

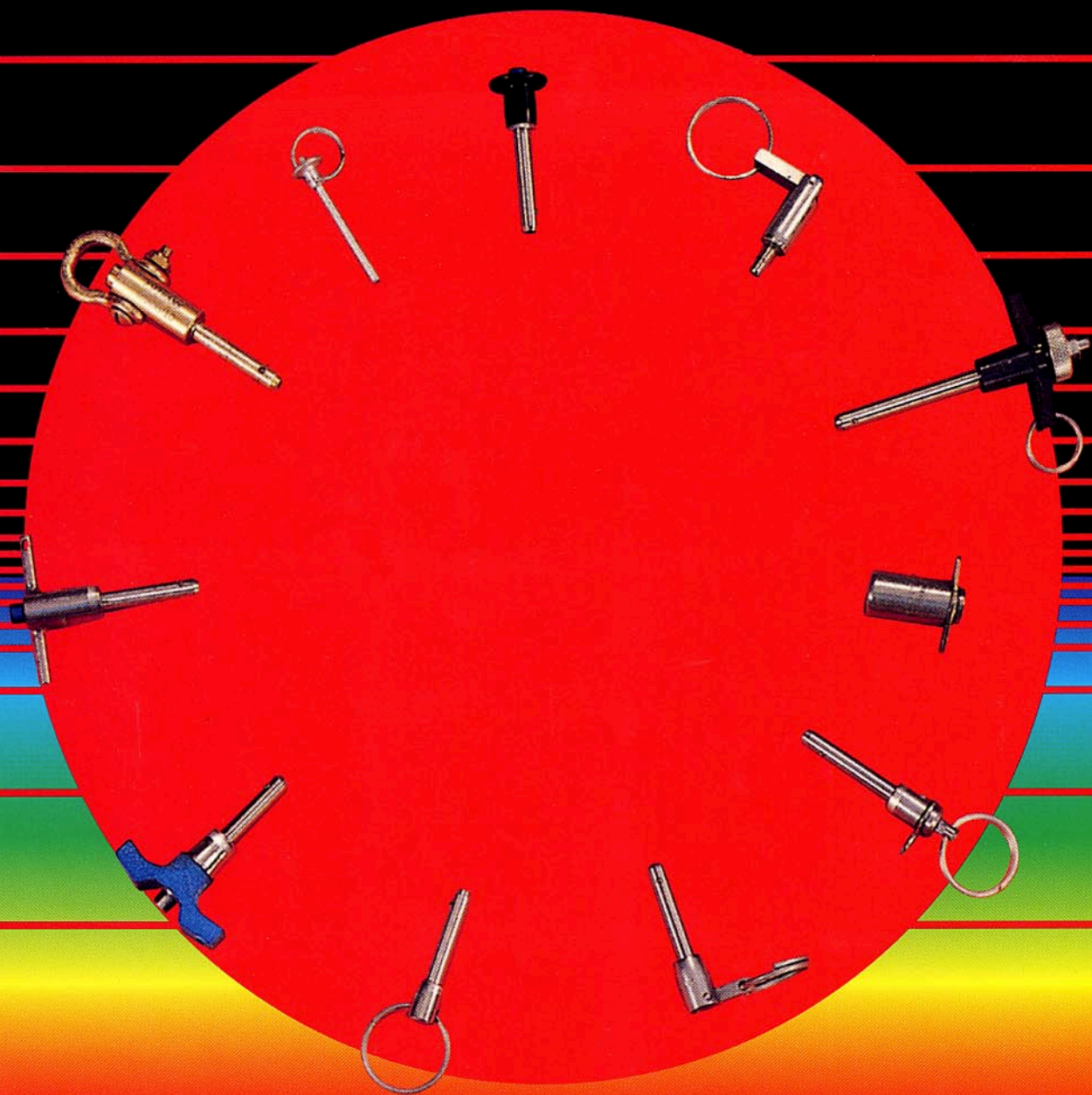
FASTENERS
TAKEN TO NEW HEIGHTS



AVIBANK
MFG. INC.
AEROSTRUCTURES DIVISION, A PCC COMPANY

11500 Sherman Way
P.O. Box 9909
North Hollywood, CA 91609-1909

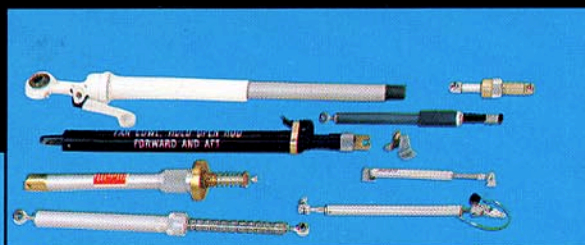
**BALL-LOK® QUICK RELEASE PINS
& ACCESSORIES**



**AVIBANK
MFG. INC.**

AVIBANK'S LINE OF PRODUCTS

**ADJUSTABLE
DIAMETER
FASTENERS**



STRUTS/HOLD-OPEN RODS

**SELF RETAINING BOLTS
AND ACCESSORIES**



2

TABLE OF CONTENTS

SINGLE ACTING PINS

STANDARD PINS "B", "TA", "LA" & "R" HANDLES	4
GROUND HANDLING PINS "GL" & "GT"	5
ENVIRONMENTAL PINS "E" SERIES	6 & 7
CAM LEVER PINS – CL	8
DOUBLE-LOK CAM LEVER PINS – DCL	9
SHACKLE PINS – SP	10
ADJUSTABLE GRIP LENGTH PINS (51588)	11
HI-TENSION PINS (52325)	12

DOUBLE ACTING PINS

STANDARD PINS "T", "L" & "R" HANDLES	13
--	----

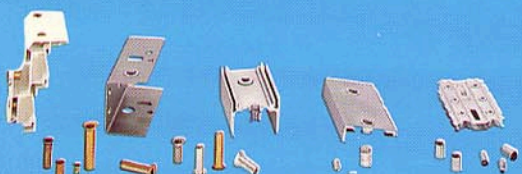
RECEPTACLES

STANDARD RECEPTACLES	14
LIGHTWEIGHT RECEPTACLES AND MOUNTING PLATES	15

DETENT PINS

STANDARD SHOULDER AND NO SHOULDER – SPRING LOADED	16
---	----

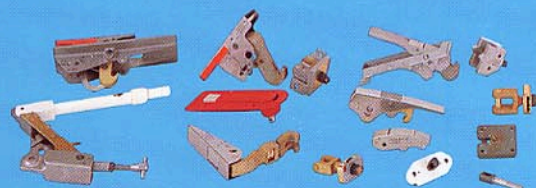
THREADED INSERTS



STRUCTURAL PANEL FASTENERS



LATCHES AND KEEPER ASSEMBLIES



LANYARDS, CABLES, CHAINS, STREAMERS AND RINGS

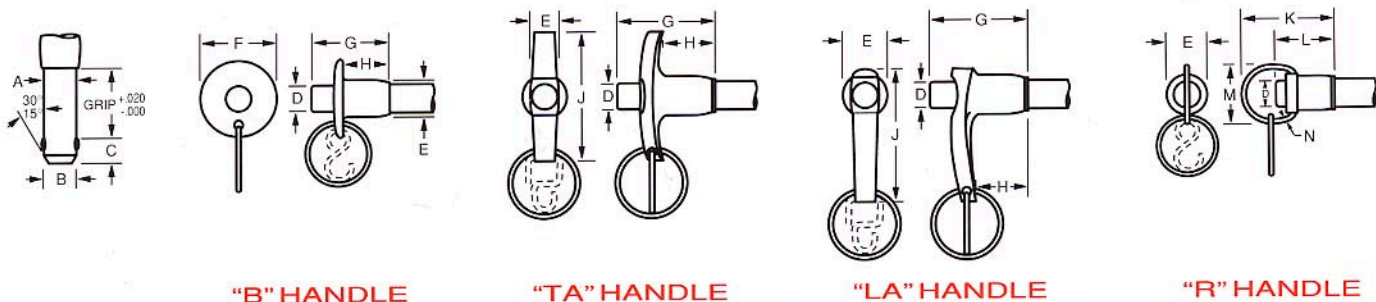
LANYARDS	17
CABLES & CHAINS	18
STREAMERS & RINGS	19

METRIC PINS

"B" HANDLE – SINGLE ACTING (56772)	20
"TA" HANDLE – SINGLE ACTING (51399)	21
"LA" HANDLE – SINGLE ACTING (51446)	22
GROUND HANDLING, "GL" & "GT" (52917)	23
"R", "T" AND "L" HANDLES – DOUBLE ACTING (51453)	24
DETENTS – SPRING LOADED (53420)	25

SPECIALS

SPECIALS	26
----------------	----



"B" HANDLE

"TA" HANDLE

"LA" HANDLE

"R" HANDLE

BALL-LOK® SINGLE ACTING PINS - POSITIVE LOCKING

DIMENSIONS

NOM. DIA.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
3/16	.1885	.1870	.220	.260	.310	.250	.500	.310	.800	.720	1.280	.750	.820	.470
1/4	.2485	.2470	.289	.290	.310	.250	.500	.310	.800	.720	1.280	.750	.820	.470
5/16	.3110	.3095	.375	.330	.310	.250	.500	.310	1.135	.810	1.300	.890	.820	.600
3/8	.3735	.3720	.440	.365	.390	.300	.625	.450	1.135	.875	1.440	.960	.890	.600
7/16	.4360	.4345	.509	.380	.390	.300	.625	.550	1.400	.940	1.480	1.120	.890	.760
1/2	.4985	.4970	.594	.460	.565	.435	.800	.600	1.400	1.300	1.580	1.140	.970	.830
9/16	.5610	.5595	.666	.510	.565	.435	.800	.680	1.650	1.340	1.600	1.350	1.030	.870
5/8	.6235	.6220	.750	.580	.580	.450	.975	.750	1.700	1.530	1.730	1.390	1.030	.900
3/4	.7485	.7470	.887	.670	.700	.570	1.000	.865	1.900	1.790	1.730	1.630	1.210	.900
7/8	.8735	.8720	1.046	.760	.840	.700	1.320	.980	2.250	2.120	2.200	1.900	1.470	1.120
1	.9985	.9970	1.219	.890	.950	.750	1.320	1.175	2.250	2.120	2.200	1.900	1.570	1.200

DIMENSIONS CONTINUED

NOM. DIA.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
3/16	1.820	1.720	1.520	1.360	.870	.750	1.30	1.06	.10	4600	5150	200	260	
1/4	1.820	1.720	1.520	1.360	.870	.750	1.30	1.06	.10	8200	9200	230	300	
5/16	1.820	1.720	1.610	1.390	1.000	.880	1.30	1.06	.10	12800	14400	510	660	
3/8	2.070	1.940	1.610	1.390	1.160	1.040	1.37	1.06	.10	18400	20600	575	745	
7/16	2.070	1.940	1.820	1.700	1.220	1.100	1.52	1.09	.12	25000	28000	710	920	
1/2	2.350	2.230	1.820	1.700	1.240	1.120	1.61	1.16	.12	32800	36800	1160	1500	
9/16	2.350	2.230	2.000	1.880	1.460	1.340	1.64	1.16	.12	41200	46000	1420	1845	
5/8	3.100	2.380	2.000	1.880	1.460	1.340	1.70	1.24	.12	51200	57500	2070	2690	
3/4	3.100	2.460	2.640	2.520	1.730	1.610	2.00	1.64	.15	73600	82500	2950	3835	
7/8	3.520	2.750	2.790	2.670	1.980	1.860	2.18	1.64	.15	100000	112500	3980	5070	
1	3.520	2.750	3.010	2.890	2.210	2.090	2.28	1.64	.15	131000	147000	5480	7120	

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40 (MIL-H-6875)
CORROSION RESISTANT STEEL:
SHANK AND SPINDLE Rc 40 MIN. (MIL-H-6875)
BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CARBON AND ALLOY STEEL:
CADMIUM PLATE (QQ-P-416, TYPE I OR TYPE II, CLASS 2)
CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)
ALUMINUM ALLOY:
ANODIZE (MIL-A-8625) HANDLE (DYE DARK GRAY OR BLACK), BUTTON (DYE BLUE)

NOTES:

- ALL PINS MEET OR EXCEED THE REQUIREMENTS OF PROCUREMENT SPECIFICATIONS MIL-P-23460 (WEP), AND ARE LISTED (QPL) ON MS17984 THRU 17987 AND NAS 1333 THRU 1346.
- ALL PINS FURNISHED WITH ATTACHING RINGS; SIZE AND SHAPE AT AVIBANK'S OPTION.
- "A" CALLOUT AFTER HANDLE CONFIGURATION IN PARTS ABOVE SIGNIFIES ALUMINUM HANDLE.
- BUTTON "B" AND RING "R" HANDLES AVAILABLE IN ALUMINUM "A", CRES "C" OR STEEL "S" MATERIAL. AVIBANK'S OPTION IF NOT CALLED OUT.
- IF A FOUR-BALL PIN IS REQUIRED FOR GREATER TENSION STRENGTH, ADD THE SUFFIX "F" AT THE END OF STANDARD CALLOUT. EXAMPLE: BLS8BA15SF
- IF GREATER "C" DIMENSION IS NECESSARY, ADD LENGTH AFTER "C" LETTER, EXAMPLE: BLS8BA15SC10 (C10 BEING 1.0 INCHES).
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLES.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP; EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY & SPINDLE	STEEL 4130 (MIL-T-6736 OR MIL-S-6758)	CRES 17-4PH (AMS 5643) OR PH15-7MO (AMS 5657)
BALLS	CRES 440C (QQ-S-763)	CRES 440C (QQ-S-763)
BUTTONS	MILD STEEL (ASTM-A-108) OR ALUMINUM 2024/2017 (QQ-A-225/6 OR /5)	CRES 303 (ASTM-A-581/582 OR ALUMINUM 2024/2017 (QQ-225/6 OR /5)
"B" BUTTON HEAD	MILD STEEL (ASTM-A-108) OR ALUMINUM 2024/2017 (QQ-A-225/6 OR /5)	CRES 303 (ASTM-A-581/582 OR ALUMINUM 2024/2017 (QQ-225/6 OR /5)
"TA"/"LA" HEAD	ALUMINUM CASTING 380 (QQ-A-591)	ALUMINUM CASTING 380 (QQ-A-591)
"R" HANDLE RING	CRES 302 (ASTM-A-313)	CRES 302 (ASTM-A-313)
"R" HANDLE HEAD	MILD STEEL (ASTM-A-108)	CRES 303 (ASTM-A-581/582)
COLLAR (ON ALUM. HANDLES ONLY)	MILD STEEL (ASTM-A-108 OR 366)	CRES 300 SERIES (ASTM-A-581/582 OR QQ-S-766)
SPRING/ATTACHING RING	MUSIC WIRE (ASTM-A-228)	CRES 17-7PH (AMS 5678) OR 302 (ASTM-A-313)

OPTIONAL LANYARD

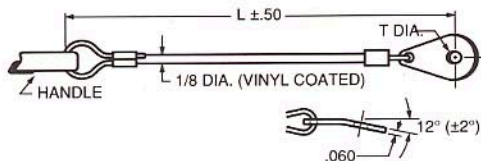


TABLE I

TAB HOLE SIZE	DASH NO.	+ .004 T-.001 DIA.
	-4	.129
	-6	.194
	-7	.255
	-8	.281
	-10	.318
	-12	.377

NOTES:

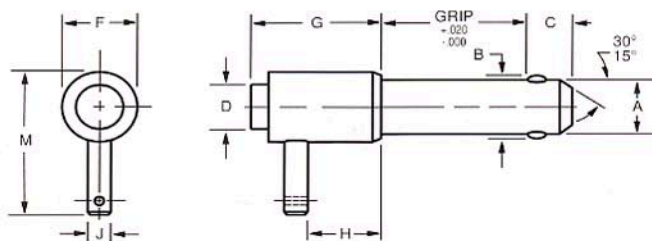
CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIV.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. **FINISH:** ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

SAMPLE CALLOUT

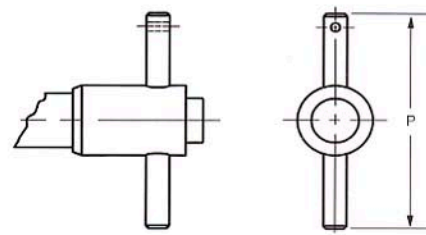
B L S (or C) 8 B (A) 15 S L12 C 4

TAB HOLE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 7. (L12 = 12" LONG.) (4" MIN)
SINGLE ACTING
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES FIRST DIGIT "O" IF LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
ADD "A" FOR ALUMINUM, "C" FOR CRES OR "S" FOR STEEL HANDLE
HANDLE STYLE (SEE NOTE 4)
DIAMETER IN SIXTEENTHS: 8 = 1/2"
CORROSION RESISTANT STEEL

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS



"GL" HANDLE



"GT" HANDLE

BALL-LOK® GROUND HANDLING PINS - POSITIVE LOCKING

5

DIMENSIONS

DASH NO.	NOM. DIA.	A +.0000 -.0015	B ±.005	C MAX.	D MIN.	F ±.030	G MAX.	H MIN.	J ±.015	M MAX.	P MAX.	CALCULATED DOUBLE SHEAR LBS.	
												STEEL	CRES
3	3/16	.1885	.220	.380	.160	.500	1.550	.740	.187	2.155	2.000	4,600	5,150
4	1/4	.2485	.287	.380	.250	.500	1.550	.740	.187	2.155	2.000	8,200	9,200
5	5/16	.3110	.372	.400	.250	.500	1.550	.740	.187	2.155	2.000	12,800	14,400
6	3/8	.3735	.438	.490	.300	.625	1.550	.740	.250	2.155	2.000	18,400	20,600
7	7/16	.4360	.507	.490	.370	.625	1.550	.810	.250	2.245	2.250	25,000	28,000
8	1/2	.4985	.593	.530	.430	.750	1.820	.810	.250	2.425	2.500	32,800	36,800
9	9/16	.5610	.666	.600	.430	.750	1.820	.810	.250	2.425	2.500	41,200	46,000
10	5/8	.6235	.748	.650	.480	.875	1.820	.880	.312	3.075	3.000	51,200	57,500
12	3/4	.7485	.887	.780	.570	1.000	1.820	.930	.312	3.075	3.000	73,600	82,500
14	7/8	.8735	1.043	.890	.700	1.125	2.140	1.120	.375	3.650	3.500	100,000	112,500
16	1	.9985	1.217	1.000	.750	1.250	2.140	1.130	.375	3.650	3.500	131,000	147,000
18	1 1/8	1.122	1.375	1.250	1.00	1.390	3.90	1.62	.50	6.37	6.37	166,100	187,000
20	1 1/4	1.247	1.500	1.250	1.00	1.515	3.90	1.62	.50	6.50	6.50	205,000	230,500
22	1 3/8	1.372	1.625	1.250	1.00	1.640	3.90	1.62	.50	6.62	6.62	248,000	279,000
24	1 1/2	1.497	1.750	1.250	1.00	1.765	3.90	1.62	.50	6.75	6.75	295,000	332,000
26	1 5/8	1.622	1.931	1.562	1.00	1.890	3.90	1.62	.50	6.87	6.87	346,100	389,500
28	1 3/4	1.747	2.062	1.562	1.00	2.015	3.90	1.62	.50	7.00	7.00	401,200	452,100
30	1 7/8	1.872	2.187	1.562	1.00	2.140	3.90	1.62	.50	7.12	7.12	461,000	519,000
32	2	1.997	2.312	1.562	1.00	2.265	3.90	1.62	.50	7.25	7.25	524,000	590,000
34	2 1/8	2.122	2.500	1.875	1.50	2.390	4.25	1.75	.50	7.37	7.37	591,500	666,100
36	2 1/4	2.247	2.625	1.875	1.50	2.515	4.25	1.75	.50	7.50	7.50	663,100	747,000
38	2 3/8	2.372	2.750	1.875	1.50	2.640	4.25	1.75	.50	7.62	7.62	739,100	832,100
40	2 1/2	2.497	2.875	1.875	1.50	2.765	4.25	1.75	.50	7.75	7.75	819,000	922,100
42	2 5/8	2.622	3.000	1.875	1.50	2.890	4.25	1.75	.50	7.87	7.87	903,000	1,016,000
44	2 3/4	2.747	3.125	1.875	1.50	3.015	4.25	1.75	.50	8.00	8.00	991,000	1,116,000
46	2 7/8	2.872	3.250	1.875	1.50	3.140	4.25	1.75	.50	8.12	8.12	1,083,000	1,219,300
48	3	2.997	3.375	1.875	1.50	3.265	4.25	1.75	.50	8.25	8.25	1,179,000	1,328,100

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY	ALLOY STEEL 4130	MIL-S-6758/MIL-S-6736
SPINDLE	ALLOY STEEL 4130	MIL-S-6758
BUTTON	CARBON STEEL ALUM. ALLOY 2017/2024	ASTM-A-108 QQ-A-225/5 OR QQ-A-225/6
SPRING	MUSIC WIRE	ASTM-A-228
HEAD	CARBON STEEL	ASTM-A-108
HANDLE	CARBON STEEL	ASTM-A-108
BALLS	CRES 440C	QQ-S-763

OPTIONAL LANYARD

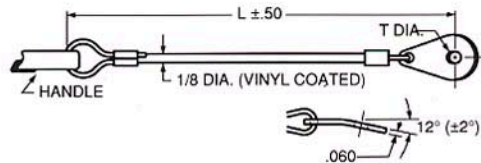


TABLE 1

DASH NO.	TAB HOLE SIZE +.004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIV.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40 (MIL-H-6875)
CORROSION RESISTANT STEEL:
SHANK & SPINDLE Rc 40 MIN. (MIL-H-6875), SPRING 17-7 PH CH900 (MIL-H-6875)
BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CARBON AND ALLOY STEEL:
CADMIUM PLATE (QQ-P-416, TYPE I OR TYPE II, CLASS 2)
CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)
ALUMINUM ALLOY:
ANODIZE (MIL-A-8625)
BUTTON (DYE BLUE)

NOTES:

- ALL PINS MEET OR EXCEED THE REQUIREMENTS OF PROCUREMENT SPECIFICATION MIL-P-23460 (WEP) AND ARE AVAILABLE UNDER NAS1333 THROUGH NAS1346. WHEN ORDERED UNDER A NAS NUMBER, A RING OR HOOK MUST BE ATTACHED TO THE HANDLE.
- ALL PINS ARE IDENTIFIED PER MIL-STD130 AND APPLICABLE SPECIFICATIONS.
- IF A FOUR-BALL PIN IS REQUIRED FOR GREATER TENSION STRENGTH, ADD THE SUFFIX "F" AT THE END OF A STANDARD CALLOUT. EXAMPLE: BLS8GL15F
- IF A GREATER "C" DIMENSION IS REQUIRED, ADD THE LETTER "C" AND THE LENGTH AFTER THE STANDARD GRIP. EXAMPLE: BLS8GL15C10 (C10 BEING 1.0 INCHES).
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP. EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SAMPLE CALLOUT

B L S (or C) 8 GL (or GT) 15 L12 C 4

TAB HOLE: 4 = .129 DIA. (SEE TABLE 1)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 5. (L12 = 12" LONG.) (4" MIN)
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES, FIRST DIGIT "O" IF LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
HANDLE STYLE
DIAMETER IN SIXTEENTHS: 8 = 1/2"
CORROSION RESISTANT STEEL

NEW

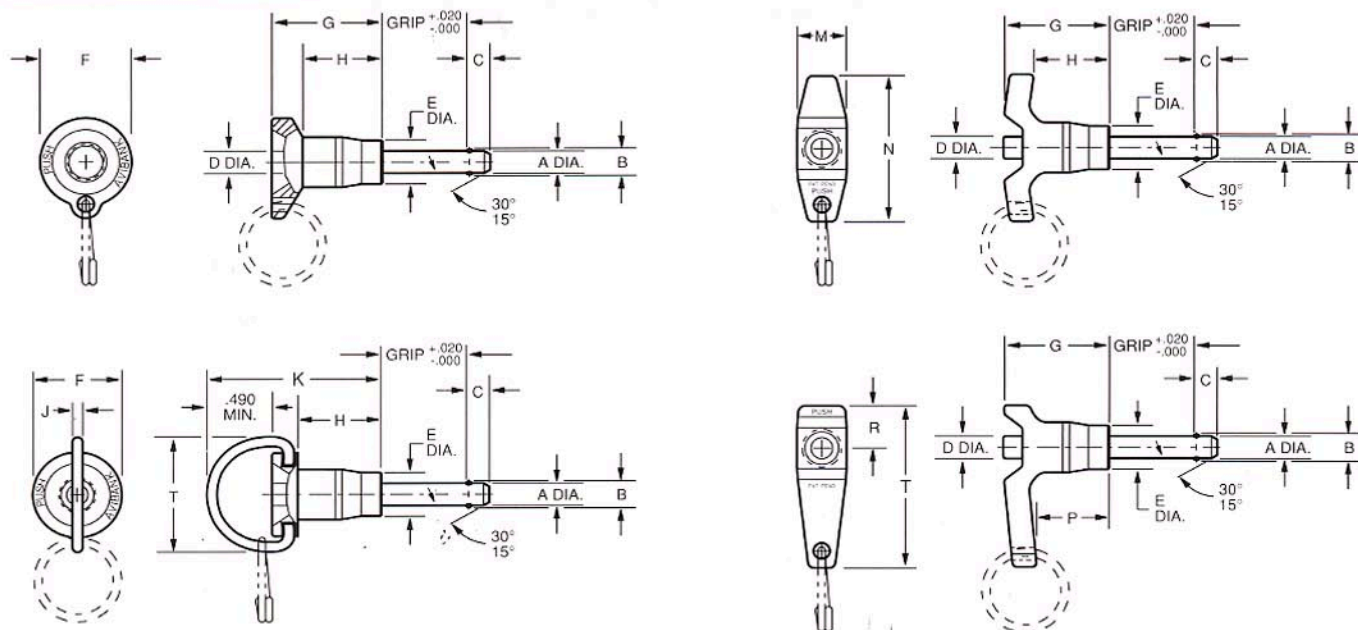
- ◆ ERGONOMIC HANDLE DESIGN PREVENTS INADVERTENT BUTTON RELEASE
- ◆ STAINLESS STEEL CONSTRUCTION ELIMINATES TOXIC CADMIUM PLATING
- ◆ EXCEEDS ALL MS AND NAS TENSILE STRENGTH REQUIREMENTS

- ◆ ENGINEERED REINFORCED COMPOSITE RESIN HANDLE
- ◆ DECORATOR HANDLE COLORS ARE AVAILABLE BY SPECIAL ORDER
- ◆ ALL STAINLESS STEEL HANDLES OPTIONAL
- ◆ AVAILABLE IN METRIC SIZES (SEE PAGE 7)

BIGGEST IMPROVEMENT IN QUICK RELEASE PINS IN 50 YEARS

6

BALL-LOK® ENVIRONMENTAL PIN - SINGLE ACTING, POSITIVE LOCKING, "E" STYLE



PATENT NO. 5,394,594

DIMENSIONS

DASH NO.	NOM. DIA.	A +.0000 -.0015	B ±.005	C +.000 -.030	D		E		F		G	H	J	K	L	M	N		P	R	T		CALCULATED DOUBLE SHEAR (LBS)
		MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.							MIN.	MAX.			MIN.		
3	3/16	.1885	.220	.260	.310	.250	.500	.380	1.070	.990	1.270	.700	.080	2.125	1.060	.625	1.815	1.750	.700	.540	1.590	1.540	5.150
4	1/4	.2485	.289	.290	.310	.250	.500	.380	1.070	.990	1.270	.700	.080	2.125	1.060	.625	1.815	1.750	.700	.540	1.590	1.540	9.200
5	5/16	.3110	.375	.330	.310	.250	.500	.380	1.070	.990	1.270	.700	.080	2.125	1.060	.625	1.815	1.750	.700	.540	1.590	1.540	14.400
6	3/8	.3735	.440	.365	.565	.300	.800	.510	1.390	1.120	1.600	.850	.080	2.340	1.060	.800	2.345	1.935	.850	.700	1.975	1.925	20.600
7	7/16	.4360	.509	.380	.565	.300	.800	.510	1.390	1.120	1.600	.850	.080	2.340	1.060	.800	2.345	1.935	.850	.700	1.975	1.925	28.000
8	1/2	.4985	.594	.460	.565	.300	.800	.510	1.390	1.120	1.600	.850	.080	2.340	1.060	.800	2.345	1.935	.850	.700	1.975	1.925	36.800

SPECIFICATIONS

PART NAME	MATERIALS
HANDLE RING (R STYLE)	CRES 302
BALL	CRES 440C
ATTACHING RING (OPTIONAL)	CRES 17-7PH/302
HEAD	CRES 303
HANDLE	REINFORCED COMPOSITE RESIN (BLUE) OR CRES 300 SERIES
SPRING (NOT SHOWN)	CRES 17-7PH/302
SPINDLE (NOT SHOWN)	CRES 17-4PH
BUTTON	CRES 303
BODY	CRES 17-4PH/15-5PH

HEAT TREATMENT:

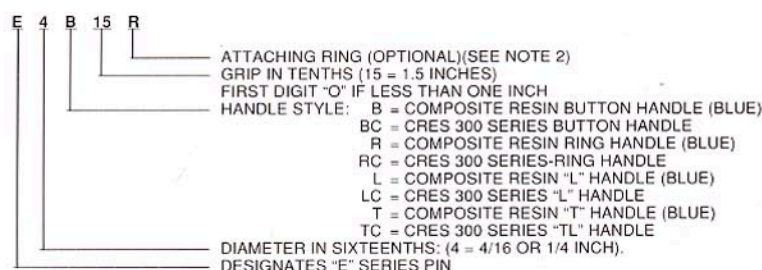
CORROSION RESISTANT STEEL:
SHANK AND SPINDLE Rc 40 MIN.
(MIL-H-6875) SPRING 17-7 PH
CH900 (MIL-H-6875)

BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)

SAMPLE CALLOUT



- GRIP MEASURED TO EDGE OF BALL HOLE PRIOR TO STAKING.
- SIZE AND SHAPE OF RING AVIBANK'S OPTION. IF ATTACHING RING OPTION IS CHOSEN (SUFFIX "R"), THE RING SHALL BE SUPPLIED UNASSEMBLED.
- NO MARKING
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN THAT SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

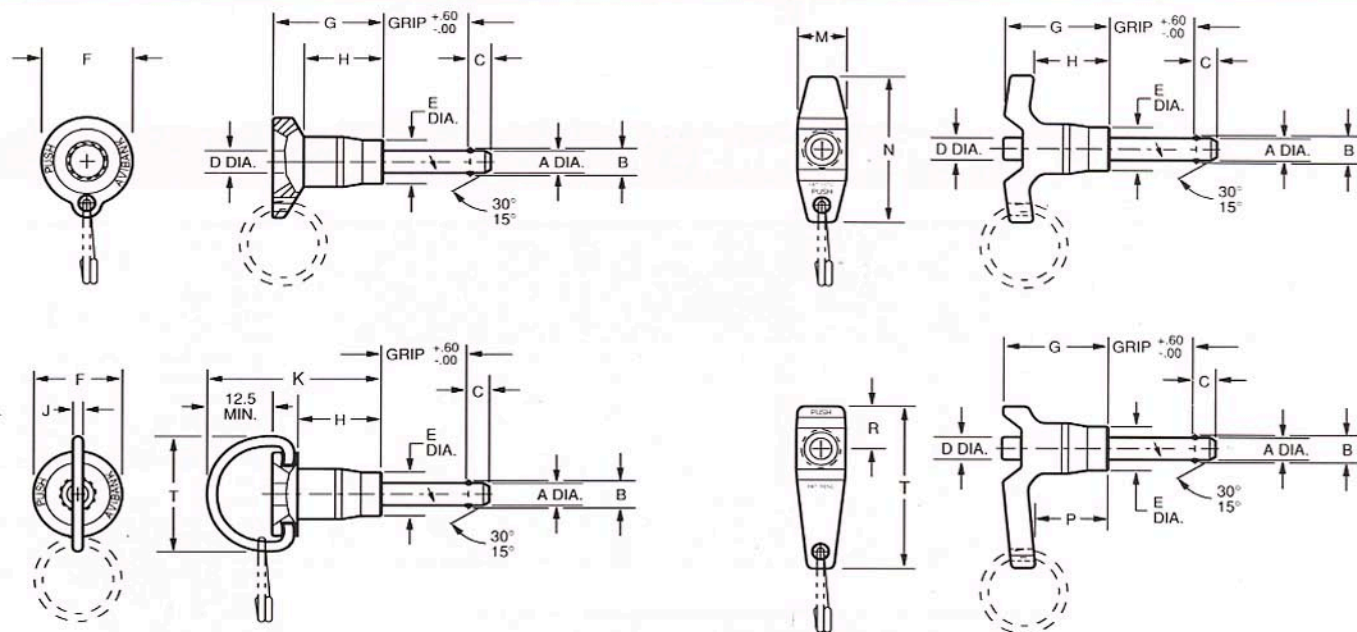
- ◆ ERGONOMIC HANDLE DESIGN PREVENTS INADVERTENT BUTTON RELEASE
- ◆ STAINLESS STEEL CONSTRUCTION ELIMINATES TOXIC CADMIUM PLATING
- ◆ EXCEEDS ALL EUROPEAN A.E.C.M.A. AND DIN SHEAR AND TENSILE STRENGTH REQUIREMENTS

- ◆ ENGINEERED REINFORCED COMPOSITE RESIN HANDLE
- ◆ DECORATOR HANDLE COLORS ARE AVAILABLE BY SPECIAL ORDER
- ◆ ALL STAINLESS STEEL HANDLES OPTIONAL
- ◆ AVAILABLE IN INCH SIZES (SEE PAGE 6)

NEW

BALL-LOK® METRIC ENVIRONMENTAL PIN - SINGLE ACTING, POSITIVE LOCKING, "EM" STYLE

7



PATENT NO. 5,394,594

DIMENSIONS

DASH NO.	NOM. DIA.	A +0.00 -0.04	B ±.25	C ±.1	D		E		F		G MAX.	H MIN.	J MIN.	K MAX.	L MIN.	M MAX.	N		P MIN.	R MAX.	T		CALCULATED DOUBLE SHEAR (N)
					MAX.	MIN.	MAX.	MIN.	MAX.	MIN.							MAX.	MIN.			MAX.	MIN.	
5	5 MM	4.96	5.33	7	8.0	6.0	13.0	9.5	27.5	25.0	32.5	17.5	2.0	54.0	26.5	16.0	46.5	44.5	17.5	14.0	40.5	39.0	24,400
6	6 MM	5.96	6.98	7	8.0	6.0	13.0	9.5	27.5	25.0	32.5	17.5	2.0	54.0	26.5	16.0	46.5	44.5	17.5	14.0	40.5	39.0	35,640
8	8 MM	7.96	9.43	8	8.0	6.0	13.0	9.5	27.5	25.0	32.5	17.5	2.0	54.0	26.5	16.0	46.5	44.5	17.5	14.0	40.5	39.0	63,804
10	10 MM	9.96	11.86	9	14.5	7.5	20.5	12.5	35.5	28.5	41.0	21.5	2.0	59.5	26.5	20.5	59.5	49.0	21.5	18.0	50.5	48.5	100,101
12	12 MM	11.96	14.45	10	14.5	7.5	20.5	12.5	35.5	28.5	41.0	21.5	2.0	59.5	26.5	20.5	59.5	49.0	21.5	18.0	50.5	48.5	144,060

SPECIFICATIONS

PART NAME	MATERIALS
HANDLE RING	CRES 302
BALL	CRES 440C
ATTACHING RING (OPTIONAL)	CRES 17-7PH/302
HEAD	CRES 303
HANDLE	REINFORCED COMPOSITE RESIN (BLUE) OR CRES 300 SERIES (OPTIONAL)
SPRING (NOT SHOWN)	CRES 17-7PH/302
SPINDLE (NOT SHOWN)	CRES 17-4PH
BUTTON	CRES 303
BODY	CRES 17-4PH/15-7MO

HEAT TREATMENT:

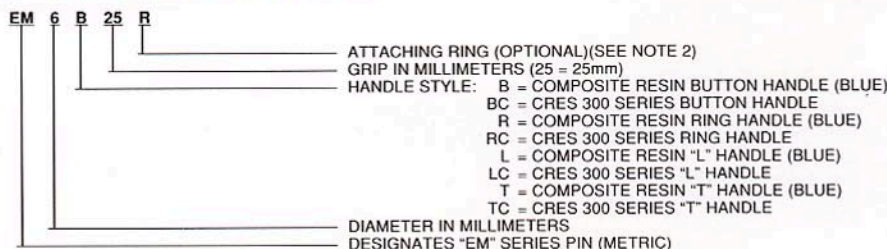
CORROSION RESISTANT STEEL:
SHANK AND SPINDLE Rc 40 min.
(MIL-H-6875) SPRING 17-7 PH
CH900 (MIL-H-6875)

BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)

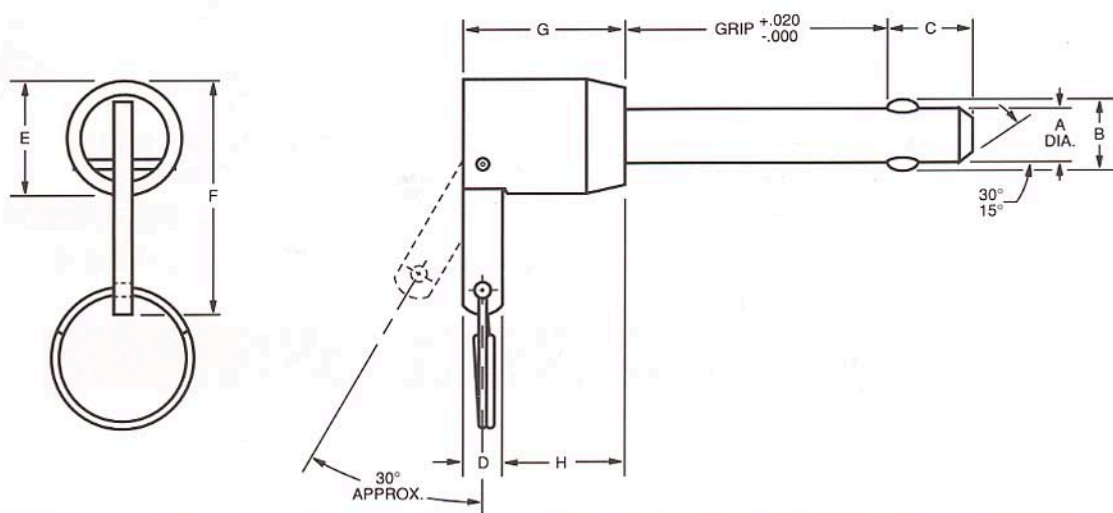
SAMPLE CALLOUT



NOTES:

- GRIP MEASURED TO EDGE OF BALL HOLE PRIOR TO STAKING.
- SIZE AND SHAPE OF RING AVIBANK'S OPTION. IF ATTACHING RING OPTION IS CHOSEN (SUFFIX "R"), THE RING SHALL BE SUPPLIED UNASSEMBLED.
- NO MARKING.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN THAT SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS



BALL-LOK® CAM LEVER PINS - POSITIVE LOCKING

DIMENSIONS

DASH NO.	NOM. DIA.	A DIA.		B ±.005	C +.000 -.030	D ±.015	E ±.03	F ±.05	G MAX.	H MIN.	CALC. DOUBLE SHEAR STRENGTH-LBS.	
		MAX.	MIN.								STEEL	CRES
3	3/16	.1885	.1870	.220	.260	.188	.44	.93	1.125	.44	4,600	5,150
4	1/4	.2485	.2470	.287	.290	.188	.44	.93	1.125	.44	8,200	9,200
5	5/16	.3110	.3095	.372	.330	.188	.50	1.11	1.125	.44	12,800	14,400
6	3/8	.3735	.3720	.438	.365	.188	.56	1.15	1.500	.45	18,400	20,600
7	7/16	.4360	.4345	.507	.380	.250	.63	1.36	1.500	.49	25,000	28,000
8	1/2	.4985	.4970	.593	.460	.250	.69	1.39	1.500	.59	32,800	36,800
9	9/16	.5610	.5595	.666	.510	.250	.75	1.45	1.500	.66	41,200	46,000
10	5/8	.6235	.6220	.748	.580	.375	.81	1.72	1.750	.69	51,200	57,500
12	3/4	.7485	.7470	.887	.670	.375	.94	1.91	2.000	.85	73,600	82,500
14	7/8	.8735	.8720	1.045	.760	.500	1.06	2.12	2.500	.90	100,000	112,500
16	1	.9985	.9970	1.217	.890	.500	1.25	2.21	2.500	.97	131,000	147,000

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40
(MIL-H-6875)

CORROSION RESISTANT STEEL:
SHANK AND SPINDLE, Rc 40 MIN.
(MIL-H-6875)

BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CARBON AND ALLOY STEEL:
CADMIUM PLATE (QQ-P-416,
TYPE I OR TYPE II, CLASS 2)

CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)

ALUMINUM ALLOY:
ANODIZE (MIL-A-8625)

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT		
BODY	ALLOY STEEL 4130	MIL-T-6736, MIL-S-6758 OR EQUIV.	CRES 17-4PH OR 15-7MO	AMS 5643/AMS5657
SPINDLE	ALLOY STEEL 4130	MIL-S-6758	CRES 17-4PH	AMS 5643
BUTTON	MILD STEEL OR ALUM. ALLOY	ASTM-A-108 QQ-A-225/6	CRES 303 OR ALUM. ALLOY	ASTM-A-581/582 QQ-A-225/6
LEVER	MILD STEEL	ASTM-A-108	CRES 303	ASTM-A-581/582
SPRING	MUSIC WIRE	ASTM-A-228	CRES 17-7PH OR 302	AMS5678/ASTM-A-313
HEAD	MILD STEEL	ASTM-A-108	CRES 303	ASTM-A-581/582
ATTACHING LINK	MILD STEEL	ASTM-A-108	CRES 17-7PH OR 302	AMS5678/ASTM-A-313
BALLS	CRES 440C	QQ-S-763	CRES 440C	QQ-S-763
PIN	CRES		CRES	

OPTIONAL LANYARD

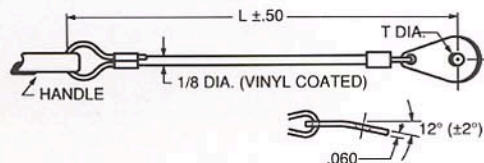


TABLE I

TAB HOLE SIZE	
DASH NO.	+ .004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. **FINISH:** ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

NOTES:

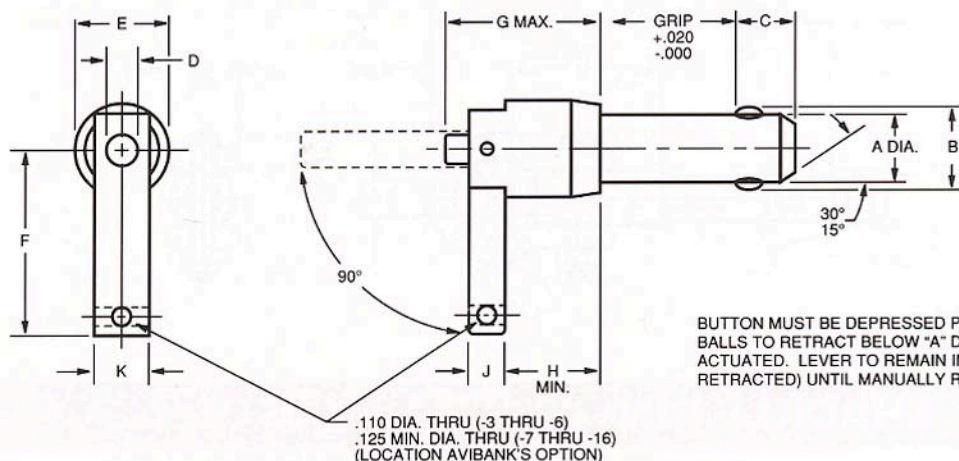
- ALL PINS MEET THE REQUIREMENTS OF NAS1332 EXCEPT OTHERWISE NOTED.
- ALL PINS FURNISHED WITH ATTACHING RINGS; SIZE AND SHAPE AVIBANK'S OPTION.
- IF FOUR BALL PIN IS REQUIRED FOR GREATER TENSION STRENGTH, ADD THE LETTER "F" TO STANDARD CALLOUT. EXAMPLE: BLS8CL15F.
- IF A GREATER "C" DIMENSION IS REQUIRED, ADD THE LETTER "C" AND THE LENGTH AFTER THE STANDARD GROUP. EXAMPLE: BLS8CL15C10 (C10 BEING 1.0 INCHES)
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP. EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.

SAMPLE CALLOUT

B L S (or C) 8 CL 15 L12 C 4

TAB HOLE SIZE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 5. (L12 = 12" LONG.) (MIN. 4")
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES FIRST DIGIT "0" IF LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
HANDLE STYLE
DIAMETER IN SIXTEENTHS: 8 = 1/2"
CORROSION RESISTANT STEEL
STEEL

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS



BUTTON MUST BE DEPRESSED PRIOR TO ACTUATING LEVER. BALLS TO RETRACT BELOW "A" DIAMETER ONLY WHEN LEVER IS ACTUATED. LEVER TO REMAIN IN UNLOCKED POSITION (BALLS RETRACTED) UNTIL MANUALLY RELEASED.

BALL-LOK® DOUBLE-LOK CAM LEVER PINS - POSITIVE LOCKING

9

DIMENSIONS

DASH NO.	NOM. DIA.	A		B ±.005	C +.000 -.030	D ±.010	E ±.030	F ±.030	G MAX.	H MIN.	J MAX.	K ±.015	CALC. DOUBLE SHEAR STR. MIN. LBS.	
		MAX.	MIN.										STEEL	CRES
3	3/16	.1885	.1870	.220	.260	.187	.437	.850	1.550	.740	.250	.312	4,600	5,150
4	1/4	.2485	.2470	.289	.290	.187	.437	.850	1.550	.740	.250	.312	8,200	9,200
5	5/16	.3110	.3095	.375	.330	.187	.500	1.000	1.550	.740	.250	.375	12,800	14,400
6	3/8	.3735	.3720	.440	.365	.218	.562	1.000	1.550	.810	.250	.375	18,400	20,600
7	7/16	.4360	.4345	.509	.380	.218	.625	1.125	1.550	.810	.281	.406	25,000	28,000
8	1/2	.4985	.4970	.594	.460	.218	.687	1.350	1.820	.810	.281	.406	32,800	36,800
9	9/16	.5610	.5595	.666	.510	.218	.750	1.350	1.820	.810	.281	.406	41,200	46,000
10	5/8	.6235	.6220	.750	.580	.250	.812	1.750	1.820	.880	.281	.562	51,200	57,500
12	3/4	.7485	.7470	.887	.670	.250	.937	2.000	2.330	.930	.375	.562	73,600	82,500
14	7/8	.8735	.8720	1.046	.760	.375	1.062	2.000	2.500	1.120	.375	.562	100,000	112,500
16	1	.9985	.9970	1.219	.890	.375	1.250	2.000	2.750	1.130	.375	.562	131,000	147,200

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40
(MIL-H-6875)

CORROSION RESISTANT STEEL:
SHANK AND SPINDLE Rc 40 min.
(MIL-H-6875)

BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CARBON AND ALLOY STEEL:
CADMIUM PLATE (QQ-P-416,
TYPE I OR TYPE II, CLASS 2)

CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)

ALUMINUM ALLOY:
ANODIZE (MIL-A-8625)
BUTTON (DYE BLUE)

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY	4130 ALLOY STEEL	MIL-T-6736/MIL-S-6758
SPINDLE	4130 ALLOY STEEL	MIL-S-6758
BUTTON	ALUM. ALLOY 2024 OR 2017	QQ-A-225/6/ QQ-A-225/5
SPRING	MUSIC WIRE	ASTM-A-228
HEAD	MILD STEEL	ASTM-A-108
LEVER	MILD STEEL	ASTM-A-108
BALL	CRES 440C	QQ-S-763

NOTES:

- IF A FOUR BALL PIN IS REQUIRED FOR GREATER TENSION STRENGTH, ADD THE SUFFIX "F" AT THE END OF A STANDARD CALLOUT. EXAMPLE: BLS8DCL15F
- IF A GREATER "C" DIMENSION IS NECESSARY, ADD LENGTH AFTER "C" LETTER. EXAMPLE: BLS8DCL15C10 (C10 BEING 1.0 INCHES).
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP; EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

OPTIONAL LANYARD

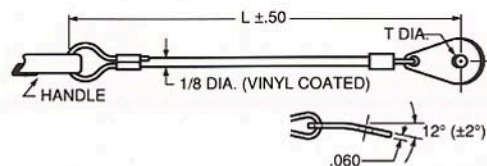


TABLE I

DASH NO.	±.004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ.

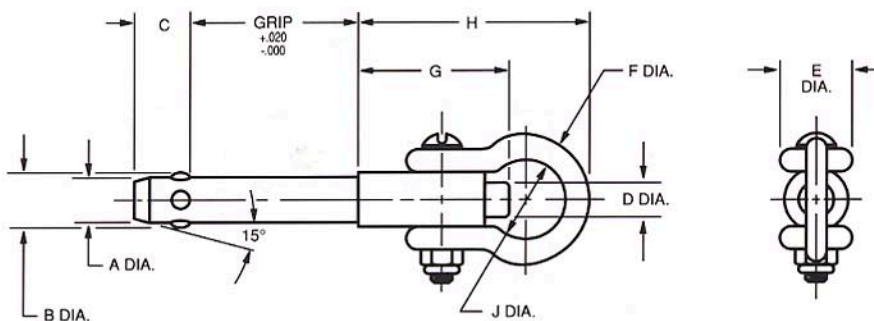
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

SAMPLE CALLOUT

B L S (orC) 8 DCL 15 L12 C 4

TAB HOLE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 4. (L12 = 12" LONG.) (4" MIN.)
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES FIRST DIGIT "O" IF LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
HANDLE STYLE
DIAMETER IN SIXTEENTHS: 8 = 1/2"
CORROSION RESISTANT STEEL
STEEL

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS



BALL-LOK® SHACKLE PIN - POSITIVE LOCKING

DIMENSIONS

DASH NO.	NOM. DIA.	A		B ±.015	C +.000 -.030	D ±.015	E ±.020	F NOM.	G MAX.	H MAX.	J MIN.	CALC. DBL. SHEAR LBS. MIN. STEEL
		MAX.	MIN.									
4	1/4	.2485	.2470	.287	.333	.382	.562	3/16	1.500	2.450	.562	8,200
5	5/16	.3110	.3095	.372	.395	.382	.562	3/16	1.500	2.450	.562	12,800
6	3/8	.3735	.3720	.438	.425	.453	.750	1/4	1.600	2.850	.687	18,400
7	7/16	.4360	.4345	.507	.457	.453	.750	1/4	1.650	2.850	.687	25,000
8	1/2	.4985	.4970	.593	.519	.574	.812	5/16	1.800	3.150	.812	32,800
9	9/16	.5610	.5595	.666	.583	.574	.812	5/16	1.800	3.150	.812	41,200
10	5/8	.6235	.6220	.748	.645	.625	1.000	3/8	2.100	3.650	.968	51,200
12	3/4	.7485	.7470	.887	.707	.625	1.125	7/16	2.200	4.050	1.125	73,600
14	7/8	.8735	.8720	1.043	.833	.824	1.375	1/2	2.600	4.550	1.249	100,000
16	1	.9985	.9970	1.217	.957	.824	1.375	1/2	2.750	4.550	1.249	131,000

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40
(MIL-H-6875)

BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

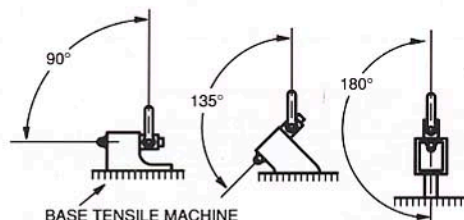
ALLOY STEEL:
CADMIUM PLATE (QQ-P-416,
TYPE I OR TYPE II, CLASS 2

CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)

LOADS

DASH NO.	ULTIMATE LOAD* LBS.			TABLE II MAX. GAP**	
	90°	135°	180°	90°	135°
4	583	847	1,054	.037	.031
5	1,040	1,570	2,390	.037	.031
6	1,744	2,622	2,590	.042	.036
7	2,375	2,870	2,880	.042	.036
8	3,857	4,475	4,906	.042	.036
9	4,250	5,580	5,030	.042	.036
10	6,610	9,530	9,610	.047	.041
12	9,930	11,350	11,061	.047	.041
14	12,650	15,140	14,470	.052	.046
16	12,655	13,948	14,481	.052	.046

LOAD SCHEMATIC



* ULTIMATE STRENGTH VALUES OBTAINED FROM THE AVERAGE FAILING LOAD OF TEST SPECIMENS DIVIDED BY 1.15. HOLE TOLERANCES IN FIXTURES PER NAS 618 COLUMN C, SHEET 4. LOAD VALUES MAY BE REDUCED IF OVERSIZE INSTALLATION HOLES ARE USED. HARDENED TOOL STEEL SHOULDER BUSHING USED FOR 180 DEGREE TESTS.

** MAXIMUM ALLOWABLE GAP BETWEEN SHACKLE PIN SHOULDER AND FACE OF FIXTURE.

NOTES:

- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO SHACKLE.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP; EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- IF A GREATER "C" DIMENSION IS REQUIRED ADD THE LETTER "C" AND THE LENGTH AFTER THE STANDARD GRIP. EXAMPLE: BL8SP15C10 (C10 BEING 1.0 INCHES).
- FOUR BALLS IS STANDARD.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SPECIFICATIONS

PART NAME		
BODY	4130 ALLOY STEEL	MIL-S-6758 OR EQUIV.
SPINDLE	4130 ALLOY STEEL	MIL-S-6758
BUTTON	MILD STEEL	ASTM-A-108
SPRING	MUSIC WIRE	ASTM-A-228
HEAD (OPTIONAL)	4130 ALLOY STEEL	MIL-S-6758 OR EQUIV.
BALLS (4)	CRES 440C	QQ-S-763
SHACKLE	MODIFIED AN116	---
BOLT	AN23	---
NUT	AN364	---

OPTIONAL LANYARD

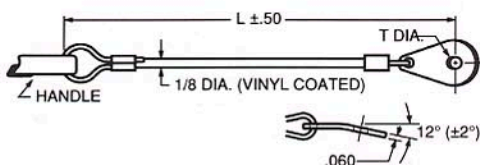


TABLE I

TAB HOLE SIZE	
DASH NO.	+ .004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIVALENT.

TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11.

"C"—CORROSION RESISTANT STEEL PER MIL-S-5059.

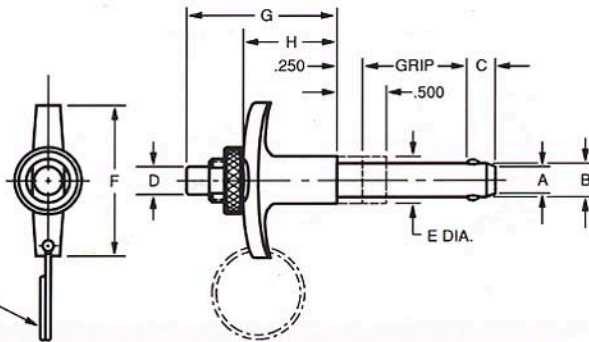
FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

SAMPLE CALLOUT

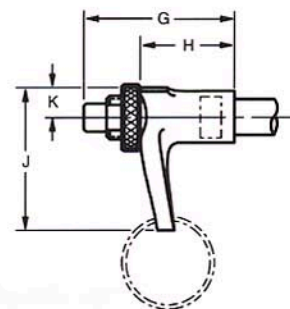
B L 8 SP 15 L12 C 4

TAB HOLE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 1. (L12 = 12" LONG.) (4" MIN)
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES, FIRST DIGIT "0" IF LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
HANDLE STYLE
DIAMETER IN SIXTEENTHS: 8 = 1/2"

SIZE,
SHAPE &
LOCATION,
AVIBANK'S
OPTION



"T" HANDLE



"L" HANDLE

BALL-LOK® ADJUSTABLE GRIP LENGTH PIN - POSITIVE LOCKING (51588)

11

DIMENSIONS

DASH NO.	A		B	C	D		E		F		G	H	J		K	CALC. DOUBLE SHEAR LBS.	
	MAX.	MIN.	±.005	+.000 -.030	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	STEEL	CRES
3	.1885	.1870	.220	.260	.185	.165	.500	.380	1.815	1.750	1.630	.870	1.800	1.720	.340	4,600	5,150
4	.2485	.2470	.289	.290	.185	.165	.500	.380	1.815	1.750	1.630	.870	1.800	1.720	.340	8,200	9,200
5	.3110	.3095	.375	.330	.185	.165	.625	.510	2.065	1.935	1.730	.870	2.030	1.945	.390	12,800	14,400
6	.3735	.3720	.440	.365	.285	.265	.800	.630	2.345	2.220	1.730	.870	2.360	2.230	.500	18,400	20,600
7	.4360	.4345	.509	.380	.345	.325	.800	.630	2.345	2.220	1.730	.990	2.360	2.230	.500	25,000	28,000
8	.4985	.4970	.594	.460	.345	.325	.800	.630	2.345	2.220	1.830	.990	2.360	2.230	.500	32,800	36,800
9	.5610	.5595	.666	.510	.375	.355	.975	.810	3.100	2.250	1.830	.990	3.070	2.385	.600	41,200	46,000
10	.6235	.6220	.750	.580	.375	.355	.975	.810	3.100	2.250	2.480	1.240	3.070	2.385	.600	51,200	57,500
12	.7485	.7470	.887	.670	.500	.480	1.320	1.120	3.520	2.750	2.480	1.240	3.700	2.750	.800	73,600	82,500
14	.8735	.8720	1.046	.760	.656	.636	1.320	1.120	3.520	2.750	2.720	1.610	3.700	2.750	.800	100,000	112,500
16	.9985	.9970	1.219	.890	.656	.636	1.320	1.120	3.520	2.750	2.720	1.610	3.700	2.750	.800	131,000	147,000

HEAT TREATMENT:

ALLOY STEEL:
SHANK & SPINDLE, Rc 36-40 (MIL-H-6875)
CORROSION RESISTANT STEEL:
SHANK AND SPINDLE, Rc 40 min. (MIL-H-6875)
BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CARBON AND ALLOY STEEL:
CADMIUM PLATE (QQ-P-416, TYPE I OR TYPE II, CLASS 2)
CORROSION RESISTANT STEEL:
PASSIVATE (QQ-P-35)
ALUMINUM ALLOY:
ANODIZE (MIL-A-8625) HANDLE (DYE DARK GRAY OR BLACK)

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY	ALLOY STEEL 4130	MIL-T-6736/MIL-S-6758
SPINDLE	ALLOY STEEL 4130	MIL-S-6758
BUTTON	CARBON STEEL	ASTM-A-108 OR EQUIV.
SPRING	MUSIC WIRE	ASTM-A-228
HANDLE	ALUMINUM ALLOY 380	QQ-A-591
BALL	CRES 440C	QQ-S-763
NUT	CARBON STEEL	ASTM-A-108 OR EQUIV.
ATTACHING HOOK	CARBON STEEL WIRE OR CRES 302	ASTM-A-228/ASTM-A-313

NOTES:

1. PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
2. BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
3. OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

OPTIONAL LANYARD

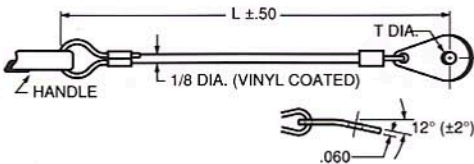


TABLE I

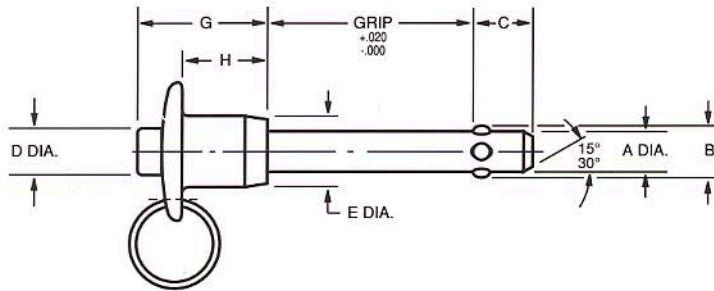
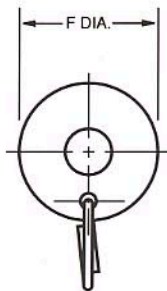
TAB HOLE SIZE	
DASH NO.	±.004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIVALENT.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. **FINISH:** ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

SAMPLE CALLOUT

51588 S 4 T 3 F L 8 C 6
 TAB HOLE: 6 = .194 DIA. (SEE TABLE I)
 TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
 LANYARD IN INCHES (4" MIN.)
 LANYARD OPTIONAL
 ADD "F" FOR FOUR BALLS
 GRIP LENGTH IN 1/2 INCH INCREMENTS (3 = 1.5 INCHES)
 HANDLE STYLE ("T" OR "L")
 DIAMETER IN SIXTEENTHS: (4 = 1/4" DIA.)
 MATERIAL: S = STEEL, C = CRES
 BASIC PART NUMBER



BALL-LOK® HI-TENSION PIN - SINGLE ACTING, POSITIVE LOCKING (52325)

DIMENSIONS

DASH NO.	NOM. DIA.	A		B ±.005	C +.000 -.030	D		E		F		G	H	CALC. DBL. SHEAR (LBS.)	MIN. TENSION (LBS.)
		MAX.	MIN.			MAX.	MIN.	MAX.	MIN.	MAX.	MIN.				
4	1/4	.2485	.2470	.289	.290	.310	.250	.440	.310	.800	.720	.890	.480	9,200	1,500
5	5/16	.3110	.3095	.375	.330	.310	.250	.490	.410	1.135	.810	.930	.480	14,400	1,700
6	3/8	.3735	.3720	.440	.365	.390	.300	.570	.450	1.135	.810	1.040	.620	20,600	3,100
7	7/16	.4360	.4345	.509	.380	.390	.300	.625	.550	1.400	.940	1.160	.620	28,000	4,000
8	1/2	.4985	.4970	.594	.460	.565	.365	.725	.600	1.400	1.300	1.190	.720	36,800	5,500

HEAT TREATMENT:

CORROSION RESISTANT STEEL:
180/210 KPSI
BALL HARDNESS:
Rc 58-62

PROTECTIVE TREATMENT:

CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35
ALUMINUM ALLOY:
ANODIZE PER MIL-A-8625

NOTES:

- ALL PINS FURNISHED WITH ATTACHING RINGS. SIZE AND SHAPE AVIBANK'S OPTION.
- IF A GREATER "C" DIMENSION IS REQUIRED, ADD LENGTH IN TENTHS OF AN INCH AFTER LETTER "C". EXAMPLE: 52325-4-15C15 (C15 BEING 1.5 INCHES).
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP. EXAMPLE: 1.25 = 1.250 GRIP.
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- ALL PARTS TO BE IDENTIFIED PER MIL-STD-130 AND ALL APPLICABLE SPECIFICATIONS.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SPECIFICATIONS

PART NAME		
BODY	CRES 17-4PH/15-7 MO.	AMS 5643/AMS 5657
SPINDLE	CRES 440C	QQ-S-763
BUTTON	CRES 303, ALUM. ALLOY 2024 OR 2017	QQ-S-764, QQ-A-225/6 OR QQ-A-225/5
SPRING	CRES 17-7PH 302	AMS 5678/ASTM-A-313
HANDLE	CRES 303	ASTM-A-581/582
BALLS (4)	CRES 440C	QQ-S-763
ATTACHING RING	CRES 302	ASTM-A-313

OPTIONAL LANYARD

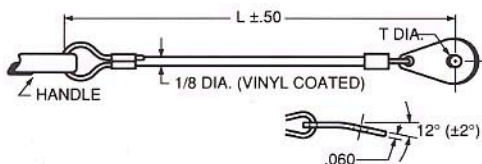


TABLE I

DASH NO.	TAB HOLE SIZE
	+.004 T-.001 DIA.
-4	.129
-6	.194
-8	.281
-10	.318
-12	.377

NOTES:

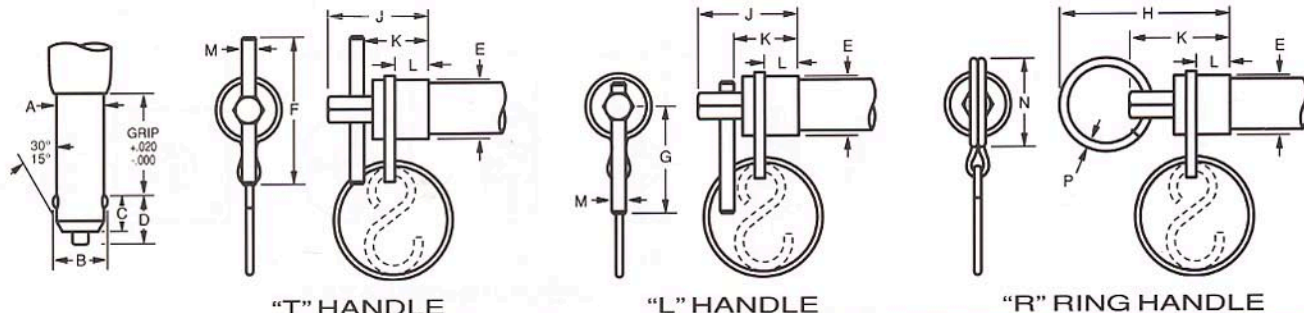
CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIVALENT.

TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. **FINISH:** ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625

SAMPLE CALLOUT

52325 - 4 - 15 C15 L12 C 4

TAB HOLE SIZE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD. SEE NOTE 4. (L12 = 12" LONG) (4" MIN.)
"C" DIMENSION: 15 = 1.5 INCHES
GRIP IN TENTHS: 15 = 1.5 INCHES, FIRST DIGIT "0" IF LESS THAN ONE INCH
DIAMETER IN SIXTEENTHS: 4 = 1/4 INCH
BASIC PART NUMBER



"T" HANDLE

"L" HANDLE

"R" RING HANDLE

BALL-LOK® DOUBLE ACTING PINS - POSITIVE LOCKING

13

DIMENSIONS

NOM.	A		B	C	D	E		F		G		H		J	
DIA.	MAX.	MIN.	±.005	+0.000 -0.060	+0.000 -0.060	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
3/16	.1885	.1870	.220	.410	.500	.450	.360	1.750	1.375	1.300	1.140	1.945	1.875	1.030	.940
1/4	.2485	.2470	.289	.410	.500	.450	.360	1.750	1.375	1.300	1.140	1.945	1.875	1.030	.940
5/16	.3110	.3095	.375	.440	.550	.505	.390	1.750	1.375	1.300	1.140	1.945	1.875	1.030	.940
3/8	.3735	.3720	.440	.510	.640	.630	.510	2.000	1.875	1.500	1.300	2.025	1.905	1.090	1.000
7/16	.4360	.4345	.509	.510	.640	.630	.510	2.000	1.875	1.500	1.300	2.025	1.905	1.090	1.000
1/2	.4985	.4970	.594	.590	.780	.755	.640	2.250	2.125	1.655	1.500	2.060	1.960	1.270	1.180
9/16	.5610	.5595	.666	.660	.820	.755	.640	2.250	2.125	1.655	1.500	2.060	1.960	1.270	1.180
5/8	.6235	.6220	.750	.750	.930	.870	.805	2.500	2.375	1.810	1.625	2.550	2.400	1.465	1.375
3/4	.7485	.7470	.887	.790	1.000	.960	.890	2.500	2.375	1.810	1.625	2.550	2.400	1.465	1.375
7/8	.8735	.8720	1.046	.950	1.180	1.150	1.070	2.875	2.750	2.250	2.050	2.770	2.570	1.640	1.550
1	.9985	.9970	1.219	1.100	1.350	1.280	1.200	2.875	2.750	2.250	2.050	2.950	2.750	1.830	1.740

NOM.	K		L		M	N		P	CALCULATE DOUBLE SHEAR STR. MIN.		MINIMUM TENSION LOAD CAPABILITIES LBS.	
DIA.	MAX.	MIN.	MAX.	MIN.	+0.030 -0.000	MAX.	MIN.	±.03	STEEL	CRES	2 BALLS	4 BALLS
3/16	.900	.780	.480	.415	.105	1.125	1.000	.11	4,600	5,140	200	260
1/4	.900	.780	.480	.415	.105	1.125	1.000	.11	8,200	9,200	230	300
5/16	.900	.780	.480	.415	.105	1.125	1.000	.11	12,800	14,400	510	660
3/8	.970	.830	.540	.445	.134	1.125	1.000	.11	18,400	20,600	575	745
7/16	.970	.830	.540	.445	.134	1.125	1.000	.11	25,000	28,000	710	920
1/2	1.120	.880	.540	.445	.200	1.125	1.000	.11	32,800	36,800	1160	1500
9/16	1.120	.880	.540	.445	.200	1.125	1.000	.11	41,200	46,000	1420	1845
5/8	1.300	1.000	.575	.510	.231	1.500	1.312	.15	51,200	57,500	2070	2690
3/4	1.300	1.000	.595	.530	.231	1.500	1.312	.15	73,600	82,500	2950	3835
7/8	1.470	1.180	.730	.665	.231	1.500	1.312	.15	100,000	112,500	3900	5070
1	1.680	1.320	.865	.800	.231	1.500	1.312	.15	131,000	147,000	5480	7120

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY & SPINDLE	STEEL 4130 (MIL-T-6736 OR MIL-S-6758)	CRES 17-4PH (AMS 5643)/15-7MO (AMS 5657)
BALL	CRES 440C (QQ-S-763)	CRES 440C (QQ-S-763)
BUTTON	MILD STEEL (ASTM-A-108) OR ALUMINUM 2024/2017 (QQ-A-225/6 OR /5)	CRES 303 (ASTM-A-581/582) OR ALUMINUM 2024/2017 (QQ-A-225/6 OR /5)
HEAD	MILD STEEL (ASTM-A-108)	CRES 303 (ASTM-A-581/582) OR CRES 302 (QQ-S-763)
"T" OR "L" HANDLE	MILD STEEL (ASTM-A-108)	CRES 303 (ASTM-A-581/582)
"R" HANDLE RING	CRES 302 (ASTM-A-313) OR 17-7PH (AMS5678)	CRES 302 (ASTM-A-313) OR 17-7PH (AMS 5678)
ATTACHING LINK BAND	MILD STEEL (ASTM-A-366/568) OR CRES 302 (QQ-S-766 OR MIL-S-5059)	CRES 302 (QQ-S-766 OR MIL-S-5059)
SPRING/ATTACHING RING	MUSIC WIRE (ASTM-A-228 OR CRES 302 (ASTM-A-313)	CRES 302 (ASTM-A-313) OR 17-7PH (AMS 5678)

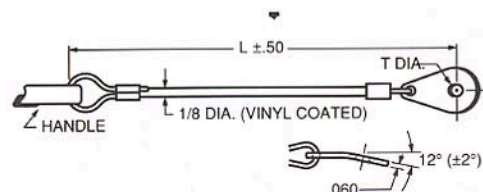
OPTIONAL LANYARD

TABLE I

TAB HOLE SIZE	DASH NO.	+0.004 T-.001 DIA.
-4	.129	
-6	.194	
-7	.255	
-8	.281	
-10	.318	
-12	.377	

NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIVALENT. TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.



SAMPLE CALLOUT

B L S (OR C) 8 R 15 N (OR D) L12 C 4

TAB HOLE, 4 = .129 (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 6. (L12 = 12" LONG.) (4" MIN.)
DRIVE OUT (SEE NOTE 3)
NON-DRIVE OUT
GRIP LENGTH, FIFTEEN TENTHS = 1.5 INCHES, FIRST DIGIT "0" IF
LESS THAN ONE INCH. DROP DECIMAL IF ONLY 2 DIGITS USED.
HANDLE STYLE (R, T OR L)
DIAMETER IN SIXTEENTHS: 8 = 1/2"
CORROSION RESISTANT STEEL
STEEL

HEAT TREATMENT:

ALLOY STEEL: SHANK AND SPINDLE (MIL-H-6875) Rc 36-40
CORROSION RESISTANT STEEL: SHANK AND SPINDLE Rc 40 MIN. (MIL-H-6875) SPRING 17-7 PH CH900 (MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

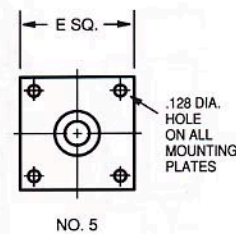
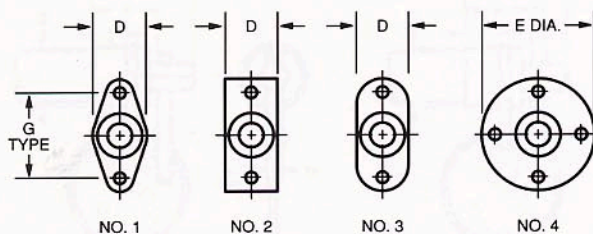
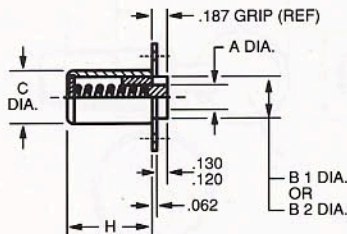
CARBON AND ALLOY STEEL: CADMIUM PLATE (QQ-P-416, TYPE I OR TYPE II, CLASS 2)
CORROSION RESISTANT STEEL: PASSIVATE (QQ-P-35)
ALUMINUM ALLOY: ANODIZE (MIL-A-8625)

NOTES:

- ALL PINS MEET OR EXCEED THE REQUIREMENTS OF PROCUREMENT SPECIFICATIONS MIL-P-23460 (WEP), AND ARE LISTED (QPL) ON MS17988 THRU MS17990 AND NAS 1353 THRU 1366.
- ALL PINS FURNISHED WITH ATTACHING RINGS; SIZE AND SHAPE AVIBANK'S OPTION.
- DOUBLE ACTING PINS ARE AVAILABLE WITH DRIVE-OUT FEATURE. THIS FEATURE IS EMPLOYED WHERE REMOVAL OF PIN IS NECESSARY WHILE IN A SHEAR LOADED CONDITION. TO ORDER DRIVE-OUT, SEE SAMPLE CALLOUT.
- IF A FOUR BALL PIN IS REQUIRED FOR GREATER TENSION STRENGTH, ADD THE LETTER "F" TO THE END OF THE STANDARD CALLOUT. EXAMPLE: BLS8R15NF
- IF GREATER "C" DIMENSION IS NECESSARY, ADD LENGTH AFTER "C" LETTER, EXAMPLE: BLS8R15NC10 (C10 BEING 1.0 INCHES).
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO LINK BAND.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATION.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT; AND CALL OUT ACTUAL GRIP. EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- ALL PINS IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

RECEPTACLES - FOR USE WITH POSITIVE LOCK, SINGLE ACTING, BALL-LOK® PINS



MOUNTING PLATES

DIMENSIONS

PIN NO.	"A" +.003 -.000	"B 1" +.001 -.004	"B 2"	"C"	"D"	"E"	"G"	"H"	APPROX. WEIGHT	WEIGHTS ARE CALCULATED USING STEEL RECEPTACLES WITH NO. 4 MOUNTING PLATES.
3	.190	.375	.500	.63	.63	1.28	1.000	1.06	.080 LBS.	
4	.250	.375	.500	.63	.63	1.28	1.000	1.06	.085 LBS.	
5	.312	—	.500	.63	.63	1.28	1.000	1.06	.090 LBS.	
6	.375	—	.500	.63	.63	1.28	1.000	1.06	.095 LBS.	
7	.437	.625	—	.75	.75	1.41	1.125	1.25	.100 LBS.	
8	.500	.625	—	.75	.75	1.41	1.125	1.25	.110 LBS.	

ALUMINUM RECEPTACLES

PART NAME	MATERIAL	SPECIFICATION
BODY	7075-T73/T6511	QQ-A-225/9/QQ-A-200/11
PLUNGER	2017-T4/2024-T4	QQ-A-225/5/QQ-A-225/6
MOUNTING PLATE (OPTIONAL)	7075-T73/T6511	QQ-A-225/9/QQ-A-200/11
SPRING	MUSIC WIRE	ASTM-A-228
RETAINING DISK	ALUM. ALLOY 2024-T4 OR 6061-T6	QQ-A-225/6/QQ-A-225/8

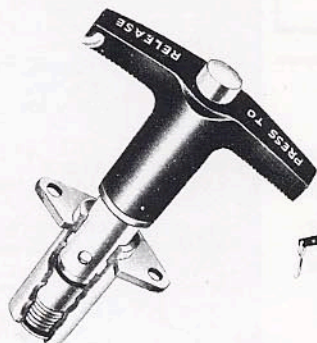
CRES RECEPTACLES

PART NAME	MATERIAL	SPECIFICATION
BODY	CRES 17-4 PH	AMS 5643
PLUNGER	CRES 300 SERIES	ASTM-A-581/582
MOUNTING PLATE	CRES 300 SERIES	QQ-S-766/MIL-S-5059
SPRING	CRES 302 OR 17-7 PH	ASTM-A-313/AMS 5678
RETAINING DISK	CRES 300 SERIES	QQ-S-766/MIL-S-5059

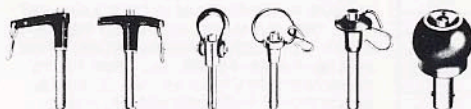
STEEL RECEPTACLES

PART NAME	MATERIAL	SPECIFICATION
BODY	ALLOY STEEL 4130	MIL-S-6758/MIL-T-6763
PLUNGER	MILD STEEL	ASTM-A-108 OR EQUIV.
MOUNTING PLATE	ALLOY STEEL 4130, MILD STEEL	MIL-S-18729 OR EQUIV., ASTM-A-366 OR EQUIV.
SPRING	MUSIC WIRE	ASTM-A-228
RETAINING DISK	MILD STEEL	ASTM-A-366 OR EQUIV.

FLUSH-MOUNTED RECEPTACLE

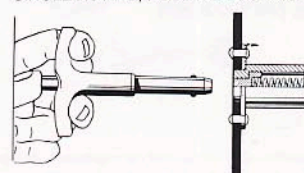


THE COMBINATION OF THE BALL-LOK® SERIES SINGLE-ACTING QUICK RELEASE PIN AND RECEPTACLE PROVIDES A FASTENING UNIT THAT OFFERS SPEED OF ATTACHMENT—QUICK CONNECT AND DISCONNECT—EASE OF ASSEMBLY AND DISASSEMBLY—LIFTING, HOLDING AND SUPPORTING EQUIPMENT, MATERIALS AND ACCESSORIES. THE RECEPTACLE IS PERMANENTLY FLUSH-MOUNTED ON THE SKIN SURFACE. (OR ON ANY SURFACE WHERE FLANGE CAN BE ATTACHED.) THE SELF-LOCKING QUICK RELEASE BALL-LOK® PIN CANNOT BE ACCIDENTALLY RELEASED... PRESSING BUTTON AND PULLING REMOVES PIN INSTANTLY FROM RECEPTACLE.



THIS RECEPTACLE IS MADE SPECIFICALLY FOR USE WITH BALL-LOK® SINGLE ACTING PINS. "SPECIAL" BALL-LOK® PINS CAN BE DESIGNED FOR SPECIFIC APPLICATIONS AND TO MANY REQUIREMENTS.

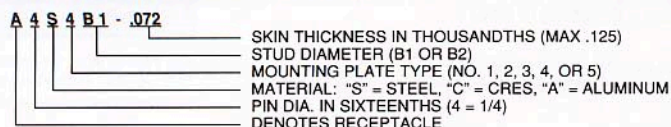
SINGLE ACTING, POSITIVE LOCKING PINS



SPECIAL DIAMETER RECEPTACLE AND MOUNTING PLATES CAN BE MANUFACTURED FOR SPECIAL APPLICATIONS. PLEASE CONSULT OUR SALES ENGINEERS FOR FURTHER INFORMATION AND PRICES.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SAMPLE CALLOUT



SHIMS:

STANDARD RECEPTACLE MANUFACTURED FOR .125 SKIN THICKNESS. WHEN ORDERING, CALL OUT SKIN THICKNESS. SHIM WILL BE FURNISHED TO COMPENSATE FOR THE DIFFERENCE (ON CRES AND STEEL ONLY). TOLERANCE OF SHIM THICKNESS ±.005. ALUMINUM RECEPTACLES MANUFACTURED TO SPECIFIED SKIN THICKNESS. MOUNTING PLATE THICKNESS VARIES ACCORDING TO SKIN THICKNESS DESIRED. EXAMPLE: .093 SKIN THICKNESS, .032 MOUNTING PLATE THICKNESS (ALUMINUM RECEPTACLES ONLY).

MATERIALS:

1. CONSTRUCTION:

CRES & STEEL: MOUNTING PLATE BRAZED TO BODY PER MIL-B-7883.

ALUMINUM: ONE PIECE MOUNTING PLATE AND BODY WITH HARDENED STEEL SHOULDER ON INSIDE FOR TENSION LOADS.

2. HEAT TREAT:

CRES BODY: 180/210,000 PSI
STEEL BODY: 160/180,000 PSI

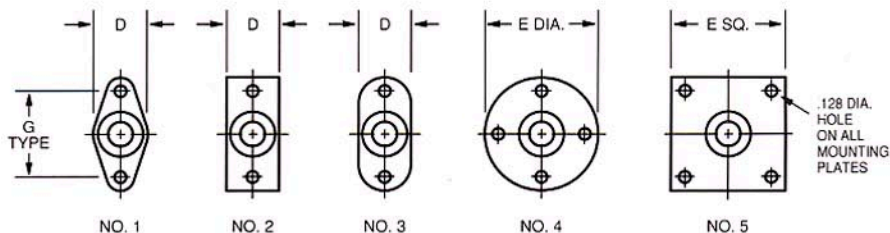
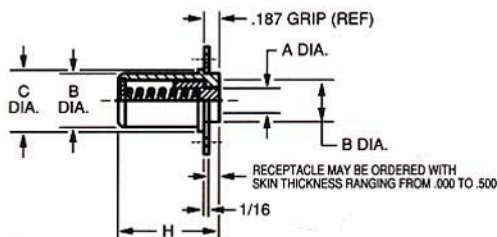
3. FINISH:

CRES: PASSIVATE PER QQ-P-35

STEEL: CADMIUM PLATE PER QQ-P-416, TYPE I OR II, CLASS 2.

ALUMINUM: ANODIZE PER MIL-A-8625 (CLEAR OR GRAY)

RECEPTACLES ARE DESIGNED TO WITHSTAND THE TENSION LOADS OF THE BALL-LOK® PINS USED WITH THEM.



MOUNTING PLATES

LIGHTWEIGHT RECEPTACLES - FOR USE WITH SINGLE ACTING, BALL-LOK® PINS

15

DIMENSIONS

PIN NO.	A +.003 -.000	B +.001 -.004	C*	D	E	G	H	APPROX. WEIGHT
3	.190	.375	.437	5/8	1.281	1.000	1.25	.040 LBS.
4	.250	.375	.437	5/8	1.281	1.000	1.25	.043 LBS.
5	.312	.500	.562	5/8	1.281	1.000	1.25	.045 LBS.
6	.375	.625	.687	3/4	1.406	1.125	1.31	.048 LBS.

WEIGHTS ARE CALCULATED USING STEEL RECEPTACLES WITH NO. 4 MOUNTING PLATES.

* "C" DIMENSION OPTIONAL WHEN ALUMINUM COMPONENTS ARE USED.

MATERIALS:

1. CONSTRUCTION:

CRES & STEEL:
MOUNTING PLATE
BRAZED TO BODY PER
MIL-B-7883.

ALUMINUM:
ONE PIECE MOUNTING
PLATE AND BODY WITH
HARDENED STEEL
SHOULDER ON INSIDE
FOR TENSION LOADS.

2. HEAT TREAT:

CRES BODY:
180/210,000 PSI

STEEL BODY:
160/180,000 PSI

3. FINISH:

CRES:
PASSIVATE PER QQ-P-35

STEEL:
CADMIUM PLATE PER
QQ-P-416, TYPE I OR II
CLASS 2.

ALUMINUM:
ANODIZE PER MIL-A-8625
(CLEAR OR GRAY)

RECEPTACLES ARE DESIGNED
TO WITHSTAND THE TENSION
LOADS OF THE BALL-LOK®
PINS USED WITH THEM.

ALUMINUM RECEPTACLES

PART NAME	MATERIAL	SPECIFICATION
BODY	7075-T73/T6511	QQ-A-225/9/ QQ-A-200/11
PLUNGER	2017-T4/2024-T4	QQ-A-225/5/ QQ-A-225/6
MOUNTING PLATE (OPTIONAL)	7075-T73/T6511	QQ-A-225/9/ QQ-A-200/11
SPRING	MUSIC WIRE	ASTM-A-228
RETAINING DISK	2024-T4 ALUMINUM ALLOY	QQ-A-225/6

CRES RECEPTACLES

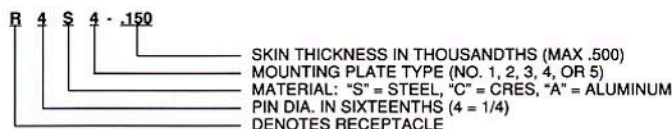
PART NAME	MATERIAL	SPECIFICATION
BODY	CRES 17-4 PH	AMS 5643
PLUNGER	CRES 300 SERIES	QQ-S-763 OR EQUIVALENT
MOUNTING PLATE	CRES 300 SERIES	QQ-S-766/ QQ-S-763
SPRING	CRES 302 OR 17-7 PH	ASTM-A-313/AMS 5673
RETAINING DISK	CRES 300 SERIES	QQ-S-766/ QQ-S-763

STEEL RECEPTACLES

PART NAME	MATERIAL	SPECIFICATION
BODY	ALLOY STEEL 4130	MIL-S-6758/MIL-T-6736
PLUNGER	MILD STEEL	ASTM-A-108 OR EQUIVALENT
MOUNTING PLATE	ALLOY STEEL 4130, MILD STEEL	MIL-S-18725 OR EQUIVALENT, QQ-S-698 OR EQUIV.
SPRING	MUSIC WIRE	ASTM-A-228
RETAINING DISK	MILD STEEL	ASTM-A-366 OR EQUIVALENT

ALL PARTS WILL BE SUPPLIED TO
THE LATEST DRAWING REVISIONS

SAMPLE CALLOUT



MOUNTING PLATES — CAN BE USED IN PLACE OF A RECEPTACLE

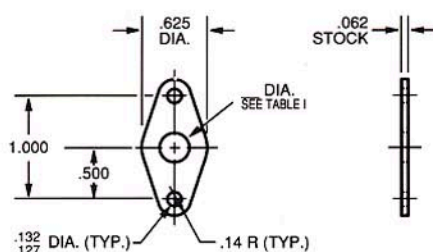


TABLE I

HOLE SIZE		
DASH NO.	MIN.	MAX.
-1	.190	.194
-2	.250	.254
-3	.312	.316
-4	.375	.379
-5	.438	.442
-6	.500	.504

MATERIAL:

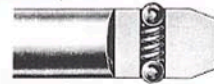
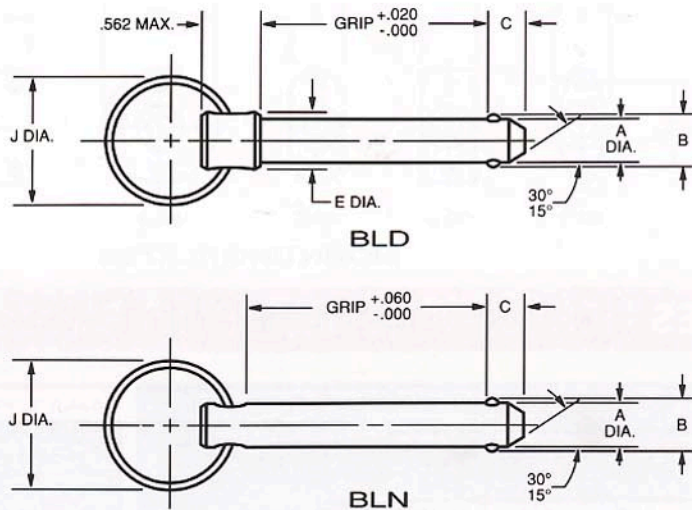
300 SERIES CRES QQ-S-766 OR EQUIV.

FINISH:

PASSIVATE PER QQ-P-35

SAMPLE CALLOUT:

52907 - 1
DASH NO.
SEE TABLE: -1 = .190/.194 HOLE
BASIC PART NO.



TWO BALLS FOR COMPLETE SAFETY
3/16" PIN HAS 1 BALL ONLY
SOLID STEEL SHANK FOR ADDED STRENGTH

BALL-LOK® DETENT PINS - SPRING LOADED

DIMENSIONS

DASH NO.	NOM. DIA.	A +.0000 -.0030	B MIN.	C MAX.	E ±.015	J MAX	CALCULATED DOUBLE SHEAR STRENGTH (POUNDS)			PUSH-PULL FORCE LBS.	
							STEEL 4130	MILD STEEL	CRES	MAX.	MIN.
3	3/16	.1885	.200	.329	.312	1.187	4,700	2,100	3,900	7	2
4	1/4	.2480	.280	.344	.375	1.187	8,500	3,800	4,500	7	2
5	5/16	.3105	.360	.359	.438	1.187	13,400	6,100	7,100	14	6
6	3/8	.3730	.430	.390	.500	1.187	19,600	8,900	10,300	14	6
7	7/16	.4355	.495	.469	.563	1.187	26,700	12,200	14,100	17	8
8	1/2	.4980	.570	.516	.625	1.187	34,900	15,900	18,400	22	10
9	9/16	.5605	.645	.593	.688	1.687	44,400	20,300	23,400	22	10
10	5/8	.6230	.720	.672	.750	1.687	54,900	25,200	28,900	30	15
12	3/4	.7480	.860	.750	.875	1.687	79,300	36,500	41,800	30	15
14	7/8	.8730	1.030	.859	1.000	2.187	108,000	49,800	57,000	35	20
16	1	.9980	1.160	.984	1.125	2.187	141,500	65,200	74,600	40	20

HEAT TREATMENT:

4130 STEEL:
SHANK: 160/180,000, PSI PER MIL-H-6875, Rc 36-40
CORROSION RESISTANT STEEL:
17-7 PH (CH900)
CARBON STEEL: NONE

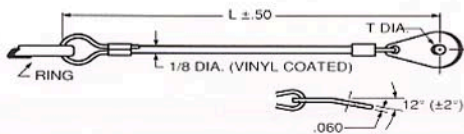
PROTECTIVE TREATMENT:

4130 STEEL:
SHANK, SPRING & RING:
CADMIUM PLATED PER QQ-P-416, TYPE I OR TYPE II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.
CARBON STEEL:
SHANK, SPRING & RING:
CADMIUM PLATED PER QQ-P-416, TYPE I OR TYPE II, CLASS 2.

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY	ALLOY STEEL 4130 "S"	MIL-S-6758 OR EQUIV.
BODY	MILD STEEL "M"	ASTM-A-108
SPRING & RING	MUSIC WIRE	ASTM-A-228
HEAD (OPTIONAL)	MILD STEEL	ASTM-A-108
BALLS	CRES 440C	QQ-S-763, Rc 58-62

OPTIONAL LANYARD



NOTES:

CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIVALENT.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059.
FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

TABLE I

DASH NO.	TAB HOLE SIZE +.004 T-.001 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

NOTES:

- IF A GREATER "C" DIMENSION IS REQUIRED, ADD THE LETTER "C" AND THE LENGTH AFTER THE STANDARD GRIP. EXAMPLE: BLD8-15C10 (C10 BEING 1.0 INCHES)
- PARTS TO BE IDENTIFIED. AVK AND APPROPRIATE PART NUMBER IF AREA PERMITS.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
- IF GRIP CANNOT BE CALLED OUT IN WHOLE NUMBER TENTHS, USE A DECIMAL POINT AND CALL OUT ACTUAL GRIP. EXAMPLE: 1.25 = 1.250 OR 2.375 = 2.375 GRIP.
- OPTIONAL LANYARD ASSEMBLY IS ATTACHED DIRECTLY TO RING HANDLE.

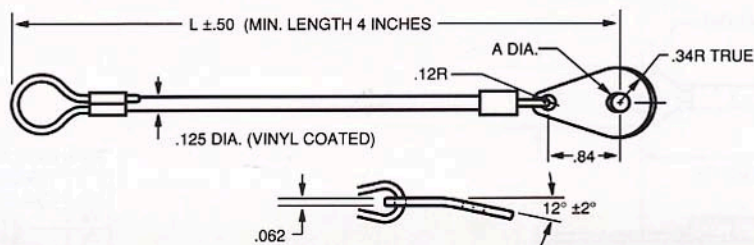
ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SAMPLE CALLOUT

B L (D OR N) (S OR C OR M) 8 - 15 L12 C 4

TAB HOLE: 4 = .129 DIA. (SEE TABLE I)
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
OPTIONAL LANYARD, SEE NOTE 5. (L12=12" LONG.) (4" MIN)
FIFTEEN TENTHS = 1.5 INCHES, GRIP IN TENTHS FIRST DIGIT "0" IF LESS THAN ONE INCH.
DIAMETER IN SIXTEENTHS: 8 = 1/2"
MILD STEEL
CORROSION RESISTANT STEEL
4130 STEEL
NO SHOULDER TYPE
SHOULDER TYPE

LANYARD ASSEMBLY (LT1504)



SAMPLE CALLOUT:

LT1504 C 6 - 16
 LENGTH IN INCHES (4 INCH MIN.)
 DASH NO. (SEE TABLE I)
 TAB MATERIAL
 "C" = CRES, "A" = ALUM. ALLOY
 BASIC PART NO.

SPECIFICATIONS

PART NAME	MATERIAL	SPECIFICATION	FINISH
SWAGING SLEEVE, NICO PRESS 28-IC	COPPER	COMMERCIAL	ZINC PLATE
TAB	ALUM. ALLOY 6061	QQ-A-250/11	ALUM. ANODIZE PER MIL-A-8625
CABLE 1/16 DIA., 7 X 7	CRES	MIL-S-5059	CRES PASSIVATE PER QQ-P-35
	CRES	MIL-W-83420 TY. I, COMP. B	VINYL COATED (GREEN) PER MIL-I-631

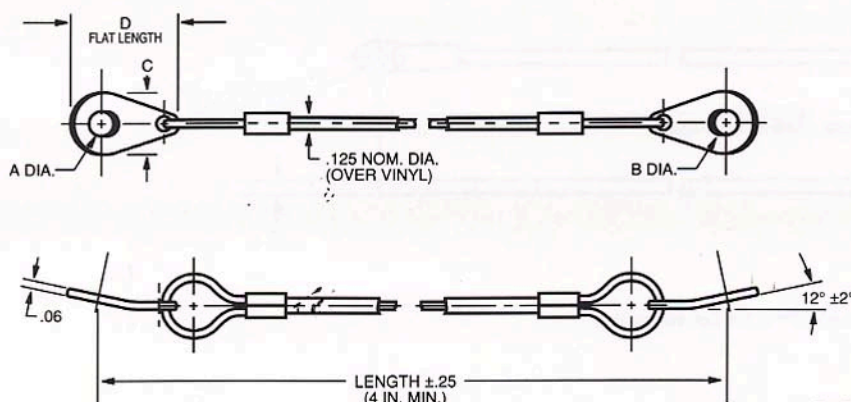
RATED FULL STRENGTH OF CABLE 480 LBS.

TABLE I

TAB HOLE SIZE	
DASH NO.	A +.004 DIA.
-4	.129
-6	.194
-7	.255
-8	.281
-10	.318
-12	.377

LANYARDS

LANYARD ASSEMBLY (53128)



SPECIFICATIONS

PART NAME	MATERIAL	SPECIFICATION	FINISH
TAB	CRES	MIL-S-5059	PASSIVATE PER QQ-P-35
SLEEVE, NICO PRESS® 28-IC	COPPER	COMMERCIAL	ZINC PLATE
CABLE 1/16 DIA., 7 X 7	CRES	MIL-W-83420	VINYL COAT (GREEN) PER MIL-I-631

RATED FULL STRENGTH OF CABLE 480 LBS.

SAMPLE CALLOUT:

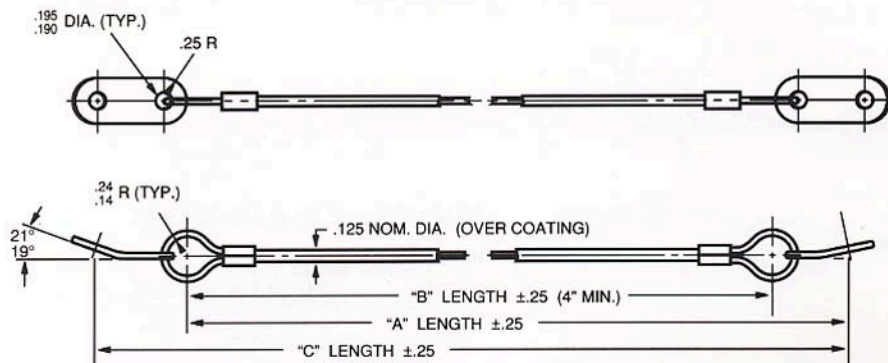
53128 - 8 - 250 - 375
 "B" DIA. NOM.*
 (.384/.379)
 "A" DIA. NOM.*
 (.259/.254)
 LENGTH IN 1"
 INCREMENTS
 BASIC PART NO.

*SEE TABLE II

TABLE II

TAB DIMENSIONS			
HOLE SIZE	C	D	DASH NO. A & B
.133	.68	1.31	.125
.128	.68	1.31	.190
.198	.68	1.31	.250
.193	.68	1.31	.277
.259	.68	1.31	.312
.254	.68	1.31	.375
.285	.68	1.31	.437
.280	.68	1.31	.500
.323	.68	1.31	.562
.316	.68	1.31	.625
.384	.68	1.31	.688
.379	.68	1.31	.750
.445	.68	1.31	.812
.440	.68	1.31	.875
.510	.68	1.31	.938
.505	.68	1.31	1.000
.571	1.25	2.31	
.566	1.25	2.31	
.635	1.25	2.31	
.630	1.25	2.31	
.697	1.25	2.31	
.692	1.25	2.31	
.760	1.25	2.31	
.755	1.25	2.31	
.821	1.25	2.31	
.816	1.25	2.31	
.885	1.25	2.31	
.880	1.25	2.31	
.947	1.25	2.31	
.942	1.25	2.31	
1.010	1.25	2.31	
1.005	1.25	2.31	

LANYARD ASSEMBLY (50996)



SAMPLE CALLOUT:

50996 - 6 W B
 BARE CABLE NO VINYL COATING
 "W" DENOTES WITHOUT TABS.
 (USE "B" LENGTH)
 NO LETTER DENOTES (1) TAB
 (USE "A" LENGTH)
 "T" DENOTES TWO TABS
 (USE "C" LENGTH)
 LENGTH IN 2 INCH INCREMENTS
 (6 = 12.00 LG, 4.00 MIN.)
 BASIC PART NO.

* DUE TO SIZE LIMITATIONS THE .2 LENGTH WILL BE SUPPLIED WITHOUT VINYL COATING.

SPECIFICATIONS

PART NAME	MATERIAL	SPECIFICATION	FINISH
TAB	ALUM. ALLOY 2024-T4	QQ-A-250/4	ANODIZE PER MIL-A-8625, TYPE II
SLEEVE	COPPER	COMMERCIAL	ZINC PLATE
CABLE, 1/16 DIA., 7 X 7	CRES	MIL-W-83420, TY. I, COMP. B	VINYL COAT PER MIL-I-631, GREEN

RATED FULL STRENGTH
 OF CABLE 480 LBS.

CABLE ASSEMBLY

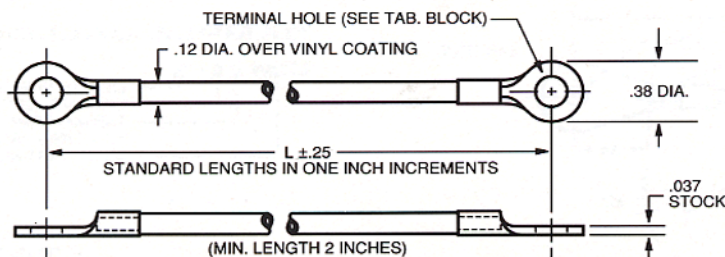


TABLE I

NO.	TERMINAL HOLE DIA.
T4	.129
T6	.194
T8	.252

SPECIFICATIONS

PART NAME	MATERIAL	SPECIFICATION	FINISH
CABLE 1/16", 7 X 7	CRES	MIL-W-83420 TY. I, COMP. B	VINYL COATED (GREEN) PER MIL-I-631
TERMINAL	300 SERIES CRES	MIL-S-5059/QQ-S-766	PASSIVATE PER QQ-P-35

TENSION LOAD = 30 LB. MIN.

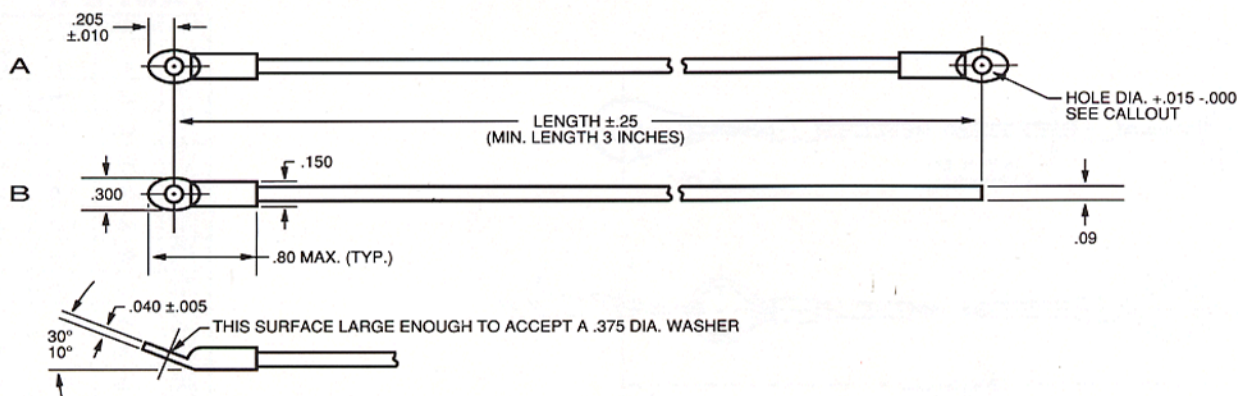
SAMPLE CALLOUT:

L 12 T6 V
 VINYL COATED (OMIT IF NOT REQUIRED)
 TERMINAL HOLE SIZE (SEE TABLE I)
 LENGTH IN INCHES (2" MIN.)
 INDICATES CABLE

18

CABLES AND CHAINS

CABLE ASSEMBLY (52305)



SPECIFICATIONS

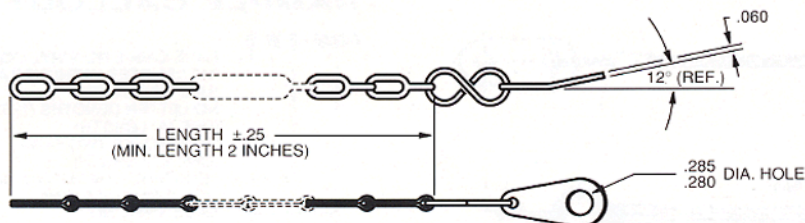
PART NAME	MATERIAL	SPECIFICATION	FINISH
CABLE 1/16", 7 X 7	CRES	MIL-W-83420, TYPE I, COMP B ASTM-D-2116-66	VINYL COVERED (GREEN) TEFLON COVERED
TERMINAL	CRES	QQ-S-764 OR ASTM-A-581/582	PASSIVATE PER QQ-P-35

CABLE ASSEMBLY IS CAPABLE OF WITHSTANDING A 200 LB. MIN. TENSILE LOAD WITHOUT FAILURE.
 TEST LEVEL PER MIL-STD-105E, SPECIAL INSPECTION LEVEL S-3 AQL 1.0.

SAMPLE CALLOUT:

52305 A 06 - 4
 HOLE: 4 = .129, 6 = .194
 TYPE OF COVER: "T" = TEFLON,
 "P" = BARE, "-" = VINYL
 LENGTH IN INCHES (ONE INCH INCREMENTS)
 (MIN. 3")
 TERMINALS: "A" = BOTH SIDES, "B" = ONE END
 BASIC PART NO.

CHAIN ASSEMBLY (1504)



SAMPLE CALLOUT:

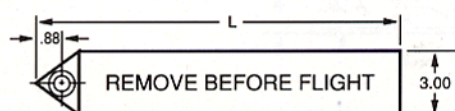
1504 - 6 W
 WITHOUT TAB
 (DELETE FOR WITH TAB)
 LENGTH IN INCHES
 (6 = 6.0 INCHES)
 BASIC PART NO.

SPECIFICATIONS

PART NAME	MATERIAL	SPECIFICATION	FINISH
CHAIN - FLAT LINK - SIZE #1	STEEL	RR-C-271	CAD. PLATE PER QQ-P-416, TYPE I OR II, CLASS 2
"S" HOOK	MILD STEEL	ASTM-A-228 OR EQUIV.	CAD. PLATE PER QQ-P-416, TYPE I OR II, CLASS 2
TAB	6061-T4 ALUM. ALLOY	QQ-A-250/11 OR EQUIV.	ANODIZE PER MIL-A-8625

TENSION LOAD 30 LBS. MIN.

67D34391 - STREAMER - CLOTH COATED NYLON



SAMPLE CALLOUT:

67D34391 - 3
DASH NO.
(-3 = 36.00" LONG)
BASIC PART NO.

TABLE I

DASH NO.*	LENGTH IN. L
-1	24.00
-3	36.00
-5	48.00
-7	60.00
-15	12.00

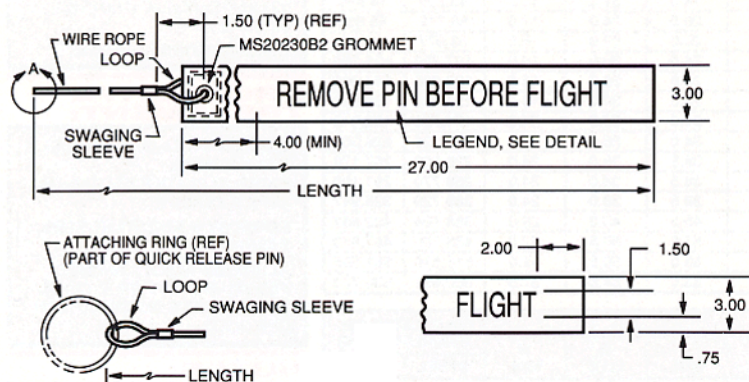
*SEE NOTE 1.

NOTES:

- OTHER CONFIGURATIONS AND MARKINGS ARE AVAILABLE. SEE LATEST SPECIFICATION.
- MATERIAL: CLOTH, NYLON, WATERPROOF PER MIL-C-20696, TYPE I, CLASS 2, COLOR NUMBER 11136 (INSIGNIA RED) PER FED-STD-595.
- HEIGHT OF LETTERS: SINGLE LINE, 1.00" HIGH, DOUBLE LINE, .75" HIGH.

STREAMERS AND RINGS

NAS 1091 - STREAMER VINYL COATED NYLON



SAMPLE CALLOUT:

NAS1091 - 39
LENGTH IN INCHES
(SEE TABLE II)
BASIC PART NO.

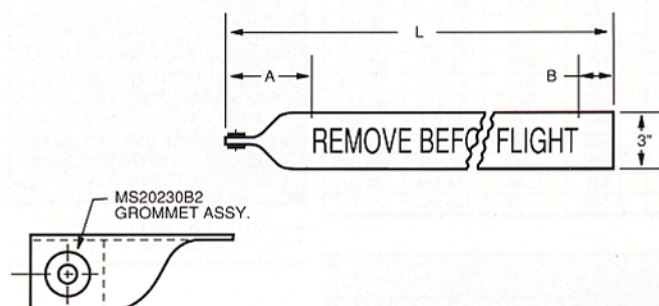
TABLE II

LOOP END	LENGTH OR IN. ±.25
NAS 1091-33	33"
NAS 1091-39	39"
NAS 1091-45	45"
NAS 1091-51	51"
NAS 1091-57	57"
NAS 1091-63	63"

NOTES:

- MATERIAL: CLOTH, NYLON, VINYL COATED PER MIL-C-20696, TYPE I, CLASS 2.
- COLOR; STREAMER: RED COLOR NO. 11136 PER FED-STD-595. LETTERS: WHITE COLOR NO. 37875 PER FED-STD-595.

NAS 1756 - STREAMER VINYL COATED NYLON



SAMPLE CALLOUT:

NAS1756 - 36
LENGTH IN INCHES, SEE TABLE III
" " = WITH LEGEND, "N" = NO LEGEND
BASIC PART NO.

TABLE III

LOOP END	A MIN.	B APPROX.	LENGTH OR IN. ±.25
NAS 1756-12	2	1	12"
NAS 1756-24	4	2	24"
NAS 1756-36	12	6	36"
NAS 1756-48	24	6	48"
NAS 1756-60	36	6	60"

NOTES:

- MATERIAL: VINYL COATED NYLON PER MIL-C-20696, TYPE I, CLASS 2.
- COLOR; STREAMER: RED COLOR NO. 11136 PER FED-STD-595. LETTERS: WHITE COLOR NO. 37875 PER FED-STD-595.
- BASIC PART NUMBER INCLUDES LEGEND "REMOVE BEFORE FLIGHT." ADD "N" IN PLACE OF DASH FOR NO LEGEND.

RINGS

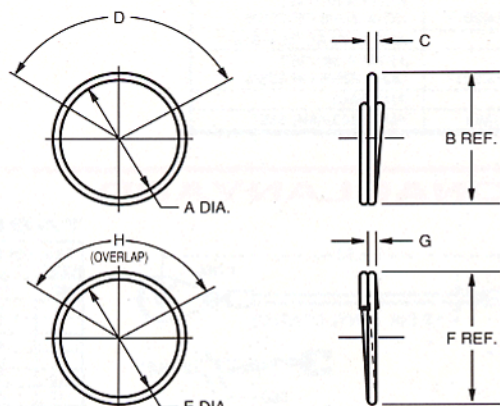


TABLE IV

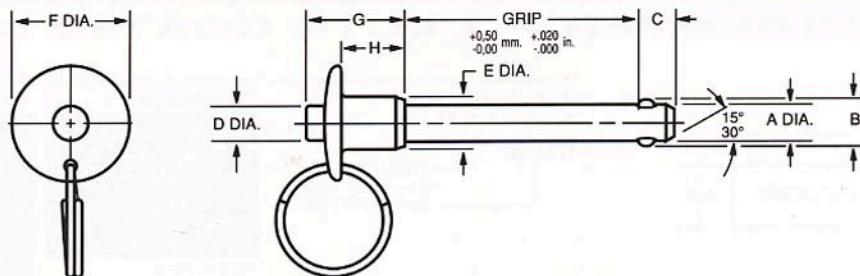
PART NO.	MATERIAL	SPEC.	A	B	C DIA.	D
19 - 4CD	CRES 302	ASTM-A-313	1.050-.950	1.144	.077-.067	120°
19 - 8CD	CRES 302	ASTM-A-313	1.423-1.325	1.561	.058-.088	120°
19 - 9CD	CRES 302	ASTM-A-313	1.550-1.450	1.660	.095-.075	120°
R - 625	MUSIC WIRE	ASTM-A-228	.592-.532	.625	.068-.058	60°
19 - 4SD	MUSIC WIRE	ASTM-A-228	1.050-.950	1.144	.077-.067	120°
19 - 8SD	MUSIC WIRE	ASTM-A-228	1.425-1.325	1.561	.058-.066	120°
19 - 9SD	MUSIC WIRE	ASTM-A-228	1.550-1.450	1.660	.085-.075	120°

PART NO.	MATERIAL	SPEC.	E	F	G DIA.	H
7CR	302 CRES	ASTM-A-313	.655-.595	.740	.062-.052	90°
19 - 100C	17-7PH CRES	AMS 5678	.810-.790	.859	.086-.084	285°-255°
719 - 4CR	302 CRES	ASTM-A-313	.922-.862	1.062	.088-.082	150°-120°
719 - 10CR	302 CRES	ASTM-A-313	1.135-1.075	1.375	.138-.132	150°-120°
7SR	MUSIC WIRE	ASTM-A-228	.655-.595	.740	.062-.052	90°
19 - 100S	MUSIC WIRE	ASTM-A-228	.810-.790	.859	.086-.084	285°-255°

NOTE:

- FINISH: STEEL: CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. CRES: PASSIVATE PER QQ-P-35.

BALL-LOK® METRIC PINS – “B” HANDLE, SINGLE ACTING, POSITIVE LOCKING (56772)



DIMENSIONS

DIMENSIONS IN MILLIMETERS												CALCULATED DBL. SHEAR (NEWTONS)	
DASH NO.	A +0.04, -0.00	B ±0.25	C ±1.0	MAX. D	MIN. D	MAX. E	MIN. E	MAX. F	MIN. F	MAX. G	MIN. H	STEEL	CRES
5	4.92	5.54	6	8.0	6.0	12.0	8.0	20.0	18.0	21.0	12.0	21,600	24,400
6	5.92	6.99	7	8.0	6.0	12.0	8.0	20.0	18.0	21.0	12.0	31,686	35,640
7	6.92	7.90	7	8.0	6.0	12.0	8.0	20.0	18.0	21.0	12.0	43,200	48,690
8	7.92	9.42	8	8.0	6.0	13.0	10.0	29.0	20.0	24.0	12.0	56,712	63,804
10	9.92	11.86	9	10.0	7.0	15.0	11.0	29.0	20.0	27.0	16.0	88,977	100,101
11	10.92	12.80	9	10.0	7.0	16.0	14.0	36.0	24.0	30.0	16.0	107,750	121,220
12	11.92	14.45	10	10.0	7.0	16.0	14.0	36.0	24.0	30.0	16.0	128,050	144,060
13	12.92	15.04	11	15.0	10.5	18.5	15.0	36.0	24.0	30.5	18.0	150,800	169,690
14	13.92	16.94	12	15.0	10.5	19.5	17.0	42.0	34.0	36.0	24.0	174,706	196,543
15	14.92	18.54	13	15.0	10.5	19.5	17.0	42.0	34.0	36.0	24.0	201,125	226,300
16	15.92	19.00	14	15.0	11.5	22.0	19.0	43.0	38.5	38.0	24.0	228,602	257,179
17	16.92	20.07	14	15.0	11.5	22.0	19.0	43.0	38.5	38.0	24.0	258,770	291,100
18	17.92	20.91	16	15.0	11.5	22.0	19.0	43.0	38.5	38.0	24.0	289,729	325,947
20	19.92	24.08	17	18.0	14.0	25.4	21.5	48.5	45.5	43.0	29.0	358,104	402,867
22	21.92	26.49	19	21.5	17.0	29.0	24.5	57.5	53.0	50.5	32.0	433,700	487,910
24	23.92	27.74	21	21.5	17.0	29.0	24.5	57.5	53.0	50.5	32.0	516,536	581,095
25	24.92	33.32	29	23.0	17.5	33.0	29.0	57.5	53.0	54.5	37.5	660,661	630,783

DIMENSIONS IN INCHES												CALCULATED DBL. SHEAR (POUNDS)	
DASH NO.	A +0.016, -0.000	B ±0.009	C ±0.39	MAX. D	MIN. D	MAX. E	MIN. E	MAX. F	MIN. F	MAX. G	MIN. H	STEEL	CRES
5	.1930	.218	.232	.315	.236	.472	.315	.787	.708	.830	.472	4,856	5,485
6	.2331	.275	.275	.315	.236	.472	.315	.787	.708	.830	.472	7,121	8,009
7	.2725	.311	.275	.315	.236	.472	.315	.787	.708	.830	.472	9,712	10,946
8	.3118	.371	.315	.315	.236	.512	.393	1.141	.787	.945	.472	12,745	14,339
10	.3905	.467	.354	.394	.276	.590	.433	1.141	.787	1.063	.630	19,996	22,496
11	.4300	.504	.354	.394	.276	.630	.551	1.417	.945	1.180	.630	24,223	27,251
12	.4693	.569	.394	.394	.276	.630	.551	1.417	.945	1.180	.630	28,777	32,375
13	.5087	.592	.433	.590	.413	.728	.590	1.417	.945	1.200	.708	33,901	38,148
14	.5481	.667	.472	.590	.413	.768	.669	1.653	1.338	1.417	.945	39,262	44,170
15	.5874	.730	.512	.590	.413	.768	.669	1.653	1.338	1.417	.945	45,215	50,874
16	.6268	.748	.551	.590	.453	.866	.748	1.693	1.516	1.496	.945	51,375	57,796
17	.6662	.790	.551	.590	.453	.866	.748	1.693	1.516	1.496	.945	58,173	65,441
18	.7056	.823	.630	.590	.453	.866	.748	1.693	1.516	1.496	.945	65,111	73,231
20	.7843	.948	.669	.708	.551	1.000	.846	1.909	1.791	1.693	1.141	80,478	90,537
22	.8630	1.043	.748	.846	.669	1.141	.964	2.263	2.087	1.988	1.260	97,466	109,649
24	.9418	1.092	.827	.846	.669	1.141	.964	2.263	2.087	1.988	1.260	116,082	130,591
25	.9811	1.218	.866	.905	.689	1.300	1.141	2.263	2.087	2.145	1.476	125,999	141,757

SPECIFICATIONS

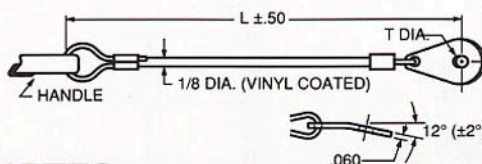
PART NAME	ALLOY STEEL	CORROSION RESISTANT
BALLS	CRES 440C	CRES 440C
ATTACHING RING	MUSIC WIRE, CRES 302	CRES 17-7PH
COLLAR	CARBON STEEL CRES 300 SERIES	CRES 300 SERIES
HANDLE	CARBON STEEL ALUM. ALLOY 2024/2017	CRES 303 ALUM. ALLOY 2024/2017
SPRING	MUSIC WIRE	CRES 17-7PH/302
BUTTON	CARBON STEEL ALUM. ALLOY 2024/2017	CRES 303 ALUM. ALLOY 2024/2017
SPINDLE	ALLOY STEEL 4130	CRES 17-4PH
BODY	ALLOY STEEL 4130	CRES 17-4PH/15-7MO

SAMPLE CALLOUT

56772 S B A 25 F C 30 L 6 C 6

TAB HOLE: 6 = .194 DIA. (SEE TABLE I)
 TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
 LANYARD IN INCHES (4 INCH MINIMUM)
 LANYARD (OPTIONAL)
 EXTENDED "C" DIMENSION (OPTIONAL)
 FOUR BALLS (OPTIONAL)
 GRIP IN MILLIMETERS,
 FIRST DIGIT "0" IF LESS THAN TEN MM
 BUTTON MATERIAL TO BE SAME AS HANDLE
 "A" = ALUMINUM; "C" = CRES; "S" = STEEL;
 "NO LETTER" = AVIBANK'S OPTION
 HANDLE STYLE: "B" = BUTTON
 DIAMETER IN MILLIMETERS (8 = 8 MM)
 MATERIAL: "S" = ALLOY STEEL, "C" = CRES
 BASIC PART NUMBER

OPTIONAL LANYARD



NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ. TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

HEAT TREATMENT:

ALLOY STEEL SHANK & SPINDLE:
 1100/1240 MPa OR 160/180 KSI.
 (MIL-H-6825)
 CORROSION RESISTANT STEEL
 SHANK & SPINDLE:
 1240/1455 MPa OR 180/210 KSI.
 (MIL-H-6875)
 BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CARBON STEEL, ALLOY STEEL
 & MUSIC WIRE:
 CADMIUM PLATE PER QQ-P-416,
 TYPE II, CLASS 2.
 CORROSION RESISTANT STEEL:
 PASSIVATE PER QQ-P-35.
 ALUMINUM ALLOY: ANODIZE
 PER MIL-A-8625, TYPE II, CLASS
 2, HANDLE DYE BLACK, BUTTON
 DYE GOLD.

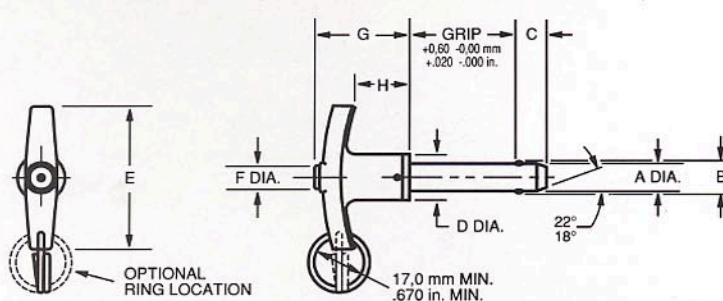
NOTES:

- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- ALL PARTS THAT ARE SUPPLIED WITH A RING, SIZE AND SHAPE IS AVIBANK'S OPTION.
- COLLAR IS USED WITH ALUMINUM HANDLE.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

TABLE I

TAB HOLE SIZE		
DASH NO.	T ±.004 DIA.	T ±0.102 DIA.
-4	.129	3.277
-6	.194	4.928
-7	.255	6.477
-8	.281	7.137
-10	.318	8.077
-12	.377	9.576



BALL-LOK® METRIC PINS – “TA” HANDLE, SINGLE ACTING, POSITIVE LOCKING (51399)

21

DIMENSIONS

DIMENSIONS IN MILLIMETERS										CALCULATED DBL. SHEAR (NEWTONS)	
DASH NO.	MAX.	A MIN.	B ±0.25	C ±1.0	D MAX.	E ±1.0	F ±1.0	G MAX.	H MIN.	STEEL	CRES
5	4.96	4.92	5.54	6	13	46	7	32	18	21,600	24,400
6	5.96	5.92	6.99	7	13	46	7	32	18	31,686	35,640
7	6.96	6.92	7.90	7	13	46	7	32	18	43,200	48,690
7.3	7.26	7.22	8.69	7	13	46	7	32	18	47,000	52,900
8	7.96	7.92	9.42	8	13	46	7	32	18	56,712	63,804
10	9.96	9.92	11.86	9	16	51	8	37	21	88,977	100,101
11	10.96	10.92	12.80	9	16	51	10	37	21	107,750	121,220
12	11.96	11.92	14.45	10	16	51	10	37	21	128,050	144,060
13	12.96	12.92	15.04	11	21	57	12	37	22	150,800	169,690
14	13.96	13.92	16.94	12	21	57	12	37	22	174,706	196,543
15	14.96	14.92	18.54	13	21	57	12	42	22	201,125	226,300
16	15.96	15.92	19.00	14	25	76	13	42	24	228,602	257,179
17	16.96	16.92	20.07	14	25	76	13	43	24	258,770	291,100
18	17.96	17.92	20.91	16	25	76	15	43	26	289,729	325,947
20	19.96	19.92	24.08	17	25	76	15	43	26	358,104	402,867
22	21.96	21.92	26.49	19	34	89	18	55	33	433,700	487,910
24	23.96	23.92	27.74	21	34	89	20	55	33	516,536	581,095
25	24.96	24.92	30.94	23	34	89	20	55	33	660,661	730,783
28	27.96	27.92	33.32	29	34	89	20	55	33	704,900	793,000

DIMENSIONS IN INCHES										CALCULATED DBL. SHEAR (POUNDS)	
DASH NO.	MAX.	A MIN.	B ±.009	C ±.039	D MAX.	E ±.039	F ±.039	G MAX.	H MIN.	STEEL	CRES
5	.1950	.1930	.216	.232	.511	1.811	.275	1.259	.708	4,856	5,485
6	.2346	.2331	.275	.275	.511	1.811	.275	1.259	.708	7,121	8,009
7	.2740	.2725	.311	.275	.511	1.811	.275	1.259	.708	9,712	10,946
7.3	.2858	.2842	.342	.275	.511	1.811	.275	1.259	.708	10,566	11,892
8	.3133	.3118	.371	.315	.511	1.811	.275	1.259	.708	12,745	14,339
10	.3920	.3905	.467	.354	.629	2.008	.315	1.377	.827	19,996	22,496
11	.4315	.4300	.504	.354	.629	2.008	.394	1.417	.827	24,223	27,251
12	.4708	.4693	.569	.394	.629	2.008	.394	1.417	.827	28,777	32,375
13	.5102	.5087	.592	.433	.826	2.244	.472	1.456	.866	33,901	38,148
14	.5496	.5481	.667	.472	.826	2.244	.472	1.456	.866	39,262	44,170
15	.5889	.5874	.730	.512	.826	2.244	.472	1.653	.866	45,215	50,874
16	.6283	.6268	.748	.551	.984	2.992	.511	1.653	.945	51,375	57,796
17	.6677	.6662	.790	.551	.984	2.992	.511	1.692	.945	58,173	65,441
18	.7070	.7056	.823	.630	.984	2.992	.590	1.692	1.024	65,111	73,231
20	.7858	.7843	.948	.669	.984	2.992	.590	1.692	1.024	80,478	90,537
22	.8645	.8630	1.043	.748	1.338	3.504	.710	2.165	1.300	97,466	109,649
24	.9433	.9418	1.092	.82	1.338	3.504	.787	2.165	1.300	116,082	130,591
25	.9826	.9811	1.218	.866	1.338	3.504	.787	2.165	1.300	125,999	141,757
28	1.1009	1.0994	1.312	1.141	1.338	3.504	.787	2.165	1.300	158,468	178,273

HEAT TREATMENT:

ALLOY STEEL SHANK & SPINDLE:
1100/1240 MPa OR 160/180 KSI.
(MIL-H-6825)
CORROSION RESISTANT STEEL
SHANK & SPINDLE:
1240/1445 MPa OR 180/210 KSI.
(MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CARBON STEEL, ALLOY STEEL
& MUSIC WIRE:
CADMIUM PLATE PER QQ-P-416,
TYPE II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.
ALUMINUM ALLOY: ANODIZE
PER MIL-A-8625, TYPE II, CLASS
2, HANDLE DYE BLACK, BUTTON
DYE GOLD.

NOTES:

1. OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
2. ALL PINS THAT ARE FURNISHED WITH RING, SIZE AND SHAPE IS AVIBANK'S OPTION.
3. ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
4. BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
4. GRIP LENGTH IS MEASURED TO EDGE OF BALL HOLE BEFORE STAKING.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

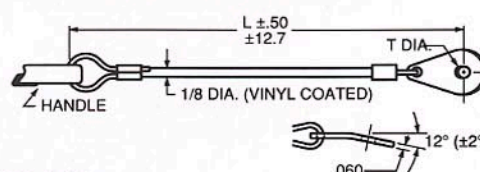
SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
SPINDLE	STEEL 4130	MIL-S-6758
SPRING	MUSIC WIRE	ASTM-A-228
BUTTON	ALUM. ALLOY 2017/2024	QQ-A-225/5/QQ-A-225/6
BALL	CRES 440C	QQ-S-763
BODY	STEEL 4130	MIL-S-6758/MIL-T-6737
SHOULDER RING	CARBON STEEL	ASTM-A-108
HANDLE	ALUM. ALLOY 380	QQ-A-591

SAMPLE CALLOUT

51399 S 6 T 25 MS P F C10 L 6 C 6
 TAB HOLE: 6 = .194 DIA. (SEE TABLE I)
 TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
 LANYARD IN INCHES (4 INCH MINIMUM)
 LANYARD (OPTIONAL)
 EXTENDED "C" DIMENSION (OPTIONAL)
 "F" = FOUR BALLS (OPTIONAL),
 NO LETTER = TWO BALLS STANDARD
 HANDLE PINNED (OPTIONAL) (2 PLACES)
 DENOTES METRIC STANDARD
 GRIP IN MILLIMETERS FIRST DIGIT "0" IF
 LESS THAN TEN MM
 HANDLE STYLE: "T"
 DIAMETER IN MILLIMETERS (6 = 6 MM)
 MATERIAL: "S" = ALLOY STEEL, "C" = CRES
 BASIC PART NO.

OPTIONAL LANYARD



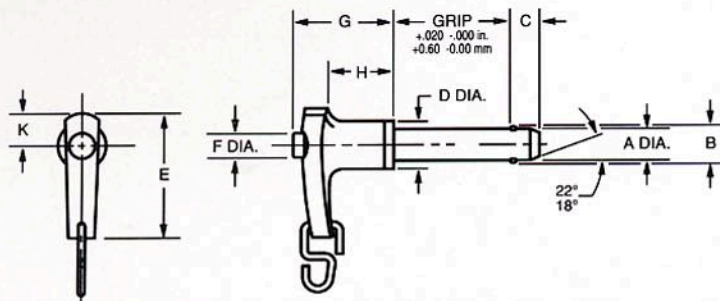
NOTES:

CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ. TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C"—CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

TABLE I

TAB HOLE SIZE		
DASH NO.	T ±.004 DIA. T ±.012 DIA.	T ±.005 DIA.
-4	.129	3.277
-6	.194	4.928
-7	.255	6.477
-8	.281	7.137
-10	.318	8.077
-12	.377	9.576

BALL-LOK® METRIC PINS – “LA” HANDLE, SINGLE ACTING, POSITIVE LOCKING (51446)



DIMENSIONS

DIMENSIONS IN MILLIMETERS											CALCULATED DOUBLE SHEAR (NEWTONS)	
DASH NO.	A MAX.	A MIN.	B ±0.25	C ±1	D MAX.	E MAX.	F ±1	G MAX.	H MIN.	K MAX.	STEEL	CRES
6	5.96	5.92	6.98	7	12.7	45.8	7	32.2	19.3	8.7	31,686	35,640
8	7.96	7.92	9.43	8	12.7	45.8	7	32.2	19.3	8.7	56,712	63,304
10	9.96	9.92	11.86	9	15.8	51.6	8	37.3	21.5	10.0	88,977	100,101
12	11.96	11.92	14.45	10	20.3	51.6	10	40.6	21.5	10.0	128,050	144,060
14	13.96	13.92	16.94	12	20.3	60.0	12	40.6	21.5	12.7	174,706	196,543
16	15.96	15.92	19.00	14	24.7	78.0	12.5	43.1	24.9	15.3	228,602	257,179
18	17.96	17.92	20.91	16	25.4	78.0	12.5	43.6	34.8	15.3	289,729	325,947
20	19.96	19.92	24.08	17	25.4	94.0	15	43.6	30.4	20.4	358,104	402,867
22	21.96	21.92	26.49	19	33.5	94.0	18	55.1	30.4	20.4	433,700	487,910
24	23.96	23.92	27.74	21	33.5	94.0	20	55.1	30.4	20.4	516,536	581,095
25	24.96	24.92	30.94	22	33.5	94.0	20	55.1	30.4	20.4	560,661	630,783

DIMENSIONS IN INCHES											CALCULATED DOUBLE SHEAR (POUNDS)	
DASH NO.	A MAX.	A MIN.	B ±.009	C ±.039	D MAX.	E MAX.	F ±.039	G MAX.	H MIN.	K MAX.	STEEL	CRES
6	.2346	.2331	.275	.275	.500	1.800	.275	1.270	.760	.34	7,121	8,009
8	.3133	.3118	.371	.315	.500	1.800	.275	1.270	.760	.34	12,745	14,339
10	.3920	.3905	.467	.354	.625	2.030	.315	1.470	.850	.39	19,996	22,496
12	.4708	.4693	.569	.394	.800	2.030	.394	1.600	.850	.39	28,777	32,375
14	.5496	.5481	.667	.472	.800	2.360	.472	1.600	.850	.50	39,262	44,170
16	.6283	.6278	.748	.551	.975	3.070	.482	1.700	.905	.60	51,375	57,796
18	.7070	.7056	.823	.630	1.000	3.070	.482	1.720	.980	.60	65,111	73,251
20	.7858	.7843	.948	.669	1.000	3.700	.590	1.720	1.200	.80	80,478	90,537
22	.8645	.8630	1.043	.748	1.320	3.700	.708	2.170	1.200	.80	97,466	109,649
24	.9433	.9418	1.092	.827	1.320	3.700	.787	2.170	1.200	.80	116,082	130,591
25	.9826	.9811	1.218	.866	1.320	3.700	.787	2.170	1.200	.80	125,999	141,757

SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
ATTACHING LINK	CARBON STEEL OR CRES 302	ASTM-A-228 ASTM-A-313
SPINDLE	4130 ALLOY STEEL	MIL-S-6758
SPRING	MUSIC WIRE	ASTM-A-228
BUTTON	MILD STEEL 2017, 2024 ALUM. ALLOY	ASTM-A-08 QQ-A-225/5/6
BALL	440C CRES	QQ-S-763
BODY	4130 ALLOY STEEL	MIL-S-6758 MIL-T-6736
SHOULDER RING	MILD STEEL	ASTM-A-108 OR EQUIV.
HANDLE	ALUM. ALLOY 380	QQ-A-591

HEAT TREATMENT:

ALLOY STEEL SHANK & SPINDLE:
1100/1240 MPa OR 160/180 KSI
(MIL-H-6825)
CORROSION RESISTANT STEEL
SHANK & SPINDLE:
1240/1445 MPa OR 180/210 KSI.
(MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

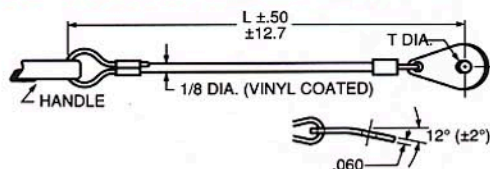
CARBON STEEL, ALLOY STEEL
& MUSIC WIRE:
CADMIUM PLATE PER QQ-P-416,
TYPE II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.
ALUMINUM ALLOY: ANODIZE
PER MIL-A-8625, TYPE II, CLASS
2, HANDLE DYE BLACK, BUTTON
DYE GOLD.

NOTES:

- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO HANDLE.
- ALL PINS THAT ARE FURNISHED WITH A S-HOOK, SIZE AND SHAPE IS AVIBANK'S OPTION.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS. ALL -6L'S AND -C6L'S ARE IDENTIFIED WITH THE LATEST REVISION LETTER.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

OPTIONAL LANYARD



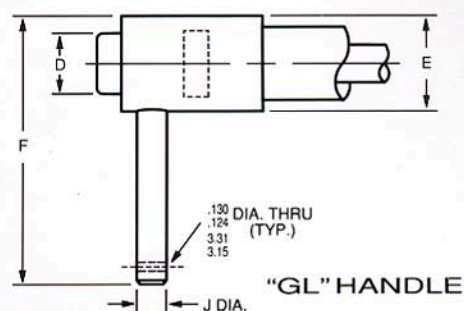
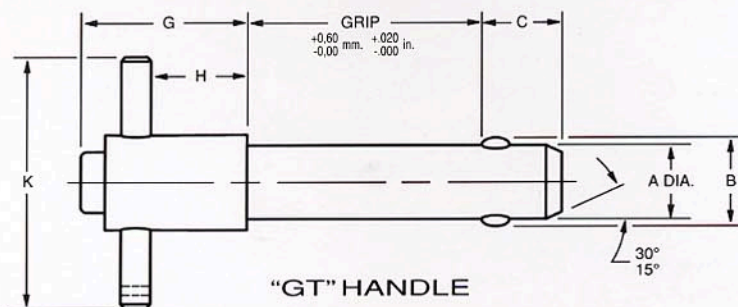
TAB HOLE SIZE		
DASH NO.	T .004 DIA.	T .012 DIA.
-4	.129	3.277
-6	.194	4.928
-7	.255	6.477
-8	.281	7.137
-10	.318	8.077
-12	.377	9.576

NOTES:

CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11.
"C"—CORROSION RESISTANT STEEL PER MIL-S-5059.
FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

SAMPLE CALLOUT

51446 - 6 L 25 F C10 L 6 C 6
 TAB HOLE: 6 = .194 DIA. (SEE TABLE I)
 TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
 LANYARD IN INCHES (4 INCH MINIMUM)
 LANYARD (OPTIONAL)
 "C" = DIMENSION IN MM (OPTIONAL)
 "F" = FOUR BALLS (OPTIONAL), NO LETTER = TWO BALLS (STD)
 GRIP IN MILLIMETERS
 HANDLE STYLE
 NOMINAL SHANK DIA. IN MM (6 = 6 MM)
 MATERIAL: "-" = ALLOY STEEL, "C" = CRES
 BASIC PART NUMBER



BALL-LOK® METRIC PINS – GROUND HANDLING, SINGLE ACTING (52917)

DIMENSIONS

DIMENSIONS IN MILLIMETERS														CALCULATED DOUBLE SHEAR (NEWTONS)	
DASH NO.	MAX.	A MIN.	B ±0.25	C ±1	D MIN.	MAX.	E MIN.	F MAX.	G MAX.	H MIN.	J ±0.38	MAX.	K MIN.	STEEL	CRES
6	5.96	5.92	6.98	7	6.35	13.46	11.93	54.73	39.37	18.28	4.74	50.80	44.45	31,686	35,640
8	7.96	7.92	9.43	8	6.35	13.46	11.93	54.73	39.37	18.28	4.74	50.80	44.45	56,712	63,804
10	9.96	9.92	11.86	9	7.62	16.63	15.11	57.02	39.37	18.28	6.35	50.80	44.45	88,977	100,101
12	11.96	11.92	14.45	10	9.40	16.63	15.11	57.02	39.37	18.79	6.35	57.15	50.80	128,050	144,060
14	13.96	13.92	16.94	12	10.92	19.81	18.28	61.59	46.22	20.57	6.35	62.50	57.15	174,706	196,543
16	15.96	15.92	19.00	14	12.19	22.98	21.46	78.10	46.22	22.35	7.92	76.20	57.15	228,602	257,179
18	17.96	17.92	20.91	16	12.19	22.98	21.46	78.10	46.22	22.35	7.92	76.20	63.50	289,729	325,947
20	19.96	19.92	24.08	17	14.47	26.16	24.63	78.10	46.22	23.62	7.92	76.20	63.50	358,104	402,867
22	21.96	21.92	26.49	19	17.78	29.33	27.81	92.71	54.45	28.44	9.52	88.90	69.85	433,700	487,910
24	23.96	23.92	27.74	21	17.78	29.33	27.81	92.71	54.45	28.70	9.52	88.90	69.85	516,536	581,095
25	24.96	24.92	30.94	22	19.05	32.51	30.98	92.71	54.45	28.70	9.52	88.90	69.85	560,661	630,783

DIMENSIONS IN INCHES														CALCULATED DOUBLE SHEAR (POUNDS)	
DASH NO.	MAX.	A MIN.	B ±0.009	C ±0.039	D MIN.	MAX.	E MIN.	F MAX.	G MAX.	H MIN.	J ±0.015	MAX.	K MIN.	STEEL	CRES
6	.2346	.2331	.275	.275	.250	.530	.470	2.155	1.550	.720	.187	2.000	1.750	7,121	8,009
8	.3133	.3118	.371	.315	.250	.530	.470	2.155	1.550	.720	.187	2.000	1.750	12,745	14,339
10	.3920	.3905	.467	.354	.300	.655	.595	2.245	1.550	.720	.250	2.000	1.750	19,996	22,496
12	.4708	.4693	.569	.394	.370	.655	.595	2.245	1.550	.740	.250	2.250	2.000	28,777	32,375
14	.5496	.5481	.667	.472	.430	.780	.720	2.425	1.820	.810	.250	2.500	2.250	39,262	44,170
16	.6283	.6262	.748	.551	.480	.905	.845	3.075	1.820	.880	.312	3.000	2.250	51,375	57,796
18	.7070	.7056	.823	.630	.480	.905	.845	3.075	1.820	.880	.312	3.000	2.500	65,111	73,251
20	.7858	.7843	.948	.669	.570	1.030	.970	3.075	1.820	.930	.312	3.000	2.500	80,478	90,537
22	.8645	.8630	1.043	.748	.700	1.155	1.095	3.650	2.140	1.120	.375	3.500	2.750	97,466	109,649
24	.9433	.9418	1.092	.827	.700	1.155	1.095	3.650	2.140	1.130	.375	3.500	2.750	116,082	130,591
25	.9826	.9811	1.218	.866	.750	1.280	1.220	3.650	2.140	1.130	.375	3.500	2.750	125,999	141,757

SPECIFICATIONS

PART NAME	ALLOY STEEL	MIL-T-6736/MIL-S-6758	CORROSION RESISTANT	AMS 5643/AMS 5657
BODY	ALLOY STEEL 4130	MIL-T-6736/MIL-S-6758	CRES 17-4 PH OR 15-7 MO	AMS 5643/AMS 5657
SPINDLE	ALLOY STEEL 4130	MIL-S-6758	CRES 17-4 PH	AMS 5643
BUTTON	CARBON STEEL	ASTM-A-108	CRES 303	ASTM-A-581/582
	ALUM. ALLOY 2017/2024	QQ-A-225/5, QQ-A-225/6	ALUM. ALLOY 2017/2024	QQ-A-225/5, QQ-A-225/6
SPRING	MUSIC WIRE	ASTM-A-228	CRES 17-7PH/302	AMS5678/ASTM-A-313
HEAD	CARBON STEEL	ASTM-A-108	CRES 304, 316 OR 321	QQ-S-763 OR EQUIV.
HANDLE	CARBON STEEL	ASTM-A-108	CRES 304, 316 OR 321	QQ-S-763 OR EQUIV.
BALL	CRES 440C	QQ-S-763	CRES 440C	QQ-S-763

HEAT TREATMENT:

ALLOY STEEL SHANK & SPINDLE:
1100/1240 MPa OR 160/180 KSI.
(MIL-H-6875)
CORROSION RESISTANT STEEL
SHANK & SPINDLE:
1240/1445 MPa OR 180/210 KSI.
(MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CARBON STEEL, ALLOY STEEL
& MUSIC WIRE:
CADMIUM PLATE PER QQ-P-416,
TYPE II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.

NOTES:

- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO THE HANDLE.
- HANDLE IS WELDED TO HEAD PER MIL-STD-2219.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
- HOLE IN HANDLE MAY BE ROTATED TO POSITION OTHER THAN SHOWN.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

OPTIONAL LANYARD

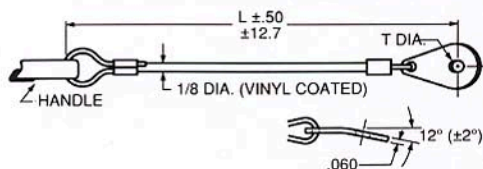


TABLE I

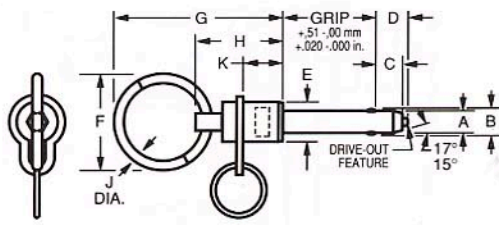
TAB HOLE SIZE		
DASH NO.	1.004 DIA. T ^{0.004}	1.012 DIA. T ^{0.012}
-4	.129	3.277
-6	.194	4.928
-7	.255	6.477
-8	.281	7.137
-10	.318	8.077
-12	.377	9.576

NOTES:

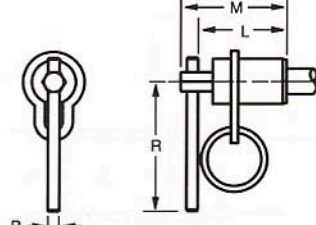
CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420, VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIV.
TAB: "A"—ALUMINUM ALLOY 6061 PER QQ-A-250/11.
"C"—CORROSION RESISTANT STEEL PER MIL-S-5059.
FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

SAMPLE CALLOUT

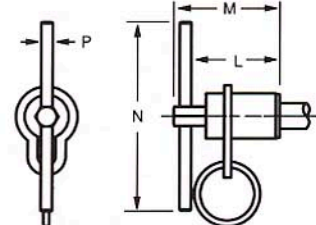
52917 S 8 GL 40 E L 6 C 6
TAB HOLE: 6 = .194 DIA.
TAB MATERIAL: "A" = ALUMINUM, "C" = CRES
LANYARD IN INCHES (4 INCH MINIMUM)
LANYARD (OPTIONAL)
"F" = FOUR BALLS (OPTIONAL), NO LETTER = 2 BALL STANDARD
GRIP IN MILLIMETERS
HANDLE STYLE: "GT" = "T" HANDLE, "GL" = "L" HANDLE
NOMINAL DIAMETER IN MILLIMETERS (8 = 8 MM)
MATERIAL: "S" = ALLOY STEEL, "C" = CRES
BASIC PART NUMBER



"R" HANDLE



"L" HANDLE



"T" HANDLE

BALL-LOK® METRIC PINS – DOUBLE ACTING, POSITIVE LOCKING (51453)

DIMENSIONS

DIMENSIONS IN MILLIMETERS																		CALCULATED DBL. SHEAR (NEWTONS)	
DASH NO.	MAX.	A MIN.	B ±0.25	+0.0-1.27	D MAX.	E MAX.	MIN.	F MAX.	G MAX.	H MIN.	J MIN.	K MAX.	L MIN.	M MAX.	N MAX.	P MIN.	R MAX.	STEEL	CRES
6	5.96	5.92	6.98	10.41	12.70	11.43	9.14	28.58	49.41	23.74	2.03	12.19	19.81	26.17	44.45	2.66	33.02	31,686	35,630
7	6.96	6.92	8.11	10.41	12.70	11.43	9.14	28.58	49.41	23.74	2.03	12.19	19.81	26.17	44.45	2.66	33.02	43,301	48,716
8	7.96	7.92	9.43	11.68	13.97	12.83	9.91	28.58	49.41	23.74	2.03	12.19	19.81	26.17	44.45	2.66	33.02	56,427	63,490
9	8.96	8.92	10.64	13.21	16.26	16.00	12.95	28.58	51.44	25.40	2.03	13.72	21.08	27.69	50.80	3.40	38.10	71,907	80,893
10	9.96	9.92	11.86	13.21	16.26	16.00	12.95	28.58	51.44	25.40	2.03	13.72	21.08	27.69	50.80	3.40	38.10	88,741	99,836
11	10.96	10.92	13.16	13.46	16.26	16.00	12.95	28.58	51.44	25.40	2.03	13.72	21.08	27.69	50.80	3.40	38.10	107,861	121,350
12	11.96	11.92	14.45	13.72	19.81	16.00	12.95	28.58	52.33	27.17	2.03	13.72	22.35	32.26	57.15	5.08	42.04	128,344	144,384
13	12.96	12.92	15.09	15.49	19.81	19.18	16.26	28.58	52.33	27.17	2.03	13.72	22.35	32.26	57.15	5.08	42.04	151,103	169,988
14	13.96	13.92	16.94	17.27	20.83	19.18	16.26	28.58	52.33	27.17	2.03	13.72	22.35	32.26	57.15	5.08	42.04	175,216	197,122
15	14.96	14.92	17.95	17.27	20.83	19.18	16.26	28.58	52.33	27.17	2.03	13.72	22.35	32.26	57.15	5.08	42.04	201,321	226,493
16	15.96	15.92	19.00	19.18	23.62	22.10	20.45	38.10	64.77	31.75	3.04	14.61	25.40	37.34	63.50	5.86	45.98	229,397	258,072
17	16.96	16.92	19.97	19.18	23.62	22.10	20.45	38.10	64.77	31.75	3.04	14.61	25.40	37.34	63.50	5.86	45.98	258,817	291,180
18	17.96	17.92	20.91	19.18	25.40	24.38	22.61	38.10	64.77	31.75	3.04	15.12	25.40	37.34	63.50	5.86	45.98	290,003	326,251
19	18.96	18.92	22.48	20.19	25.40	24.38	22.61	38.10	64.77	31.75	3.04	15.12	25.40	37.34	63.50	5.86	45.98	323,828	364,304
20	19.96	19.92	24.08	20.57	25.40	24.38	22.61	38.10	64.77	31.75	3.04	15.12	25.40	37.34	63.50	5.86	45.98	358,644	403,475
21	20.96	20.92	25.28	25.15	29.97	29.21	27.18	38.10	70.36	38.10	3.04	18.54	29.97	41.46	73.03	5.86	57.15	396,108	445,629
22	21.96	21.92	26.49	25.15	29.97	29.21	27.18	38.10	70.36	38.10	3.04	18.54	29.97	41.46	73.03	5.86	57.15	434,554	488,881
23	22.96	22.92	27.11	25.15	29.97	29.21	27.18	38.10	70.36	38.10	3.04	18.54	29.97	41.46	73.03	5.86	57.15	475,383	534,802
24	23.96	23.92	27.74	28.83	34.29	32.51	30.48	38.10	74.93	43.18	3.04	21.97	33.53	46.48	73.03	5.86	57.15	516,663	581,243
25	24.96	24.92	30.94	28.83	34.29	32.51	30.48	38.10	74.93	43.18	3.04	21.97	33.53	46.48	73.03	5.86	57.15	561,515	631,715

DIMENSIONS IN INCHES																		CALCULATED DOUBLE SHEAR (LBS.)	
DASH NO.	A MAX.	A MIN.	B ±.009	C +.000-.050	D MAX.	E MAX.	E MIN.	F MAX.	G MAX.	H MIN.	J MIN.	K MAX.	L MIN.	M MAX.	N MAX.	P MIN.	R MAX.	STEEL	CRES
6	.2346	.2331	.275	.410	.500	.450	.360	1.125	1.945	.935	.080	.480	.78	1.03	1.750	.105	1.300	7,118	8,008
7	.2739	.2724	.319	.410	.500	.450	.360	1.125	1.945	.935	.080	.480	.78	1.03	1.750	.105	1.300	9,732	10,950
8	.3133	.3118	.371	.460	.550	.505	.390	1.225	1.945	.935	.080	.480	.78	1.03	1.750	.105	1.300	12,682	14,268
9	.3527	.3512	.419	.520	.640	.630	.510	1.125	2.025	1.000	.080	.540	.83	1.09	2.000	.134	1.500	16,160	18,180
10	.3920	.3905	.467	.520	.640	.630	.510	1.125	2.025	1.000	.080	.540	.83	1.09	2.000	.134	1.500	19,944	22,437
11	.4315	.4300	.506	.530	.640	.630	.510	1.125	2.025	1.000	.080	.540	.83	1.09	2.000	.134	1.500	24,242	27,272
12	.4708	.4693	.569	.540	.780	.630	.510	1.125	2.060	1.070	.080	.540	.88	1.27	2.250	.200	1.655	28,842	32,448
13	.5102	.5087	.594	.610	.780	.755	.640	1.125	2.060	1.070	.080	.540	.88	1.27	2.250	.200	1.655	33,958	38,202
14	.5496	.5481	.667	.680	.820	.755	.640	1.125	2.060	1.070	.080	.540	.88	1.27	2.250	.200	1.655	39,377	44,300
15	.5889	.5874	.707	.680	.820	.755	.640	1.125	2.060	1.070	.080	.540	.88	1.27	2.250	.200	1.655	45,244	50,900
16	.6283	.6268	.748	.755	.930	.870	.805	1.500	2.550	1.250	.120	.575	1.00	1.47	2.500	.231	1.810	51,553	57,997
17	.6677	.6662	.786	.755	.930	.870	.805	1.500	2.550	1.250	.120	.575	1.00	1.47	2.500	.231	1.810	58,166	65,438
18	.7070	.7055	.823	.755	.930	.870	.805	1.500	2.550	1.250	.120	.575	1.00	1.47	2.500	.231	1.810	65,173	73,320
19	.7464	.7449	.885	.795	1.000	.960	.890	1.500	2.550	1.250	.120	.595	1.00	1.47	2.500	.231	1.810	72,776	81,872
20	.7858	.7843	.948	.810	1.000	.960	.890	1.500	2.550	1.250	.120	.595	1.00	1.47	2.500	.231	1.810	80,598	90,673
21	.8252	.8237	.995	.990	1.180	1.150	1.070	1.500	2.770	1.500	.120	.730	1.18	1.64	2.875	.231	2.250	89,020	100,148
22	.8646	.8630	1.043	.990	1.180	1.150	1.070	1.500	2.770	1.500	.120	.730	1.18	1.64	2.875	.231	2.250	97,659	109,867
23	.9039	.9024	1.067	.990	1.180	1.150	1.070	1.500	2.770	1.500	.120	.730	1.18	1.64	2.875	.231	2.250	106,334	120,188
24	.9433	.9418	1.092	1.135	1.350	1.280	1.200	1.500	2.950	1.700	.120	.865	1.32	1.83	2.875	.231	2.250	116,110	130,624
25	.9826	.9811	1.218	1.135	1.350	1.280	1.200	1.500	2.950	1.700	.120	.865	1.32	1.83	2.875	.231	2.250	126,191	141,966

HEAT TREATMENT:

ALLOY STEEL SHANK & SPINDLE:
1100/1240 MPa OR 160/180 KSI.
(MIL-H-6825)
CORROSION RESISTANT STEEL
SHANK & SPINDLE:
1240/1445 MPa OR 180/210 KSI.
(MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CARBON STEEL, ALLOY STEEL &
MUSIC WIRE:
CAD. PLATE PER QQ-P-416, TYPE
II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.

NOTES:

- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO ATTACHING LINK BAND.
- ALL PINS THAT ARE FURNISHED WITH ATTACHING RING, SIZE AND SHAPE AVIBANK'S OPTION.
- ALL PINS ARE IDENTIFIED PER MIL-STD-130 AND APPLICABLE SPECIFICATIONS.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

SPECIFICATIONS

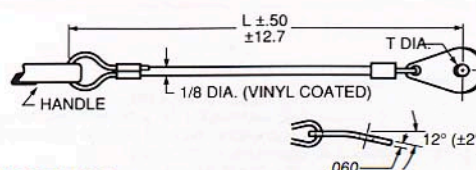
PART NAME	ALLOY STEEL	CORROSION RESISTANT
BODY	ALLOY STEEL 4130	MIL-T-6736/MIL-S-6758
SPINDLE	ALLOY STEEL 4130	MIL-S-6758
BUTTON	CARBON STL/ALLOY STL 4130	ASTM-A-108/MIL-S-6758
SPRING	MUSIC WIRE	ASTM-A-228
HEAD	CARBON STL/ALLOY STL 4130	ASTM-A-108/MIL-S-6758
BALL	CRES 440C	QQ-S-763
ATTACHING LINK BAND	CARBON STL/CRES 302	ASTM-A-366/MIL-S-5059
ATTACHING LINK	CARBON STL WIRE/CRES 302	ASTM-A-228/ASTM-A-313
HANDLE RING	CRES 302/17-7PH	ASTM-A-313/AMS5678
HANDLE, "T" OR "L"	CARBON STL/CRES 302	ASTM-A-108/QQ-S-763

SAMPLE CALLOUT

51453 C 6 R 25 N F C 25 W R L 6 C 6

TAB HOLE: 6 = .194 DIA. (SEE TABLE I)
TAB MAT'L: "A" = ALUMINUM, "C" = CRES
LANYARD IN INCHES (4" MIN.)
LANYARD (OPTIONAL)
ADD "R" FOR WELDED RING
ADD "W" FOR LESS ATTACHING LINK AND LINK.
IF GREATER "C" DIMENSION REQUIRED
(IN MILLIMETERS) (OPTIONAL)
"F" = 4 BALLS (OPTIONAL)
NO LETTER = 2 BALL STANDARD
DRIVE OUT FEATURE: "N" = NON DRIVE OUT
(STANDARD), "D" = DRIVE OUT (OPTIONAL)
GRIP IN MILLIMETERS
HANDLE STYLE: "R" = RING, "T" = T, "L" = L
NOMINAL SHANK DIA. IN MM (6 = 6 MM)
MATERIAL: "C" = CRES, "S" = ALLOY STEEL
BASIC PART NO.

OPTIONAL LANYARD

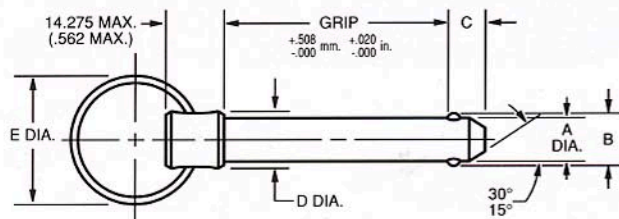


NOTES:

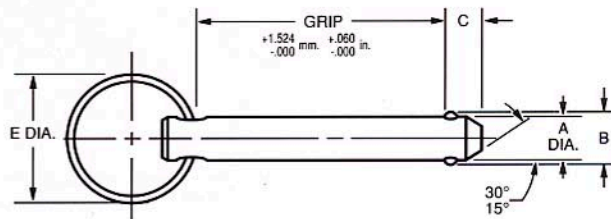
CABLE: SIZE 1/16 DIAMETER, 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQUIV. TAB: "A" - ALUMINUM ALLOY 6061 PER QQ-A-250/11. "C" - CORROSION RESISTANT STEEL PER MIL-S-5059. FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

TABLE I

TAB HOLE SIZE		
DASH NO.	T ±.004 DIA.	T ±.012 DIA.
-4	.129	3.277
-6	.194	4.928
-7	.255	6.477
-8	.281	7.137
-10	.318	8.077
-12	.377	9.576



53420D



53420N

BALL-LOK® METRIC DETENT PINS – SPRING LOADED, SINGLE ACTING (53420)

25

DIMENSIONS

DIMENSIONS IN MILLIMETERS							DOUBLE SHEAR STRENGTH			PUSH-PULL FORCE		RECOMMENDED HOLE SIZE	
NOM. DIA.	MAX.	A MIN.	B MIN.	C MAX.	D ±.381	E MAX.	MILD STEEL	CRES	4130	MAX.	MIN.	MIN.	MAX.
5	4.95	4.87	5.23	8.36	7.925	30.150	1139	1294	2464	3.1	.9	5.000	5.102
6	5.95	5.87	6.76	8.74	9.525	30.150	1657	1882	3581	3.1	.9	6.000	6.102
8	7.95	7.87	9.22	9.12	11.125	30.150	2980	3381	6441	6.2	2.7	8.000	8.102
10	9.95	9.87	11.40	9.91	12.700	30.150	4684	5316	10129	6.2	2.7	10.000	10.102
12	11.95	11.87	13.79	13.11	14.300	30.150	6775	7691	14648	9.8	4.5	12.000	12.127
14	13.95	13.87	16.10	15.06	17.475	42.850	9252	10502	20004	9.8	4.5	14.000	14.127
16	15.95	15.87	18.42	17.07	19.050	42.850	12113	13750	26187	13.4	6.7	16.000	16.127
18	17.95	17.87	20.80	19.05	22.225	42.850	15355	17433	33202	13.4	6.7	18.000	18.178
20	19.95	19.87	22.78	20.45	23.800	42.850	18985	21552	41048	13.4	6.7	20.000	20.178
22	21.95	21.87	25.93	21.82	25.400	55.550	23002	26107	49731	15.6	8.9	22.000	22.178
24	23.95	23.87	28.07	23.42	27.000	55.550	27397	31102	59241	15.6	8.9	24.000	24.178
25	24.95	24.87	29.06	24.99	28.575	55.550	29741	33762	64308	17.8	8.9	25.000	25.254

DIMENSIONS IN INCHES							DOUBLE SHEAR STRENGTH			PUSH-PULL FORCE		RECOMMENDED HOLE SIZE	
NOM. DIA.	MAX.	A MIN.	B MIN.	C MAX.	D ±.381	E MAX.	MILD STEEL	CRES	4130	MAX.	MIN.	MIN.	MAX.
5	.1949	.1917	.206	.329	.312	1.187	2560	2910	5540	7	2	.197	.201
6	.2343	.2311	.266	.344	.375	1.187	3725	4230	8050	7	2	.236	.240
8	.3130	.3098	.363	.359	.438	1.187	6700	7600	14480	14	6	.315	.319
10	.3917	.3886	.449	.390	.500	1.187	6700	11950	22770	14	6	.394	.398
12	.4705	.4673	.543	.516	.563	1.187	15230	17290	32930	22	10	.472	.477
14	.5492	.5461	.634	.593	.688	1.687	20800	23610	44970	22	10	.551	.556
16	.6280	.6248	.725	.672	.750	1.687	27230	30910	58870	30	15	.630	.635
18	.7067	.7035	.819	.750	.875	1.687	34520	39190	74640	30	15	.709	.716
20	.7854	.7823	.897	.805	.937	1.687	42680	48450	92280	30	15	.787	.794
22	.8642	.8610	1.021	.859	1.000	2.187	51710	58690	111800	35	20	.866	.873
24	.9429	.9398	1.105	.922	1.063	2.187	61590	69920	133180	35	20	.945	.952
25	.9823	.9791	1.144	.984	1.125	2.187	66860	75900	144570	40	20	.984	.994

HEAT TREATMENT:

ALLOY STEEL:
1100/1240 MPa OR 160/180 KSI.
(MIL-H-6875)
CORROSION RESISTANT STEEL:
1240/1445 MPa OR 180/210 KSI.
(MIL-H-6875)
BALL HARDNESS: Rc 58-62

PROTECTIVE TREATMENT:

CARBON STEEL, ALLOY STEEL & MUSIC WIRE:
CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2.
CORROSION RESISTANT STEEL:
PASSIVATE PER QQ-P-35.

NOTES:

- PARTS TO BE IDENTIFIED BY AVK AND APPROPRIATE PART NUMBER IF AREA PERMITS.
- BALLS MAY BE ROTATED TO POSITIONS OTHER THAN SHOWN.
- OPTIONAL LANYARD IS ATTACHED DIRECTLY TO HANDLE.

ALL PARTS WILL BE SUPPLIED TO THE LATEST DRAWING REVISIONS

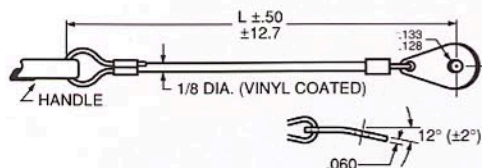
SPECIFICATIONS

PART NAME	ALLOY STEEL	CORROSION RESISTANT
BALL	CRES 440C	QQ-S-763
HEAD (OPTIONAL)	MILD STEEL	ASTM-A-108 OR EQUIV.
SPRING & RING	MUSIC WIRE	ASTM-A-228
BODY "M"	MILD STEEL	ASTM-A-108 OR EQUIV.
BODY "S"	4130 STEEL	MIL-S-6758



TWO BALLS FOR COMPLETE SAFETY
5MM PIN HAS 1 BALL ONLY
SOLID STEEL SHANK FOR ADDED STRENGTH

OPTIONAL LANYARD



NOTES:

CABLE: SIZE 1/16 DIAMETER. 7 X 7 CORROSION RESISTANT STEEL PER MIL-W-83420. VINYL COATED, COLOR GREEN PER MIL-I-631. RATED FULL STRENGTH: 480 POUNDS. SWAGING SLEEVE: NICOPRESS® 28-IC OR EQ.
TAB: CORROSION RESISTANT STEEL PER MIL-S-5059.
FINISH: ALL CRES PARTS PASSIVATED PER QQ-P-35. ALL ALUMINUM ALLOY PARTS ANODIZED PER MIL-A-8625.

SAMPLE CALLOUT

53420 N C 5 - 25 C15 L200

- LANYARD LENGTH IN MILLIMETERS (100 MILLIMETERS MIN.)
- ADD LENGTH REQUIRED AFTER LETTER "L", OMIT IF NOT REQUIRED
- IF GREATER "C" DIMENSION IS REQUIRED, ADD LENGTH IN MILLIMETERS AFTER LETTER "C". OMIT IF NOT REQUIRED.
- GRIP IN MILLIMETERS
- NOMINAL DIAMETER (5 = 5 MM)
- MATERIAL: "C" = CRES, "M" = MILD STEEL, "S" = 4130 STEEL
- PIN STYLE
- BASIC PART NUMBER

AIRLINE SEAT BACK LOCKS
AMUSEMENT RIDE ASSEMBLY
ANCHOR CLEVIS FITTINGS
ANTI SHOPLIFTING MAGNETS
ASSEMBLY MACHINERY FOR
ELECTRONICS INDUSTRIES
BACKPACK ATTACHMENTS
BATTING MACHINE HEIGHT
ADJUSTMENT
BICYCLE HYDRAULIC BRAKE
BLIND GEAR BOX ASSEMBLY
BOAT TRAILER HITCHES
BOTTLING MACHINERY
CAMPER SHOCK
CAB SEATS
CAN MAKING MACHINERY
CANOPY HANDLES
CART-DOLLY IN PLANT USE
CHASSIS TO HOUSE RADIO
TELESCOPES
COAL MINING EQUIPMENT
COMPUTER DISK PACK
CONCRETE WALL ERECTION
CONVEYOR BELT ASSEMBLY LINE
COTTER PIN REPLACEMENT
DOORS ON TANKS & DRUMS FOR
FOOD AND PHARMACEUTICAL
INDUSTRIES
ENGINE ALIGNMENT

FIRE FIGHTING LADDERS
FLOOR WASHING/WAXING
EQUIPMENT
FOOD PROCESSING MACHINERY
FORK LIFT BRAKE SAFETY PIN
LAWN MOWERS
GUITAR PIN STRAP
HANG GLIDERS
HELICOPTER CROP SPRAYING
ATTACHMENTS
HINGE TO SECURE INDUSTRIAL
SEWING MACHINE TO PLATFORM
HOSPITAL BEDS
HOT AIR BALLOONS
IMAGE SCANNERS FOR
ADVERTISING INDUSTRIES
JACKS—MECHANICAL &
HYDRAULIC
KNITTING MACHINES
LAUNDRY MACHINERY
LAWN MOWER ATTACHMENTS
MARINE—QUICK RELEASE LINE
TENSIONER
MARINE—QUICK RELEASE TILLER
EXTENDER
MARINE FASTENER FOR FABRIC
MEDICAL EQUIPMENT
MINING MACHINES
MOBILE X-RAY MACHINES

MOTORIZED AND VACUUM
STREET SWEEPERS
MOUNTAIN CLIMBING EQUIP.
NC MILLING MACHINE TOOLS
OIL DRILLING EQUIPMENT
OIL SPILL CLEAN UP BOOMS
OUTRIGGERS HEAVY LIFT EQUIP.
OXYGEN EQUIPMENT
PACKAGING MACHINERY
PAPER MAKING MACHINERY
PART FORMING EQUIPMENT/NUT
FORMERS/COLD HEADERS
PHOTO EQUIPMENT
PLASTIC INJECTION MOULDING
MACHINE TOOLS
PORTABLE ANTENNAS
SCAFFOLDING
PRINTING PRESS TO HOLD
DRUM PLATES
R.V. AWNINGS
RACING STEERING WHEELS
RACING TRANSMISSION
RACKS ON MOTORCYCLES
RAILROAD EQUIPMENT
REMOVABLE ARMS & LEGS—
PROSTHESIS
SAIL PLANES
SCAFFOLDING
SEAT HEIGHT ADJUSTMENT
SKYLIGHT HINGE PIN
SLING PRODUCTS WIRE ROPE,

HOISTS, CRANES, WINCHES
STAGE & LIGHTING
EQUIPMENT—PORTABLE
SUN ROOFS
SURFBOARD STRAP
TABLET OR PILL MFG MACHINERY
TELEPHONE BOOTH
TELESCOPING TUBE LOCK
TEST EQUIPMENT
TEXTILE MACHINES
TONNEAU COVERS
TOOL AND DIE MFG
TOOLING JAWS
TRACTOR ACCESSORY SUPPORT
TRAILER BED
TRANSPORTABLE RADAR SYSTEM
TRUCK HOISTS
TUBE ASSEMBLIES
ULTRALIGHTS
UTILITY TOOL EQ. AND TRUCKS
VALVES—MARINE & NUCLEAR
WALLS—REMOVABLE & PANELS
WAVE RUNNERS JET SKIS
WEAVING MACHINES
WEIGHT LIFTING MACHINES
WHEELCHAIR AXLES, HUBS,
RECEIVERS, ATTACHMENTS
WHEELS—MOTION PICTURE
CAMERA
WHEELS ON SMALL BOATS
WINDOW WASHING STAGES

CONTACT AVIBANK WITH YOUR SPECIAL DESIGN REQUIREMENTS.



BALL-LOK® QUICK RELEASE PINS

DIAMETER DASH NO.	NOMINAL DIAMETER	ACTUAL FINISH DIAMETER		RECOMMENDED* HOLE DIAMETER		BALL DIA.	MINIMUM TENSION LOAD CAPABILITIES** 2 BALLS
		MAX.	MIN.	MAX.	MIN.		
3	3/16	.1885	.1870	.1940	.1900	.062 (1/16)	200 lbs.
4	1/4	.2485	.2470	.2540	.2500	.078 (5/64)	230 lbs.
5	5/16	.3110	.3095	.3165	.3125	.125 (1/8)	510 lbs.
6	3/8	.3735	.3720	.3790	.3750	.125 (1/8)	575 lbs.
7	7/16	.4360	.4345	.4425	.4375	.156 (5/32)	710 lbs.
8	1/2	.4985	.4970	.5050	.5000	.171 (11/64)	1160 lbs.
9	9/16	.5610	.5595	.5675	.5625	.218 (7/32)	1420 lbs.
10	5/8	.6235	.6220	.6300	.6250	.250 (1/4)	2070 lbs.
12	3/4	.7485	.7470	.7570	.7500	.281 (9/32)	2950 lbs.
14	7/8	.8735	.8720	.8820	.8750	.343 (11/32)	3900 lbs.
16	1"	.9985	.9970	1.0100	1.0000	.406 (13/32)	5480 lbs.

*DATA TAKEN FROM PAGE 4, COLUMN C, OF NAS618

**DATA TAKEN FROM MIL-P-23460 (TABLE II) - CAN BE INCREASED 30% USING 4 BALLS

WEIGHT CHART

SINGLE ACTING - QUICK RELEASE PINS

DIAMETER DASH NO.	WT. PER 1" GRIP LENGTH	WEIGHT OF COMPLETE PIN LESS GRIP LENGTH			
		BL-R	BL-LA	BL-TA	BL-B
4	.25 oz.	.425 oz.	1.75 oz.	1.625 oz.	.60 oz.
5	.40 oz.	.80 oz.	2.00 oz.	1.75 oz.	.85 oz.
6	.50 oz.	1.10 oz.	2.40 oz.	2.10 oz.	1.10 oz.
7	.62 oz.	1.40 oz.	2.90 oz.	2.50 oz.	1.50 oz.
8	.80 oz.	1.90 oz.	3.40 oz.	2.70 oz.	2.00 oz.
9	1.20 oz.	2.10 oz.	3.65 oz.	3.40 oz.	2.40 oz.
10	1.35 oz.	2.75 oz.	4.00 oz.	4.20 oz.	2.70 oz.
12	2.30 oz.	3.60 oz.	4.25 oz.	4.80 oz.	3.60 oz.
14	2.73 oz.	8.11 oz.	8.31 oz.	8.56 oz.	9.11 oz.
16	3.47 oz.	—	9.80 oz.	9.80 oz.	15.9 oz.

TO FIGURE WEIGHT OF PIN:

$$\begin{array}{l} \text{Weight Complete} \\ \text{pin less grip} \\ \text{length} \end{array} + \begin{array}{l} \text{Grip Weight} \\ \text{Grip X Wt. per} \\ \text{1" grip} \end{array} = \begin{array}{l} \text{Complete} \\ \text{Weight} \end{array}$$

EXAMPLE: BLS4R09S $.425 \text{ oz.} + (.900 \times .25 \text{ oz.}) = .225 = .650 \text{ oz.}$
EXAMPLE: BLS12TA50S $4.80 \text{ oz.} + (5.000 \times 2.30 \text{ oz.}) = 11.50 = 16.30 \text{ oz.}$

EXPLANATION OF BALL-LOK GRIP LENGTH

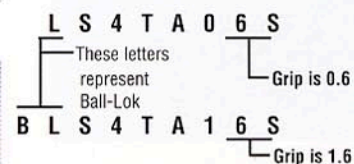
How to select the CORRECT LENGTH for your application

DEFINITION:

This is the effective area in which the Ball-Lok® Pin is to be installed. This area is measured from the shoulder to the tangent point where the Ball intersects the Body diameter.

HOW TO SPECIFY:

Unless otherwise specified, Grip Length can only be ordered in tenths. For example:



INTERPRETATION: (Important)

There should always be a zero (0) preceding the digit if the Grip Length is less than one (1) inch. Also, since the maximum Grip Length that can be ordered (standard) is 9.9 the decimal point should always follow the first digit, i.e., 06 equals 0.6, 16 equals 1.6.

We have assigned different part numbers for Grip Lengths over 9.9, which are available upon request.

If the application makes it mandatory that you order a Grip Length that consists of three (3) or more digits, i.e. BLS4TA2.25S, be sure you note the actual Grip Length required. (i.e., 2 1/4 inch.)

This extra precaution will ensure that the correct Grip Length is quoted and manufactured for you.

In order to eliminate any misinterpretation with regard to the Grip Length required, we suggest the following:

- If required Grip Length is not in EVEN tenths of an inch, show actual Grip Length as a decimal equivalent.

EXAMPLE:

- Grip Length required-1 3/8 inches.

Proper call-out should be BLS4TA1.375S.
(Grip Length-1.375 inches or one inch and three hundred seventy-five thousandths.)

- Grip Length required-5/16 inches.

Proper call-out should be BLS4TA0.312S.
(Grip Length-.312 inches or three hundred twelve thousandths.)

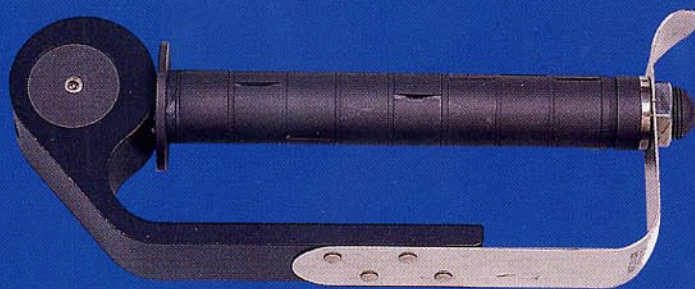
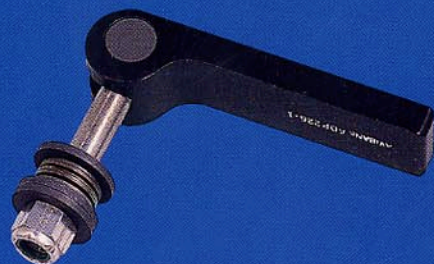
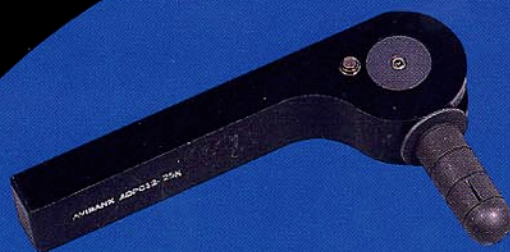
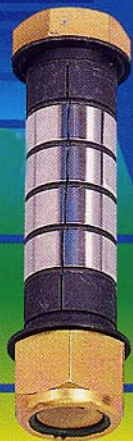
NOTES

ADJUSTABLE DIAMETER FASTENERS



The advertisement features a central blue circle containing five black adjustable diameter fasteners. These fasteners are shown in various orientations, highlighting their adjustable nature. The fasteners have a black body with a silver-colored threaded section and a black hexagonal head. The background is a gradient of blue, green, and yellow, with horizontal lines. The Avibank logo is visible in the bottom right corner.

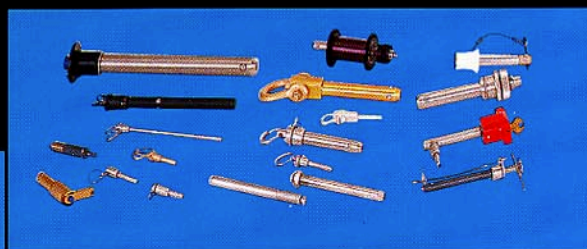
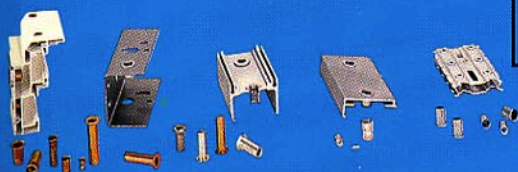
AVIBANK MFG. INC.



AVIBANK
MFG. INC.

AVIBANK'S LINE OF PRODUCTS

THREADED INSERTS



QUICK RELEASE PINS & ACCESSORIES

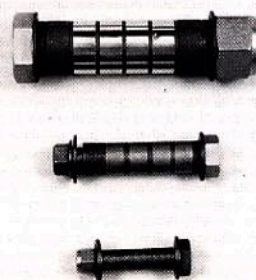
SELF-RETAINING BOLTS AND ACCESSORIES



ADJUSTABLE DIAMETER PINS

AVIBANK's Adjustable Diameter Pins are easily installed and removed without the use of any tools.

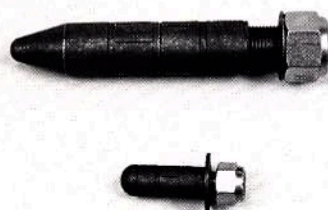
PAGES 4-5



ADJUSTABLE DIAMETER BOLTS

AVIBANK's Adjustable Diameter Bolts can be easily installed and removed in the same manner as a standard solid bolt.

PAGES 6-7



ADJUSTABLE DIAMETER BLIND BOLTS

AVIBANK's Adjustable Diameter Blind Bolts are easily installed and removed from one side only with the use of standard tools such as an allen wrench and torque wrench.

PAGES 8-9

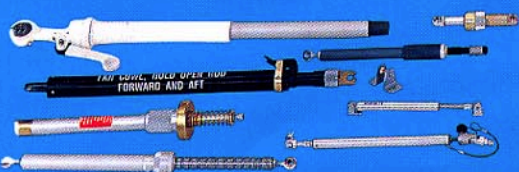


ADJUSTABLE DIAMETER SPECIALS

AVIBANK's Adjustable Diameter Specials have been developed to be used in critical applications such as helicopter blade attachments and as engine mount pins/bolts. We specialized in design and manufacturing of special designs. Send us your requirements for review.

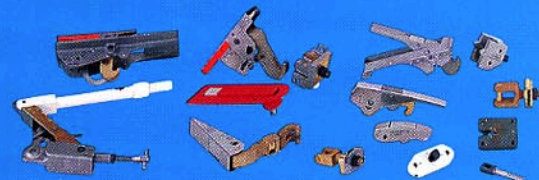
PAGES 10

STRUTS/HOLD-OPEN RODS



STRUCTURAL PANEL FASTENERS

LATCHES & KEEPER ASSEMBLIES



ADJUSTABLE DIAMETER FASTENERS

FEATURES

- ◆ ELIMINATES OR REDUCES WEAR DUE TO VIBRATION
- ◆ CAN BE USED IN BLIND APPLICATIONS
- ◆ PROVIDES NEAR PERFECT ALIGNMENT OF HOLES
- ◆ PERMITS A MEANS OF QUICK INSTALLATION AND REMOVAL; SOME WITHOUT TOOLS AND OFTEN WITH STANDARD TOOLS IN THE SAME MANNER AS A SOLID BOLT
- ◆ PROVIDES HIGH SHEAR STRENGTH COMPARABLE TO A SOLID BOLT
- ◆ ELIMINATES PLAY BETWEEN FASTENER AND STRUCTURE
- ◆ INTERFERENCE FIT CAPABILITIES WITH COMMERCIAL HOLE TOLERANCE
- ◆ METRIC SIZES AVAILABLE

APPLICATIONS

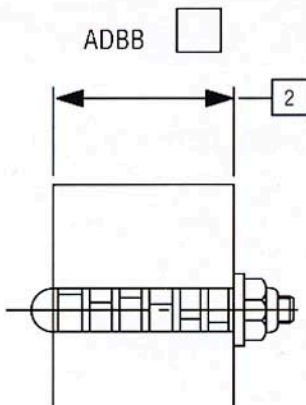
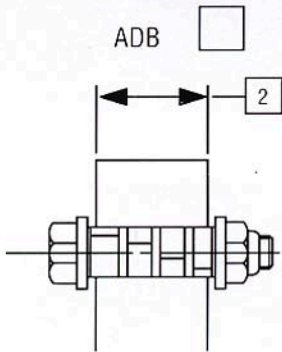
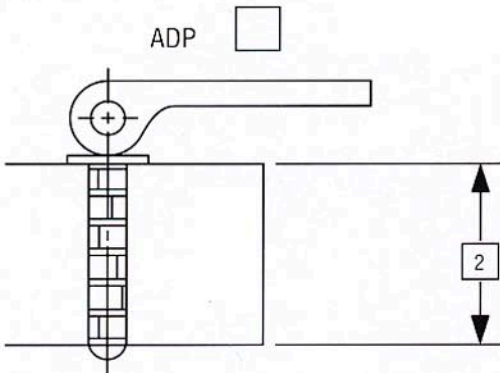
- ◆ QUICK CHANGE OF HELICOPTER ROTOR BLADES
- ◆ ALIGNMENT OF JET ENGINE SECTIONS
- ◆ ATTACHMENT OF EXTERNAL MUNITIONS TO AIRCRAFT/HELICOPTERS
- ◆ ALIGNMENT OF JIGS AND FIXTURES
- ◆ QUICK INSTALLATION AND REMOVAL OF AIRCRAFT ENGINES
- ◆ ATTACHMENT OF GUN SIGHTS
- ◆ ATTACHMENT OF TEST EQUIPMENT
- ◆ QUICK RELEASE AXLES FOR WHEELCHAIRS
- ◆ REPLACEMENT FOR PRESS FIT OR TAPER PINS

SEE INSIDE BACK COVER FOR APPLICATION DESIGN FORM

AVIBANK SPECIAL REQUESTS

COPY AND FILL OUT THIS FORM TO SUBMIT YOUR SPECIAL REQUIREMENTS FOR REVIEW.

ADJUSTABLE DIAMETER FASTENERS



NOTES:

1. CHOOSE TYPE OF FASTENER DESIRED. CHECK ONE BOX
2. GRIP LENGTH OR STRUCTURE LENGTH.
3. FILL IN INFORMATION FOR APPLICATION AND DRAW STRUCTURE.
4. CAUTION: ALL EXPANDING SEGMENTS MUST BE CONTAINED WITHIN THE APPLICATION. IF EXPANSION IS NOT REQUIRED ON THE PART OF THE FASTENER, PLEASE INDICATE.
5. IF POSSIBLE, ATTACH A SKETCH OR DRAWING OF THE APPLICATION AND NOTE THE LENGTH AND THE DIAMETERS.

HOLE DIA.: _____

GRIP LENGTH OR
STRUCTURE LENGTH: _____

FASTENER MAT'L: _____

SHEAR LOAD: _____

TENSILE LOAD: _____

STRUCTURE MAT'L: _____

TEMPERATURE: _____

VIBRATION: _____

OTHER: _____

COMMENTS: _____

CUSTOMER NAME: _____ DATE: _____

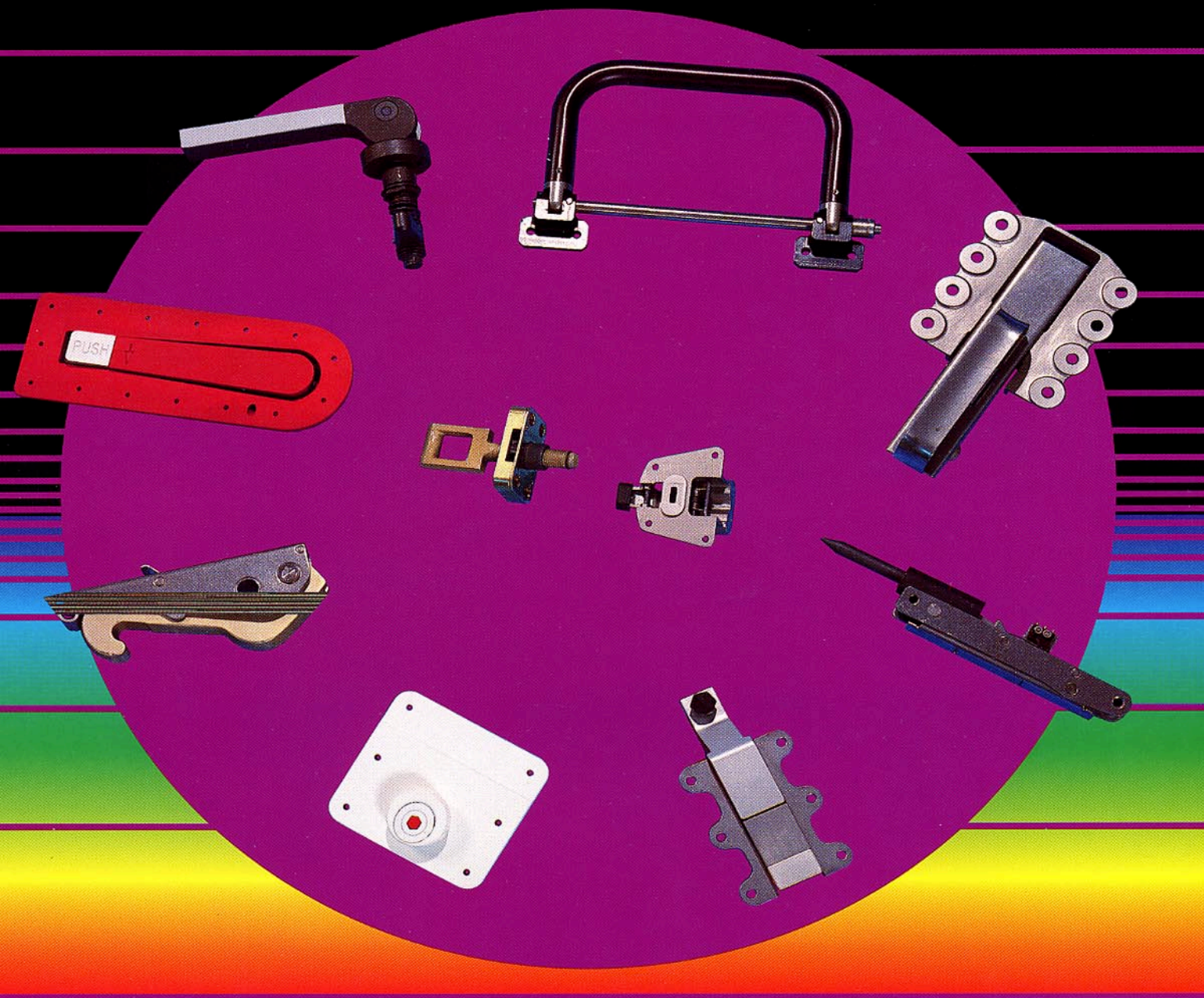
ADDRESS: _____

PHONE: _____



AVIBANK
MFG. INC.

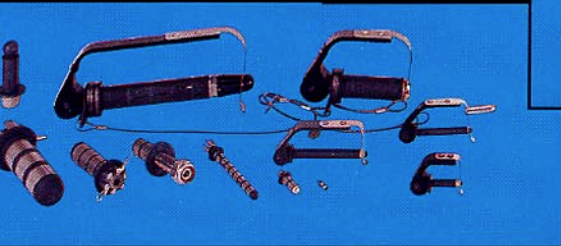
LATCHES AND KEEPER ASSEMBLIES



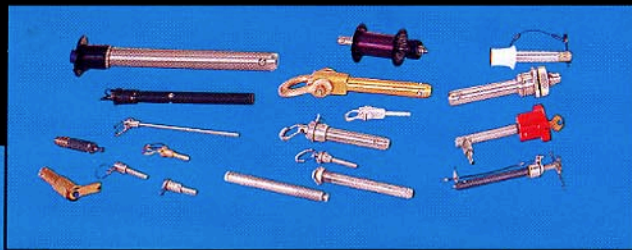
AVIBANK
MFG. INC.

AVIBANK'S LINE OF PRODUCTS

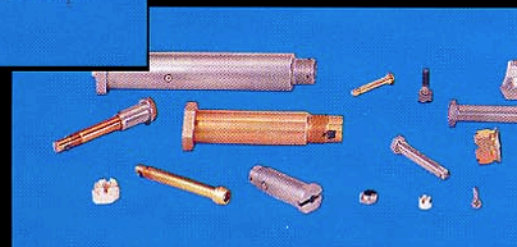
**ADJUSTABLE
DIAMETER
FASTENERS**



**QUICK RELEASE PINS
& ACCESSORIES**



**SELF RETAINING BOLTS
AND ACCESSORIES**



HOOK LATCHES PAGE 4

A wide variety of configurations ranging from flat to contoured, to protruding to low profile with variable load requirement, are available. Adjustable hooks or keepers compensate for wear.

FLUSH & PUSH BUTTON LATCHES PAGE 5

These latches are available in many styles which operate with a push, pull or slide trigger release. Flushness with the parent material prevents snagging or drag.

SHEAR PIN & SLIDE BOLT LATCHES PAGE 6

These latches are designed to carry shear type loads. They can be operated by sliding the pin or bolt in or out of the load-carrying area or receptacle.

PAWL LATCHES PAGE 7

These latches use a cam action to not only lock a door but also to take-up and compress the door gasket preventing electromagnetic interference.

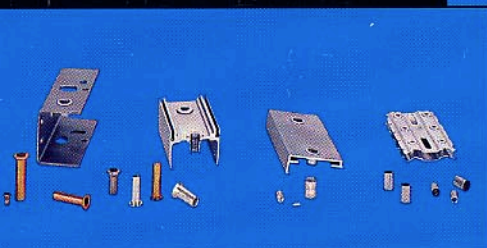
CONTAINER, OVER-THE-CENTER & V-BAND LATCHES PAGE 7

These latches are available in various styles for cases, boxes and crates. The V-band latches incorporate folding handles that allow for a mechanical advantage during closing.

PRESSURE RELIEF LATCHES PAGE 8

These latches are normally used on engine cowls. They automatically release under a pre-determined load to release pressure on the cowl.

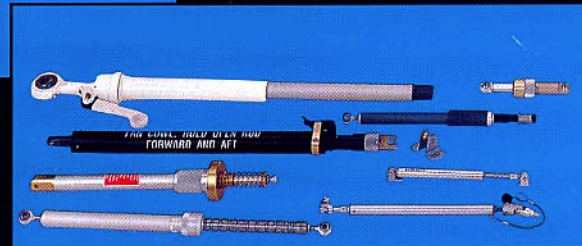
THREADED INSERTS



STRUCTURAL PANEL FASTENERS



STRUTS/HOLD-OPEN RODS



OVERHEAD BAGGAGE RACK LATCHES PAGE 8

These latches are used on commercial planes to open and close baggage compartments. Various materials, including plastic, are available.

FOLDING HANDLES PAGE 9

These handles are for electronic boxes and drawers. They fold out of the way after installation. They are also used as a carrying handle when the box or drawer is removed.

CHASSIS LATCHES & KEEPERS PAGE 9

These latches are used on electronic doors, drawers and black boxes. They combine the hold-down feature with the need to have a carrying handle. Some can be removed during flight. Keepers are also available.

HINGES & INSPECTION PLATES PAGE 10

Gooseneck hinges open the radome or door out of the way. Various style spring-loaded plates are available to allow access to areas that require inspection.

ROTARY LATCHES PAGE 10

Flush mounted rotary latches are usually actuated with a tool. The internal eccentric cam design allows tension take-up. A warning flag indicates whether the latch is locked or unlocked.

KEEPERS & EYEBOLTS PAGE 11

Adjustable or non-adjustable keepers or eyebolts are mated with a hook or a rotary latch. These keepers are adjusted to apply the correct preload.

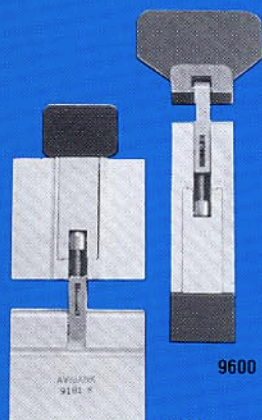
HOOK LATCHES



9479



9589

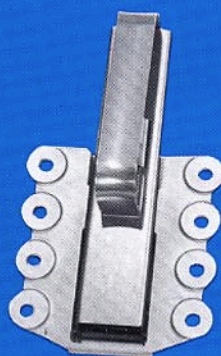


9600

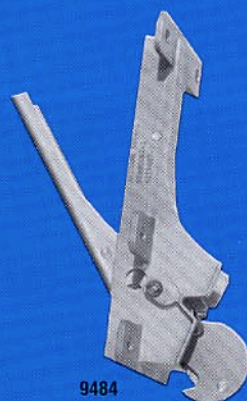
9181

- ◆ FLAT OR CONTOURED CONFIGURATIONS
- ◆ ADJUSTABLE HOOKS TO COMPENSATE FOR WEAR AND ADJUST LATCH PRELOAD
- ◆ STANDARD DESIGNS TO WITHSTAND UP TO 15,000 LBS. ULTIMATE TENSION
- ◆ HANDLE OPENS FREELY APPROXIMATELY 15° TO MAKE IT EASY TO GRIP AND OPEN WITHOUT USING A TOOL
- ◆ SOME LATCHES HAVE A SLOT FOR A SCREW DRIVER TO OPERATE THE HANDLE
- ◆ LATCHES HAVE A TRIGGER AS A SECONDARY LOCKING FEATURE IN ADDITION TO THE PRIMARY OVER-THE-CENTER HOOK MECHANISM
- ◆ TRIGGER HAS DOUBLE-TORSION SPRING AS A FAIL-SAFE FEATURE
- ◆ LOW PROFILE LATCHES WITH HIGH TENSION LOAD OVER 20,000 LBS. ARE ALSO AVAILABLE
- ◆ SOME LATCHES HAVE SECONDARY SAFETY FEATURES THAT ALLOW THE HANDLE TO BE CLOSED ONLY WHEN THE LATCH IS ENGAGED WITH MATING KEEPER
- ◆ EASY IDENTIFICATION OF UNLATCHED CONDITION

SEE PAGE 12 FOR APPLICATION DESIGN FORM



9913



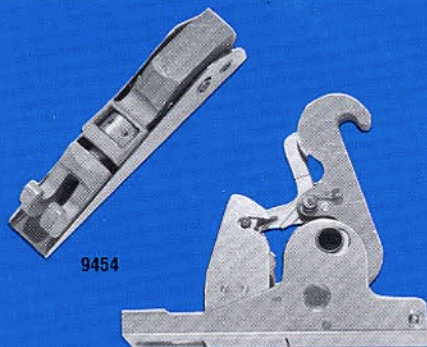
9484



9130



9093

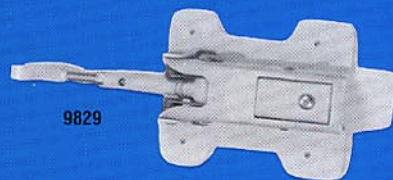


9454



9348

9564

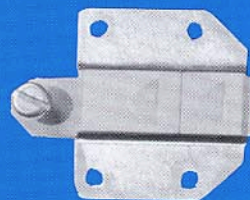
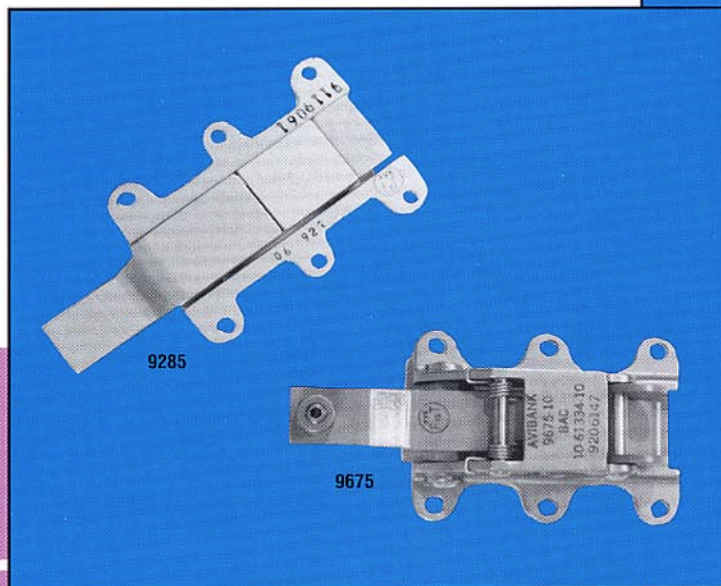


9829

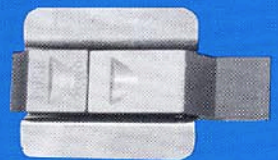


9225

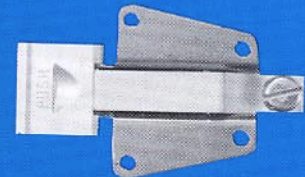
FLUSH AND PUSH BUTTON LATCHES



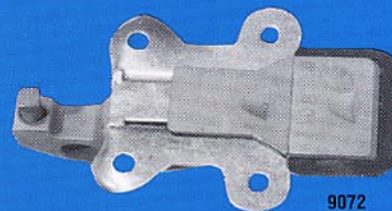
9476



9047



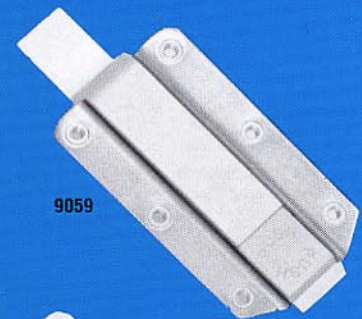
9109



9072

- ◆ CONTOURED FOR FLUSH FIT
- ◆ EASY-TO-USE LEVER ACTIONS
- ◆ EASY IDENTIFICATION OF UNLATCHED CONDITION
- ◆ MICRO SWITCHES CAN BE ADDED
- ◆ BOLT OFFSET CAN BE ADJUSTED FOR DIFFERENT PANEL THICKNESS
- ◆ BOLT HAS DOUBLE TORSION SPRING AS A FAIL-SAFE FEATURE
- ◆ MANY COMBINATIONS OF BOLT & TRIGGER OFFSETS ARE AVAILABLE

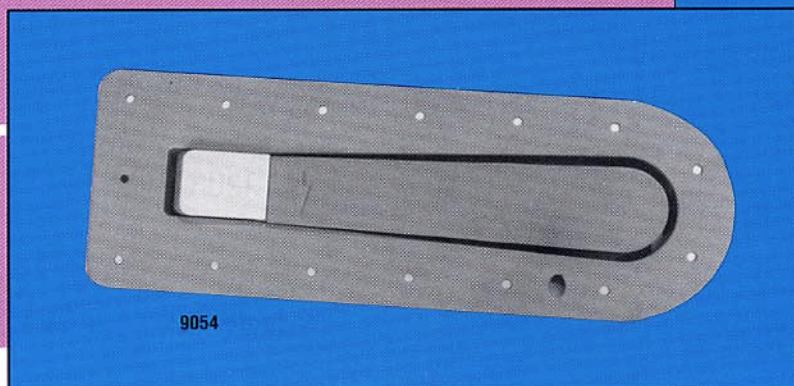
SEE PAGE 12 FOR APPLICATION DESIGN FORM



9059

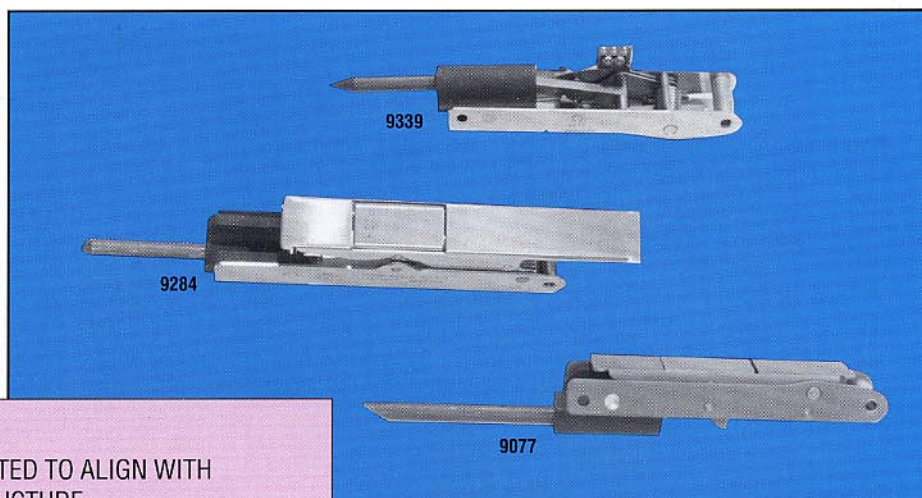


9012



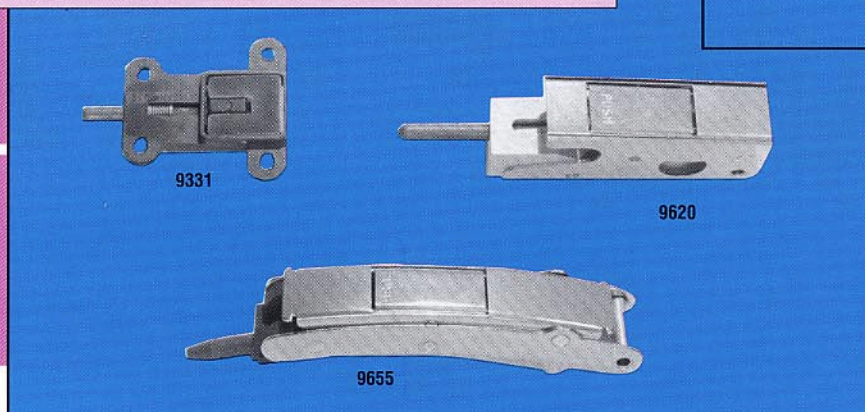
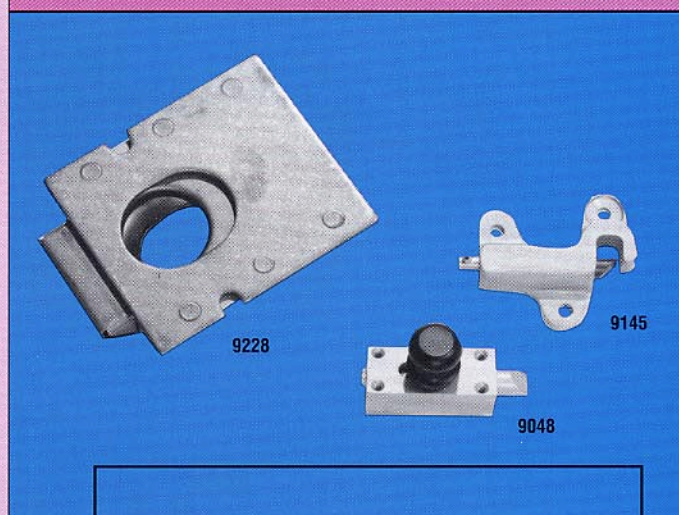
9054

SHEAR PIN AND SLIDE BOLT LATCHES



- ◆ PIN ANGLE CAN BE ADJUSTED TO ALIGN WITH MATING HOLE IN THE STRUCTURE
- ◆ HANDLE OPENS FREELY 15° FOR EASY ACCESS FOR UNLOCKING
- ◆ LATCH HAS A TRIGGER AS A SECONDARY LOCKING FEATURE
- ◆ TRIGGER HAS DOUBLE TORSION SPRING AS A FAIL-SAFE FEATURE
- ◆ MICRO SWITCHES CAN BE ADDED AS A VISUAL INDICATOR THAT THE LATCH IS UNLOCKED OR LOCKED
- ◆ ON LARGE PANELS, SHEAR PIN LATCHES ARE USUALLY USED IN CONJUNCTION WITH HOOK LATCHES
- ◆ PIN PROVIDES ADDED STRENGTH IN SHEAR APPLICATIONS
- ◆ TAPERED PIN ALLOWS EASY ALIGNMENT WITH MATING HOLE
- ◆ A VISIBLE PAINTED HANDLE INDICATES WHEN LATCH IS UNLOCKED

SEE PAGE 13 FOR APPLICATION DESIGN FORM

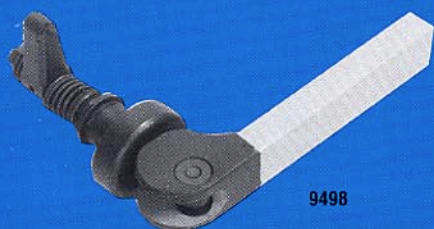


PAWL LATCHES

- ◆ QUICK ENGAGEMENT AND RELEASE WITH ROTATING PAWL
- ◆ PAWL TURNS AND DRAWS UP THE PANEL/DOOR
- ◆ TAKE-UP COMPRESSES THE DOOR GASKET
- ◆ PROVIDE ADDED PROTECTION AGAINST EMI/RFI BY TAKE-UP AGAINST CABINET STRUCTURE



9591



9498



9353



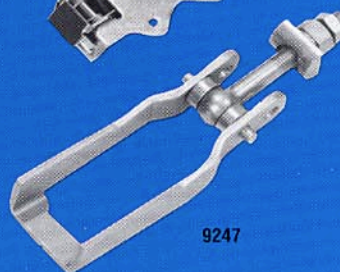
9149

CONTAINER, OVER-THE-CENTER & V-BAND LATCHES

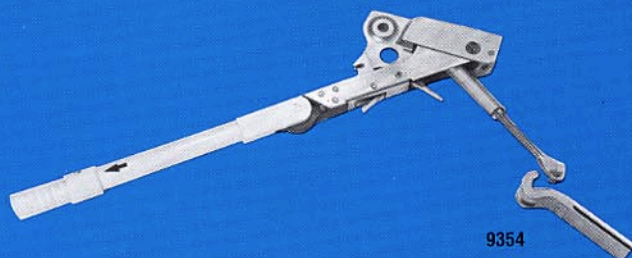
- ◆ PRODUCE HIGH PRELOAD WITH LONG HANDLE LEVERAGE
- ◆ TRIGGER HAS DOUBLE TORSION SPRING AS A FAIL-SAFE FEATURE
- ◆ T-BOLT IS ADJUSTABLE FOR PROPER PRELOAD OR ENGAGEMENT
- ◆ SECONDARY SAFETY FEATURE ALLOWS THE HANDLE TO CLOSE ONLY WHEN THE LATCH IS ENGAGED WITH MATING KEEPER



9170



9247



9354

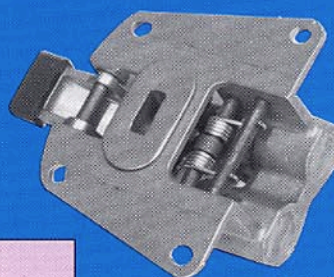


9494

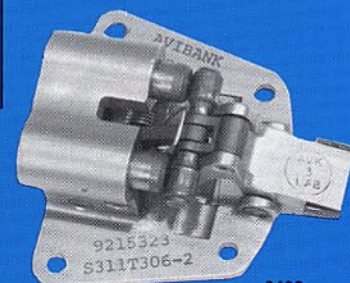
PRESSURE RELIEF LATCHES

- ◆ ACTUATE WITH A STANDARD SCREW DRIVER
- ◆ PRE-SET LOADS AT THE FACTORY TO HANDLE PRECISE LOADS WITHIN $\pm 10\%$ OF LOAD TOLERANCE
- ◆ LATCHES ALLOW BLEED-OFF OF EXCESSIVE PRESSURES TO PREVENT DAMAGE TO VITAL INTERNAL HARDWARE

SEE PAGE 13 FOR APPLICATION DESIGN FORM



9483



9488

OVERHEAD BAGGAGE-RACK LATCHES

- ◆ SOME LATCHES HAVE INTERLOCK SYSTEM WITH HOOK DESIGN TO WITHSTAND HIGH LOADS AND VIBRATION
- ◆ PROVIDES PASSENGERS A STORAGE COMPARTMENT THAT IS EASY TO OPEN AND SECURES TIGHTLY TO PREVENT OPENING DURING FLIGHTS
- ◆ EASY ATTACHMENT OF BAGGAGE BIN TO BULKHEAD



9877



9877



9145



9818

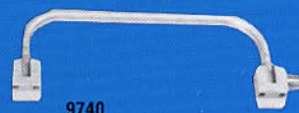
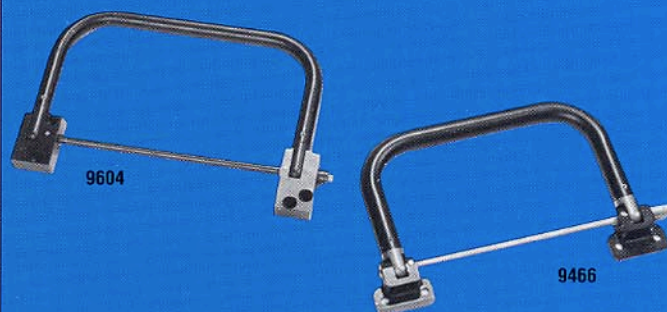


9819

FOLDING HANDLES

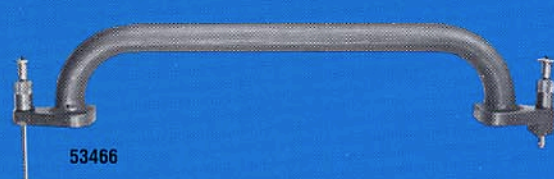
- ◆ LIGHTWEIGHT DESIGNS OF ALUMINUM AND TITANIUM MATERIAL
- ◆ UP TO 3 POSITIVE HANDLE LOCKING POSITIONS IF REQUIRED
- ◆ WITHSTAND HIGH SIDE LOAD TO THE HANDLE IN CASE OF MISHANDLING OR ACCIDENT
- ◆ HANDLE FOLDS AWAY TO PREVENT SNAGGING OR INADVERTENT RELEASE
- ◆ HANDLE IS USED FOR CARRYING ELECTRONIC BOX WHEN REMOVED FROM THE APPLICATION

SEE PAGE 14 FOR APPLICATION DESIGN FORM



CHASSIS LATCHES AND KEEPERS

- ◆ THESE LATCHES COMBINE THE FOLD-DOWN FEATURE WITH THE NEED TO HAVE A CARRYING HANDLE
- ◆ LIGHTWEIGHT ALUMINUM DESIGN LATCH
- ◆ KEEPERS WITH DIFFERENT COMBINATION OF LOAD AND COMPENSATING TRAVEL ARE AVAILABLE



HINGES AND INSPECTION PLATES

- ◆ PROVIDES ACCESSIBILITY TO AREAS WHERE INSPECTION IS REQUIRED
- ◆ TRIGGER-LOCKED HINGES ALLOW DOORS AND PANELS TO SWING COMPLETELY OUT OF THE WAY TO ALLOW WORK IN COMPARTMENT



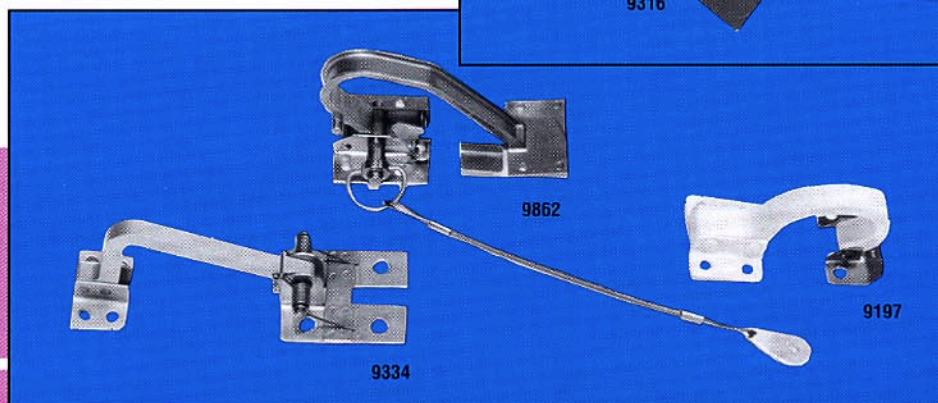
9316



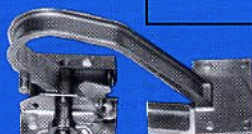
9075



53558



9334



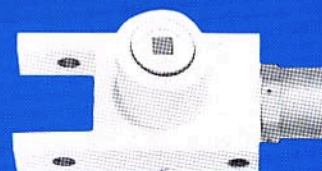
9862



9197

ROTARY LATCHES

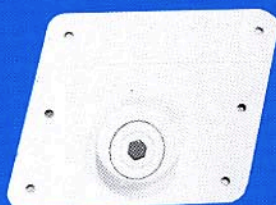
- ◆ SMALL CUT-OUT HOLE IN THE PANEL PROVIDES GOOD FLUSHNESS
- ◆ PAINTED VISUAL INDICATOR WILL POP UP WHEN LATCH IS NOT ENGAGED
- ◆ FLUSH MOUNTED
- ◆ ACTIVATED WITH A STANDARD TOOL
- ◆ PROVIDES TENSION TAKE-UP WHEN CLOSED
- ◆ NO SPECIAL TOOLS REQUIRED FOR PANEL PREPARATION



9183



9026



9350



9350

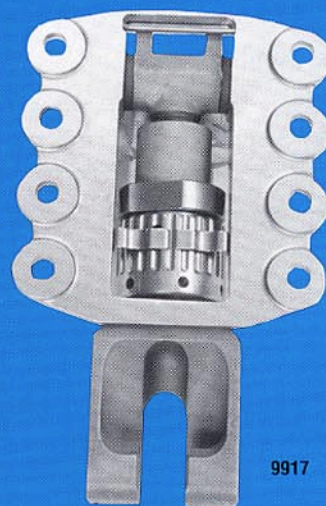
KEEPERS AND EYEBOLTS



9357



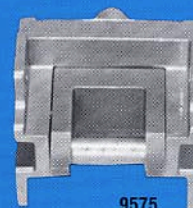
9350



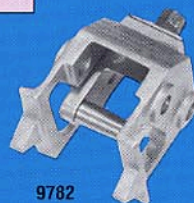
9917

- ◆ ADJUSTABLE KEEPER CAN BE ADJUSTED TO PROVIDE PROPER TENSION LOAD TO THE LATCH WHILE IT IS STILL ENGAGED
- ◆ SLOTTED HOLES IN MOUNTING PLATE ALLOW ADJUSTMENT
- ◆ AVAILABLE IN ADJUSTABLE OR NON-ADJUSTABLE TYPES
- ◆ ADJUSTABLE TYPES ARE FOR APPLYING CORRECT PRELOAD TO LATCHES
- ◆ SPECIAL KEEPER HOUSINGS ARE AVAILABLE FOR MOUNTING

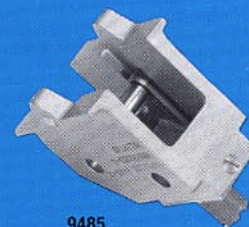
SEE PAGE 14 FOR APPLICATION DESIGN FORM



9575



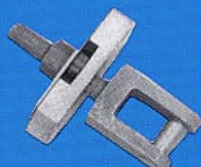
9782



9485



9183



9351



9929



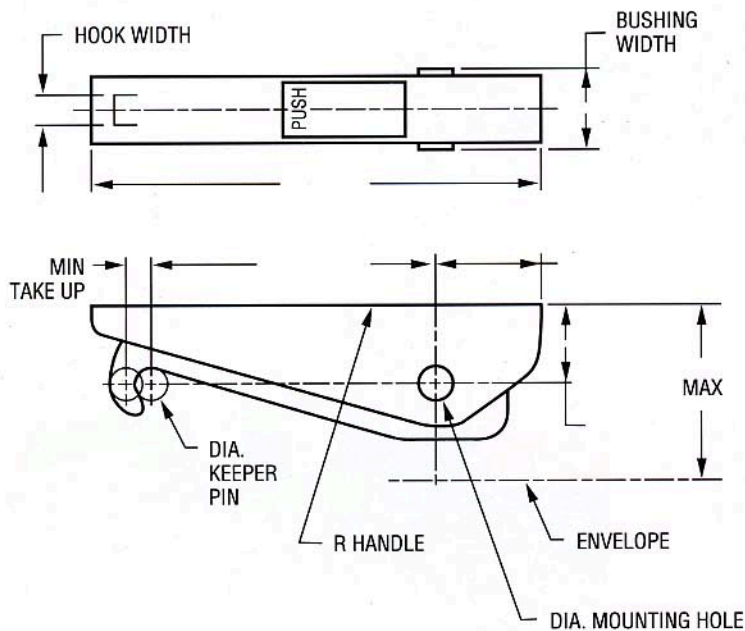
9381



9382

HOOK LATCHES (SEE PAGE 4)

CONTROL ENVELOPE DIMENSIONS



DATA

1. ULTIMATE LOAD _____ LBS.
2. LIMIT LOAD _____ LBS.
3. PRELOAD _____ LBS.
4. FATIGUE LIFE _____ CYCLES
_____ LBS. MIN. _____ LBS. MAX.
5. OPERATING TEMPERATURE _____ °F
6. MATERIAL _____
7. FINISH _____

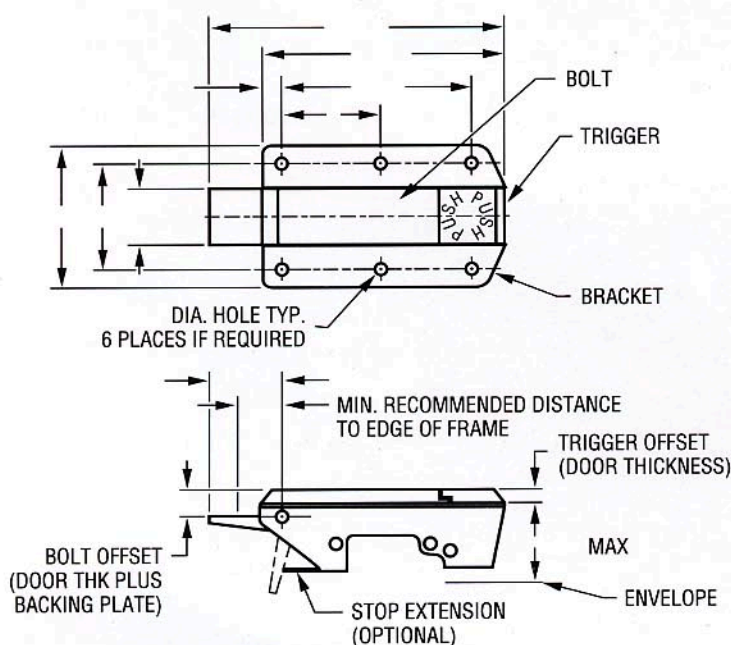
COMMENTS: _____

COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

FLUSH LATCHES (SEE PAGE 5)

CONTROL ENVELOPE DIMENSIONS



DATA

1. ULTIMATE LOAD _____ LBS.
2. OPERATING TEMPERATURE _____ °F
3. MATERIAL _____
4. FINISH _____

COMMENTS: _____

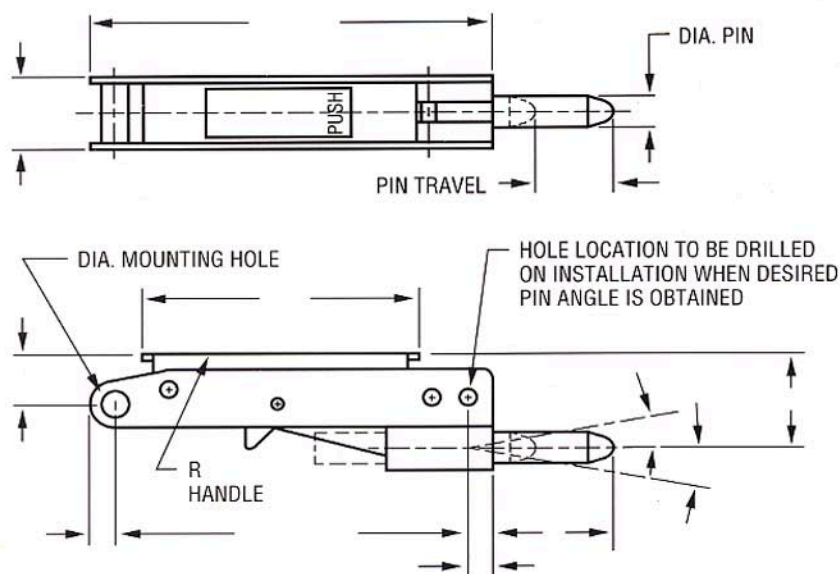
COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

SHEAR PIN LATCHES

(SEE PAGE 6)

CONTROL ENVELOPE DIMENSIONS



DATA

1. DOUBLE SHEAR LOAD _____ LBS.
SINGLE SHEAR LOAD _____ LBS.
2. OPERATING TEMPERATURE _____ °F
6. MATERIAL _____
7. FINISH _____

COMMENTS: _____

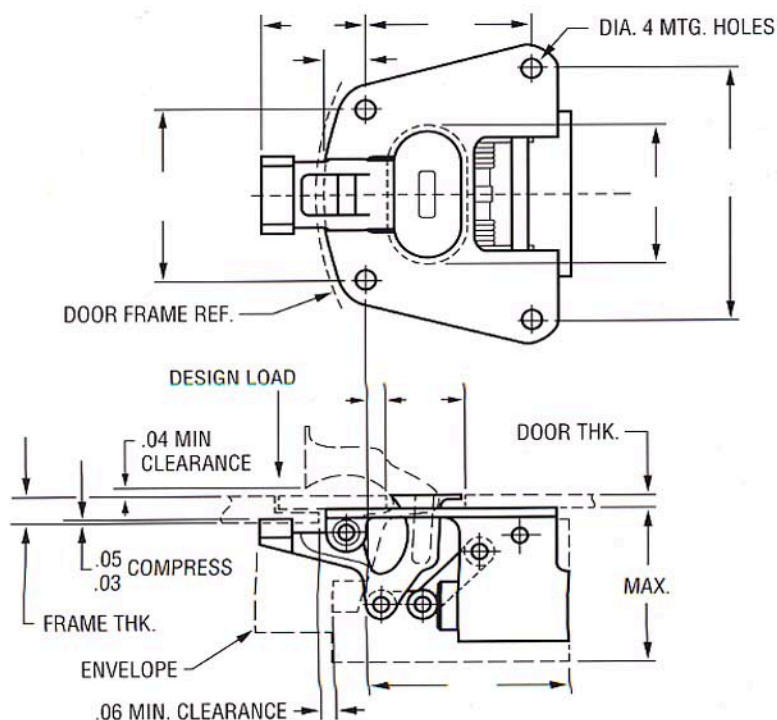
COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

PRESSURE RELIEF LATCHES

(SEE PAGE 8)

CONTROL ENVELOPE DIMENSIONS



DATA

1. DESIGN LOAD _____ LBS.
± _____ LBS.
2. OPERATING TEMPERATURE _____ °F
3. MATERIAL _____
4. FINISH _____

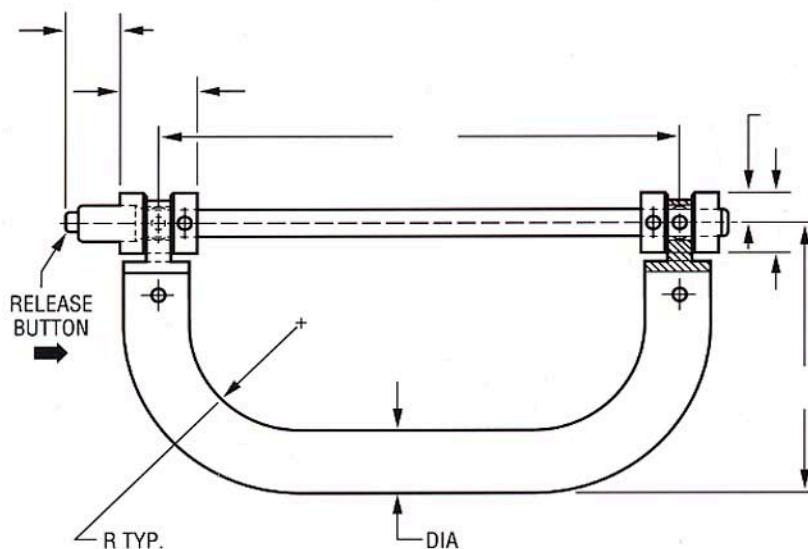
COMMENTS: _____

COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

FOLDING HANDLES (SEE PAGE 9)

CONTROL ENVELOPE DIMENSIONS



DATA

1. HANDLE TO WITHSTAND SIDE LOAD OF _____ LBS.
2. OPERATING TEMPERATURE _____ °F
3. MATERIAL _____
4. FINISH _____

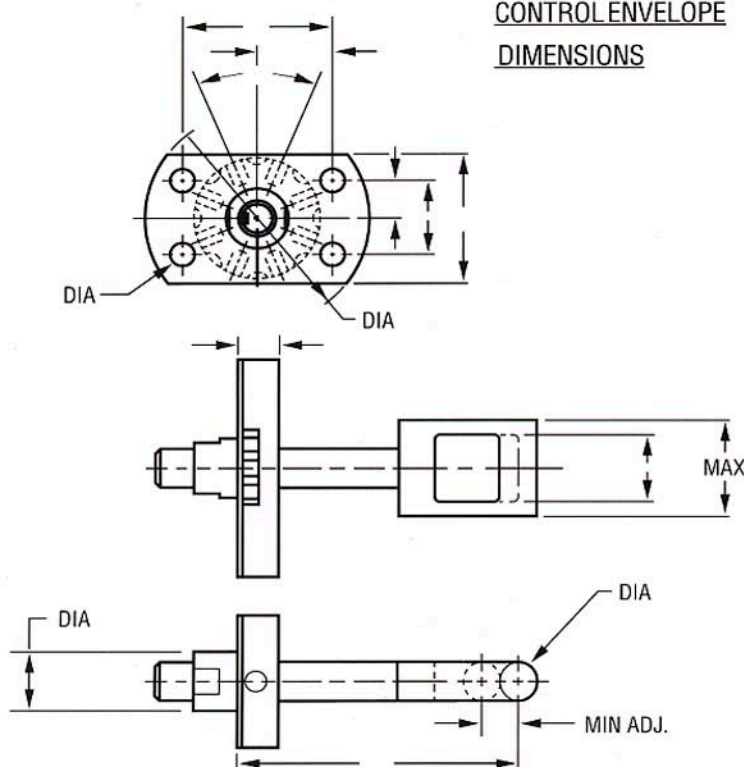
COMMENTS: _____

COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

KEEPERS & EYEBOLTS (SEE PAGE 11)

CONTROL ENVELOPE DIMENSIONS



DATA

1. ULTIMATE LOAD _____ LBS.
1. FATIGUE LIFE _____ CYCLES
_____ LBS. MIN. FOR _____ LBS. MAX.
2. OPERATING TEMPERATURE _____ °F
3. MATERIAL _____
4. FINISH _____

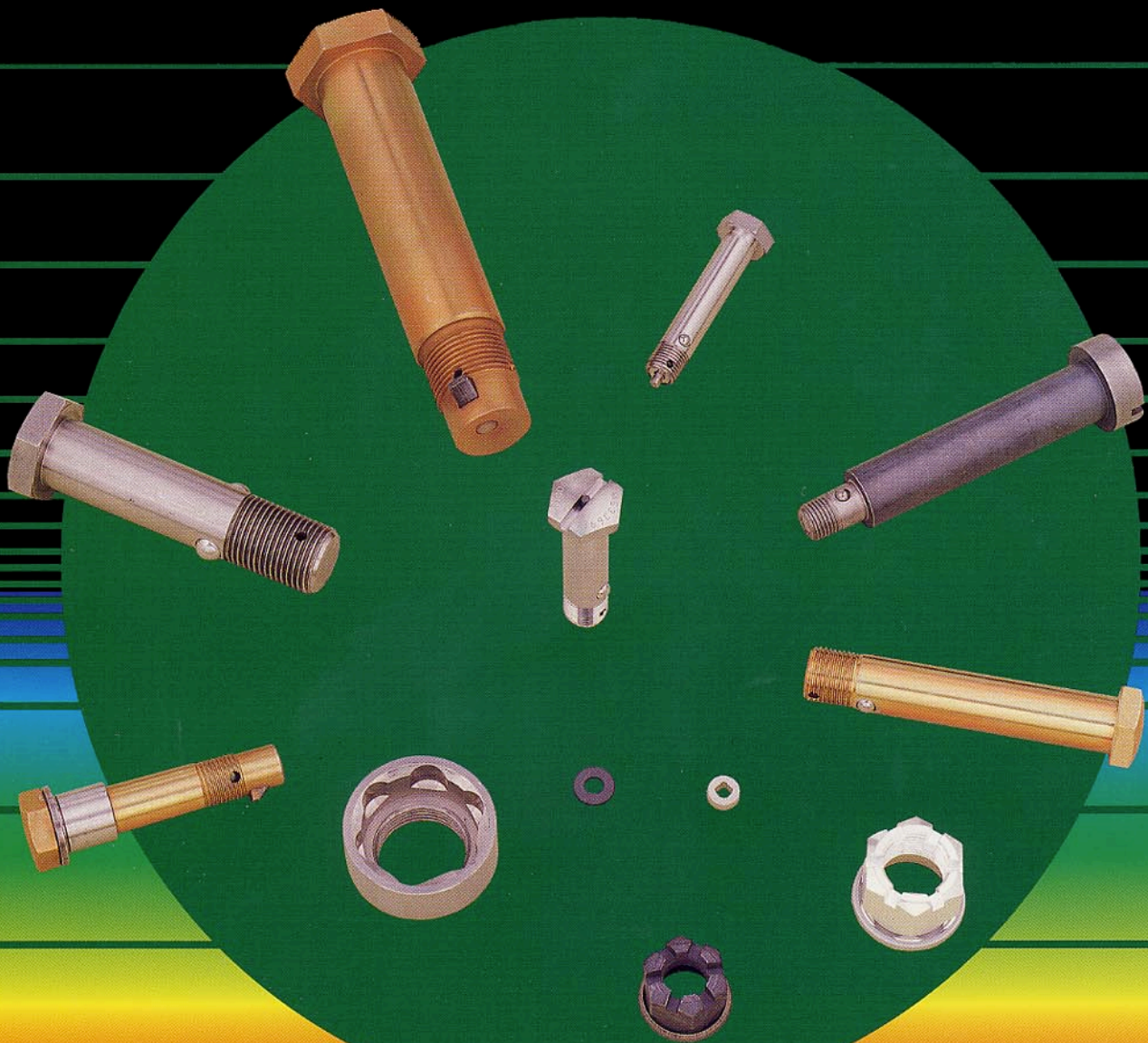
COMMENTS: _____

COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
NAME _____

PHONE NO. _____
FAX NO. _____

SELF-RETAINING BOLTS & NUTS

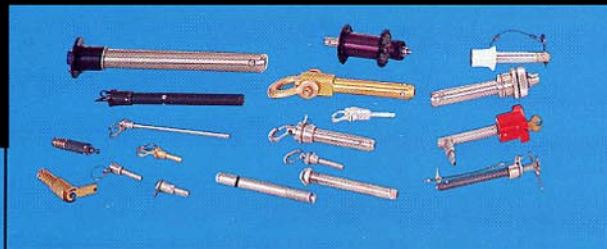
SPECIAL BOLTS



AVIBANK
MFG. INC.

AVIBANK'S LINE OF PRODUCTS

ADJUSTABLE DIAMETER FASTENERS



QUICK RELEASE PINS & ACCESSORIES

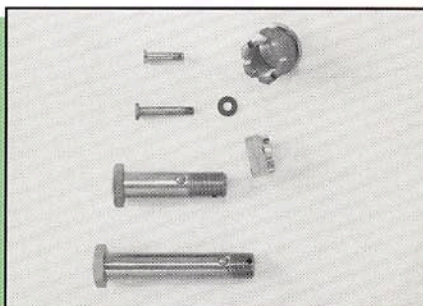
STRUTS/HOLD-OPEN RODS



POSITIVE LOCK SRB's

PAGES 4-7

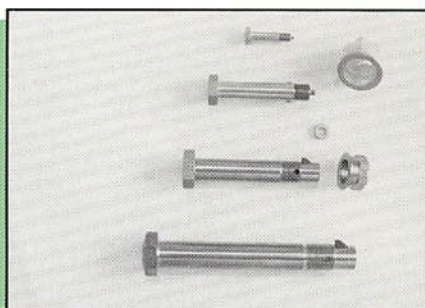
Positive-lock bolts require the insertion of a tool to depress the plunger which releases the locking elements. Made to MS 3369, MS 21130, MS 21125 and MS 18115. These conform to MIL-B-23964.



IMPEDANCE SRB's

PAGES 8-9

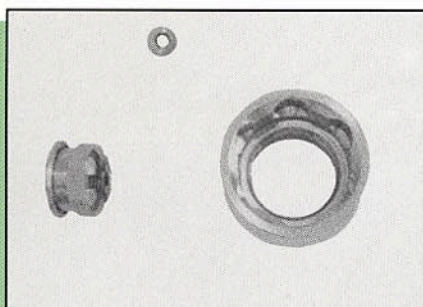
Impedance bolts produce a detent effect with the use of spring loaded balls. Made to MS 27576 and MS 27577. These conform to MIL-B-83050.



THREAD END RELEASE SRB's

PAGES 10-13

These bolts can have the self-locking feature in an area beyond the thread. This allows a solid shank through the gripping area resulting in the same loads as a standard solid bolt.

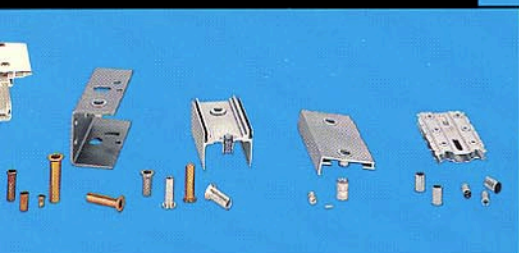


NUTS

PAGES 14-15

Nuts for self-retaining bolts are available with or without scallops which prevent backing off of the nut.

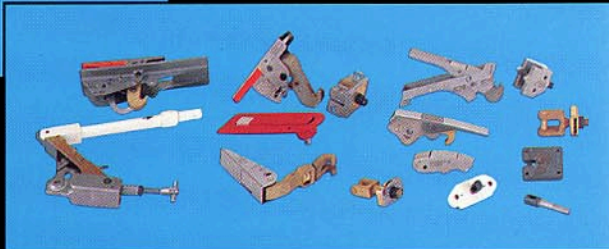
THREADED INSERTS



STRUCTURAL PANEL FASTENERS



LATCHES & KEEPER ASSEMBLIES



SELF-RETAINING BOLTS & NUTS

FEATURES

- ◆ MADE TO MS SPECIFICATIONS
- ◆ VARIOUS HEAD STYLES
- ◆ FRONT OR REAR END RELEASE
- ◆ TRIPLE LOCKING FEATURE
- ◆ EXOTIC MATERIALS
- ◆ METRIC SIZES
- ◆ MATING NUTS AND SPACERS

APPLICATIONS

- ◆ FLIGHT CONTROL LINKAGE
- ◆ REMOVABLE CONTROL STICKS
- ◆ TRANSMISSION LINKAGE
- ◆ SEAT ATTACHMENTS
- ◆ HIGH VIBRATION AREAS

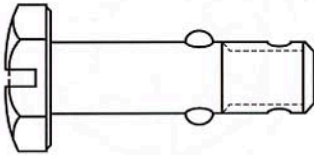
SEE INSIDE BACK COVER FOR APPLICATION DESIGN FORM

AVIBANK SPECIAL REQUESTS

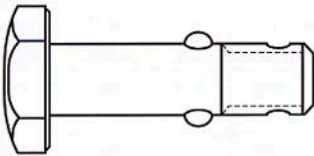
COPY AND FILL OUT THIS FORM TO SUBMIT YOUR SPECIAL REQUIREMENTS FOR REVIEW.

SELF-RETAINING BOLTS

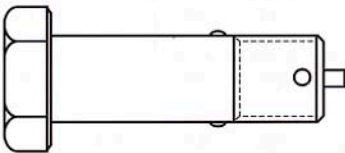
POSITIVE LOCK ☐



IMPEDANCE ☐



THREAD END RELEASE ☐



**THREAD END RELEASE
WITH PAWL** ☐



NOTES:

1. CHOOSE TYPE OF BOLT. CHECK ONE BOX.
2. HEAD TYPE: ☐ HEX ☐ FLUSH ☐ OTHER
3. DRIVE STYLE: ☐ SLOT ☐ HEX ☐ SOCKET
☐ PHILLIPS ☐ HIGH TORQUE
☐ _____
4. DIAMETER: _____ Sixteenths _____ mm
5. GRIP: _____ Sixteenths _____ mm
6. MATERIAL: ☐ ALLOY STEEL ☐ CRES
☐ _____
7. DOUBLE SHEAR LOAD: _____
8. THREAD TENSILE LOAD: _____
(Does not apply to impedance type)
9. LOCKING FEATURE: ☐ BALLS ☐ PAWL
10. TEMPERATURE: _____
11. VIBRATION: _____
12. ENVIRONMENT: _____
13. FATIGUE REQUIREMENTS: _____

14. PROCUREMENT SPECIFICATIONS: _____

15. OTHER COMMENTS: _____

CUSTOMER NAME: _____ DATE: _____

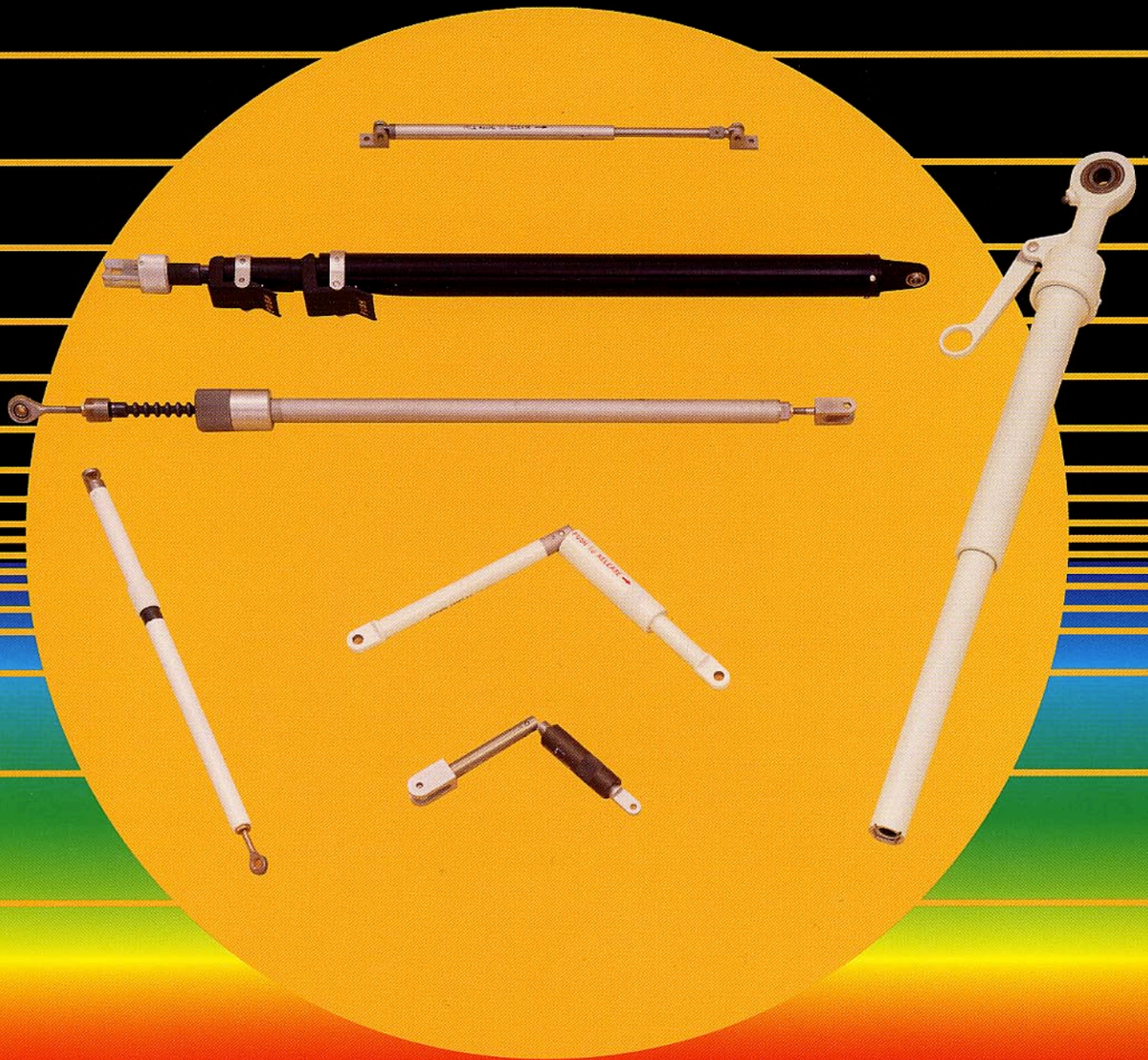
ADDRESS: _____

PHONE: _____



AVIBANK
MFG., INC.

STRUTS/HOLD-OPEN RODS



AVIBANK
MFG., INC.

AVIBANK'S LINE OF PRODUCTS

ADJUSTABLE DIAMETER FASTENERS



QUICK RELEASE PINS & ACCESSORIES

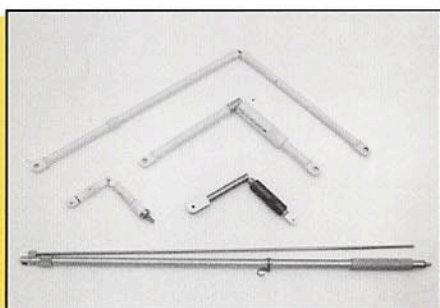
SELF RETAINING BOLTS AND ACCESSORIES



TELESCOPING STRUTS

PAGES 4-7

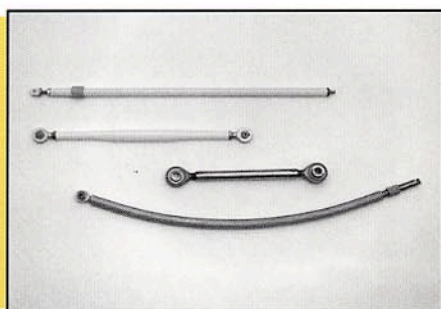
Telescoping struts collapse inside themselves! They can be automatically locked in any position. Secondary locking safety features are optional.



SCISSOR/FOLDING STRUTS

PAGES 8-9

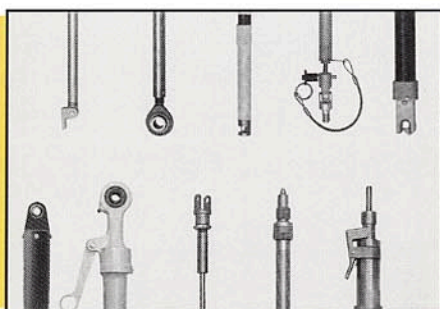
Scissor struts fold when the door or compartment is closed and extend and lock in the open position. Optional exterior sleeves provide extra strength in the open position.



FIXED LENGTH STRUTS

PAGES 10-11

Fixed length struts are used as supports and as push-pull rods for controls.

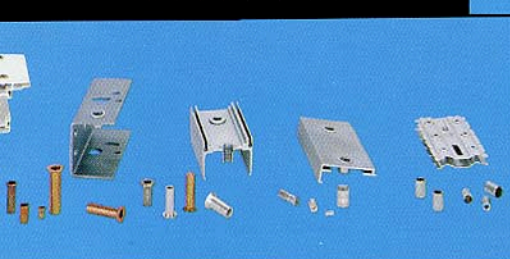


END FITTINGS

PAGES 12-13

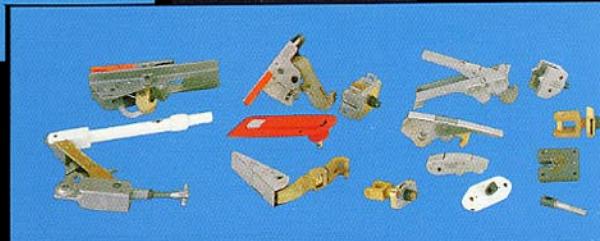
Different end fittings are available.

THREADED INSERTS



STRUCTURAL PANEL FASTENERS

LATCHES & KEEPER ASSEMBLIES



STRUTS/HOLD-OPEN RODS

FEATURES

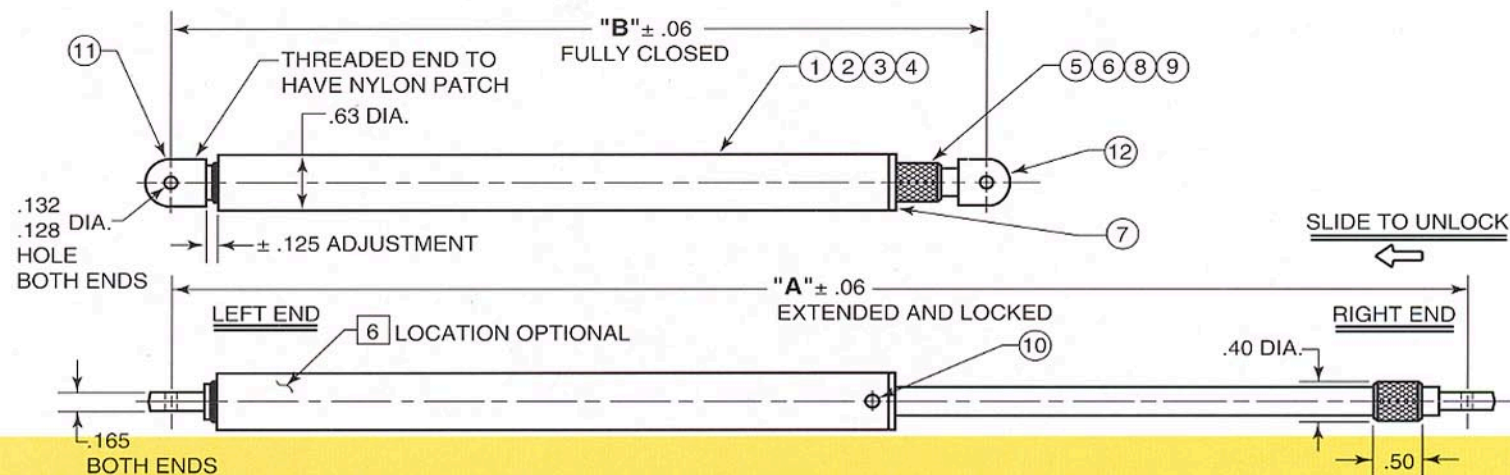
- ◆ AUTO-LOCK FEATURE
- ◆ EASY ONE HAND RELEASE
- ◆ NO SPECIAL RECEPTACLES REQUIRED
- ◆ RELIABILITY
- ◆ FLEXIBILITY IN DESIGN
- ◆ HIGH COMPRESSION, TENSION LOADS
- ◆ WITHSTAND HIGH TEMPERATURES
- ◆ VARIOUS END FITTINGS
- ◆ DOUBLE SAFETY-LOCKS
- ◆ ONE PERSON OPERATION OF MULTIPLE STRUTS

APPLICATIONS

- ◆ ENGINE NACELLE STRUTS
- ◆ RADOME HOLD-OPEN RODS
- ◆ INTERIOR LIGHTING SUPPORTS
- ◆ BAGGAGE RACK SUPPORTS
- ◆ HOLD-OPEN RODS FOR ELECTRONIC DRAWERS
- ◆ HOLD-OPEN RODS FOR APU AND BAGGAGE COMPARTMENT DOORS
- ◆ RACK & PANEL ATTACHMENTS IN SPACE HAB
- ◆ LANDING GEAR DOOR ACCESS STRUTS
- ◆ PORTABLE RADAR MAST SUPPORTS

SEE INSIDE BACK COVER FOR APPLICATION DESIGN FORM

TELESCOPING STRUTS - ST 200 SERIES



SAMPLE CALL-OUT

ST200 A 28 A 1 C 2

FIG. -2 END FITTING (RIGHT END) USE "O" FOR NO END FITTING.
 END FITTING MATL: (RIGHT END) A=ALUM., C=CRES
 FIG. -1 END FITTING (LEFT END) USE "O" FOR NO END FITTING.
 END FITTING MATL: (LEFT END) A=ALUM., C=CRES
 EXTENDED LENGTH IN 1/4" INCREMENTS (-99 MAX. LENGTH, -28 MIN LENGTH)
 MATERIAL: A=ALUMINUM, C=CRES
 BASIC PART NO.

NOTES

1 TABULATION FOR "A" AND "B" DIMENSIONS

$$A = (B - 1.50) / 2 \quad B = (A / 2) + 1.50$$

- 2 HEAT TREAT TO H900 OR H1025.
- 3 PASSIVATE PER QQ-P-35.
- 4 ANODIZE PER MIL-A-8625, TY. II OR III, CL. 2, DYED BLACK.
- 5 BALL HARDNESS Rc 58-62.
- 6 IDENTIFY WITH "AVIBANK ST200-XXXX"
- 8 HEAT TREAT TO CH900.
- 9 CAD PLATE PER QQ-P-416.

SPECIFICATIONS

APPLICABLE NOTES	ITEM NO.	QTY REQ'D	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL OR NOTE	SPECIFICATION
	4	1		TUBE	ALUMINUM ALLOY 7075-T6	QQ-A-200/11 or QQ-A-225/9
9	3	2		BODY	303 CRES	ASTM-A-581/582
3	2	3		SPINDLE	17-4 PH CRES	AMS 5643
	5	4		BALL	440C CRES	QQ-S-763
3	8	5		SPRING	17-7 PH CRES	AMS 5678
	4	6		SLEEVE	ALUMINUM ALLOY 2024	QQ-A-200/3 or QQ-A-225/6
9	3	2		PLUG	17-4 PH CRES	AMS 5643
	3	8		WASHER	17-4 PH CRES	AMS 5643
		9	79-012-062-0437	ROLL PIN		
3	2	10		PIN	17-4 PH CRES	AMS 5643
9	3	11		THREADED END 7/16"	303 CRES	ASTM-A-581/582
	3	12		THREADED END 1/4"	303 CRES	ASTM-A-581/582
	4	13	FIG. -1	END PIVOT	ALUMINUM ALLOY 2024	QQ-A-200/3 or QQ-A-225/6
	4	14	FIG. -2	END PIVOT	ALUMINUM ALLOY 2024	QQ-A-200/3 or QQ-A-225/6
9	3	15		PIN	303 CRES	ASTM-A-581/582
		16		TRUARC RING		
	3	1		TUBE	300 SERIES CRES	QQ-S-763
	3	6		SLEEVE	300 SERIES CRES	QQ-S-763
3	2	13		END PIVOT	300 SERIES/17-4 PH CRES	QQ-S-763/AMS 5643
3	2	14		END PIVOT	300 SERIES/17-4 PH CRES	QQ-S-763/AMS 5643

END FITTINGS

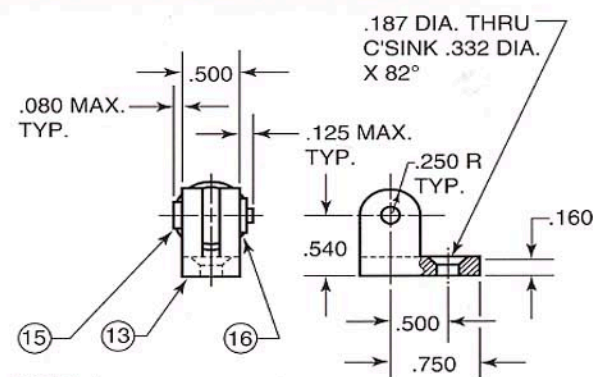


FIGURE 1

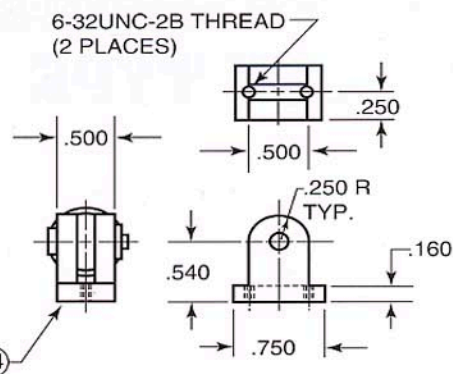
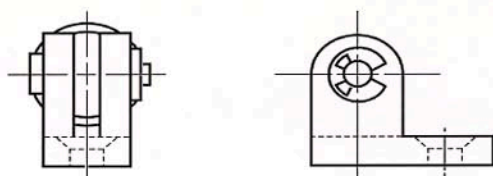


FIGURE 2

OPTIONS

— MAY BE ORDERED SEPARATELY

ST200E1

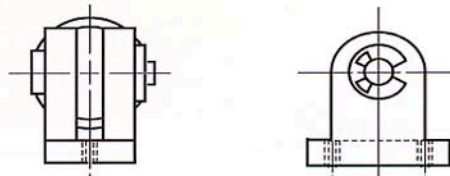


ASSEMBLY INCLUDES PIVOT END (FIGURE 1)
PIN AND TRUARC RING

ST200E1A

MATERIAL: A=ALUMINUM, C=CRES

ST200E2

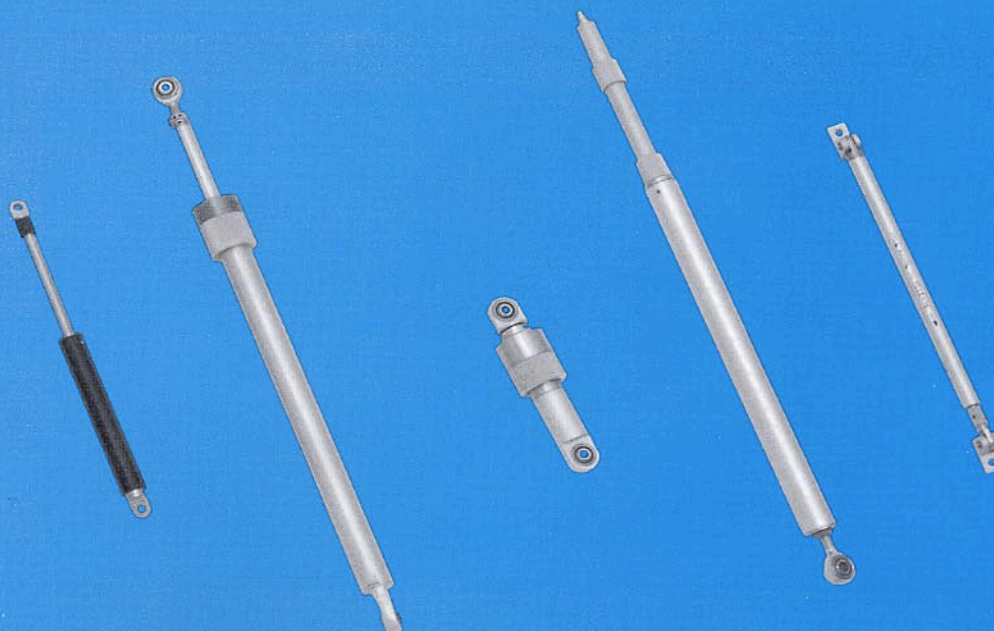


ASSEMBLY INCLUDES PIVOT END (FIGURE 2)
PIN AND TRUARC RING

ST200E2A

MATERIAL: A=ALUMINUM, C=CRES

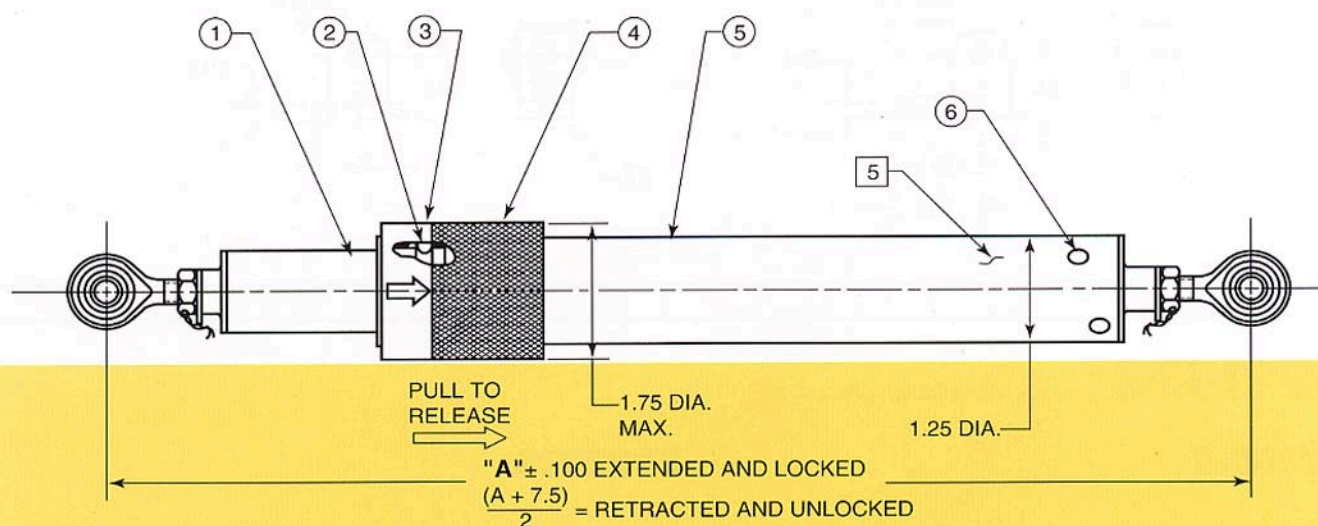
SPECIAL TELESCOPING STRUTS



NOTE: WEIGHTS AND LOADS VARY WITH SIZE OF THE STRUT. CONTACT OUR BURBANK PLANT FOR INFORMATION ON SPECIFIC SIZES.

TELESCOPING STRUTS - ST 204 SERIES

HEAVY DUTY TYPE



SAMPLE CALL-OUT

ST204 A 25 B 6 A 8

LEFT HAND MOUNTING HOLE DIAMETER
 LEFT HAND ATTACHMENT
 RIGHT HAND MOUNTING HOLE DIAMETER
 RIGHT HAND ATTACHMENT
 LENGTH IN SIXTEENTHS OF AN INCH
 (160 = 10.00 IN.)
 MATERIAL: A = ALUMINUM, C = CRES
 BASIC PART NO.

NOTES

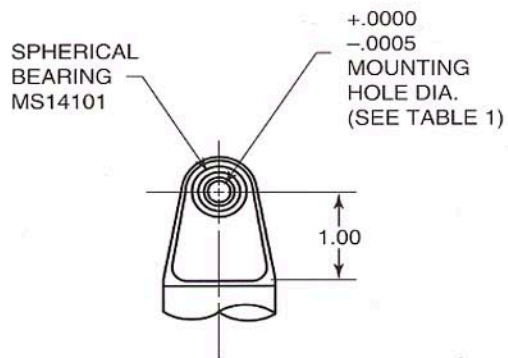
- 1 HEAT TREAT 17-4 PH TO H900 OR H1025.
- 2 PASSIVATE PER QQ-P-35.
- 3 CAD PLATE PER QQ-P-416.
- 4 ANODIZE PER MIL-A-8625, DYED BLACK.
- 5 IDENTIFY WITH "AVIBANK ST204-(APPROPRIATE DASH NO.)".

SPECIFICATIONS

APPLICABLE NOTES			ITEM NO.	QTY REQ'D	NOMENCLATURE OR DESCRIPTION	MATERIAL OR NOTE	SPECIFICATION
ALUMINUM							
		4	1	1	TUBE, SMALL	ALUMINUM ALLOY 7075/2024	QQ-A-225/9/6
			2	6	BALL	440C CRES	QQ-S-763
3	2	1	3	1	SLEEVE	17-4 PH CRES	AMS 5643
		4	4	1	KNURLED SLEEVE	ALUMINUM ALLOY 6061/2024	WW-T-700/6/3
		4	5	1	TUBE OUTER	ALUMINUM ALLOY 6061/2024	WW-T-700/6/3
3	2	1	6	2	RIVET	17-4 PH CRES	AMS 5643
CRES							
	2	1	1	1	TUBE, SMALL	17-4 PH/304A CRES	AMS 5643/AMS 5639
			2	6	BALL	440C CRES	QQ-S-763
	2	1	3	1	SLEEVE	17-4 PH CRES	AMS 5643
	2	1	4	1	KNURLED SLEEVE	17-4 PH/300 SERIES CRES	AMS 5643/QQ-S-763
		2	5	1	TUBE OUTER	304A CRES	AMS 5639
	2	1	6	2	RIVET	17-4 PH CRES	AMS 5643

END FITTINGS

TYPE A



TYPE B

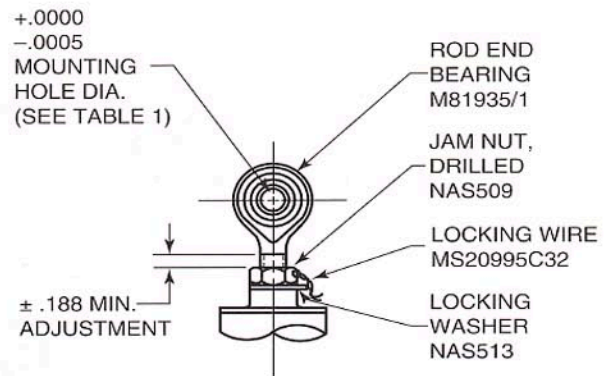
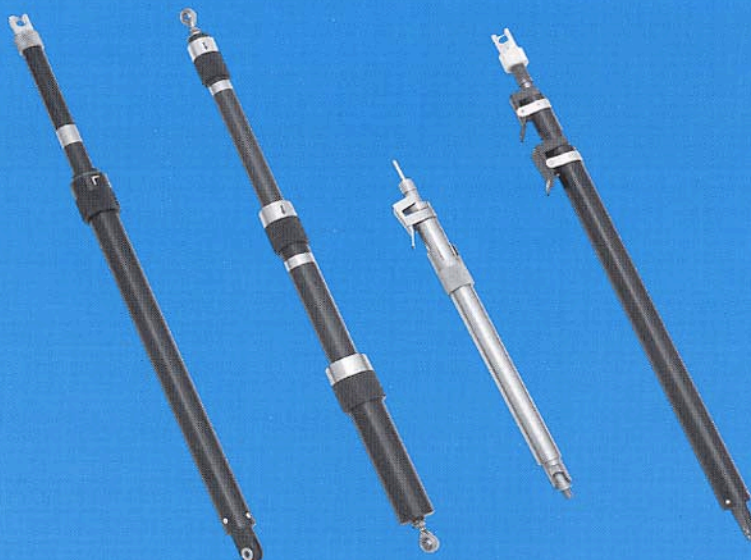


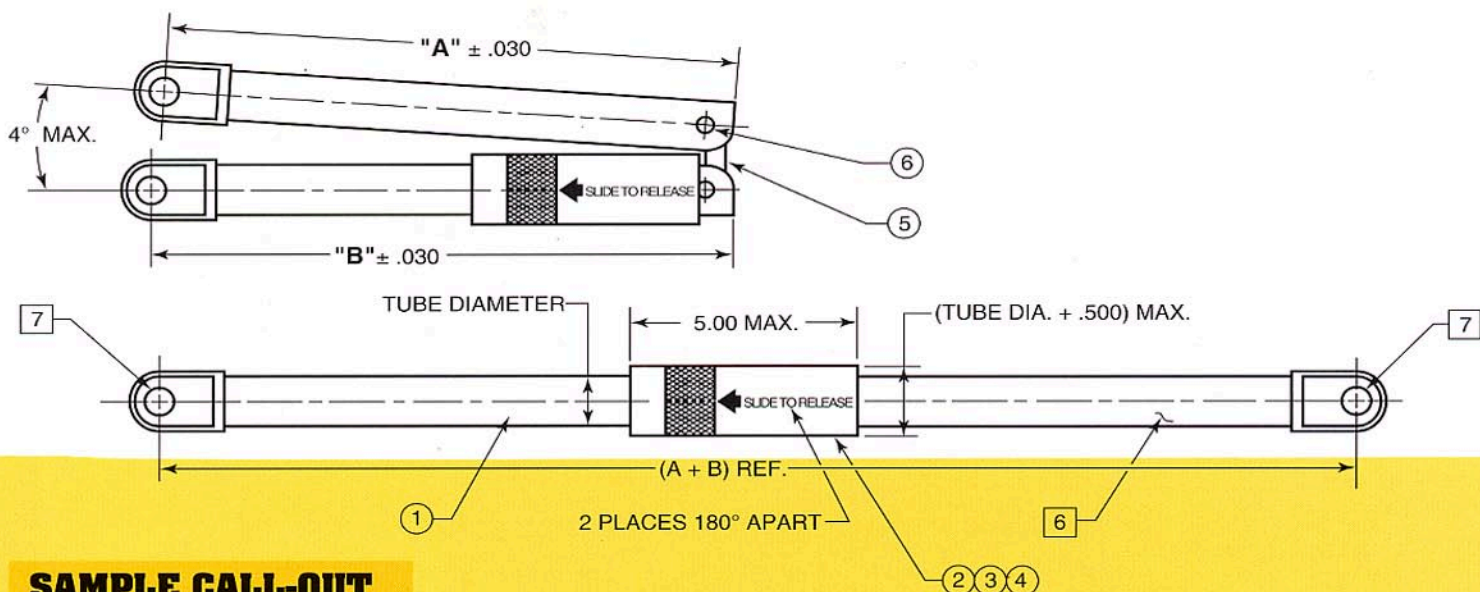
TABLE I	
SIZE	HOLE DIA.
3	.190
4	.250
5	.313
6	.375
8	.500

SPECIAL HEAVY DUTY TELESCOPING STRUTS



NOTE: WEIGHTS AND LOADS VARY WITH SIZE OF THE STRUT. CONTACT OUR BURBANK PLANT FOR INFORMATION ON SPECIFIC SIZES.

FOLDING STRUTS - ST 201 SERIES



SAMPLE CALL-OUT

ST201 C 60-45-8 A 6 B 4

- LEFT HAND MOUNTING HOLE (SEE TABLE 1, PAGE 9)
- LEFT HAND ATTACHMENT
- RIGHT HAND MOUNTING HOLE (SEE TABLE 1, PAGE 9)
- RIGHT HAND ATTACHMENT
- TUBE DIAMETER IN SIXTEENTHS OF AN INCH
- "B" DIAMETER IN QUARTER INCH INCREMENTS (5.00 MIN.)
- "A" DIAMETER IN QUARTER INCH INCREMENTS
- MATERIAL: A = ALUMINUM; C = CRES
- BASIC PART NO.

NOTES

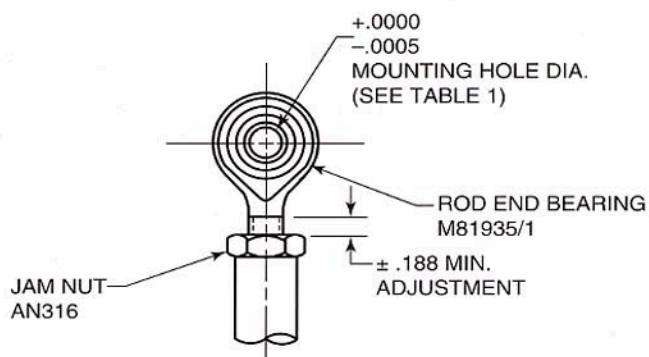
- 1 HEAT TREAT TO CH900.
- 2 HEAT TREAT TO TH1050.
- 3 PASSIVATE PER QQ-P-35.
- 4 CAD PLATE PER QQ-P-416, TY. II, CL. 2.
- 5 ANODIZE PER MIL-A-8625, TY. II, CL. 2, DYED BLACK.
- 6 IDENTIFY WITH "AVIBANK ST201-(APPROPRIATE DASH NO.)".
- 7 MOUNTING HOLES TO BE ORIENTED AS SHOWN ± 2°.
- 8 HEAT TREAT TO H900 OR H1025.
- 9 DRY FILM LUBE PER MIL-L-46010, TY. 1.

SPECIFICATIONS

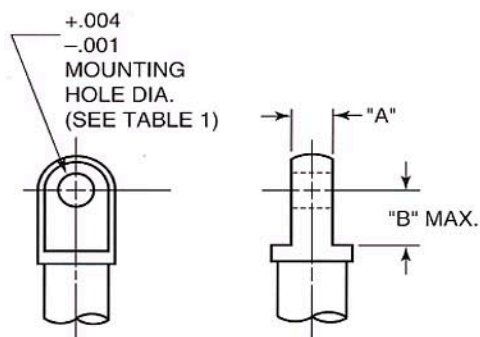
APPLICABLE NOTES				ITEM NO.	QTY REQ'D	NOMENCLATURE OR DESCRIPTION	MATERIAL OR NOTE	SPECIFICATION
- - - - - ALUMINUM - - - - -								
			5	1	2	TUBE	ALUMINUM ALLOY 7075/2024	QQ-A-225/9 OR /6
			5	2	1	SLEEVE	ALUMINUM ALLOY 7075	QQ-A-225/9
	4	3	1/3	3	1	SPRING	17-7 PH/302 CRES	AMS 5678/ASTM-A-313
			5	4	1	PLUG	ALUMINUM ALLOY	QQ-A-225/WW-T-700
9	4	3	2	5	1	LINK	17-7 PH CRES	AMS 5528
9	4	3	8/6	6	2	PIVOT PIN	17-4 PH/300 SERIES CRES	AMS 5643/ASTM-A-581
- - - - - CRES - - - - -								
		3	8	1	2	TUBE	17-4 PH/300 SERIES CRES	AMS 5643/QQ-S-763
		3	8	2	1	SLEEVE	17-4 PH/300 SERIES CRES	AMS 5643/QQ-S-763
		3	1/3	3	1	SPRING	17-7 PH/302 CRES	AMS 5678/ASTM-A-313
		3	8	4	1	PLUG	17-4 PH/300 SERIES CRES	AMS 5643/QQ-S-763
	9	3	2	5	1	LINK	17-7 PH CRES	AMS 5528
	9	3	8/6	6	2	PIVOT PIN	17-4 PH/300 SERIES CRES	AMS 5643/QQ-S-763

OPTIONAL END FITTINGS

TYPE A



TYPE B



TYPE C

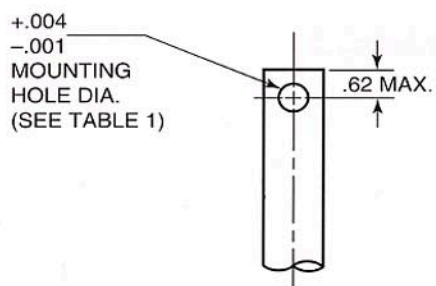
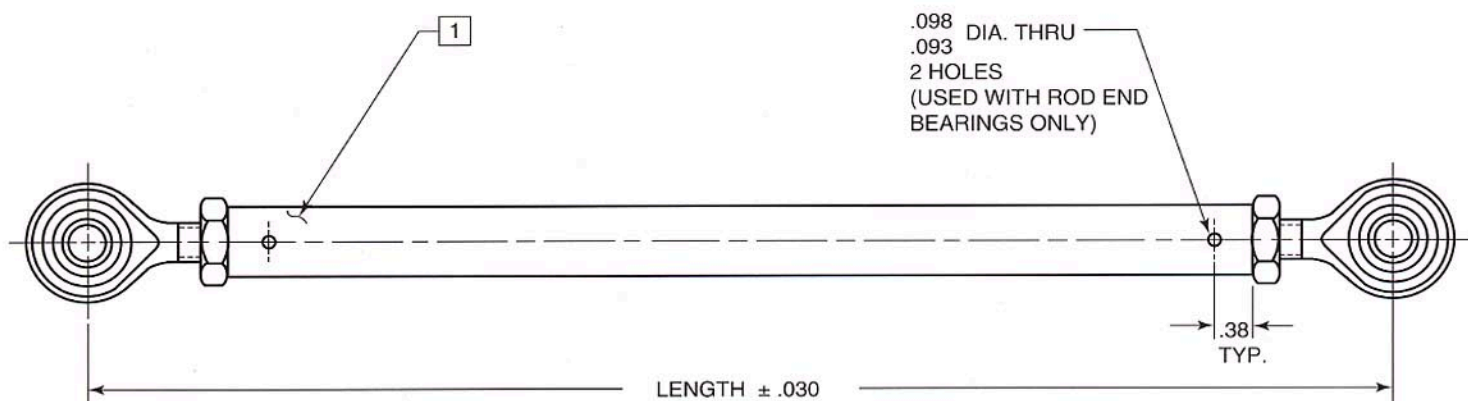


TABLE I	
SIZE	DIA.
-3	.190
-4	.250
-5	.313
-6	.375
8	.500

SPECIAL FOLDING STRUTS



FIXED LENGTH STRUTS - ST 202 SERIES



SAMPLE CALL-OUT

ST202 C 100-8 A 4 B 6

- LEFT SIDE MOUNTING HOLE (SEE TABLE 1, PAGE 11)
- LEFT SIDE ATTACHMENT METHOD
- RIGHT SIDE MOUNTING HOLE (SEE TABLE 1, PAGE 11)
- RIGHT SIDE ATTACHMENT METHOD
- TUBE DIA. IN SIXTEENTHS OF AN INCH (8 = .500)
- LENGTH IN SIXTEENTHS OF AN INCH (160 = 10.00)
- MATERIAL:
 - A = ALUMINUM ALLOY [3]
 - C = CRES [2]
- BASIC PART NO.

NOTES

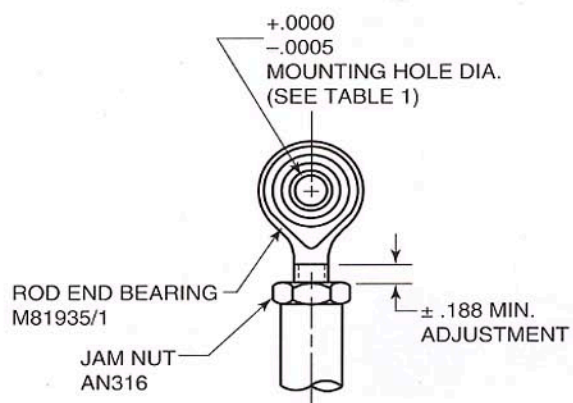
- [1] IDENTIFY WITH "AVIBANK ST202-(APPROP. DASH NO.)".
- [2] PASSIVATE CRES PER QQ-P-35.
- [3] ANODIZE ALUMINUM PER MIL-A-8625, TY. II, CL. 2, DYED BLACK.

SPECIFICATIONS

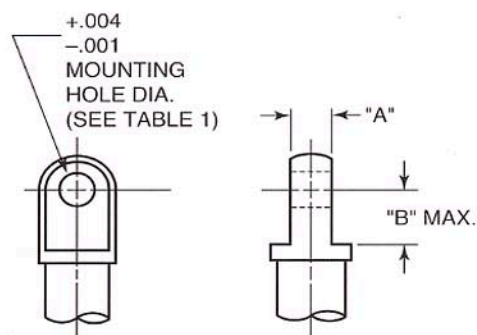
APPLICABLE NOTES	ITEM NO.	QTY REQ'D	NOMENCLATURE OR DESCRIPTION	MATERIAL OR NOTE	SPECIFICATION
ALUMINUM					
	3	1	TUBE	ALUMINUM ALLOY 7075	QQ-A-225/9
CRES					
	2	1	TUBE	300 SERIES CRES	QQ-P-35

OPTIONAL END FITTINGS

TYPE A



TYPE B



TYPE C

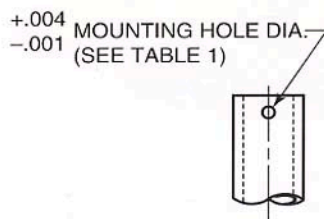
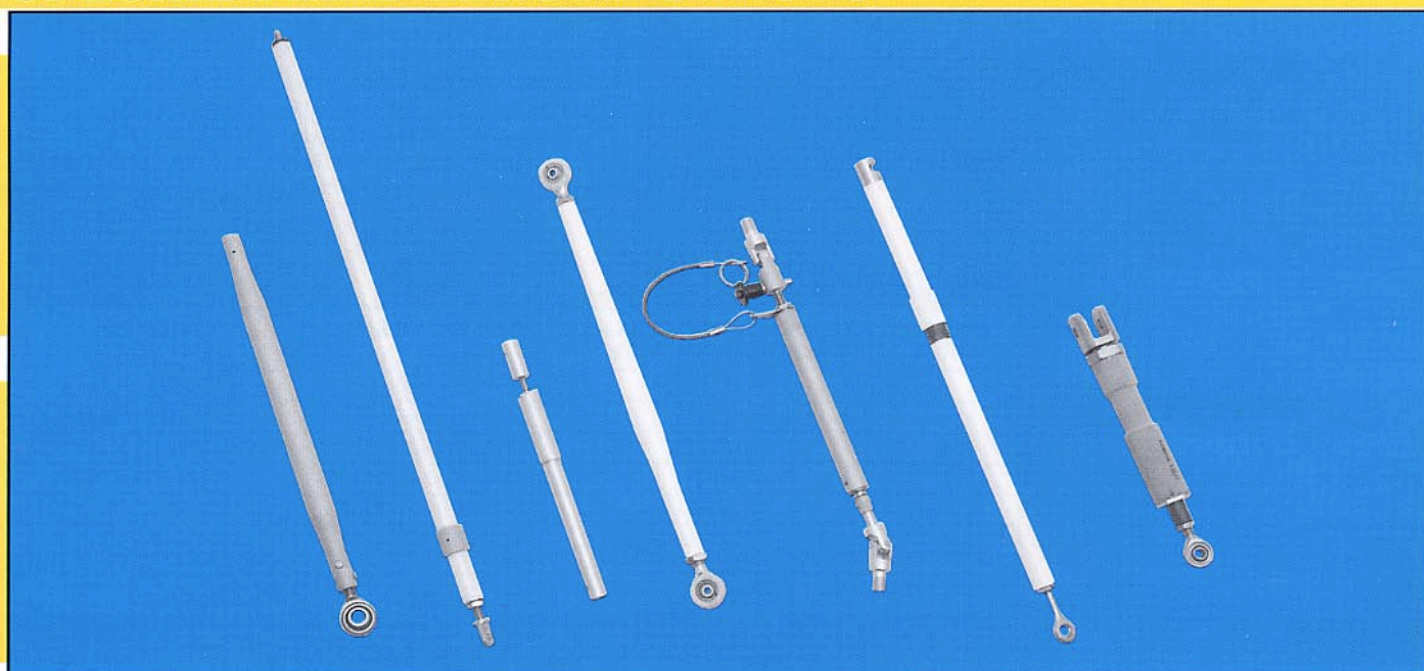


TABLE I	
SIZE	MOUNTING HOLE DIA.
3	.188
4	.250
5	.313
6	.375
8	.500

TUBE DIAMETER	"A"	"B" MAX.
.625 & UNDER	.300 .295	.750
OVER .625	.435 .430	1.25

SPECIAL FIXED LENGTH STRUTS

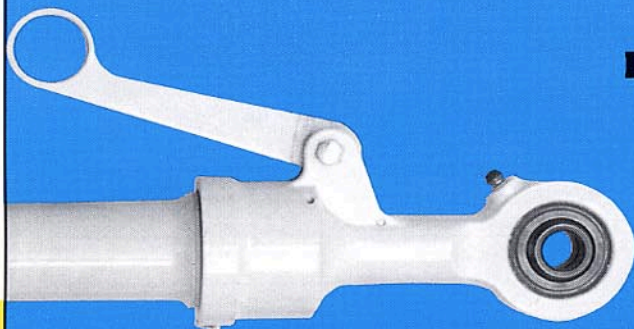


NOTE: WEIGHTS AND LOADS VARY WITH SIZE OF THE STRUT. CONTACT OUR BURBANK PLANT FOR INFORMATION ON SPECIFIC SIZES.

OTHER END FITTINGS



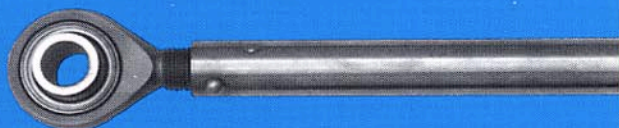
PRESSED BEARING



PIVOT BLOCK

ROD END BEARING WITH GREASE FITTING

ROD END BEARING



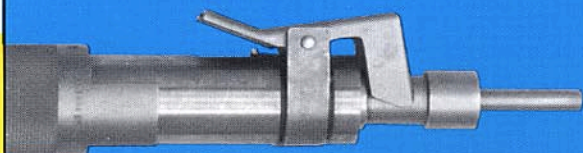
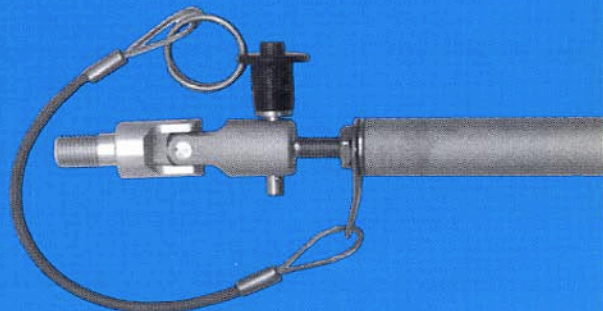
CLEVIS END

SPINDLE-LOK



AUTO-LOK BALL-TYPE

SWIVEL END



STRAIGHT END

AUTO-LOK J-LOK TYPE

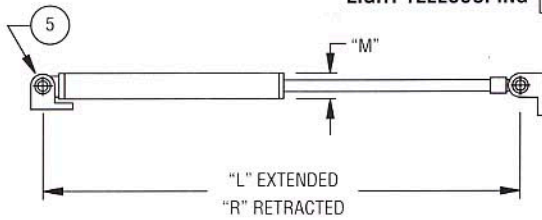


AVIBANK SPECIAL REQUESTS

COPY AND FILL OUT THIS FORM TO SUBMIT YOUR SPECIAL REQUIREMENTS FOR REVIEW.

STRUTS/HOLD-OPEN RODS

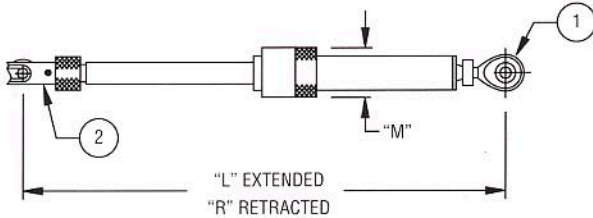
LIGHT TELESCOPING ☐



FORMULA FOR "L" AND "R" DIMENSIONS:

$$L = (R - 1.50) \times 2 \quad R = (L/2) + 1.50$$

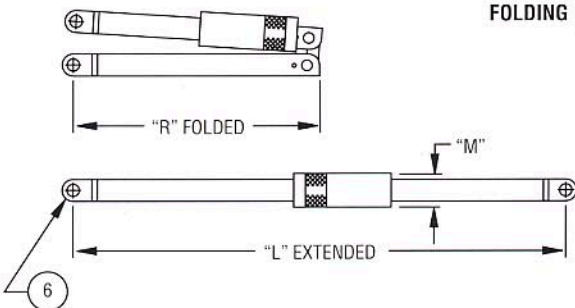
HEAVY DUTY TELESCOPING ☐



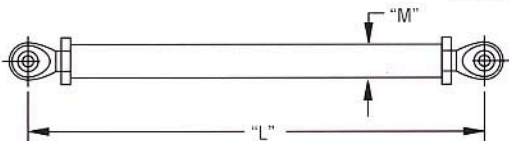
IF STRUT REQUIRES "J" LOK, WE NEED THE FOLLOWING INFORMATION ON CUSTOMER RECEIVER.

1. DETAIL DRAWING OR SKETCH SHOWING ALL DIMENSIONS OF RECEIVER.
2. RECEIVER MATERIAL AND HARDNESS.
3. ANGULARITY REQUIRED TO LOCK.
4. STRUCTURE CLEARANCES WHERE THE RECEIVER IS MOUNTED.

FOLDING ☐



FIXED ☐



NOTES:

1. CHOOSE TYPE OF STRUT
2. FILL IN INFORMATION FOR STRUT APPLICATION.

"L" EXTENDED _____ LOCKED/UNLOCKED

"R" RETRACTED OR FOLDED _____ LOCKED/UNLOCKED

"M" MAX DIA. _____

MAX WEIGHT REQUIRED _____

MAXIMUM TEMPERATURE _____

COMPRESSION LOAD REQUIRED

OPERATING LOAD _____
STRUT MUST BE FUNCTIONAL AFTER TEST.

ULTIMATE LOAD _____
STRUT NOT FUNCTIONAL AFTER TEST

TENSION LOAD REQUIRED

OPERATING LOAD _____
STRUT MUST BE FUNCTIONAL AFTER TEST.

ULTIMATE LOAD _____
STRUT NOT FUNCTIONAL AFTER TEST

TRANSVERSE/SIDE LOAD

SIDE LOAD ONLY _____

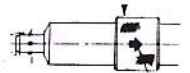
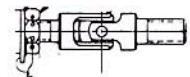
SIDE SIMULTANIOUS WITH
COMPRESSION LOAD REQ. _____

OTHER _____

COMMENTS: _____

TYPE OF ENDS

1. ROD END BEARING
2. PIVOT BLOCKS
3. SWIVEL END _____
4. PRESSED BEARING
5. "J" LOK
6. STRAIGHT END
7. AUTO-LOK (BALL TYPE). _____



CUSTOMER NAME: _____ DATE: _____

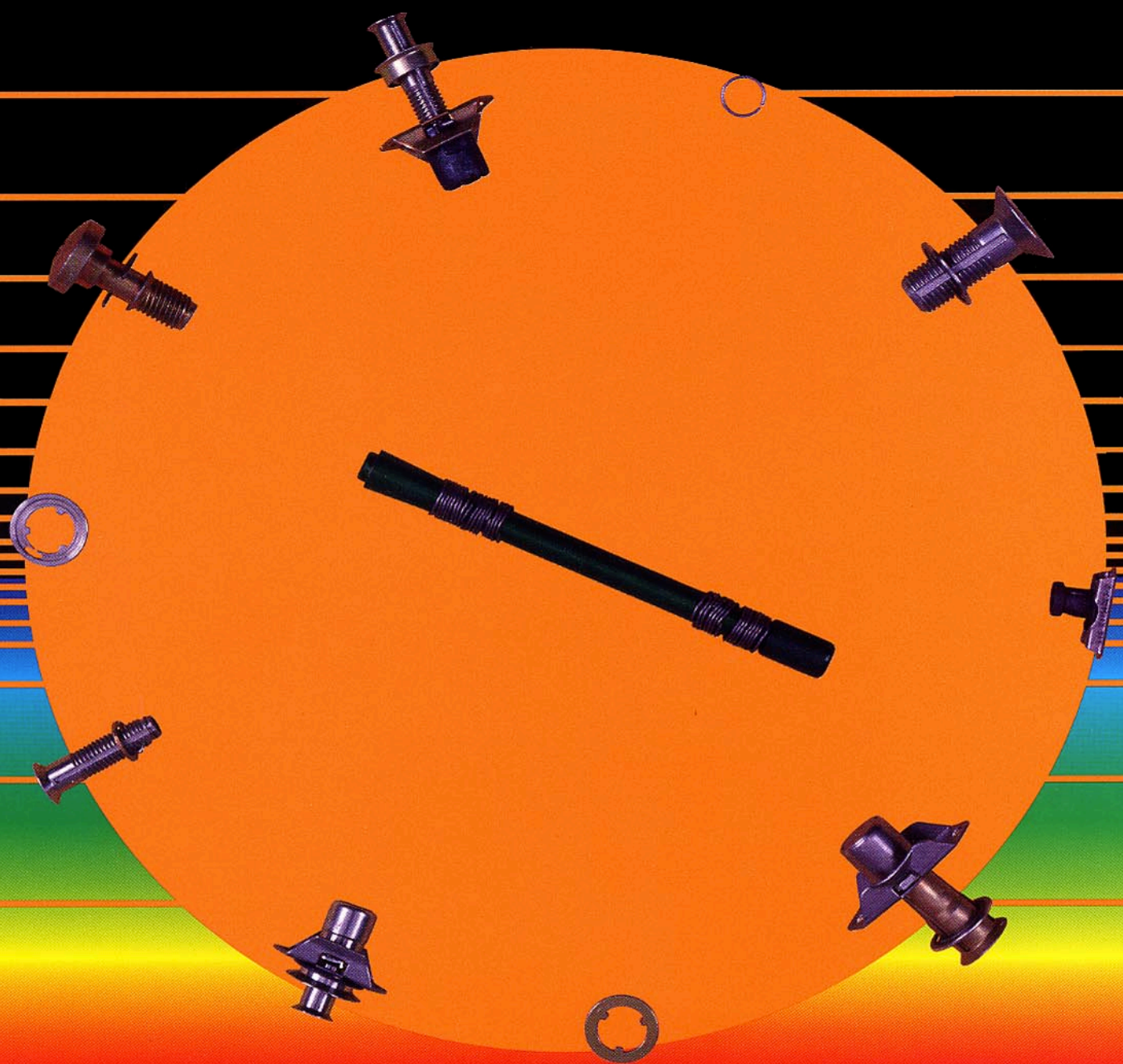
ADDRESS: _____

PHONE: _____



AVIBANK
MFG. INC.

STRUCTURAL PANEL FASTENERS



AVIBANK
MFG., INC.

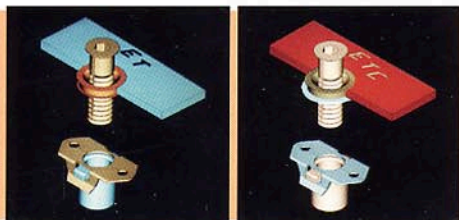
AVIBANK'S LINE OF PRODUCTS

ADJUSTABLE DIAMETER FASTENERS



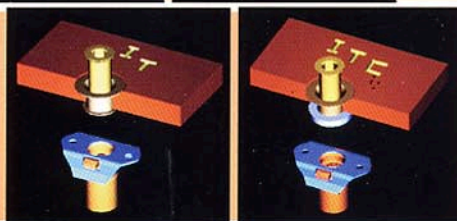
QUICK RELEASE PINS AND ACCESSORIES

SELF-RETAINING BOLTS AND ACCESSORIES



ET/ETC Pages 4-11

Eternally threaded with internally captivated and un-exposed retaining ring eliminates damage. Grommet design eliminates wear and elongation of the panel hole.



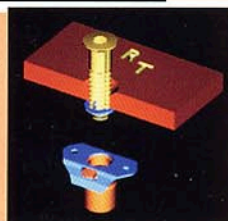
IT/ITC Pages 12-19

Internally threaded with flared grommet prevents damage to material such as composites. Hold out feature for easy installation of curved panels.



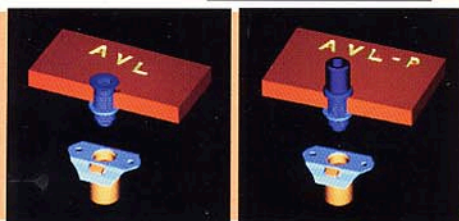
MT Pages 20-27

Internally threaded with dual lead threads for quick installation. Tapered shank eliminates damage to the threads or panel during installation.



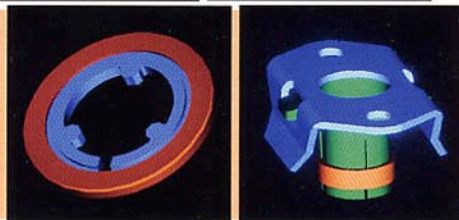
RT Pages 28-35

Externally threaded fastener. Three-pronged high strength retaining washer and ring system prevents foreign object damage (FOD).



AVL Pages 36-39

AVILOK® structural panel fasteners have a unique ratchet design with quad lead threads which provides for quick installation and removal, while at the same time, a positive lock without fear of release under severe vibration.

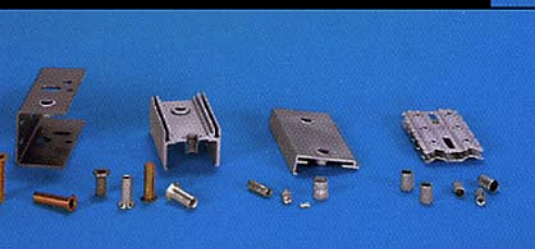


FLEX WASHER & FLEX NUT™ ... Pages 40-41

Flex washers are high strength retaining washers that have high reusable cycles and can be installed without the use of a tool. Flex nuts assemblies provide radial float for misalignment with a high reusable cycle and an easily replaced nut.

Send us your special requirements for review.

THREADED INSERTS



STRUTS/HOLD-OPEN RODS

LATCHES AND KEEPER ASSEMBLIES



STRUCTURAL PANEL FASTENERS

FEATURES

- ◆ EXTERNAL OR INTERNAL THREADS
- ◆ NON-EXPOSED WORKING COMPONENTS
- ◆ ELIMINATES FOREIGN OBJECT DAMAGE (FOD)
- ◆ POSITIVELY CAPTIVE TO PANEL
- ◆ HOLD OUT FEATURE
- ◆ PRE-ASSEMBLED BOLT AND GROMMET
- ◆ SELF-LOCKING RECEPTACLE
- ◆ EASY REPLACEMENT OF RECEPTACLE NUT
- ◆ MANUAL AND PNEUMATIC TOOLS FOR INSTALLATION OR REMOVAL
- ◆ INSTALL IN METAL OR COMPOSITE MATERIAL
- ◆ AVAILABLE IN METRIC SIZES

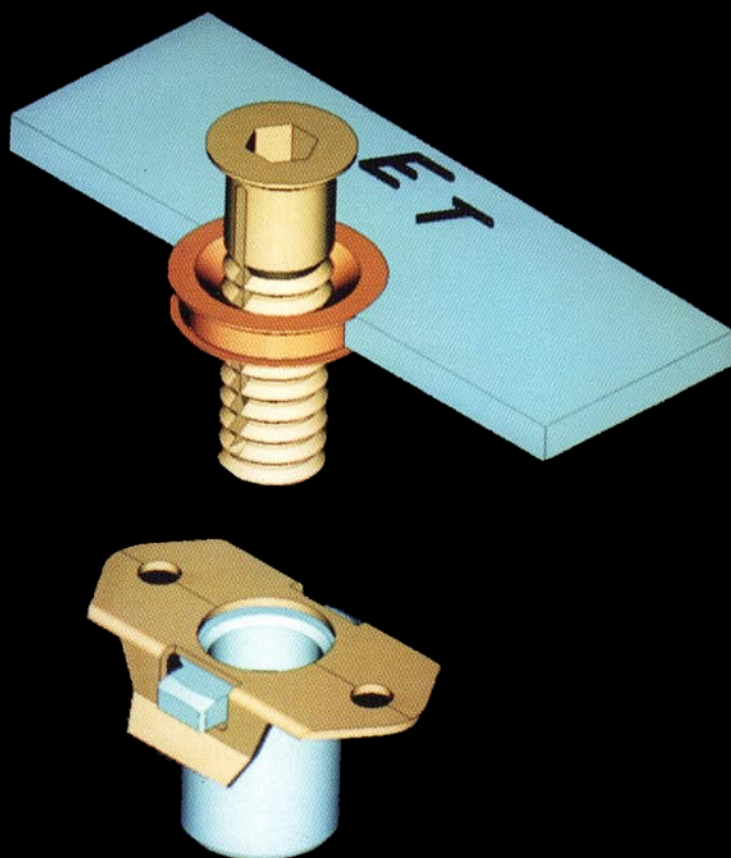
APPLICATIONS

- ◆ AIRCRAFT EXTERIOR PANELS
- ◆ RPV'S
- ◆ MISSILE DOORS
- ◆ AIRCRAFT CEILINGS
- ◆ ELECTRONIC BOXES ACCESS DOORS
- ◆ STEALTH AIRCRAFT OUTER SKIN

SEE INSIDE BACK COVER FOR APPLICATION DESIGN FORM

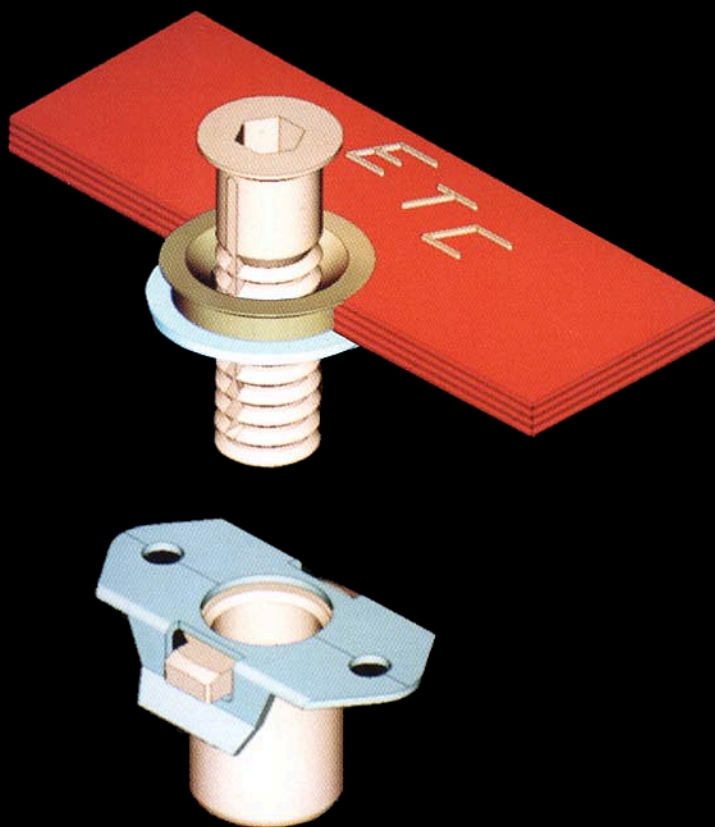
ET

**—For Use
in Steel
and
Aluminum**



ETC

**—For
Use in
Composite
Material**



EXTERNALLY THREADED PANEL FASTENERS

ET/ETC Features

THIS FASTENING SYSTEM OFFERS A UNIQUE INTERNAL-RING DESIGN THAT FEATURES:

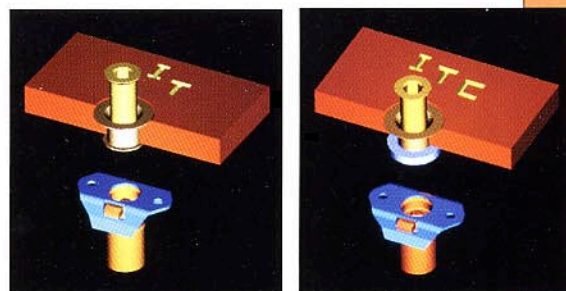
- ◆ Non-exposed working components eliminate foreign object damage (FOD).
- ◆ Internal captivated/non-exposed retaining ring eliminates retaining ring damage:
 - during installation of the Stud-Bolt in the panel.
 - during engagement of the Stud-Bolt with the receptacle.
- ◆ Positively-captive to prevent the Stud-Bolt from coming off the panel.
- ◆ Stud-Bolt holdout feature that allows easy panel installation on both curved and flat surfaces.
- ◆ Pre-assembled Stud-Bolt & Grommet reduces installation cost and the number of components purchased.
- ◆ Grommet design eliminates wear and elongation of the fastener holes in the panel.
- ◆ Self locking receptacle nut feature allows a minimum of 500 reusable cycles and eliminates galling and removal of plating from the Stud-Bolt.
- ◆ Removal and replacement of the receptacle nut without removal of the mounting basket.
- ◆ Installation can be made with manual or pneumatic tools.
- ◆ Pneumatic tool installs Stud-Bolt and grommet assemblies in 3 seconds.

OTHER AVIBANK STRUCTURAL PANEL FASTENERS AVAILABLE

IT

INTERNALLY THREADED PANEL FASTENER FOR EITHER METAL OR COMPOSITE ACCESS PANELS.

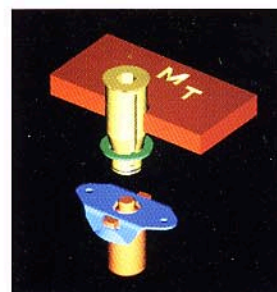
SEE PAGES 12-19.



MT

INTERNALLY THREADED FASTENER WITH TAPERED SLEEVE BOLT AND INTERNAL DETENT RING.

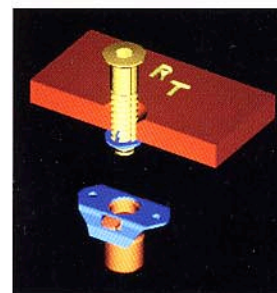
SEE PAGES 20-27.



RT

EXTERNALLY THREADED PANEL FASTENER WITH UNIQUE RETAINING WASHER AND RING SYSTEM.

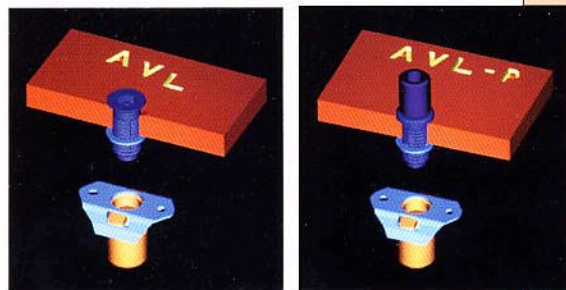
SEE PAGES 28-35.



AVL

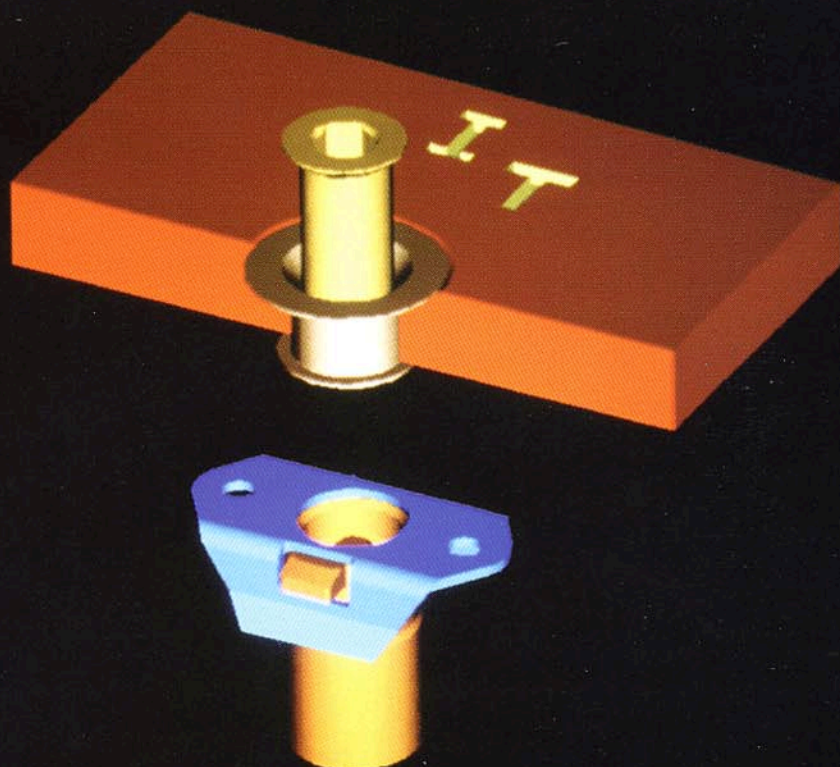
AVILOK® OFFERS A UNIQUE RATCHET DESIGN FOR INADVERTENT RELEASE UNDER SEVERE VIBRATION.

SEE PAGES 36-39.



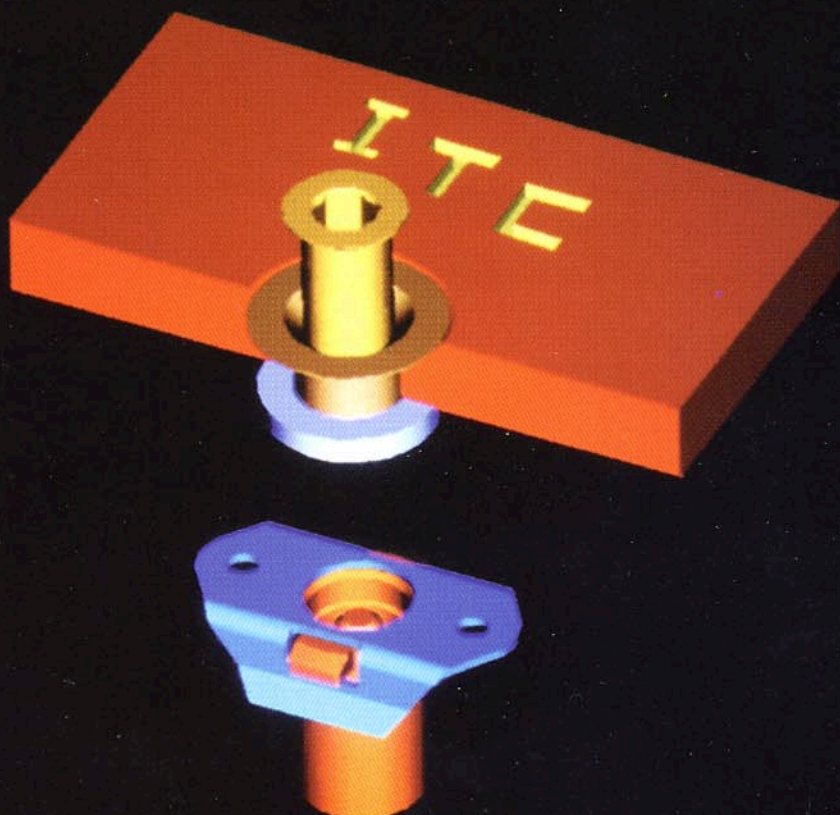
IT

**—For Use
in Steel
and
Aluminum**



ITC

**—For
Use in
Composite
Material**



INTERNALLY THREADED PANEL FASTENERS

IT/ITC Features

THIS FASTENING SYSTEM OFFERS A UNIQUE INTERNAL-THREAD DESIGN WITH DUAL LEAD THREADS THAT FEATURES:

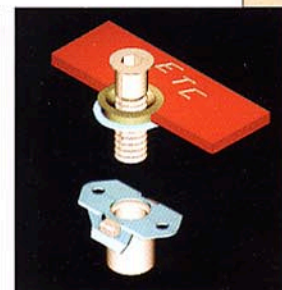
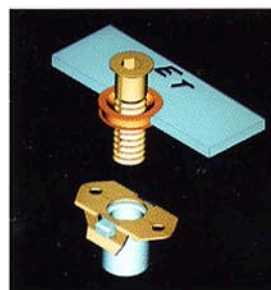
- ◆ Non-exposed working components eliminate foreign object damage (FOD).
- ◆ Internally captivated/non-exposed retaining ring eliminates retaining ring damage:
 - during installation of the sleeve bolt on the panel.
 - during engagement of the sleeve bolt with the receptacle.
- ◆ Positively-captive to prevent the sleeve bolt from coming off the panel.
- ◆ Sleeve bolt hold out feature that allows easy panel installation on both curved and flat surfaces.
- ◆ Pre-assembled sleeve bolt & grommet reduces installation cost and the number of components required.
- ◆ Grommet design eliminates wear and elongation of the fastener holes in the panel.
- ◆ Self-locking receptacle nut feature allows a minimum of 500 reusable cycles and eliminates galling and removal of plating from the sleeve bolt.
- ◆ Removal and replacement of the receptacle nut without removal of the mounting basket.
- ◆ Installation can be made with manual or pneumatic tools.
- ◆ Pneumatic tool installs sleeve bolt and grommet assemblies in 3 seconds.
- ◆ Installation method ensures flushness of the fastener to the panel surface for smooth aerodynamic outer skin of aircraft.
- ◆ ITC protects composite panel from delamination or fracture by flaring grommet to the washer not the panel during installation.

OTHER AVIBANK STRUCTURAL PANEL FASTENERS AVAILABLE

ET

EXTERNALLY THREADED PANEL FASTENER FOR EITHER METAL OR COMPOSITE ACCESS PANELS.

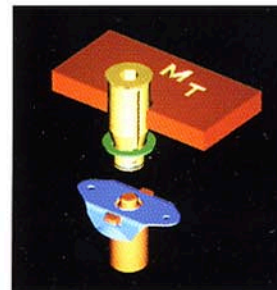
SEE PAGES 4-11.



MT

INTERNALLY THREADED FASTENER WITH TAPERED SLEEVE BOLT AND INTERNAL DETENT RING.

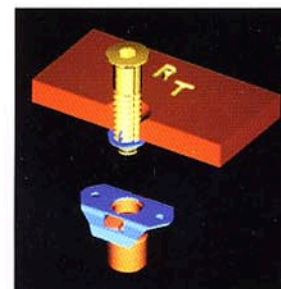
SEE PAGES 20-27.



RT

EXTERNALLY THREADED PANEL FASTENER WITH UNIQUE RETAINING WASHER AND RING SYSTEM.

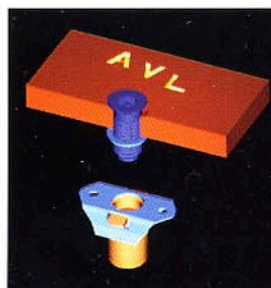
SEE PAGES 28-35.



AVL

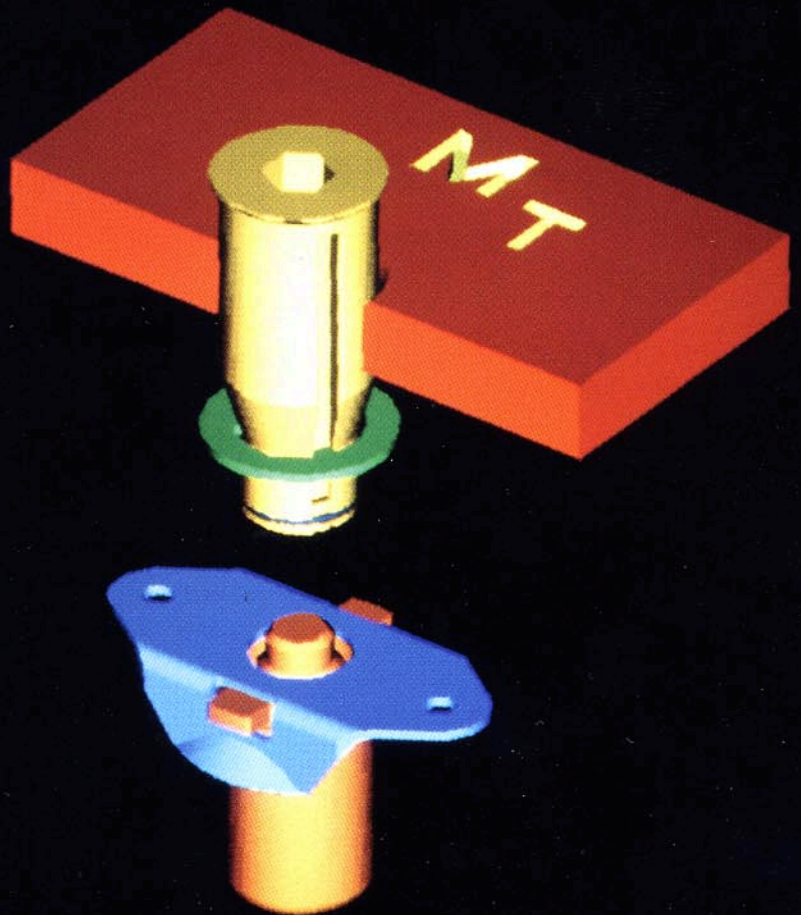
AVILOK® OFFERS A UNIQUE RACHET DESIGN FOR INADVERTENT RELEASE UNDER SEVERE VIBRATION.

SEE PAGES 36-39.



MT

**—For Use
in Steel,
Aluminum
and
Composite
Materials**



TAPERED SHANK PANEL FASTENERS

MT Features

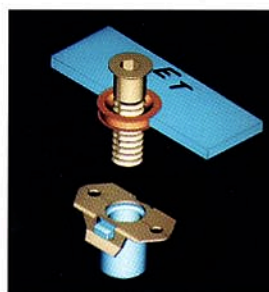
- ◆ Tapered shank with internal dual lead threads for quick installation.
- ◆ Tapered shank improves alignment capabilities and minimizes hole wear.
- ◆ Internally threaded sleeve bolt eliminates damage to the sleeve bolt threads or panel during installation.
- ◆ High strength washer and retaining ring prevents loss of the sleeve bolt and retaining ring for the panel, thus eliminating foreign object damage (FOD).
- ◆ Pre-assembled internal detent ring permits positive hold-out of the sleeve bolt when used with a shim. This ensures fast and easy installation of curved or misaligned access panels.
- ◆ High strength retaining washer slides smoothly in the sleeve bolts slots. Washer does not expand and contract or bend, causing it to fatigue or break, thereby it eliminates FOD problems.
- ◆ Receptacle nut floats radially in basket to accommodate misalignment during installation of the sleeve bolt.
- ◆ Receptacle nut may be replaced without removal of the riveted basket.
- ◆ Sleeve bolt meets the torque requirements of MIL-N-25027, and provides a minimum of 500 reusable cycles.
- ◆ Installs into existing panel and substructure mounting holes of similar panel fastener designs.
- ◆ Sleeve bolt mates with similar designed receptacles, and the MT receptacle mates with similar designed sleeve bolts.

OTHER AVIBANK STRUCTURAL PANEL FASTENERS AVAILABLE

ET

EXTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

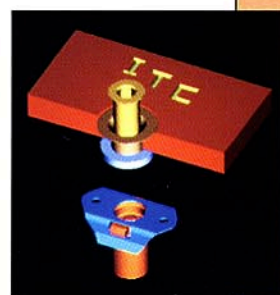
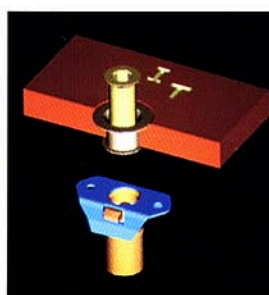
SEE PAGES 4-11.



IT

INTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

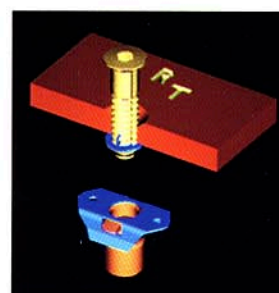
SEE PAGES 12-19.



RT

EXTERNALLY
THREADED PANEL
FASTENER WITH
UNIQUE RETAINING
WASHER AND
RING SYSTEM.

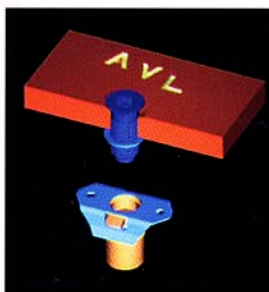
SEE PAGES 28-35.



AVL

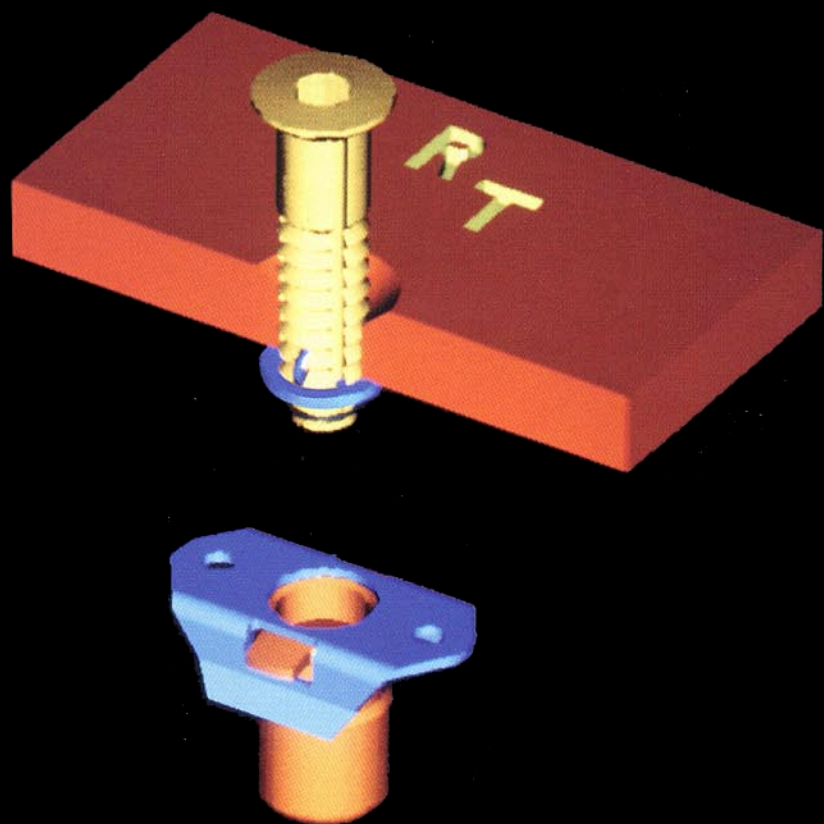
AVILOK® OFFERS
A UNIQUE RATCHET
DESIGN FOR
INADVERTENT
RELEASE UNDER
SEVERE VIBRATION.

SEE PAGES 36-39.



RT

**—For Use
in Steel,
Aluminum
and
Composite
Materials**



RT Features

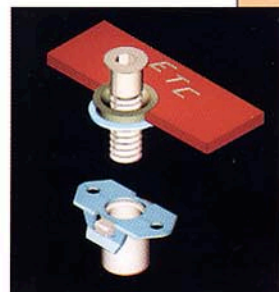
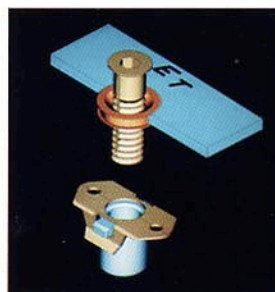
- ◆ Stud-bolt has external dual lead threads to speed up operation.
- ◆ High strength retaining washer and ring system prevents loss of the fastener components, thus eliminating Foreign Object Damage (FOD).
- ◆ Three pronged retaining washer provides higher load capabilities and proper orientation during installation and removal.
- ◆ Optional positive stud-bolt hold-out feature facilitates installation and removal of curved or hinged panels.
- ◆ Unique grommet designs help to eliminate wear and elongation of the fastener holes in either metallic or composite type panels.
- ◆ Unique two piece grommet provides:
 - Compensation for variation in composite type panel thickness.
 - Protection to composite type panels from fracturing or delamination. Grommet is flared onto the washer and not directly onto the composite panel.
 - Grommet washer protects composite panel from fracturing during removal of the grommet.
 - Flush aerodynamic smoothness of the fastener.
- ◆ Receptacle nut provides a minimum 500 reusable cycles and eliminates galling and removal of the stud-bolt plating.
- ◆ Receptacle nut meets or exceeds the torque requirements of MIL-N-25027.
- ◆ Receptacle nut floats radially in basket to accommodate misalignment and may be replaced without removal of the riveted basket.
- ◆ Installation of the grommets by either manual or pneumatic tools.

OTHER AVIBANK STRUCTURAL PANEL FASTENERS AVAILABLE

ET

EXTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

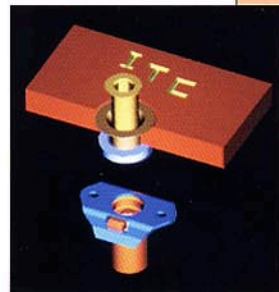
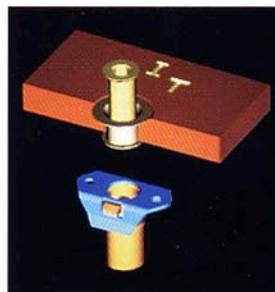
SEE PAGES 4-11.



IT

INTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

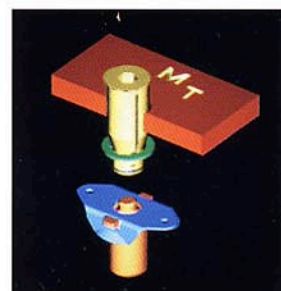
SEE PAGES 12-19.



MT

INTERNALLY
THREADED FASTENER
WITH TAPERED
SLEEVE BOLT
AND INTERNAL
DETENT RING.

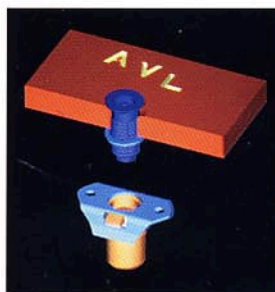
SEE PAGES 20-27.



AVL

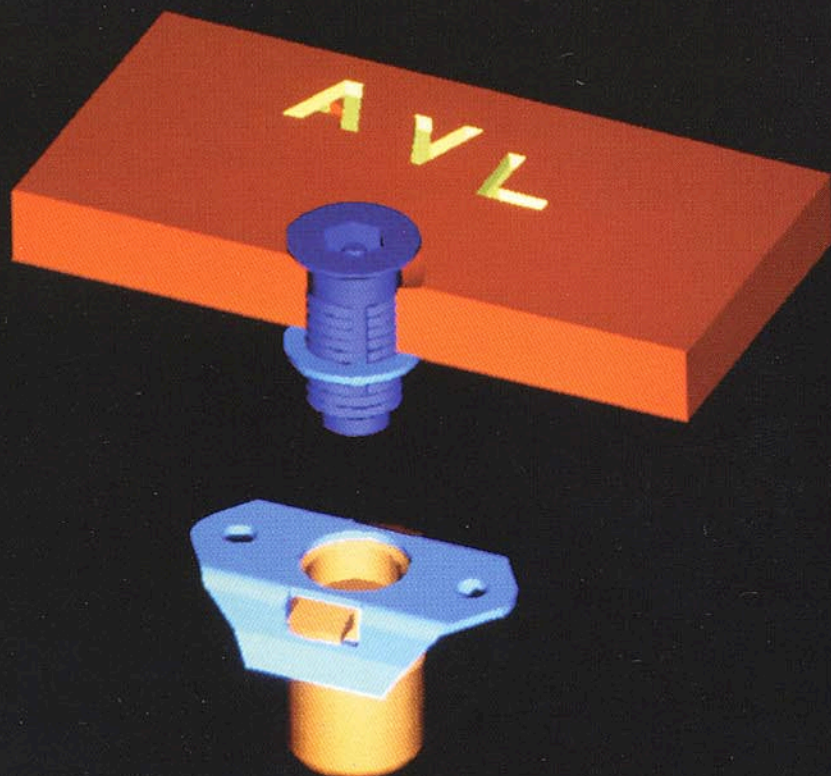
AVILOK® OFFERS
A UNIQUE RATCHET
DESIGN FOR
INADVERTENT
RELEASE UNDER
SEVERE VIBRATION.

SEE PAGES 36-39.



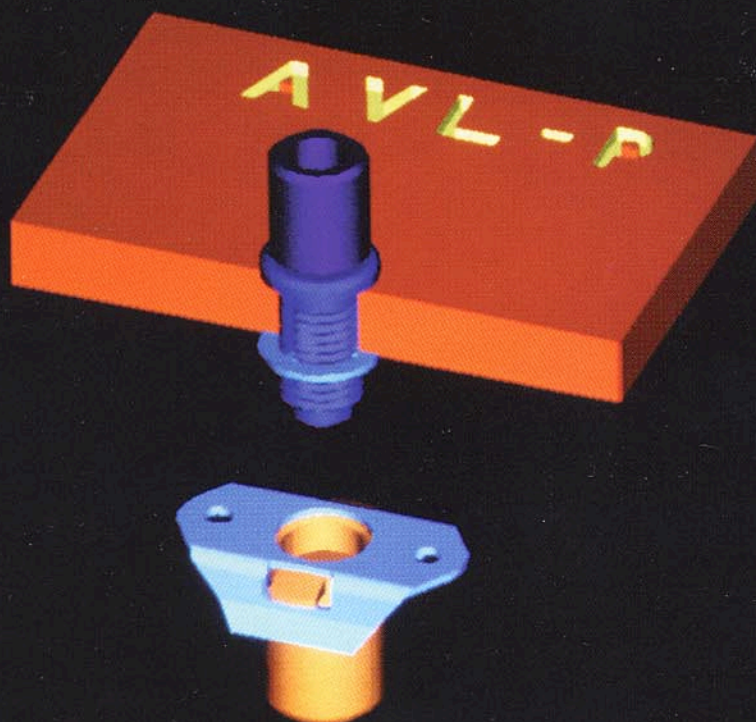
AVILOK®

Flush Head



AVILOK®

Protruding Head



POSITIVE LOCK PANEL FASTENERS

AVILOK® Features

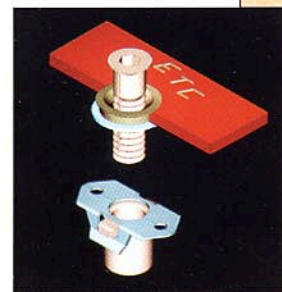
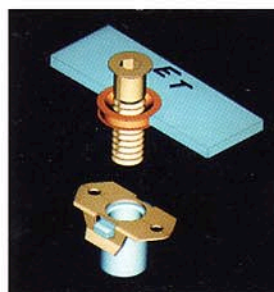
- ◆ Unique ratchet design using quad lead threads provides quick installation and removal while at the same time a positive lock without fear of inadvertent release under severe vibration.
- ◆ Self locking ratchet and release system allows for minimum use of 5,000 cycles.
- ◆ Floating receptacle permits misalignment of up to .030 in any direction.
- ◆ Multiple springs in receptacle assure against accidental release under high vibration.
- ◆ Flush headed design releases with the use of standard Allen wrenches.
- ◆ Washer can easily be replaced without also replacing the stud.
- ◆ Meets vibration requirements of MIL-F-22978.
- ◆ Test reports available upon request.
- ◆ Choice of 1/4 inch and 3/8 inch nominal stud diameters with both flush and protruding heads. Special sizes available upon request.
- ◆ Protruding head design allows positive lock without use or need of tools. Operates entirely by hand.

OTHER AVIBANK STRUCTURAL PANEL FASTENERS AVAILABLE

ET

EXTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

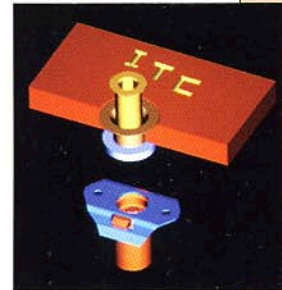
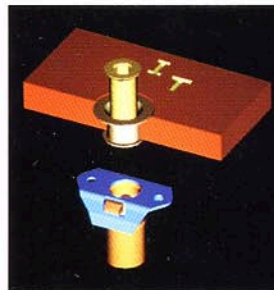
SEE PAGES 4-11.



IT

INTERNALLY
THREADED PANEL
FASTENER FOR
EITHER METAL
OR COMPOSITE
ACCESS PANELS.

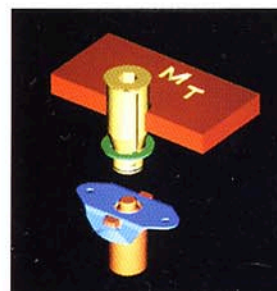
SEE PAGES 12-19.



MT

INTERNALLY
THREADED FASTENER
WITH TAPERED
SLEEVE BOLT
AND INTERNAL
DETENT RING.

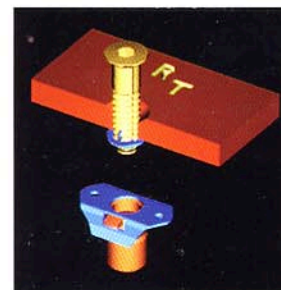
SEE PAGES 20-27.



RT

EXTERNALLY
THREADED PANEL
FASTENER WITH
UNIQUE RETAINING
WASHER AND
RING SYSTEM.

SEE PAGES 28-35.

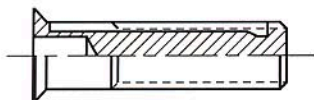


AVIBANK SPECIAL REQUESTS

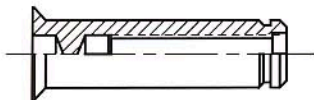
COPY AND FILL OUT THIS FORM TO SUBMIT YOUR SPECIAL REQUIREMENTS FOR REVIEW.

STRUCTURAL PANEL FASTENERS

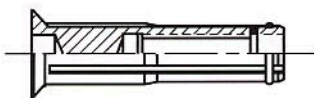
ET



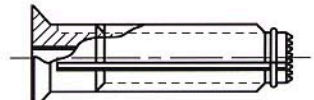
IT



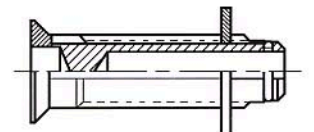
MT



AVL



RT



RETAINING DEVICE



GROMMET



SOLID WASHER



FLEX WASHER

BOLT WORKSHEET

1. SELECT BOLT TYPE DESIRED _____
2. CIRCLE RETAINING DEVICE: GROMMET SOLID WASHER FLEX WASHER
3. DOOR PANEL THICKNESS _____ ±
4. SUBSTRUCTURE THICKNESS _____ ±
5. TOTAL GRIP LENGTH INCLUDING GASKET, SHIM, GROMMET AS APPLICABLE _____ ±
6. DOOR PANEL MATERIAL _____
7. SUBSTRUCTURE MATERIAL _____
8. NOMINAL SHANK DIA. _____
9. NOMINAL THREAD SIZE _____
10. FASTENER MATERIAL _____
11. TENSILE LOAD _____ LBS. MIN.
12. SHEAR LOAD (THRU GRIP) _____ LBS. MIN.
- (THRU RECESS) _____ LBS. MIN.
13. TEMPERATURE _____
14. VIBRATION _____
15. NEED HOLD-OUT FEATURE? _____ YES _____ NO
16. OTHER _____

COMMENTS: _____

RECEPTACLE WORKSHEET

1. SELECT RECEPTACLE TYPE DESIRED _____
2. AXIAL TENSION LOAD _____ LBS. MIN.
3. TORQUE OUT LOAD _____ IN.-LBS. MIN.
4. PUSH OUT LOAD _____ LBS. MIN.
5. NEED SELF-LOCKING? _____ YES _____ NO
6. REUSABLE CYCLE REQUIRED _____ CYCLES
7. OTHER _____

COMMENTS: _____

CUSTOMER NAME: _____ DATE: _____

ADDRESS: _____

PHONE: _____



AVIBANK
MFG., INC.



NEW PRODUCT BULLETIN

PATENT PENDING

E-NUT[®] FASTENING SYSTEM:

Avibank introduces a self-expanding, self-aligning, self-locking, reusable, rapidly removable, top-down fastening system.

APPLICATIONS:

- > Replaces Riveted & Rivet-less Nut Plates
- > Floorboards
- > Blind Fastener
- > Clamps for Wire Harness
- > Clamps for Hydraulic Lines

ADVANTAGES:

- > Weight Savings
- > Labor Savings - Easy Installation
- > Accommodates Multiple Grip Lengths
- > Allows for Angular Misalignment
- > Improves Corrosion Performance
- > Back Side Space Savings
- > Qualified for Major Programs and Various Applications
- > Fastening System can be Installed in Composite, Aluminum, Stainless Steel and Titanium Structures



TEST DATA:

E-NUT [®] Tensile*	2,150 lbs. min.
Installation Torque	25 - 35 in-lbs.

* Reflects fastener strength. Composite material and bonding techniques may affect system strength.



AVIBANK
MFG. INC.
SPS FASTENERS DIVISION, A PCC COMPANY

11500 SHERMAN WAY, NORTH HOLLYWOOD, CA 91605 PH: 818-392-2100 FAX: 818-255-2094
www.avibank.com

TECHNICAL DATA SHEET:

E-NUT[®] FLOORBOARD FASTENING SYSTEM

WEIGHT SAVINGS:

PATENT PENDING

E-NUT[®]



**2.36 lbs. (1170 grams)
per 1,000 pcs.**

Material: Cres 17-7PH

Further weight savings can be achieved
from the use of a shorter screw with the
E-Nut[®] Fastening System.

COMPOSITE CLIP NUT



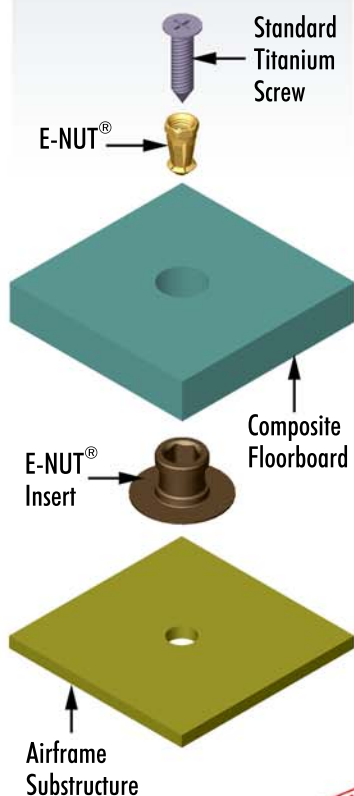
**5.82 lbs. (2640 grams)
per 1,000 pcs.**

**Materials: Composite
and Cres A286**

INSTALLATION:

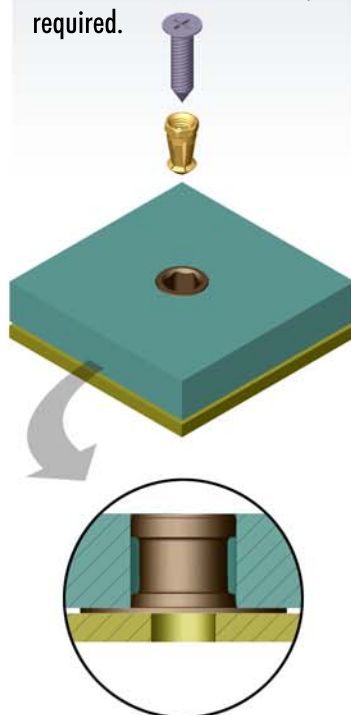
Step 1:

Bond aluminum E-Nut[®] insert
into composite floorboard,
using standard installation
procedure and bonding agent.



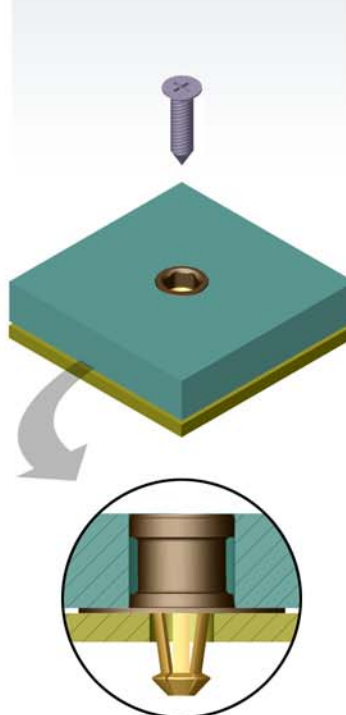
Step 2:

Place floorboard in position
over pre-drilled substructure
holes. Use foam or standard
floorboard barrier between
floorboard and substructure, as
required.



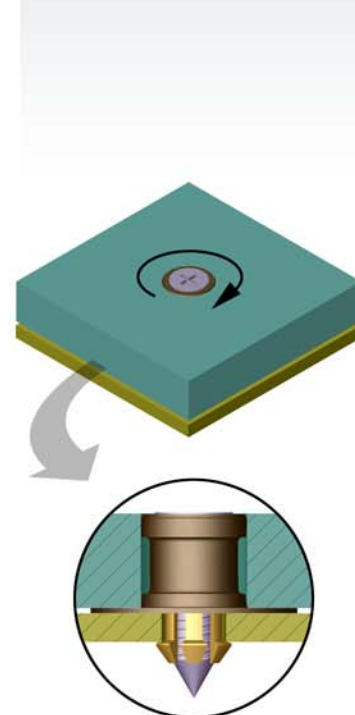
Step 3:

Drop E-Nut[®] into hole.



Step 4:

Tighten screw to standard
30 in-lbs.



AVIBANK
MFG. INC.
SPS FASTENERS DIVISION, A PCC COMPANY

11500 SHERMAN WAY, P.O. BOX 9909, NORTH HOLLYWOOD, CA, 91605 PH:818-392-2100 FAX:818-255-2094

www.avibank.com

E-Nut Installation RevE 01-23-09

TECHNICAL DATA SHEET:

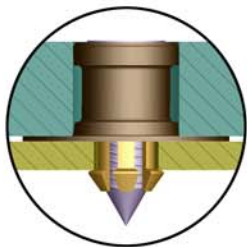
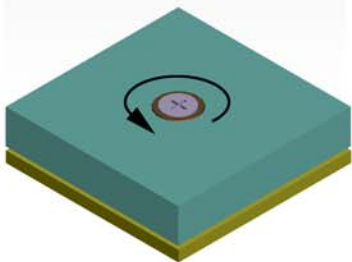
E-NUT[®] FLOORBOARD FASTENING SYSTEM

PATENT PENDING

REMOVAL:

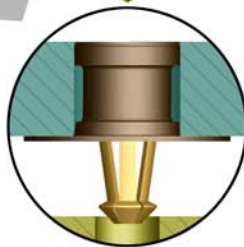
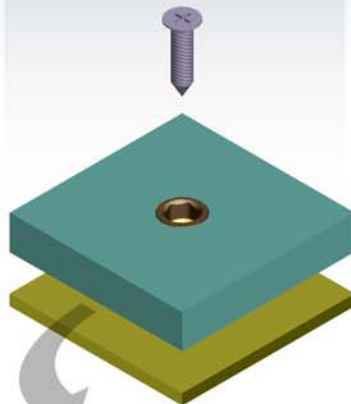
Step 1:

Loosen screw completely, and remove from insert.



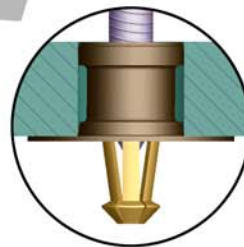
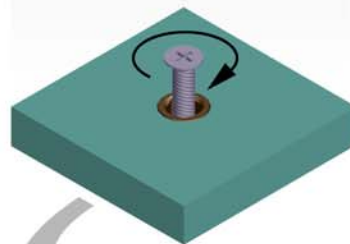
Step 2:

Floorboard can now be removed by lifting off from substructure.



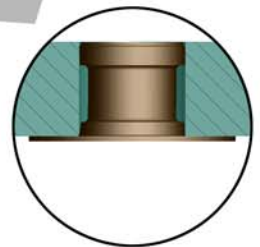
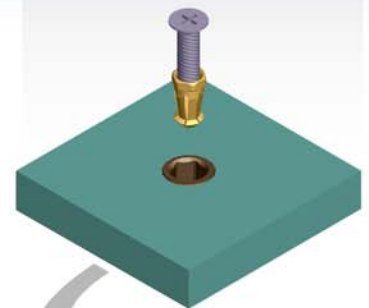
Step 3:

If E-Nut[®] must be removed from the floorboard, insert screw 1 or 2 turns (no more than 4 turns).



Step 4:

Pull screw out, and the E-Nut[®] will come out with the screw.



TIME ADVANTAGES:

- *One person - top-down installation*
- *No alignment of clip or threads with screw*

LOAD CAPABILITIES:

- *Tensile Load: 2,150 lbs. min.*
- *Installation Torque: 25 - 35 in-lbs.*
- *Qualified for Major Programs and Various Applications*



AVIBANK
MFG. INC.
SPS FASTENERS DIVISION, A PCC COMPANY

11500 SHERMAN WAY, P.O. BOX 9909, NORTH HOLLYWOOD, CA, 91605 PH:818-392-2100 FAX:818-255-2094

www.avibank.com

E-Nut Removal RevE 01-23-09



AVIBANK

MFG., INC.

AEROSTRUCTURES DIVISION, A PCC COMPANY

11500 Sherman Way, P.O. Box 9909, North Hollywood, CA 91609-1909 Ph: 818-392-2100 Fx: 818-255-2094
www.avibank.com

AVIBANK'S PRODUCT LINE

Avibank Mfg., Inc., has been at the forefront of fastener design and manufacturing for over half a century. Avibank's mission is to become partners with our customers and be an extension of their engineering and manufacturing facilities.

Standards, Metrics, Specials Cables, Streamers, Lanyards, Chains, Receptacles

QPL Source for MS17984 thru MS17990,
NAS 1333-1343, 1353-1363

Sizes 1/8" to 4" diameter

NSN: 1005, 1560, 1680, 1730, 4010, 5120,
5315, 5325, 5340



Ball-Lok® Pins

Pins, Bolts, Blind Bolts, and Specials

Tight radial fit, no tolerance

Eliminates vibration

High tensile and shear strengths

NSN: 1560, 1615, 1680, 1730, 2590,
5306, 5315, 5340



**Adjustable Diameter
Fasteners**

Positive Lock, Impedance, Metrics, Nuts & Washers, and Specials

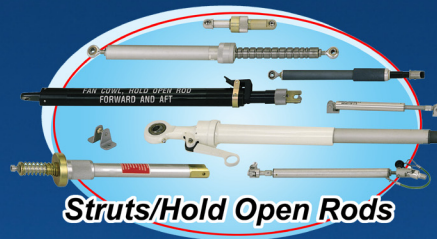
QPL Source for MS3369, MS21125,
MS21130, MS27576, MS27577, MS21244

Conforms to MIL-B-23964

Ball type or Pawl type locking elements
NSN: 5305, 5306, 5310, 5325, 5340



Self-Retaining Bolts



Struts/Hold Open Rods

Fixed Length, Telescoping, Scissor-folding, and Specials

Designed to hold open doors, drawers,
cowlings, metallic or composite materials

Secondary locking features

High tension & compression capabilities

NSN: 1560, 1680, 3040, 5340, 5895, 7010



Latches & Keepers

Hook, Hinges, Rotary, 2-Button, Shear Pin, Slide Bolt, Flush Lever, Pressure Relief, Adjustable Keeper

Adjustable feature to compensate for
structure wear

Various materials, configurations, strength
capabilities

NSN: 1560, 1680, 1700, 3040, 5340, 5975



Panel Fasteners

ET/ETC/RT - External Threads IT/ITC/MT - Internal Threads AVILOK® and Specials

For metal or composite panels

No washers to fall off causing FOD

Captivated stud bolts

Single, Dual, Quad-lead threads

NSN: 5310, 5325, 5340, 5365



**E-Nut® Fastening
System**

E-Nut® Fastening System & High Strength E-Nut® Fastening System

A Top-down fastening system for panels

Weight savings & reduces scratching of panels

Tolerates angular misalignment

Uses standard screws & accommodates a
range of material depths

**Please send me more information
on the following product lines:**

- ☐ Quick Release Pins
- ☐ Adjustable Diameter Fasteners
- ☐ Self-Retaining Bolts
- ☐ Struts/Hold-Open Rods
- ☐ Latch & Keeper Assemblies
- ☐ Panel Fasteners
- ☐ Space Hardware
- ☐ Automotive Fasteners
- ☐ E-Nut® Fastening System
- ☐ Other: _____

Your Contact Information:

Name: _____

Title: _____

Company: _____

Address: _____

Address: _____

City: _____ State: _____

Country: _____ Zip: _____

Telephone: _____

Email: _____