

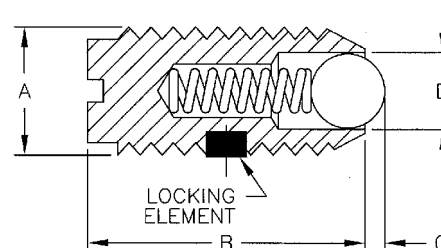
SPRING LOADED DEVICES



Ball Plungers

- Material:
 - Steel Body: 12L14 Steel
 - Stainless Steel Body: 303 Stainless Steel
 - Ball: 440 Stainless Steel or Nylon
- Smallest and lightest spring loaded device
- Side-load tolerant
- Controlled end forces
- Screwdriver installation
- Many sizes conform to TCMAI standards
- Bodies are color coded to indicate end forces:
 - Plain or Zinc = Light Force
 - Black = Standard Force
 - Gold = Heavy Force

NYLON THREAD LOCKING ELEMENT IS STANDARD ON ALL SIZES
 To order ball plungers without a locking element, simply add an "X" to the end of the part number (ex. 52821X).
 Pricing is the same with or without locking element.



STEEL BODY			STAINLESS STEEL BODY			End Force (lbs)		Thread	B	C	Ball Dia. D	Weight (lbs/100pcs)
Stainless Steel Ball Part No.	Nylon Ball Part No.	Body Color Type	Stainless Steel Ball Part No.	Nylon Ball Part No.	Body Color Type	Initial	Final	A				
52821	53821	Black	52901	53830	Plain	.12	.50	4-48	3/16	.020	.062	.005
52822	53822	Black	52902	53831	Plain	.25	.75	5-40	1/4	.020	.062	.02
52823	53823	Black	52903	53832	Plain	.50	1.00	6-40	5/16	.023	.078	.02
52824	53824	Black	52904	53833	Plain	.50	1.25	8-36	11/32	.025	.093	.04
52825	53825	Black	52923	53852	Plain	.50	1.25	8-32	11/32	.025	.093	.04
52801	53801	Zinc	52905	53834	Plain	.50	1.50	10-32	33/64	.025	.093	.30
52802	53802	Black	52906	53835	Black	1.50	3.00	10-32	33/64	.025	.093	.30
52803	53803	Gold	52907	53836	Gold	2.00	5.00	10-32	33/64	.025	.093	.30
52804	53804	Zinc	52908	53837	Plain	2.00	4.00	1/4-20	17/32	.035	.125	.40
52805	53805	Black	52909	53838	Black	3.00	7.00	1/4-20	17/32	.035	.125	.40
52806	53806	Gold	52910	53839	Gold	4.00	12.00	1/4-20	17/32	.035	.125	.40
52807	53807	Zinc	52911	53840	Plain	2.00	4.50	5/16-18	37/64	.040	.156	.70
52808	53808	Black	52912	53841	Black	4.00	9.00	5/16-18	37/64	.040	.156	.70
52809	53809	Gold	52913	53842	Gold	6.00	17.00	5/16-18	37/64	.040	.156	.70
52810	53810	Zinc	52914	53843	Plain	2.50	5.00	3/8-16	5/8	.048	.187	1.20
52811	53811	Black	52915	53844	Black	5.00	10.00	3/8-16	5/8	.048	.187	1.20
52812	53812	Gold	52916	53845	Gold	6.00	21.00	3/8-16	5/8	.048	.187	1.20
52813	53813	Zinc	52917	53846	Plain	3.00	6.00	1/2-13	3/4	.072	.281	2.60
52814	53814	Black	52918	53847	Black	6.00	12.00	1/2-13	3/4	.072	.281	2.60
52815	53815	Gold	52919	53848	Gold	6.00	30.00	1/2-13	3/4	.072	.281	2.60
52816	53816	Zinc	52920	53849	Plain	4.50	9.00	5/8-11	63/64	.096	.375	5.00
52817	53817	Black	52921	53850	Black	9.00	18.00	5/8-11	63/64	.096	.375	5.00
52818	53818	Gold	52922	53851	Gold	7.00	50.00	5/8-11	63/64	.096	.375	5.00

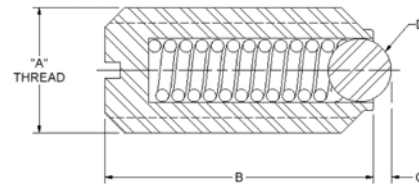
Special sizes quoted upon request – see quotation form on page 115.

For information concerning installation, see page 125.

Metric

STEEL BODY			STAINLESS STEEL BODY			End Force (lbs)		Thread	B	C	Ball Dia. D
Stainless Steel Ball Part No.	Nylon Ball Part No.	Body Color Type	Stainless Steel Ball Part No.	Nylon Ball Part No.	Body Color Type	Initial	Final	A	mm (in.)	mm (in.)	mm (in.)
63901	63961	Black	64001	64061	Black	.90	2.25	M4 x 0.7	9 (.354)	.8 (.032)	2.5 (.098)
63920	–	Black	–	–	–	.50	1.50	M5 x 0.8	13 (.518)	.6 (.023)	2.38 (.093)
63921	–	Black	–	–	–	1.50	3.00	M5 x 0.8	13 (.518)	.6 (.023)	2.38 (.093)
63922	–	Black	–	–	–	2.00	4.90	M5 x 0.8	13 (.518)	.6 (.023)	2.38 (.093)
63902	63962	Black	64002	64062	Black	2.00	2.90	M6 x 1.0	14 (.551)	1 (.039)	3.5 (.138)
63903	63963	Zinc	64003	64063	Plain	.45	1.35	M6 x 1.0	14 (.551)	1 (.039)	3.5 (.138)
63904	63964	Gold	64004	64064	Gold	6.25	8.95	M6 x 1.0	14 (.551)	1 (.039)	3.5 (.138)
63905	63965	Black	64005	64065	Black	3.35	6.70	M8 x 1.25	16 (.630)	1.5 (.059)	5 (.196)
63906	63966	Zinc	64006	64066	Plain	1.11	2.25	M8 x 1.25	16 (.630)	1.5 (.059)	5 (.196)
63907	63967	Gold	64007	64067	Gold	8.95	13.40	M8 x 1.25	16 (.630)	1.5 (.059)	5 (.196)
63908	63968	Black	64008	64068	Black	4.45	7.80	M10 x 1.5	19 (.748)	2 (.079)	6 (.236)
63909	63969	Zinc	64009	64069	Plain	1.80	3.35	M10 x 1.5	19 (.748)	2 (.079)	6 (.236)
63910	63970	Gold	64010	64070	Gold	13.40	20.00	M10 x 1.5	19 (.748)	2 (.079)	6 (.236)
63911	63971	Black	64011	64071	Black	6.70	12.25	M12 x 1.75	22 (.866)	2.5 (.098)	8 (.315)
63912	63972	Zinc	64012	64072	Plain	2.25	4.50	M12 x 1.75	22 (.866)	2.5 (.098)	8 (.315)
63913	63973	Gold	64013	64073	Gold	16.75	25.65	M12 x 1.75	22 (.866)	2.5 (.098)	8 (.315)

Ball Plungers (continued)



Standard End Pressure – Metric

Steel Part No.	Stainless Steel Part No.	End Force (Newtons) Initial	End Force (Newtons) Final	A	B	C	D
69001X	69101X	1,5	3	M3x0.5	7	0,5	1,5
63901X	64001X	4	10	M4x0.7	9	0,8	2,5
69002X	69102X	6	11	M5x0.8	12	0,9	3
63902X	64002X	9	13	M6x1.0	14	1	3,5
63905X	64005X	15	30	M8x1.25	16	1,5	5
63908X	64008X	20	35	M10x1.5	19	2	6
63911X	64011X	30	55	M12x1.75	22	2,5	8
69003X	69103X	65	125	M16x2.0	24	3,5	10
69004X	69104X	80	160	M20x2.5	30	4,5	12

Heavy End Pressure – Metric

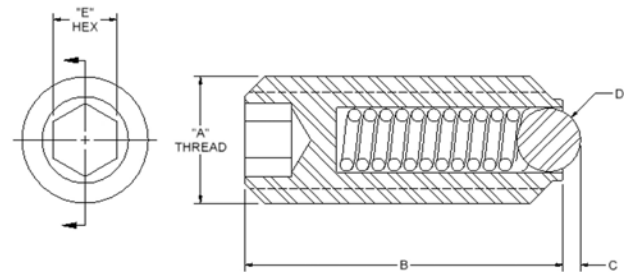
Steel Part No.	Stainless Steel Part No.	End Force (Newtons) Initial	End Force (Newtons) Final	A	B	C	D
69010X	69110X	5	7	M3x0.5	7	0,5	1,5
69011X	69111X	12	22	M4x0.7	9	0,8	2,5
69012X	69112X	19	30	M5x0.8	12	0,9	3
63904X	64004X	28	40	M6x1.0	14	1	3,5
69013X	69113X	47	73	M8x1.25	16	1,5	5
69014X	69114X	66	100	M10x1.5	19	2	6
69015X	69115X	66	120	M12x1.75	22	2,5	8
69016X	69116X	90	180	M16x2.0	24	3,5	10
69017X	69117X	115	240	M20x2.5	30	4,5	12

Available without locking element only

NEW

Ball Plungers – Hexagon Socket

- Material:
 - Steel Body: ball in steel, spring steel D
- Surface finish:
 - Steel: black oxide finish
 - Stainless Steel Body: 300 series, ball 400 series, spring 300series



Standard End Pressure – Inch

Steel Part No.	Stainless Steel Part No.	End Force (lbs) Initial	End Force (lbs) Final	A	B	C	D	E
55001X	55101X	2.0	2.9	1/4-28	15	1	3.5	1/8
55002X	55102X	2.0	2.9	1/4-20	15	1	3.5	1/8
55003X	55103X	3.4	6.7	5/16-18	18	1.5	5	5/32
55004X	55104X	4.5	7.9	3/8-16	23	2	6	3/16
55005X	55105X	6.7	12.4	1/2-13	26	2.5	8	7/32
55006X	55106X	14.6	28.1	5/8-11	33	3.5	10	5/16

Heavy End Pressure – Inch

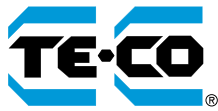
Steel Part No.	Stainless Steel Part No.	End Force (lbs) Initial	End Force (lbs) Final	A	B	C	D	E
55010X	55110X	6.3	9.0	1/4-28	15	1	3.5	1/8
55011X	55111X	6.3	9.0	1/4-20	15	1	3.5	1/8
55012X	55112X	10.6	16.4	5/16-18	18	1.5	5	5/32
55013X	55113X	14.8	22.5	3/8-16	23	2	6	3/16
55014X	55114X	14.8	27.0	1/2-13	26	2.5	8	7/32
55015X	55115X	20.2	40.5	5/8-11	33	3.5	10	5/16

Standard End Pressure – Metric

Steel Part No.	Stainless Steel Part No.	End Force (Newtons) Initial	End Force (Newtons) Final	A	D	B	C	E
69201X	69301X	1,5	3	M3x0.5	1,5	9	0,5	1,5
69202X	69302X	4	10	M4x0.7	2,5	10	0,8	2
69203X	69303X	6	11	M5x0.8	3	14	0,9	2,5
69204X	69304X	9	13	M6x1.0	3,5	15	1	3
69205X	69305X	15	30	M8x1.25	5	18	1,5	4
69206X	69306X	20	35	M10x1.5	6	23	2	5
69207X	69307X	30	55	M12x1.75	8	26	2,5	6
69208X	69308X	65	125	M16x2.0	10	33	3,5	8
69209X	69309X	80	160	M20x2.5	12	43	4,5	10
69210X	69310X	90	180	M24x3.0	15	48	5,5	12

Heavy End Pressure – Metric

Steel Part No.	Stainless Steel Part No.	End Force (Newtons) Initial	End Force (Newtons) Final	A	D	B	C	E
69221X	69321X	5	7	M3x0.5	1,5	9	0,5	1,5
69222X	69322X	12	22	M4x0.7	2,5	10	0,8	2
69223X	69323X	19	30	M5x0.8	3	14	0,9	2,5
69224X	69324X	28	40	M6x1.0	3,5	15	1	3
69225X	69325X	47	73	M8x1.25	5	18	1,5	4
69226X	69326X	66	100	M10x1.5	6	23	2	5
69227X	69327X	66	120	M12x1.75	8	26	2,5	6
69228X	69328X	90	180	M16x2.0	10	33	3,5	8
69229X	69329X	115	240	M20x2.5	12	43	4,5	10
69230X	69330X	130	270	M24x3.0	15	48	5,5	12



SPRING LOADED DEVICES

Installation Information for TE-CO Spring Loaded Devices

Most TE-CO Spring & Ball Plungers can be installed using a screwdriver, hex key wrench, or spring/ball plunger wrench (see page 100). Also, many Hand Retractable Spring Plungers can be installed without using any tools by simply using its knob to engage the threads. Because spring loaded devices have hollow bodies, the maximum installation torques they can withstand are significantly less than bolts or screws. The table below should be used as a guideline for installing spring loaded devices.

Unified Thread Size	Metric Thread Size	Max Installation Torque (inch pounds)
No. 4	M2.5 x 0.45	.60
No. 5	M3 x 0.5	1.25
No. 6	M3.5 x 0.6-6g	1.65
No. 8	M4 x 0.7-6g	2.15
No. 10	M5 x 0.8-6g	3.15
1/4	M6 x 1-6g	6.0
5/16	M8 x 1.25	11.0
3/8	M10 x 1.5	16.0
7/16	M11 x 1.5	22.0
1/2	M12 x 1.75	28.0
9/16	M14 x 2.0	36.0
5/8	M16 x 2.0	55.0
3/4	M20 x 2.5	70.0
7/8	M22 x 2.5	95.0
1	M24 x 3.0	130.0
1-1/8	M30 x 3.5	160.0
1-1/4	M33 x 3.5	190.0

Most TE-CO Spring Loaded Devices can be ordered with or without a nylon thread locking element (see each product group for details). The nylon-locking element forces the threads on the opposite side of a spring loaded device to compress against the mating threads of a tapped hole, providing the thread locking property. The nylon-locking element can cause installation problems when installing into softer metals or aluminum. This can be prevented by either using a larger tap drill when tapping, by ordering a spring plunger without a locking element, or by requesting a quote for a special plunger that will fit your needs.

When installing spring loaded devices with a nylon thread locking element pellet (thread sizes 5/16" and larger or M8 and larger), TE-CO recommends that the tapped installation hole be countersunk 90 degrees by 1/32 larger than major thread diameter to prevent damage to the locking element.

For more detailed information you may contact any of our knowledgeable TE-CO Customer Service Representatives at 800-543-4071.

Inch Tap Drill Sizes Table for Spring Plungers

Tap	Tap Drill	Decimal Equiv. of Tap Drill	Probable Hole Size	Percent Of Thread %
4-48	42	0.0935	0.0955	61
	3/32	0.0938	0.0958	60
	41	0.0960	0.0980	52
5-40	40	0.098	0.1003	76
	39	0.0995	0.1018	71
	38	0.1015	0.1038	65
	37	0.1040	0.1063	58
	37	0.1040	0.1063	78
6-32	36	0.1065	0.1091	71
	7/64	0.1094	0.1120	64
	35	0.1100	0.1126	63
	34	0.1110	0.1136	60
	33	0.1130	0.1156	55
6-40	34	0.1110	0.1136	75
	33	0.1130	0.1156	69
	32	0.1160	0.1186	60
8-32	29	0.1360	0.1389	62
	28	0.1405	0.1434	51
8-36	29	0.1360	0.1389	70
	28	0.1405	0.1434	57
	9/64	0.1406	0.1435	57
10-32	5/32	0.1563	0.1595	75
	22	0.1570	0.1602	73
	21	0.1590	0.1622	68
	20	0.1610	0.1642	64
	19	0.1660	0.1692	51
1/4-20	9	0.1960	0.1998	77
	8	0.1990	0.2028	73
	7	0.2010	0.2048	70
	13/64	0.2031	0.2069	66
	6	0.2040	0.2078	65
	5	0.2055	0.2093	63
	4	0.2090	0.2128	57
1/4-28	3	0.2130	0.2168	72
	7/32	0.2188	0.2226	59
	2	0.2210	0.2248	55
5/16-18	F	0.257	0.2608	72
	G	0.261	0.2651	66
	17/64	0.2656	0.2697	59
	H	0.2660	0.2701	59
3/8-16	5/16	0.3125	0.3169	72
	O	0.3160	0.3204	68
	P	0.3230	0.3274	59
1/2-13	27/64	0.4219	0.4266	73
	7/16	0.4375	0.4422	58
5/8-11	17/32	0.5313	0.5362	75
	36/64	0.5469	0.5518	62
3/4-10	41/64	0.6406	0.6456	80
	21/32	0.6563	0.6613	68
1-8	55/64	0.8594	0.8653	83
	7/8	0.8750	0.8809	73
	57/64	0.8906	0.8965	64
	29/32	0.9063	0.9122	54