21	15	66	40	0.189	21.4	67.7
SA 18 KW	SAL 18 KW	18	M 18x1.5	46	21.8	23	17	72	44	0.267	26.2	81.4
SA 20 KW	SAL 20 KW	20	M 20x1.5	50	24.3	25	18	78	47	0.348	31.4	93.7
SA 22 KW	SAL 22 KW	22	M 22x1.5	54	25.8	28	20	84	51	0.443	38.1	113.8
SA 25 KW	SAL 25 KW	25	M 24x2	60	29.6	31	22	94	58	0.600	47.1	135.4
SA 28 KW	SAL 28 KW	28	M 27x2	66	32.2	35	24	103	62	0.870		
SA 30 KW	SAL 30 KW	30	M 30x2	70	34.8	37	25	110	71	1.030	63.5	184.4

## Internal Thread

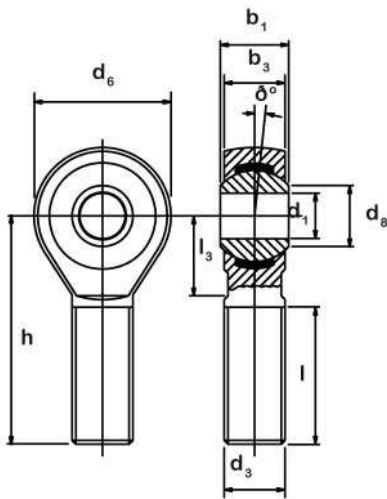
Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	d <sub>7</sub>	SW	Weight kg	Load Rating (kN)	
R.Hand	L.Hand													Dynamic	Static
SI 5 KW	SIL 5 KW	5	9.0	M 5x0.8	18	7.7	8	6	27	8	12	9	0.016		
SI 6 KW	SIL 6 KW	6	10.0	M 6	20	8.9	9	7	30	12	13	11	0.027	4.3	16.7
SI 8 KW	SIL 8 KW	8	12.5	M 8	24	10.4	12	9	36	16	16	13	0.046	7.1	25.5
SI 10 KW	SIL 10 KW	10	15.0	M 10	28	12.9	14	11	43	20	19	17	0.076	10.0	34.8
SI 12 KW	SIL 12 KW	12	17.5	M 12	32	15.4	16	12	50	22	22	19	0.115	13.3	42.2
SI 14 KW	SIL 14 KW	14	20.0	M 14	36	16.8	19	14	57	25	25	22	0.170	17.1	56.9
SI 16 KW	SIL 16 KW	16	22.0	M 16	42	19.3	21	15	64	28	27	22	0.230	21.4	67.7
SI 18 KW	SIL 18 KW	18	25.0	M 18x1.5	46	21.8	23	17	71	32	31	27	0.320	26.2	81.4
SI 20 KW	SIL 20 KW	20	27.5	M 20x1.5	50	24.3	25	18	77	33	34	32	0.415	31.4	93.7
SI 22 KW	SIL 22 KW	22	30.0	M 22x1.5	54	25.8	28	20	84	37	37	32	0.540	38.1	113.8
SI 25 KW	SIL 25 KW	25	33.5	M 24x2	60	29.6	31	22	94	42	42	36	0.750	47.1	135.4
SI 28 KW	SIL 28 KW	28	37.0	M 27x2	66	32.2	35	24	103	41	46	41	1.120		
SI 30 KW	SIL 30 KW	30	40.0	M 30x2	70	34.8	37	25	110	51	50	41	1.130	63.5	184.4

# Metric Rod Ends

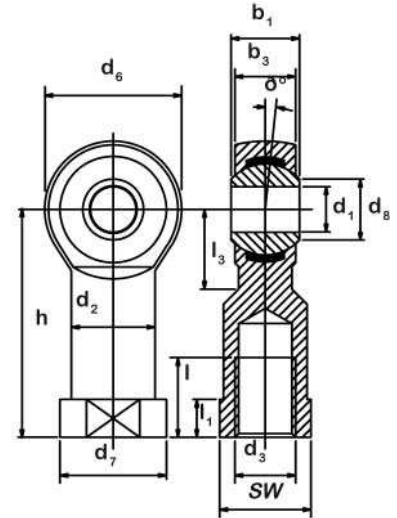
## Stainless Steel Rod Ends with Integral Spherical Bearing

Self-lubricating  
Adapter Size According  
~ DIN 648 Series K

Housing: Stainless Steel 1.4571  
Insert: Special High Strength  
Bronze with Teflon liner  
Ball: Hardened, Ground, Polished  
& Hard Chrome Plated 100Cr6  
Steel



SA..K SS  
External Thread



SI..K SS  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand												Radial	Axial
SA 5 K SS	SAL 5 K SS	5	M 5	18	7.7	8	6	33	20	9	12	0.013	7.5	6.2
SA 6 K SS	SAL 6 K SS	6	M 6	20	8.9	9	7	36	22	10	11	0.020	9.3	8.8
SA 8 K SS	SAL 8 K SS	8	M 8	24	10.4	12	9	42	25	13	12	0.033	16.7	16.1
SA 10 K SS	SAL 10 K SS	10	M 10	28	12.9	14	11	48	29	15	12	0.056	23.4	25.5
SA 12 K SS	SAL 12 K SS	12	M 12	32	15.4	16	12	54	33	17	13	0.087	32.0	34.5
SA 14 K SS	SAL 14 K SS	14	M 14	36	16.8	19	14	60	38	19	14	0.129	41.9	39.4
SA 16 K SS	SAL 16 K SS	16	M 16	42	19.3	21	15	66	40	22	14	0.189	52.7	60.6
SA 18 K SS	SAL 18 K SS	18	M 18x1.5	46	21.8	23	17	72	44	24	14	0.267	63.8	73.2
SA 20 K SS	SAL 20 K SS	20	M 20x1.5	50	24.3	25	18	78	47	26	14	0.348	78.1	83.1
SA 22 K SS	SAL 22 K SS	22	M 22x1.5	54	25.8	28	20	84	51	28	15	0.443	97.2	99.7
SA 25 K SS	SAL 25 K SS	25	M 24x2	60	29.6	31	22	94	58	32	15	0.600	122.1	118.3
SA 30 K SS	SAL 30 K SS	30	M 30x2	70	34.8	37	25	110	71	37	15	1.030	168.4	154.8
SA 35 K SS	SAL 35 K SS	35	M 36x2	80	37.7	43	28	125	77			1.600	205.7	191.2

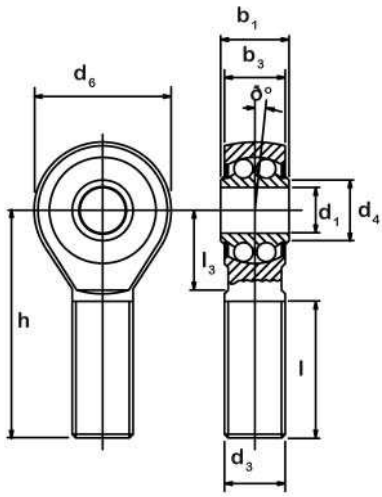
### Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>8</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Max. Static Load (kN)	
R.Hand	L.Hand														Radial	Axial
SI 5 K SS	SIL 5 K SS	5	9.0	M 5	18	7.7	8	6	27	10	9	12	9	0.018	7.5	11.8
SI 6 K SS	SIL 6 K SS	6	10.0	M 6	20	8.9	9	7	30	12	10	11	11	0.027	9.3	13.1
SI 8 K SS	SIL 8 K SS	8	12.5	M 8	24	10.4	12	9	36	16	13	12	13	0.046	16.7	20.7
SI 10 K SS	SIL 10 K SS	10	15.0	M 10	28	12.9	14	11	43	20	15	12	17	0.076	23.4	28.3
SI 12 K SS	SIL 12 K SS	12	17.5	M 12	32	15.4	16	12	50	22	17	13	19	0.115	32.0	34.5
SI 14 K SS	SIL 14 K SS	14	20.0	M 14	36	16.8	19	14	57	25	19	14	22	0.170	41.9	39.4
SI 16 K SS	SIL 16 K SS	16	22.0	M 16	42	19.3	21	15	64	28	22	14	22	0.230	52.7	60.6
SI 18 K SS	SIL 18 K SS	18	25.0	M 18x1.5	46	21.8	23	17	71	32	24	14	27	0.320	63.8	73.2
SI 20 K SS	SIL 20 K SS	20	27.5	M 20x1.5	50	24.3	25	18	77	33	26	14	32	0.415	78.1	83.1
SI 22 K SS	SIL 22 K SS	22	30.0	M 22x1.5	54	25.8	28	20	84	37	28	15	32	0.540	97.2	99.7
SI 25 K SS	SIL 25 K SS	25	33.5	M 24x2	60	29.6	31	22	94	42	32	15	36	0.750	122.1	118.3
SI 30 K SS	SIL 30 K SS	30	40.0	M 30x2	70	34.8	37	25	110	51	37	15	41	1.130	168.4	154.8
SI 35 K SS	SIL 35 K SS	35	46.0	M 36x2	80	37.7	43	28	125	56			50	1.600	205.7	191.2

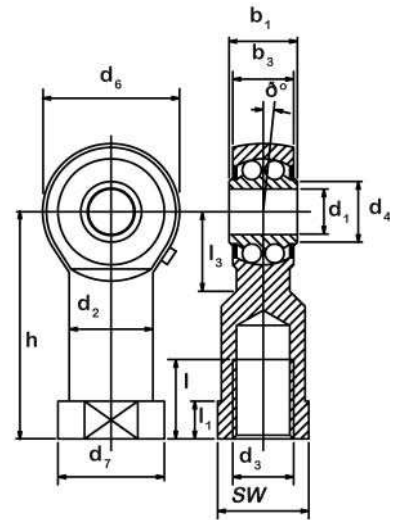
# Metric Rod Ends

## Heavy Duty Rod Ends with Integral Ball Bearing

Long Life Grease, Seal Covers  
Adapter Size According  
DIN 648 Series B



SA..B  
External Thread



SI..B  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Load Rating (kN)	
R.Hand	L.Hand												Dynamic	Static
SA 6 B	SAL6B	6	M 6x1	9	20	9	6.75	36	22	12	8.0	0.019	2.8	0.7
SA 8 B	SAL8B	8	M 8x1.25	10.5	24	12	9.0	42	25	15	8.5	0.036	4.0	1.0
SA 10 B	SAL10B	10	M 10x1.5	12	28	14	10.5	48	29	15	8.0	0.060	4.5	1.5
SA 12 B	SAL12B	12	M 12x1.75	14.5	32	16	12	54	33	19	7.5	0.087	5.0	1.8
SA 14 B	SAL14B	14	M 14x2	17	36	19	13.5	60	36	20	6.0	0.135	5.6	2.0
SA 16 B	SAL16B	16	M 16x2	19	42	21	15	66	40	22	8.0	0.190	6.3	2.4
SA 18 B	SAL18B	18	M 18x1.5	21.5	46	23	16.5	72	44	25	8.5	0.270	7.1	2.9
SA 20 B	SAL20B	20	M 20x1.5	24.5	50	25	18	78	47	28	7.0	0.338	7.9	3.5
SA 22 B	SAL22B	22	M 22x1.5	26	54	28	20	84	51	26	8.0	0.450	9.3	4.0
SA 25 B	SAL25B	25	M 24x2	29.5	64	31	22	94	57	30	5.0	0.602	11.0	5.7
SA 30 B	SAL30B	30	M 30x2	34.5	70	37	25	110	66	35	7.5	0.922	14.2	7.5

### Internal Thread

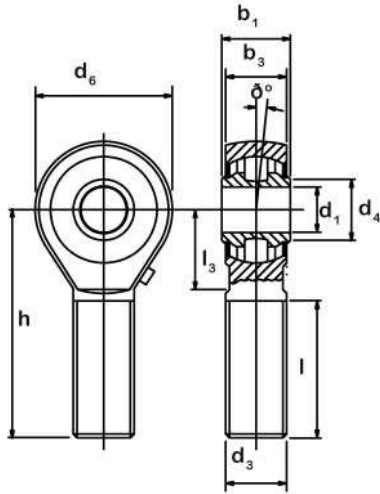
Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Load Rating (kN)	
R.Hand	L.Hand														Dynamic	Static
SI 6 B	SIL6B	6	10	M 6x1	9	20	9	6.75	30	12	10	8.0	11	0.024	2.8	0.7
SI 8 B	SIL8B	8	12.5	M 8x1.25	10.5	24	12	9.0	36	16	12	8.5	14	0.044	4.0	1.0
SI 10 B	SIL10B	10	15	M 10x1.5	12	28	14	10.5	43	20	15	8.0	17	0.072	4.5	1.5
SI 12 B	SIL12B	12	17.5	M 12x1.75	14.5	32	16	12	50	22	16	7.5	19	0.107	5.0	1.8
SI 14 B	SIL14B	14	20	M 14x2	17	36	19	13.5	57	25	20	6.0	22	0.160	5.6	2.0
SI 16 B	SIL16B	16	22	M 16x2	19	42	21	15	64	28	22	8.0	22	0.224	6.3	2.4
SI 18 B	SIL18B	18	25	M 18x1.5	21.5	46	23	16.5	71	32	24	8.5	27	0.293	7.1	2.9
SI 20 B	SIL20B	20	27.5	M 20x1.5	24.5	50	25	18	77	33	26	7.0	30	0.367	7.9	3.5
SI 22 B	SIL22B	22	30	M 22x1.5	26	54	28	20	84	37	26	8.0	32	0.480	9.3	4.0
SI 25 B	SIL25B	25	30	M 24x2	29.5	64	31	22	94	42	32	5.0	30	0.572	11.0	5.7
SI 30 B	SIL30B	30	40	M 30x2	34.5	70	37	25	110	51	35	7.5	41	0.978	14.2	7.5



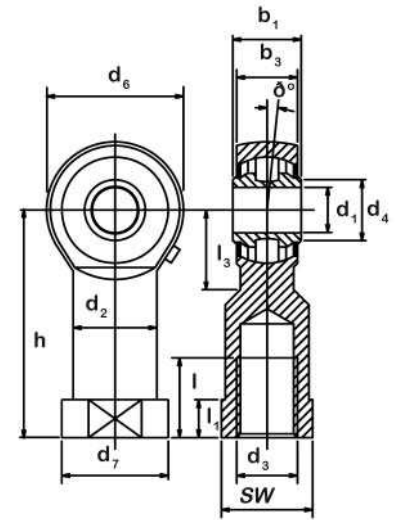
# Metric Rod Ends

## Heavy Duty Rod Ends with Integral Roller Bearing

Long Life Grease, Seal Covers  
Adapter Size According  
DIN 648 Series R



SA..R  
External Thread



SI..R  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	Weight kg	Load Rating (kN)	
R.Hand	L.Hand												Dynamic	Static
SA 12 R	SAL12R	12	M 12x1.75	14.5	32	16	12	54	33	19	7.5	0.088	10.3	6.6
SA 16 R	SAL16R	16	M 16x2	19	42	21	15	66	40	22	7.0	0.185	13.3	8.9
SA 20 R	SAL20R	20	M 20x1.5	24.5	50	25	18	78	47	28	7.0	0.340	17.0	11.7
SA 25 R	SAL25R	25	M 24x2	29.5	64	31	22	94	57	30	5.0	0.596	25.0	18.5
SA 30 R	SAL30R	30	M 30x2	34.5	70	37	25	110	66	35	7.5	0.912	32.5	24.9
SA 35 R	SAL35R	35	M 36x3	44.5	92	48	35	137	82	48	7.0	2.000	50.1	37.0
SA 40 R	SAL40R	40	M 42x3	51.5	120	66	49	170	94	70	7.0	5.070	104.9	79.2

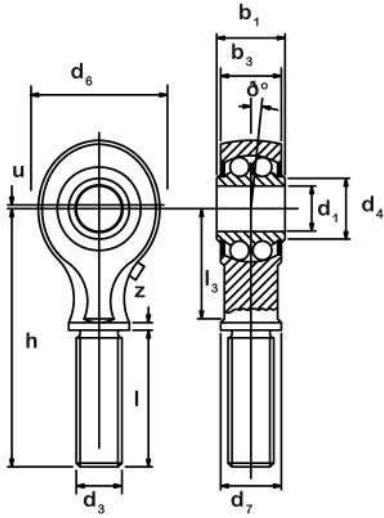
### Internal Thread

Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	b <sub>1</sub>	b <sub>3</sub>	h	l	l <sub>3</sub>	δ°	SW	Weight kg	Load Rating (kN)	
R.Hand	L.Hand														Dynamic	Static
SI 12 R	SIL12R	12	17.5	M 12x1.75	14.5	32	16	12	50	22	16	7.5	19	0.109	10.3	6.6
SI 16 R	SIL16R	16	22	M 16x2	19	42	21	15	64	28	22	7.0	22	0.220	13.3	8.9
SI 20 R	SIL20R	20	27.5	M 20x1.5	24.5	50	25	18	77	33	26	7.0	30	0.361	17.0	11.7
SI 25 R	SIL25R	25	30	M 24x2	29.5	64	31	22	94	42	32	5.0	30	0.565	24.9	18.5
SI 30 R	SIL30R	30	40	M 30x2	34.5	70	37	25	110	51	35	7.5	41	1.000	32.5	24.9
SI 35 R	SIL35R	35	48	M 36x3	44.5	92	48	35	137	70	48	7.0	50	2.250	50.1	37.0
SI 40 R	SIL40R	40	58	M 42x3	51.5	120	66	49	170	80	70	7.0	60	5.070	104.9	79.2

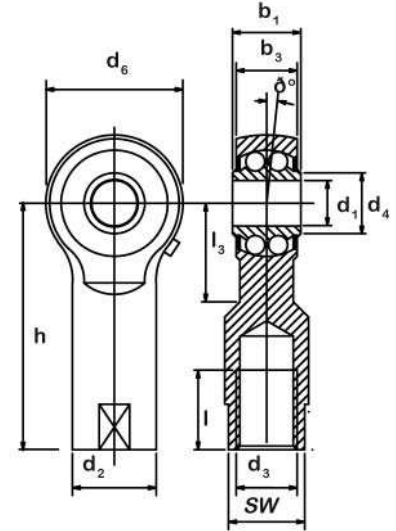
# Metric Rod Ends

## Heavy Duty Rod Ends with Integral Ball Bearing

Long Life Grease, Seal Covers  
Special Construction



SA..PB  
External Thread



SI..PB  
Internal Thread

### External Thread

Part No.		d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	b <sub>1</sub>	b <sub>3</sub>	l	l <sub>3</sub>	h	u	z	ø°	Weight kg	Load Rating (kN)	
R.Hand	L.Hand															Dynamic	Static
SA 5 PB	SAL 5 PB	5	M 8x1	7.5	19	12	12	8	39.5	13	57	1.5	2.5	7.0	0.037	1.6	0.5
SA 6 PB	SAL 6 PB	6	M 10x1	8.5	24	14	14	10	42.5	17	64	1.5	2.5	10.5	0.062	2.5	0.8
SA 8 PB	SAL 8 PB	8	M 12x1.5	11	30	17	15	10	46.5	20	72	2	2.5	8.5	0.097	2.6	1.0
SA 10 PB	SAL 10 PB	10	M 14x1.5	13.5	36	19	20	14	49.5	28	82	2.5	2.5	9.5	0.168	5.1	1.9
SA 12 PB	SAL 12 PB	12	M 16x1.5	15	40	21	20	14	53.5	31	90	3	2.5	7.5	0.226	5.4	2.1
SA 15 PB	SAL 15 PB	15	M 20x1.5	18.5	42	26	20	14	62.5	30	100	3	2.5	6.5	0.310	5.5	3.3
SA 17 PB	SAL 17 PB	17	M 20x1.5	21	48	26	22	16	62.5	36	105	3.5	2.5	7.0	0.401	5.6	2.7
SA 20 PB	SAL 20 PB	20	M 24x1.5	24	56	30	24	18	68.5	41	117	3.5	3	5.5	0.587	6.2	3.1

### Internal Thread

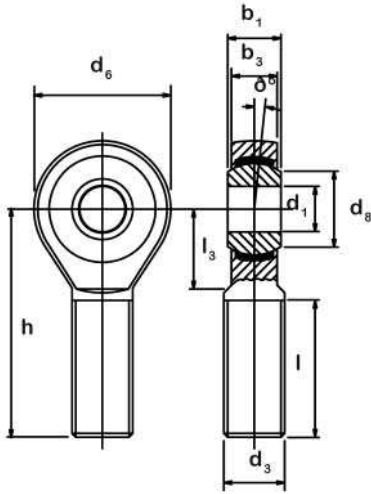
Part No.		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	b <sub>1</sub>	b <sub>3</sub>	l	l <sub>3</sub>	h	r	SW	ø°	Weight kg	Load Rating (kN)	
R.Hand	L.Hand															Dynamic	Static
SI 10 PB	SIL 10 PB	10	15	M 8x1.25	13	30	13	9	17	14.5	38	10	13	7.0	0.063		1.0
SI 15 PB	SIL 15 PB	15	19	M 12x1.75	17.5	40	16.5	12	24	20	51	15	17	7.0	0.140		1.9
SI 20 PB	SIL 20 PB	20	22	M 16x2	24	48	20.5	15	32	22	65	20	19	6.5	0.223		3.0

# Inch Rod Ends

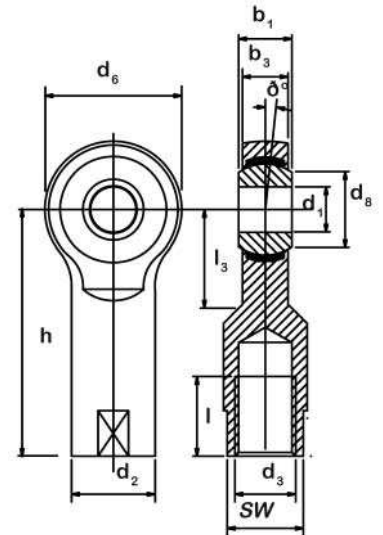
Standard Rod Ends  
Integral Design Spherical Bearing

Self-Lubricating  
SAE 52100 Heat Treated Steel

Race: Teflon® Type



CMR.T  
External Thread



CFR..T  
Internal Thread

## External Thread

Part No.		d1	b1	b3	h	d6	l	d3	d0	Load Rating (lbs)
R.Hand	L.Hand									Static
CMR 3 T	CML 3 T	3/16	0.312	0.234	1.250	0.625	0.750	10-32	10	2,070
CMR 4 T	CML 4 T	1/4	0.375	0.250	1.562	0.750	1.000	1/4-28	13.5	3,820
CMR 5 T	CML 5 T	5/16	0.437	0.312	1.875	0.875	1.250	5/16-24	11	5,110
CMR 6 T	CML 6 T	3/8	0.500	0.359	1.938	1.000	1.250	3/8-24	11	7,610
CMR 7 T	CML 7 T	7/16	0.562	0.406	2.125	1.125	1.375	7/16-20	10.5	9,120
CMR 8 T	CML 8 T	1/2	0.625	0.453	2.438	1.312	1.500	1/2-20	10	12,220
CMR 10 T	CML 10 T	5/8	0.750	0.484	2.625	1.500	1.625	5/8-18	13	13,540
CMR 12 T	CML 12 T	3/4	0.875	0.593	2.875	1.750	1.750	3/4-16	12	18,810

## Internal Thread

Part No.		d1	b1	b3	h	d6	d2	SW	l	d3	d0	Load Rating (lbs)
R.Hand	L.Hand											Static
CFR 3 T	CFL 3 T	3/16	0.312	0.234	1.062	0.625	0.406	0.315	0.500	10-32	10	2,700
CFR 4 T	CFL 4 T	1/4	0.375	0.250	1.312	0.750	0.469	0.375	0.687	1/4-28	13.5	4,400
CFR 5 T	CFL 5 T	5/16	0.437	0.312	1.375	0.875	0.500	0.437	0.687	5/16-24	11	5,110
CFR 6 T	CFL 6 T	3/8	0.500	0.359	1.625	1.000	0.687	0.562	0.812	3/8-24	11	7,610
CFR 7 T	CFL 7 T	7/16	0.562	0.406	1.812	1.125	0.750	0.625	0.937	7/16-20	10.5	9,120
CFR 8 T	CFL 8 T	1/2	0.625	0.453	2.125	1.312	0.875	0.750	1.062	1/2-20	10	12,220
CFR 10 T	CFL 10 T	5/8	0.750	0.484	2.500	1.500	1.000	0.875	1.375	5/8-18	13	13,540
CFR 12 T	CFL 12 T	3/4	0.875	0.593	2.875	1.750	1.125	1.000	1.562	3/4-16	12	12,000

# Stainless Steel Inch Rod Ends

Standard Rod Ends

Integral Design Spherical Bearing

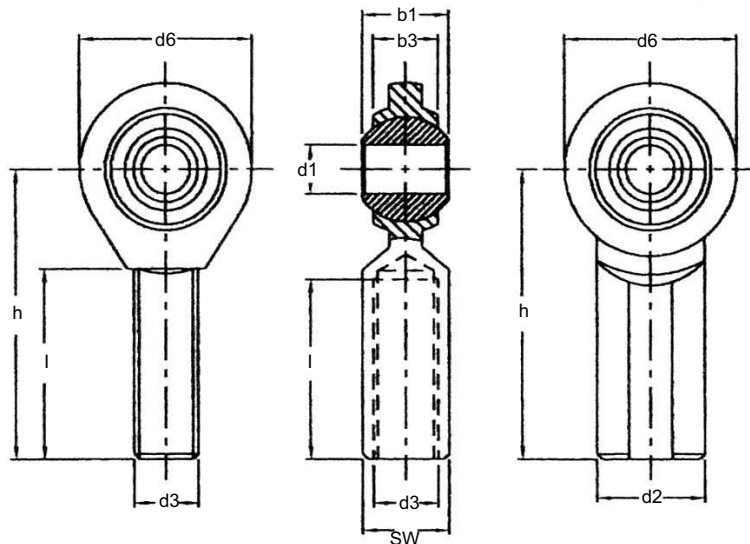
Self Lubricating

Body: 304 SS

Ball: 440 SS

**CMR...T SS**  
External Thread

**CFR...T SS**  
Internal Thread



## External Thread

Part No.	d1	b1	b3	h	d6	l	d3	d°	Load Rating (lbs) Static	Weight (lbs)
CMR 3 T SS	3/16	0.312	0.204	1.250	0.525	0.750	10-32	20	1,200	0.03
CMR 4 T SS	1/4	0.375	0.250	1.562	0.760	1.000	1/4-28	20	2,000	0.05
CMR 5 T SS	5/16	0.437	0.312	1.875	0.875	1.250	5/16-24	22	3,000	0.07
CMR 6 T SS	3/8	0.500	0.359	1.939	1.000	1.250	3/8-24	22	4,000	0.12
CMR 7 T SS	7/16	0.562	0.408	2.125	1.125	1.375	7/16-20	21	5,000	0.16
CMR 8 T SS	1/2	0.625	0.453	2.436	1.312	1.500	1/2-20	20	6,000	0.24
CMR 10 T SS	5/8	0.750	0.484	2.625	1.500	1.625	5/8-18	26	8,000	0.36
CMR 12 T SS	3/4	0.875	0.593	2.875	1.750	1.750	3/4-16	21	10,000	0.57

## Internal Thread

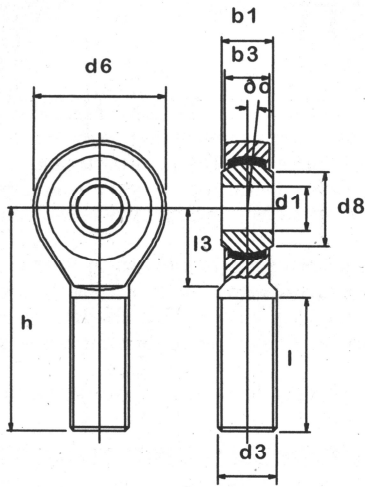
Part No.	d1	b1	b3	h	d6	d2	SW	l	d3	d°	Load Rating (lbs) Static	Weight (lbs)
CFR 3 T SS	3/16	0.312	0.204	1.032	0.525	0.405	0.312	0.500	10-32	20	1,200	0.04
CFR 4 T SS	1/4	0.375	0.250	1.242	0.760	0.468	0.375	0.625	1/4-28	20	2,000	0.06
CFR 5 T SS	5/16	0.437	0.312	1.375	0.875	0.500	0.437	0.625	5/16-24	22	3,000	0.08
CFR 6 T SS	3/8	0.500	0.359	1.625	1.000	0.687	0.500	0.750	3/8-24	22	4,000	0.13
CFR 7 T SS	7/16	0.562	0.408	1.812	1.125	0.750	0.625	0.875	7/16-20	21	5,000	0.18
CFR 8 T SS	1/2	0.625	0.453	2.125	1.312	0.875	0.750	1.000	1/2-20	20	6,000	0.29
CFR 10 T SS	5/8	0.750	0.484	2.500	1.500	1.000	0.875	1.250	5/8-18	26	8,000	0.43
CFR 12 T SS	3/4	0.875	0.593	2.375	1.750	1.125	1.000	1.375	3/4-16	21	10,000	0.65

# INCH ROD ENDS

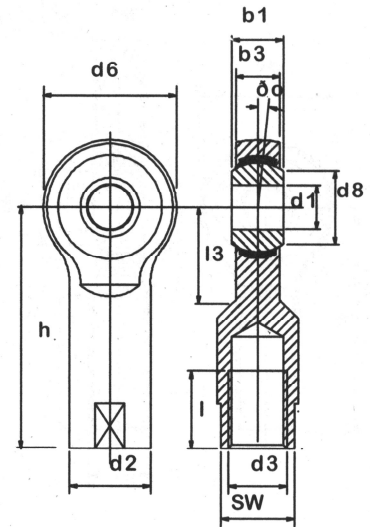
Heavy Duty Rod Ends  
Cartridge Design Spherical Bearing

Self-Lubricating  
Heat Treated Alloy Steel Body  
Hard Chrome Plated Ball

Race: Teflon® Type



KMR..C/H  
External Thread



KFR..C/H  
Internal Thread

## External Thread

Part No.		d1	b1	b3	h	d6	l	d3	δo	Load Rating (lbs)
R.Hand	L.Hand									Static
KMR 4 C/H	KML 4 C/H	1/4	0.375	0.281	1.562	0.750	1.000	1/4-28	16	4,320
KMR 5 C/H	KML 5 C/H	5/16	0.437	0.344	1.875	0.875	1.250	5/16-24	14	5,560
KMR 6 C/H	KML 6 C/H	3/8	0.500	0.406	1.938	1.000	1.250	3/8-24	12	7,840
KMR 7 C/H	KML 7 C/H	7/16	0.562	0.437	2.125	1.125	1.375	7/16-20	14	8,440
KMR 8 C/H	KML 8 C/H	1/2	0.625	0.500	2.438	1.312	1.500	1/2-20	12	13,320
KMR 10 C/H	KML 10 C/H	5/8	0.750	0.562	2.625	1.500	1.625	5/8-18	16	14,720
KMR 12 C/H	KML 12 C/H	3/4	0.875	0.687	2.875	1.750	1.750	3/4-16	14	23,040

## Internal Thread

Part No.		d1	b1	b3	h	d6	d2	SW	l	d3	δo	Load Rating (lbs)
R.Hand	L.Hand											Static
KFR 4 C/H	KFL 4 C/H	1/4	0.375	0.281	1.312	0.750	0.469	0.375	0.750	1/4-28	16	5,080
KFR 5 C/H	KFL 5 C/H	5/16	0.437	0.344	1.375	0.875	0.500	0.437	0.750	5/16-24	14	6,260
KFR 6 C/H	KFL 6 C/H	3/8	0.500	0.406	1.625	1.000	0.687	0.562	0.937	3/8-24	12	7,840
KFR 7 C/H	KFL 7 C/H	7/16	0.562	0.437	1.812	1.125	0.750	0.625	1.062	7/16-20	14	8,440
KFR 8 C/H	KFL 8 C/H	1/2	0.625	0.500	2.125	1.312	0.875	0.750	1.187	1/2-20	12	13,320
KFR 10 C/H	KFL 10 C/H	5/8	0.750	0.562	2.500	1.500	1.000	0.875	1.500	5/8-18	16	14,720
KFR 12 C/H	KFL 12 C/H	3/4	0.875	0.687	2.875	1.750	1.125	1.000	1.750	3/4-16	14	23,040