

# CarrLane®

MANUFACTURING CO.



Standard Components for Tooling and Production

**2016 Catalog**

[www.carrlane.com](http://www.carrlane.com)

Authorized Distributor:

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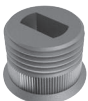
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4200 Carr Lane Ct., P.O. Box 191970 • St. Louis, Missouri 63119-7970 USA  
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# TECHNICAL INFORMATION

## BALL LOCK PINS

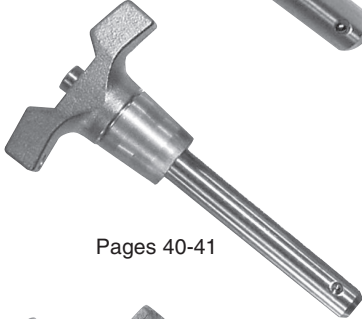
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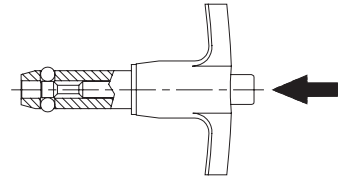
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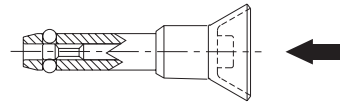
### BALL LOCK PINS

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.



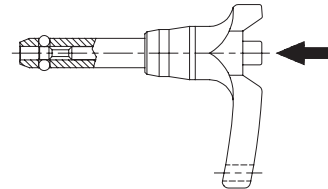
### MARINE BALL LOCK PINS

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 two handle styles: Recessed Button and Ring. Shank diameters from 3/16 to 1/2", each available in a choice of several standard grip lengths. Available from stock only (not made to order).



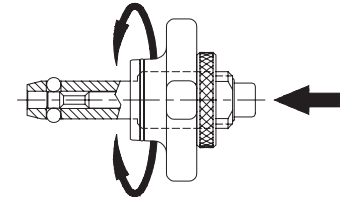
### HEAVY-DUTY BALL LOCK PINS

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. Available from stock only (not made to order).



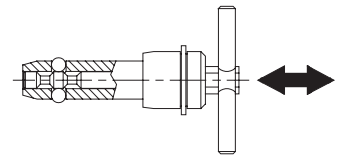
### ADJUSTABLE BALL LOCK PINS

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).



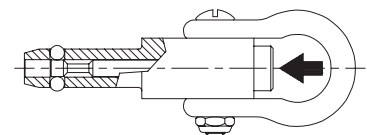
### DOUBLE-ACTING BALL LOCK PINS

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. Shank diameters from 1/4 to 1", each in a choice of several standard grip lengths. Available from stock only (not made to order).



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4200 Carr Lane Ct., P.O. Box 191970 • St. Louis, Missouri 63119-7970 USA  
Phone: 314/647-6200 • Fax: 314/647-5736 • Web Site: www.carrlane.com

## MATERIAL SPECIFICATIONS

(Any options listed below are manufacturing options, not options selectable by the customer.)

COMPONENT	ALLOY STEEL PINS	STAINLESS STEEL PINS
Shank	4130 steel, heat treated, 160,000 psi min. tensile strength, zinc or cadmium plated**	17-4 PH, heat treated, 180,000 psi min. tensile strength, or equivalent (300 Series on Detent Pins)**
Spindle	4130 steel or 416 stainless	17-4 PH or 416 stainless steel
Handle-BLPT,BLPL,ABP	Aluminum alloy, black or plain finish	Aluminum alloy, black or plain finish
Handle-BLPR,BLPB,BPD	Carbon steel, zinc or cadmium plated, or aluminum alloy, black finish	303 stainless, or aluminum alloy, black finish
Collar	Carbon steel, zinc or cadmium plated	303 stainless
Button	Carbon steel, zinc or cadmium plated, or aluminum alloy, anodized	302 or 303 stainless, or aluminum alloy, anodized
Balls	440 C stainless	440 C stainless
Spring	17-7PH, 302 stainless, or music wire	17-7PH or 302 stainless
Handle Ring	Carbon steel, zinc or cadmium plated, or 302 stainless	302 stainless
S-Hook	Carbon steel, zinc or cadmium plated, or 302 stainless	302 stainless
S-Hook Band	Carbon steel, zinc or cadmium plated, or 15-7MO or 302 stainless	15-7MO or 302 stainless

### STRENGTH DATA (INCH)

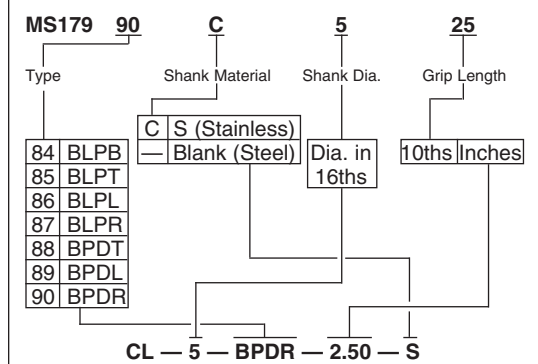
NOM. DIA	RECOMMENDED HOLE DIA		BLP, BPD, ABP APPROXIMATE PULL OUT STRENGTH (LBS)	BLP, BPD, ABP, LFP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		DEP CALCULATED DOUBLE SHEAR STRENGTH (LBS)***		BLP, BPD APPROX. WEIGHT (OUNCES)		DEP INSERTION/REMOVAL FORCE (LBS)	
	MAX	MIN		STEEL	STAINLESS	STEEL	STAINLESS	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)

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

### MS CONVERSIONS

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

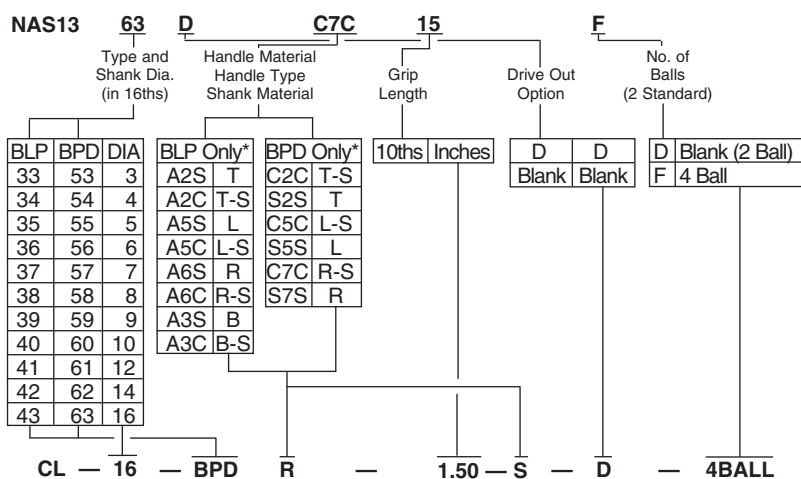


\*\*Pins with grip lengths over 8" (special) are not heat treated, in order to maintain straightness. Double shear strength will be reduced approximately 20-50%. Steel pins over 8" long will have a black oxide finish instead of plating. Pins in larger diameters than listed here are available as specials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

\*\*\*2:1 Safety factor

### NAS CONVERSIONS

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



\*These are the only standard combinations of Handle Material, Handle Style, Spindle Material, and BLP-BPD type directly convertible from NAS to Carr Lane. Other combinations are available as specials.



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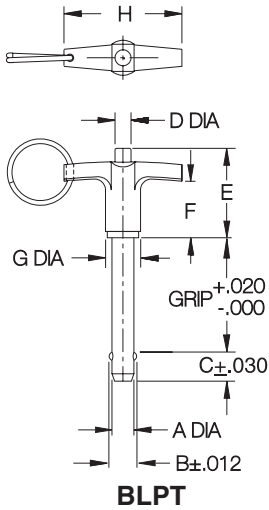
# BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

1



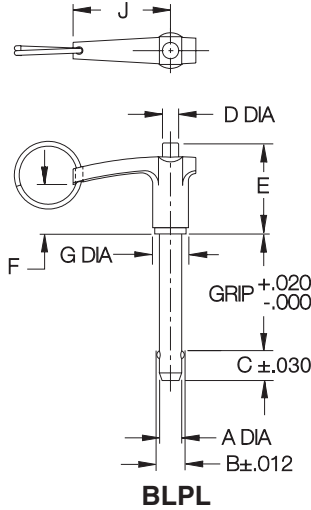
T Handle



BLPT



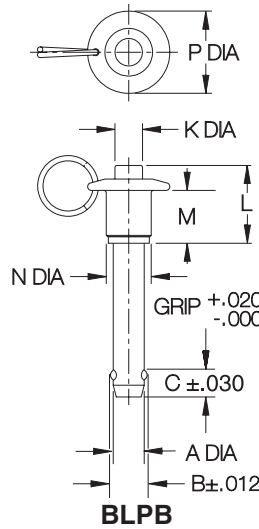
L Handle



BLPL



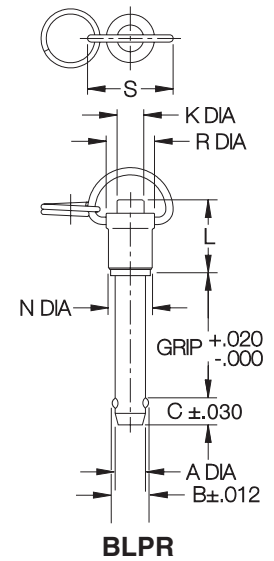
Button Handle



BLPB



Ring Handle



BLPR

## INCH

PART NO.	A DIA		B	C	D DIA	E	F	G DIA	H	J	K DIA	L	M	N DIA	P DIA	R DIA	S
	NOMINAL	ACTUAL															
CL- 3-BLPx-x.xx	3/16 (#10)	.1885/.1870	.219	.245													
CL- 4-BLPx-x.xx	1/4	.2485/.2470	.290	.275	.22	1.26	.78	.47	1.75	1.50	.22	1.26	.89	.47	.82	.57	1.13
CL- 5-BLPx-x.xx	5/16	.3110/.3095	.375	.315													
CL- 6-BLPx-x.xx	3/8	.3735/.3720	.438	.350	.27	1.47	.94	.59	2.00	1.62	.27	1.47	1.02	.59	1.00	.69	1.13
CL- 7-BLPx-x.xx	7/16	.4360/.4345	.508	.365													
CL- 8-BLPx-x.xx	1/2	.4985/.4970	.592	.445	.39	1.61	1.06	.75	2.25	1.88	.39	1.61	1.08	.75	1.31	.82	1.33
CL- 9-BLPx-x.xx	9/16	.5610/.5595	.666	.495													
CL-10-BLPx-x.xx	5/8	.6235/.6220	.750	.565	.50	1.81	1.06	.93	3.00	2.50	.50	1.81	1.25	.93	1.56	1.01	1.33
CL-12-BLPx-x.xx	3/4	.7485/.7470	.886	.655													
CL-14-BLPx-x.xx	7/8	.8735/.8720	1.044	.745	.71	2.07	1.25	1.31	3.50	2.90	.71	2.07	1.49	1.31	2.16	1.41	1.90
CL-16-BLPx-x.xx	1	.9985/.9970	1.217	.875													

## METRIC

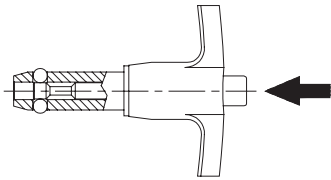
CLM-5-BLPx-xx	5mm	.1954/.1939	.212	.245													
CLM-6-BLPx-xx	6mm	.2347/.2332	.278	.275	.22	1.26	.78	.47	1.75	1.50	.22	1.26	.89	.47	.82	.57	1.13
CLM-8-BLPx-xx	8mm	.3135/.3120	.371	.315													
CLM-10-BLPx-xx	10mm	.3922/.3907	.469	.350	.27	1.47	.94	.59	2.00	1.62	.27	1.47	1.02	.59	1.00	.69	1.13
CLM-12-BLPx-xx	12mm	.4709/.4694	.567	.445													
CLM-16-BLPx-xx	16mm	.6284/.6269	.748	.565	.50	1.81	1.06	.93	3.00	2.50	.50	1.81	1.25	.93	1.56	1.01	1.33
CLM-20-BLPx-xx	20mm	.7859/.7844	.948	.795													



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# BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS



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.

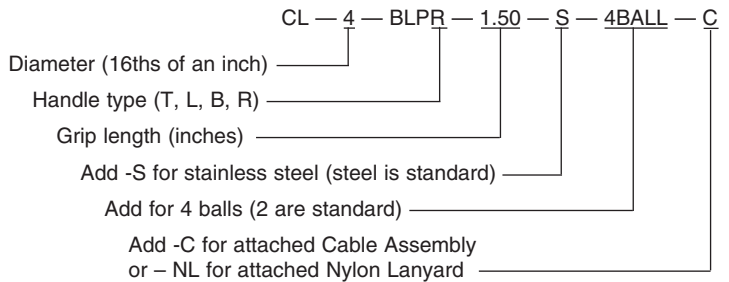


## Options

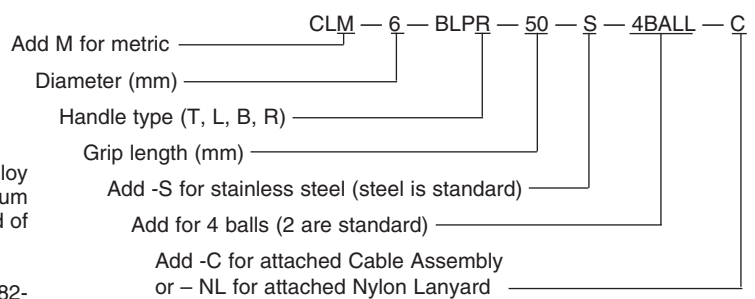
Ball Lock Pins are optionally available in stainless steel instead of alloy steel for greater corrosion resistance. (Note: Both types have aluminum handles, and buttons.) Pins are also available with four balls instead of two, as specials, for more-distributed ball-contact force.

The optional attached Cable Assembly (-C) is 12" long (part no. CL-82-KA-12.0 if ordered separately), while the optional attached Nylon Lanyard (-NL) is 10" long (part no. CL-1-NL-10 if ordered separately). Both have an eyelet at the free end for a #10 or M5 attachment screw.

## Ordering Example (INCH):



## Ordering Example (Metric):



## STOCK GRIP LENGTHS (INCH)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)															
		.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
CL-3-BLPx-x.xx	3/16 (#10)	•••••	•••••	X X X X	X ••••	X X X X		X ••••		••••	•••••	••					
CL-4-BLPx-x.xx	1/4	X X X •	X • X •	X X X X	X ••••	X X X X	••••	X X X X	••••	X X X •	X • X •	•••••	X ••••	••		•	
CL-5-BLPx-x.xx	5/16	•••••	•••••	X X X •	•••••	X X X •	••••	X X X •	••	X X ••	•••••	•••••	••	•		•	
CL-6-BLPx-x.xx	3/8	••••	X •••	X X X X	•••••	X X X X	••••	X X X •	••••	X X X •	X X X •	X X X •	X ••••	X •••	•••••	••	
CL-7-BLPx-x.xx	7/16			••••		••••		••••		••	••		•				
CL-8-BLPx-x.xx	1/2	•	••••	X ••••	X X •	X X X •	X X ••	X X X •	••	X X X •	X X ••	X ••••	X ••••	•••••	•••••	X ••••	
CL-9-BLPx-x.xx	9/16							••••		••••	••						
CL-10-BLPx-x.xx	5/8					••••		••••		••••	••••	••••	••	••	••	•	
CL-12-BLPx-x.xx	3/4					••		X ••••		X X ••	X X ••	X •	X ••	••	X •••	••	X •
CL-14-BLPx-x.xx	7/8							••		••	••				••		
CL-16-BLPx-x.xx	1							••		••	••••	••	••	•		••	

## STOCK GRIP LENGTHS (METRIC)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (mm)															
		10	15	20	25	30	40	50	60	70	80	90	100				
CLM-5-BLPx-xx	5mm																
CLM-6-BLPx-xx	6mm	••	••	••	••	••	••	••									••
CLM-8-BLPx-xx	8mm			•	•	•	•	••									
CLM-10-BLPx-xx	10mm				••	••	••	••									••
CLM-12-BLPx-xx	12mm					••	••	••						•			••
CLM-16-BLPx-xx	16mm							••									
CLM-20-BLPx-xx	20mm																

• = STOCKED IN ALLOY STEEL ONLY  
X = STOCKED IN ALLOY AND STAINLESS STEEL



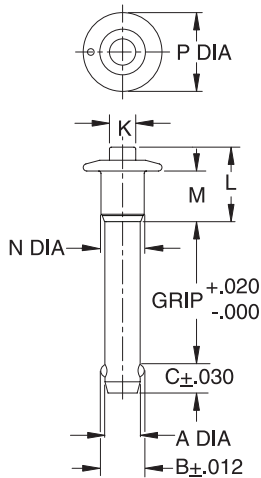
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# MARINE BALL LOCK PINS

1



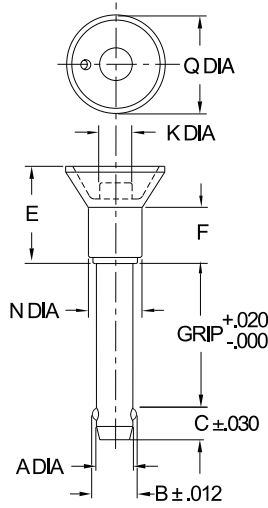
Button Handle (B)



MBPB



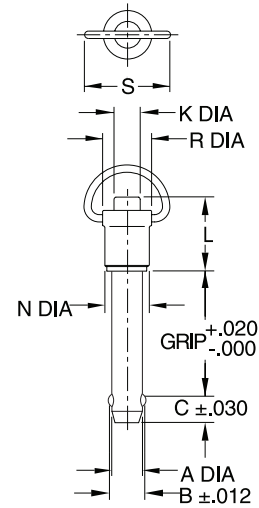
Recessed Button Handle (M)



MBPM



Ring Handle (R)



MBPR

## INCH

PART NO.	A DIA		B	C	E	F	K DIA	L	M	N DIA	P DIA	Q DIA	R	S
	NOMINAL	ACTUAL												
CL-3-MBPx-x.xx-S	3/16 (#10)	.1885/.1870	.219	.245	.94	.62	.25	.81	.56	.47	.79	1.00	.52	1.13
CL-4-MBPx-x.xx-S	1/4	.2485/.2470	.290	.275										
CL-5-MBPx-x.xx-S	5/16	.3110/.3095	.375	.315	1.00	.68	.31	.92	.65	.59	1.00	1.00	.64	1.13
CL-6-MBPx-x.xx-S	3/8	.3735/.3720	.438	.350	1.06	.78								
CL-8-MBPx-x.xx-S	1/2	.4985/.4970	.592	.445	1.19	.93	.44	1.20	.80	.75	1.31	1.33	.80	1.33
CL-10-MBPx-x.xx-S	5/8	.6235/.6220	.750	.565	1.50	1.00	.44	1.56	1.00	.93	1.56	1.50	1.01	1.33
CL-12-MBPx-x.xx-S	3/4	.7485/.7470	.886	.655										

## METRIC

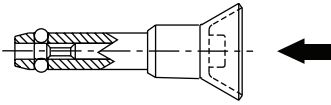
CLM-5-MBPx-xx-S	5mm	.1954/.1939	.212	.245	.94	.62	.22	.81	.56	.47	.82	1.00	.52	1.13
CLM-6-MBPx-xx-S	6mm	.2347/.2332	.278	.275										
CLM-8-MBPx-xx-S	8mm	.3135/.3120	.371	.315	1.00	.68	.27	.92	.65	.59	1.00	1.00	.64	1.13
CLM-10-MBPx-xx-S	10mm	.3922/.3907	.469	.350	1.06	.78								
CLM-12-MBPx-xx-S	12mm	.4709/.4694	.567	.445	1.19	.93	.39	1.20	.80	.75	1.31	1.33	.80	1.33
CLM-16-MBPx-xx-S	16mm	.6283/.6268	.748	.565	1.50	1.00	.50	1.56	1.00	.93	1.56	1.50	1.01	1.33



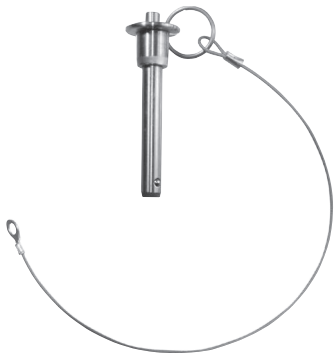
MANUFACTURING CO.  
4200 Carr Lane Ct., P.O. Box 191970 • St. Louis, Missouri 63119-7970 USA  
Phone: 314/647-6200 • Fax: 314/647-5736 • Web Site: www.carrlane.com

# MARINE BALL LOCK PINS

SHANK & SPINDLE: 17-4PH STAINLESS STEEL  
 HANDLE AND BUTTON: 300-SERIES STAINLESS STEEL  
 SPRING: 17-7 OR 300-SERIES STAINLESS STEEL  
 BALLS: 440C OR 300-SERIES STAINLESS STEEL



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: Buttons, Recessed Button and Ring. Shank diameters from 3/16 to 3/4" (5 to 16mm in metric), each available in a choice of several standard grip lengths. Available from stock only in the standard grip lengths listed below (other grip length available as specials).



**Optional Cable**

The optional attached Cable Assembly (-C) is 12" long (part no. CL-82-KA-12.0 if ordered separately), while the optional attached Nylon Lanyard (-NL) is 10" long (part no. CL-1-NL-10 if ordered separately). Both have an eyelet at the free end for a #10 or M5 attachment screw.

## Ordering Example (INCH):

CL — 4 — MBPR — 1.50 — S — C

Diameter (16ths) — 4 —

Handle type (B, M, or R) — MBPR —

Grip length (inches) — 1.50 —

Add -C for attached cable assembly  
 or -NL for attached Nylon Lanyard

## Ordering Example (Metric):

CLM — 6 — MBPR — 50 — S — C

Diameter (mm) — 6 —

Diameter (mm) — MBPR —

Handle type (B, M, or R) — MBPR —

Grip length (mm) — 50 —

Add -C for attached cable assembly  
 or -NL for attached Nylon Lanyard

## STANDARD STOCK GRIP LENGTHS (INCH)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)												
		0.50 BMR	0.75 BMR	1.00 BMR	1.25 BMR	1.50 BMR	1.75 BMR	2.00 BMR	2.25 BMR	2.50 BMR	3.00 BMR	3.50 BMR	4.00 BMR	4.50 BMR
CL-3-MBPx-x.xx-S	3/16 (#10)	XXX	XXX	XXX	XXX	XXX		XXX		XXX	XXX			
CL-4-MBPx-x.xx-S	1/4	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX			
CL-5-MBPx-x.xx-S	5/16		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
CL-6-MBPx-x.xx-S	3/8		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
CL-8-MBPx-x.xx-S	1/2			XXX		XXX		XXX		XXX	XXX	XXX	XXX	XXX
CL-10-MBPx-x.xx-S	5/8					XXX		XXX		XXX	XXX			
CL-12-MBPx-x.xx-S	3/4							XXX		XXX	XXX			

## STANDARD STOCK GRIP LENGTHS (METRIC)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (mm)											
		10 BMR	15 BMR	20 BMR	25 BMR	30 BMR	40 BMR	50 BMR	60 BMR	70 BMR	80 BMR	100 BMR	
CLM-5-MBPx-xx-S	5mm	XXX	XXX	XXX	XXX	XXX	XXX	XXX					
CLM-6-MBPx-xx-S	6mm	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX				
CLM-8-MBPx-xx-S	8mm			XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX
CLM-10-MBPx-xx-S	10mm			XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX
CLM-12-MBPx-xx-S	12mm				XXX	XXX	XXX	XXX	XXX			XXX	XXX
CLM-16-MBPx-xx-S	16mm							XXX					

X = STOCKED IN STAINLESS STEEL



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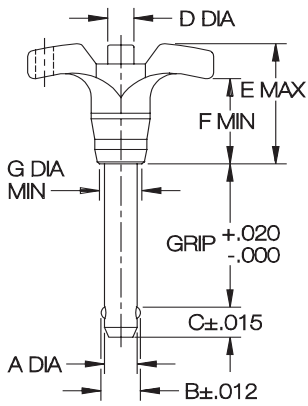
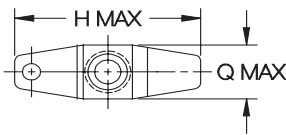


# HEAVY-DUTY BALL LOCK PINS

1



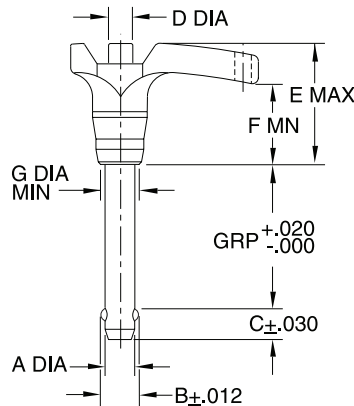
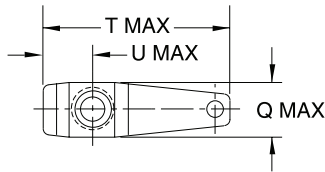
T Handle



BLHT



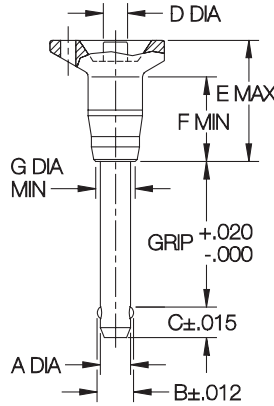
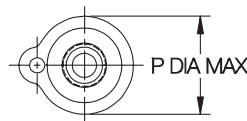
L Handle



BLHL



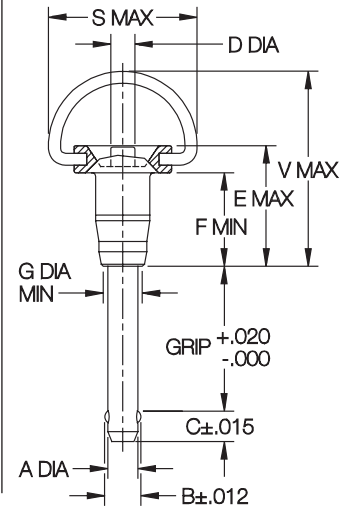
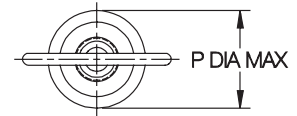
Button Handle



BLHB



Ring Handle



BLHR

INCH

PART NO.	A DIA		B	C	D DIA	E	F	G DIA	H	P DIA	Q	S	T	U	V
	NOMINAL	ACTUAL													
CL-3-BLHx-x.xx-S	3/16 (#10)	.1885/.1870	.220	.245	.25	1.27	.70	.38	1.82	1.07	.63	1.56	1.95	.54	2.13
CL-4-BLHx-x.xx-S	1/4	.2485/.2470	.289	.275											
CL-5-BLHx-x.xx-S	5/16	.3110/.3095	.375	.315	.30	1.60	.85	.51	2.35	1.39	.80	2.00	2.51	.70	2.34
CL-6-BLHx-x.xx-S	3/8	.3735/.3720	.440	.350											
CL-7-BLHx-x.xx-S	7/16	.4360/.4345	.509	.365											
CL-8-BLHx-x.xx-S	1/2	.4985/.4970	.594	.445											

METRIC

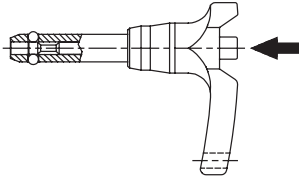
CLM-5-BLHx-xx-S	5mm	.1954/.1939	.210	.245	.25	1.27	.70	.38	1.82	1.07	.63	1.56	1.95	.54	2.13
CLM-6-BLHx-xx-S	6mm	.2347/.2332	.275	.275											
CLM-8-BLHx-xx-S	8mm	.3135/.3120	.371	.315	.30	1.60	.85	.51	2.35	1.39	.80	2.00	2.51	.70	2.34
CLM-10-BLHx-xx-S	10mm	.3922/.3907	.467	.350											
CLM-12-BLHx-xx-S	12mm	.4709/.4694	.569	.445											



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# HEAVY-DUTY BALL LOCK PINS

SHANK & SPINDLE: 17-4PH OR 15-7MO STAINLESS STEEL  
 HANDLE: 17-4PH STAINLESS STEEL  
 HEAD & BUTTON: 303 STAINLESS STEEL  
 R-HANDLE RING: 302 STAINLESS STEEL  
 SPRING & ATTACHING RING: 17-7PH OR 302 STAINLESS STEEL  
 BALLS: 440C STAINLESS STEEL



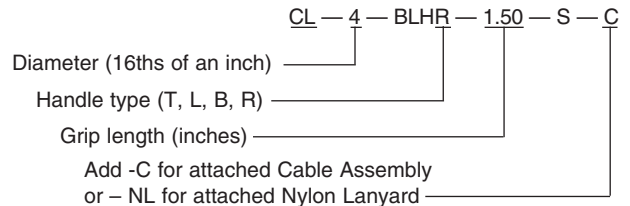
Similar to our standard single-acting Ball Lock Pins, except with a heavier handle for rough service. Available only in stainless steel. Handles are made of solid stainless for maximum impact strength, and are specially shaped to prevent accidentally pressing the release button. Choice of four handle 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. Available from stock only (not made to order).



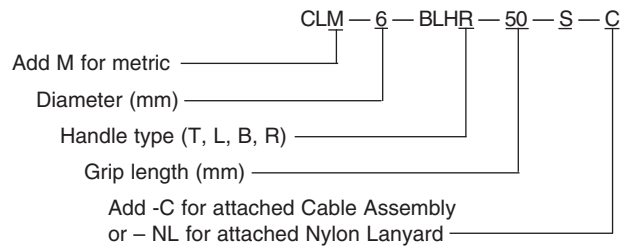
## Optional Cable

The optional attached Cable Assembly (-C) is 12" long, while the optional attached Nylon Lanyard (-NL) is 10" long. Both have an eyelet at the free end for a #10 or M5 attachment screw.

## Ordering Example (INCH):



## Ordering Example (Metric):



## STANDARD STOCK GRIP LENGTHS (INCH)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)														
		.50 TLBR	.75 TLBR	1.00 TLBR	1.25 TLBR	1.50 TLBR	1.75 TLBR	2.00 TLBR	2.25 TLBR	2.50 TLBR	3.00 TLBR	3.50 TLBR	4.00 TLBR	4.50 TLBR	5.00 TLBR	6.00 TLBR
CL-3-BLHx-x.xx-S	3/16 (#10)	x x x x	x x x x	x x x x	x x x x	x x x x		x x x x		x x x x	x x x x					
CL-4-BLHx-x.xx-S	1/4	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x
CL-5-BLHx-x.xx-S	5/16	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x			
CL-6-BLHx-x.xx-S	3/8	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x
CL-7-BLHx-x.xx-S	7/16			x x x x		x x x x		x x x x		x x x x	x x x x					
CL-8-BLHx-x.xx-S	1/2			x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x

## STOCK GRIP LENGTHS (METRIC)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (mm)												
		10 TLBR	15 TLBR	20 TLBR	25 TLBR	30 TLBR	40 TLBR	50 TLBR	60 TLBR	70 TLBR	80 TLBR	100 TLBR		
CLM-5-BLHx-xx-S	5mm	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x						
CLM-6-BLHx-xx-S	6mm	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x					x x x x
CLM-8-BLHx-xx-S	8mm			x x x x	x x x x	x x x x	x x x x	x x x x	x x x x					x x x x
CLM-10-BLHx-xx-S	10mm			x x x x	x x x x	x x x x	x x x x	x x x x	x x x x				x x x x	x x x x
CLM-12-BLHx-xx-S	12mm					x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x

X = Stocked in stainless steel.



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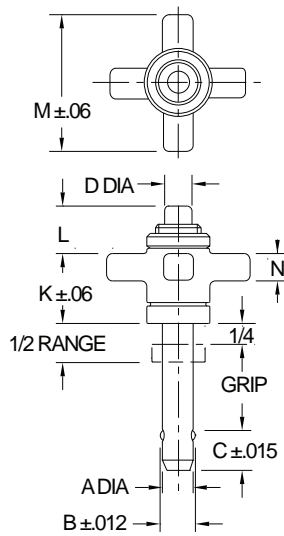
# ADJUSTABLE BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

1



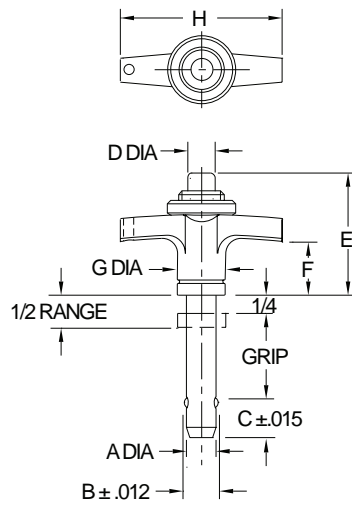
**Knob Handle**



**ABPK**



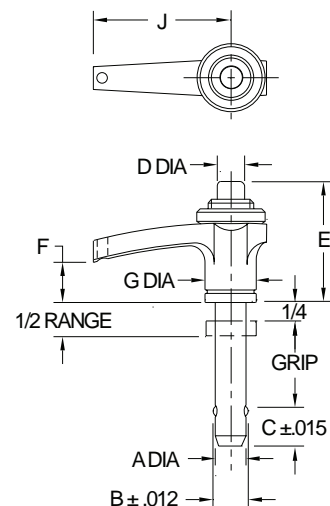
**T Handle**



**ABPT**



**L Handle**



**ABPL**

## INCH

PART NO.	A DIA		B	C	D DIA	E	F	G DIA	H	J	K	L	M	N
	NOMINAL	ACTUAL												
CL-4-ABPx-x.xx	1/4	.2485/.2470	.290	.275	.22	1.51 1.45	1.06	.75	2.25	1.87	.88	.58	1.75	.38
CL-5-ABPx-x.xx	5/16	.3110/.3095	.375	.315	.27	1.48	1.06	.93	3.00	2.50	.88	.63	2.12	.44
CL-6-ABPx-x.xx	3/8	.3735/.3720	.438	.350	.39	1.55	1.06	.93	3.00	2.50	1.00	.55	2.12	.44
CL-7-ABPx-x.xx	7/16	.4360/.4345	.508	.365	.50	2.07	1.25	1.31	3.50	2.87	1.25	1.13	2.75	.50
CL-8-ABPx-x.xx	1/2	.4985/.4970	.592	.445	.71	2.34	1.62	1.50	4.30	4.00	1.62	1.00	4.00	.75
CL-9-ABPx-x.xx	9/16	.5610/.5595	.666	.495										
CL-10-ABPx-x.xx	5/8	.6235/.6220	.750	.565										
CL-12-ABPx-x.xx	3/4	.7485/.7470	.886	.655										
CL-14-ABPx-x.xx	7/8	.8735/.8720	1.044	.745										
CL-16-ABPx-x.xx	1	.9985/.9970	1.217	.875										

## METRIC

CLM-6-ABPx-xx	6mm	.2346/.2331	.278	.275	.22	1.51 1.45	1.06	.75	2.25	1.87	.88	.65 .75	1.75	.38
CLM-8-ABPx-xx	8mm	.3134/.3118	.371	.315	.27	1.48	1.06	.93	3.00	2.50	.88	.72	2.12	.44
CLM-10-ABPx-xx	10mm	.3921/.3906	.469	.350	.39	1.55	1.06	.93	3.00	2.50	1.00	.73	2.12	.44
CLM-12-ABPx-xx	12mm	.4709/.4693	.567	.445	.50	2.07	1.25	1.31	3.50	2.87	1.25	1.13	2.75	.50
CLM-16-ABPx-xx	16mm	.6283/.6268	.748	.565										
CLM-20-ABPx-xx	20mm	.7858/.7843	.948	.795										

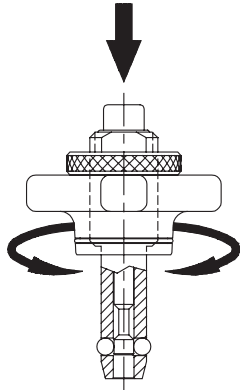


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# ADJUSTABLE BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

1



Adjustable Ball Lock Pins can be used for clamping, or simply to provide a variable grip length.

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 +/- 1/4" clamping range or adjustment range. When used just for variable grip length (not for clamping), the handle can be secured with the supplied knurled locknut. These single-acting pins are manufactured with four balls as standard, instead of two, for more-distributed ball-pullout force in clamping applications. Available in steel or stainless steel.

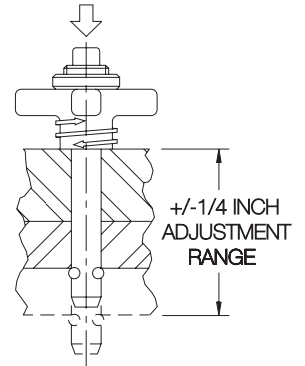
Choice of three handle styles: Knob, T, and L. Standard shank diameters from 1/4 to 1" (6 to 20mm in metric), each in a choice of many standard grip lengths. Available from stock only in the standard grip lengths listed below. Other grip lengths are available as specials (extra charge and longer delivery time).

Pins are optionally available in stainless steel instead of alloy steel, for greater corrosion resistance. Note: both steel and stainless pins have aluminum handles and buttons. Add "-S" to the part number:

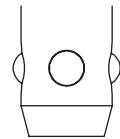
- CL-4-ABPK-1.50 (steel)
- CL-4-ABPK-1.50-S (stainless)

To order pins with a standard Cable Assembly attached (#2 cable size, 12" long, with a terminal at the free end for a #10 or M5 attachment screw), add "-C" to the part number:

- CL-4-ABPK-1.50-S-C



Grip length adjusts +/- 1/4" from nominal.



Four balls are standard on Adjustable Ball Lock Pins, to provide more distributed ball-pullout force in clamping applications.

## STOCK GRIP LENGTHS (INCH)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)																	
		.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00		
CL-4-ABPx-x.xx	1/4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CL-5-ABPx-x.xx	5/16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CL-6-ABPx-x.xx	3/8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CL-7-ABPx-x.xx	7/16																		
CL-8-ABPx-x.xx	1/2			X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CL-9-ABPx-x.xx	9/16																		
CL-10-ABPx-x.xx	5/8			X	X	X		X	X	X	X	X	X	X	X	X	X		
CL-12-ABPx-x.xx	3/4			X	X	X		X	X	X	X	X	X	X	X	X	X		
CL-14-ABPx-x.xx	7/8																		
CL-16-ABPx-x.xx	1							X	X	X	X	X	X	X	X	X	X		

## STOCK GRIP LENGTHS (METRIC)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (mm)											
		10	15	20	25	30	40	50	60	70	80	90	100
CLM-6-ABPx-xx	6mm			X	X	X	X	X	X	X	X	X	X
CLM-8-ABPx-xx	8mm			X	X	X	X	X	X	X	X	X	X
CLM-10-ABPx-xx	10mm					X	X	X	X	X	X	X	X
CLM-12-ABPx-xx	12mm												
CLM-16-ABPx-xx	16mm												
CLM-20-ABPx-xx	20mm												

X = STOCKED IN ALLOY AND STAINLESS STEEL



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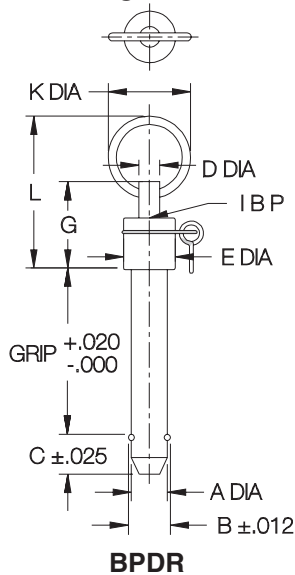
# DOUBLE-ACTING BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

1



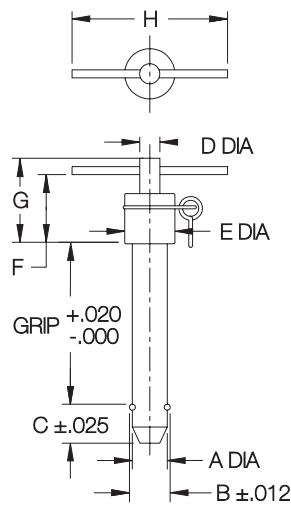
Ring Handle



BPDR



T Handle

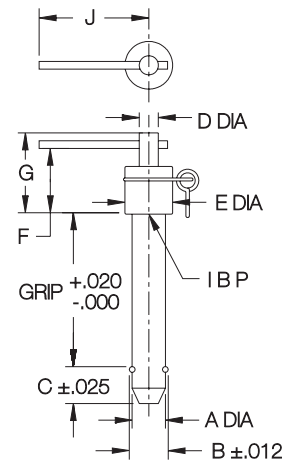


BPDT

INCH



L Handle



BPDL

PART NO.	A DIA		B	C	D DIA	E DIA	F	G	H	J	K DIA	L	M
	NOMINAL	ACTUAL											
CL-3-BPDx-x.xx	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	1/4	.2485/.2470	.290										.12
CL-5-BPDx-x.xx	5/16	.3110/.3095	.375	.415	.25	1/2	.86	1.06	1-15/16	1-7/16			.14
CL-6-BPDx-x.xx	3/8	.3735/.3720	.438	.485									.15
CL-7-BPDx-x.xx	7/16	.4360/.4345	.508	.592	.565	.31	11/16	.97	1.24	2-3/16			1-19/32
CL-8-BPDx-x.xx	1/2	.4985/.4970	.592	.565	.18								
CL-9-BPDx-x.xx	9/16	.5610/.5595	.666	.635	.43	13/16	1.14	1.44	2-7/16	1-3/4	1-5/16	2.45	.26
CL-10-BPDx-x.xx	5/8	.6235/.6220	.750	.725									.29
CL-12-BPDx-x.xx	3/4	.7485/.7470	.886	.765	.56	1-1/8	1.29	1.59	2-25/32	2-3/16			2.44
CL-14-BPDx-x.xx	7/8	.8735/.8720	1.044	.925									.28
CL-16-BPDx-x.xx	1	.9985/.9970	1.217	1.075	.56	1-1/4	1.47	1.77	2-25/32	2-3/16			2.79

METRIC

CLM-5-BPDx-xx	5mm	.1954/.1939	.212	.385	.19	7/16	.86	1.02	1-1/2	1-1/4	1	1.86	.12	
CLM-6-BPDx-xx	6mm	.2347/.2332	.278										.12	
CLM-8-BPDx-xx	8mm	.3135/.3120	.371	.415	.25	1/2	.86	1.06	1-15/16	1-7/16			.14	
CLM-10-BPDx-xx	10mm	.3922/.3907	.469	.485									.15	
CLM-12-BPDx-xx	12mm	.4709/.4694	.567	.565	.31	11/16	.97	1.24	2-3/16	1-19/32			1-5/16	1.97
CLM-16-BPDx-xx	16mm	.6284/.6269	.748	.725							.43	13/16		
CLM-20-BPDx-xx	20mm	.7859/.7844	.948	.925	.56	1-1/8	1.29	1.59	2-25/32	2-3/16	2.62	.28		

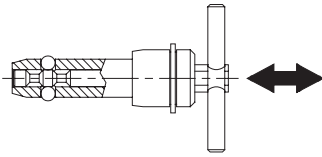


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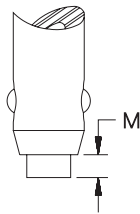


# DOUBLE-ACTING BALL LOCK PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

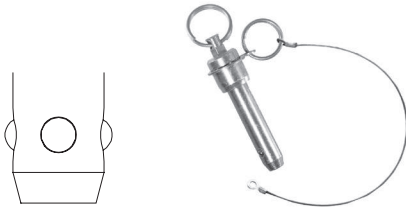


Similar to a single-acting pin, except the center spindle has *two* grooves instead of one, to release the ball by either pushing or pulling. Pushing on the handle releases the balls and inserts the pin in one motion. Pulling on the handle releases the balls and removes the pin in one motion. Available 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.



## Drive-Out Option

Double-acting Ball Lock Pins are available with a "drive-out" option, where the center spindle extends slightly beyond the shank end (see M dimension). This allows removing a pin under slight shear load by tapping the shank end with a hammer (releasing the balls at the same time).

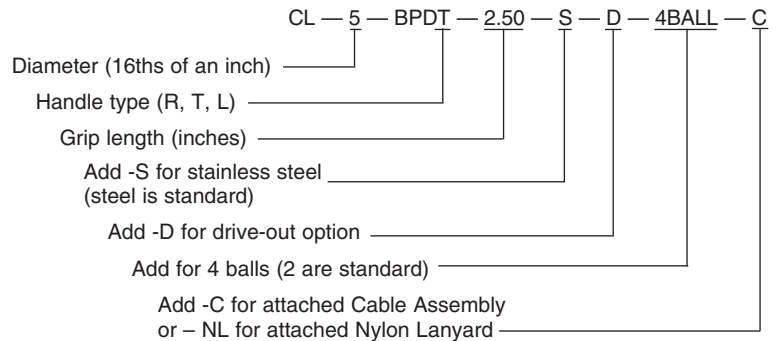


## Other Options

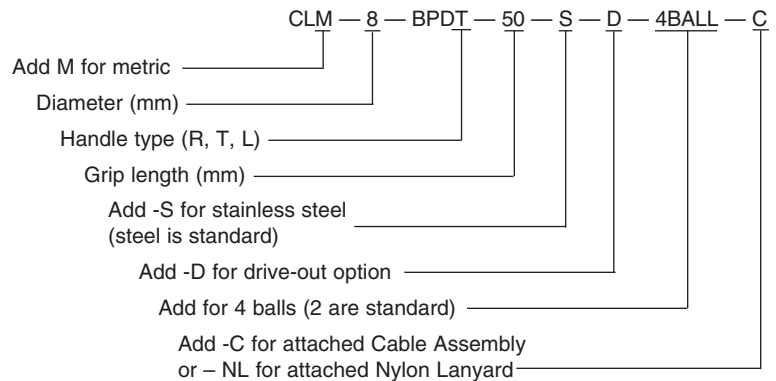
Ball Lock Pins are optionally available in stainless steel instead of alloy steel for greater corrosion resistance. Pins are also available with four balls instead of two, as specials, for additional pull-out strength and more distributed ball-contact force.

The optional attached Cable Assembly (-C) is 12" long (part no. CL-82-KA-12.0 if ordered separately), while the optional attached Nylon Lanyard (-NL) is 10" long (part no. CL-1-NL-10 if ordered separately). Both have an eyelet at the free end for a #10 or M5 attachment screw.

## Ordering Example (INCH):



## Ordering Example (Metric):



## STOCK GRIP LENGTHS (INCH) ALLOY STEEL

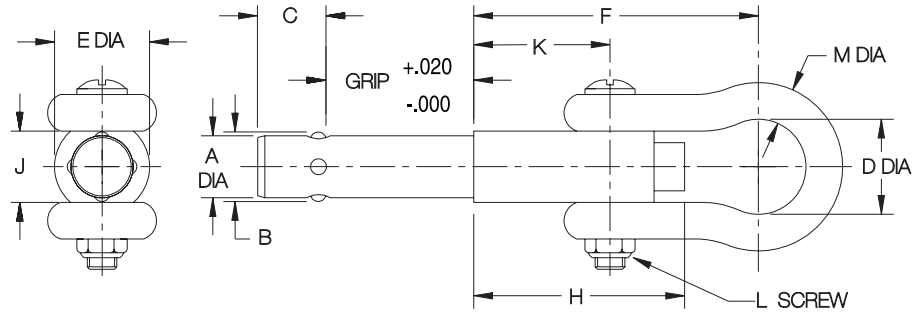
PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)									
		1.00 R T L	1.25 R T L	1.50 R T L	1.75 R T L	2.00 R T L	2.50 R T L	3.00 R T L	3.50 R T L	4.00 R T L	5.00 R T L
CL-3-BPDx-x.xx	3/16 (#10)	••		••							
CL-4-BPDx-x.xx	1/4	••	•	••		••	•				
CL-5-BPDx-x.xx	5/16			••		••	••	•			
CL-6-BPDx-x.xx	3/8	••		••		••	••	•			
CL-7-BPDx-x.xx	7/16										
CL-8-BPDx-x.xx	1/2	•		•••	•	••	••	••	••	•	•
CL-9-BPDx-x.xx	9/16										
CL-10-BPDx-x.xx	5/8										
CL-12-BPDx-x.xx	3/4										
CL-14-BPDx-x.xx	7/8										
CL-16-BPDx-x.xx	1										



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# LIFTING PINS

**INFO+:** STAINLESS STEEL-MATERIAL SPECIFICATIONS ON PAGE 35  
FORGED STEEL SHACKLE PER AN116

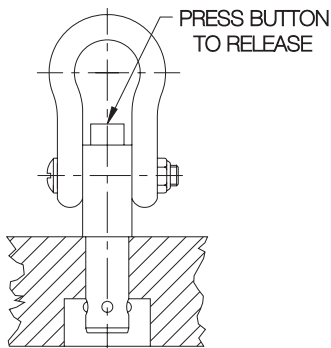


**Ordering Example:**

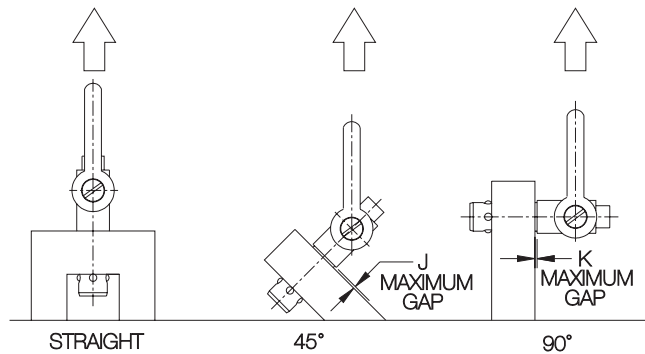
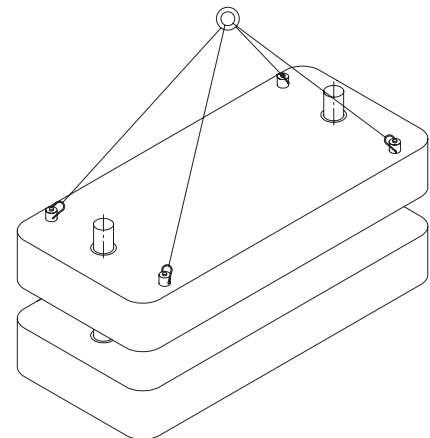
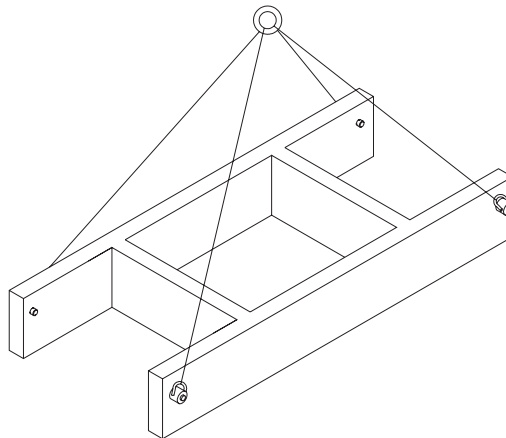
CL-6-LFP-1.50-S  
 \_\_\_\_\_ GRIP LENGTH (inches)  
 \_\_\_\_\_ PIN DIAMETER (16ths of an inch)

A single-acting ball lock pin with a solid, one-piece body and four balls for high tension loads. Sturdy forged shackle for heavy lifting. Shank diameters from 1/4 to 1" are available, in several standard lengths. **INFO+:** See safety precautions on page 59.

PART NO.	NOM. DIA	A DIA		B	C	D DIA	E DIA	F	H	J	K	L	M DIA	STOCK GRIP LENGTHS					
		MIN	MAX											.25	.50	1.00	1.50	2.00	3.00
CL-4-LFP-x.xx-S	1/4	.2470	.2485	.287	.333	9/16	9/16	2.45	1.50	1/2	7/8	M6	3/16	●	●	●	●	●	●
CL-6-LFP-x.xx-S	3/8	.3720	.3735	.438	.425	11/16	3/4	2.85	1.60	9/16	15/16	5/16-18	1/4	●	●	●	●	●	●
CL-8-LFP-x.xx-S	1/2	.4970	.4985	.593	.519	13/16	13/16	3.15	1.80	11/16	1	3/8-16	5/16	●	●	●	●	●	●
CL-12-LFP-x.xx-S	3/4	.7470	.7485	.887	.707	1-1/8	1-1/8	4.05	2.20	7/8	1-1/4	1/2-13	7/16	●	●	●	●	●	●
CL-16-LFP-x.xx-S	1	.9970	.9985	1.217	.957	1-1/4	1-3/8	4.55	2.75	1-1/8	1-1/2	M18	1/2	●	●	●	●	●	●



TYPICAL INSTALLATION



**TECHNICAL DATA**

PART NO.	LOAD CAPACITY (LBS)*					RECOMMENDED HOLE DIA	
	STRAIGHT	45°	90°	J (45°)	K (90°)	MAX	MIN
CL-4-LFP-x.xx-S	210	170	120	.031	.037	.254	.250
CL-6-LFP-x.xx-S	520	520	350	.036	.042	.379	.375
CL-8-LFP-x.xx-S	980	900	770			.505	.500
CL-12-LFP-x.xx-S	2200	2200	2000	.041	.047	.757	.750
CL-16-LFP-x.xx-S	2900	2800	2500	.046	.052	1.010	1.000

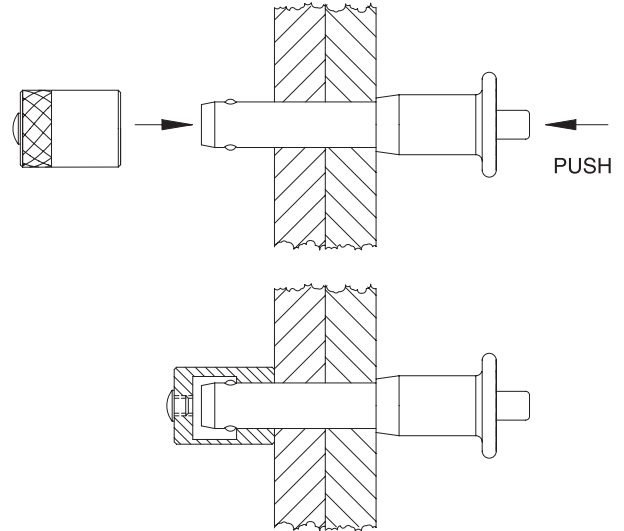
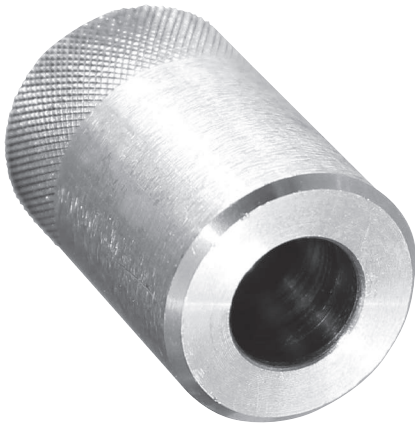
\* 5:1 Safety factor, based on the average failing load of test specimens. See above for allowable installation-hole tolerances. Straight pull capacity assumes pin is installed in a hardened tool steel plate or bushing. Use standard lifting hook so that button is not depressed while lifting.



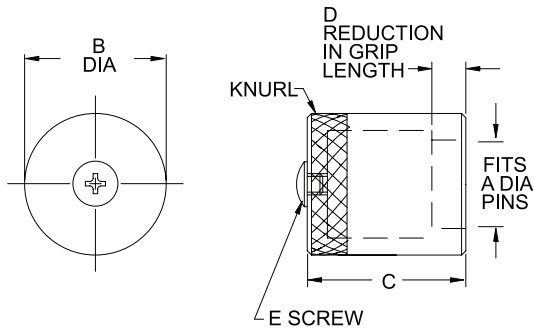
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# BALL LOCK RECEIVER CAPS

300-SERIES STAINLESS STEEL, PASSIVATED



Receiver Caps are ideal for securing Ball Lock Pins used in clevis applications, especially when the through-hole has excess clearance. The Receiver Cap's inside diameter fits the Ball Lock Pin exactly, and is stepped to provide a perfect locking surface for the balls. Available to fit Ball Lock Pin diameters from 3/16 to 1" (5 to 20mm in metric). Made of 300-series stainless steel. Please note, using a Receiver Cap reduces the Ball Lock Pin's effective grip length slightly (see D dimension).



Receiver Caps are tapped to allow fastening the eyelet end of a standard Ball Lock Pin Cable Assembly (12" long) or Nylon Lanyard (10" long), and include a fastening screw.

## INCH

PART NO.	A DIA	B DIA	C	D	E
CL-3-BLR-S	3/16 (#10)	.50	.72	1/4	#10-32
CL-4-BLR-S	1/4	.50	.81		
CL-5-BLR-S	5/16	.63	.81		
CL-6-BLR-S	3/8	.75	1.16	1/2	
CL-7-BLR-S	7/16	.75	1.16		
CL-8-BLR-S	1/2	.88	1.25		
CL-9-BLR-S	9/16	.88	1.25		
CL-10-BLR-S	5/8	1.00	1.31		
CL-12-BLR-S	3/5	1.25	1.45		
CL-14-BLR-S	7/8	1.50	1.48		
CL-16-BLR-S	1	1.50	1.69		

## METRIC

PART NO.	A DIA	B DIA	C	D	E
CLM-5-BLR-S	5mm	.50	.93	.39 (10mm)	M5
CLM-6-BLR-S	6mm	.50	.95		
CLM-8-BLR-S	8mm	.63	1.00		
CLM-10-BLR-S	10mm	.75	1.03		
CLM-12-BLR-S	12mm	.88	1.13		
CLM-16-BLR-S	16mm	1.00	1.25		
CLM-20-BLR-S	20mm	1.25	1.50		

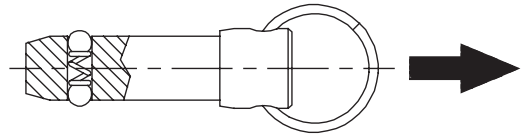


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# DETENT PINS

INFO+: SEE PAGE 35 FOR MATERIAL SPECIFICATIONS

1



Solid alignment pin with spring-loaded locking balls (not positive locking like a Ball Lock Pin). Simply push pin to insert, and pull to remove. Available in steel or stainless steel. Standard shank diameters from 3/16 to 1" (6 to 20mm in metric). Note: 3/16-diameter pins have one ball, instead of two, due to their small size. Any grip length up to 6" (150mm in metric) is available as a standard, at no extra charge. Available from stock in many standard grip lengths, or quickly made to order in custom lengths and diameters.

### Optional Cable

The optional attached Cable Assembly (-C) is 12" long (part no. CL-82-KA-12.0 if ordered separately), while the optional attached Nylon Lanyard (-NL) is 10" long (part no. CL-1-NL-10 if ordered separately). Both have an eyelet at the free end for a #10 or M5 attachment screw.

### Ordering Example (INCH):

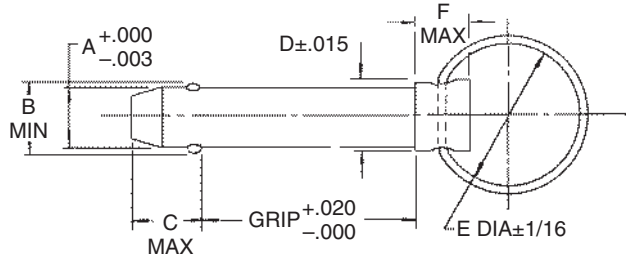
CL - 4 - DEP - 1.50 - S - C

Diameter (16ths of an inch) ————  
 Grip length (inches) ————  
 Add -S for stainless steel (steel is standard)  
 Add -C for attached Cable Assembly  
 or -NL for attached Nylon Lanyard

### Ordering Example (Metric):

CLM - 6 - DEP - 50 - S - C

Add M for metric ————  
 Diameter (mm) ————  
 Grip length (mm) ————  
 Add -S for stainless steel (steel is standard)  
 Add -C for attached Cable Assembly  
 or -NL for attached Nylon Lanyard



• = STOCKED IN ALLOY STEEL ONLY  
 X = STOCKED IN ALLOY AND STAINLESS STEEL

### INCH

PART NO.	A DIA		B	C	D DIA	E DIA	F	STOCK GRIP LENGTHS, ALLOY STEEL (INCHES)																	
	NOMINAL	ACTUAL						.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.50	5.00	6.00
CL-3-DEP-x.xx	3/16 (#10)	.1880	.217	.250	.375	1.00	.562	•	X	X	X	X	•	•											
CL-4-DEP-x.xx	1/4	.2480	.280	.344						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CL-5-DEP-x.xx	5/16	.3105	.360	.359	.438					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CL-6-DEP-x.xx	3/8	.3730	.430	.390	.500					•	X	X	X	•	X	•	•	•	•	•	•	•	•	•	•
CL-7-DEP-x.xx	7/16	.4355	.495	.469	.563						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CL-8-DEP-x.xx	1/2	.4980	.570	.516	.625					•	•	X	•	X	X	•	X	X	•	X	•	X	•	•	•
CL-9-DEP-x.xx	9/16	.5605	.645	.593	.688																				
CL-10-DEP-x.xx	5/8	.6230	.720	.672	.750			1.50			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CL-12-DEP-x.xx	3/4	.7480	.860	.750	.875							•	•	•	•	•	•	•	•	•	•	•	•	•	•
CL-14-DEP-x.xx	7/8	.8730	1.03	.859	1.000			2.00																	
CL-16-DEP-x.xx	1	.9980	1.16	.984	1.125																				

### METRIC

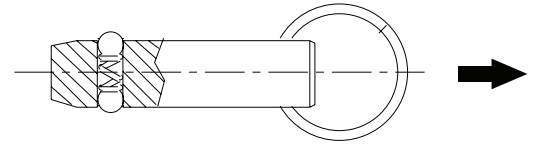
PART NO.	A DIA		B	C	D DIA	E DIA	F	STOCK GRIP LENGTHS, ALLOY STEEL (MM)																
	NOMINAL	ACTUAL						10	15	20	25	30	40	50	60	70	80	90	100					
CLM-6-DEP-xx	6mm	.2342	.266	.344	.375	1.00	.562	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
CLM-8-DEP-xx	8mm	.3130	.363	.359	.438																			
CLM-10-DEP-xx	10mm	.3917	.451	.390	.500						•	•	•	•	•	•	•	•	•	•	•	•	•	•
CLM-12-DEP-xx	12mm	.4704	.540	.516	.563																			
CLM-16-DEP-xx	16mm	.6279	.725	.672	.750			1.50																
CLM-20-DEP-xx	20mm	.7854	.897	.750	1.000	2.00																		



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# MARINE DETENT PINS

SHANK: 316 STAINLESS STEEL  
RING: 316 OR 300-SERIES STAINLESS STEEL  
SPRING & BALLS: 316 STAINLESS STEEL



Marine Detent pins are made of 316 stainless steel for extra corrosion resistance. Economical shear pin, without a head for applications where exact grip length is not important. Solid alignment pins with spring-loaded locking balls (not positive locking like a Ball Lock Pin). Simply push pin to insert, and pull to remove. Shank diameters from 3/16" to 1/2", each available in a choice of several standard grip lengths. Note: 3/16-diameter pins have one ball, instead of two, due to their small size. Available from stock only in the standard grip lengths listed below (other grip lengths available as specials).

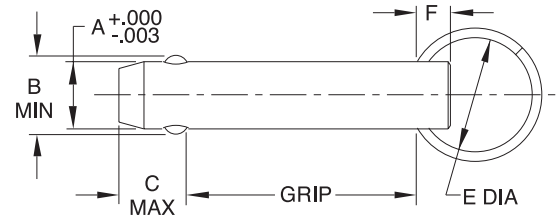
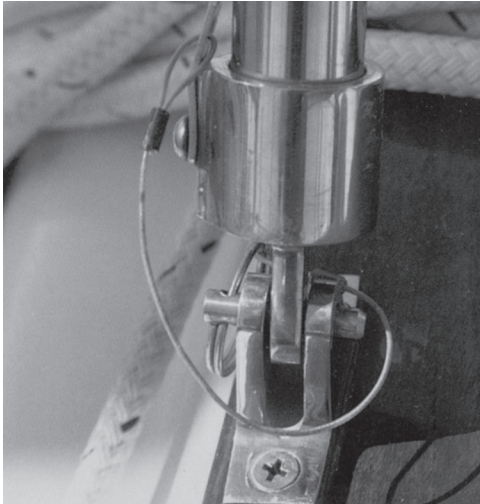
## Optional Cable

The optional attached Cable Assembly (-C) is 12" long (part no. CL-82-KA-12.0 if ordered separately), while the optional attached Nylon Lanyard (-NL) is 10" long (part no. CL-1-NL-10 if ordered separately). Both have an eyelet at the free end for a #10 or M5 attachment screw.

## Ordering Example (INCH):

CL - 4 - MDP - 1.50 - S - C

Diameter (16ths of an inch) ————  
Grip length (inches) ————  
Add -C for attached Cable Assembly  
or -NL for attached Nylon Lanyard



## DIMENSIONS (INCH)

PART NO.	A DIA		B	C	E DIA	F DIA
	NOMINAL	ACTUAL				
CL-3-MDP-x.xx-S	3/16 (#10)	.1880	.200	.329	1.00	.25
CL-4-MDP-x.xx-S	1/4	.2480	.280	.344		
CL-5-MDP-x.xx-S	5/16	.3105	.360	.359		
CL-6-MDP-x.xx-S	3/8	.3730	.430	.390		
CL-8-MDP-x.xx-S	1/2	.4980	.570	.516		

## STANDARD STOCK GRIP LENGTHS (INCH)

PART NO.	NOMINAL SHANK DIA	GRIP LENGTH (INCHES)											
		0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	3.00	3.50	4.00
CL-3-MDP-x.xx-S	3/16 (#10)	X	X	X	X	X	X	X	X	X			
CL-4-MDP-x.xx-S	1/4	X	X	X	X	X	X	X	X	X	X		
CL-5-MDP-x.xx-S	5/16		X	X	X	X	X	X	X	X	X	X	X
CL-6-MDP-x.xx-S	3/8		X	X	X	X	X	X	X	X	X	X	X
CL-8-MDP-x.xx-S	1/2			X	X	X	X	X	X	X	X	X	X

X-Stocked in stainless steel.



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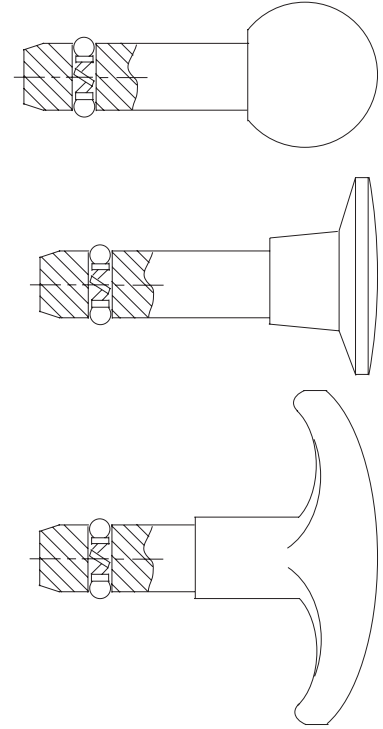


# THREADED DETENT PINS

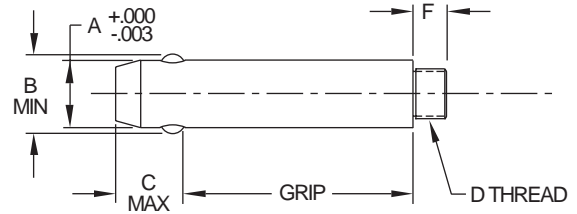
SHANK: 300-SERIES STAINLESS STEEL  
 SPRING: 17-7PH OR 302 STAINLESS STEEL  
 BALLS: 440C STAINLESS STEEL



Threaded Detent Pins are solid alignment pins with a ground shank and a threaded end for a knob handle. Two locking balls hold the pin in place by spring force. Simply push to insert, and pull to remove. The threaded end accepts virtually any type of knob handle (order separately — available in steel, stainless steel, and several different plastics). Knob handles can be permanently secured with thread-locking adhesive if desired. Threaded Detent Pins are available in stainless steel only. Standard shank diameters from 3/16 to 1/2" (6 to 10mm in metric), each in a choice of many standard grip lengths. Note: 3/16-diameter pins have only one locking ball instead of two due to their small size. Available from stock only in the standard grip lengths listed (other grip lengths available as specials).



**INFO+:** For a wide selection of knob handles to fit these Threaded Detent Pins, see pages 128-135.



## INCH

PART NO.	A DIA		GRIP LENGTH	B	C	D	F
	NOMINAL	ACTUAL					
CL-3-TDP-0.50-S	3/16(#10)	.1880	.50	.200	.250	#8-32	1/4
CL-3-TDP-0.75-S			.75				
CL-3-TDP-1.00-S			1.00				
CL-3-TDP-1.25-S			1.25				
CL-3-TDP-1.50-S			1.50				
CL-3-TDP-1.75-S			1.75				
CL-3-TDP-2.00-S			2.00				
CL-4-TDP-0.50-S	1/4	.2480	0.50	.280	.344	#10-32	1/4
CL-4-TDP-0.75-S			0.75				
CL-4-TDP-1.00-S			1.00				
CL-4-TDP-1.25-S			1.25				
CL-4-TDP-1.50-S			1.50				
CL-4-TDP-1.75-S			1.75				
CL-4-TDP-2.00-S			2.00				
CL-4-TDP-2.50-S	2.50						
CL-4-TDP-3.00-S	3.00						
CL-5-TDP-0.75-S	5/16	.3105	0.75	.360	.359	1/4-20	3/8
CL-5-TDP-1.00-S			1.00				
CL-5-TDP-1.25-S			1.25				
CL-5-TDP-1.50-S			1.50				
CL-5-TDP-1.75-S			1.75				
CL-5-TDP-2.00-S			2.00				
CL-5-TDP-2.50-S			2.50				
CL-5-TDP-3.00-S	3.00						
CL-6-TDP-0.75-S	3/8	.3730	0.75	.430	.390	1/4-20	3/8
CL-6-TDP-1.00-S			1.00				
CL-6-TDP-1.25-S			1.25				
CL-6-TDP-1.50-S			1.50				
CL-6-TDP-1.75-S			1.75				
CL-6-TDP-2.00-S			2.00				
CL-6-TDP-2.50-S			2.50				
CL-6-TDP-3.00-S	3.00						
CL-6-TDP-3.50-S	3.50						
CL-6-TDP-4.00-S	4.00						
CL-8-TDP-1.00-S	1/2	.4980	1.00	.570	.516	3/8-16	1/2
CL-8-TDP-1.50-S			1.50				
CL-8-TDP-2.00-S			2.00				
CL-8-TDP-2.50-S			2.50				
CL-8-TDP-3.00-S			3.00				
CL-8-TDP-3.50-S			3.50				
CL-8-TDP-4.00-S	4.00						

## METRIC

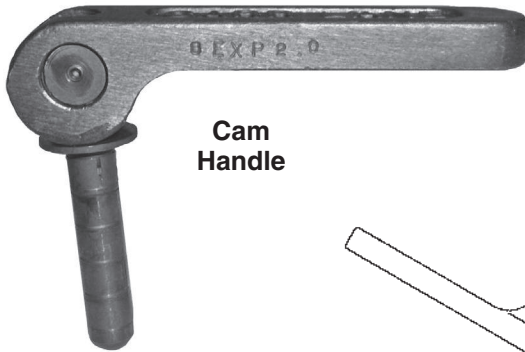
PART NO.	A DIA		GRIP LENGTH	B	C	D	F
	NOMINAL	ACTUAL					
CLM-6-TDP-15-S	6mm	.2342	15mm	.266	.344	M5	.24
CLM-6-TDP-20-S			20mm				
CLM-6-TDP-25-S			25mm				
CLM-6-TDP-30-S			30mm				
CLM-6-TDP-40-S			40mm				
CLM-6-TDP-50-S			50mm				
CLM-8-TDP-20-S	8mm	.3130	20mm	.363	.359	M6	.39
CLM-8-TDP-25-S			25mm				
CLM-8-TDP-30-S			30mm				
CLM-8-TDP-40-S			40mm				
CLM-8-TDP-50-S			50mm				
CLM-10-TDP-20-S	10mm	.3917	20mm	.451	.390	M8	.39
CLM-10-TDP-25-S			25mm				
CLM-10-TDP-30-S			30mm				
CLM-10-TDP-40-S			40mm				
CLM-10-TDP-50-S			50mm				



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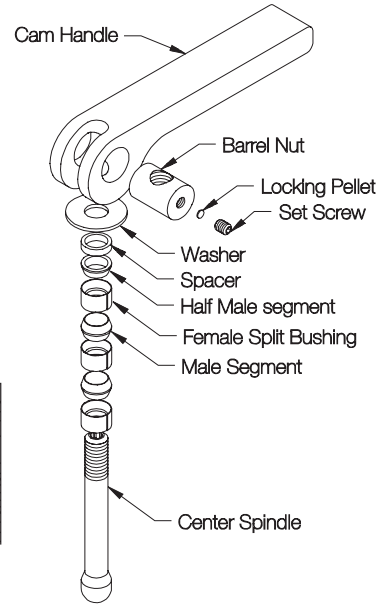
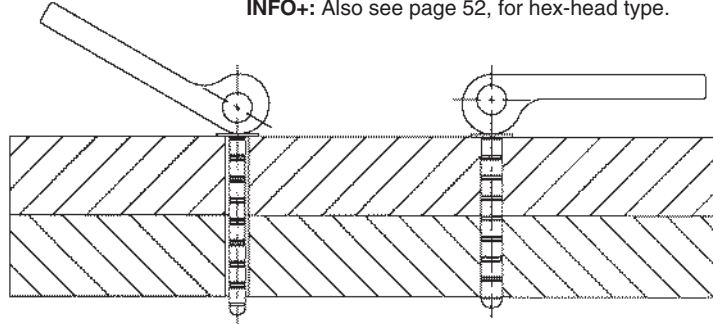
# EXPANDING PINS

SPLIT BUSHINGS, MALE SEGMENTS, & SPACERS: 17-4PH STAINLESS STEEL, RC 40 MIN, PASSIVATED, DRY FILM LUBE  
 CENTER SPINDLE: 17-4PH STAINLESS STEEL, RC 36-40, PASSIVATED, DRY FILM LUBE  
 BARREL NUT & WASHER: 17-4PH STAINLESS STEEL, PASSIVATED, DRY FILM LUBE  
 HANDLE: ALUMINUM ALLOY, BLACK ANODIZED

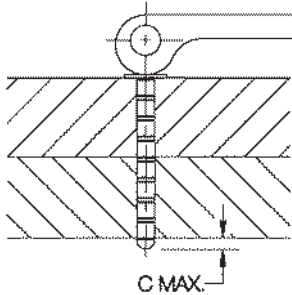


Cam Handle

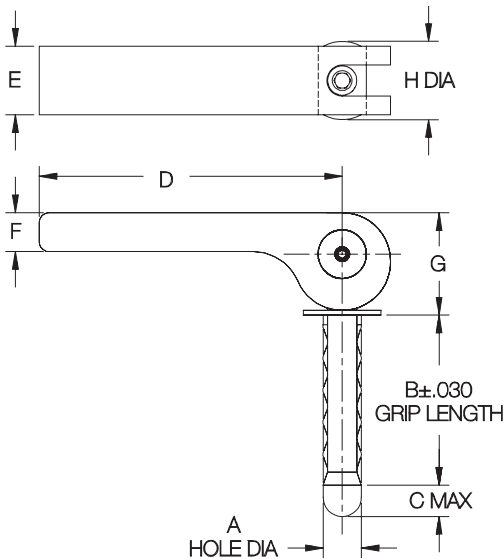
Precision alignment pin that expands up to .006 inches to tighten up hole clearance. The pin is an assembly of female split bushings separated by male segments, on a center spindle, that expands when drawn together. This assembly provides excellent shear strength, comparable to a solid pin. Diameters from 1/4 to 3/4" are available in several standard lengths. Pins can be installed in through holes or blind holes. **INFO+:** Also see page 52, for hex-head type.



Moving the cam handle expands pin diameter up to .006 inches, to take up slack and secure the pin in place. If additional adjustment is required, remove set screw and turn the cam handle.



Important: Install so that all expanding bushings are contained in the installation hole.



## CAM HANDLE

PART NO.	A DIA			B	C	D	E	F	G	H DIA	DOUBLE-SHEAR STRENGTH (LBS)*
	NOMINAL	MIN	MAX								
CL-4-EXP-0.50	1/4	.250	.254	.50	1/4	2-3/8	1/2	5/16	.81	5/8	4,000
CL-4-EXP-0.75				.75							
CL-4-EXP-1.00				1.00							
CL-4-EXP-1.50				1.50							
CL-4-EXP-2.00				2.00							
CL-4-EXP-3.00	3.00										
CL-5-EXP-1.00	5/16	.312	.317	1.00	5/16	2-3/8	1	1/2	1.12	1	6,300
CL-5-EXP-2.00				2.00							
CL-5-EXP-3.00				3.00							
CL-6-EXP-1.00	3/8	.375	.380	1.00	3/8	4-1/2	1	1/2	1.12	1	9,000
CL-6-EXP-1.50				1.50							
CL-6-EXP-2.00				2.00							
CL-6-EXP-3.00				3.00							
CL-8-EXP-0.50	1/2	.500	.505	.50	1/2	4-1/2	1	1/2	1.12	1	16,100
CL-8-EXP-1.00				1.00							
CL-8-EXP-1.50				1.50							
CL-8-EXP-2.00				2.00							
CL-8-EXP-3.00				3.00							
CL-10-EXP-1.00	5/8	.625	.630	1.00	5/8	4-1/2	1	1/2	1.31	1	25,100
CL-10-EXP-1.50				1.50							
CL-10-EXP-2.00				2.00							
CL-10-EXP-3.00				3.00							
CL-12-EXP-2.00	3/4	.750	.757	2.00	3/4	6	1-1/4	3/4	2.09	1-1/4	36,200
CL-12-EXP-3.00				3.00							
CL-12-EXP-4.00				4.00							

\* 2:1 Safety Factor



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# EXPANDING PINS

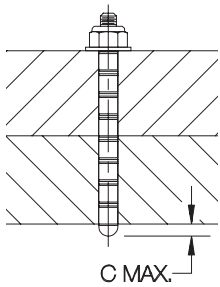
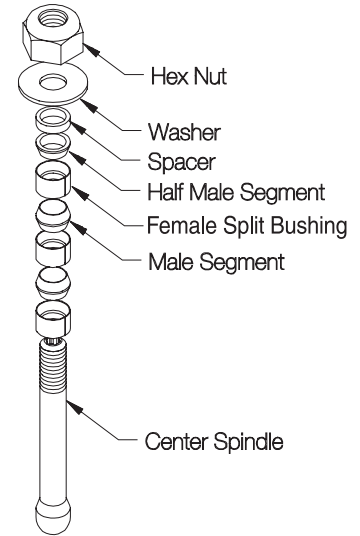
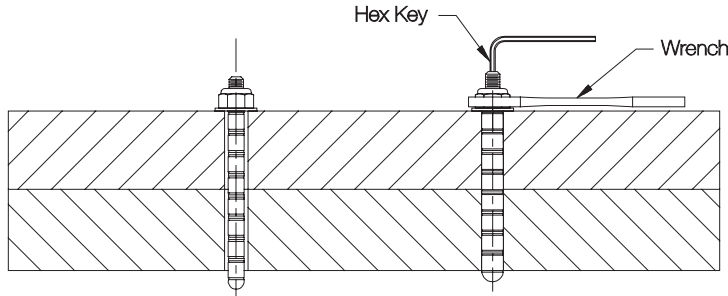
SPLIT BUSHINGS, MALE SEGMENTS, & SPACERS: 17-4PH STAINLESS STEEL, RC 40 MIN, PASSIVATED, DRY FILM LUBE  
 CENTER SPINDLE: 17-4PH STAINLESS STEEL, RC 36-40, PASSIVATED, DRY FILM LUBE  
 WASHER: 17-4PH STAINLESS STEEL, PASSIVATED, DRY FILM LUBE  
 HEX NUT: 17-4PH STAINLESS STEEL, WITH LOCKING ELEMENT

1



Hex Head

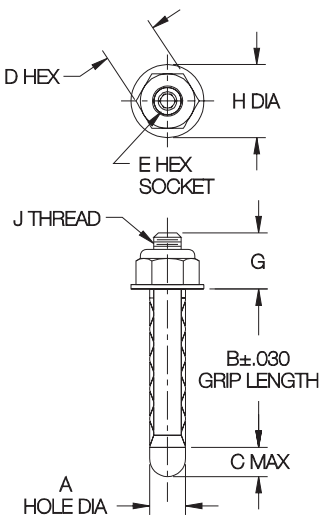
Precision alignment pin that expands up to .006 inches to tighten up hole clearance. The pin is an assembly of female split bushings separated by male segments, on a center spindle, that expands when drawn together. This assembly provides excellent shear strength, comparable to a solid pin. Diameters from 1/4 to 3/4" are available in several standard lengths. Pins can be installed in through holes or blind holes. **INFO+:** Also see page 51, for cam-handle type.



Tightening the hex nut with a wrench expands pin diameter up to .006 inches, to take up slack and secure the pin in place. Hold center spindle stationary with a hex key while tightening.

## HEX HEAD

Important: Install pin so that all split bushings are contained in the installation hole.



PART NO.	A DIA			B	C	D	E	G	H DIA	J	DOUBLE-SHEAR STRENGTH (LBS)*	INSTALLATION TORQUE (FT-LBS)
	NOMINAL	MIN	MAX									
CL-4-EXPH-0.50	1/4	.250	.254	.50	1/4	3/8	3/32	.39	.67	#10-32	4,000	3
CL-4-EXPH-0.75				.75								
CL-4-EXPH-1.00				1.00								
CL-4-EXPH-1.50				1.50								
CL-4-EXPH-2.00				2.00								
CL-4-EXPH-3.00	3.00											
CL-5-EXPH-1.00	5/16	.312	.317	1.00	5/16	3/8	3/32	.40	.67	#10-32	6,300	3
CL-5-EXPH-2.00				2.00								
CL-5-EXPH-3.00				3.00								
CL-6-EXPH-1.00	3/8	.375	.380	1.00	3/8	7/16	1/8	.49	.67	1/4-28	9,000	7.5
CL-6-EXPH-1.50				1.50								
CL-6-EXPH-2.00				2.00								
CL-6-EXPH-3.00	3.00											
CL-8-EXPH-0.50	1/2	.500	.505	.50	1/2	9/16	3/16	.71	.92	3/8-24	16,100	29
CL-8-EXPH-1.00				1.00								
CL-8-EXPH-1.50				1.50								
CL-8-EXPH-2.00				2.00								
CL-8-EXPH-3.00				3.00								
CL-10-EXPH-1.00	5/8	.625	.630	1.00	5/8	3/4	1/4	.90	1.22	1/2-20	25,100	83
CL-10-EXPH-1.50				1.50								
CL-10-EXPH-2.00				2.00								
CL-10-EXPH-3.00				3.00								
CL-12-EXPH-2.00	3/4	.750	.757	2.00	3/4	7/8	1/4	1.02	1.35	9/16-18	36,200	121
CL-12-EXPH-3.00				3.00								
CL-12-EXPH-4.00				4.00								

\* 2:1 Safety Factor



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