



Manual Number: MCRUHA02  
Edition (ECN): 2024036

# Installation, Parts, and Service

## MiRAIL® POD Loading System Round Rail Atlas



## Contents

1 General Service & Safety Related Components.....	4
Limited Standard Warranty .....	5
1.1 Trademarks .....	6
1.2 How to Get the Necessary Repair Components .....	6
1.3 Torque Requirements for Fasteners .....	7
1.3.1 Torque Values .....	7
1.3.1.1 Fasteners Made of Carbon Steel .....	7
1.3.1.1.1 Without a Threadlocker .....	7
1.3.1.1.2 With a Threadlocker .....	9
1.3.1.2 Stainless Steel Fasteners .....	11
1.3.2 Preparation.....	12
1.3.3 How to Apply a Threadlocker .....	13
1.3.3.1 Blind Holes.....	13
1.3.3.2 Through Holes .....	13
1.4 Safety — MilRAIL® Rail Loading System .....	14
1.4.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards.....	14
1.4.2 Safety Alert Messages—Unsafe Conditions .....	15
1.4.2.1 Damage and Malfunction Hazards .....	15
1.4.2.1.1 Hazards Resulting from Inoperative Safety Devices.....	15
1.4.2.1.2 Hazards Resulting from Damaged Mechanical Devices .....	16
1.4.2.2 Careless Use Hazards .....	16
1.4.2.2.1 Careless Operation Hazards—Vital Information for Operator Personnel (see also operator hazards throughout manual) .....	16
1.4.2.2.2 Careless Servicing Hazards—Vital Information for Service Personnel (see also service hazards throughout manuals).....	16
2 Rail & Netting .....	18
Stanchion and Beam Connections .....	19
Rail Joiner MilRAIL® Flat Rail and Round Round.....	24
Net Hanging Brackets .....	28
Netting and Hardware .....	30
3 Bag Loading Chute.....	31
POD Rail Loading Chute .....	32
Bag Stabilizer Cylinder .....	35
4 Bags Components.....	36
Hard Ring POD Bag 44 Inch MilRAIL® Bag Loading System — Atlas .....	38
Double Trolley MilRAIL® POD Bag Loading System, Round Rail .....	40
5 MilRAIL® Elevator .....	42
Guards and Covers MilRAIL® Elevator .....	43
Hoist Drive MilRAIL® Elevator.....	44
Torque Arm Overload Switch MilRAIL® Elevator .....	46
Carriage Slider MilRAIL® Elevator .....	49
Carriage Slider and Load Cells MilRAIL® Elevator .....	51
Hoist Motor MilRAIL® Elevator .....	54
6 Pneumatic Elevator.....	55
Pneumatic Elevator MilRAIL® Pneumatic Elevator .....	56
Pneumatic Elevator Carriage MilRAIL® Round Rail .....	60

7 Discharger & Closer .....	64
Bag Discharger and Closer MilRAIL®Round Rail .....	65
Discharger Cylinders MilRAIL®Discharger Round Rail .....	70
8 Stops & Switches.....	72
Flight Bar Stops Round Rail MilRAIL®Round Rail and Elevator .....	73
Flight Bar No Return MilRAIL®Round Rail .....	76
No Go MilRAIL®Round Rail.....	77
9 Controls & Sensing.....	78
Bag Detector Lift Bar MilRAIL®Round Rail Systems with Hard Ring Bags .....	79
Proximity Switch and Mounting Bracket .....	80
10 Pneumatic Valves.....	81
Solenoids 2 Position MilRAIL®Systems.....	82
Solenoid Spring Center 3 Position Pneumatic Rail Elevators.....	84

## Figures

Figure 1	The Bolts in Milnor® Equipment.....	7
Figure 2	Apply Threadlocker in a Blind Hole.....	13
Figure 3	Apply Threadlocker in a Through Hole.....	14
Figure 4	Use heat for disassembly of fasteners with threadlocker.....	14
Figure 5	Lattice Beams, Short Beams, and Net Support Beam Connections .....	19
Figure 6	Stanchions to Floor .....	20
Figure 7	Unistrut Beam Brackets and Hardware .....	20
Figure 8	Example of Unistrut Cross Bracing .....	21
Figure 9	Additional Unistrut Beam Connectors.....	21
Figure 10	Upper Elevator Connected to Unistrut .....	22
Figure 11	Brackets and Mounting Hardware .....	28
Figure 12	Bracket Lengths .....	28
Figure 13	Torque Arm Overload Switch Installed.....	46
Figure 14	Torque Arm Overload Switch Assembly.....	47
Figure 15	Carriage Components .....	51
Figure 16	Rail Insert and Hardware .....	52
Figure 17	Elevator Components.....	56
Figure 18	Cylinder Mounting.....	57
Figure 19	Carriage.....	60
Figure 20	Details .....	61
Figure 21	Discharger Installed to Rail .....	65
Figure 22	Discharger Components.....	66
Figure 23	Closer Components.....	67
Figure 24	Hard Rail Insert .....	68
Figure 25	Flight Bar Stops without Rail .....	73
Figure 26	Flight Bar Stops with Rail .....	74

## Tables

Table 1	Trademarks .....	6
Table 2	Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant .....	7

Table 3	Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant .....	8
Table 4	Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant .....	8
Table 5	Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant .....	9
Table 6	Threadlocker by the Diameter of the Bolt (see below Note ) .....	9
Table 7	Torque Values if You Apply LocTite 222 .....	10
Table 8	Torque Values if You Apply LocTite 242 .....	10
Table 9	Torque Values if You Apply LocTite 262 .....	10
Table 10	Torque Values if You Apply LocTite 272 (High-Temperature) .....	10
Table 11	Torque Values if You Apply LocTite 277 .....	11
Table 12	Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller .....	11
Table 13	Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch .....	12
Table 14	Parts List—Stanchion and Bean Connections .....	22
Table 15	Parts List—Rail Joiner MilRAIL® Flat Rail and Round Round .....	25
Table 16	Parts List—Net Hanging Hardware .....	29
Table 17	Parts List—Netting and Hardware .....	30
Table 18	Parts List—POD Rail Loading Chute .....	33
Table 19	Parts List—Bag Stabilizer Cylinder .....	35
Table 20	Parts List—Hard Ring POD Bag 44 Inch MilRAIL® Bag Loading System — Atlas .....	39
Table 21	Parts List—Double Trolley MilRAIL® POD Bag Loading System, Round Rail .....	41
Table 22	Parts List—Guards and Covers MilRAIL® Elevator .....	43
Table 23	Parts List—Hoist Drive MilRAIL® Elevator .....	44
Table 24	Parts List—Torque Arm Overload Switch MilRAIL® Elevator .....	47
Table 25	Parts List—Carriage Slider MilRAIL® Elevator .....	50
Table 26	Parts List—Carriage and Load Cells MilRAIL® Elevator .....	53
Table 27	Parts List—Hoist Motor MilRAIL® Elevator .....	54
Table 28	Parts List—Pneumatic Elevator MilRAIL® Pneumatic Elevator .....	57
Table 29	Parts List—Pneumatic Elevator Carriage MilRAIL® Round Rail .....	62
Table 30	Parts List—Bag Discharger and Closer MilRAIL® Round Rail .....	68
Table 31	Parts List—Discharger Cylinders MilRAIL® Discharger Round Rail .....	70
Table 32	Parts List—MilRAIL® Round Rail and Elevator .....	74
Table 33	Parts List—Flight Bar No Return MilRAIL® Round Rail .....	76
Table 34	Parts List—No Go MilRAIL® Round Rail .....	77
Table 35	Parts List—Bag Detector Lift Bar MilRAIL® Round Rail Systems with Hard Ring Bags .....	79
Table 36	Parts List—Proximity Switch and Mounting Bracket .....	80
Table 37	Parts List—Solenoids 2 Position MilRAIL® Systems .....	82
Table 38	Parts List—Solenoid Spring Center 3 Position Pneumatic Rail Elevators .....	84

# 1 General Service & Safety Related Components

BMP720097 / 19036

BRUUUM01.1 0000229985 C.2 D.6 12/5/19, 11:43 AM Released

## **PELLERIN MILNOR CORPORATION LIMITED STANDARD WARRANTY**

We warrant to the original purchaser that MILNOR machines including electronic hardware/software (hereafter referred to as "equipment"), will be free from defects in material and workmanship for a period of one year from the date of shipment (unless the time period is specifically extended for certain parts pursuant to a specific MILNOR published extended warranty) from our factory with no operating hour limitation. This warranty is contingent upon the equipment being installed, operated and serviced as specified in the operating manual supplied with the equipment, and operated under normal conditions by competent operators.

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will—at our option—repair or replace the defective part or parts, EX Factory (labor and freight specifically NOT included). We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

Parts damaged by exposure to weather, to aggressive water, or to chemical attack are not covered by this warranty. For parts which require routine replacement due to normal wear—such as gaskets, contact points, brake and clutch linings, belts, hoses, and similar parts—the warranty time period is 90 days.

We reserve the right to make changes in the design and/or construction of our equipment (including purchased components) without obligation to change any equipment previously supplied.

ANY SALE OR FURNISHING OF ANY EQUIPMENT BY MILNOR IS MADE ONLY UPON THE EXPRESS UNDERSTANDING THAT MILNOR MAKES NO EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR ANY OTHER WARRANTY IMPLIED BY LAW INCLUDING BUT NOT LIMITED TO REDHIBITION. MILNOR WILL NOT BE RESPONSIBLE FOR ANY COSTS OR DAMAGES ACTUALLY INCURRED OR REQUIRED AS A RESULT OF: THE FAILURE OF ANY OTHER PERSON OR ENTITY TO PERFORM ITS RESPONSIBILITIES, FIRE OR OTHER HAZARD, ACCIDENT, IMPROPER STORAGE, MIS-USE, NEGLIGENCE, POWER OR ENVIRONMENTAL CONTROL MALFUNCTIONS, DAMAGE FROM LIQUIDS, OR ANY OTHER CAUSE BEYOND THE NORMAL RANGE OF USE. REGARDLESS OF HOW CAUSED, IN NO EVENT SHALL MILNOR BE LIABLE FOR SPECIAL, INDIRECT, PUNITIVE, LIQUIDATED, OR CONSEQUENTIAL COSTS OR DAMAGES, OR ANY COSTS OR DAMAGES WHATSOEVER WHICH EXCEED THE PRICE PAID TO MILNOR FOR THE EQUIPMENT IT SELLS OR FURNISHES.

THE PROVISIONS ON THIS PAGE REPRESENT THE ONLY WARRANTY FROM MILNOR AND NO OTHER WARRANTY OR CONDITIONS, STATUTORY OR OTHERWISE, SHALL BE IMPLIED.

WE NEITHER ASSUME, NOR AUTHORIZE ANY EMPLOYEE OR OTHER PERSON TO ASSUME FOR US, ANY OTHER RESPONSIBILITY AND/OR LIABILITY IN CONNECTION WITH THE SALE OR FURNISHING OF OUR EQUIPMENT TO ANY BUYER.

BMP720097/19036

**BNUUUU02 / 2023296** BNUUUU02 0000158094 G.2 7/20/23, 10:58 AM Released

## 1.1 Trademarks

BNUUUU02.R01 0000158093 C.2 G.2 F.2 7/20/23, 10:57 AM Released

These words are trademarks of Pellerin Milnor® Corporation and other entities:

**Table 1. Trademarks**

AutoSpot™	GreenFlex™	MilMetrix®	PulseFlow®
CBW®	GearTrace™	MilTouch™	RAM Command™
Drynet™	GreenTurn™	MilTouch-EX™	RecircONE®
E-P Express®	Hydro-cushion™	MilRAIL®	RinSave®
E-P OneTouch®	Mentor®	Miltrac™	SmoothCoil™
E-P Plus®	Mildata®	MilVision™	Staph Guard®
Gear Guardian®	Milnor®	PBW™	

**BNUUUM01 / 2019342** BNUUUM01 0000250121 B.3 1/2/20, 2:14 PM Released

## 1.2 How to Get the Necessary Repair Components

BNUUUM01.C01 0000250120 A.3 C.2 B.3 1/2/20, 2:14 PM Released

You can get components to repair your machine from the approved supplier where you got this machine. Your supplier will usually have the necessary components in stock. You can also get components from the Milnor® factory.

Tell the supplier the machine model and serial number and this data for each necessary component:

- The component number from this manual
- The component name if known
- The necessary quantity
- The necessary transportation requirements
- If the component is an electrical component, give the schematic number if known.
- If the component is a motor or an electrical control, give the nameplate data from the used component.

To write to the Milnor® factory:

Pellerin Milnor Corporation  
 Post Office Box 400  
 Kenner, LA 70063-0400  
 UNITED STATES

Telephone: 504-712-7775  
 Fax: 504-469-9777  
 Email: parts@milnor.com



BNUUUN02 / 2019125

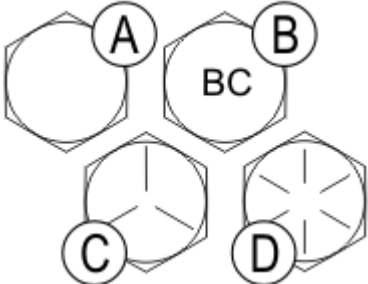
BNUUUN02 0000222452 B.3 1/2/20, 2:14 PM Released

## 1.3 Torque Requirements for Fasteners

BNUUUN02.C01 0000222451 A.3 C.2 B.3 1/2/20, 2:14 PM Released

The document about the assembly gives the torque requirements for other fasteners. **If fastener torque specifications or threadlocker requirements in an assembly document are different from this document, use the assembly document.**

**Figure 1. The Bolts in Milnor® Equipment**

The Marks on Bolt Heads	Legend
	<p><b>A</b> . . . SAE Grades 1 and 2, ASTM A307, and stainless steel</p> <p><b>B</b> . . . Grade BC, ASTM A354</p> <p><b>C</b> . . . SAE Grade 5, ASTM A449</p> <p><b>D</b> . . . SAE Grade 8 and ASTM A354 BD</p>

### 1.3.1 Torque Values

BNUUUN02.C02 0000222449 A.3 C.2 B.3 1/2/20, 2:14 PM Released

These tables give the standard dimension, grade, threadlocker, and torque requirements for fasteners frequently used on Milnor® equipment.



**NOTE:** Data from the Pellerin Milnor® Corporation “Bolt Torque Specification” (bolt\_torque\_milnor.xls/2002096).

#### 1.3.1.1 Fasteners Made of Carbon Steel

BNUUUN02.C03 0000222448 A.3 C.2 B.3 1/2/20, 2:14 PM Released

##### 1.3.1.1.1 Without a Threadlocker

BNUUUN02.C04 0000222447 A.3 C.2 B.3 1/2/20, 2:14 PM Released

**Table 2. Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	66	7	101	11	143	16	126	14
1/4 x 28	76	9	116	13	163	18	–	–
5/16 x 18	136	15	209	24	295	33	258	29
5/16 x 24	150	17	232	26	325	37	–	–

**Table 3. Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	20	27	31	42	44	59	38	52
3/8 x 24	23	31	35	47	50	68	–	–
7/16 x 14	32	43	49	66	70	95	61	83
7/16 x 20	36	49	55	75	78	105	–	–
1/2 x 13	49	66	75	102	107	145	93	126
1/2 x 20	55	75	85	115	120	163	–	–
9/16 x 12	70	95	109	148	154	209	134	182
9/16 x 18	78	106	121	164	171	232	–	–
5/8 x 11	97	131	150	203	212	287	186	252
5/8 x 18	110	149	170	231	240	325	–	–
3/4 x 10	172	233	266	361	376	510	329	446
3/14 x 16	192	261	297	403	420	569	–	–
7/8 x 9	167	226	429	582	606	821	531	719
7/8 x 14	184	249	473	641	668	906	–	–
1 x 8	250	339	644	873	909	1232	796	1079
1 x 12	274	371	704	954	994	1348	–	–
1 x 14	281	381	723	980	1020	1383	–	–
1 1/8 x 7	354	480	794	1077	1287	1745	1126	1527
1 1/8 x 12	397	538	891	1208	1444	1958	–	–
1 1/4 x 7	500	678	1120	1519	1817	2464	1590	2155
1 1/4 x 12	553	750	1241	1682	2012	2728	–	–
1 3/8 x 6	655	888	1469	1992	2382	3230	2085	2827
1 3/8 x 12	746	1011	1672	2267	2712	3677	–	–
1 1/2 x 6	869	1178	1949	2642	3161	4286	2767	3751
1 1/2 x 12	979	1327	2194	2974	3557	4822	–	–

**Table 4. Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	49	6	76	9	107	12	95	11
1/4 x 28	56	6	88	10	122	14	–	–
5/16 x 18	102	12	156	18	222	25	193	22
5/16 x 24	113	13	174	20	245	28	–	–

**Table 5. Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	15	20	23	31	33	44	29	38
3/8 x 24	17	23	26	35	37	49	–	–
7/16 x 14	24	32	37	50	52	71	46	61
7/16 x 20	27	36	41	55	58	78	–	–
1/2 x 13	37	49	56	76	80	106	70	93
1/2 x 20	41	55	64	85	90	120	–	–
9/16 x 12	53	70	81	110	115	153	101	134
9/16 x 18	59	79	91	122	128	174	–	–
5/8 x 11	73	97	113	150	159	212	139	186
5/8 x 18	83	110	127	172	180	240	–	–
3/4 x 10	129	173	200	266	282	376	246	329
3/4 x 16	144	192	223	297	315	420	–	–
7/8 x 9	125	166	322	430	455	606	398	531
7/8 x 14	138	184	355	474	501	668	–	–
1 x 8	188	250	483	644	682	909	597	796
1 x 12	205	274	528	716	746	995	–	–
1 x 14	210	280	542	735	765	1037	–	–
1 1/8 x 7	266	354	595	807	966	1288	845	1126
1 1/8 x 12	298	404	668	890	1083	1444	–	–
1 1/4 x 7	375	500	840	1120	1363	1817	1192	1590
1 1/4 x 12	415	553	930	1261	1509	2013	–	–
1 3/8 x 6	491	655	1102	1470	1787	2382	1564	2085
1 3/8 x 12	559	758	1254	1672	2034	2712	–	–
1 1/2 x 6	652	870	1462	1982	2371	3161	2075	2767
1 1/2 x 12	733	994	1645	2194	2668	3557	–	–

**1.3.1.1.2 With a Threadlocker**

BNUUUN02.C05 0000222446 A.3 C.2 B.3 1/2/20, 2:14 PM Released

**Table 6. Threadlocker by the Diameter of the Bolt (see below Note )**

LocTite Product	Dimension			
	1/4-inch	1/4- to 5/8-inch	5/8- to 7/8-inch	1-inch +
LocTite 222	OK			
LocTite 242		OK		
LocTite 262			OK	
LocTite 272			High temperature	
LocTite 277				OK



**NOTE:** The acceptable bolt size ranges for various LocTite® threadlocking products is the LocTite manufacturer’s **general** recommendation. Specific applications sometime require that a LocTite product is applied to a bolt size outside the ranges shown here. For example, Milnor® specifies LocTite 242 for use on certain 1" bolt applications and has confirmed this usage with the LocTite manufacturer. You may see variances such as this in the documentation for specific machine assemblies.

**Table 7. Torque Values if You Apply LocTite 222**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	60	7	96	11	132	15	108	12
1/4 x 28	72	8	108	12	144	16	–	–

**Table 8. Torque Values if You Apply LocTite 242**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
5/16 x 18	11	15	17	23	25	34	22	30
5/16 x 24	13	18	19	26	27	37	27	37
3/8 x 16	20	27	31	42	44	60	38	52
3/8 x 24	23	31	35	47	50	68	–	–
7/16 x 14	32	43	49	66	70	95	61	83
7/16 x 20	36	49	55	75	78	106	–	–
1/2 x 13	49	66	75	102	107	145	93	126
1/2 x 20	55	75	85	115	120	163	–	–
9/16 x 12	70	95	109	148	154	209	134	182
9/16 x 18	78	106	121	164	171	232	–	–
5/8 x 11	97	132	150	203	212	287	186	252
5/8 x 18	110	149	170	230	240	325	–	–

**Table 9. Torque Values if You Apply LocTite 262**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/4 x 10	155	210	240	325	338	458	296	401
3/4 x 16	173	235	267	362	378	512	–	–
7/8 x 9	150	203	386	523	546	740	477	647
7/8 x 14	165	224	426	578	601	815	–	–

**Table 10. Torque Values if You Apply LocTite 272 (High-Temperature)**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 8	350	475	901	1222	1272	1725	1114	1510
1 x 12	383	519	986	1337	1392	1887	–	–

**Table 10 Torque Values if You Apply LocTite 272 (High-Temperature) (cont'd.)**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 14	393	533	1012	1372	1428	1936	–	–
1-1/8 x 7	496	672	1111	1506	1802	2443	1577	2138
1-1/8 x 12	556	754	1247	1691	2022	2741	–	–
1-1/4 x 7	700	949	1568	2126	2544	3449	2226	3018
1-1/4 x 12	774	1049	1737	2355	2816	3818	–	–
1-3/8 x 6	917	1243	2056	2788	3335	4522	2919	3958
1-3/8 x 12	1044	1415	2341	3174	3797	5148	–	–
1-1/2 x 6	1217	1650	2729	3700	4426	6001	3873	5251
1-1/2 x 12	1369	1856	3071	4164	4980	6752	–	–

**Table 11. Torque Values if You Apply LocTite 277**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 8	325	441	837	1135	1181	1601	1034	1402
1 x 12	356	483	916	1242	1293	1753	–	–
1 x 14	365	495	939	1273	1326	1798	–	–
1-1/8 x 7	461	625	1032	1399	1674	2270	1464	1985
1-1/8 x 12	516	700	1158	1570	1877	2545	–	–
1-1/4 x 7	650	881	1456	1974	2362	3202	2067	2802
1-1/4 x 12	719	975	1613	2187	2615	3545	–	–
1-3/8 x 6	851	1154	1909	2588	3097	4199	2710	3674
1-3/8 x 12	970	1315	2174	2948	3526	4781	–	–
1-1/2 x 6	1130	1532	2534	3436	4110	5572	3597	4877
1-1/2 x 12	1271	1723	2852	3867	4624	6269	–	–

### 1.3.1.2 Stainless Steel Fasteners

BNUUUN02.C06 0000222445 A.3 C.2 B.3 1/2/20, 2:14 PM Released

**Table 12. Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller**

Dimension	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	79	9	76	9	45	5
1/4 x 28	100	11	94	11	56	6
5/16 x 18	138	16	132	15	79	9
5/16 x 24	148	17	142	16	85	10

**Table 13. Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch**

Dimension	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	21	28	20	27	12	16
3/8 x 24	23	31	22	29	13	18
7/16 x 14	33	44	31	42	19	25
7/16 x 20	35	47	33	45	20	27
1/2 x 13	45	61	43	58	26	35
1/2 x 20	47	64	45	61	27	37
9/16 x 12	59	81	57	77	34	46
9/16 x 18	66	89	63	85	38	51
5/8 x 11	97	131	93	125	56	75
5/8 x 18	108	150	104	141	62	84
3/4 x 10	132	179	128	173	77	104
3/4 x 16	130	176	124	168	75	101
7/8 x 9	203	275	194	263	116	158
7/8 x 14	202	273	193	262	116	157
1 x 8	300	406	287	389	172	233
1 x 14	271	367	259	351	156	211
1-1/8 x 7	432	586	413	560	248	336
1-1/8 x 12	408	553	390	529	234	317
1-1/4 x 7	546	740	523	709	314	425
1-1/4 x 12	504	683	480	651	288	390
1-1/2 x 6	930	1261	888	1204	533	722
1-1/2 x 12	732	992	703	953	422	572

### 1.3.2 Preparation

BNUUUN02.T01 0000222511 B.2 C.2 B.3 4/20/23, 9:05 AM Released



**WARNING: Fire Hazard** — Some solvents and primers are flammable.

- ▶ Use threadlocker and primers with sufficient airflow.
- ▶ Do not use flammable material near ignition sources.

1. Clean all threads with a wire brush or a different tool.
2. Remove the grease from the fasteners and the mating threads with solvent. Make the parts dry.



**NOTE:** LocTite 7649 Primer™ or standard solvents will remove grease from parts.

3. Apply a spray of LocTite 7649 Primer™ or equal on the fasteners and the mating threads. Let the primer dry for one minute minimum.

### 1.3.3 How to Apply a Threadlocker

BNUUUN02.T02 0000222508 B.2 C.2 B.3 4/20/23, 9:09 AM Released

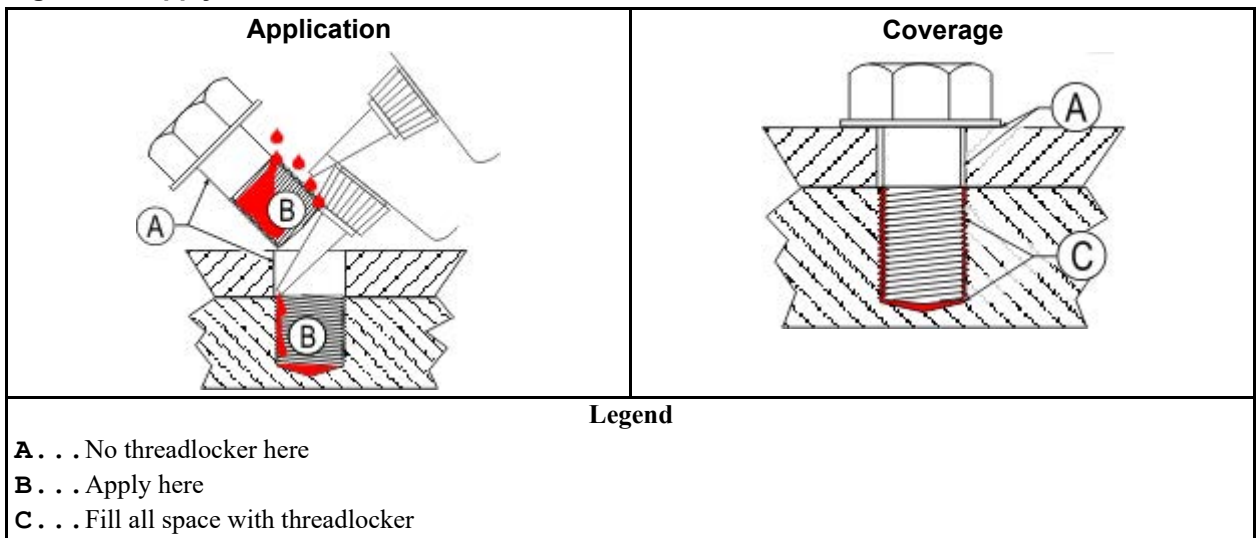


**CAUTION: Malfunction Hazard** — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

- ▶ Read the threadlocker manufacturer's instructions and warnings. Obey these instructions.

Apply the threadlocker only to the areas where the fastener threads and the mating threads engage.

**Figure 2. Apply Threadlocker in a Blind Hole**



#### 1.3.3.1 Blind Holes

BNUUUN02.T03 0000222507 A.3 C.2 B.3 1/2/20, 2:14 PM Released

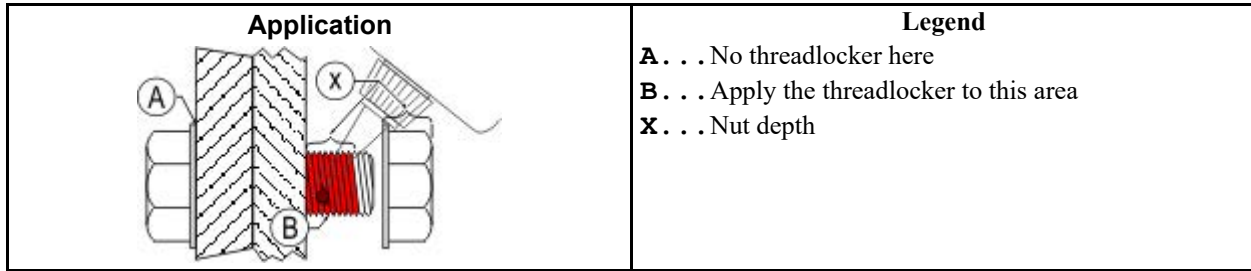
1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table ([Table 6: Threadlocker by the Diameter of the Bolt \(see below Note\), page 9](#) to [Table 12: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 11](#)).

#### 1.3.3.2 Through Holes

BNUUUN02.T04 0000222506 A.3 C.2 B.3 11/26/19, 2:51 PM Released

1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.
3. Tighten the bolt to the value shown in the correct table ([Table 6: Threadlocker by the Diameter of the Bolt \(see below Note\), page 9](#) to [Table 12: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 11](#)).

**Figure 3. Apply Threadlocker in a Through Hole**



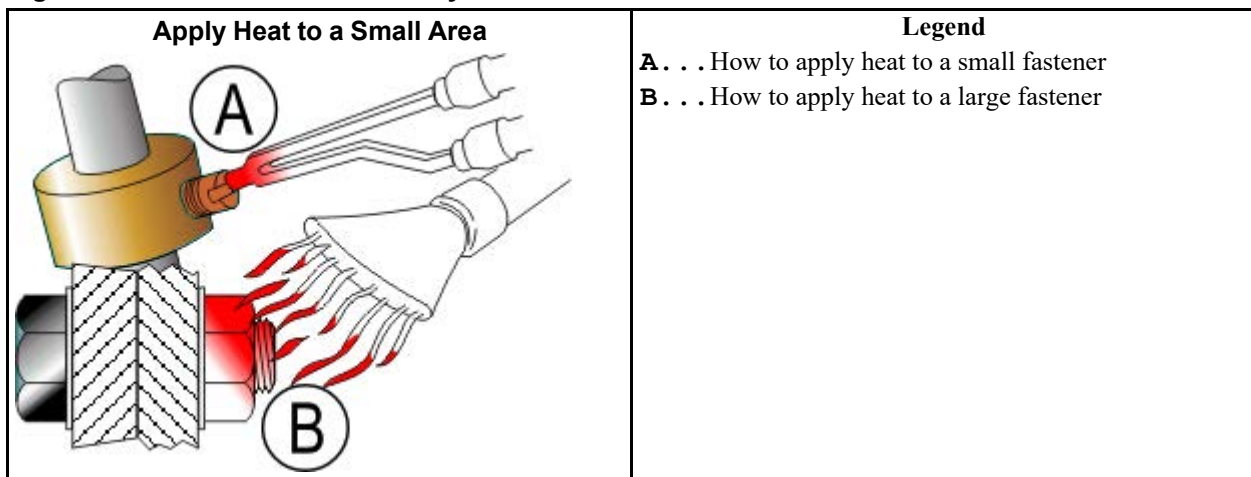
### 1.3.3.3 Disassembly

BNUUUN02.C07 0000222444 A.3 C.2 B.3 11/26/19, 2:59 PM Released

For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

For low-strength and moderate-strength threadlocker, disassemble with hand tools.

**Figure 4. Use heat for disassembly of fasteners with threadlocker.**



BNRUUS04 / 2021535

BNRUUS04 0000403378 C.2 12/30/21, 1:45 PM Released

## 1.4 Safety — MiRAIL® Rail Loading System

BNRUUS04.C01 0000403377 A.2 C.2 12/30/21, 1:45 PM Released

### 1.4.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNRUUS01.C03 0000403322 A.2 C.2 12/30/21, 11:26 AM Released

The following are instructions about hazards inside the machine and in electrical enclosures.



**WARNING: Electrocution and Electrical Burn Hazards** — Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- ▶ Do not unlock or open electric box doors.



- ▶ Do not remove guards, covers, or panels.
- ▶ Do not reach into the machine housing or frame.
- ▶ Keep yourself and others off of machine.
- ▶ Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.



**WARNING: The moving bag elevator** — can strike or entrap you.

- ▶ Do not enter the bag loading enclosure unless you are qualified and authorized.
- ▶ Keep enclosure keys in a secure area, accessible only to authorized personnel.



**CAUTION: A bag malfunction** — can release a large quantity of soiled goods.

- ▶ Do not stand under bags, especially if protective netting is not in place.
- ▶ Do not use your hands to free drawstring tangles.

## 1.4.2 Safety Alert Messages—Unsafe Conditions

BNRUUS03.C01 0000403366 A.2 C.2 12/30/21, 11:27 AM Released

### 1.4.2.1 Damage and Malfunction Hazards

BNRUUS03.C02 0000403365 A.1 A.2 C.2 12/29/21, 2:31 PM Released

#### 1.4.2.1.1 Hazards Resulting from Inoperative Safety Devices

BNRUUS03.C03 0000403364 A.2 C.2 12/30/21, 11:27 AM Released



**WARNING: Multiple Hazards** — Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- ▶ Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.



**WARNING: Electrocution and Electrical Burn Hazards** — Electric box doors—Operating the machine with any electric box door unlocked can expose high voltage conductors inside the box.

- ▶ Do not unlock or open electric box doors.



**WARNING: Entangle and Crush Hazards** — Guards, covers, and panels—Operating the machine with any guard, cover, or panel removed exposes moving components.

- ▶ Do not remove guards, covers, or panels.

### 1.4.2.1.2 Hazards Resulting from Damaged Mechanical Devices

BNRUUS03.C04 0000403363 A.2 C.2 12/30/21, 11:27 AM Released



**WARNING: Multiple Hazards** — Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- ▶ Do not operate a damaged or malfunctioning machine. Request authorized service.



**WARNING: Crush Hazards** — Chain and hoist—A broken chain or a malfunctioning hoist can permit the belt/bucket assembly to fall or descend.

- ▶ Do not operate the machine with any evidence of damage or malfunction.

### 1.4.2.2 Careless Use Hazards

BNRUUS03.C05 0000403362 A.1 A.2 C.2 12/29/21, 2:35 PM Released

#### 1.4.2.2.1 Careless Operation Hazards—Vital Information for Operator Personnel (see also operator hazards throughout manual)

BNRUUS03.C06 0000403361 A.2 C.2 12/30/21, 11:27 AM Released



**WARNING: Multiple Hazards** — Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- ▶ Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- ▶ Do not operate a damaged or malfunctioning machine. Request authorized service.
- ▶ Do not attempt unauthorized servicing, repairs, or modification.
- ▶ Do not use the machine in any manner contrary to the factory instructions.
- ▶ Use the machine only for its customary and intended purpose.
- ▶ Understand the consequences of operating manually.

#### 1.4.2.2.2 Careless Servicing Hazards—Vital Information for Service Personnel (see also service hazards throughout manuals)

BNRUUS03.C07 0000403360 A.2 C.2 12/30/21, 11:27 AM Released



**WARNING: Electrocution and Electrical Burn Hazards** — Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- ▶ Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.

- ▶ Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.



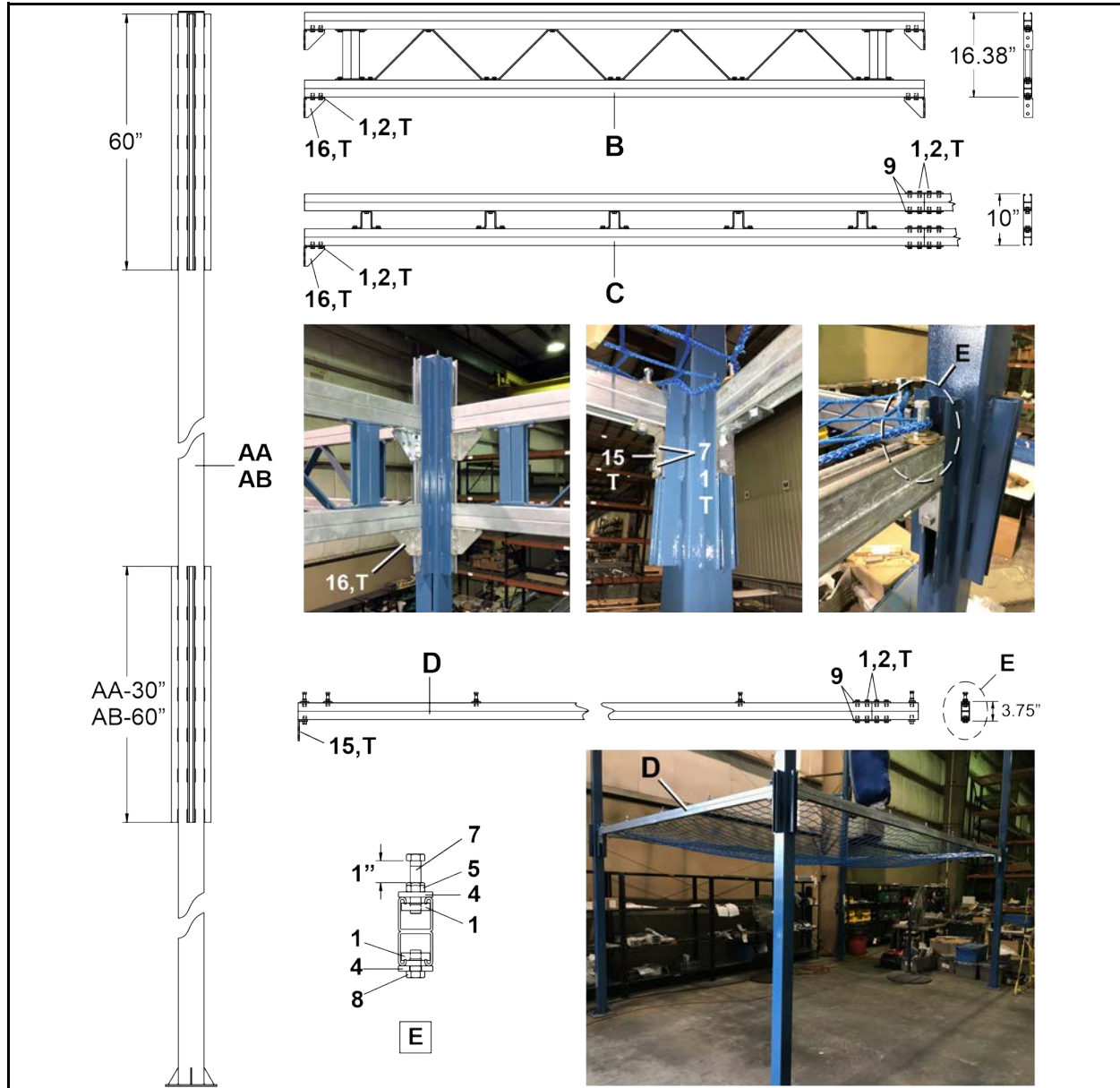
**WARNING: Rail system mechanisms such as air-operated devices — can pinch or sever fingers.**

- ▶ Use extreme care with you work on, or in the vicinity of rail system mechanisms.

## 2 Rail & Netting

Stanchion and Beam Connections

Figure 5. Lattice Beams, Short Beams, and Net Support Beam Connections



Legend

- AA** . . Stanchion made of 4" square tubing
- AB** . . Stanchion made of 6" square tubing
- B** . . . Lattice Beam
- C** . . . Short Beam
- D** . . . Net Support Beam
- E** . . . Net Support Beam Hardware, typical
- T** . . . Typical

# Stanchion and Beam Connections

Figure 6. Stanchions to Floor

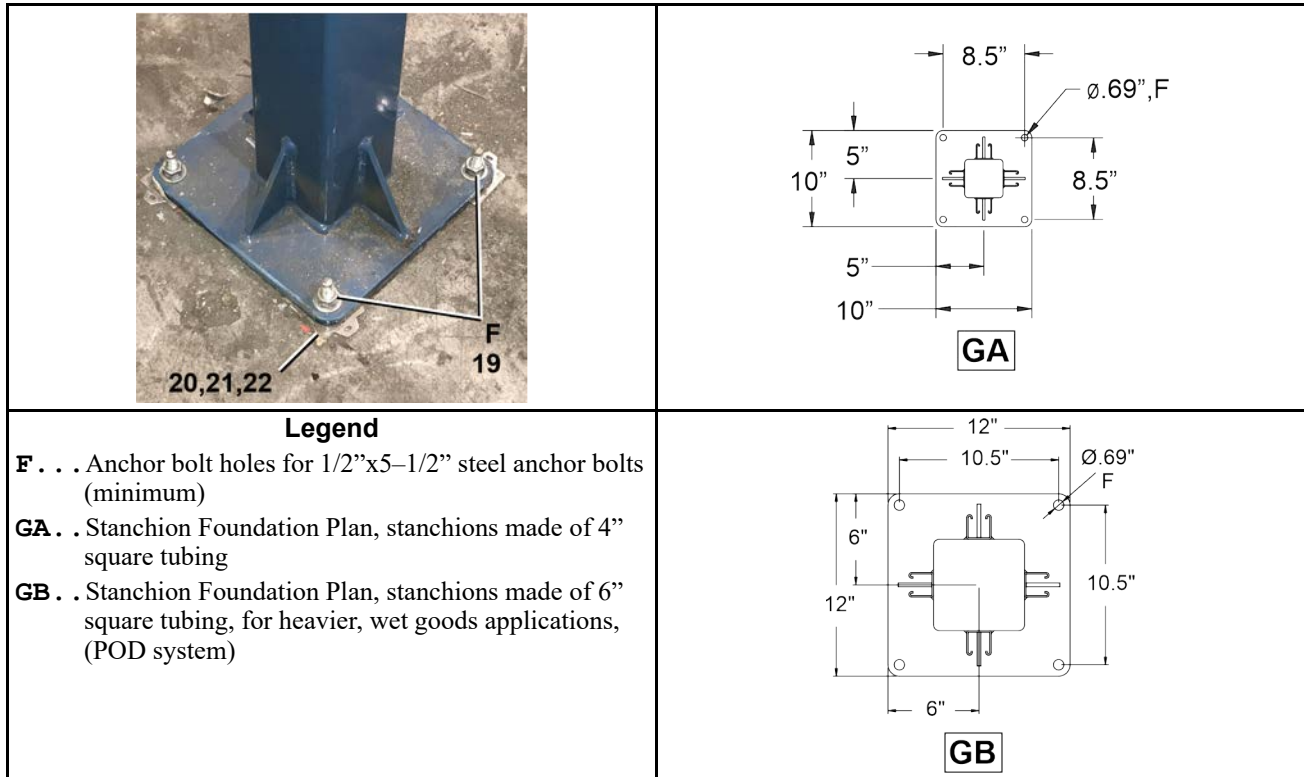
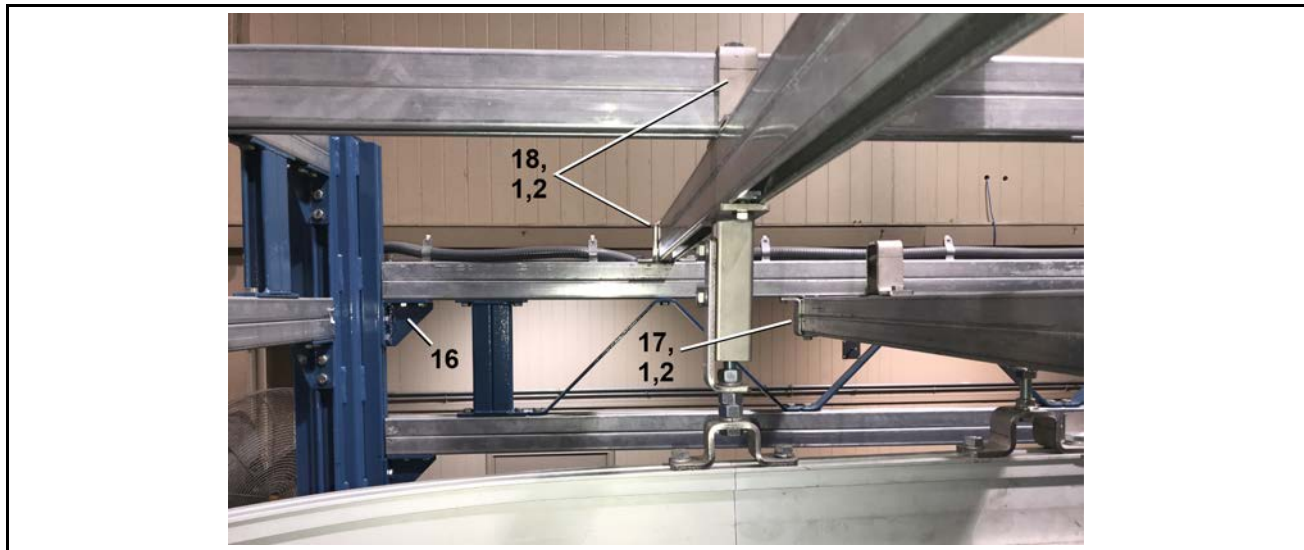


Figure 7. Unistrut Beam Brackets and Hardware



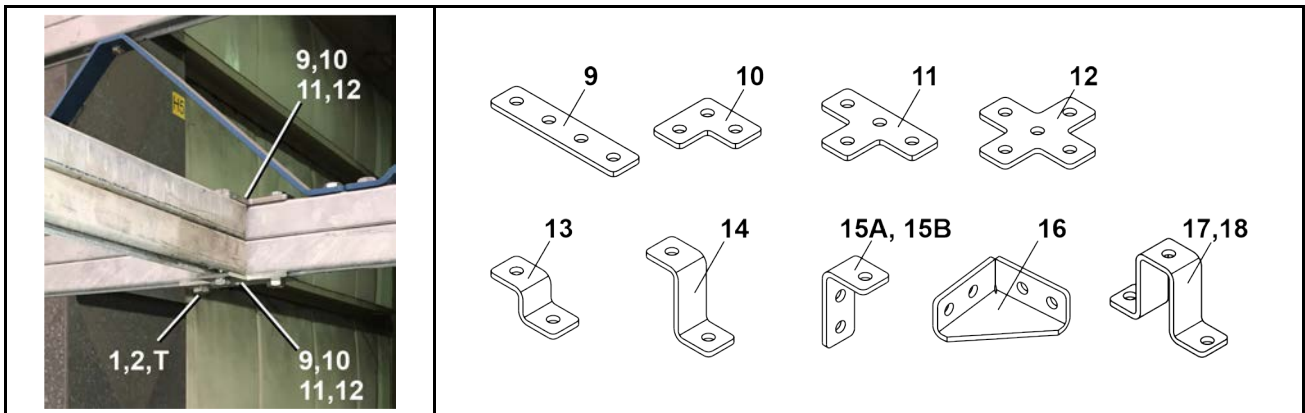
# Stanchion and Beam Connections

5 Sheet

Figure 8. Example of Unistrut Cross Bracing



Figure 9. Additional Unistrut Beam Connectors





## Stanchion and Beam Connections

5 Sheet

Figure 10. Upper Elevator Connected to Unistrut

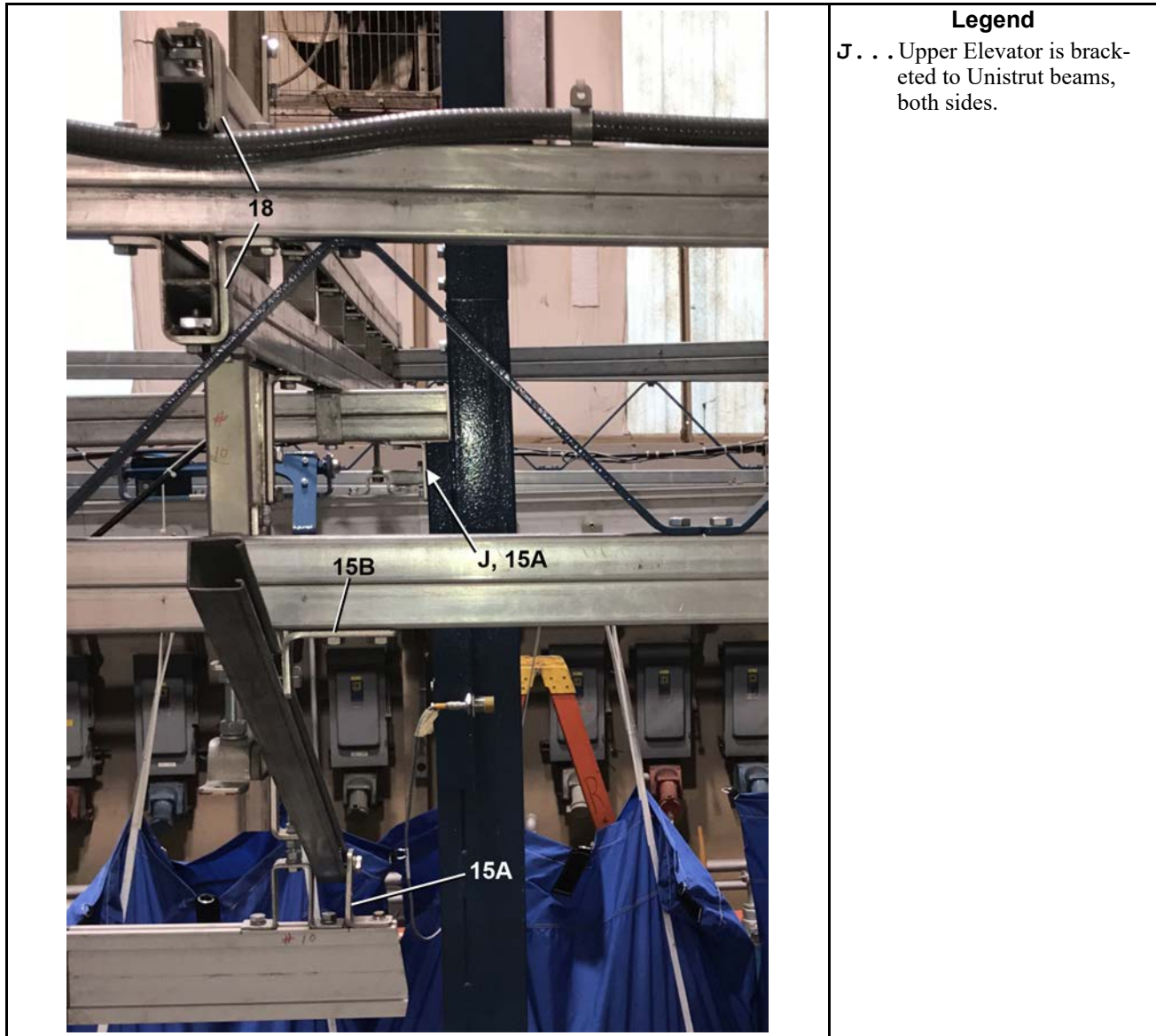


Table 14. Parts List—Stanchion and Bean Connections

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GUJ37001A	UNISTRUT STRAIGHT JOINT W/HARDWARE	Reference
	B	GUJ37001B	UNISTRUT L-JOINT W/HARDWARE	



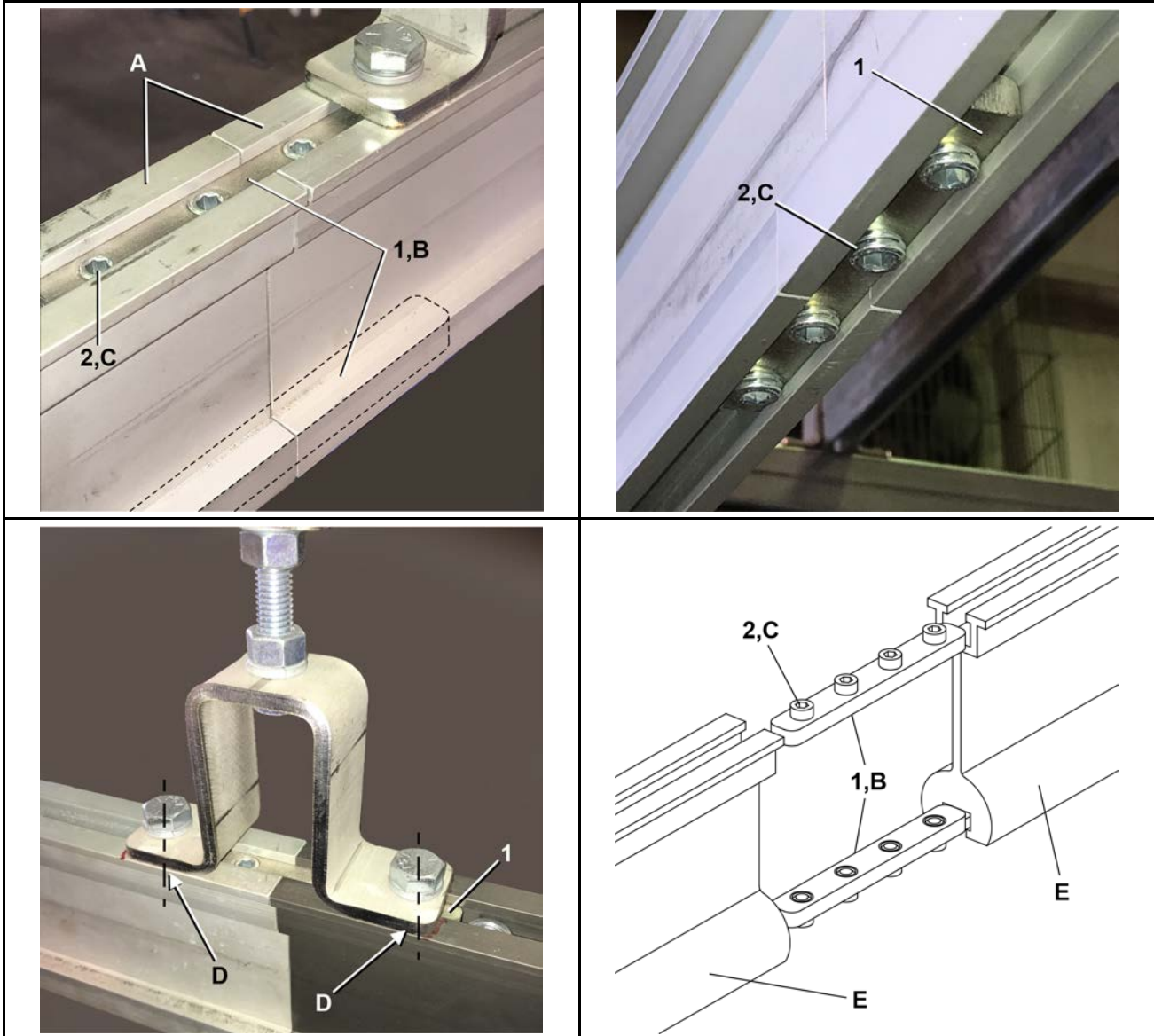
**Stanchion and Beam Connections**

5 Sheet

**Table 14 Parts List—Stanchion and Bean Connections (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
	C	GUJ37001C	UNISTRUT T-JOINT W/HARDWARE	
	D	GUJ37001D	UNISTRUT CROSS-JOINT W/HARDWARE	
	E	GUJ37003	UNISTRUT GUSSET W/HARDWARE	
	F	GUJ37004	UNISTRUT DOUBLE CHANNEL TOP HAT W/HARDWARE	
	G	GUJ37004A	UNISTRUT TOP HAT W/HARDWARE	
	H	GUJ37005	UNISTRUT L BRACKET W/HARDWARE	
	J	GUJ37005A	UNISTRUT SHORT L BRACKET W/HARDWARE	
	K	GUJ37006	UNISTRUT LONG Z-BRACKET W/HARDWARE	
	L	GUJ37006A	UNISTRUT SHORT Z-BRACKET W/HARDWARE	
Components				
all	1	27A0625NUV	CLAMPNUT 1/2-13	
all	2	15K151B	HXCAPSCR 1/2-13UNC2X1.25 GR5 ZINC PRECOTE 30 THRD7-11	
all	4	15U286	FLATWASHER 2"0DX17/32"IDX1/4"	
all	5	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	6	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	7	15K190A	HEXTAPSCR 1/2-13X2.5 ZINC GR5F	
all	8	15K149	HXCAPSCR 1/2-13UNC2X1+1/8 GR5 ZINC	
A	9	27A06001	UNISTRUT FLAT PLATE STRAIGHT	
B	10	27A06002	UNISTRUT FLAT PLATE L	
C	11	27A06003	UNISTRUT FLAT PLATE T	
D	12	27A06004	UNISTRUT FLAT PLATE CROSS	
L	13	27A06005	UNISTRUT Z BRACKET	
K	14	27A06005A	UNISTRUT Z BRACKET LONG	
H	15	27A06006	UNISTRUT L BRACKET	
J	15	27A06006A	UNISTRUT SHORT L BRACKET	
E	16	27A06010	UNISTRUT GUSSET 4X4X90DEG WLD	
all	17	04 30575A	RAIL SUPPORT TOP HAT	
all	18	04 30575C	DOUBLE CHANNEL TOP HAT	
all	19	15B193	WEDGE ANCHOR BOLT 1/2X5-1/2 STEEL	
all	20	04 30598	SHIM 24GA 2" X 2" SS 5/8" SLOT	
all	21	04 30598A	SHIM 18GA. 2" X 2" SS 5/8" SLOT	
all	22	04 30598B	SHIM 11GA. 2" X 2" SS 5/8" SLOT	

Rail Joiner



Legend

- A . . . Flat rail
- B . . . Two joiner plates per rail junction, top and bottom
- C . . . 4 instances per plate
- D . . . Rail support brackets may mount onto outer holes of joiner plates.
- E . . . Round rail

# Rail Joiner

2 Sheet

MilRAIL® Flat Rail and Round Round

**Legend**

- A . . . Rail segments
- B . . . Two joiner plates (one upper and one lower) are used per rail junction.
- C . . . Four instances per plate
- D . . . Rail support brackets may mount into the outer holes of the upper joiner plates.

**Table 15. Parts List—Rail Joiner**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ARJ37001	RAIL JOINER STANDARD	Plate plus Hardware
Components				

## Rail Joiner

2 Sheet

MilRAIL® Flat Rail and Round Round

**Table 15 Parts List—Rail Joiner (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	1	04 30250B	RAIL JOINING PLATE 4 HOLE	
all	2	15Q168	SOKSETSCR CUP 1/2-13X5/8 ZN	

This page intentionally blank

Net Hanging Brackets

Figure 11. Brackets and Mounting Hardware

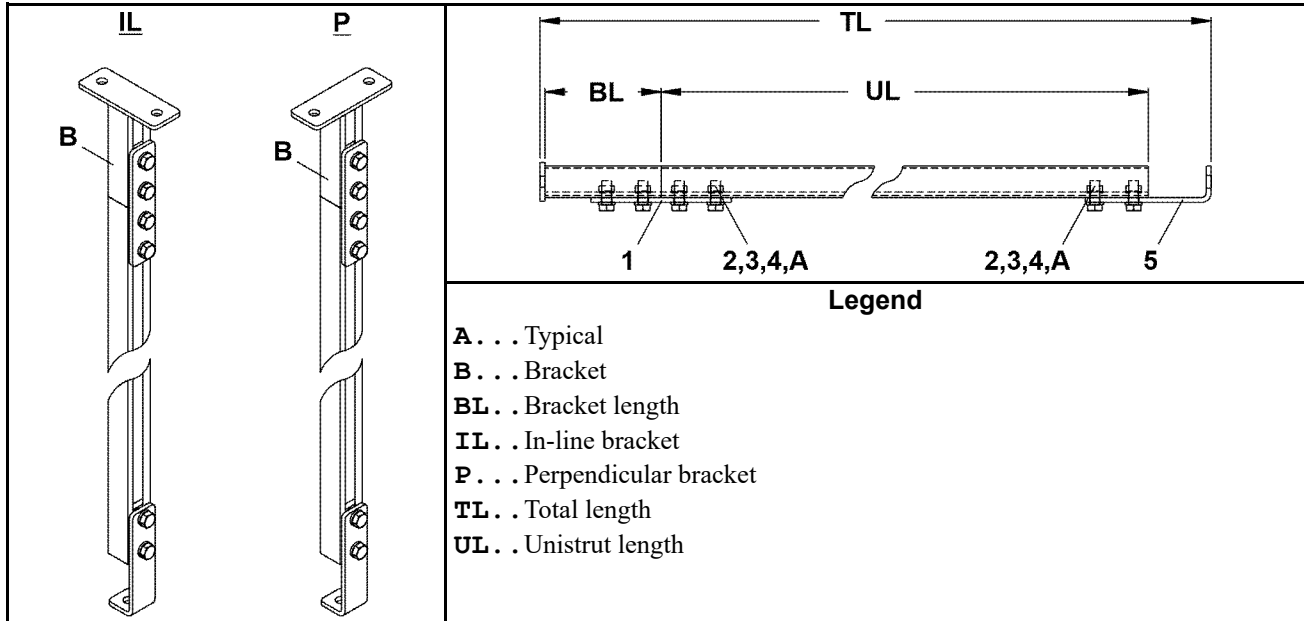


Figure 12. Bracket Lengths

Assembly	Bracket	BL	UL	TL		IL/P
				Minimum	Maximum	
ANP37044	W4 RS009	6"	69.75	77"	79.25"	P
ANP37045	W4 RS009	6"	71.75	79"	81.25"	P
ANP37046	W4 RS009	6"	73.75	81"	83.25"	P
AHN37047	W4 RI009	6"	75.75	83"	85.25"	IL
ANP37047	W4 RS009	6"	75.75	83"	85.25"	P
ANP37048	W4 RS009	6"	77.75	86"	87.25"	P
ANP37049	W4 RS009	6"	79.75	87"	89.25"	P
ANP37050	W4 RS009	6"	81.75	89"	91.25"	P
ANP37064	W4 RS009	6"	109.75	117"	119.25"	P
ANP37067	W4 RS009	6"	115.75	123"	125.25"	P
ANH37070	W4 RI010	8"	119.75	129"	131.25	IL
ANP37070	W4 RI010	8"	119.75	129"	131.25	P
ANP37072	W4 RS012	12"	119.75	133"	135.25	P
ANH37073	W4 RI013	14"	119.75	135"	137.25	IL
ANH37078	W4 RI018	24"	119.75	145"	147.25	IL

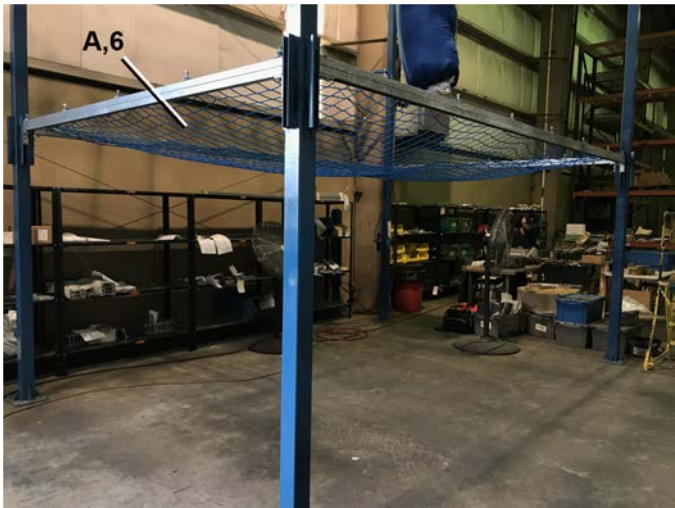

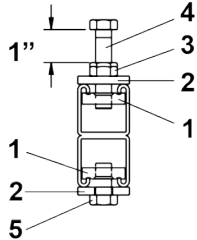
**Net Hanging Brackets**

2 Sheet

**Table 16. Parts List—Net Hanging Hardware**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	27A06001	UNISTRUT FLAT PLATE STRAIGHT	
all	2	27A0625NUV	CLAMPNUT 1/2-13	
all	3	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	4	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	5	04 30577A	RAIL SUPPORT ADJUSTMENT BRKT LARGE BTM HOLE	

**Netting and Hardware**

	
<p><b>Legend</b></p> <p>A . . . Net</p> <p>B . . . Net support hardware, typical</p> <p>C . . . See also Net Hanging Brackets, see BPRRUF06.</p>	
	 <p style="text-align: center; border: 1px solid black; padding: 2px; width: 30px; margin: 0 auto;">B</p>

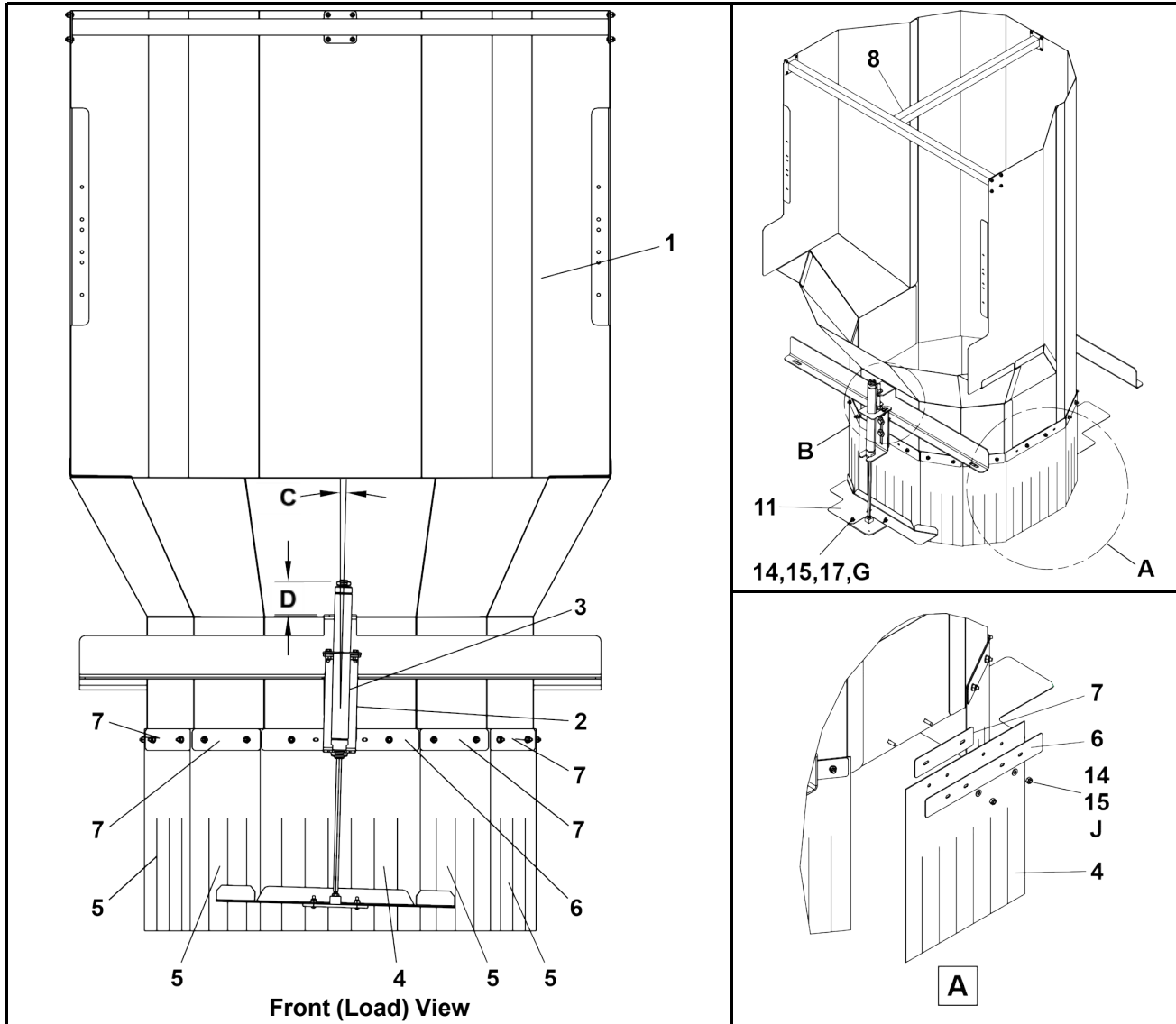
**Table 17. Parts List—Netting and Hardware**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	27A0625NUV	CLAMPNUT 1/2-13	
all	2	15U286	FLATWASHER 2"0DX17/32"IDX1/4"	
all	3	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	4	15K190A	HEXTAPSCR 1/2-13X2.5 ZINC GR5F	
all	5	15K149	HXCAPSCR 1/2-13UNC2X1+1/8 GR5 ZINC	
all	6	SKU000156	ATLAS NET 2200X3900MM	
all	6	SKU000157	ATLAS NET 3100X6200MM	
all	6	SKU000158	ATLAS NET 2100X4200MM	
all	6	SKU000159	ATLAS NET 1700X6200MM	



# 3 Bag Loading Chute

POD Rail Loading Chute



Front (Load) View

Legend

- A . . . See Detail A.
- B . . . See Detail B.
- C . . . 1.5 Degrees
- D . . . 3.09" [78MM]
- F . . . 2 instances
- G . . . 3 instances
- H . . . 12 instances
- J . . . 24 instances

POD Rail Loading Chute

3 Sheet

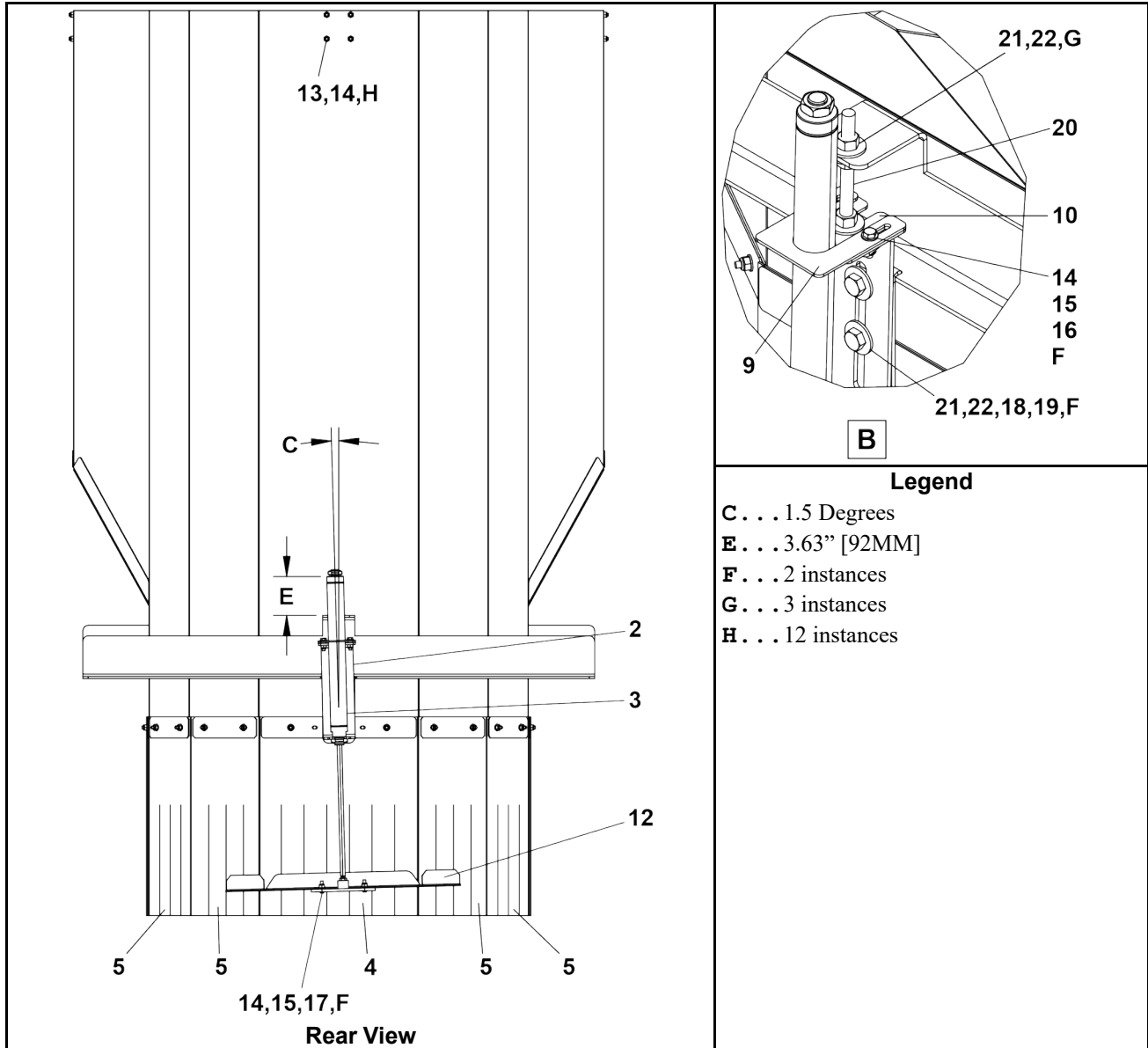


Table 18. Parts List—POD Rail Loading Chute

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ARC37001	POD RAIL LOADING CHUTE	
Components				
all	1	W4 30977	POD RAIL LOADING CHUTE WELDMENT	

**POD Rail Loading Chute**

**Table 18 Parts List—POD Rail Loading Chute (cont'd.)**

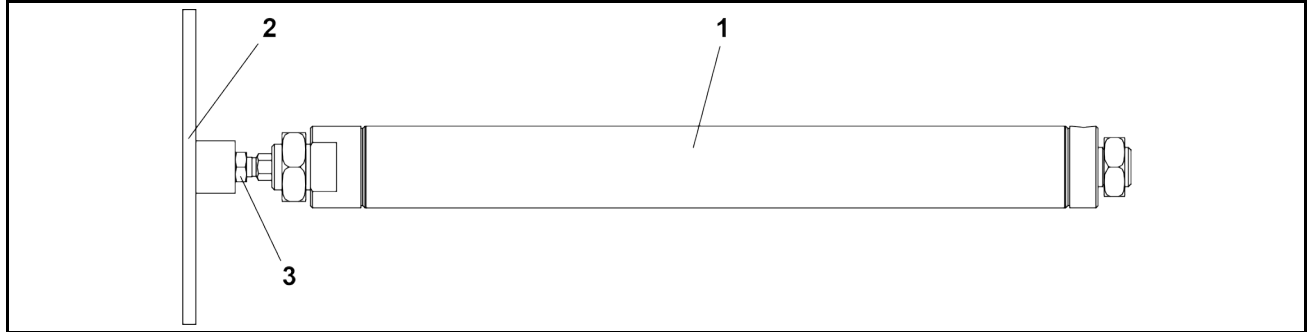
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	2	04 30936A	POD RAIL LOADING CHUTE STABILIZER CYL MOUNT BRKT	
all	3	ABG37004B	POD LOADING BAG STABILIZER CYL ASSEMBLY	
all	4	04 30986	POD RAIL LOADING CHUTE FRONT CURTAIN	
all	5	04 30985	POD RAIL LOADING CHUTE SIDE CURTAIN	
all	6	04 30984A	POD RAIL LOADING CHUTE CURTAIN CLAMP PLATE	
all	7	04 30984	POD RAIL LOADING CHUTE CURTAIN MOUNTING PLATE	
all	8	W4 30976	POD RAIL LOADING CHUTE BRACE WLDMT	
all	9	04 30994B	STABILIZER CYLINDER TOP BRACKET OUTSIDE	
all	10	04 30994A	STABILIZER CYLINDER TOP BRACKET	
all	11	04 30949	POD LOADING CHUTE REAR CURTAIN GUARD	
all	12	04 30949A	POD LOADING CHUTE FRONT CURTAIN GUARD	
all	13	15K033	BUTSOKCAPSCR 1/4-20X5/8 SS18-8	
all	14	15G166A	HXLKLNUT NYL1/4-20 UNC2A STL/Z	
all	15	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	16	15K041	HXCAPSCR 1/4-20UNC2AX1 GR 5 ZI	
all	17	15K042	BUTSOKCAPSCR 1/4-20NCX1 SS18-8	
all	18	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	19	15U280E	FL WASHER SAE 1/2 ZNC PL 17/32 IDX1+1/16 OD X.095 THK	
all	20	15K203	HXTAPSCR TFL 1/2-13X5 GR5 ZINC	
all	21	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	22	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	

BPRUU002 / 2023282

BPRUU002.1 0000580005 C.2 A.4 7/12/23, 8:36 AM Released

**Bag Stabilizer Cylinder**

1 Sheet



**Table 19. Parts List—Bag Stabilizer Cylinder**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ABG37004B	POD LOADING BAG STABILIZER CYL ASSEMBLY	
Components				
all	1	27C213P	"AIR CYL 1.5""BORE X 12""STROKE DBL NON-ROT "	
all	2	W4 30943A	POD LOADING BAG STABILIZER WLMT	
all	3	15G215	HXFINJAMNUT 3/8-24UNF2B ZINC G	

# 4 Bags Components

This page intentionally blank

# Hard Ring POD Bag 44 Inch

MiIRAIL® Bag Loading System — Atlas

**Note:** Upper rope is 5 MM. Lower rope is 4.5 MM. Do not swap the ropes.

**Legend**

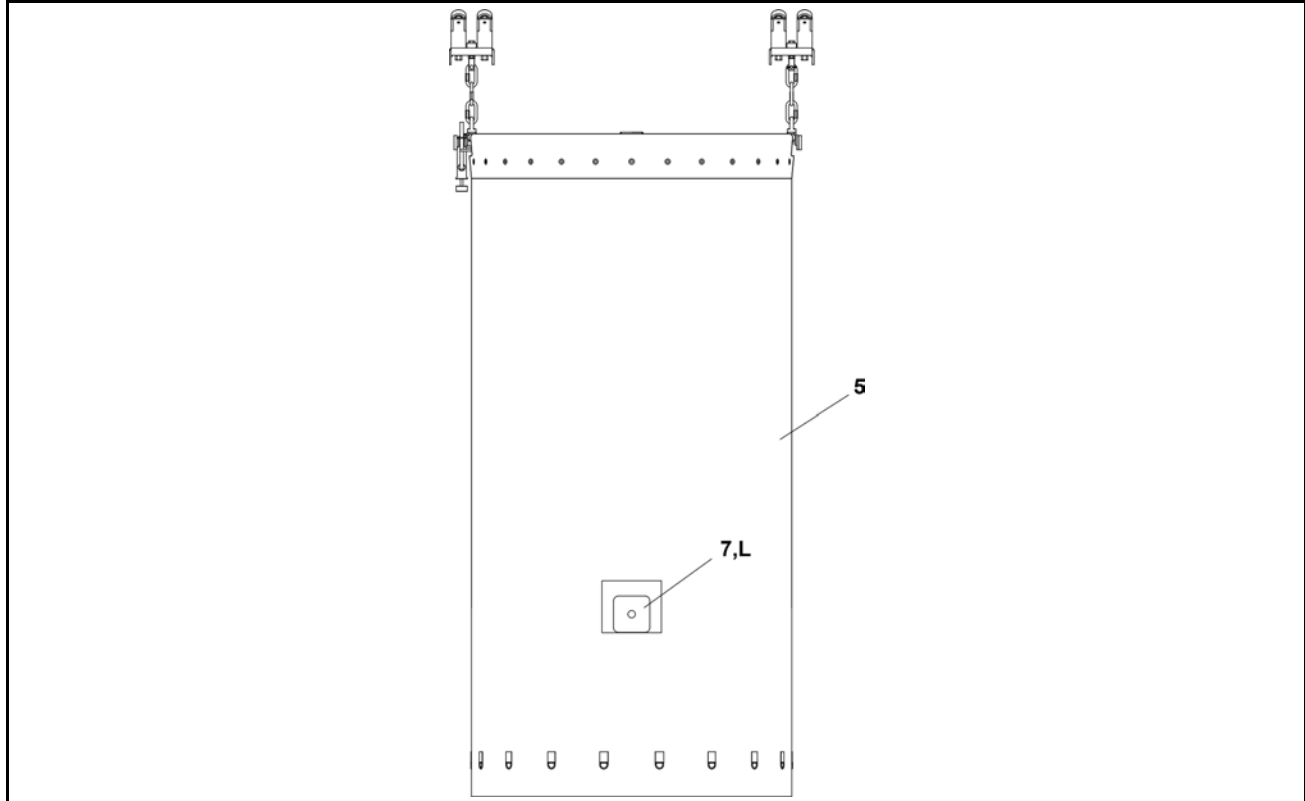
- A-A** . . . Detail View
- B** . . . Start the upper rope, item 4, here with a knot.
- C** . . . Upper rope is to pass through the grommets, alternating as shown, and through the tube and pulley.
- D** . . . Terminate each section of rope with a knot.
- E** . . . Rope end bell
- F** . . . Rope end weighted yoke
- G** . . . Start the lower rope, item 6, with a knot.
- H** . . . Lower rope is to pass through all D-rings.
- J** . . . Keep the ropes separate, do not tangle.
- K** . . . End the lower rope with a knot.



# Hard Ring POD Bag 44 Inch

2 Sheet

MilRAIL® Bag Loading System — Atlas



**Legend**

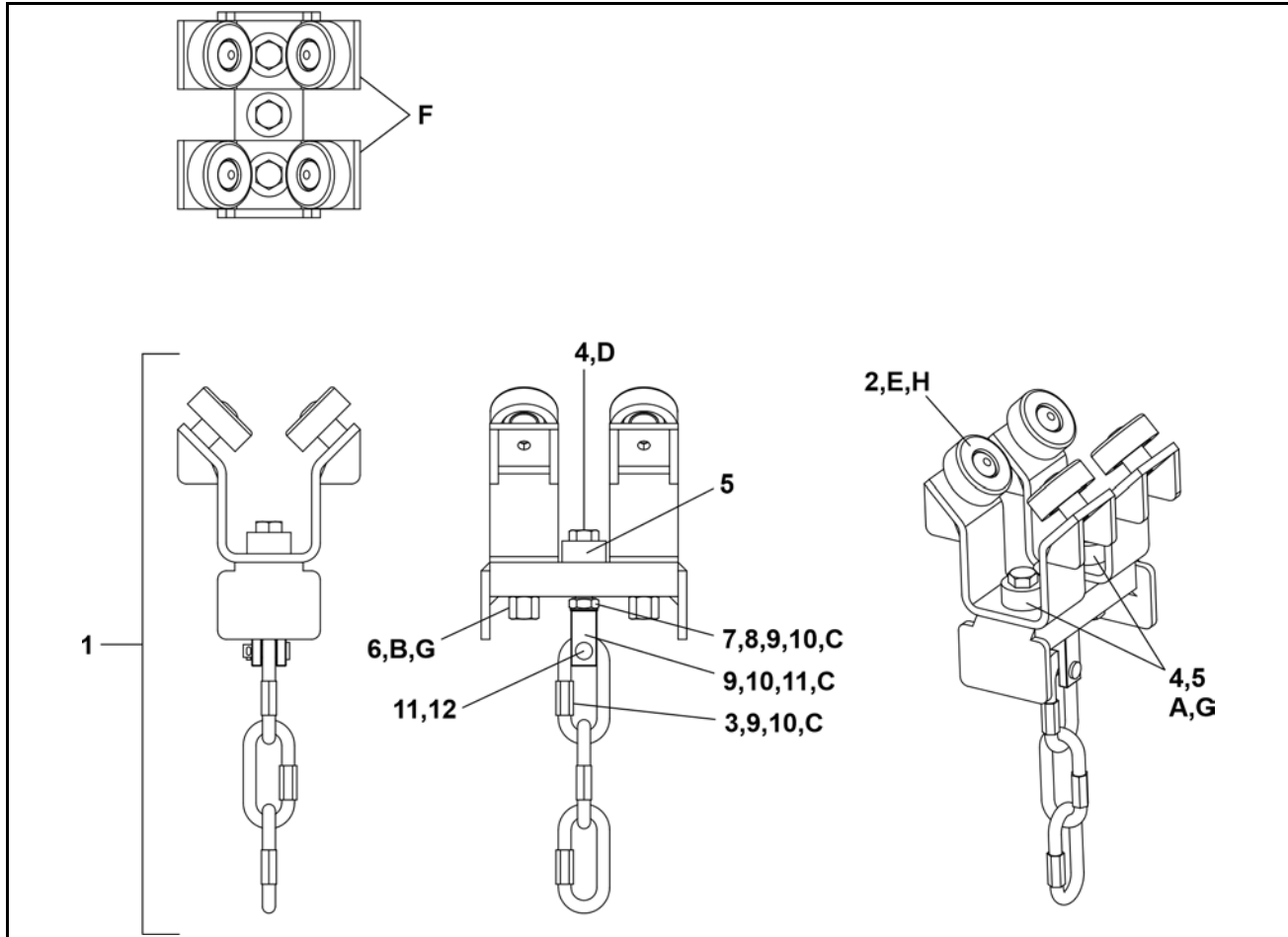
L . . . Uses 2.

**Table 20. Parts List—Hard Ring POD Bag 44 Inch**

Find the assembly for your machine and the letter in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ABA37011	44" POD BAG	
Components				
all	1	ABR37011	44" CLEAN AND POD BAG RING	
all	2	ATA37022	POD BAG DOUBLE TROLLEY WITH FLIGHTBAR	
all	3	X4 30958	BAG WEIGHT	
all	4	09WRA0059	150LB HARD RING TOP ROPE 5MM 8PLAIT	
all	5	09WRC0008A	CLEAN/POD BAG WHITE W/LOGOS	
all	6	09WRA0060	150LB HARD RING BOTTOM ROPE 4.5MM 100M REEL	
all	7	04 30996	RR CLEAN BAG BALANCE WEIGHT	

# POD Double Trolley

MiIRAIL®POD Bag Loading System, Round Rail



### Legend

- A** . . . Tighten bolts until fully down.
- B** . . . Locknuts must be used, no substitutions.
- C** . . . Apply primer and adhesive to threads of jam nut, clevis, and quick link.
- D** . . . Middle bolt must spin freely.
- E** . . . Wheels must spin freely.
- F** . . . Wheel mounting bracket should rotate freely.
- G** . . . 2 instances
- H** . . . 4 instances

# Double Trolley

2 Sheet

MilRAIL®POD Bag Loading System, Round Rail

**Table 21. Parts List—Double Trolley**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
none				
	A	ATA37022	POD BAG DOUBLE TROLLEY WITH FLIGHTBAR	Reference Asseby
Components				
all	1	ATA37022	POD BAG DOUBLE TROLLEY WITH FLIGHTBAR	Contains items 2–14
all	2	09WRC0005	TROLLEY WHEEL ACETAL 6202VV ROUND RAIL	Replacement wheels
all	3	27A980	QUICK LINK 3/8" THK - 7/16" OPENING - ZINC PLATED	
all	4	15K191	HXCAPSCR 1/2-13UNC2AX2.5 GR5 Z	
all	5	54E014B	GROOVED RACE THRUST BALL BEARING 1/2X1-9/32X5/8"	
all	6	15G234N	HXLOCKNUT NYL 1/2-13UNC2 STL/Z	
all	7	15G231	HXFINJAMNUT 1/2-13UNC2B ZINC G	
all	8	15U305	LOCKWASHER INTOOTH 1/2 ZN	
all	9	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	10	20C006P	PRIMER-N #7649 LCT#21348-4 - 4.5 AEROSOL	
all	11	17A030A	CLEVIS PIN 3/8" X 1.25" ZINC	
all	12	15H045	STDCOTTERPIN 1/8X1 SS18-8	
all	13	EXPKDD248	SHORT CLEVIS END 1/2-13	
all	14	15K084	TRUSS HXSOK 3/8-16 X 23/32SS	

# 5 MiRAIL® Elevator

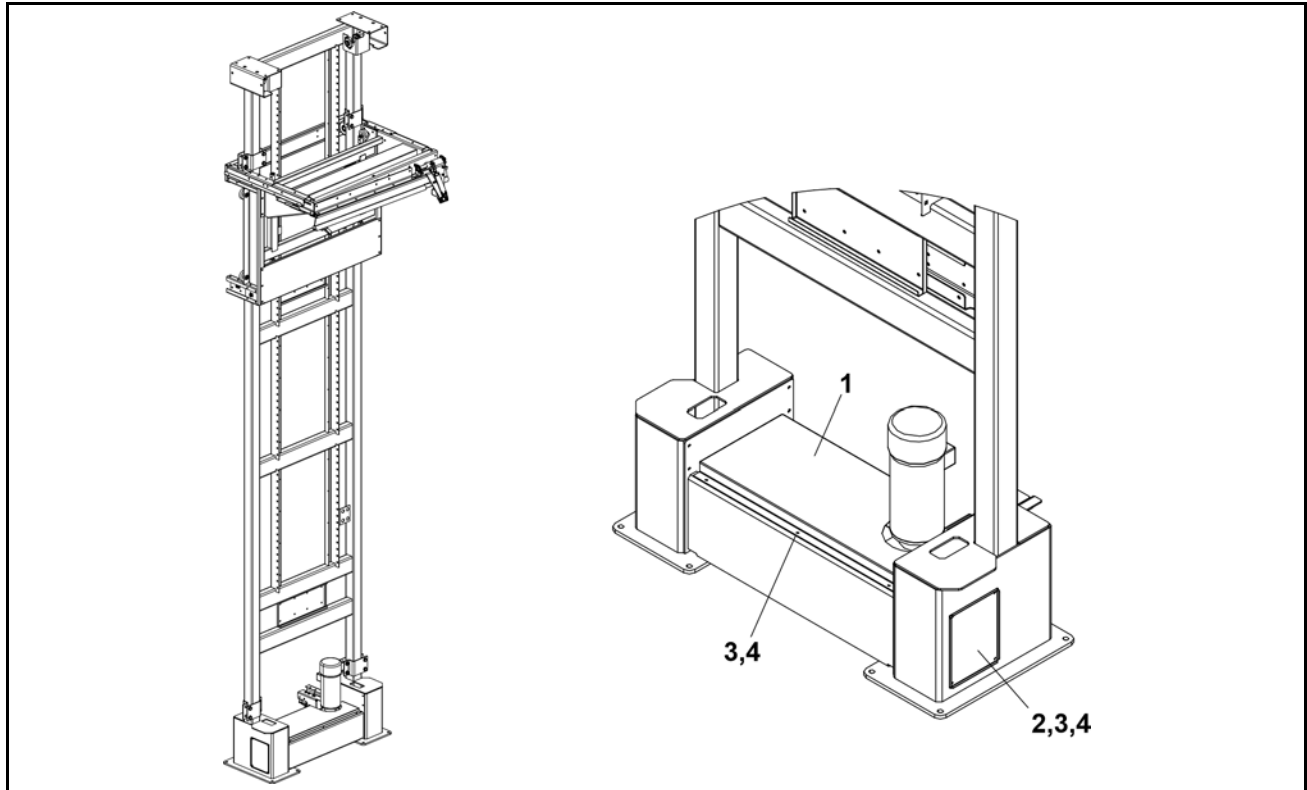
BPRBHM01 / 2023355A

BPRBHM01.1 0000583068 B.2 C.2 9/1/23, 2:00 PM Released

# Guards and Covers

1 Sheet

MilRAIL® Elevator

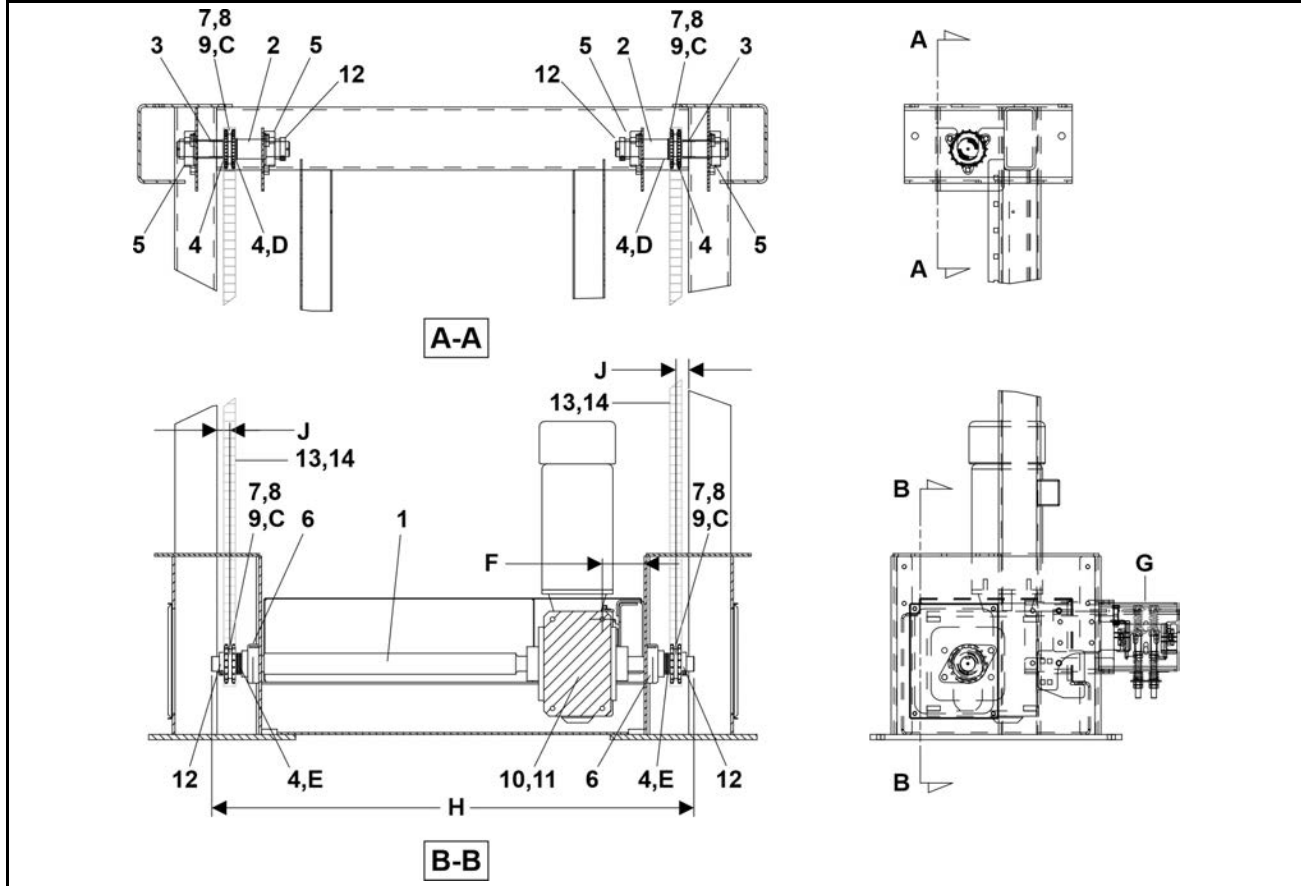


**Table 22. Parts List—Guards and Covers**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	04 30711A	DRIVE SHAFT COVER-738 GEAR	
all	2	04 30710B	ELEVATOR SPROCKET ACCESS COVER	
all	3	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	4	17N059	KNURRIVNUT 1/4-20 ZN.027"- .165 .386 (13/32 HOLE)	

Hoist Drive

MilRAIL®Elevator



Legend

- A—A . . . View of Upper Idler Shafts and Sprockets
- B—B . . . View of Lower Drive Shaft and Sprockets
- C . . . Taper lock bushing torque equals 175 IN-LBS.
- D . . . Use 3 flat washers.
- E . . . Use 8 flat washers.
- F . . . 4" [102 MM]
- G . . . Torque Arm Overload Switch, see BPRBHI02.
- H . . . 46" [1168 MM] as reference
- J . . . 1.25" [32MM]

Table 23. Parts List—Hoist Drive

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	AVB37001B	VERT ELEV BASE 264.75"H ASSY	
Components				

**Hoist Drive**

2 Sheet

MilRAIL®Elevator

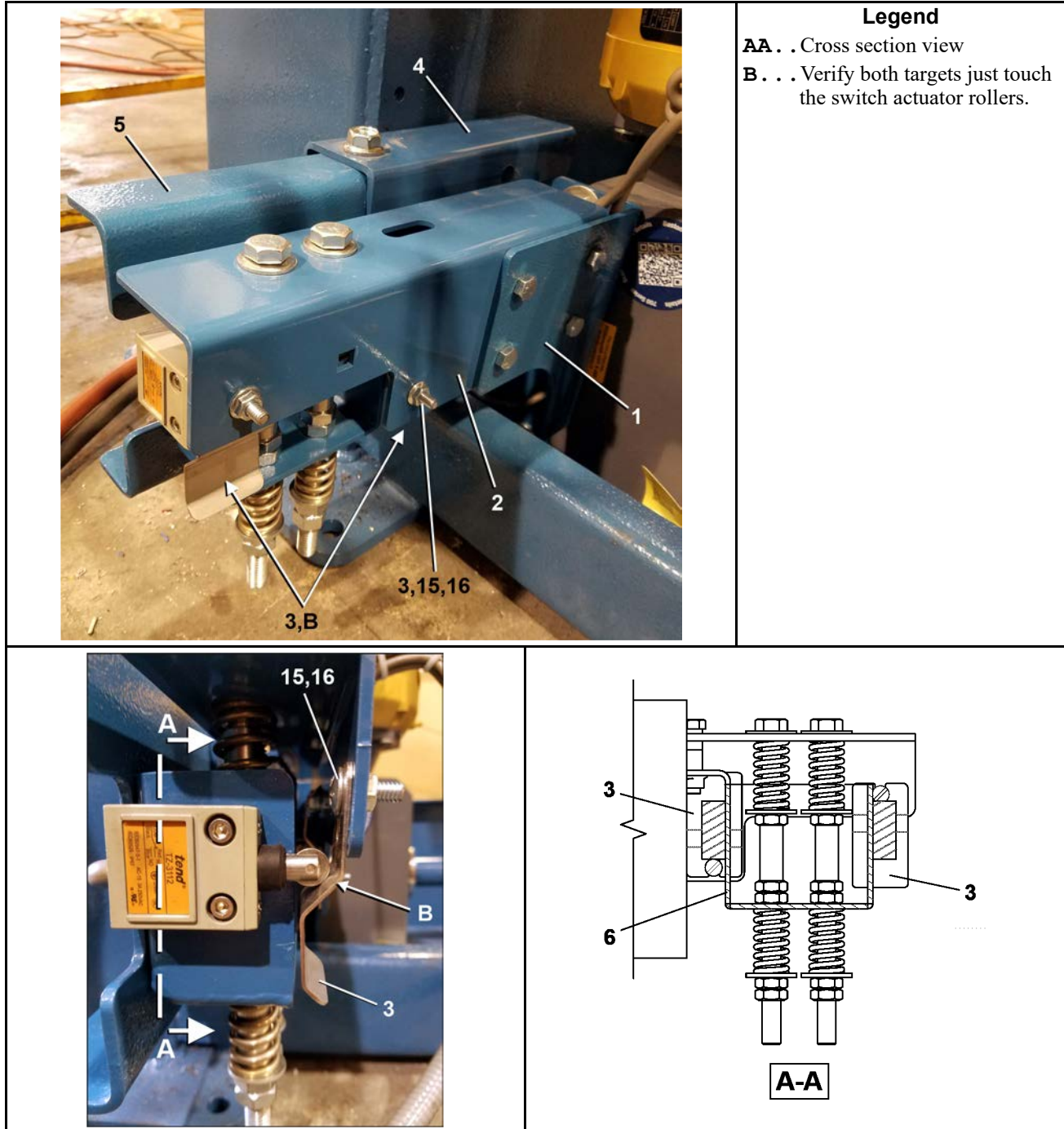
**Table 23 Parts List—Hoist Drive (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	1	X4 30702	VERT ELEV HOIST SHAFT-500LB BAG	
all	2	X4 30716	IDLER SPROCKET SHAFT-500LB BAG	
all	3	04 30716A	IDLER SPROCKET SPACER	
all	4	15U445	FLATWASH 1.453"X2"OD.X.060THK.	
all	5	54AF1437	FLGEBRG.HUBCITY 3-BOLT	
all	6	56F1H2CS	FLGBRG REXNORD BS228336 1+7/16" (2 BOLT)	
all	7	54N050B17	SPROCKET 17T 3.4PD	
all	8	56Q1HTB	1+7/16" TAPRLOCKBUSH1610#119226	
all	9	15E221	SQMACH KEY 3/8X1" C/0/8 NOHEAD	
all	10	54STB33840	REDUCER 40:1 HF738-40KET-B7-H1-P23	
all	11	15E229	MACHINE KEY .375X.375X7.00LG	
all	12	54JH11437C	SHAFTCOLLAR 1.4375 CFG #23S	
all	13	54G050H	ROLLCHAIN 50-DBL DAIDO #RC50-2R	
all	14	54G050CL	CONN LINK CL50-2 DBL	

# Torque Arm Overload Switch

MilRAIL®Elevator

Figure 13. Torque Arm Overload Switch Installed





# Torque Arm Overload Switch

1 Sheet

MilRAIL®Elevator

Figure 14. Torque Arm Overload Switch Assembly

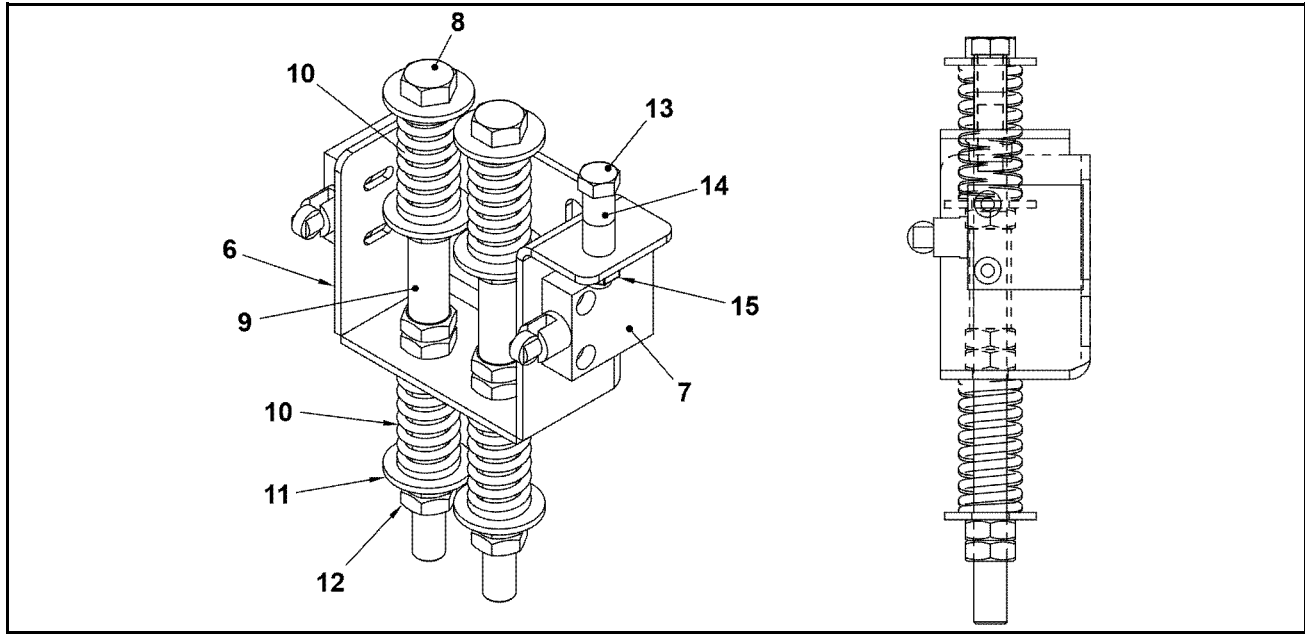


Table 24. Parts List—Torque Arm Overload Switch

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ALC420159	TORQARM OVERLOAD SWITCH ASSY	
Components				
all	1	04 30714A	TORQARM MTG ANGLE-HF732	
all	2	04 30714B	TORQ ARM-HF738-BAG ELEVATOR	
all	3	04 22338	TORQUE LIMIT SW TARGET	
all	4	04 30713	TORQUE ARM MTG CHANNEL	
all	5	04 30708	TORQARM OVERLOAD MTG BRKT	
all	6	04 22337	TORQARM OVERLOAD SW MTG-RT	
all	7	09RM01212G	CAPSW 12FT 180DEG ROLLER GOLD	
all	8	15D122C	HEXTAPSCR 1/2-13UNC X 8.5 FLTHD	
all	9	27B32024SS	SPACER ROLL .5IDX1.5LX.062T SS	
all	10	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	11	15U280E	FL WASHER SAE 1/2 ZNC PL 17/32 IDX1+1/16 OD X.095 THK	
all	12	15G231	HXFJINJAMNUT 1/2-13UNC2B ZINC G	
all	13	15K117	HEXCAPSCR 3/8-16X1+3/4 GR 5 PL	

## Torque Arm Overload Switch

1 Sheet

MilRAIL® Elevator

**Table 24 Parts List—Torque Arm Overload Switch (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	14	27B2100G0L	SPCROLL.39ID.562L.048T STLZNC	
all	15	15G198	HXFLGNUT 3/8-16 ZINC	
all	16	15A011	CARBOLT 3/8-16UNC2X1 ZINC GR2	

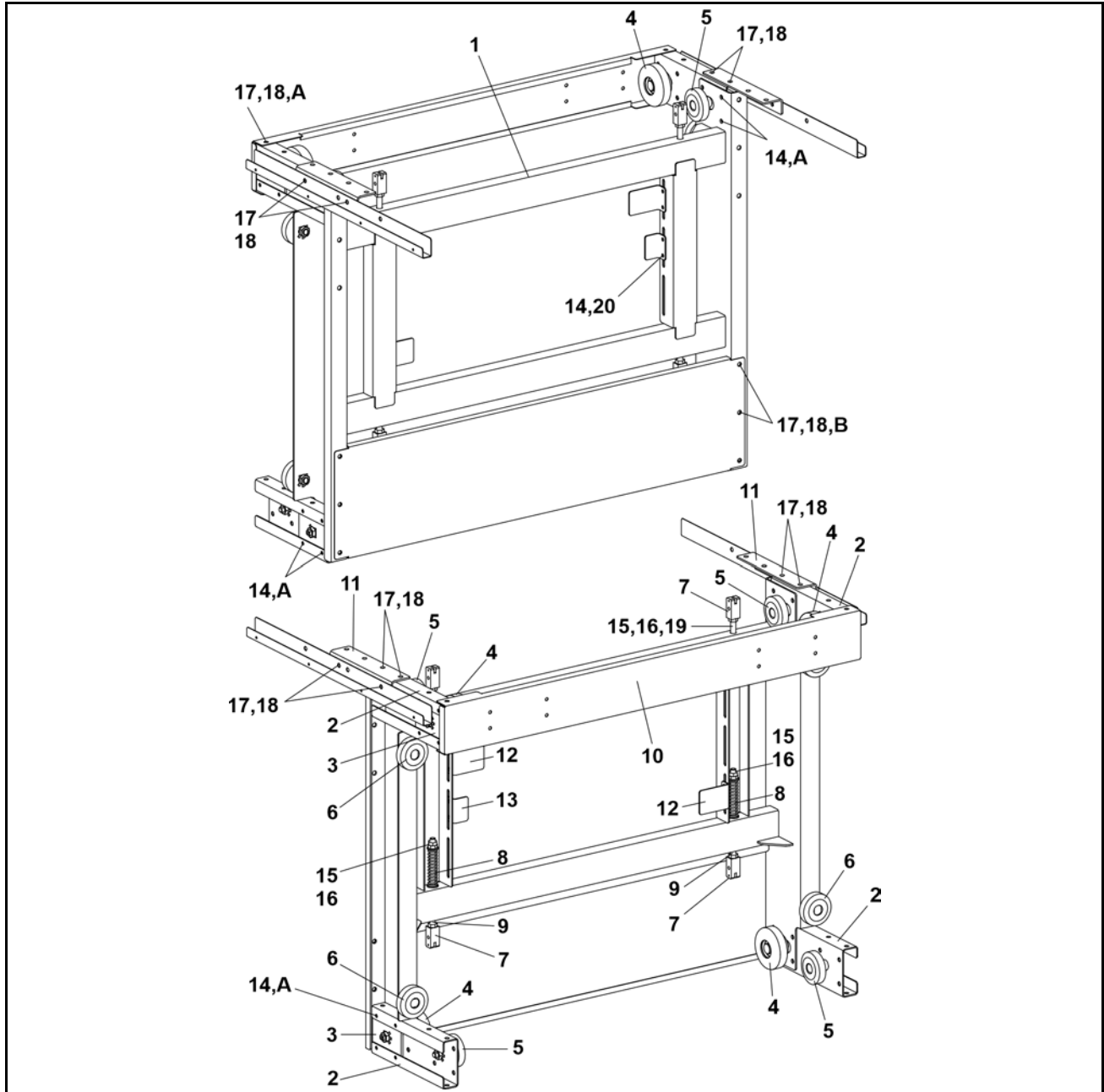
BPRBHI03 / 2023355A

BPRBHI03.1 0000586698 C.2 B.3 9/6/23, 11:27 AM Released

# Carriage Slider

1 Sheet

MilRAIL® Elevator



### Legend

A . . . 16 instances

B . . . 30 instances

# Carriage Slider

MilRAIL®Elevator

**Table 25. Parts List—Carriage Slider**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ALC420282	VERTICAL RAIL CARRIAGE SLIDER ASSY	
Components				
all	1	W4 30776	BAG CARRIAGE SLIDER WLMT	
all	2	04 30774	FRONT/BACK WHEEL MTG BRKT	
all	3	04 30709	MAIN SLIDER 4" WHEEL MTG PL	
all	4	ALC420010	*5"TRACTOR SUP.ROLLER ASSY	
all	5	ALC420069	OUTRIG WHEEL ASSY-LT SHTL	
all	6	A75GB003B	*4" GUIDE ROLLER WHEEL ASSY	
all	7	X4 22342A	CHAIN CONNECTING BAR #50 2-STRAND	
all	8	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	9	17R024A12A	THREADED ROD 5/8-11X12"ZNC GR5	
all	10	04 23926	MAIN SLIDER REAR X-MEMBER	
all	11	04 23927	CARRIAGE/SLIDER MTG ANGLE	
all	12	04 23929	CARRIAGE STOP TARGET 3X4.25	
all	13	04 23929A	CARRIAGE STOP TARGET 3X2	
all	14	15K092Z	HEXFLGSCR 3/8-16X1 GR5 ZINC	
all	15	15U316	FLTWASH 5/8 HARD ASTM F436	
all	16	15G236C	HXFINJAMNUT 5/8-11UNC2B ZINC G	
all	17	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	18	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	19	15K227B	HEXCAPSC 5/8-11X5.5 GR8 ZINC	
all	20	15G206A	HEXFLGNUT 3/8-16UNC2 SS18-8	

BPRBH104 / 2023355A

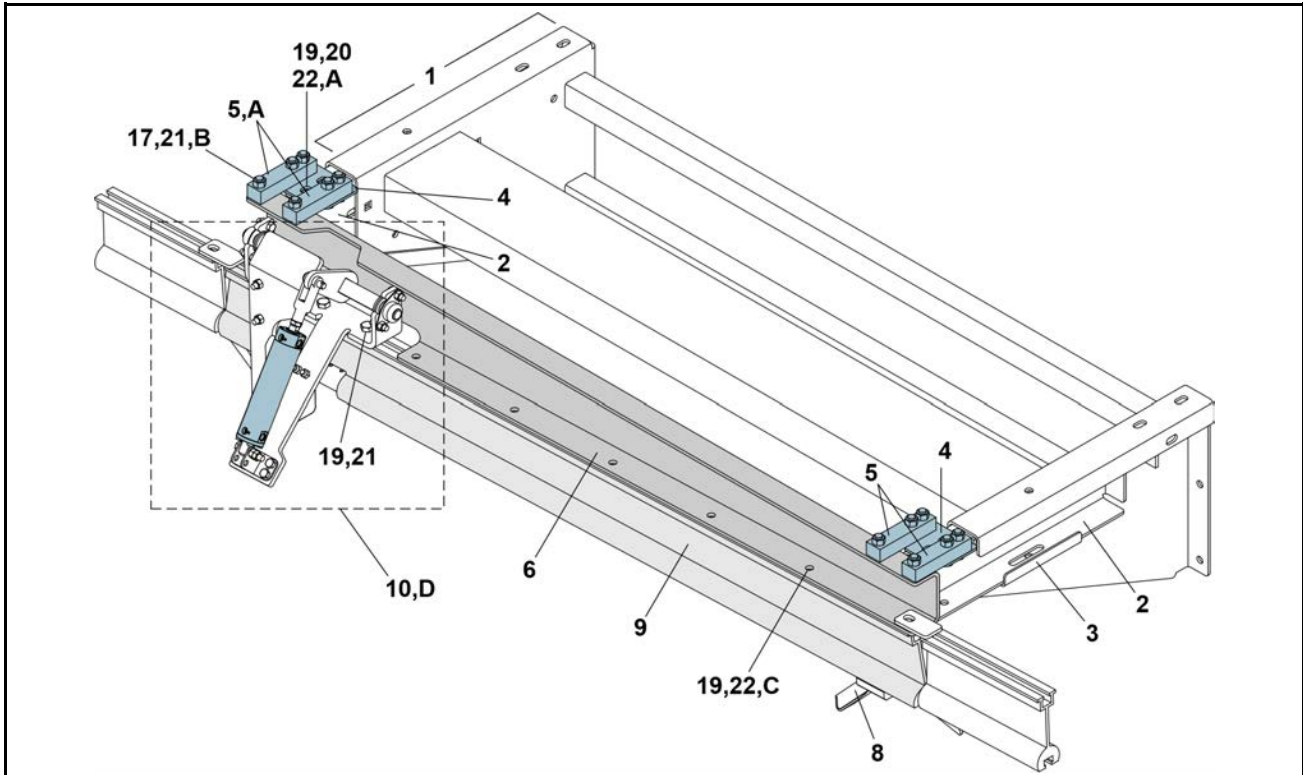
BPRBH104.1 0000588824 C.2 12/21/23, 3:57 PM Released

# Carriage Slider with Load Cells

3 Sheet

MilRAIL® Elevator

Figure 15. Carriage Components



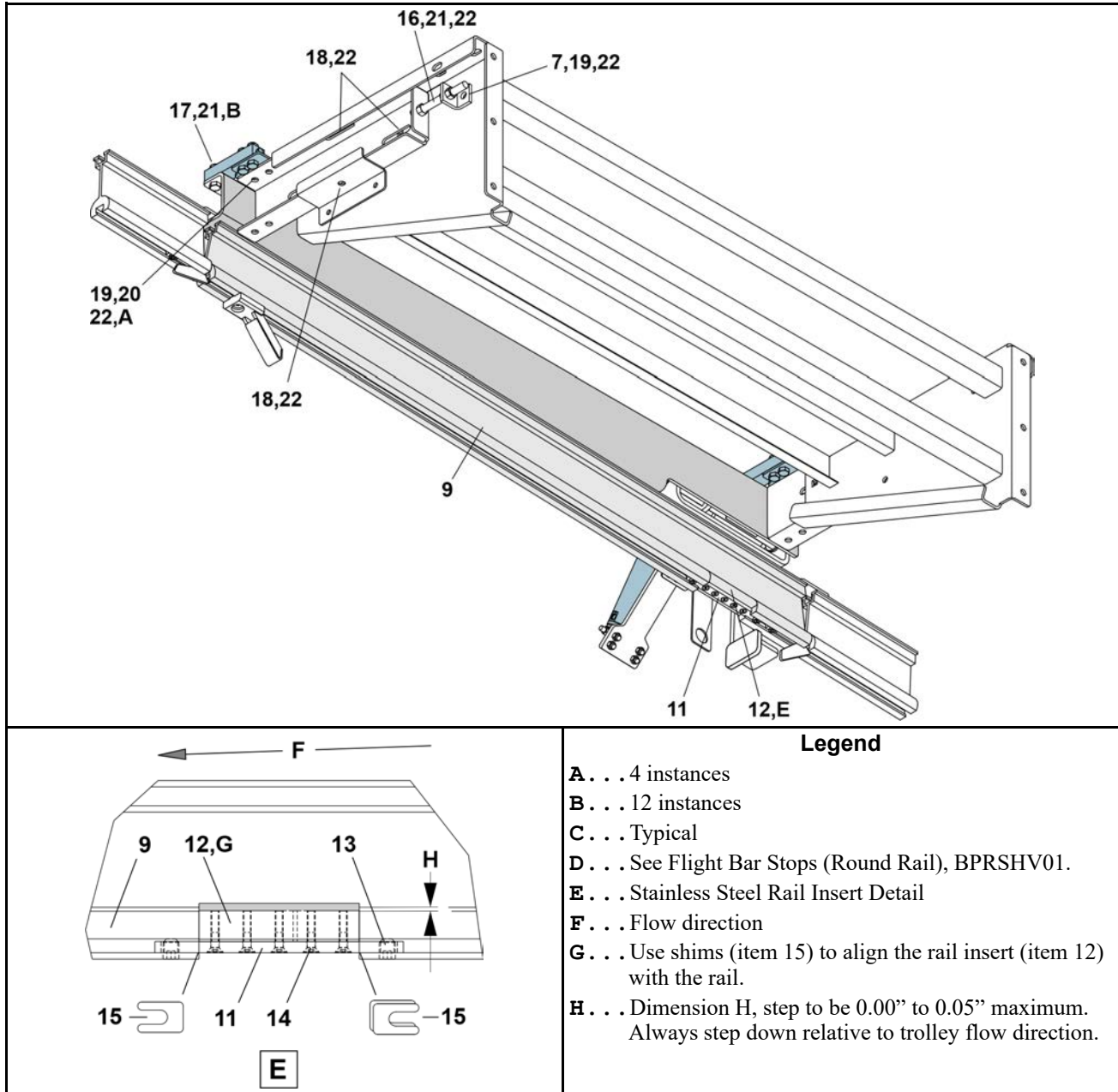
### Legend

- A** . . . 4 instances
- B** . . . 12 instances
- C** . . . Typical
- D** . . . See Flight Bar Stops (Round Rail), BPRSHV01.

# Carriage Slider and Load Cells

MilRAIL® Elevator

Figure 16. Rail Insert and Hardware



## Carriage Slider and Load Cells

3 Sheet

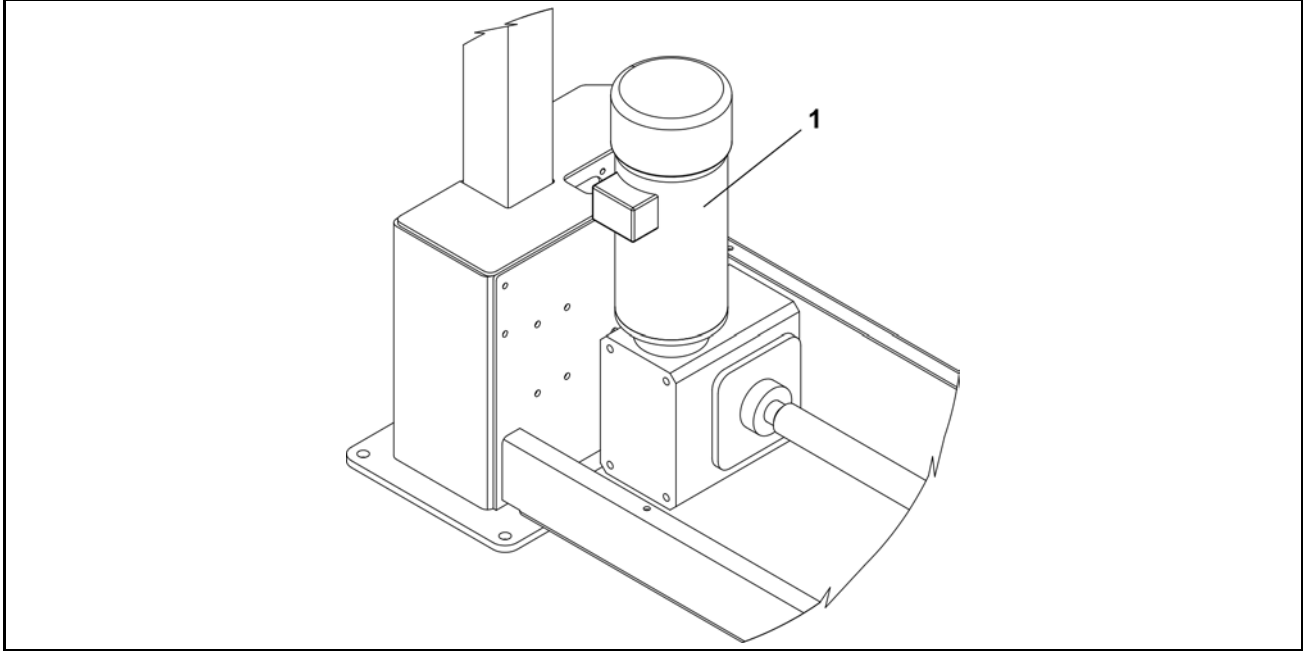
MilRAIL® Elevator

**Table 26. Parts List—Carriage and Load Cells**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	AVR37010D	VE 500LBS BAG CARRIAGE ASSY, LEFT DISCH W/LOAD CELLS	Left Discharge with Load Cells
	B	AVR37010B	VERT ELEV 500LBS BAG CARRIAGE ASSY, LEFT DISCH	Left Discharge
	C	AVR37010C	VERT ELEV 500LBS BAG CARRIAGE ASSY, RIGHT DISCH	Right Discharge
Components				
all	1	W4 30543B	VERTICAL ELEV 500# CARRIAGE WLMT	
all	2	04 30542B	VERTICAL ELEV RAIL MTG CHANNEL	
all	3	04 30556	CARRIAGE ARM SUPPORT BRKT	
A	4	04 30918	VE CARRIAGE ARM LOAD CELL MOUNT	
BC	4	04 30554	VERT ELEV RAIL MTG X-MEMBER	
A	5	30L2009	LOADCELL 500LB SINGLE ENDED BEAM - VPG# 17125	
A	6	04 30555C	VE LOADCELL CARRIAGE RAIL MOUNTING ANGLE	
BC	6	04 30555	RAIL MOUNTING ANGLE	
all	7	02 19288	BRACKET=ADJUSTING-1.5X1.75	
all	8	GNR37030	POD RAIL NO RETURN EASY INSTALL	
all	9	X4 30962L	ROUND RAIL W/ CUTOUT FOR VE	
AB	10	APS37030C	RND RAIL FLIGHTBAR STOP CCW W/O RAIL	
C	10	APS37030A	RND RAIL FLIGHTBAR STOP CW W/O RAIL	
all	11	X4 30700	HARD RAIL INSERT MOUNT	
all	12	X4 30723C	RND RAIL INSERT 410SS CHROME PLATED	
all	13	15Q168	SOKSETSCR CUP 1/2-13X5/8 ZN	
all	14	15N173B	FLATMACHSCR 1/4-20X5/8" BLK ALLEN HEAD	
all	15	04 30702	RAIL HARD INSERT SHIM .005 THK	
all	16	15K203	HXTAPSCR TFL 1/2-13X5 GR5 ZINC	
all	17	15K173A	HXCAPSCR 1/2-13UNC2AX1.75 GR5	
all	18	15A058SZ	CARRBOLT 1/2-13X1.25 ZINCGR2	
all	19	15K146A	1/2-13 X 1 FLGBOLT NON-SERR ZN	
all	20	15U286	FLATWASHER 2"0DX17/32"IDX1/4"	
all	21	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	22	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	

**Hoist Motor**

MilRAIL®Elevator



**Table 27. Parts List—Hoist Motor**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	39T030DAU	3.0HP 4P TEFC 145TC W/BRAKE(7/8")	

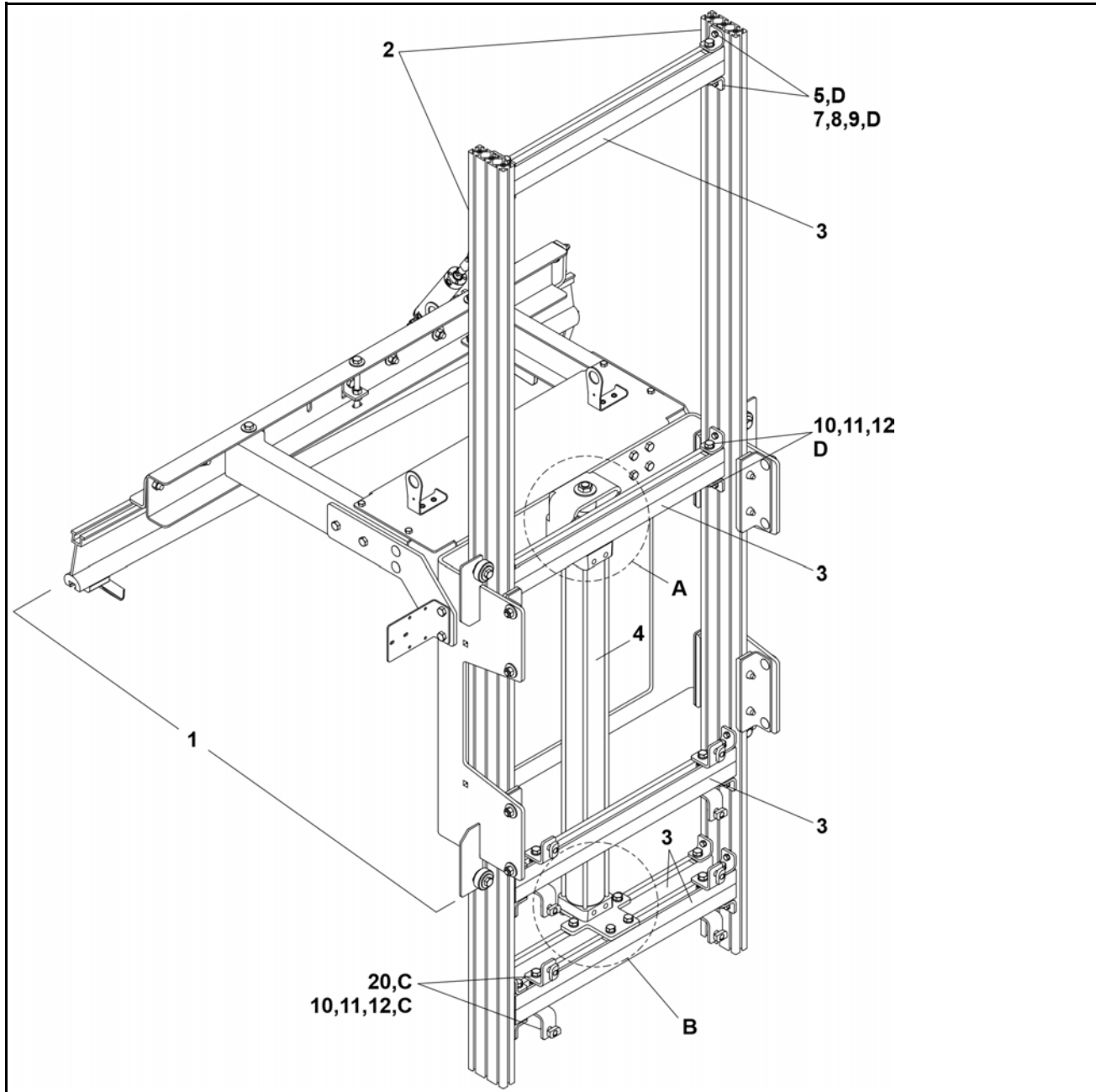


# 6 Pneumatic Elevator

**Pneumatic Elevator**

MilRAIL® Pneumatic Elevator

**Figure 17. Elevator Components**



**Legend**

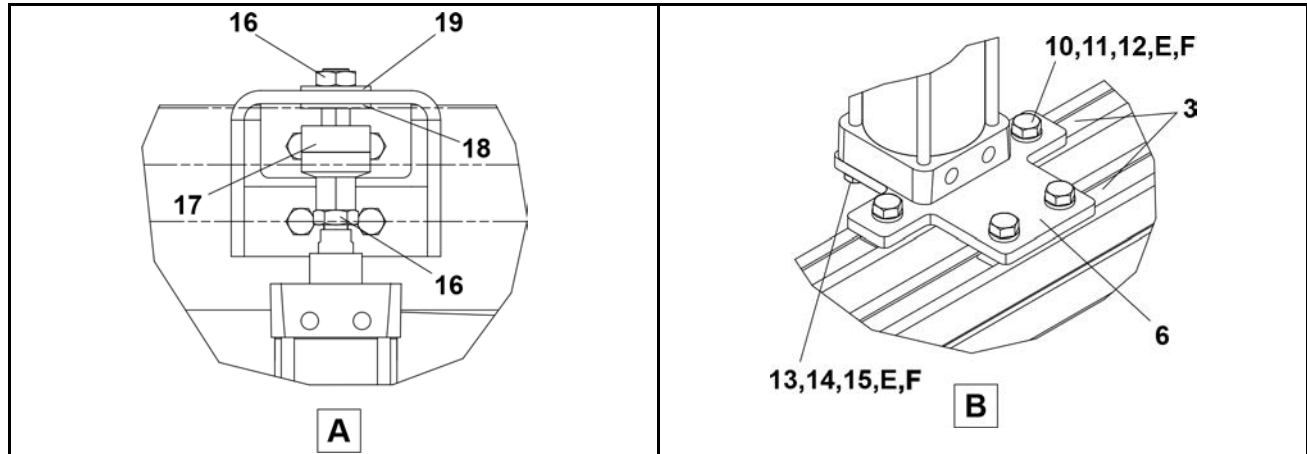
- A . . . See Detail A.
- B . . . See Detail B.
- C . . . 8 instances
- D . . . 20 instances
- E . . . Carriage, see BPRBHV02.

# Pneumatic Elevator

MiIRAIL® Pneumatic Elevator

3 Sheet

**Figure 18. Cylinder Mounting**



**Legend**

- A** . . . Upper Cylinder Mounting Detail
- B** . . . Lower Cylinder Mounting Detail
- E** . . . 4 instances
- F** . . . Attach the air cylinder to the lower mounting bracket (item 6) before attaching the mounting bracket to the double channels (item 3).

**Table 28. Parts List—Pneumatic Elevator**

Find the assembly for your machine and the letter in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	APE37010	PNEUMATIC ELEV 36.125" LEFT DISCH, POD BAG	
Components				
all	1	AEC37020A	PNEUMATIC VE RND RAIL CARRIAGE ASSEMBLY LEFT	
all	2	27A0641101E	T-SLOT ALUM CHANNEL 1+1/2" X 4+1/2" X 101.25"L	
all	3	27A0627028C	DOUBLE CHANNEL 1+5/8"HT X 28.13" L GAL	
all	4	27C336C	AIRCYL 3.25"BORE X 36.125" STROKE	
all	5	04 30686	T-SLOT TO UNISTRUT L BRACKET	
all	6	04 30680	PNEUMATIC ELEV CYLINDER MOUNTING PLATE	
all	7	15K060	HXCAPSCR 5/16-18UNCAX3/4 GR5 Z	
all	8	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	9	27A0640AAA	T-NUT 5/16-18 SLIDE IN	
all	10	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	11	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	12	27A0625NUV	CLAMPNUT 1/2-13	
all	13	15K103	HEXCAPSCR 3/8-24X1.25 SS 18-8	

**Pneumatic Elevator**

MilRAIL® Pneumatic Elevator

**Table 28 Parts List—Pneumatic Elevator (cont'd.)**

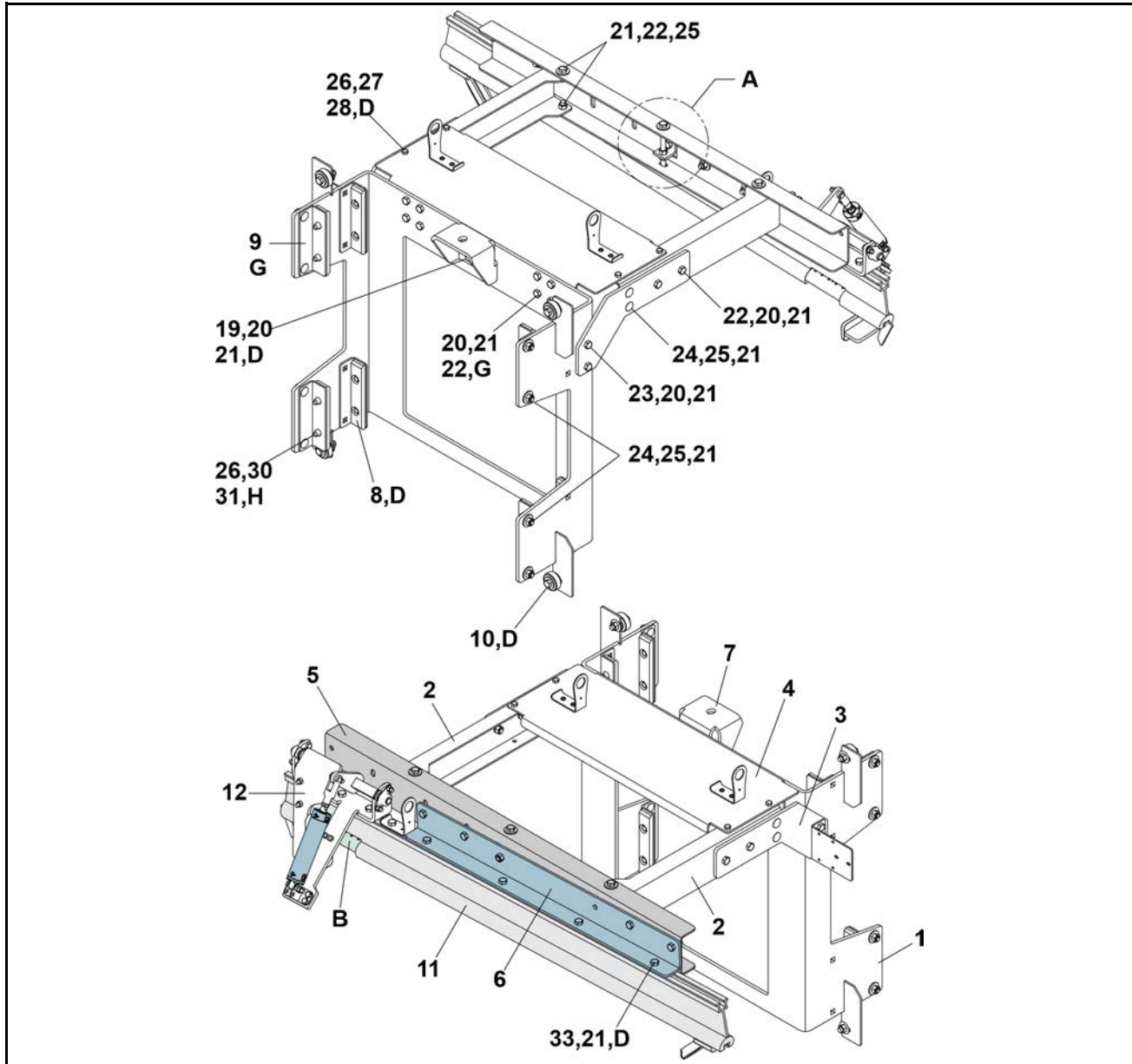
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	14	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	15	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	16	15G239J	HXJAMNUT 3/4-16UNF2B SAE ZINC	
all	17	27A975	CYL MISALIGNMENT COUPLER 3/4-16	
all	18	04 30689	PNEUMATIC ELEV CYLINDER WASHER	
all	19	15U320P	FLATWASHER(USS STD) 3/4" ZNC P	
all	20	27A06006A	UNISTRUT SHORT L BRACKET	

This page intentionally blank

# Pneumatic Elevator Carriage

MILRAIL®Round Rail

Figure 19. Carriage



**Legend**

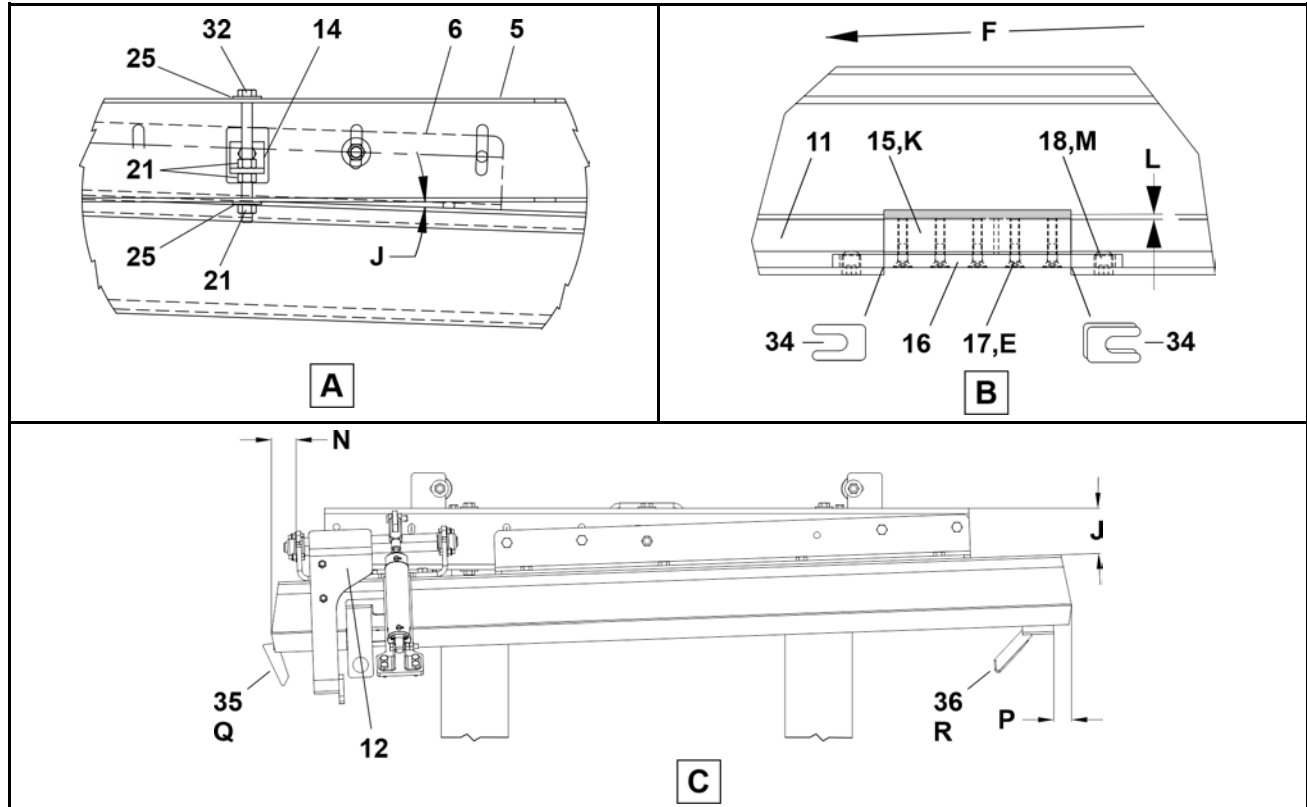
- A . . . See Detail A.
- B . . . See Detail B.
- C . . . See Detail C.
- D . . . 4 instances
- E . . . 5 instances
- F . . . Trolley direction and flow of goods
- G . . . 8 instances
- H . . . 16 instances

# Pneumatic Elevator Carriage

4 Sheet

MilRAIL®Round Rail

Figure 20. Details



### Legend

- A . . . Rail Adjustment
- B . . . Hard Rail Insert
- C . . . Switch and Stop Placement
- D . . . 4 instances
- E . . . 5 instances
- F . . . Trolley direction and flow of goods
- J . . . 2 degrees
- K . . . Align the insert (item 15) to the rail. Use the .005 shims (item 34) to step down the angle of the rail toward the trolley direction.
- L . . . Dimension L is to be .005 inch maximum on the high side.
- M . . . 2 instances
- N . . . 1.97 inches
- P . . . 1.32 inches
- Q . . . No go, see BPRSHV03.
- R . . . Flight bar, see BPRSHV02.

# Pneumatic Elevator Carriage

MilRAIL®Round Rail

**Table 29. Parts List—Pneumatic Elevator Carriage**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	AEC37020A	PNEUMATIC VE RND RAIL CARRIAGE ASSEMBLY LEFT	
Components				
all	1	W4 30682	PNEUMATIC ELEV CARRIAGE MAIN BODY WELDMENT	
all	2	04 30542D	PNEUMATIC VE CARRIAGE ARM RND RAIL	
all	3	04 30684	PNEUMATIC ELEV ARM SUPPORT	
all	4	04 30685	PNEUMATIC ELEV CARRIAGE ARMS CROSS BRACE	
all	5	04 30554B	PNEUMATIC VE RAIL MTG X-MEMBER	
all	6	04 30555B	PNEUMATIC VE RAIL MOUNTING ANGLE	
all	7	04 30681	PNEUMATIC ELEV CYLINDER BRACKET	
all	8	X4 23391	TRACK SLIDER UHMW BAR	
all	9	04 30687	PNEUMATIC ELEV SLIDER BRACKET	
all	10	ALC50155	BED LIFT GUIDE WHEEL ASSY	
all	11	X4 30962L	ROUND RAIL W/ CUTOUT FOR VE	
all	12	APS37030C	RND RAIL FLIGHTBAR STOP CCW W/O RAIL	
all	14	02 19288	BRACKET=ADJUSTING-1.5X1.75	
all	15	X4 30723C	RND RAIL INSERT 410SS CHROME PLATED	
all	16	X4 30700	HARD RAIL INSERT MOUNT	
all	17	15N173B	FLATMACHSCR 1/4-20X5/8" BLK ALLEN HEAD	
all	18	15Q168	SOKSETSCR CUP 1/2-13X5/8 ZN	
all	19	15K171	HEXCAPSCR 1/2-13UNC2X1+3/4 SS1	
all	20	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	21	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	22	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	23	15K162	HXCAPSCR 1/2-13UNC2AX1.5 GR5 P	
all	24	15A058SZ	CARRBOLT 1/2-13X1.25 ZINCGR2	
all	25	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	26	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	27	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	28	15K255	HEXCAPSCR 3/4-10X6 GR8/2C	
all	30	15G198	HXFLGNUT 3/8-16 ZINC	
all	31	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	32	15K203T	HEXCAPSCR 1/2-13X6 GR5 ZINC	
all	33	15K147	HXCAPSCR 1/2-13UNC2X1 GR5 ZINC	



# Pneumatic Elevator Carriage

4 Sheet

MilRAIL®Round Rail

**Table 29 Parts List—Pneumatic Elevator Carriage (cont'd.)**

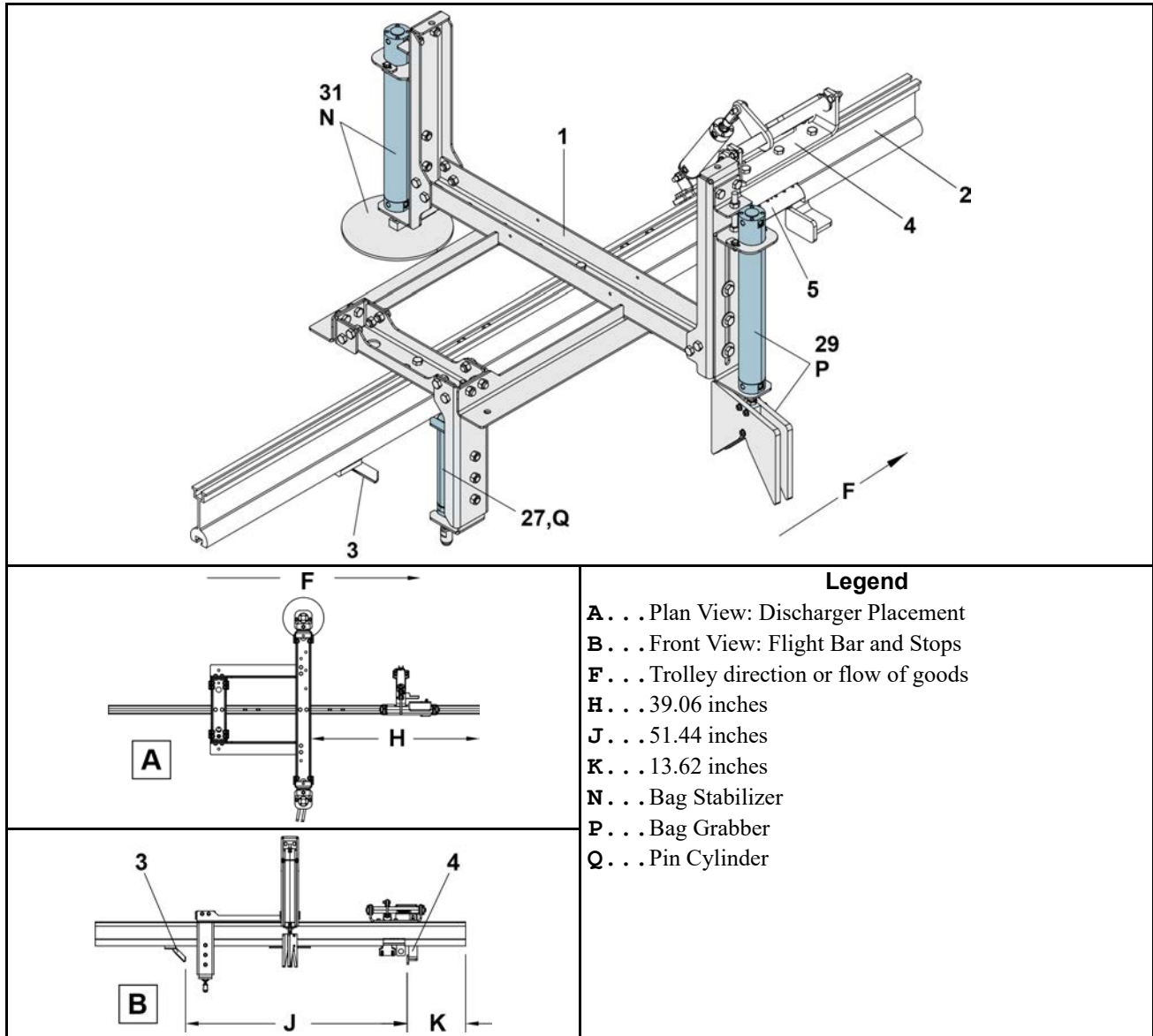
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	34	04 30702	RAIL HARD INSERT SHIM .005 THK	
all	35	ANG37001A	ROUND RAIL ELEV NO GO ASSEMBLY INTERNAL	
all	36	ANR37030	CLEAN RAIL FLIGHTBAR NO RETURN ASSEMBLY	

# 7 Discharger & Closer

# Bag Discharger and Closer

MilRAIL®Round Rail

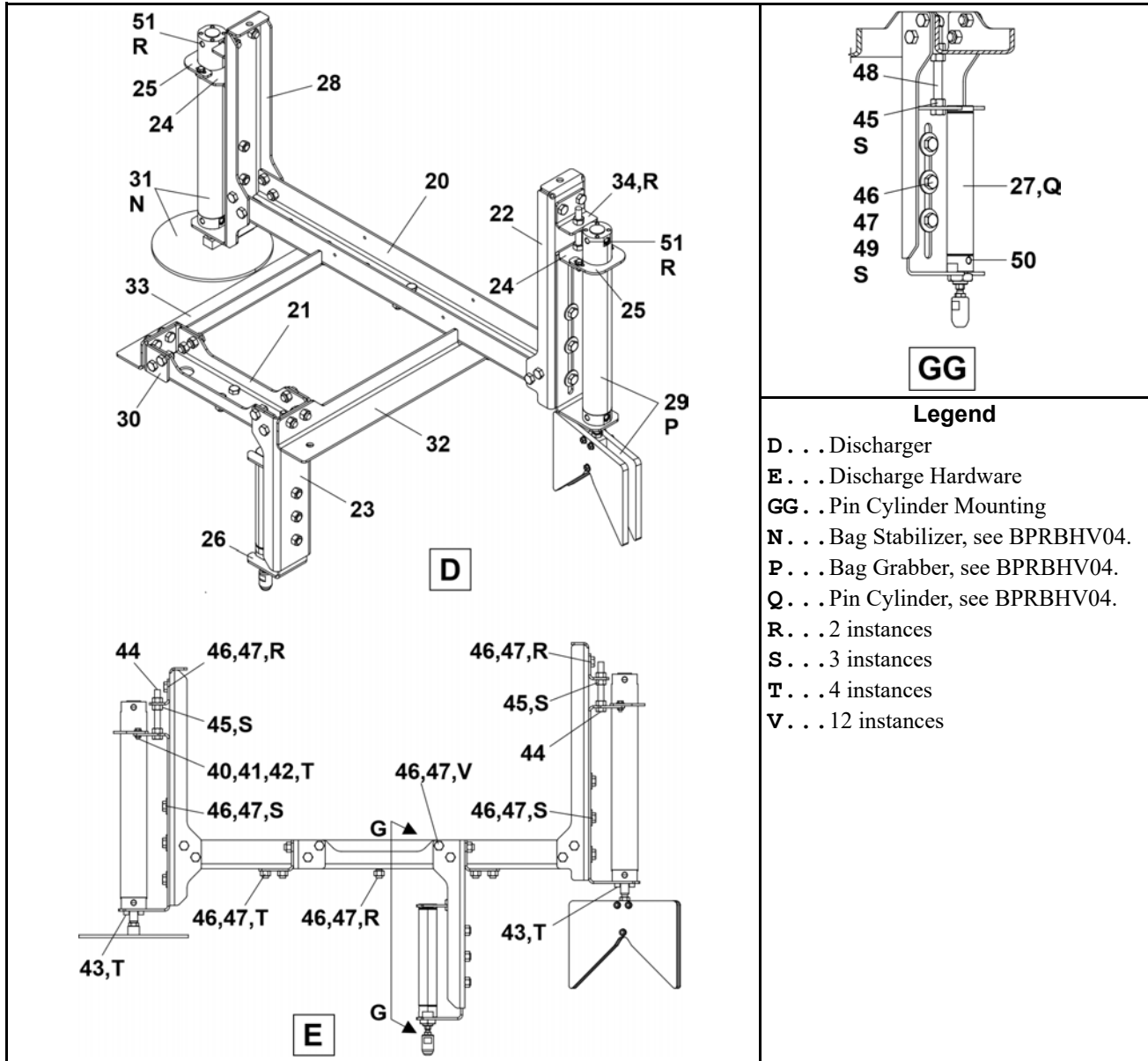
Figure 21. Discharger Installed to Rail



# Bag Discharger and Closer

MilRAIL® Round Rail

Figure 22. Discharger Components

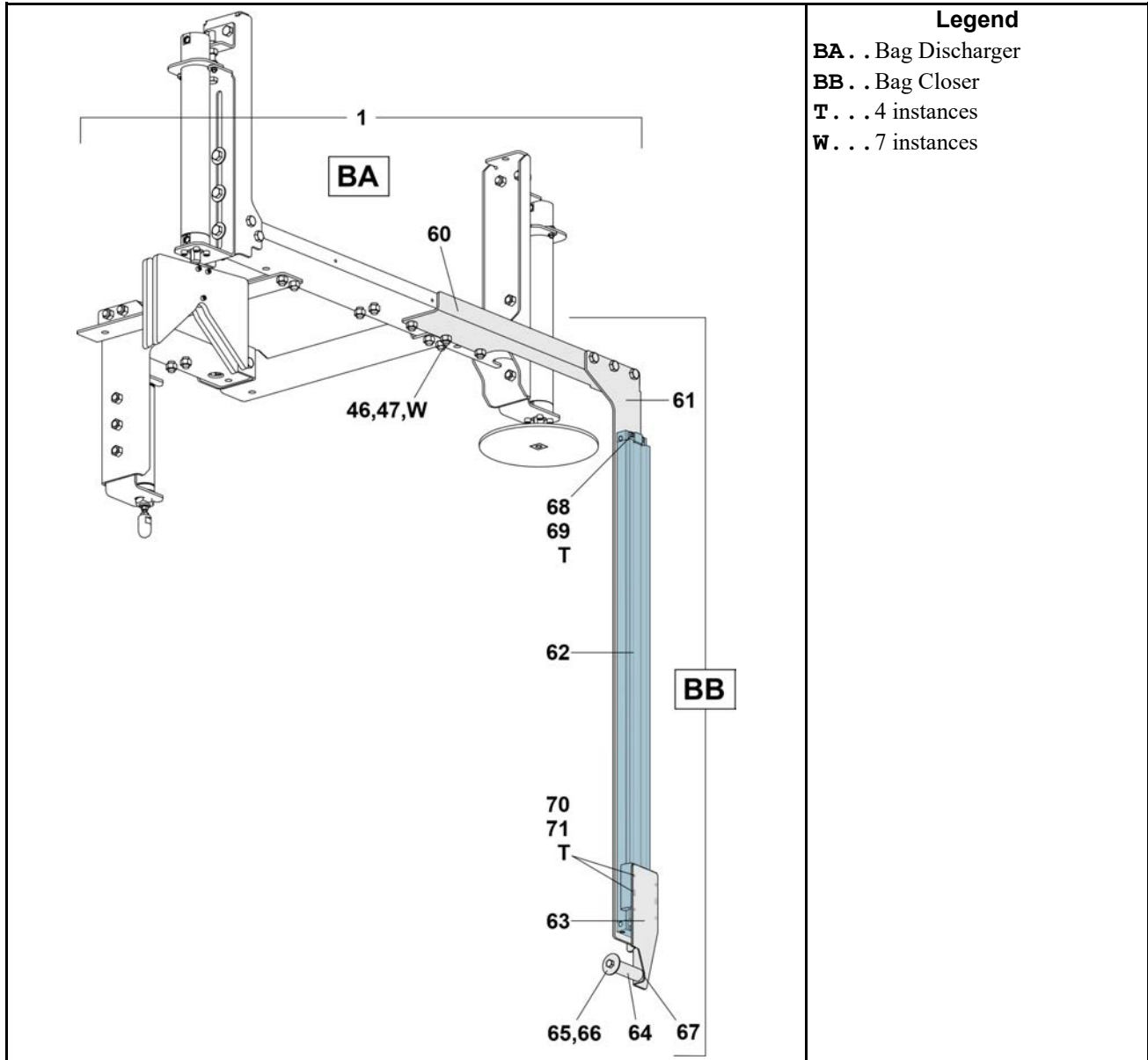


# Bag Discharger and Closer

5 Sheet

MilRAIL®Round Rail

Figure 23. Closer Components

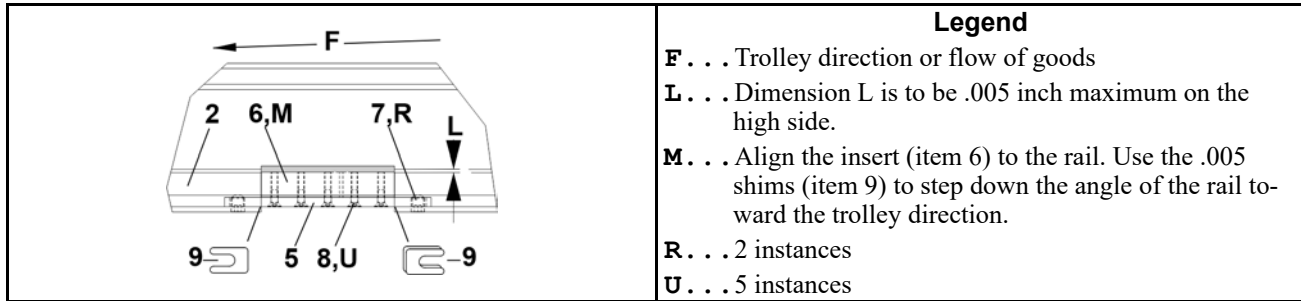


**Legend**  
**BA** . . Bag Discharger  
**BB** . . Bag Closer  
**T** . . 4 instances  
**W** . . 7 instances

# Bag Discharger and Closer

MilRAIL®Round Rail

**Figure 24. Hard Rail Insert**



**Table 30. Parts List—Bag Discharger and Closer**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	APB37021	POD RAIL DISCHARGER PREBUILD	Discharger with rail stops and hardware items (1–9)
	B	ABC37021F	RR POD BAG CLOSER HEAVY DUTY	Closer items (60–71) are additional to the Discharger
Components				
all	1	ABD37021F	RR POD BAG DISCHARGER HEAVY DUTY	Discharger contains items (20–51)
all	2	X4 30962M	ROUND RAIL W/CUTOUT FOR DISCHARGER/ RECLOSER	
all	3	GNR37030	POD RAIL NO RETURN EASY INSTALL	
all	4	APS37030C	RND RAIL FLIGHTBAR STOP CCW W/O RAIL	
all	5	X4 30700	HARD RAIL INSERT MOUNT	
all	6	X4 30723C	RND RAIL INSERT 410SS CHROME PLATED	
all	7	15Q168	SOKSETSCR CUP 1/2-13X5/8 ZN	
all	8	15N173B	FLATMACHSCR 1/4-20X5/8" BLK ALLEN HEAD	
all	9	04 30702	RAIL HARD INSERT SHIM .005 THK	
all	20	04 30934	POD DISCHARGER PERP SUPPORT LONG	
all	21	04 30937	POD DISCHARGER PERP SUPPORT SHORT	
all	22	04 30935A	POD DISCHARGER BAG GRABBER CYL BRKT HVY DUTY	
all	23	04 30938	POD DISCHARGER BAG PIN CYL BRKT	
all	24	04 30936D	POD DISCHARGER GRABBER CYL MOUNT HVY DUTY	
all	25	04 30997	POD DISCHARGER CYL CLAMP	
all	26	04 30939	POD DISCHARGER PIN CYL MOUNT	
all	27	ABD37004	POD DISCHARGER PIN CYLINDER ASSEMBLY	
all	28	04 30945A	POD DISCHARGER BAG STABILIZER CYL BRKT HVY DUTY	
all	29	ABG37004C	POD DISCHARGER GRABBER CYL ASSEMBLY HVY DUTY	

## Bag Discharger and Closer

5 Sheet

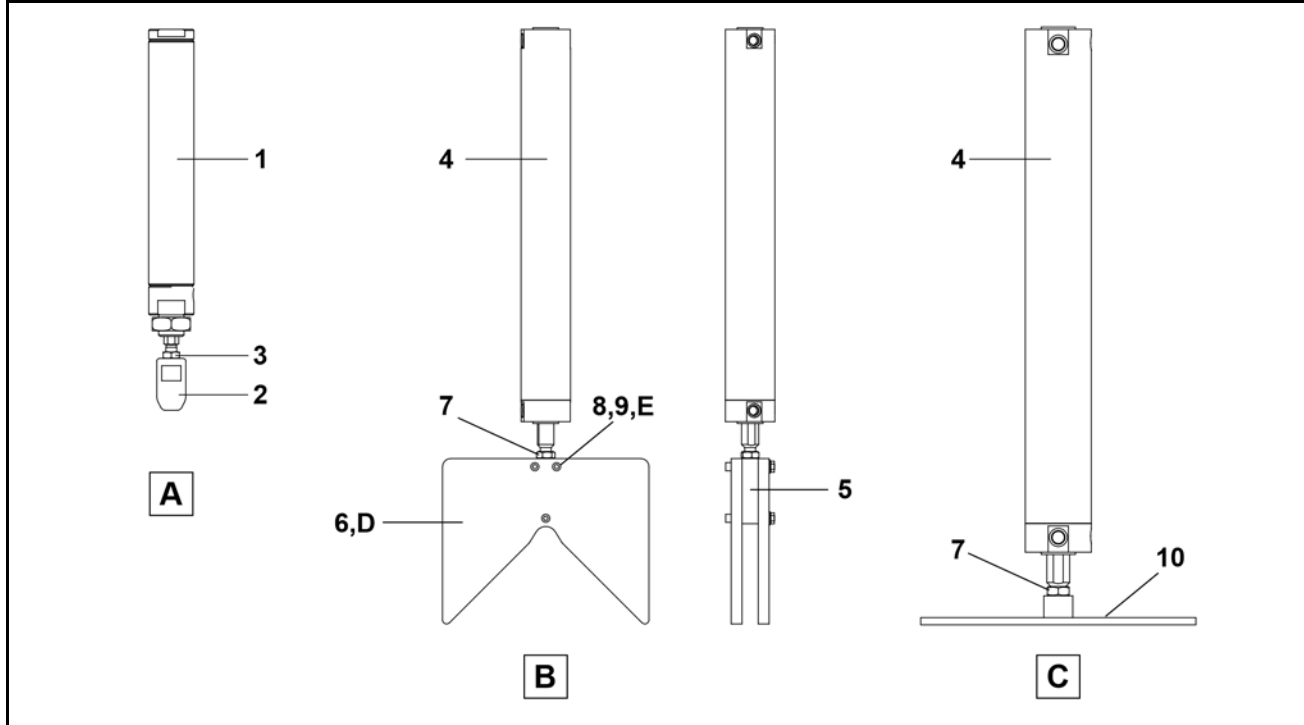
MiIRAIL®Round Rail

**Table 30 Parts List—Bag Discharger and Closer (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	30	04 30942	POD DISCHARGER SUPPORT MATING BRKT	
all	31	ABG37004D	POD DISCHARGER BAG STABILIZER CYL ASSEMBLY HVY DUTY	
all	32	04 30946	POD DISCHARGER PARALLEL SUPPORT R	
all	33	04 30946B	POD DISCHARGER PARALLEL SUPPORT L	
all	34	04 30950	POD DISCHARGER JACK BOLT BRKT	
all	40	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	41	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	42	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
all	43	15K050E	SKCAPSCR 5/16-24X3/4 1936 SERIES PLAIN ALLOY	
all	44	15D119	HXTAPSCR 1/2-13X4 GR5 ZNC FTL	
all	45	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	46	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	47	15K147	HXCAPSCR 1/2-13UNC2X1 GR5 ZINC	
all	48	15K203	HXTAPSCR TFL 1/2-13X5 GR5 ZINC	
all	49	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	50	96PVQC18249	QUICK CONNECT FITTING 1/8" NPT X 1/4" TUBING 90	
all	51	96PVQC24249	QUICK CONNECT FITTING 1/4" NPT X 1/4" TUBING 90	
all	60	04 30947	POD BAG CLOSER PERP SUPPORT	
all	61	04 30948	POD BAG CLOSER CYL BRKT	
all	62	27C209A	AIR CYL 25MM BORE X 900MM STROKE ROD MECH JOINTED	
all	63	04 30951	POD BAG CLOSER PIN CYL	
all	64	X4 30952	POD BAG CLOSER PIN	
all	65	15U241	FLATWASHER 13/32IDX1+3/4ODX14G	
all	66	15K140	HXCAPSCR 3/8-16UNC2AX4 ZNC GR5	
all	67	15G218	HXLKKNUT NYL 3/8-16 STL/ZNC	
all	68	15K024A	SOKCAPSCR M5X40 ZNC	
all	69	15G004A	HEXLOCKNUT M5-.8 STAINLESS STEEL	
all	70	15N102N	PANHDMACHSCR M5X12 ZNC	
all	71	15U161	FLATWASH M5 125-A	

# Discharger Cylinder

MilRAIL®Discharger Round Rail



**Legend**

- A . . . Pin Cylinder
- B . . . Grabber Cylinder
- C . . . Bag Stabilizer Cylinder
- D . . . 2 instances
- E . . . 3 instances

**Table 31. Parts List—Discharger Cylinders**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ABD37004	POD DISCHARGER PIN CYLINDER ASSEMBLY	
	B	ABG37004C	POD DISCHARGER GRABBER CYL ASSEMBLY HVY DUTY	
	C	ABG37004D	POD DISCHARGER BAG STABILIZER CYL ASSEMBLY HVY DUTY	
Components				
all	1	27C213D	AIR CYL 1.5"BORE X 7"STROKE DBL NON-ROT	
all	2	X4 30573C	POD DISCHARGER BAG OPENER CYLINDER END	
all	3	15G215	HXFINJAMNUT 3/8-24UNF2B ZINC G	
all	4	27C219A	AIRCYL 2"BORE X14"STROKE, DBL ACT, NON-ROT W/ MAGNET	



## Discharger Cylinders

2 Sheet

MilRAIL® Discharger Round Rail

**Table 31 Parts List—Discharger Cylinders (cont'd.)**

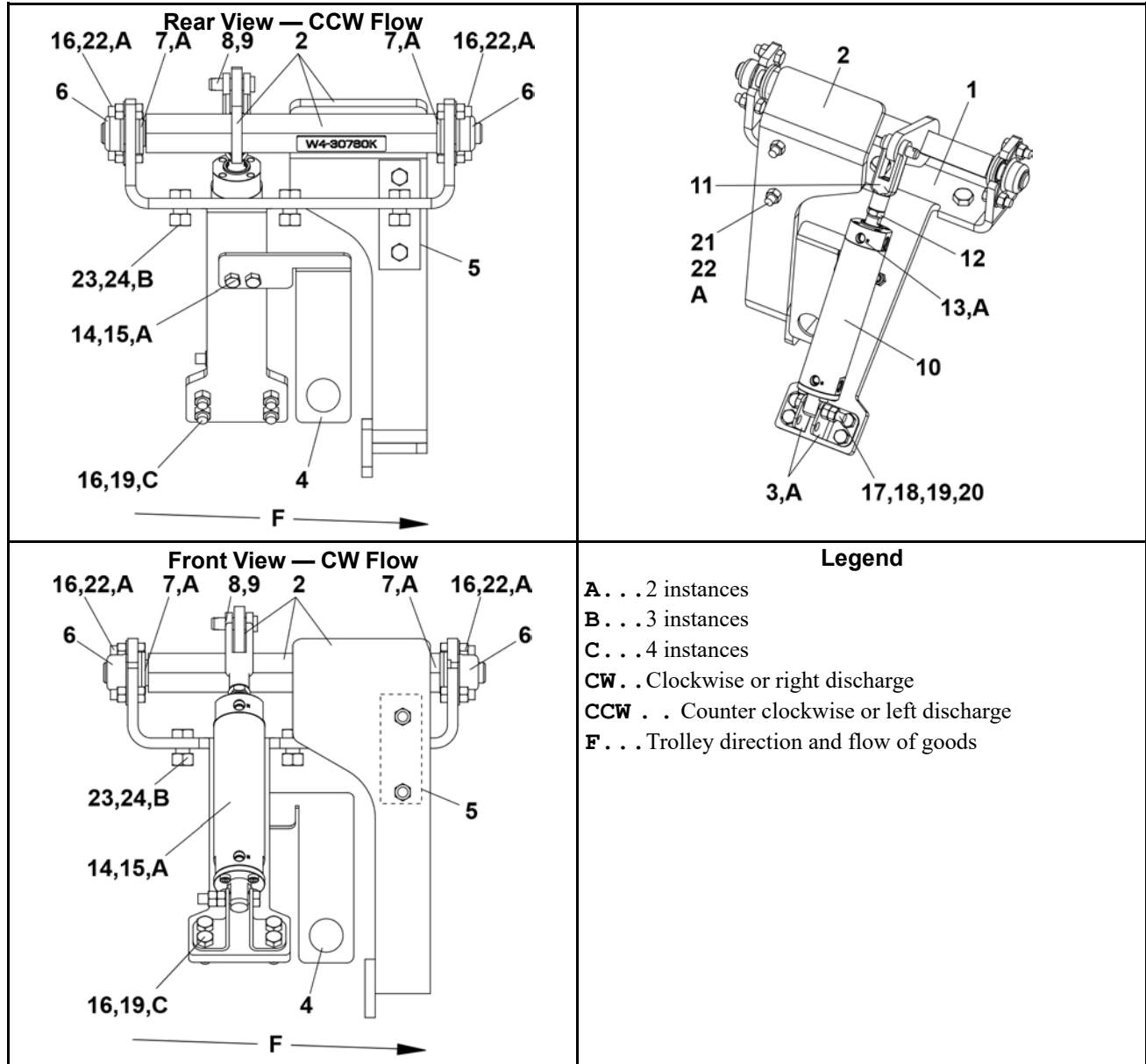
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	5	X4 30570E	BAG STABILIZER CYLINDER END 1/2"-20 THREADS	
all	6	X4 30571C	POD DISCHARGER BAG GRABBER CLAW HVY DUTY	
all	7	15G231	HXFJAMNUT 1/2-13UNC2B ZINC G	
all	8	15K045D	SKCPSCR 1/4-20 UNCX2" ZN	
all	9	15G178	1/4"-20 HEXFLANGE NUT ZINC	
all	10	W4 30943B	POD DISCHARGER BAG STABILIZER WLMT HVY DUTY	

# 8 Stops & Switches

# Flight Bar Stops Round Rail

MilRAIL® Round Rail and Elevator

Figure 25. Flight Bar Stops without Rail



# Flight Bar Stops Round Rail

MiIRAIL® Round Rail and Elevator

Figure 26. Flight Bar Stops with Rail

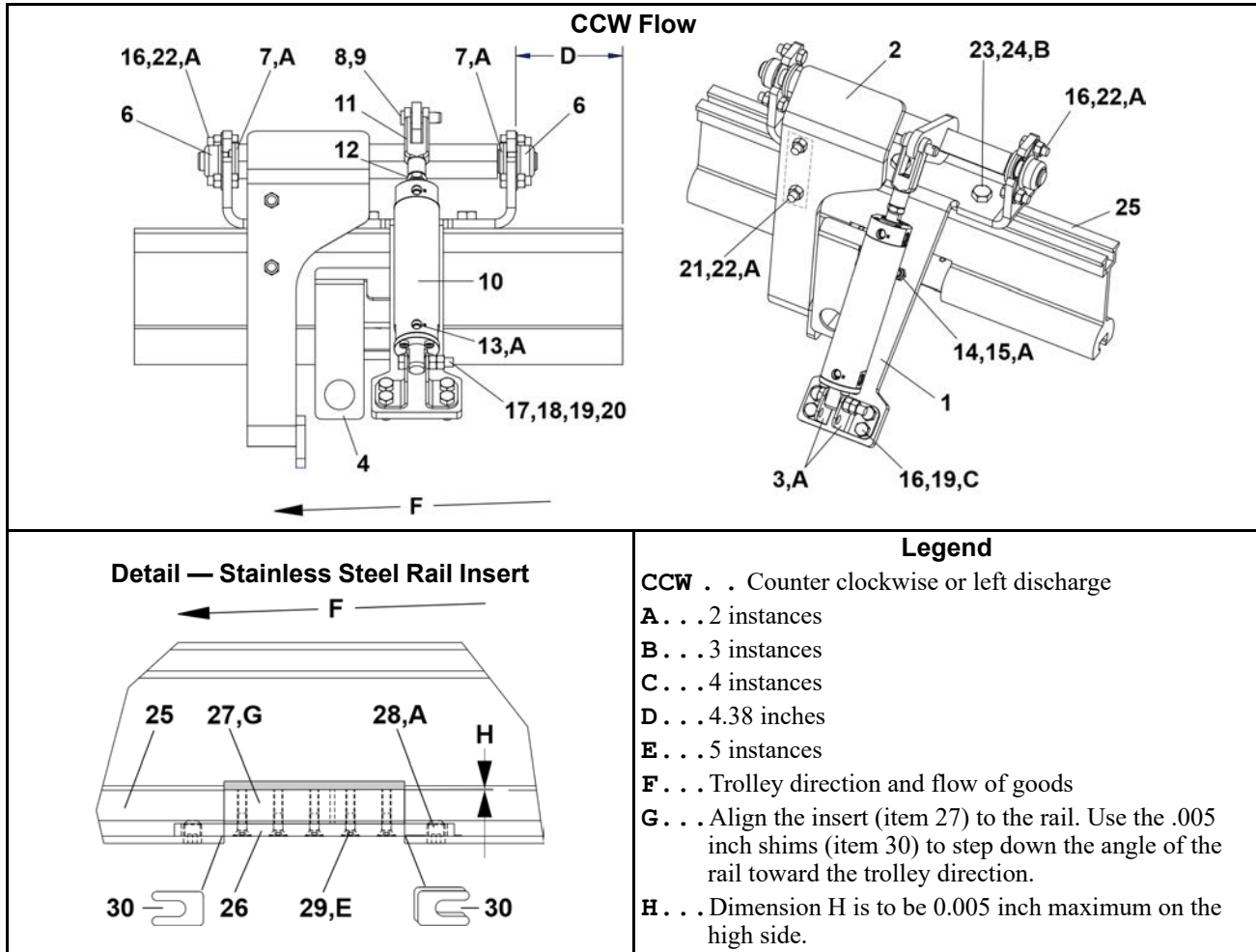


Table 32. Parts List—

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	APS37030A	RND RAIL FLIGHTBAR STOP CW W/O RAIL	Clockwise no rail
	B	APS37030C	RND RAIL FLIGHTBAR STOP CCW W/O RAIL	Counter clockwise no rail
	C	APS37030B	RND RAIL FLIGHTBAR STOP CCW W/RAIL	Counter clockwise with rail
	D	APS37030D	RR FLIGHTBAR STOP CCW HARDENED	Counter clockwise with rail & hardened insert
Components				
A	1	04 30762D	RR TROLLEY STOP MOUNT CW	

## Flight Bar Stops Round Rail

3 Sheet

MilRAIL® Round Rail and Elevator

Table 32 Parts List— (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
BCD	1	04 30762E	RR TROLLEY STOP MOUNT CCW	
A	2	W4 30760J	POD RAIL FLIGHTBAR STOP WLMT	
BCD	2	W4 30760K	RND RAIL FLIGHTBAR STOP WLMT CCW	
all	3	04 30314A	RAIL STOP CLEVIS MOUNT HALF	
A	4	04 30320TA	RR TROLLEY STOP PROX MOUNT PARALLEL CW	
BCD	4	04 30320UA	RR TROLLEY STOP PROX MOUNT PARALLEL CCW	
all	5	X4 30767	FLIGHTBAR STOP BUMPER	
all	6	54E015	FLGMTBRG 3/4 BORE BRZ #FLB12	
all	7	54E048A	MACHINERY BUSHING 1X1.5X10 GA	
all	8	17A011	7/16X1+11/32"OAL CLEVISPIN SAE	
all	9	15H045	STDCOTTERPIN 1/8X1 SS18-8	
all	10	27C215A	AIR CYL 40MM BORE X 60MM STRK DBL ACT W/ SPRING RTRN	
all	11	17A018	7/16-20 ADJ YOKE END DROPFORGE	
all	12	15G222A	HXFJNUT 7/16-20UNF2B SS	
all	13	96PVQC18249F	QUICK CONNECT FITTING 1/8" NPT X 1/4" TUBING 90 FLOW CONTROL	
all	14	15K065	HEXCAPSCR 5/16-18UNC2AX1 GR5 Z	
all	15	15G193	HEXLOKNUT 5/16-18UNC2A NYL STL	
all	16	15K095	HXCPCSCR 3/8-16UNC2AX1 GR5 ZINC	
all	17	15K121B	HEXCAPSCR 3/8-16UNCX2 GR8 Z	
all	18	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	19	15G201	HXLOKNUT 3/8-16 NYL/SS TYPE NE	
all	20	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	21	15K105	HXCPCSCR 3/8-16UNC2A1.25 GR5 P	
all	22	15G218	HXLOKNUT NYL 3/8-16 STL/ZNC	
all	23	15K147	HXCPCSCR 1/2-13UNC2X1 GR5 ZINC	
all	24	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
CD	25	X4 30962D	ROUND RAIL W/CENTER CUTOUT 20" LONG	
CD	26	X4 30700	HARD RAIL INSERT MOUNT	
C	27	X4 30723	ROUND RAIL INSERT	
D	27	X4 30723C	RND RAIL INSERT 410SS CHROME PLATED	
CD	28	15Q168	SOKSETSCR CUP 1/2-13X5/8 ZN	
CD	29	15N173B	FLATMACHSCR 1/4-20X5/8" BLK ALLEN HEAD	
CD	30	04 30702	RAIL HARD INSERT SHIM .005 THK	

# Flight Bar No Return — Round Rail

MiIRAIL®Round Rail

	<p style="text-align: center;"><b>Legend</b></p> <p><b>A. . .</b> Trolley direction or flow of goods, orient the stop as shown.</p> <p><b>B. . .</b> The rail insert nut allows stops to be added mid rail. Slide the rail insert nut into the round rail channel and bolt the stop on with the machine screw.</p>
--	--

**Table 33. Parts List—Flight Bar No Return**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GNR37030	POD RAIL NO RETURN EASY INSTALL	
Components				
all	1	ANR37030	CLEAN RAIL FLIGHTBAR NO RETURN ASSEMBLY	
all	2	15N220	FLATMACHSCR 3/8-16X7/8" BLK ALLEN HEAD	
all	3	04 30585	RAIL 3/8" INSERT NUT	

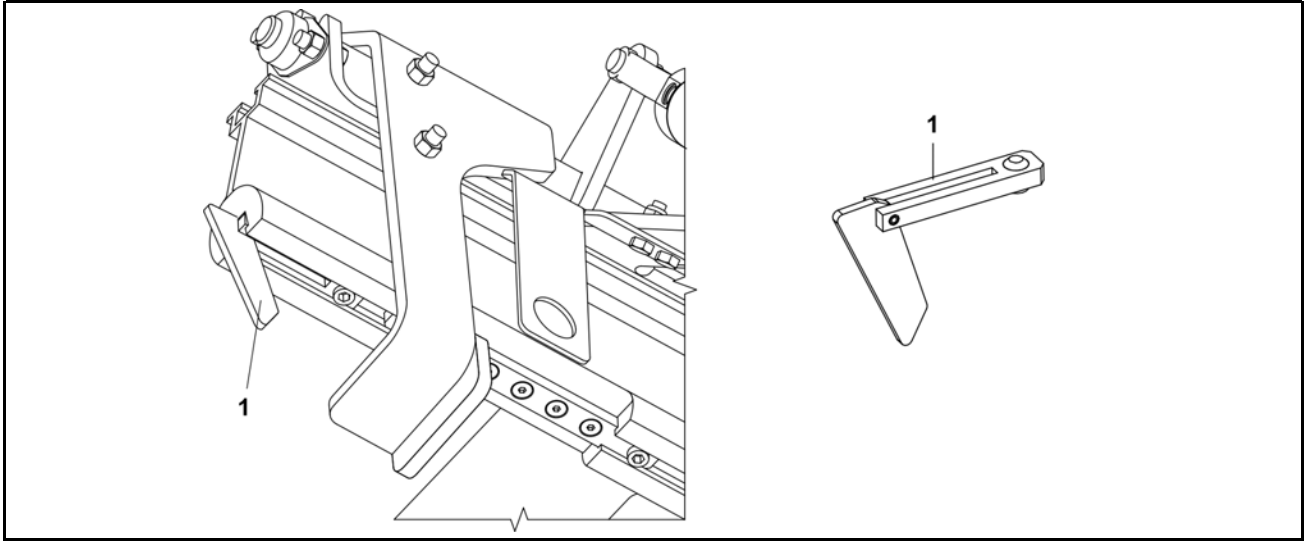
BPRSHV03 / 2023355A

BPRSHV03.1 0000590473 C.2 A.4 9/14/23, 5:00 PM Released

**No Go**

1 Sheet

MilIRAIL® Round Rail.



**Table 34. Parts List—No Go**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	ANG37001A	ROUND RAIL ELEV NO GO ASSEMBLY INTERNAL	

# 9 Controls & Sensing



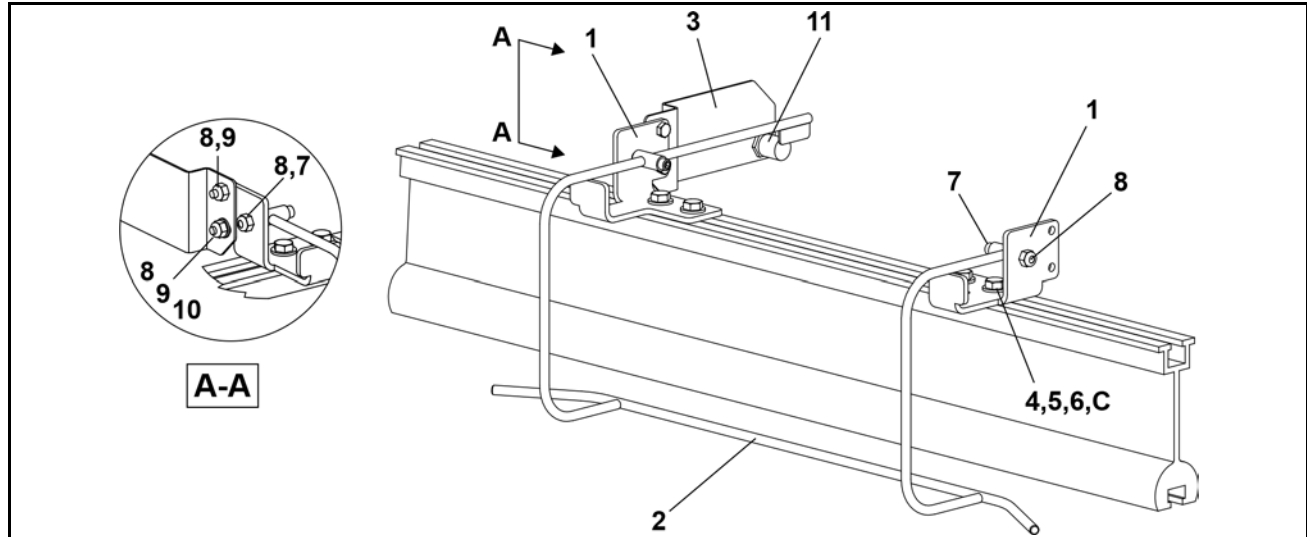
BPRSHZ01 / 2023355A

BPRSHZ01.1 0000594517 C.2 A.4 10/13/23, 9:39 AM Released

# Bag Detector Lift Bar

1 Sheet

MiRAIL® Round Rail Systems with Hard Ring Bags



**Legend**

**A—A** . . . Detail View

**B** . . . 2 instances

**C** . . . 4 instances

**Table 35. Parts List—Bag Detector Lift Bar**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ATD37020	HARD RING LIFT BAR ASSEMBLY	
Components				
A	1	04 30930	HARD RING LIFT BAR MOUNT RIGHT	Right
B	1	04 30930A	HARD RING LIFT BAR MOUNT LEFT	Left
all	2	W4 30929	HARD RING LIFT BAR WLMT	
all	3	04 30931	HARD RING LIFT BAR PROX MOUNT	
all	4	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	5	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	6	04 30585	RAIL 3/8" INSERT NUT	
all	7	15K045C	SKCPSCR 1/4-20 UNCX1+3/4 BLK	
all	8	15G166A	HXLKLNUT NYL1/4-20 UNC2A STL/Z	
all	9	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	10	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	11	09RPS18ADW	PROX SW QK CONN 18M NO-DC UNSHLD EUROFAST PNP OUTPUT	

Proximity Switch and Mounting Bracket

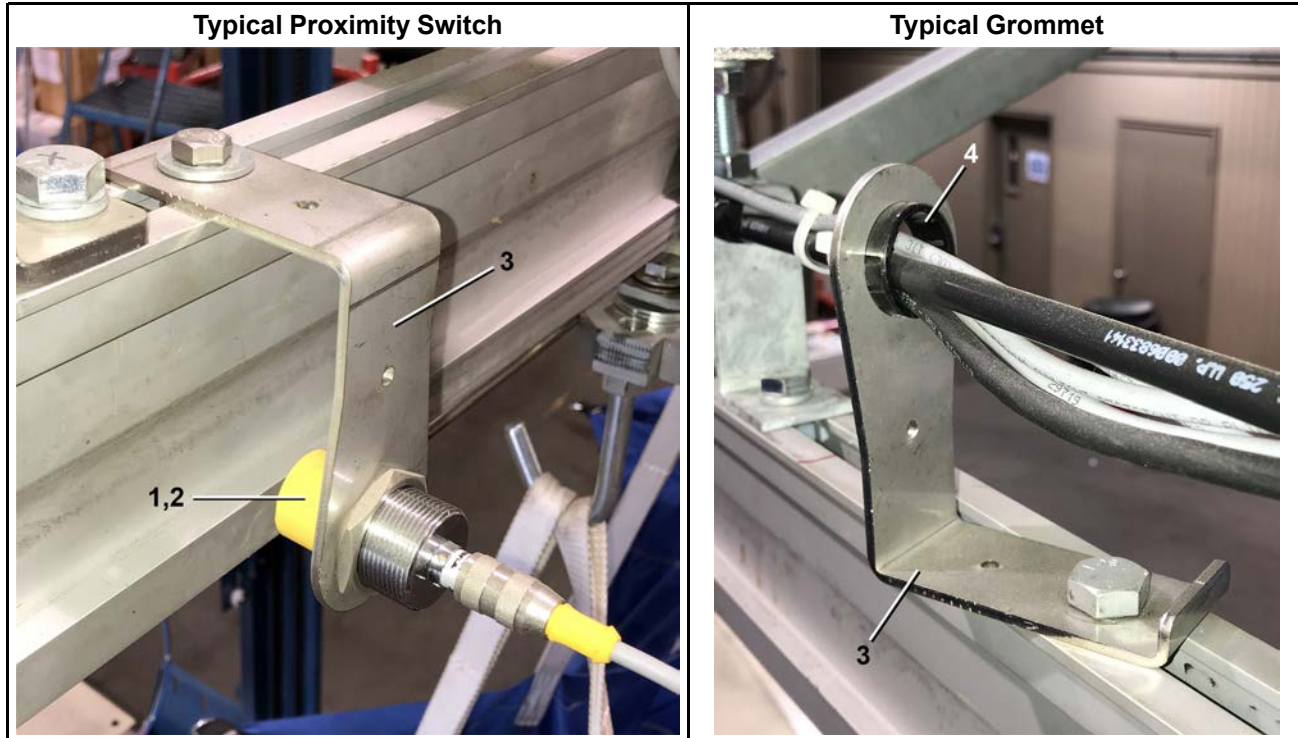


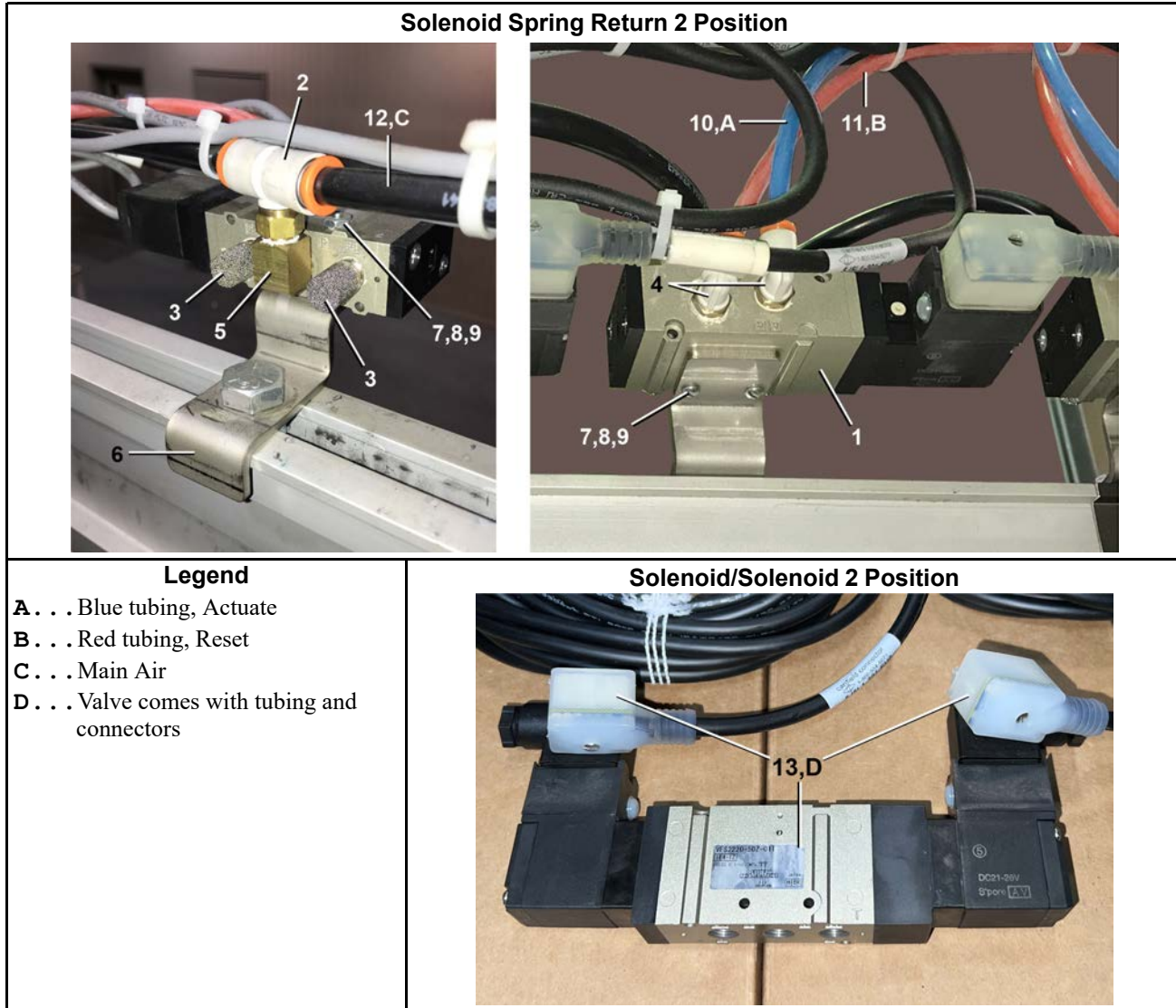
Table 36. Parts List—Proximity Switch and Mounting Bracket

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
none				
Components				
all	1	09RPS30ADW	PROX SW QK CONN 30M NO-DC UNSHLD EUROFAST PNP OUTPUT	
all	2	09RPSDC010	CONN.STR FEMALE DC 3A 300V 10M RK4T-10 - EUROFAST	
all	3	04 30320B	RAIL TROLLEY PROXIMITY MNT BRKT SMALL HOLE	
all	4	12P11CSB	SNAPBUSH 1.093"MH X .94"ID HEYCO#2166	

# 10 Pneumatic Valves

# Solenoids 2 Position

MILRAIL®Systems



**Table 37. Parts List—Solenoids 2 Position**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	AVAMRSSBB01	MILRAIL VALVE ASSY SOLENOID/SPRING RETURN 2 POSITIONS SMC	Spring Return, Assembly includes items 1–9
	B	AVAMRSPAB01	MILRAIL VALVE ASSY SOLENOID/SOLENOID 2 POSITION SMC	Solenoid Return, Assembly includes items 13 & 2–9
Components				
A	1	96R305BPS24	1/8"NPT PILOT 5 PORT NC 24VDC DIN SOLENOID/SPRING RETURN 2 POSITION	

**Solenoids 2 Position**

1 Sheet

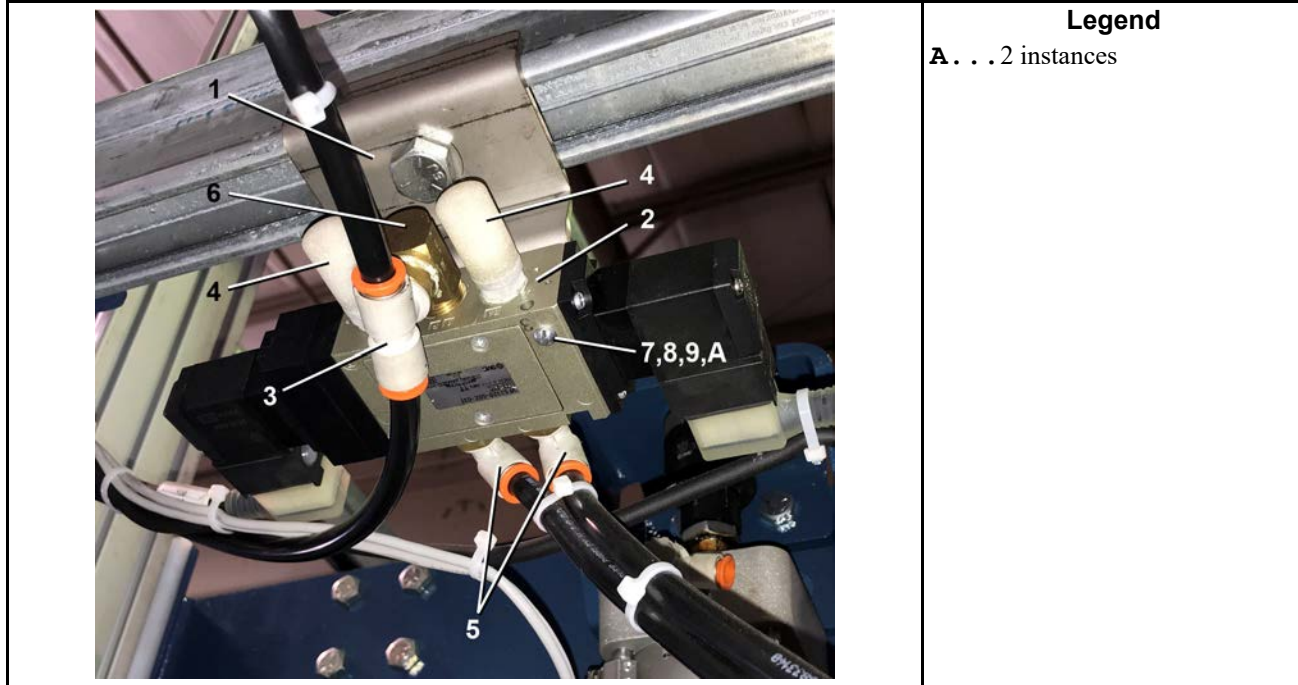
MiIRAIL®Systems

**Table 37 Parts List—Solenoids 2 Position (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	2	96PVQC3828T	QUICK CONNECT FITTING 1/8" NPT X 3/8" TUBING TEE	
all	3	96PVQC18S	SILENCER/MUFFLER FOR AIR 1/8" NPT	
all	4	96PVQC18249	QUICK CONNECT FITTING 1/8" NPT X 1/4" TUBING 90	
all	5	5SL0CBEC	NPTELB 90DEG STRT 1/8 BRASS125	
all	6	04 30580	5 PRT VALVE STRUT MOUNT BRKT, SMC	
all	7	15N068	RDMACSCR 6-32UNC2AX1.25 ZINC	
all	8	15G070	HXMACHSCRNUT 6-32UNC2B ZINC GR	
all	9	15U100	LOCKWASHER MEDIUM #6 ZINCPL	
all	10	60E004BL	1/4"OD X.170"ID NYL(BLUE)TUBING E = FT	
all	11	60E004RD	1/4"OD X.170"ID NYL(RED)TUBING - EA = FT	
all	12	60E005B	TUBING NYL.3/8"OD X.275"ID	
B	13	96R305BPR24	1/8"NPT PILOT 5 PORT NC 24VDC DIN SOLENOID/SOLENOID 2 POSITION	Includes cables and connectors

# Solenoid Spring Center 3 Position

Pneumatic Rail Elevators



**Legend**  
**A . . . 2 instances**

**Table 38. Parts List—Solenoid Spring Center 3 Position**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	AVAMRSSAB01	MILRAIL VALVE ASSY SOLENOID/SOLENOID SPRING CENTER 3 POSITION SMC 3/8 NPT	
Components				
all	1	04 30580A	3/8"NPT 5 PORT VALVE STRUT MNT BRKT	
all	2	96R307BPP24	3/8"NPT PILOT 5 PORT NC 24VDC DIN SOLENOID/SOLENOID SPRING CENTER 3 POSITION SMC	
all	3	96PVQC3838TA	QUICK CONNECT FITTING 3/8" NPT X 3/8" TUBING TEE	
all	4	96PVQC24S	SILENCER/MUFFLER FOR AIR 1/4" NPT	
all	5	96PVQC38389	QUICK CONNECT FITTING 3/8" NPT X 3/8" TUBING 90	
all	6	5SL0GBEC	NPTELB 90DEG STRT 3/8 BRASS125	
all	7	15N097B	RDMACHSCR 8-32UNC2X1.75 ZINC	
all	8	15G100	HXMACHSCRNUT 8-32UNC2B ZINC GR	
all	9	15U120	LOCKWASHER MEDIUM #8 ZINCP	