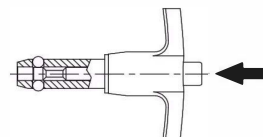


BALL LOCK PINS

TECHNICAL INFORMATION

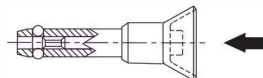
BALL LOCK PINS

Precision alignment pin with a ground shank. This popular single-acting type is positive locking until released by pushing the button, which moves the center spindle forward to allow the locking balls to retract into a radial groove. Widest range of types and sizes, in steel or stainless steel. Choice of four handle styles: T, L, Button, and Ring. Standard shank diameters from 3/16 to 1" (5 to 20mm in metric). Any grip length up to 6" (150mm in metric) is available as standard, at no extra charge. Available from stock in many standard grip lengths, or quickly made to order in custom lengths and diameters.



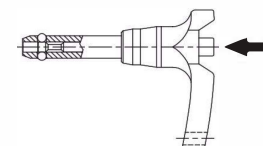
MARINE BALL LOCK PINS

Similar to our standard single-acting Ball Lock Pins in stainless steel, except this type has its handle and button made of 300-series stainless steel. Choice of three handle styles: Button, Recessed Button and Ring. Shank diameters from 3/16 to 1/2", each available in a choice of several standard grip lengths.



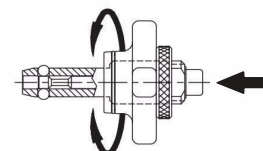
HEAVY-DUTY BALL LOCK PINS

Similar to our standard single-acting Ball Lock Pins, except with a heavier handle for rough service. Available only in stainless steel. Handles are made of solid stainless steel for maximum impact strength and are specially shaped to prevent accidentally pressing the release button. Choice of four handle styles: T, L, Button, and Ring. Shank diameters from 3/16 to 1/2" (5 to 12mm in metric), each in a choice of several standard grip lengths.



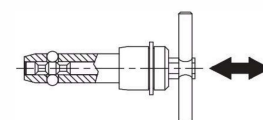
ADJUSTABLE BALL LOCK PINS

These Ball Lock Pins have an adjustable grip length. They can be used for clamping, or simply to provide a variable grip length. The threaded handle turns to provide a 1/2" clamping range or adjustment range. Available in steel or stainless steel. Choice of three handle styles: Knob, T, and L. Standard shank diameters from 1/4 to 1" (6 to 20mm in metric), each in a choice of many standard grip lengths. Other grip lengths are available as specials (extra charge and longer delivery time).



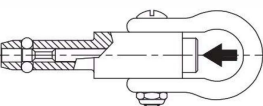
DOUBLE-ACTING BALL LOCK PINS

Similar to a single-acting pin, except the center spindle has two grooves instead of one, to release the ball by either pushing or pulling. Pushing on the handle releases the balls and inserts the pin in one motion. Pulling on the handle releases the balls and removes the pin in one motion. Available in steel or stainless steel. Choice of three handle styles: T, L, and Ring. Standard shank diameters from 3/16 to 1" (5 to 20mm in metric). Any grip length up to 6" (150mm in metric) is available as a standard, at no extra charge. Available from stock in some standard grip lengths, or quickly made to order in custom lengths and diameters.



LIFTING PINS

A single-acting ball lock pin with a solid, one-piece body and four balls for high tension loads. Positive locking until released by pushing the button. Sturdy forged shackle for heavy lifting.



BALL LOCK PINS

STRENGTH DATA (INCH)

NOM. DIA	ALLOWABLE HOLE DIA		BLP, BPD, ABP APPROXIMATE PULL OUT STRENGTH (LBS)	BLP, BPD, ABP, LFP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		DEP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		BLP, BPD APPROX. WEIGHT (OUNCES)		DEP INSERTION/ REMOVAL FORCE (LBS)	
	MAX	MIN		STEEL	STAINLESS	STEEL	STAINLESS	HANDLE	PER IN.	MAX	MIN
3/16 (#10)	.194	.190	200	2,100	2,300	2,200	2,000	1.25	.15	7	2
1/4	.254	.250	230	4,000	4,500	4,200	2,200	1.75	.25	7	2
5/16	.317	.313	510	6,000	7,100	6,700	3,500	2.00	.40	14	6
3/8	.379	.375	575	9,200	10,200	9,700	5,000	2.40	.50	14	6
7/16	.443	.438	710	12,300	13,600	13,200	7,000	2.90	.62	17	8
1/2	.505	.500	1160	16,000	18,000	17,500	9,200	3.40	.80	22	10
9/16	.568	.563	1420	20,500	23,000	22,000	11,500	3.65	1.20	22	10
5/8	.630	.625	2070	25,500	28,700	27,500	13,500	4.00	1.35	30	15
3/4	.757	.750	2970	36,700	41,000	39,500	20,500	4.25	2.30	30	15
7/8	.882	.875	3900	50,000	56,200	50,000	28,500	8.31	2.73	35	20
1	1.010	1.000	5400	65,500	73,500	70,700	37,200	9.00	3.47	40	20

STRENGTH DATA (METRIC)

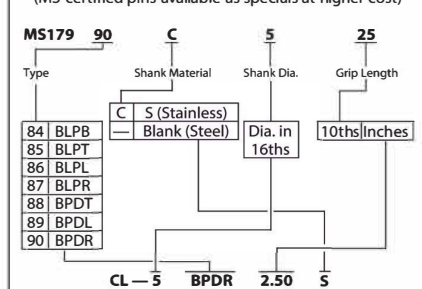
NOM. DIA	ALLOWABLE HOLE DIA		BLP, BPD, ABP APPROXIMATE PULL OUT STRENGTH (LBS)	BLP, BPD, ABP, LFP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		DEP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		BLP, BPD APPROX. WEIGHT (OUNCES)		DEP INSERTION/ REMOVAL FORCE (LBS)	
	MAX	MIN		STEEL	STAINLESS	STEEL	STAINLESS	HANDLE	PER IN.	MAX	MIN
5mm	.201	.197	230	2,600	3,000	2,500	1,400	1.25	.15	7	2
6mm	.240	.236	230	4,000	4,400	4,000	2,100	1.75	.25	7	2
8mm	.319	.315	510	7,000	8,000	7,200	3,700	2.00	.40	14	6
10mm	.398	.394	710	11,000	12,500	11,400	5,800	2.40	.50	14	6
12mm	.477	.472	1160	16,000	18,000	16,500	8,500	3.40	.80	22	10
16mm	.635	.630	2070	29,000	32,500	29,500	15,400	4.00	1.35	30	15
20mm	.794	.787	2970	45,200	50,900	46,100	21,600	4.25	2.30	30	15

**Pins with grip lengths over 8" (special) are not heat treated, in order to maintain straightness. Double shear strength will be reduced approximately 20-50%. Steel pins over 8" long will have a black oxide finish instead of plating. Pins in larger diameters than listed here are available as specials (may be made from alternate steels).

***2:1 Safety factor

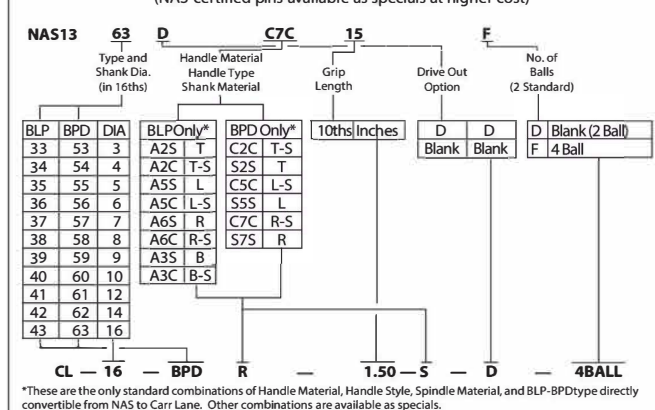
MS CONVERSIONS

(MS-certified pins available as specials at higher cost)



NAS CONVERSIONS

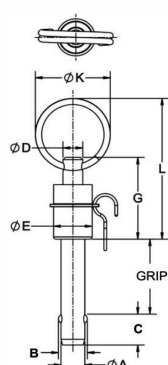
(NAS-certified pins available as specials at higher cost)



DOUBLE-ACTING BALL LOCK PINS



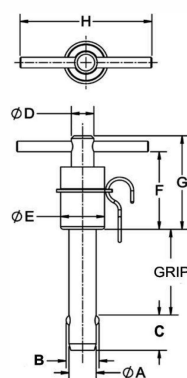
Ring Handle



BPDR



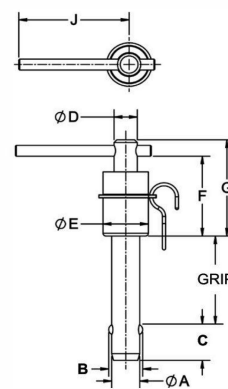
T Handle



BPDT



L Handle



BPDL

INCH

PART NO.	A DIA		B ± .012	C ± .010	D DIA	E DIA	F	G	H	J	K DIA	L	M
	NOMINAL	ACTUAL											
CL-3-BPDx-x.xx-S	3/16 (#10)	.1885/.1870	.219	.385	.19	7/16	.86	1.02	1-1/2	1-1/4	1	1.86	.12
CL-4-BPDx-x.xx-S	1/4	.2485/.2470	.290										.12
CL-5-BPDx-x.xx-S	5/16	.3110/.3095	.375	.415		1/2							.14
CL-6-BPDx-x.xx-S	3/8	.3735/.3720	.438	.485	.25	5/8	.86	1.06	1-15/16	1-7/16			.15
CL-7-BPDx-x.xx-S	7/16	.4360/.4345	.508	.565									.16
CL-8-BPDx-x.xx-S	1/2	.4985/.4970	.592	.635	.31	11/16	.97	1.24	2-3/16	1-19/32	1-5/16	2.45	.18
CL-9-BPDx-x.xx-S	9/16	.5610/.5595	.666	.725	.43	13/16	1.14	1.44	2-7/16	1-3/4			.18
CL-10-BPDx-x.xx-S	5/8	.6235/.6220	.750	.886	.56	15/16	1.13	1.43					.26
CL-12-BPDx-x.xx-S	3/4	.7485/.7470	.886	.925		1-1/8	1.29	1.59					.29
CL-14-BPDx-x.xx-S	7/8	.8735/.8720	1.044	1.075		1-1/4	1.47	1.77	2-25/32	2-3/16			.28
CL-16-BPDx-x.xx-S	1	.9985/.9970	1.217									2.79	.30

METRIC

BASIC PART NO.	A DIA (mm)		B ± .304 (mm)	C ± .254 (mm)	D DIA (mm)	E DIA (mm)	F (mm)	G (mm)	H (mm)	J (mm)	K DIA (mm)	L (mm)	M (mm)
	NOMINAL	ACTUAL											
CLM-5-BPDx-xx-S	5	4.96 / 4.92	5.38	9.78	5	11	22	26	38	32	25.5	47	3
CLM-6-BPDx-xx-S	6	5.96 / 5.92	7.06	9.78	5	11	22	26	38	32	25.5	47	3
CLM-8-BPDx-xx-S	8	7.96 / 7.92	9.42	10.54	6.5	12.5	22	26	38	32	25.5	47	3.5
CLM-10-BPDx-xx-S	10	9.96 / 9.92	11.91	12.32	6.5	16	22	27	48.5	36.5	25.5	47	4
CLM-12-BPDx-xx-S	12	11.96 / 11.92	14.40	14.35	8	17.5	24.5	31.5	55.5	40.5	25.5	50	4.5
CLM-16-BPDx-xx-S	16	15.96 / 15.92	19.00	18.42	11	20.5	29	36.5	62	44.5	33.5	62	6.5
CLM-20-BPDx-xx-S	20	19.96 / 19.92	24.08	23.50	14	28.5	33	40.5	70.6	55.5	33.5	66.5	7