SUBSTITUTION INQUIRY SCREEN PAGE 01

SINQ ITEM BRK RV500 LOC 07A KIT K QTY LTERM

KITS AVAILABLE POINTERS QTY

LEVEL	PART NUMBER	ETIS	BWD	FWD	QTY	DATE	C-CODES	SHORT
KT	BRK RV500		*----)					
BM	23-09367-506	BOM	(-SS-*		1	06/16/89		
BM	23-09366-508	BOM	(-SS-*		1	12/12/83		
BM	23-09369-812	BOM	(-SS-*		1	12/12/83		
BM	23-09366-506	BOM	(-SS-*		1	12/12/83		
BM	23-09367-507	BOM	(-SS-*		1	12/12/83		
BM	23-09367-508	BOM	(-SS-*		1	12/12/83		
BM	23-09367-610	BOM	(-SS-*		1	12/12/83		
BM	23-09367-612	BOM	(-SS-*		1	12/12/83		
BM	23-09369-810	BOM	(-SS-*		1	12/12/83		
BM	23-09366-608	BOM	(-SS-*		1	12/12/83		
BM	23-09367-607	BOM	(-SS-*		1	12/12/83		
BM	23-09367-606	BOM	(-SS-*		1	12/12/83		
BM	23-09367-608	BOM	(-SS-*		2	12/12/83		

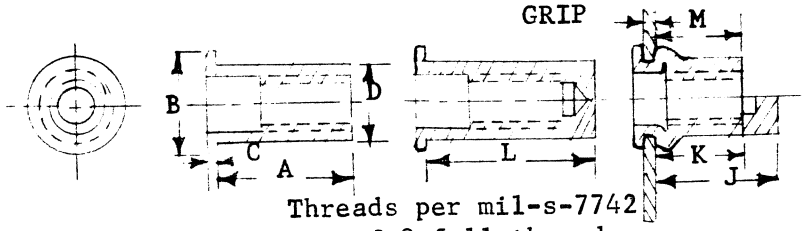
1=ITEM 2=ISTAT 3=IPLAN 4=IMGT 5=DSTAT 6=PRICE 7=HIST 8=SUPT 10=MENUI 12=HELP
02/27/96 13:56:18 DISPLAY COMPLETE

CAB RIVET KIT CONTENTS

BRK-RV500

23-9277

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT-ALUMINUM FLAT HEAD-KEYLESS OPEN & CLOSED END	23-9277
LAST CHG. LTR. B		SHEET 1 OF 5



Threads per mil-s-7742
min of 8 full threads

THREAD SIZE	B +.015 -.015	C NOM	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
#4-40 UNC-3B	.270	.025	.155	.198	.054	5/32	.155	.157
#6-32 UNC-3B	.325	.032	.189	.240	.054	#12	.189	.193
#8-32 UNC-3B	.357	.032	.221	.271	.054	# 2	.221	.226
#10-32 UNF-3B	.406	.038	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.475	.058	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.665	.062	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.781	.088	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	1.000	.125	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A ±.015	OPEN END M REF	CLOSED END L ±.015	CLOSED END J REF	CLOSED END K REF	FREIGHTLINER PART NO.
#4-40 UNC-3B	.010 .060	.345	.230				23-9277-001
4-40 UNC-3B	.010 .060			.500	.385	.230	23-9277-002
4-40 UNC-3B	.060 .085	.370	.230				23-9277-003
4-40 UNC-3B	.060 .085			.525	.385	.230	23-9277-004
4-40 UNC-3B	.085 .110	.400	.230				23-9277-005
4-40 UNC-3B	.085 .110			.555	.390	.230	23-9277-006
4-40 UNC-3B	.110 .135	.425	.230				23-9277-007
4-40 UNC-3B	.110 .135			.580	.385	.230	23-9277-008
4-40 UNC-3B	.135 .160	.450	.230				23-9277-009
4-40 UNC-3B	.135 .160			.605	.385	.230	23-9277-010
4-40 UNC-3B	.160 .185	.480	.230				23-9277-011
4-40 UNC-3B	.160 .185			.635	.385	.230	23-9277-012

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	TD	2-5-79	SEE SHEET 3	7723
B	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

B A

23-9277

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9277
LAST CHG LTR B		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
#6-32 UNC-3B	.010 .075	.438	.300				23-9277-013
6-32 UNC-3B	.010 .075			.625	.490	.305	23-9277-014
6-32 UNC-3B	.075 .120	.500	.315				23-9277-015
6-32 UNC-3B	.075 .120			.625	.440	.255	23-9277-016
6-32 UNC-3B	.120 .160	.500	.270				23-9277-017
6-32 UNC-3B	.120 .160			.750	.520	.260	23-9277-018
6-32 UNC-3B	.160 .200	.562	.290				23-9277-019
6-32 UNC-3B	.160 .200			.750	.480	.260	23-9277-020
6-32 UNC-3B	.200 .240	.625	.310				23-9277-021
6-32 UNC-3B	.200 .240			.750	.435	.260	23-9277-022
6-32 UNC-3B	.240 .280	.687	.330				23-9277-023
6-32 UNC-3B	.240 .280			.812	.455	.265	23-9277-024
#8-32 UNC-3B	.010 .075	.438	.300				23-9277-025
8-32 UNC-3B	.010 .075			.625	.490	.305	23-9277-026
8-32 UNC-3B	.075 .120	.500	.315				23-9277-027
8-32 UNC-3B	.075 .120			.625	.440	.255	23-9277-028
8-32 UNC-3B	.120 .160	.500	.270				23-9277-029
8-32 UNC-3B	.120 .160			.750	.520	.260	23-9277-030
8-32 UNC-3B	.160 .200	.625	.350				23-9277-031
8-32 UNC-3B	.160 .200			.750	.475	.265	23-9277-032
8-32 UNC-3B	.200 .240	.625	.305				23-9277-033
8-32 UNC-3B	.200 .240			.875	.555	.310	23-9277-034
8-32 UNC-3B	.240 .280	.687	.340				23-9277-035
8-32 UNC-3B	.240 .280			.875	.530	.290	23-9277-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	TD	2-5-79	SEE SHEET 3	77930
B	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	0000I	SEE SHEETS	

Portland FREIGHTLINER CORPORATION Oregon 97208

BA

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9277
LAST CHG LTR: B		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
#10-32 UNF-3B	.010 .080	.531	.380				23-9277-037
10-32 UNF-3B	.010 .080			.781	.630	.380	23-9277-038
10-32 UNF-3B	.080 .130	.594	.390				23-9277-039
10-32 UNF-3B	.080 .130			.843	.640	.390	23-9277-040
10-32 UNF-3B	.130 .180	.641	.390				23-9277-041
10-32 UNF-3B	.130 .180			.891	.640	.390	23-9277-042
10-32 UNF-3B	.180 .230	.703	.395				23-9277-043
10-32 UNF-3B	.180 .230			.953	.645	.395	23-9277-044
10-32 UNF-3B	.230 .280	.750	.395				23-9277-045
10-32 UNF-3B	.230 .280			1.000	.645	.395	23-9277-046
10-32 UNF-3B	.280 .330	.797	.385				23-9277-047
10-32 UNF-3B	.280 .330			1.047	.630	.385	23-9277-048
1/4-20 UNC-3B	.020 .080	.469	.305				23-9277-049*
1/4-20 UNC-3B	.020 .080			.781	.612	.300	23-9277-050*
1/4-20 UNC-3B	.080 .140	.531	.305				23-9277-051*
1/4-20 UNC-3B	.080 .140			.843	.612	.300	23-9277-052*
1/4-20 UNC-3B	.140 .200	.594	.305				23-9277-053*
1/4-20 UNC-3B	.140 .200			.906	.612	.300	23-9277-054*
1/4-20 UNC-3B	.200 .260	.656	.305				23-9277-055*
1/4-20 UNC-3B	.200 .260			.968	.612	.300	23-9277-056*
1/4-20 UNC-3B	.260 .320	.875	.445				23-9277-057
1/4-20 UNC-3B	.260 .320			1.187	.755	.445	23-9277-058
1/4-20 UNC-3B	.320 .380	.937	.445				23-9277-059
1/4-20 UNC-3B	.320 .380			1.250	.755	.445	23-9277-060

*Special thin wall style that can be installed using the C-6000 hand tool.

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	Job #
A	TD	2-2-79	SEE M/E HISTORY	77930
B	FEF	05-14-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

BA

23-9277

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9277
LAST CHG LTR B		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.030 .125	.750	.505				23-9277-061
5/16-18 UNC-3B	.030 .125			1.187	.940	.550	23-9277-062
5/16-18 UNC-3B	.125 .200	.875	.555				23-9277-063
5/16-18 UNC-3B	.125 .200			1.281	.960	.555	23-9277-064
5/16-18 UNC-3B	.200 .275	.937	.540				23-9277-065
5/16-18 UNC-3B	.200 .275			1.343	.950	.560	23-9277-066
5/16-18 UNC-3B	.275 .350	1.032	.560				23-9277-067
5/16-18 UNC-3B	.275 .350			1.437	.965	.570	23-9277-068
5/16-18 UNC-3B	.350 .425	1.125	.580				23-9277-069
5/16-18 UNC-3B	.350 .425			1.531	.985	.575	23-9277-070
5/16-18 UNC-3B	.425 .500	1.187	.565				23-9277-071
5/16-18 UNC-3B	.425 .500			1.593	.975	.580	23-9277-072
3/8-16 UNC-3B	.030 .115	.844	.585				23-9277-073
3/8-16 UNC-3B	.030 .115			1.281	1.020	.660	23-9277-074
3/8-16 UNC-3B	.115 .200	.938	.595				23-9277-075
3/8-16 UNC-3B	.115 .200			1.375	1.030	.670	23-9277-076
3/8-16 UNC-3B	.200 .285	1.031	.605				23-9277-077
3/8-16 UNC-3B	.200 .285			1.468	1.040	.680	23-9277-078
3/8-16 UNC-3B	.285 .370	1.125	.615				23-9277-079
3/8-16 UNC-3B	.285 .370			1.562	1.050	.690	23-9277-080
3/8-16 UNC-3B	.370 .455	1.218	.630				23-9277-081
3/8-16 UNC-3B	.370 .455			1.656	1.065	.710	23-9277-082
3/8-16 UNC-3B	.455 .540	1.312	.635				23-9277-083
3/8-16 UNC-3B	.455 .540			1.750	1.075	.715	23-9277-084

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	TD	2-5-79	SEE SHEET 3	77730
B	FEF	05-14-84	SEE SHEET 5	9943 B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

B A

23-9277

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9277
LAST CHG LTR: B		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.025 .145	1.062	.730				23-9277-085
1/2-13 UNC-3B	.025 .145			1.656	1.325	.855	23-9277-086
1/2-13 UNC-3B	.145 .265	1.188	.735				23-9277-087
1/2-13 UNC-3B	.145 .265			1.781	1.330	.865	23-9277-088
1/2-13 UNC-3B	.265 .385	1.312	.740				23-9277-089
1/2-13 UNC-3B	.265 .385			1.906	1.335	.875	23-9277-090
1/2-13 UNC-3B	.385 .505	1.453	.765				23-9277-091
1/2-13 UNC-3B	.385 .505			2.156	1.465	.895	23-9277-092
1/2-13 UNC-3B	.505 .625	1.578	.770				23-9277-093
1/2-13 UNC-3B	.505 .625			2.297	1.485	.905	23-9277-094
1/2-13 UNC-3B	.625 .745	1.719	.790				23-9277-095
1/2-13 UNC-3B	.625 .745			2.438	1.510	.920	23-9277-096

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	TD	2-5-79	SEE SHEET 3	7793
B	FEF	05-14-84	ADDED NOTE 3	9943B

ENGINEERING NOTES:

1. Material: Aluminum type 6053-T4.
2. Finish: Alumilite No. 250 per Mil-A-8625 (ASG).
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

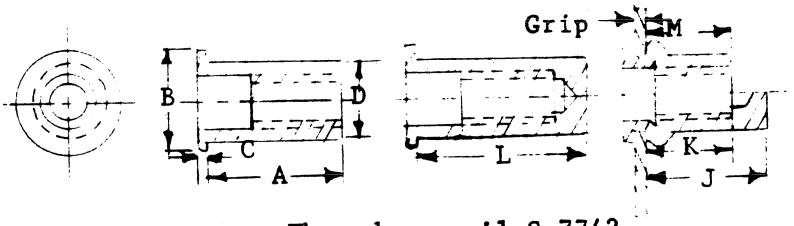
COMPILED	KJA	DATE DRAWN	MASTER NO.		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	1	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

BA

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT-STEEL FLAT HEAD-KEYLESS OPEN & CLOSED END	23-9278
LAST CHG. LTR. A		SHEET 1 OF 5



Thread per mil-S-7742
min of 8 full threads

THREAD SIZE	B ±.015	C NOM.	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN.	INSTALL HOLE SIZE MAX.
#4-40 UNC-3B	.270	.025	.155	.198	.054	5/32	.155	.157
#6-32 UNC-3B	.325	.032	.189	.240	.054	#12	.189	.193
#8-32 UNC-3B	.357	.032	.221	.271	.054	#2	.221	.226
#10-32 UNF-3B	.406	.038	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.475	.058	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.665	.062	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.781	.088	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	1.000	.125	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END ± A .015	OPEN END M REF	CLOSED END ± L .015	CLOSED END J REF	CLOSED END K REF	FREIGHTLINER PART NO.
#4-40 UNC-3B	.010 .060	.345	.230				23-9278-001
#4-40 UNC-3B	.010 .060			.500	.385	.230	23-9278-002
#4-40 UNC-3B	.060 .085	.370	.230				23-9278-003
#4-40 UNC-3B	.060 .085			.525	.385	.230	23-9278-004
#4-40 UNC-3B	.085 .110	.400	.230				23-9278-005
#4-40 UNC-3B	.085 .110			.555	.390	.230	23-9278-006
#4-40 UNC-3B	.110 .135	.425	.230				23-9278-007
#4-40 UNC-3B	.110 .135			.580	.385	.230	23-9278-008
#4-40 UNC-3B	.135 .160	.450	.230				23-9278-009
#4-40 UNC-3B	.135 .160			.605	.385	.230	23-9278-010
#4-40 UNC-3B	.160 .185	.480	.230				23-9278-011
#4-40 UNC-3B	.160 .185			.635	.385	.230	23-9278-012

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	K.G.A	9-29-69	02190	00001	SEE SHEET 5	VEHICLE

Portland FREIGHTLINER CORPORATION Oregon 97208

A

23-9278

PRINT ISSUED	TITLE	PART NO
11-1-69	RIVNUT-STEEL FLAT HEAD-KEYLESS OPEN & CLOSED END	23-9278
LAST CHG LTR: A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END A ±.015	OPEN END M REF	CLOSED END L ±.015	CLOSED END J REF	CLOSED END K REF	FREIGHTLINER PART NO.
#6-32 UNC-3B	.010 .075	.438	.300				23-9278-013
#6-32 UNC-3B	.010 .075			.625	.490	.305	23-9278-014
#6-32 UNC-3B	.075 .120	.500	.315				23-9278-015
#6-32 UNC-3B	.075 .120			.625	.440	.255	23-9278-016
#6-32 UNC-3B	.120 .160	.500	.270				23-9278-017
#6-32 UNC-3B	.120 .160			.750	.520	.260	23-9278-018
#6-32 UNC-3B	.160 .200	.562	.290				23-9278-019
#6-32 UNC-3B	.160 .200			.750	.480	.260	23-9278-020
#6-32 UNC-3B	.200 .240	.625	.310				23-9278-021
#6-32 UNC-3B	.200 .240			.750	.435	.260	23-9278-022
#6-32 UNC-3B	.240 .280	.687	.330				23-9278-023
#6-32 UNC-3B	.240 .280			.812	.455	.265	23-9278-024

#8-32 UNC-3B	.010 .075	.438	.300				23-9278-025
#8-32 UNC-3B	.010 .075			.625	.490	.305	23-9278-026
#8-32 UNC-3B	.075 .120	.500	.315				23-9278-027
#8-32 UNC-3B	.075 .120			.625	.440	.255	23-9278-028
#8-32 UNC-3B	.120 .160	.500	.270				23-9278-029
#8-32 UNC-3B	.120 .160			.750	.520	.260	23-9278-030
#8-32 UNC-3B	.160 .200	.625	.350				23-9278-031
#8-32 UNC-3B	.160 .200			.750	.475	.265	23-9278-032
#8-32 UNC-3B	.200 .240	.625	.305				23-9278-033
#8-32 UNC-3B	.200 .240			.875	.555	.310	23-9278-034
#8-32 UNC-3B	.240 .280	.687	.340				23-9278-035
#8-32 UNC-3B	.240 .280			.875	.530	.290	23-9278-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

23-9278

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT-STEEL FLAT HEAD-KEYLESS OPEN & CLOSED END	23-9278
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		±A .015	M REF	±L .015	J REF	K REF	
#10-32 UNF-3B	.010 .080	.531	.380				23-9278-037
#10-32 UNF-3B	.010 .080			.781	.630	.380	23-9278-038
#10-32 UNF-3B	.080 .130	.594	.390				23-9278-039
#10-32 UNF-3B	.080 .130			.843	.640	.390	23-9278-040
#10-32 UNF-3B	.130 .180	.641	.390				23-9278-041
#10-32 UNF-3B	.130 .180			.891	.640	.390	23-9278-042
#10-32 UNF-3B	.180 .230	.703	.395				23-9278-043
#10-32 UNF-3B	.180 .230			.953	.645	.395	23-9278-044
#10-32 UNF-3B	.230 .280	.750	.395				23-9278-045
#10-32 UNF-3B	.230 .280			1.000	.645	.395	23-9278-046
#10-32 UNF-3B	.280 .330	.797	.385				23-9278-047
#10-32 UNF-3B	.280 .330			1.047	.630	.385	23-9278-048
1/4-20 UNC-3B	.020 .080	.625	.450				23-9278-049
1/4-20 UNC-3B	.020 .080			.937	.760	.440	23-9278-050
1/4-20 UNC-3B	.080 .140	.687	.450				23-9278-051
1/4-20 UNC-3B	.080 .140			1.000	.760	.440	23-9278-052
1/4-20 UNC-3B	.140 .200	.750	.450				23-9278-053
1/4-20 UNC-3B	.140 .200			1.062	.760	.440	23-9278-054
1/4-20 UNC-3B	.200 .260	.812	.445				23-9278-055
1/4-20 UNC-3B	.200 .260			1.125	.755	.445	23-9278-056
1/4-20 UNC-3B	.260 .320	.875	.445				23-9278-057
1/4-20 UNC-3B	.260 .320			1.187	.755	.445	23-9278-058
1/4-20 UNC-3B	.320 .380	.937	.445				23-9278-059
1/4-20 UNC-3B	.320 .380			1.250	.755	.445	23-9278-060

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	K.G.A	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

F-183

23-9278

PRINT ISSUED	TITLE	PART NO
11-11	RIVNUT -STEEL FLAT HEAD- KEYLESS OPEN & CLOSED END	23-9278
LAST CHG LTR: A		SHEET 4 OF 5

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99438

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M REF	L ±.015	J REF	K REF	
5/16-18 UNC-3B	.030 .125	.750	.505				23-9278-061
5/16-18 UNC-3B	.030 .125			1.187	.940	.550	23-9278-062
5/16-18 UNC-3B	.125 .200	.875	.555				23-9278-063
5/16-18 UNC-3B	.125 .200			1.281	.960	.555	23-9278-064
5/16-18 UNC-3B	.200 .275	.937	.540				23-9278-065
5/16-18 UNC-3B	.200 .275			1.343	.950	.560	23-9278-066
5/16-18 UNC-3B	.275 .350	1.032	.560				23-9278-067
5/16-18 UNC-3B	.275 .350			1.437	.965	.570	23-9278-068
5/16-18 UNC-3B	.350 .425	1.125	.580				23-9278-069
5/16-18 UNC-3B	.350 .425			1.531	.985	.575	23-9278-070
5/16-18 UNC-3B	.425 .500	1.187	.565				23-9278-071
5/16-18 UNC-3B	.425 .500			1.593	.975	.580	23-9278-072
3/8-16 UNC-3B	.030 .115	.844	.585				23-9278-073
3/8-16 UNC-3B	.030 .115			1.281	1.020	.660	23-9278-074
3/8-16 UNC-3B	.115 .200	.938	.595				23-9278-075
3/8-16 UNC-3B	.115 .200			1.375	1.030	.670	23-9278-076
3/8-16 UNC-3B	.200 .285	1.031	.605				23-9278-077
3/8-16 UNC-3B	.200 .285			1.468	1.040	.680	23-9278-078
3/8-16 UNC-3B	.285 .370	1.125	.615				23-9278-079
3/8-16 UNC-3B	.285 .370			1.562	1.050	.690	23-9278-080
3/8-16 UNC-3B	.370 .455	1.218	.630				23-9278-081
3/8-16 UNC-3B	.370 .455			1.656	1.065	.710	23-9278-082
3/8-16 UNC-3B	.455 .540	1.312	.635				23-9278-083
3/8-16 UNC-3B	.455 .540			1.750	1.075	.715	23-9278-084

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KTA	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

A

23-9278

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9278
LAST CHG LTR: A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M REF	L ±.015	J REF	K REF	
1/2-13 UNC-3B	.025 .145	1.062	.730				23-9278-085
1/2-13 UNC-3B	.025 .145			1.656	1.325	.855	23-9278-086
1/2-13 UNC-3B	.145 .265	1.188	.735				23-9278-087
1/2-13 UNC-3B	.145 .265			1.781	1.330	.865	23-9278-088
1/2-13 UNC-3B	.265 .385	1.312	.740				23-9278-089
1/2-13 UNC-3B	.265 .385			1.906	1.335	.875	23-9278-090
1/2-13 UNC-3B	.385 .505	1.453	.765				23-9278-091
1/2-13 UNC-3B	.385 .505			2.156	1.465	.895	23-9278-092
1/2-13 UNC-3B	.505 .625	1.578	.770				23-9278-093
1/2-13 UNC-3B	.505 .625			2.297	1.485	.905	23-9278-094
1/2-13 UNC-3B	.625 .745	1.719	.790				23-9278-095
1/2-13 UNC-3B	.625 .745			2.438	1.510	.920	23-9278-096

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-83	ADDED NOTE 3	9943B

ENGINEERING NOTES:

1. Material: Steel AISI C1108 or C1110.
2. Finish: Cadium plate per QQ-P-416A class 3 type 2, (.0002" min. thick).
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO.		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A	9-29-69	02190	00001	(1)	

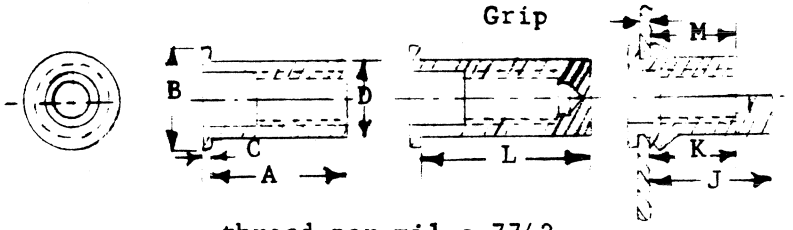
Portland FREIGHTLINER CORPORATION Oregon 97208

23-9279

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-04	SEE SHEET 5	99431

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT - STAINLESS STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9279
LAST CHG. LTR. A		SHEET 1 OF 5



thread per mil-s-7742
min of 8 full threads

THREAD SIZE	B ± .015	C -NOM	D +.000 -.004	E MAX	F ± .005	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
#4-40 UNC-3B	.270	.025	.155	.198	.054	5/32	.155	.157
6-32 UNC-3B	.325	.032	.189	.240	.054	#12	.189	.193
8-32 UNC-3B	.357	.032	.221	.271	.054	#2	.221	.226
10-32 UNF-3B	.406	.038	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.475	.058	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.665	.062	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.781	.088	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	1.000	.125	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A ± .015	OPEN END M Ref	CLOSED END L ± .015	CLOSED END J Ref	CLOSED END K Ref	FREIGHTLINER PART NO.
#4-40 UNC-3B	.010 .060	.345	.230				23-9279-001
4-40 UNC-3B	.010 .060			.500	.385	.230	23-9279-002
4-40 UNC-3B	.060 .085	.370	.230				23-9279-003
4-40 UNC-3B	.060 .085			.525	.385	.230	23-9279-004
4-40 UNC-3B	.085 .110	.400	.230				23-9279-005
4-40 UNC-3B	.085 .110			.555	.390	.230	23-9279-006
4-40 UNC-3B	.110 .135	.425	.230				23-9279-007
4-40 UNC-3B	.110 .135			.580	.385	.230	23-9279-008
4-40 UNC-3B	.135 .160	.450	.230				23-9279-009
4-40 UNC-3B	.135 .160			.605	.385	.230	23-9279-010
4-40 UNC-3B	.160 .185	.480	.230				23-9279-011
4-40 UNC-3B	.160 .185			.635	.385	.230	23-9279-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

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23-9279

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9279
LAST CHG LTR: A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref.	
#6-32 UNC-3B	.010 .075	.438	.300				23-9279-013
6-32 UNC-3B	.010 .075			.625	.490	.305	23-9279-014
6-32-UNC-3B	.075 .120	.500	.315				23-9279-015
6-32 UNC-3B	.075 .120			.625	.440	.255	23-9279-016
6-32 UNC-3B	.120 .160	.500	.270				23-9279-017
6-32 UNC-3B	.120 .160			.750	.520	.260	23-9279-018
6-32 UNC-3B	.160 .200	.562	.290				23-9279-019
6-32 UNC-3B	.160 .200			.750	.480	.260	23-9279-020
6-32 UNC-3B	.200 .240	.625	.310				23-9279-021
6-32 UNC-3B	.200 .240			.750	.435	.260	23-9279-022
6-32 UNC-3B	.240 .280	.687	.330				23-9279-023
6-32 UNC-3B	.240 .280			.312	.455	.265	23-9279-024

#8-32 UNC-3B	.010 .075	.438	.300				23-9279-025
8-32 UNC-3B	.010 .075			.625	.490	.305	23-9279-026
8-32 UNC-3B	.075 .120	.500	.315				23-9279-027
8-32 UNC-3B	.075 .120			.625	.440	.255	23-9279-028
8-32 UNC-3B	.120 .160	.500	.270				23-9279-029
8-32 UNC-3B	.120 .160			.750	.520	.260	23-9279-030
8-32 UNC-3B	.160 .200	.625	.350				23-9279-031
8-32 UNC-3B	.160 .200			.750	.475	.265	23-9279-032
8-32 UNC-3B	.200 .240	.625	.305				23-9279-033
8-32 UNC-3B	.200 .240			.875	.555	.310	23-9279-034
8-32 UNC-3B	240 .280	.687	.340				23-9279-035
8-32 UNC-3B	.240 .280			.875	.530	.290	23-9279-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	JCTA	9-29-69	02190	00001	SEE SHEET 5	

3-9279

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9279
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M Ref	L ±.015	J Ref	K Ref	
#10-32 UNF-3B	.010 .080	.581	.380				23-9279-038
10-32 UNF-3B	.010 .080			.781	.630	.380	23-9279-039
10-32 UNF-3B	.080 .130	.594	.390				23-9279-040
10-32 UNF-3B	.080 .130			.843	.640	.390	23-9279-041
10-32 UNF-3B	.130 .180	.641	.390				23-9279-042
10-32 UNF-3B	.130 .180			.891	.640	.390	23-9279-043
10-32 UNF-3B	.180 .230	.703	.395				23-9279-044
10-32 UNF-3B	.180 .230			.953	.645	.395	23-9279-045
10-32 UNF-3B	.230 .280	.750	.395				23-9279-046
10-32 UNF-3B	.230 .280			1.000	.645	.395	23-9279-047
10-32 UNF-3B	.280 .330	.797	.385				23-9279-048
10-32 UNF-3B	.280 .330			1.047	.680	.385	23-9279-049

1/4-20 UNC-3B	.020 .080	.625	.450				23-9279-049
1/4-20 UNC-3B	.020 .080			.937	.760	.440	23-9279-050
1/4-20 UNC-3B	.080 .140	.687	.450				23-9279-051
1/4-20 UNC-3B	.080 .140			1.000	.760	.440	23-9279-052
1/4-20 UNC-3B	.140 .200	.750	.450				23-9279-053
1/4-20 UNC-3B	.140 .200			1.062	.760	.440	23-9279-054
1/4-20 UNC-3B	.200 .260	.812	.445				23-9279-055
1/4-20 UNC-3B	.200 .260			1.125	.755	.445	23-9279-056
1/4-20 UNC-3B	.260 .320	.875	.445				23-9279-057
1/4-20 UNC-3B	.260 .320			1.187	.755	.445	23-9279-058
1/4-20 UNC-3B	.320 .380	.937	.445				23-9279-059
1/4-20 UNC-3B	.320 .380			1.250	.755	.445	23-9279-060

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	0001	SEE SHEET 5	

23-9279

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9279
LAST CHG LTR: A		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.030 .125	.750	.505				23-9279-061
5/16-18 UNC-3B	.030 .125			1.187	.940	.550	23-9279-062
5/16-18 UNC-3B	.125 .200	.875	.555				23-9279-063
5/16-18 UNC-3B	.125 .200			1.281	.960	.555	23-9279-064
5/16-18 UNC-3B	.200 .275	.937	.540				23-9279-065
5/16-18 UNC-3B	.200 .275			1.343	.950	.560	23-9279-066
5/16-18 UNC-3B	.275 .350	1.032	.560				23-9279-067
5/16-18 UNC-3B	.275 .350			1.437	.965	.570	23-9279-068
5/16-18 UNC-3B	.350 .425	1.125	.580				23-9279-069
5/16-18 UNC-3B	.350 .425			1.531	.985	.575	23-9279-070
5/16-18 UNC-3B	.425 .500	1.187	.565				23-9279-071
5/16-18 UNC-3B	.425 .500			1.593	.975	.580	23-9279-072
3/8-16 UNC-3B	.030 .115	.844	.585				23-9279-073
3/8-16 UNC-3B	.030 .115			1.281	1.020	.660	23-9279-074
3/8-16 UNC-3B	.115 .200	.938	.595				23-9279-075
3/8-16 UNC-3B	.115 .200			1.375	1.030	.670	23-9279-076
3/8-16 UNC-3B	.200 .285	1.031	.605				23-9279-077
3/8-16 UNC-3B	.200 .285			1.468	1.040	.680	23-9279-078
3/8-16 UNC-3B	.285 .370	1.125	.615				23-9279-079
3/8-16 UNC-3B	.285 .370			1.562	1.050	.690	23-9279-080
3/8-16 UNC-3B	.370 .455	1.218	.630				23-9279-081
3/8-16 UNC-3B	.370 .455			1.656	1.065	.710	23-9279-082
3/8-16 UNC-3B	.455 .540	1.312	.635				23-9279-083
3/8-16 UNC-3B	.455 .540			1.750	1.075	.715	23-9279-084

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO.		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

23-9279

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9279
LAST CHG LTR A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.025 .145	1.062	.730				23-9279-085
1/2-13 UNC-3B	.025 .145			1.656	1.325	.855	23-9279-086
1/2-13 UNC-3B	.145 .265	1.188	.735				23-9279-087
1/2-13 UNC-3B	.145 .265			1.781	1.330	.865	23-9279-088
1/2-13 UNC-3B	.265 .385	1.312	.740				23-9279-089
1/2-13 UNC-3B	.265 .385			1.906	1.335	.875	23-9279-090
1/2-13 UNC-3B	.385 .505	1.453	.765				23-9279-091
1/2-13 UNC-3B	.385 .505			2.156	1.465	.895	23-9279-092
1/2-13 UNC-3B	.505 .625	1.578	.770				23-9279-093
1/2-13 UNC-3B	.505 .625			2.297	1.485	.905	23-9279-094
1/2-13 UNC-3B	.625 .745	1.719	.790				23-9279-095
1/2-13 UNC-3B	.625 .745			2.438	1.510	.920	23-9279-096

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	ADDED NOTE 3	9943B

ENGINEERING NOTES:

1. Material: Stainless steel type 430.
2. Finish: Pickled and passivated per Mil-P-35 type 2.
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

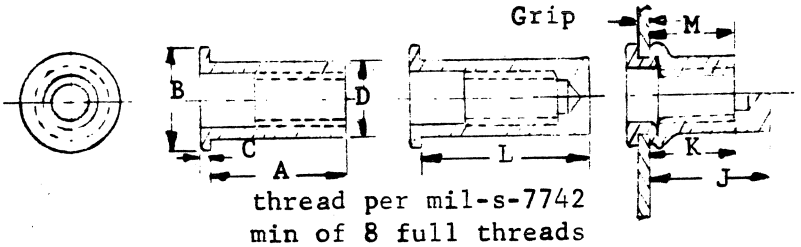
E-183

23-9280

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9280
LAST CHG LTR: A		SHEET 1 OF 5

CHG	BY	DATE	WAS

JOB NO	BY	DATE	WAS
99438	FEF	05-14-84	SEE SHEET 5



thread per mil-s-7742
min of 8 full threads

THREAD SIZE	B ± .015	C NOM	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
#4-40 UNC-3B	.270	.025	.155	.198	.054	5/32	.155	.157
#6-32 UNC-3B	.325	.032	.189	.240	.054	#12	.189	.193
#8-32 UNC-3B	.357	.032	.221	.271	.054	#2	.221	.226
#10-32 UNF-3B	.406	.038	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.475	.058	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.665	.062	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.781	.088	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	1.000	.125	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A ±.015	OPEN END M Ref	CLOSED END L ±.015	CLOSED END J Ref	CLOSED END K Ref	FREIGHTLINER PART NO.
#4-40 UNC-3B	.010 .060	.345	.230				23-9280-001
#4-40 UNC-3B	.010 .060			.500	.385	.230	23-9280-002
#4-40 UNC-3B	.060 .085	.370	.230				23-9280-003
#4-40 UNC-3B	.060 .085			.525	.385	.230	23-9280-004
#4-40 UNC-3B	.085 .110	.400	.230				23-9280-005
#4-40 UNC-3B	.085 .110			.555	.390	.230	23-9280-006
#4-40 UNC-3B	.110 .135	.425	.230				23-9280-007
#4-40 UNC-3B	.110 .135			.580	.385	.230	23-9280-008
#4-40 UNC-3B	.135 .160	.450	.230				23-9280-009
#4-40 UNC-3B	.135 .160			.605	.385	.230	23-9280-010
#4-40 UNC-3B	.160 .185	.480	.230				23-9280-011
#4-40 UNC-3B	.160 .185			.635	.385	.230	23-9280-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

A

F-183

23-9280

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9280
LAST CHG LTR: A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M Ref	L ±.015	J Ref	K Ref	
#6-32 UNC-3B	.010 .075	.438	.300				23-9280-013
#6-32 UNC-3B	.010 .075			.625	.490	.305	23-9280-014
#6-32 UNC-3B	.075 .120	.500	.315				23-9280-015
#6-32 UNC-3B	.075 .120			.625	.440	.255	23-9280-016
#6-32 UNC-3B	.120 .160	.500	.270				23-9280-017
#6-32 UNC-3B	.120 .160			.750	.520	.260	23-9280-018
#6-32 UNC-3B	.160 .200	.562	.290				23-9280-019
#6-32 UNC-3B	.160 .200			.750	.480	.260	23-9280-020
#6-32 UNC-3B	.200 .240	.625	.310				23-9280-021
#6-32 UNC-3B	.200 .240			.750	.435	.260	23-9280-022
#6-32 UNC-3B	.240 .280	.687	.330				23-9280-023
#6-32 UNC-3B	.240 .280			.812	.455	.265	23-9280-024

#8-32 UNC-3B	.010 .075	.438	.300				23-9280-025
#8-32 UNC-3B	.010 .075			.625	.490	.305	23-9280-026
#8-32 UNC-3B	.075 .120	.500	.315				23-9280-027
#8-32 UNC-3B	.075 .120			.625	.440	.255	23-9280-028
#8-32 UNC-3B	.120 .160	.500	.270				23-9280-029
#8-32 UNC-3B	.120 .160			.750	.520	.260	23-9280-030
#8-32 UNC-3B	.160 .200	.625	.350				23-9280-031
#8-32 UNC-3B	.160 .200			.750	.475	.265	23-9280-032
#8-32 UNC-3B	.200 .240	.625	.305				23-9280-033
#8-32 UNC-3B	.200 .240			.875	.555	.310	23-9280-034
#8-32 UNC-3B	.240 .280	.687	.340				23-9280-035
#8-32 UNC-3B	.240 .280			.875	.530	.290	23-9280-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KVH	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

A

3-9280

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99430

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS FLAT HEAD - KEYLESS OPEN & CLOSED END	h 23-9280
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
#10-32 UNF-3B	.010 .080	.531	.380				23-9280-037
#10-32 UNF-3B	.010 .080			.781	.630	.380	23-9280-038
#10-32 UNF-3B	.080 .130	.594	.390				23-9280-039
#10-32 UNF-3B	.080 .130			.843	.640	.390	23-9280-040
#10-32 UNF-3B	.130 .180	.641	.390				23-9280-041
#10-32 UNF-3B	.130 .180			.891	.640	.390	23-9280-042
#10-32 UNF-3B	.180 .230	.703	.395				23-9280-043
#10-32 UNF-3B	.180 .230			.953	.645	.395	23-9280-044
#10-32 UNF-3B	.230 .280	.750	.395				23-9280-045
#10-32 UNF-3B	.230 .280			1.000	.645	.395	23-9280-046
#10-32 UNF-3B	.280 .330	.797	.385				23-9280-047
#10-32 UNF-3B	.280 .330			1.047	.630	.385	23-9280-048

1/4-20 UNC-3B	.020 .080	.625	.450				23-9280-049
1/4-20 UNC-3B	.020 .080			.937	.760	.440	23-9280-050
1/4-20 UNC-3B	.080 .140	.687	.450				23-9280-051
1/4-20 UNC-3B	.080 .140			1.000	.760	.440	23-9280-052
1/4-20 UNC-3B	.140 .200	.750	.450				23-9280-053
1/4-20 UNC-3B	.140 .200			1.062	.760	.440	23-9280-054
1/4-20 UNC-3B	.200 .260	.812	.445				23-9280-055
1/4-20 UNC-3B	.200 .260			1.125	.755	.445	23-9280-056
1/4-20 UNC-3B	.260 .320	.875	.445				23-9280-057
1/4-20 UNC-3B	.260 .320			1.187	.755	.445	23-9280-058
1/4-20 UNC-3B	.320 .380	.937	.445				23-9280-059
1/4-20 UNC-3B	.320 .380			1.250	.755	.445	23-9280-060

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

23-9280

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9280
LAST CHG LTR: A		SHEET 4 OF 5

THREAD SIZE	GRIP	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.030 .125	.750	.505				23-9280-061
5/16-18 UNC-3B	.030 .125			1.187	.940	.550	23-9280-062
5/16-18 UNC-3B	.125 .200	.875	.555				23-9280-063
5/16-18 UNC-3B	.125 .200			1.281	.960	.555	23-9280-064
5/16-18 UNC-3B	.200 .275	.937	.540				23-9280-065
5/16-18 UNC-3B	.200 .275			1.343	.950	.560	23-9280-066
5/16-18 UNC-3B	.275 .350	1.032	.560				23-9280-067
5/16-18 UNC-3B	.275 .350			1.437	.965	.570	23-9280-068
5/16-18 UNC-3B	.350 .425	1.125	.580				23-9280-069
5/16-18 UNC-3B	.350 .425			1.531	.985	.575	23-9280-070
5/16-18 UNC-3B	.425 .500	1.187	.565				23-9280-071
5/16-18 UNC-3B	.425 .500			1.593	.975	.580	23-9280-072

3/8-16 UNC-3B	.030 .115	.844	.585				23-9280-073
3/8-16 UNC-3B	.030 .115			1.281	1.020	.660	23-9280-074
3/8-16 UNC-3B	.115 .200	.938	.595				23-9280-075
3/8-16 UNC-3B	.115 .200			1.375	1.030	.670	23-9280-076
3/8-16 UNC-3B	.200 .285	1.031	.605				23-9280-077
3/8-16 UNC-3B	.200 .285			1.468	1.040	.680	23-9280-078
3/8-16 UNC-3B	.285 .370	1.125	.615				23-9280-079
3/8-16 UNC-3B	.285 .370			1.562	1.050	.690	23-9280-080
3/8-16 UNC-3B	.370 .455	1.218	.630				23-9280-081
3/8-16 UNC-3B	.370 .455			1.656	1.065	.710	23-9280-082
3/8-16 UNC-3B	.455 .540	1.312	.635				23-9280-083
3/8-16 UNC-3B	.455 .540			1.750	1.075	.715	23-9280-084

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	JKJA	9-29-69	02190	00001	SEE SHEET 5	

23-9280

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS FLAT HEAD - KEYLESS OPEN & CLOSED END	23-9280
LAST CHG LTR: A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M Ref	L ±.015	J Ref	K Ref	
1/2-13 UNC-3B	.025 .145	1.062	.730				23-9280-085
1/2-13 UNC-3B	.025 .145			1.656	1.325	.855	23-9280-086
1/2-13 UNC-3B	.145 .265	1.188	.735				23-9280-087
1/2-13 UNC-3B	.145 .265			1.781	1.330	.865	23-9280-088
1/2-13 UNC-3B	.265 .385	1.312	.740				23-9280-089
1/2-13 UNC-3B	.265 .385			1.906	1.335	.875	23-9280-090
1/2-13 UNC-3B	.385 .505	1.453	.765				23-9280-091
1/2-13 UNC-3B	.385 .505			2.156	1.465	.895	23-9280-092
1/2-13 UNC-3B	.505 .625	1.578	.770				23-9280-093
1/2-13 UNC-3B	.505 .625			2.297	1.485	.905	23-9280-094
1/2-13 UNC-3B	.625 .745	1.719	.790				23-9280-095
1/2-13 UNC-3B	.625 .745			2.438	1.510	.920	23-9280-096

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	ADDED NOTE 3	99438

ENGINEERING NOTES:

1. Material: Brass; 66% copper, 34% zinc.
2. Finish: Bright, as machined.
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	1	

Portland FREIGHTLINER CORPORATION Oregon 97208

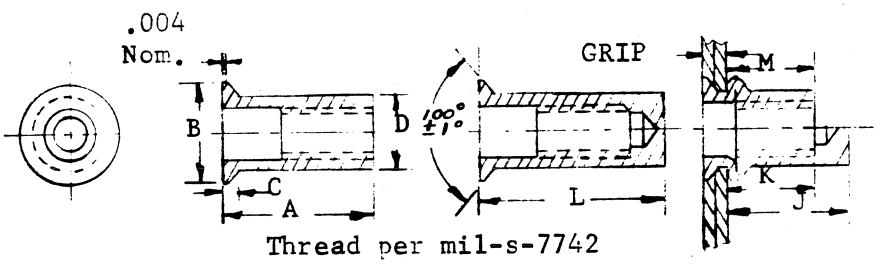
E-183

23-9281

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9281
LAST CHG LTR: A		SHEET 1 OF 5

CHG	BY	DATE	WAS

JOB NO	9943B
WAS	SEE SHEET 5
DATE	05-14-84
BY	FEF
CHG	A



Thread per mil-s-7742
min of 8 full threads

THREAD SIZE	B REF	C MAX	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
4-40 UNC-3B	.263	.051	.155	.198	.054	5/32	.155	.157
6-32 UNC-3B	.323	.063	.189	.240	.054	#12	.189	.193
8-32 UNC-3B	.355	.063	.221	.271	.054	#2	.221	.226
10-32 UNF-3B	.391	.065	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.529	.089	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.656	.104	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.770	.124	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	.990	.154	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A±.015	OPEN END M Ref	CLOSED END L±.015	CLOSED END J Ref	CLOSED END K Ref	FREIGHTLINER PART NO.
4-40 UNC-3B	.050 .081	.370	.235				23-9281-001
4-40 UNC-3B	.050 .081			.525	.390	.235	23-9281-002
4-40 UNC-3B	.081 .106	.395	.235				23-9281-003
4-40 UNC-3B	.081 .106			.550	.390	.235	23-9281-004
4-40 UNC-3B	.106 .131	.420	.235				23-9281-005
4-40 UNC-3B	.106 .131			.575	.390	.235	23-9281-006
4-40 UNC-3B	.131 .156	.450	.235				23-9281-007
4-40 UNC-3B	.131 .156			.600	.390	.235	23-9281-008
4-40 UNC-3B	.156 .181	.475	.235				23-9281-009
4-40 UNC-3B	.156 .181			.625	.390	.235	23-9281-010
4-40 UNC-3B	.181 .206	.500	.235				23-9281-011
4-40 UNC-3B	.181 .206			.650	.390	.235	23-9281-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

A

E-183

23-9281

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9281
LAST CHG LTR: A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
6-32 UNC-3B	.065 .106	.500	.325				23-9281-013
6-32 UNC-3B	.065 .106			.687	.510	.325	23-9281-014
6-32 UNC-3B	.106 .161	.500	.280				23-9281-015
6-32 UNC-3B	.106 .161			.687	.465	.280	23-9281-016
6-32 UNC-3B	.161 .201	.562	.295				23-9281-017
6-32 UNC-3B	.161 .201			.687	.420	.260	23-9281-018
6-32 UNC-3B	.201 .241	.625	.315				23-9281-019
6-32 UNC-3B	.201 .241			.812	.505	.295	23-9281-020
6-32 UNC-3B	.241 .281	.625	.270				23-9281-021
6-32 UNC-3B	.241 .281			.812	.465	.265	23-9281-022
6-32 UNC-3B	.281 .321	.687	.290				23-9281-023
6-32 UNC-3B	.281 .321			.844	.455	.265	23-9281-024
8-32 UNC-3B	.065 .106	.500	.325				23-9281-025
8-32 UNC-3B	.065 .106			.687	.510	.325	23-9281-026
8-32 UNC-3B	.106 .161	.500	.280				23-9281-027
8-32 UNC-3B	.106 .161			.687	.465	.280	23-9281-028
8-32 UNC-3B	.161 .201	.562	.290				23-9281-029
8-32 UNC-3B	.161 .201			.687	.415	.255	23-9281-030
8-32 UNC-3B	.201 .241	.625	.310				23-9281-031
8-32 UNC-3B	.201 .241			.875	.560	.290	23-9281-032
8-32UNC-3B	.241 .281	.687	.325				23-9281-033
8-32 UNC-3B	.241 .281			.875	.515	.290	23-9281-034
8-32 UNC-3B	.281 .321	.687	.295				23-9281-035
8-32 UNC-3B	.281 .321			.875	.485	.300	23-9281-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	FEF	05-14-84	SEE SHEET 5

JOB No 99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208 A

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9281
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
10-32 UNF-3B	.065 .116	.578	.395				23-9281-037
10-32 UNF-3B	.065 .116			.828	.645	.395	23-9281-038
10-32 UNF-3B	.116 .166	.625	.385				23-9281-039
10-32 UNF-3B	.116 .166			.875	.635	.385	23-9281-040
10-32 UNF-3B	.166 .216	.687	.400				23-9281-041
10-32 UNF-3B	.166 .216			.938	.650	.400	23-9281-042
10-32 UNF-3B	.216 .266	.734	.390				23-9281-043
10-32 UNF-3B	.216 .266			.984	.640	.390	23-9281-044
10-32 UNF-3B	.266 .316	.781	.385				23-9281-045
10-32 UNF-3B	.266 .316			1.031	.635	.385	23-9281-046
10-32 UNF-3B	.316 .366	.844	.400				23-9281-047
10-32 UNF-3B	.316 .366			1.094	.650	.400	23-9281-048
1/4-20 UNC-3B	.089 .151	.687	.440				23-9281-049
1/4-20 UNC-3B	.089 .151			1.000	.750	.435	23-9281-050
1/4-20 UNC-3B	.151 .211	.750	.440				23-9281-051
1/4-20 UNC-3B	.151 .211			1.062	.750	.435	23-9281-052
1/4-20 UNC-3B	.211 .271	.812	.440				23-9281-053
1/4-20 UNC-3B	.211 .271			1.125	.750	.435	23-9281-054
1/4-20 UNC-3B	.271 .331	.875	.435				23-9281-055
1/4-20 UNC-3B	.271 .331			1.187	.750	.435	23-9281-056
1/4-20 UNC-3B	.331 .391	.937	.435				23-9281-057
1/4-20 UNC-3B	.331 .391			1.250	.750	.435	23-9281-058
1/4-20 UNC-3B	.391 .451	1.000	.445				23-9281-059
1/4-20 UNC-3B	.391 .451			1.312	.760	.445	23-9281-060

HG	BY	DATE	WAS

HG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO.		MATERIAL	NEXT ASSY. NO.
APPROVED	JHJ	9-29-69	02190	00001	SEE SHEET 5	

23-9281

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9281
LAST CHG LTR: A		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.106 / .181	.844	.540				23-9281-061
5/16-18 UNC-3B	.106 / .181			1.218	.915	.540	23-9281-062
5/16-18 UNC-3B	.181 / .256	.937	.560				23-9281-063
5/16-18 UNC-3B	.181 / .256			1.312	.935	.560	23-9281-064
5/16-18 UNC-3B	.256 / .331	1.000	.550				23-9281-065
5/16-18 UNC-3B	.256 / .331			1.406	.955	.550	23-9281-066
5/16-18 UNC-3B	.331 / .406	1.093	.565				23-9281-067
5/16-18 UNC-3B	.331 / .406			1.468	.940	.565	23-9281-068
5/16-18 UNC-3B	.406 / .481	1.156	.555				23-9281-069
5/16-18 UNC-3B	.406 / .481			1.562	.960	.555	23-9281-070
5/16-18 UNC-3B	.481 / .556	1.250	.575				23-9281-071
5/16-18 UNC-3B	.481 / .556			1.625	.950	.575	23-9281-072
3/8-16 UNC-3B	.125 / .211	.938	.580				23-9281-073'
3/8-16 UNC-3B	.125 / .211			1.375	1.020	.655	23-9281-074
3/8-16 UNC-3B	.211 / .296	1.031	.590				23-9281-075
3/8-16 UNC-3B	.211 / .296			1.468	1.030	.655	23-9281-076
3/8-16 UNC-3B	.296 / .381	1.125	.600				23-9281-077
3/8-16 UNC-3B	.296 / .381			1.562	1.040	.675	23-9281-078
3/8-16 UNC-3B	.381 / .466	1.219	.615				23-9281-079
3/8-16 UNC-3B	.381 / .466			1.656	1.050	.690	23-9281-080
3/8-16 UNC-3B	.466 / .551	1.312	.625				23-9281-081
3/8-16 UNC-3B	.466 / .551			1.750	1.065	.705	23-9281-082
3/8-16 UNC-3B	.551 / .636	1.422	.650				23-9281-083
3/8-16 UNC-3B	.551 / .636			1.859	1.090	.715	23-9281-084

HG	BY	DATE	WAS

HG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	00001	SEE SHEET 5	

23-9281

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - ALUMINUM COUNTERSUNK- KEYLESS OPEN & CLOSED END	23-9281
LAST CHG LTR A		SHEET 5 OF 5

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	ADDED NOTE 3	9943B

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NC
		A±.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.156 .276	1.188	.725				23-9281-085
1/2-13 UNC-3B	.156 .276			1.781	1.320	.850	23-9281-086
1/2-13 UNC-3B	.276 .396	1.312	.730				23-9281-087
1/2-13 UNC-3B	.276 .396			1.906	1.325	.865	23-9281-088
1/2-13 UNC-3B	.396 .516	1.438	.735				23-9281-089
1/2-13 UNC-3B	.396 .516			2.031	1.330	.880	23-9281-090
1/2-13 UNC-3B	.516 .636	1.578	.750				23-9281-091
1/2-13 UNC-3B	.516 .636			2.172	1.350	.890	23-9281-092
1/2-13 UNC-3B	.636 .756	1.718	.765				23-9281-093
1/2-13 UNC-3B	.636 .756			2.312	1.360	.900	23-9281-094
1/2-13 UNC-3B	.756 .876	1.843	.780				23-9281-095
1/2-13 UNC-3B	.756 .876			2.437	1.375	.930	23-9281-096

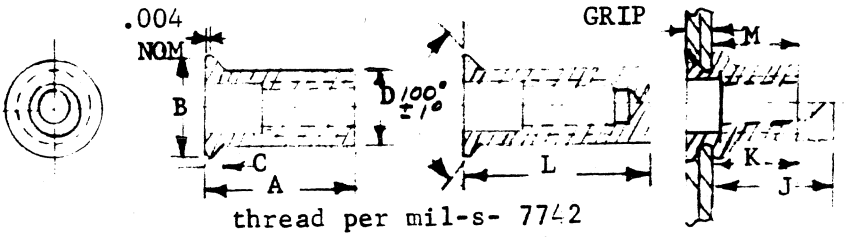
ENGINEERING NOTES:

1. Material: Aluminum; alloy 6053-T4
2. Finish: Anodize - alumilite No. 205.
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-29-69	02190	00001	1	

Portland FREIGHTLINER CORPORATION Oregon 97208 A

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT - STEEL COUNTERSUNK- KEYLESS OPEN & CLOSED END	23-9282
LAST CHG. LTR. A		SHEET 1 OF 5



thread per mil-s- 7742
min of 8 full threads

THREAD SIZE	B REF	C MAX	D +.000 -.004	E MAX	F ±.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
4-40 UNC-3B	.263	.051	.155	.198	.054	5/32	.155	.157
6-32 UNC-3B	.323	.063	.189	.240	.054	#12	.189	.193
8-32 UNC-3B	.355	.063	.221	.271	.054	#2	.221	.226
10-32 UNF-3B	.391	.065	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.529	.089	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.656	.104	.413	.505	.120	Z	.413	.422
3/8-16 UNC-3B	.770	.124	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	.990	.154	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A ±.015	OPEN END M Ref	CLOSED END L ±.015	CLOSED END J Ref	CLOSED END K Ref	FREIGHTLINER PART NO.
4-40 UNC-3B	.050 .081	.370	.235				23-9282-001
4-40 UNC-3B	.050 .081			.525	.390	.235	23-9282-002
4-40 UNC-3B	.081 .106	.395	.235				23-9282-003
4-40 UNC-3B	.081 .106			.550	.390	.235	23-9282-004
4-40 UNC-3B	.106 .131	.420	.235				23-9282-005
4-40 UNC-3B	.106 .131			.575	.390	.235	23-9282-006
4-40 UNC-3B	.131 .156	.450	.235				23-9282-007
4-40 UNC-3B	.131 .156			.600	.390	.235	23-9282-008
4-40 UNC-3B	.156 .181	.475	.235				23-9282-009
4-40 UNC-3B	.156 .181			.625	.390	.235	23-9282-010
4-40 UNC-3B	.181 .206	.500	.235				23-9282-011
4-40 UNC-3B	.181 .206			.650	.390	.235	23-9282-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	9943B

E-183

A

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9282
LAST CHG LTR: A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
6-32 UNC-3B	.065 .106	.500	.325				23-9282-013'
6-32 UNC-3B	.065 .106			.687	.510	.325	23-9282-014
6-32 UNC-3B	.106 .161	.500	.280				23-9282-015
6-32 UNC-3B	.106 .161			.687	.465	.280	23-9282-016
6-32 UNC-3B	.161 .201	.562	.295				23-9282-017
6-32 UNC-3B	.161 .201			.687	.420	.260	23-9282-018
6-32 UNC-3B	.201 .241	.625	.315				23-9282-019
6-32 UNC-3B	.201 .241			.812	.505	.295	23-9282-020
6-32 UNC-3B	.241 .281	.625	.270				23-9282-021
6-32 UNC-3B	.241 .281			.812	.465	.265	23-9282-022
6-32 UNC-3B	.281 .321	.687	.290				23-9282-023
6-32 UNC-3B	.281 .321			.844	.455	.265	23-9282-024
8-32 UNC-3B	.065 .106	.500	.325				23-9282-025
8-32 UNC-3B	.065 .106			.687	.510	.325	23-9282-026
8-32 UNC-3B	.106 .161	.500	.280				23-9282-027
8-32 UNC-3B	.106 .161			.687	.465	.280	23-9282-028
8-32 UNC-3B	.161 .201	.562	.290				23-9282-029
8-32 UNC-3B	.161 .201			.687	.415	.255	23-9282-030
8-32 UNC-3B	.201 .241	.625	.310				23-9282-031
8-32 UNC-3B	.201 .241			.875	.560	.290	23-9282-032
8-32 UNC-3B	.241 .281	.687	.325				23-9282-033
8-32 UNC-3B	.241 .281			.875	.515	.290	23-9282-034
8-32 UNC-3B	.281 .321	.687	.295				23-9282-035
8-32 UNC-3B	.281 .321			.875	.485	.300	23-9282-036

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	MJ9	9-29-69	02190	00001	SEE SHEET 5	

23-9282

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9282
LAST CHG LTR A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
10-32 UNF-3B	.065 .116	.578	.395				23-9282-037
10-32 UNF-3B	.065 .116			.828	.645	.395	23-9282-038
10-32 UNF-3B	.116 .166	.625	.385				23-9282-039
10-32 UNF-3B	.116 .166			.875	.635	.385	23-9282-040
10-32 UNF-3B	.166 .216	.687	.400				23-9282-041
10-32 UNF-3B	.166 .216			.938	.650	.400	23-9282-042
10-32 UNF-3B	.216 .266	.734	.390				23-9282-043
10-32 UNF-3B	.216 .266			.984	.640	.390	23-9282-044
10-32 UNF-3B	.266 .316	.781	.385				23-9282-045
10-32 UNF-3B	.266 .316			1.031	.635	.385	23-9282-046
10-32 UNF-3B	.316 .366	.844	.400				23-9282-047
10-32 UNF-3B	.316 .366			1.094	.650	.400	23-9282-048
1/4-20 UNC-3B	.089 .151	.687	.440				23-9282-049
1/4-20 UNC-3B	.089 .151			1.000	.750	.435	23-9282-050
1/4-20 UNC-3B	.151 .211	.750	.440				23-9282-051
1/4-20 UNC-3B	.151 .211			1.062	.750	.435	23-9282-052
1/4-20 UNC-3B	.211 .271	.812	.440				23-9282-053
1/4-20 UNC-3B	.211 .271			1.125	.750	.435	23-9282-054
1/4-20 UNC-3B	.271 .331	.875	.435				23-9282-055
1/4-20 UNC-3B	.271 .331			1.187	.750	.435	23-9282-056
1/4-20 UNC-3B	.331 .391	.937	.435				23-9282-057
1/4-20 UNC-3B	.331 .391			1.250	.750	.435	23-9282-058
1/4-20 UNC-3B	.391 .451	1.000	.445				23-9282-059
1/4-20 UNC-3B	.391 .451			1.312	.760	.445	23-9282-060

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

A

E-183

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9282
LAST CHG LTR A		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.106 .181	.844	.540				23-9282-061
5/16-18 UNC-3B	.106 .181			1.218	.915	.540	23-9282-062
5/16-18 UNC-3B	.181 .256	.937	.560				23-9282-063
5/16-18 UNC-3B	.181 .256			1.312	.935	.560	23-9282-064
5/16-18 UNC-3B	.256 .331	1.000	.550				23-9282-065
5/16-18 UNC-3B	.256 .331			1.406	.955	.550	23-9282-066
5/16-18 UNC-3B	.331 .406	1.093	.565				23-9282-067
5/16-18 UNC-3B	.331 .406			1.468	.940	.565	23-9282-068
5/16-18 UNC-3B	.406 .481	1.156	.555				23-9282-069
5/16-18 UNC-3B	.406 .481			1.562	.960	.555	23-9282-070
5/16-18 UNC-3B	.481 .556	1.250	.575				23-9282-071
5/16-18 UNC-3B	.481 .556			1.625	.950	.575	23-9282-072
3/8-16 UNC-3B	.125 .211	.938	.580				23-9282-073
3/8-16 UNC-3B	.125 .211			1.375	1.020	.655	23-9282-074
3/8-16 UNC-3B	.211 .296	1.031	.590				23-9282-075
3/8-16 UNC-3B	.211 .296			1.468	1.030	.655	23-9282-076
3/8-16 UNC-3B	.296 .381	1.125	.600				23-9282-077
3/8-16 UNC-3B	.296 .381			1.562	1.040	.675	23-9282-078
3/8-16 UNC-3B	.381 .466	1.219	.615				23-9282-079
3/8-16 UNC-3B	.381 .466			1.656	1.050	.690	23-9282-080
3/8-16 UNC-3B	.466 .551	1.312	.625				23-9282-081
3/8-16 UNC-3B	.466 .551			1.750	1.065	.705	23-9282-082
3/8-16 UNC-3B	.551 .636	1.422	.650				23-9282-083
3/8-16 UNC-3B	.551 .636			1.859	1.090	.715	23-9282-084

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-29-69	02190	00001	SEE SHEET 5	

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG | BY | DATE | WAS
A | FEF | 05-16-84 | SEE SHEET 5

JOB NO 9943B

23-9282

23-9282

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9282
LAST CHG LTR: A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.156 .276	1.188	.725				23-9282-085
1/2-13 UNC-3B	.156 .276			1.781	1.320	.850	23-9282-086
1/2-13 UNC-3B	.276 .396	1.312	.730				23-9282-087
1/2-13 UNC-3B	.276 .396			1.906	1.325	.865	23-9282-088
1/2-13 UNC-3B	.396 .516	1.438	.735				23-9282-089
1/2-13 UNC-3B	.396 .516			2.031	1.330	.880	23-9282-090
1/2-13 UNC-3B	.516 .636	1.578	.750				23-9282-091
1/2-13 UNC-3B	.516 .636			2.172	1.350	.890	23-9282-092
1/2-13 UNC-3B	.636 .756	1.718	.765				23-9282-093
1/2-13 UNC-3B	.636 .756			2.312	1.360	.900	23-9282-094
1/2-13 UNC-3B	.756 .876	1.843	.780				23-9282-095
1/2-13 UNC-3B	.756 .876			2.437	1.375	.930	23-9282-096

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	ADDED NOTE 3	99438

ENGINEERING NOTES:

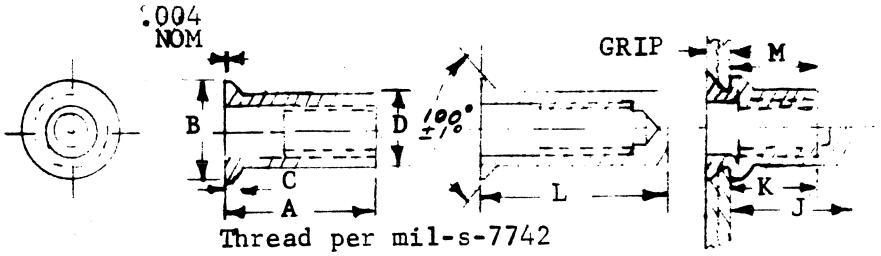
1. Material: Steel C1108 or C1110.
2. Finish: Cadium plate per AA-P-416A class 3 type 1, (.0002" min. thick).
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-29-69	02190	00001	1	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

23-9283

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT-STANLESS STEEL COUNTERSUNK-KEYLESS OPEN & CLOSED END	23-9283
LAST CHG. LTR. A		SHEET 1 OF 5



Thread per mil-s-7742
min. of 8 full threads

THREAD SIZE	B REF	C MAX	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
#4-40 UNC-3B	.263	.051	.155	.198	.054	5/32	.155	.157
6-32 UNC-3B	.323	.063	.189	.240	.054	#12	.189	.198
8-32 UNC-3B	.355	.063	.221	.271	.054	#2	.221	.228
10-32 UNC-3B	.391	.065	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.529	.089	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.656	.104	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.770	.124	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	.990	.154	.640	.772	.151	41/64	.640	.650

THREAD SIZE	Grip Range	Open End A ±.015	Open End M Ref	Closed End L ±.015	Closed End J Ref	Closed End K Ref	Freightliner Part No.
4-40 UNC-3B	.050 .081	.370	.235				23-9283-001
4-40 UNC-3B	.050 .081			.525	.390	.235	23-9283-002
4-40 UNC-3B	.081 .106	.395	.235				23-9283-003
4-40 UNC-3B	.081 .106			.550	.390	.235	23-9283-004
4-40 UNC-3B	.106 .131	.420	.235				23-9283-005
4-40 UNC-3B	.106 .131			.575	.390	.235	23-9283-006
4-40 UNC-3B	.131 .156	.450	.235				23-9283-007
4-40 UNC-3B	.131 .156			.600	.390	.235	23-9283=008
4-40 UNC-3B	.156 .181	.475	.235				23-9283-009
4-40 UNC-3B	.156 .181			.625	.390	.235	23-9283-010
4-40 UNC-3B	.181 .206	.500	.235				23-9283-011
4-40 UNC-3B	.181 .206			.650	.390	.235	23-9283-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	9943B

E-183

23-9283

PRINT ISSUED	TITLE	PART NO
11-1-69	RIVNUT - STAINLESS STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9283
LAST CHG LTR: A		SHEET 2 OF 5

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	99438

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L+.015	J Ref	K Ref	
6-32 UNC-3B	.065 .106	.500	.325				23-9283-013
6-32 UNC-3B	.065 .106			.687	.510	.325	23-9283-014
6-32 UNC-3B	.106 .161	.500	.280				23-9283-015
6-32 UNC-3B	.106 .161			.687	.465	.280	23-9283-016
6-32 UNC-3B	.161 .201	.562	.295				23-9283-017
6-32 UNC-3B	.161 .201			.687	.420	.260	23-9283-018
6-32 UNC-3B	.201 .241	.625	.315				23-9283-019
6-32 UNC-3B	.201 .241			.812	.505	.295	23-9283-020
6-32 UNC-3B	.241 .281	.625	.270				23-9283-021
6-32 UNC-3B	.241 .281			.812	.465	.265	23-9283-022
6-32 UNC-3B	.281 .321	.687	.290				23-9283-023
6-32 UNC-3B	.281 .321			.844	.455	.265	23-9283-024
8-32 UNC-3B	.065 .106	.500	.325				23-9283-025
8-32 UNC-3B	.065 .106			.687	.510	.325	23-9283-026
8-32 UNC-3B	.106 .161	.500	.280				23-9283-027
8-32 UNC-3B	.106 .161			.687	.465	.280	23-9283-028
8-32 UNC-3B	.161 .201	.562	.290				23-9283-029
8-32 UNC-3B	.161 .201			.687	.415	.255	23-9283-030
8-32 UNC-3B	.201 .241	.625	.310				23-9283-031
8-32 UNC-3B	.201 .241			.875	.560	.290	23-9283-032
8-32 UNC-3B	.241 .281	.687	.325				23-9283-033
8-32 UNC-3B	.241 .281			.875	.515	.290	23-9283-034
8-32 UNC-3B	.281 .321	.687	.295				23-9283-035
8-32 UNC-3B	.281 .321			.875	.485	.300	23-9283-036

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	Vehicle

A Portland FREIGHTLINER CORPORATION Oregon 97208

23-9283

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9283
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
10-32 UNF-3B	.065 .116	.578	.395				23-9283-037
10-32 UNF-3B	.065 .116			.828	.645	.395	23-9283-038
10-32 UNF-3B	.116 .166	.625	.385				23-9283-039
10-32 UNF-3B	.116 .166			.875	.635	.385	23-9283-040
10-32 UNF-3B	.166 .216	.687	.400				23-9283-041
10-32 UNF-3B	.166 .216			.938	.650	.400	23-9283-042
10-32 UNF-3B	.216 .266	.734	.390				23-9283-043
10-32 UNF-3B	.216 .266			.984	.640	.390	23-9283-044
10-32 UNF-3B	.266 .316	.781	.385				23-9283-045
10-32 UNF-3B	.266 .316			1.031	.635	.385	23-9283-046
10-32 UNF-3B	.316 .366	.844	.400				23-9283-047
10-32 UNF-3B	.316 .366			1.094	.650	.400	23-9283-048
1/4-20 UNC-3B	.089 .151	.687	.440				23-9283-049
1/4-20 UNC-3B	.089 .151			1.000	.750	.435	23-9283-050
1/4-20 UNC-3B	.151 .211	.750	.440				23-9283-052
1/4-20 UNC-3B	.151 .211			1.062	.750	.435	23-9283-053
1/4-20 UNC-3B	.211 .271	.812	.440				23-9283-054
1/4-20 UNC-3B	.211 .271			1.125	.750	.435	23-9283-055
1/4-20 UNC-3B	.271 .331	.875	.435				23-9283-056
1/4-20 UNC-3B	.271 .331			1.187	.750	.435	23-9283-057
1/4-20 UNC-3B	.331 .391	.937	.435				23-9283-058
1/4-20 UNC-3B	.331 .391			1.250	.750	.435	23-9283-059
1/4-20 UNC-3B	.391 .451	1.000	.445				23-9283-060
1/4-20 UNC-3B	.391 .451			1.312	.760	.445	23-2983-061

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	Vehicle

Portland A FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9283
LAST CHG LTR: A		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.106 .181	.844	.540				23-9283-061
5/16-18 UNC-3B	.106 .181			1.218	.915	.540	23-9283-062
5/16-18 UNC-3B	.181 .256	.937	.560				23-9283-063
5/16-18 UNC-3B	.181 .256			1.312	.935	.560	23-9283-064
5/16-18 UNC-3B	.256 .331	1.000	.550				23-9283-065
5/16-18 UNC-3B	.256 .331			1.406	.955	.550	23-9283-066
5/16-18 UNC-3B	.331 .406	1.093	.565				23-9283-067
5/16-18 UNC-3B	.331 .406			1.468	.940	.565	23-9283-068
5/16-18 UNC-3B	.406 .481	1.156	.555				23-9283-069
5/16-18 UNC-3B	.406 .481			1.562	.960	.555	23-9283-070
5/16-18 UNC-3B	.481 .556	1.250	.575				23-9283-071
5/16-18 UNC-3B	.481 .556			1.625	.950	.575	23-9283-072
3/8-16 UNC-3B	.125 .211	.938	.580				23-9283-073
3/8-16 UNC-3B	.125 .211			1.375	1.020	.655	23-9283-074
3/8-16 UNC-3B	.211 .296	1.031	.590				23-9283-075
3/8-16 UNC-3B	.211 .296			1.468	1.030	.655	23-9283-076
3/8-16 UNC-3B	.296 .381	1.125	.600				23-9283-077
3/8-16 UNC-3B	.296 .381			1.562	1.040	.675	23-9283-078
3/8-16 UNC-3B	.381 .466	1.219	.615				23-9283-079
3/8-16 UNC-3B	.381 .466			1.656	1.050	.690	23-9283-080
3/8-16 UNC-3B	.466 .551	1.312	.625				23-9283-081
3/8-16 UNC-3B	.466 .551			1.750	1.065	.705	23-9283-082
3/8-16 UNC-3B	.551 .636	1.422	.650				23-9283-083
3/8-16 UNC-3B	.551 .636			1.859	1.090	.715	23-9283-084

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	9943

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	SEE SHEET 5	

Portland A FREIGHTLINER CORPORATION Oregon 97208

23-9283

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - STANLESS STEEL COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9283
LAST CHG LTR: A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.156 .276	1.188	.725				23-9283-085
1/2-13 UNC-3B	.156 .276			1.781	1.320	.850	23-9283-086
1/2-13 UNC-3B	.276 .396	1.312	.730				23-9283-087
1/2-13 UNC-3B	.276 .396			1.906	1.325	.865	23-9283-088
1/2-13 UNC-3B	.396 .516	1.438	.735				23-9283-089
1/2-13 UNC-3B	.396 .516			2.031	1.330	.880	23-9283-090
1/2-13 UNC-3B	.516 .636	1.578	.750				23-9283-091
1/2-13 UNC-3B	.516 .636			2.172	1.350	.890	23-9283-092
1/2-13 UNC-3B	.636 .756	1.718	.765				23-9283-093
1/2-13 UNC-3B	.636 .756			2.312	1.360	.900	23-9283-094
1/2-13 UNC-3B	.756 .876	1.843	.780				23-9283-095
1/2-13 UNC-3B	.756 .876			2.437	1.375	.930	23-9283-096

CHG	BY	DATE	WAS

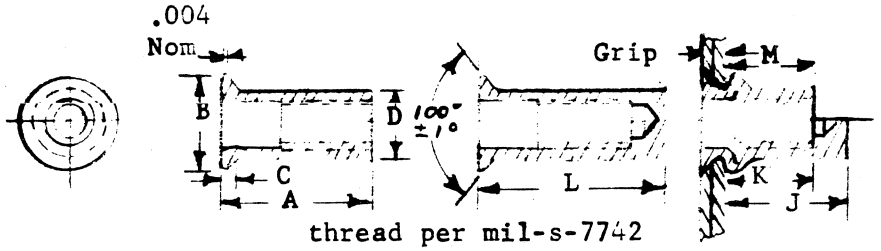
CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	ADDED NOTE 3	9943B

ENGINEERING NOTES:

1. Material: Stainless steel type 430.
2. Finish: Pickled and passivated per Mil-P-35 Type 2.
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	KJA	9-29-69	02190	00001	1	Vehicle

PRINT ISSUED	TITLE	PART NO.
11-11-69	RIVNUT - BRASS COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9284
LAST CHG. LTR. A		SHEET 1 OF 5



thread per mil-s-7742
min of 8 full threads

THREAD SIZE	B (REF)	C MAX	D +.000 -.004	E MAX	F +.005 -.000	INSTALL DRILL SIZE (REF)	INSTALL HOLE SIZE MIN	INSTALL HOLE SIZE MAX
4-40-UNC-3B	.263	.051	.155	.198	.054	5/32	.155	.157
6-32 UNC-3B	.323	.063	.189	.240	.054	#12	.189	.193
8-32 UNC-3B	.355	.063	.221	.271	.054	# 2	.221	.226
10-32 UNF-3B	.391	.065	.250	.302	.054	E	.250	.256
1/4-20 UNC-3B	.529	.089	.332	.382	.054	Q	.332	.338
5/16-18 UNC-3B	.656	.104	.413	.505	.120	Z	.413	.423
3/8-16 UNC-3B	.770	.124	.490	.597	.120	12.5MM	.490	.500
1/2-13 UNC-3B	.990	.154	.640	.772	.151	41/64	.640	.650

THREAD SIZE	GRIP RANGE	OPEN END A±.015	OPEN END M Ref	CLOSED END L±.015	CLOSED END J Ref	CLOSED END K Ref	FREIGHTLINER PART NO.
4-40 UNC-3B	.050 .081	.370	.235				23-9284-001
4-40 UNC-3B	.050 .081			.525	.390	.235	23-9284-002
4-40 UNC-3B	.081 .106	.395	.235				23-9284-003
4-40 UNC-3B	.081 .106			.550	.390	.235	23-9284-004
4-40 UNC-3B	.106 .131	.420	.235				23-9284-005
4-40 UNC-3B	.106 .131			.575	.390	.235	23-9284-006
4-40 UNC-3B	.131 .156	.450	.235				23-9284-007
4-40 UNC-3B	.131 .156			.600	.390	.235	23-9284-008
4-40 UNC-3B	.156 .181	.475	.235				23-9284-009
4-40 UNC-3B	.156 .181			.625	.390	.235	23-9284-010
4-40 UNC-3B	.181 .206	.500	.235				23-9284-011
4-40 UNC-3B	.181 .206			.650	.390	.235	23-9284-012

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	11/19	9-24-69	02190	00001	SEE SHEET 5	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG | BY | DATE | WAS
A | FEF | 5-16-84 | SEE SHEET 5

JOB NO 99438

23-9284

11-11-69	RIVNUT - BRASS COUNTERSUNK - KEYLESS OPEN & CLOSED END	PART NO 23-9284
ANY CHG LTR A		SHEET 2 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M Ref.	L ±.015	J Ref	K Ref	
#6-32 UNC-3B	.065 .106	.500	.325				23-9284-013
6-32 UNC-3B	.065 .106			.687	.510	.325	23-9284-014
6-32 UNC-3B	.106 .161	.500	.280				23-9284-015
6-32 UNC-3B	.106 .161			.687	.465	.280	23-9284-016
6-32 UNC-3B	.161 .201	.562	.295				23-9284-017
6-32 UNC-3B	.161 .201			.687	.420	.260	23-9284-018
6-32 UNC-3B	.201 .241	.625	.315				23-9284-019
6-32 UNC-3B	.201 .241			.812	.505	.295	23-9284-020
6-32 UNC-3B	.241 .281	.625	.270				23-9284-021
6-32 UNC-3B	.241 .281			.812	.465	.265	23-9284-022
	.281						
6-32 UNC-3B	.281 .321			.844	.455	.265	23-9284-024

#8-32 UNC-3B	.065 .106	.500	.325				23-9284-025
8-32 UNC-3B	.065 .106			.687	.510	.325	23-9284-026
8-32 UNC-3B	.106 .161	.500	.280				23-9284-027
8-32 UNC-3B	.106 .161			.687	.465	.280	23-9284-028
8-32 UNC-3B	.161 .201	.562	.290				23-9284-029
8-32 UNC-3B	.161 .201			.687	.415	.255	23-9284-030
8-32 UNC-3B	.201 .241	.625	.310				23-9284-031
8-32 UNC-3B	.201 .241			.875	.560	.290	23-9484-032
8-32 UNC-3B	.241 .281	.687	.325				23-9284-033
8-32 UNC-3B	.241 .281			.875	.575	.290	23-9284-034
8-32 UNC-3B	.281 .321	.687	.295				23-9284-035
8-32 UNC-3B	.281 .321			.875	.485	.300	23-9284-036

CHG	BY	DATE	WAS
A	FEF	05-16-84	SEE SHEET 5

JOB NO 99438

CHG	B	DATE	WAS

COMPILED	K.TA	DATE DRAWN	MASTER NO	MATERIAL	NEXT ASSY NO
APPROVED		9-29-69	02190 0000	SEE SHEET 5	

23-9284

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9284
LAST CHG LTR: A		SHEET 3 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A ±.015	M Ref	L ±.015	J Ref	K Ref	
#10-32 UNF-3B	.065 .116	.578	.395				23-9284-037
10-32 UNF-3B	.065 .116			.828	.645	.395	23-9284-038
10-32 UNF-3B	.116 .166	.625	.385				23-9284-039
10-32 UNF-3B	.116 .166			.875	.635	.385	23-9284-040
10-32 UNF-3B	.166 .216	.687	.400				23-9284-041
10-32 UNF-3B	.166 .216			.938	.650	.400	23-9284-042
10-32 UNF-3B	.216 .266	.734	.390				23-9284-043
10-32 UNF-3B	.216 .266			.984	.640	.390	23-9284-044
10-32 UNF-3B	.266 .316	.781	.385				23-9284-045
10-32 UNF-3B	.266 .316			1.031	.635	.385	23-9284-046
10-32 UNF-3B	.316 .366	.844	.400				23-9284-047
10-32 UNF-3B	.316 .366			1.094	.650	.400	23-9284-048
1/4-20 UNC-3B	.089 .151	.687	.440				23-9284-049
1/4-20 UNC-3B	.089 .151			1.000	.750	.435	23-9284-050
1/4-20 UNC-3B	.151 .211	.750	.440				23-9284-051
1/4-20 UNC-3B	.151 .211			1.062	.750	.435	23-9284-052
1/4-20 UNC-3B	.211 .271	.812	.440				23-9284-053
1/4-20 UNC-3B	.211 .271			1.125	.750	.435	23-9284-054
1/4-20 UNC-3B	.271 .331	.875	.435				23-9284-055
1/4-20 UNC-3B	.271 .331			1.187	.750	.435	23-9284-056
1/4-20 UNC-3B	.331 .391	.937	.435				23-9284-057
1/4-20 UNC-3B	.331 .391			1.250	.750	.435	23-9284-058
1/4-20 UNC-3B	.391 .451	1.000	.445				23-9284-059
1/4-20 UNC-3B	.391 .451			1.312	.760	.445	23-9284-060

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS	JOB NO
A	FEF	05-16-84	SEE SHEET 5	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED		9-29-69	02190	0000I	SEE SHEET 5	

A Portland FREIGHTLINER CORPORATION Oregon 97208

23-9284

PRINT ISSUED	TITLE	PART NO
11-11-69	RIVNUT - BRASS COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9284
LAST CHG LTR A		SHEET 4 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A±.015	M Ref	L±.015	J Ref	K Ref	
5/16-18 UNC-3B	.106 .181	.844	.540				23-9284-061
5/16-18 UNC-3B	.106 .181			1.218	.915	.540	23-9284-062
5/16-18 UNC-3B	.181 .256	.937	.560				23-9284-063
5/16-18 UNC-3B	.181 .256			1.312	.935	.560	23-9284-064
5/16-18 UNC-3B	.256 .331	1.000	.550				23-9284-065
5/16-18 UNC-3B	.256 .331			1.406	.955	.550	23-9284-066
5/16-18 UNC-3B	.331 .406	1.093	.565				23-9284-067
5/16-18 UNC-3B	.331 .406			1.468	.940	.565	23-9284-068
5/16-18 UNC-3B	.406 .481	1.156	.555				23-9284-069
5/16-18 UNC 3B	.406 .481			1.562	.960	.555	23-9284-070
5/16-18 UNC-3B	.481 .556	1.250	.575				23-9284-071
5/16-18 UNC-3B	.481 .556			1.625	.950	.575	23-9284-072
3/8-16 UNC-3B	.125 .211	.938	.580				23-9284-073
3/8-16 UNC-3B	.125 .211			1.375	1.020	.655	23-9284-074
3/8-16 UNC-3B	.211 .296	1.031	.590				23-9284-075
3/8-16 UNC-3B	.211 .296			1.468	1.030	.655	23-9284-076
3/8-16 UNC-3B	.296 .381	1.125	.600				23-9284-077
3/8-16 UNC-3B	.296 .381			1.562	1.040	.675	23-9284-078
3/8-16 UNC-3B	.381 .466	1.219	.615				23-9284-079
3/8-16 UNC-3B	.381 .466			1.656	1.050	.690	23-9284-080
3/8-16 UNC-3B	.466 .551	1.312	.625				23-9284-081
3/8-16 UNC-3B	.466 .551			1.750	1.065	.705	23-9284-082
3/8-16 UNC-3B	.551 .636	1.422	.650				23-9284-083
3/8-16 UNC-3B	.551 .636			1.859	1.090	.715	23-9284-084

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	FEF	05-16-84	SEE SHEET 5

JOB NO 9943B

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-29-69	02190	00001	SEE SHEET 5	

9284

PRINTED	TITLE	PART NO
11-11-69	RIVNUT - BRASS COUNTERSUNK - KEYLESS OPEN & CLOSED END	23-9284
LAST CHG LTR: A		SHEET 5 OF 5

THREAD SIZE	GRIP RANGE	OPEN END		CLOSED END			FREIGHTLINER PART NO.
		A+.015	M Ref	L±.015	J Ref	K Ref	
1/2-13 UNC-3B	.156 .276	1.188	.725				23-9284-085
1/2-13 UNC-3B	.156 .276			1.781	1.320	.850	23-9284-086
1/2-13 UNC-3B	.276 .396	1.312	.730				23-9284-087
1/2-13 UNC-3B	.276 .396			1.906	1.325	.865	23-9284-088
1/2-13 UNC-3B	.396 .516	1.438	.735				23-9284-089
1/2-13 UNC-3B	.396 .516			2.031	1.330	.880	23-9284-090
1/2-13 UNC-3B	.516 .636	1.578	.750				23-9284-091
1/2-13 UNC-3B	.516 .636			2.172	1.350	.890	23-9284-092
1/2-13 UNC-3B	.636 .756	1.718	.765				23-9284-093
1/2-13 UNC-3B	.636 .756			2.312	1.360	.900	23-9284-094
1/2-13 UNC-3B	.756 .876	1.843	.780				23-9284-095
1/2-13 UNC-3B	.756 .876			2.437	1.375	.930	23-9284-096

ENGINEERING NOTES:

1. Material: Brass; 66% copper, 34% zinc.
2. Finish: Bright, as machined.
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO
APPROVED	[illegible]	9-29-69	02190	00001	(1)	

A Portland FREIGHTLINER CORPORATION Oregon 97208

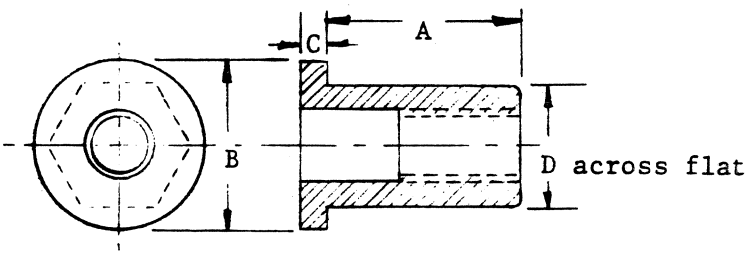
HG	BY	DATE	WAS

HG	BY	DATE	WAS
A	FEF	05-16-84	ADDED NOTE 3

JOB NO 9943B

23-9285

PRINT ISSUED		TITLE	PART NO.
		Rivnut - Steel Hex Shank - Keyless Open End	23-9285
LAST CHG LTR	A		SHEET OF



Thread Size	Grip Range Min.	Grip Range Max.	A ±.015	B ±.015	C Nom.	D Max.	Hex Hole Limits Across Flat	Round Hole Limits	Freightliner Part Number
1/4-20 UNC-3B	.020	.080	.500	.469	.058	.312	.312/.318	.347/.358	23-9285-010
1/4-20 UNC-3B	.080	.150	.578	.469	.058	.312	.312/.318	.347/.353	-011
5/16-18 UNC-3B	.020	.100	.625	.594	.062	.397	.397/.403	.437/.447	-020
5/16-18 UNC-3B	.100	.180	.703	.594	.062	.397	.397/.403	.437/.447	-021
3/8-16 UNC-3B	.020	.125	.703	.688	.088	.468	.468/.478	.522/.532	-030
3/8-16 UNC-3B	.125	.230	.812	.688	.088	.468	.468/.478	.522/.532	-031

ENGINEERING NOTES:

1. Material: Steel AISI C1108 or C1110.
2. Finish: Cadium plate per federal spec. QQ-P-416A Class 3 Type 1 (.0002" min. thick).
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

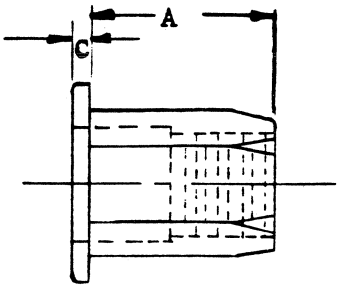
CHG	BY	DATE	WAS

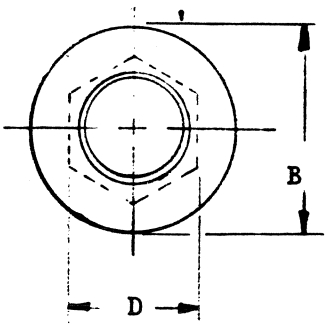
CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	ADDED NOTE 3	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A.	9-19-69	02190	00001	1	Vehicle

A Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED		TITLE	PART NO.
		Rivnut - Steel Midget Hex Series Open End	23-9286
LAST CHG. LTR.	A		SHEET OF





Thread Size	Grip Range Min.	Grip Range Max.	A ±.015	B ±.015	C Norm.	D Max.	Hex Hole Limits Across Flat	Round Hole Limits	Freightliner Part Number
10-32 UNC-3B	.010	.085	.344	.344	.043	.223	.223/.229	250/.256	23-9286-010
10-32 UNC-3B	.085	.135	.406	.344	.043	.223	.223/.229	250/.256	-011
10-32 UNC-3B	.135	.185	.456	.344	.043	.283	.223/.229	250/.185	-012

ENGINEERING NOTES:

1. Material: Steel AISI C1108 or C1110.
2. Finish: Cadium plate per federal spec. QQ-P-416A Class 3 Type 1, (.0002" min. thick).
3. Caution: The torque capacity of the rivnut is less than an equivalent grade 2 fastener.

CHG	BY	DATE	WAS

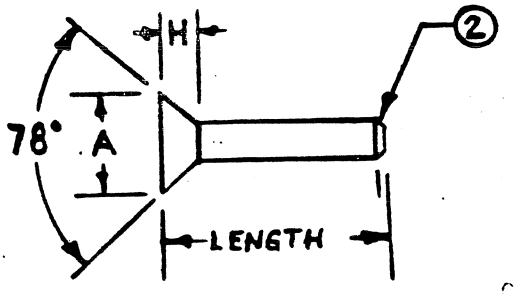
CHG	BY	DATE	WAS	JOB NO
A	FEF	05-14-84	ADDED NOTE 3	99438

COMPILED	KJA	DATE DRAWN	MASTER NO		MATERIAL	NEXT ASSY. NO.
APPROVED	[illegible]	9-19-69	02190	00001	1	Vehicle

General Use Part

PRINT ISSUED	TITLE	PART NO.
3/24/71	RIVET COUNTER SUNK HEAD - ALUM.	23-9366
LAST CHG LTR D		SHEET 1 OF 1

SKETCH



(Ref.)
A = 1.81 D
H = 0.50 D
where D is basic diameter of rivet shank.

PART NUMBERS

(D)(C)

NOM. SIZE DIA. X LENGTH	A (APPROX.)	H (APPROX.)	MANUFACTURER'S PCS/# AN NO.			FREIGHTLINER PART NUMBER*
1/8 x 1/4	0.226	0.062	AN 425-4-4	2607		23-9366-404
5/32 x 1/4	0.283	0.078	AN 425-5-4	1589		23-9366-504
5/16			AN 425-5-5	1336		-505
3/8			AN 425-5-6	1152		-506
7/16			AN 425-5-7	1014		-507
1/2			AN 425-5-8	905		-508
9/16			AN 425-5-9	817		-509
5/8			AN 425-5-10	745		-510
3/16 x 3/8	0.340	0.094	AN 425-6-6	774		23-9366-606
7/16			AN 425-6-7	680		-607
1/2			AN 425-6-8	610		-608
9/16			AN 425-6-9	550		-609
5/8			AN 425-6-10	505		-610
3/4			AN 425-6-12	430		-612
1			AN 425-6-16	333		-616
1 1/4			AN 425-6-20	271		-620
1/4 x 5/8	0.452	0.125	AN 425-8-10	272		23-9366-810
3/4			AN 425-8-12	233		-812

*Dash number expresses diameter in 32nd's (first digit) and length in 16th's (last two digits).

ENGINEERING NOTES

D
1. Material: Alum. alloy 2117-T4.
2. Point: (for small rivets) per American Standard B18.1.

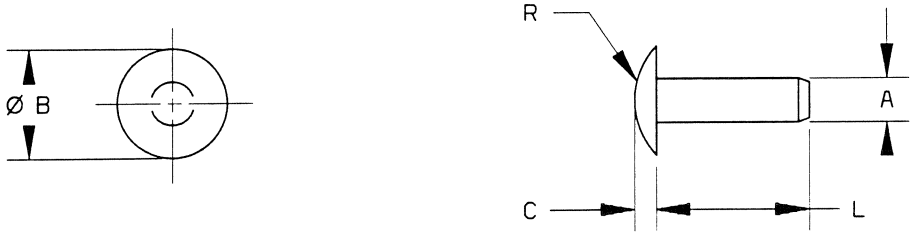
CHG	BY	DATE	WAS
D	TC	4/13/81	6053-T61 to 2117-T4 C/M
A	HJR	2-4-72	A = 1.85, R = 4.25
			J #84960
B	HJR	2-21-72	Add -510; J #85140
C	GEH	8-13-80	Add Pc/# C-1724

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		7-14-70		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

D C E

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-BRAZIER HEAD ALUMINUM	23-09367	
DATE	11/01/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. K
CATIA ORIGINAL				



NOM. SIZE		B HEAD DIA	C HEAD HEIGHT	PCS PER POUND	GRIP RANGE	MANUFACTURER'S PART NUMBER ARMY/NAVY/SPEC	FREIGHTLINER PART NUMBER*
A DIA.	L LENGTH						
1/8	3/8	.31	.062	1442	.179/.230	AN-455-4-6	23-09367-406
	1/2			1187	.296/.350	AN-455-4-8	23-09367-408
	9/16			1001	.351/.410	AN-455-4-9	23-09367-409
5/32	5/16	.39	.073	944	.125/.187	AN-455-5-5	23-09367-505
	3/8			850	.188/.249	AN-455-5-6	23-09367-506
	7/16			776	.250/.314	AN-455-5-7	23-09367-507
	1/2			709	.315/.375	AN-455-5-8	23-09367-508
	5/8			609	.429/.481	AN-455-5-10	23-09367-510
	3/4			533	.531/.587	AN-455-5-12	23-09367-512
	7/8			475	.639/.702	AN-455-5-14	23-09367-514
3/16	5/16	.47	.093	597	.121/.175	AN-455-6-5	23-09367-605
	3/8			542	.176/.219	AN-455-6-6	23-09367-606
	7/16			498	.220/.276	AN-455-6-7	23-09367-607
	1/2			459	.277/.335	AN-455-6-8	23-09367-608
	9/16			426	.336/.394	AN-455-6-9	23-09367-609
	5/8			398	.395/.453	AN-455-6-10	23-09367-610
	3/4			350	.514/.569	AN-455-6-12	23-09367-612
1/4	1/2	.62	.125	230	.217/.265	AN-455-8-8	23-09367-808
	5/8			202	.340/.385	AN-455-8-10	23-09367-810
	3/4			180	.446/.491	AN-455-8-12	23-09367-812
	7/8			163	.549/.602	AN-455-8-14	23-09367-814

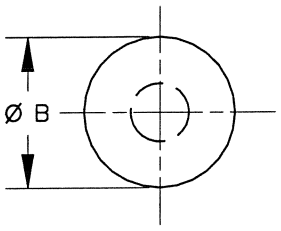
* DASH NO. EXPRESSES DIA. IN 32ND'S (FIRST DIGIT) AND LENGTH IN 16THS (LAST TWO DIGITS).

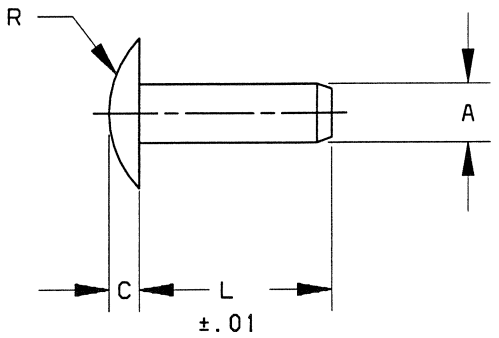
ENGINEERING NOTES:

1. MATERIAL: ALUMINUM ALLOY 6053-T61.
2. POINT: (FOR SMALL RIVETS) PER AMERICAN STD B18.1.

CHG	JOB NO	DATE	BY	REVISION
K	PA2042-97	11/01/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED GRIP RANGE.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-BRAZIER HEAD SOFT ALUMINUM	23-09368	
DATE	07/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. K
CATIA ORIGINAL				





K

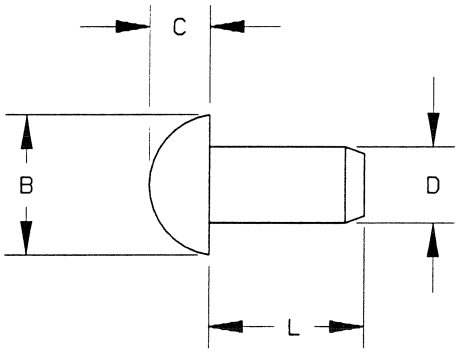
NOM. SIZE		PCS PER POUND	B	C	GRIP RANGE	R (REF)	FREIGHTLINER PART NUMBER*
A DIA.	L LENGTH						
.156 (+.004 -.001)	5/16	936	.391±.020	.078±.005	.125/.187	.280	23-09368-505
	3/8	844			.188/.249		23-09368-506
	7/16	770			.250/.314		23-09368-507
	1/2	704			.315/.375		23-09368-508
.187 (+.004 -.001)	5/16	576	.469±.023	.094±.005	.121/.175	.330	23-09368-605
	3/8	538			.176/.219		23-09368-606
	7/16	492			.220/.276		23-09368-607
	1/2	456			.277/.335		23-09368-608
	5/8	374			.395/.453		23-11634-610

ENGINEERING NOTES:

1. MATERIAL: ALUMINUM ALLOY 1100
2. POINT: PER ANSI B18.1.
3. FINISH: YELLOW ANODIZE PER MIL-STD-8625.
4. REFERENCE STANDARD: AN455A.

CHG	JOB NO	DATE	BY	REVISION
J	P03341-01	07/14/97	DAJ	REVISED AND REDRAWN IN CATIA. ADDED -605.
K	PA2042-93	11/01/99	LFB	ADDED COLUMN FOR GRIP RANGE.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET, ROUND HEAD ALUMINUM	23-09369	
DATE	11/01/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. D



NOM. SIZE		B	C	PCS PER POUND	GRIP RANGE	MANUFACTURER'S PART NUMBER ARMY/NAVY SPEC	FREIGHTLINER PART NUMBER*
D DIAM.	L LENGTH						
1/4	1/2	.460	.196	217	.217/.265	AN-430-8-8	23-09369-808
	5/8			192	.340/.385	AN-430-8-10	23-09369-810
	3/4			171	.446/.491	AN-430-8-12	23-09369-812
	7/8			155	.549/.602	AN-430-8-14	23-09369-814
	1			142	.676/.728	AN-430-8-16	23-09369-816

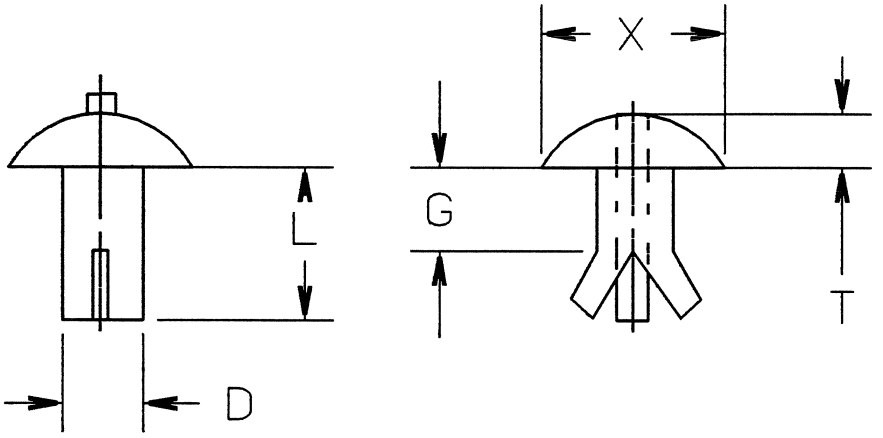
* FIRST DIGIT OF DASH NUMBER EXPRESSES DIAMETER IN 32ND'S; FINAL TWO DIGITS OF DASH NUMBER EXPRESSES LENGTH IN 16THS.

ENGINEERING NOTES:

1. MATERIAL: ALUMINUM ALLOY 2117-T4.
2. POINT: (FOR SMALL RIVETS) PER AMERICAN STD B18.1.

CHG	JOB NO	DATE	BY	REVISION
D	PA2042-97	11/01/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED GRIP RANGE.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	RIVET, DRIVE PIN, UNIVERSAL HEAD ALUMINUM	23-09370
DATE	03/21/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



DIAMETER D	GRIP G	LENGTH L	HEAD DIA X	HEAD HEIGHT T	FREIGHTLINER PART NUMBER
$5/32^{+.004}_{-.001}$	.38	.50	.312 ±.016	$.067^{+.010}_{-.000}$	23-09370-508
$3/16^{+.004}_{-.002}$	.25	.38	.375 ±.019	.080 ±.010	23-09370-606
	.38	.50			23-09370-608
	.50	.62			23-09370-610

C

MATERIAL: BODY: ALUMINUM AA2117
RIVET PIN: ALUMINUM ALLOY

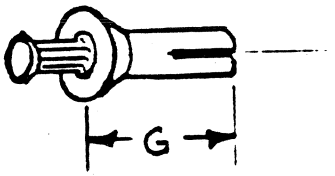
SUGGESTED VENDOR : SOUTHCO OR APPROVED EQVIVALENT

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PA2006-25	03/21/89	PCK	REDRAWN AND REVISED
C	P6530H-01	07/30/92	ERK	PIN CHANGED TO AL. ALLOY FROM SST.

General Use Part

PRINT ISSUED	TITLE	PART NO
3/29/71	RIVET, DRIVE COUNTERSUNK HEAD ALUM	23-9661
LAST CHG LTR		SHEET OF

SKETCH



PART NUMBERS

DIAM.	G GRIP	HOLE SIZE		MANUFACTURER'S NUMBER AUV		FREIGHTLINER PART NUMBER
3/16	3/16 1/4 5/16 3/8	#11 Drill (.1910)		9463 9464 9465 9466		23-9661-603 -604 -605 -606

ENGINEERING NOTES

(1) Material: Alum.Alloy ( ) Rivet: Stainless Steel Pin

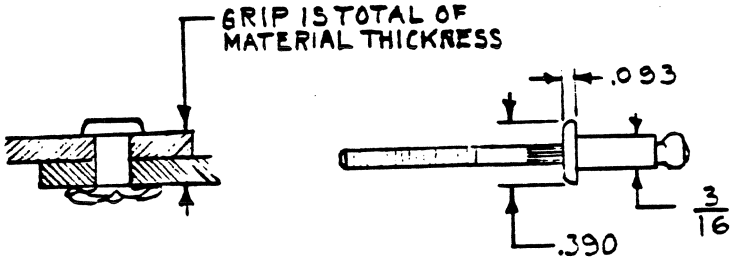
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-4-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO.
10/25/71	RIVET, BLIND MULTIGRIP (CHERRY T)	23-9800
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

GRIP RANGE				MANUFACTURER'S NUMBER		FREIGHTLINER PART NUMBER
MIN.	NOM.*	MAX.		TWS		
.046	.062 .125 .187	.203		BSPT-6-3		23-9800-603
.203	.250 .312 .375	.390		BSPT-6-6		-606
.390	.437 .500 .562	.578		BSPT-6-9		-609
.578	.625 .687 .750	.765		BSPT-6-12		-612

*Rivet core breaks flush at each of the nominal grips shown.

ENGINEERING NOTES

(1) Material: 5056 Aluminum Rivet with Cad Plated Steel Mandrel.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	10-5-71		(1)	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

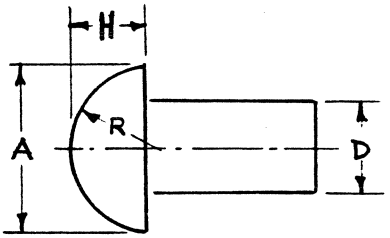
23-9830

WAS | DATE | BY | CHG

General Use Part

PRINT ISSUED	TITLE	PART NO.
10/20/71	RIVET, BUTTON HEAD STEEL	23-9830
LAST CHG. LTR.		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE OR BASIC SHANK DIAMETER		D SHANK DIAMETER MAX	D SHANK DIAMETER MIN	A HEAD DIAMETER MAX	A HEAD DIAMETER MIN	H HEAD HEIGHT MAX	H HEAD HEIGHT MIN	R HEAD RADIUS APPROX.	FREIGHTLINER PART NUMBER *
1/16	0.062	0.064	0.059	0.122	0.102	0.052	0.042	0.055	23-9830-2XX
3/32	0.094	0.096	0.090	0.182	0.162	0.077	0.065	0.084	-3XX
1/8	0.125	0.127	0.121	0.235	0.215	0.100	0.088	0.111	-4XX
5/32	0.156	0.158	0.152	0.290	0.268	0.124	0.110	0.138	-5XX
3/16	0.188	0.191	0.182	0.348	0.322	0.147	0.133	0.166	-6XX
7/32	0.219	0.222	0.213	0.405	0.379	0.172	0.158	0.195	-7XX
1/4	0.250	0.253	0.244	0.460	0.430	0.196	0.180	0.221	-8XX
9/32	0.281	0.285	0.273	0.518	0.484	0.220	0.202	0.249	-9XX

*First Digit = Diameter in 32nd's of an inch. XX = Length in 16th's of an inch.

ENGINEERING NOTES

(1) Material: Steel per ASTM A31, Grade A.

2. Finish: Plain

3. Must conform to SAE Recommended Practice for Mechanical and Chemical Requirements for Non-Threaded Fasteners--SAE J430, Grade 0.

4. Length tolerance for rivets shall be plus or minus 0.016 in.

WAS | DATE | BY | CHG

ns

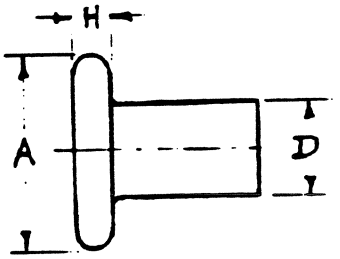
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	GM	10-5-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO.
10/20/71	RIVET, FLAT HEAD STEEL	23-9831
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE OR BASIC SHANK DIAMETER		D SHANK DIAMETER MAX	D SHANK DIAMETER MIN	A HEAD DIAMETER MAX	A HEAD DIAMETER MIN	H HEAD HEIGHT MAX	H HEAD HEIGHT MIN	FREIGHTLINER PART NUMBER *
1/16	0.062	0.064	0.059	0.140	0.120	0.027	0.017	23-9831-2XX
3/32	0.094	0.096	0.090	0.200	0.180	0.038	0.026	-3XX
1/8	0.125	0.127	0.121	0.260	0.240	0.048	0.036	-4XX
5/32	0.156	0.158	0.152	0.323	0.301	0.059	0.045	-5XX
3/16	0.188	0.191	0.182	0.387	0.361	0.069	0.055	-6XX
7/32	0.219	0.222	0.213	0.453	0.427	0.080	0.065	-7XX
1/4	0.250	0.253	0.244	0.515	0.485	0.091	0.075	-8XX
9/32	0.281	0.285	0.273	0.579	0.545	0.103	0.085	-9XX

*First Digit = Diameter in 32nd's of an inch. XX = Length in 16th's of an inch.

ENGINEERING NOTES

1. Material: Steel per ASTM A31, Grade A.
2. Finish: Plain
3. Must conform to SAE Recommended Practice for Mechanical and Chemical Requirements for Non-Threaded Fasteners--SAE J430, Grade 0.
4. Length tolerance for rivets shall be plus or minus 0.016 in.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	[illegible]	10-5-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

23-9925

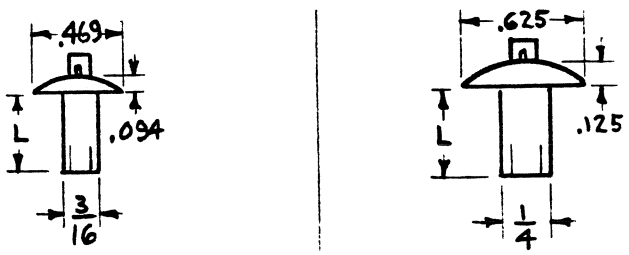
General Use Part

PRINT ISSUED		TITLE	PART NO.
		RIVET, DRIVE PIN FULL BRAZIER HEAD, ALUM	23-9925
LAST CHG. LTR.	–		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
–	–	–	J#84650

SKETCH



PART NUMBERS

GRIP MIN.	GRIP NOM.	GRIP MAX.	LENGTH UNDER HEAD "L"	3/16 DIA. MFR. NO. SOC	3/16 DIA. FREIGHTLINER PART NUMBER	1/4 DIA. MFR. NO. SOC	1/4 DIA. FREIGHTLINER PART NUMBER
.047	3/32	.140	1/4	38-206-02-13	23-9925-602	38-208-02-13	23-9925-802
.078	1/8	.171	9/32	38-206-04-13	-604	38-208-04-13	-804
.140	3/16	.234	11/32	38-206-06-13	-606	38-208-06-13	-806
.203	1/4	.296	13/32	38-206-03-13	-608	38-208-08-13	-808
.265	5/16	.359	15/32	38-206-10-13	-610	38-208-10-13	-810
.328	3/8	.421	17/32	38-206-12-13	-612	38-208-12-13	-812
.390	7/16	.484	19/32	38-206-14-13	-614	38-206-14-13	-814
.453	1/2	.546	21/32	38-206-16-13	-616	38-208-16-13	-816
.515	9/16	.609	23/32	38-206-16-13	-618	38-208-18-13	-818
.578	5/8	.671	25/32	38-206-20-13	-620	38-208-20-13	-820
.640	11/16	.734	27/32	38-206-22-13	-622	38-208-22-13	-822
.703	3/4	.796	29/32	28-206-24-13	-624	38-208-24-13	-824
.765	13/16	.859	31/32	38-206-26-13	-626	38-208-26-13	-826
.828	7/8	.921	1-1/32	38-206-28-13	-628	38-208-28-13	-828
.890	15/16	.984	1-3/32	38-206-30-13	-630	38-208-30-13	-830
.953	1	1.047	1-5/32	38-206-32-13	-632	38-208-32-13	-832

ENGINEERING NOTES

(1) Material: Rivet, Aluminum
Pin, Stainless Steel

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	1-20-72		(1)	

ns

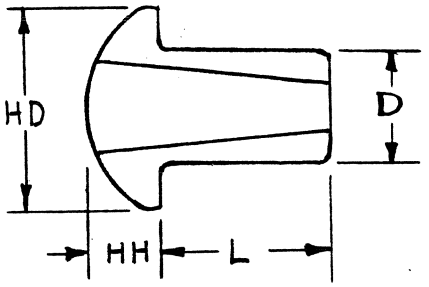
Portland FREIGHTLINER CORPORATION Oregon 97208

23-9980

General Use Part

PRINT ISSUED	TITLE	PART NO.
	RIVET, HOLLOW, DOME HEAD (ALUM)	23-9980
LAST CHG. LTR. —		SHEET 1 OF 2

SKETCH



PART NUMBERS

D DIAM.	L LENGTH	GR GRIP RANGE	HD	HH	HOLE SIZE	MANUFACTURER'S NUMBER AV		FREIGHTLINER PART NUMBER
3/32 (.095)	1/8	.000-.062	.156	.031	.098 (#40 Drill)	1131-0304		23-9980-304
	3/16	.063-.125				-0306		-306
	1/4	.126-.187				-0308		-308
	5/16	.188-.250				-0310		-310
	3/8	.251-.312				-0312		-312
1/8 (.126) Std.	1/8	.000-.062	.210	.039	.128 (#30 Drill)	1125-0404		-404
	3/16	.063-.125				-0406		-406
	1/4	.126-.187				-0408		-408
	5/16	.188-.250				-0410		-410
	3/8	.251-.312				-0412		-412
	7/16	.313-.375				-0414		-414
1/8 (.116) Under-size	3/16	.063-.125	.210	.039	.120 (#31 Drill)	75021-0406		-405
	5/16	.188-.250				-0410		-411
5/32	3/16	.063-.125	.250	.052	.161 (#20 Drill)	1125-0506		-506
	1/4	.126-.187				-0508		-508
	5/16	.188-.250				-0510		-510
	3/8	.251-.312				-0512		-512
	7/16	.313-.375				-0514		-514
	1/2	.376-.437				-0516		-516
3/16	7/32	.063-.125	.344	.065	.193 (#10 Drill)	1125-0607		-607
	9/32	.126-.187				-0609		-609
	11/32	.188-.250				-0611		-611
	13/32	.251-.312				-0613		-613
	15/32	.313-.375				-0615		-615
	17/32	.376-.437				-0617		-617
	19/32	.438-.500				-0619		-619
	21/32	.501-.561				1131-0621		-621

WAS	DATE	BY	CHG

WAS	DATE	BY	CHG
J #84640	—	—	—

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	2-1-72		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

M/E

23-9980

General Use Part

PRINT ISSUED		TITLE	PART NO.
		RIVET, HOLLOW, DOME HEAD (ALUM)	23-9980
LAST CHG. LTR.	—		SHEET 2 OF 2

PART NUMBERS (CONTINUED)

D DIAM.	L LENGTH	GR GRIP RANGE	HD	HH	HOLE SIZE	MANUFACTURER'S NUMBER AV		FREIGHTLINER PART NUMBER
1/4	11/32 13/32 15/32		.406	.078	.257 (F Drill	1131-0811 -0813 -0815		23-9980-811 -813 -815

WAS | CHG | BY | DATE

WAS | CHG | BY | DATE | J #84640 | — | — | —

ENGINEERING NOTES

(1) Material: Aluminum

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	2-1-72		(1)	

ns

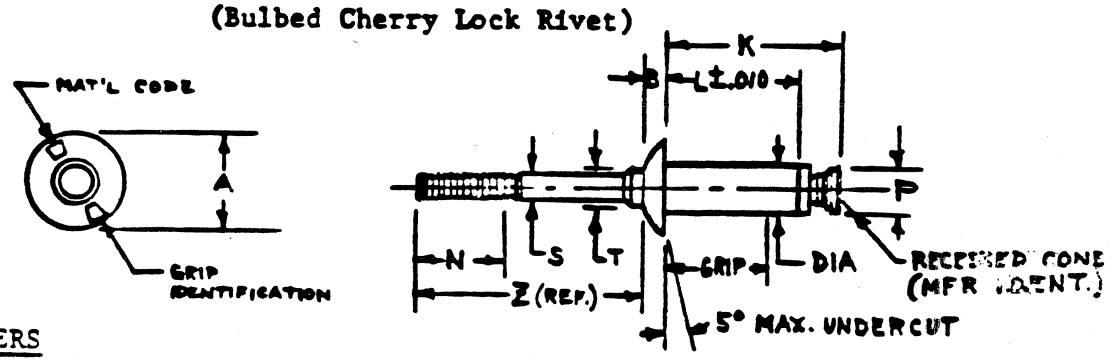
Portland FREIGHTLINER CORPORATION Oregon 97208

M/F

General Use Part

PRINT ISSUED	TITLE	PART NO.
1/29/71	RIVET, LOCK UNIVERSAL HEAD	23-9989
LAST CHG LTR		SHEET 1 OF 1

SKETCH (Bulbed Cherry Lock Rivet)



PART NUMBERS

DIAMETER NOM.	DIAMETER BASIC +.003 -.001	A ±.010	B +.010 -.006	N MIN.	P MAX.	S ±.003	T (REF.)	Z
1/8	.140	.250	.054	.375	.143	.090	.119	1.65
5/32	.173	.312	.067	.375	.176	.112	.148	1.63
3/16	.2015	.375	.080	.375	.205	.132	.174	1.65

DIA. (NOM.)	GRIP MIN.	GRIP MAX.	L	K MAX.	MANUFACTURER'S NUMBERS TWS			FREIGHTLINER PART NUMBER
1/8	.020	.062	.183	.31	CR2249-4-1			23-9989-401
	.063	.125	.247	.37	-4-2			-402
	.126	.187	.311	.44	-4-3			-403
5/32	.025	.062	.205	.34	CR2249-5-1			23-9989-501
	.063	.125	.269	.41	-5-2			-502
	.126	.187	.333	.47	-5-3			-503
	.188	.250	.397	.54	-5-4			-504
3/16	.030	.062	.233	.38	CR2249-6-1			23-9989-601
	.063	.125	.297	.44	-6-2			-602
	.126	.187	.361	.31	-6-3			-603
	.188	.250	.424	.57	-6-4			-604
	.251	.312	.499	.64	-6-5			-605

ENGINEERING NOTES

(1) Material: Rivet.....5056-F (QQ-A-430)
Stem .....4340 Steel
Lock Ring.....Monel (QQ-N-281)

2. Finish: Rivet.....Alumilite* (MIL-A-8625)
Stem.....Cadmium Plate (QQ-P-416) Type II
Lock Ring.....None

*Major portion of shank coated with black dry film coating or rivet sleeve coated with clear dry film coating.

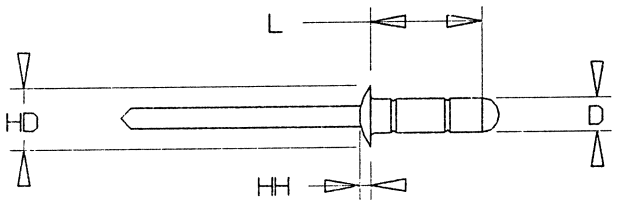
COMPILED	HJR	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED		1-18-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG | BY | DATE | WAS

ADRIENNE CHILBERG

DRAWN	TDT	TITLE	DRAWING NUMBER	
APPRV	RJM	RIVET - BLIND, DOME HEAD	23-09990	
DATE	10/17/78	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. G
CATIA ORIGINAL				



NOM. SIZE	DIA. D	LENGTH L	GRIP RANGE	HD	HH	HOLE SIZE	MANUFACTURER'S PN	FREIGHTLINER PART NUMBER
1/8	.126	.320	TO .187	.205	.036	.136	AV: 1693-0410 BLK POP: AD41-43BS-012	23-09990-004
	.126	.445	TO .312	.205	.039	.136	AV: 1693-0414 BLK POP: AD43-45BS-012	23-09990-104
5/32	.158	.383	TO .250	.245	.052	.166	AV: 1693-0512 BLK POP: AD52-54BS-012	23-09990-005
3/16	.188	.414	TO .250	.339	.060	.199	AV: 1693-0613 BLK ORNIT U481035 POP: AD62-64BS-012	23-09990-006
	.188	.617	TO .437	.339	.060	.199 (3)	AV: 1693-0619 BLK ORNIT U481515 POP: AD63-66BS-012	23-09990-106
	.188	.664	.250 TO .500	.625	.070	.193	AV: 1641-0621 BLK	23-09990-206
	.188	.976	.500 TO .781	.625	.070	.193	AV: 1641-0631 BLK	23-09990-306

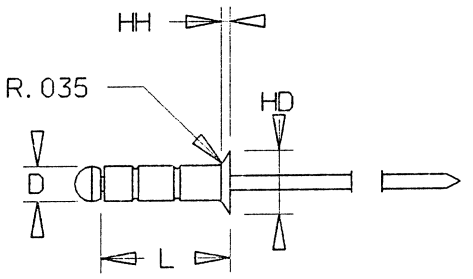
ENGINEERING NOTES:

1. MATERIAL: ALUMINUM; STEEL MANDREL.
2. FINISH: BODY -BLACK ANODIZED
   MANDREL-PLAIN (POP)
   -ZINC PLATED (AV & ORNIT)

(3) HOLE SIZE IS .193 FOR POP.

CHG	JOB NO	DATE	BY	REVISION
F	PA2042-70	06/20/96	FHC	REVISED AND REDRAWN. ADDED POP PART NUMBERS.
G	PA2042-76	12/20/96	DAJ	ADDED ORNIT AS AN APPROVED SUPPLIER.

DRAWN	SJT	TITLE	DRAWING NUMBER	
APPRV	RDF	RIVET - BLIND 120° COUNTERSUNK	23-09991	
DATE	09/06/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. C
CATIA ORIGINAL				



NOM. DIA.	D DIA. (MAX)	HD DIA (MAX)	HH (MAX)	L (MAX)	GRIP RANGE	HOLE SIZE	MANUFACTURER'S P/N	FREIGHTLINER PART NUMBER
1/8.	.128	.217	.034	.470	.093/.250	.136 (#29)	AV: 1682-0412 POP: AK41-44BS	23-09991-004
5/32	.160	.257	.036	.550	.109/.312	.166 (#19)	AV: 1682-0514	23-09991-005
3/16	.190	.352	.057	.610	.125/.312	.199 (#8)	AV: 1682-0615 ORNIT: U48121K POP: AK64-66BS	23-09991-006
	.190	.352	.057	.800	.250/.500	.199 (#8)	AV: 1682-0621 ORNIT: U48169K POP: AK66-68BS	23-09991-106

ENGINEERING NOTES:

1. MATERIAL: SLEEVE-5052 ALUMINUM
   MANDRELL-PLATED STEEL (AV & ORNIT)
   -PLAIN STEEL (POP).

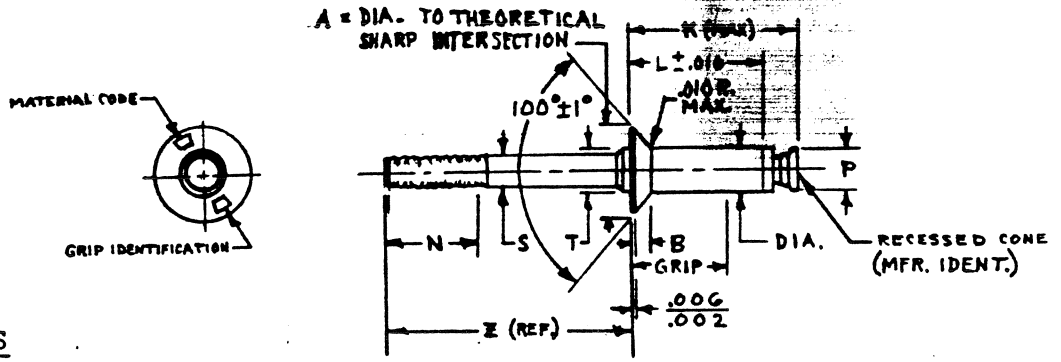
CHG	JOB NO	DATE	BY	REVISION
A	P6921E-02	09/06/90	SJT	REDRAWN, REVISED MANUFACTURER'S #'S.
B	PA2042-70	06/20/96	FHC	REVISED AND REDRAWN. ADDED POP PART NUMBERS.
C	PA2042-76	12/20/96	DAJ	ADDED ORNIT AS AN APPROVED ALTERNATE SUPPLIER

General Use Part

PRINT ISSUED	TITLE	PART NO.
	RIVET, LOCK COUNTERSUNK HEAD	23-9992
LAST CHG. LTR.		SHEET 1 OF 1

WAS / DATE / BY / CHG

SKETCH



PART NUMBERS

DIAMETER NOM.	DIAMETER BASIC +.003 -.001	A ±.004	B (REF.)	N MIN.	P MAX.	S ±.003	T (REF.)	
1/8	.140	.225	.035	.375	.143	.090		
5/32	.173	.286	.047	.375	.176		.57	
3/16	.2015	.353	.063	.375	.205		1.39	

REMOVE & DESTROY

DIA. (NOM.)	GRIP MIN.	GRIP MAX.	L	K MAX.	BERS		FREIGHTLINER PART NUMBER
1/8	.045	.062	.220	.35			23-9992-401
	.063	.125	.237				-402
	.126	.187	.30				-403
5/32	.063	.12			CR -2		23-9992-502
	.126	.1			-5-3		-503
	.188	.25		.53	-5-4		-504
3/16	.073	.125	.290	.43	CR2248-6-2		23-9992-602
	.126	.187	.354	.50	-6-3		-603
	.188	.250	.418	.56	-6-4		-604
	.251	.312	.482	.63	-6-5		-605

ENGINEERING NOTES

(1) Material: Rivet.....5056-F (QQ-A-430)
Stem.....4340 Steel
Lock Ring.....Monel (QQ-N-281)

2. Finish: Rivet.....Alumilite* (MIL-A-8625)
Stem.....Cadmium Plate (QQ-P-416) Type II
Lock Ring.....None

* Major portion of shank coated with black dry film coating or rivet sleeve coated with clear dry film coating.

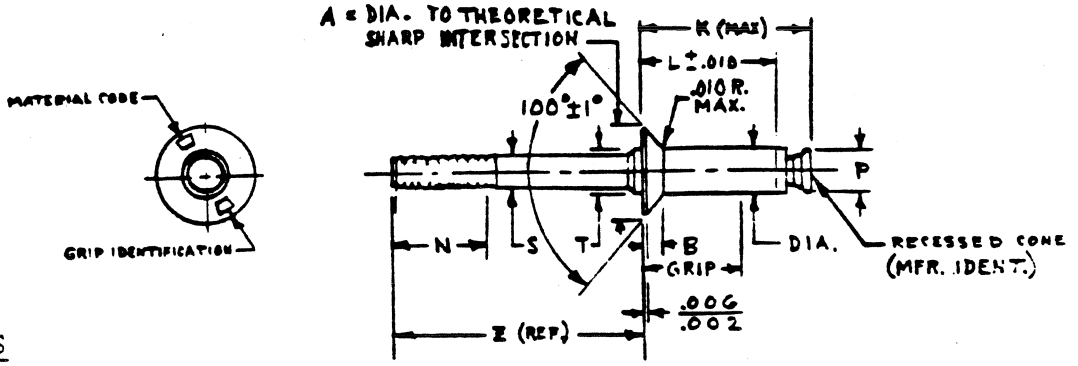
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		1-18-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO
	RIVET, LOCK COUNTERSUNK HEAD	23-9992
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

DIAMETER NOM.	DIAMETER BASIC +.003 -.001	A ±.004	B (REF.)	N MIN.	P MAX.	S ±.003	T (REF.)	Z
1/8	.140	.225	.035	.375	.143	.090	.119	1.62
5/32	.173	.286	.047	.375	.176	.112	.148	1.57
3/16	.2015	.353	.063	.375	.205	.132	.174	1.39

DIA. (NOM.)	GRIP MIN.	GRIP MAX.	L	K MAX.	MANUFACTURER'S NUMBERS TWS			FREIGHTLINER PART NUMBER
1/8	.045	.062	.220	.35	CR2248-4-1			23-9992-401
	.063	.125	.237	.36	-4-2			-402
	.126	.187	.301	.43	-4-3			-403
5/32	.063	.125	.262	.40	CR2248-5-2			23-9992-502
	.126	.187	.326	.46	-5-3			-503
	.188	.250	.390	.53	-5-4			-504
3/16	.073	.125	.290	.43	CR2248-6-2			23-9992-602
	.126	.187	.354	.50	-6-3			-603
	.188	.250	.418	.56	-6-4			-604
	.251	.312	.482	.63	-6-5			-605

ENGINEERING NOTES

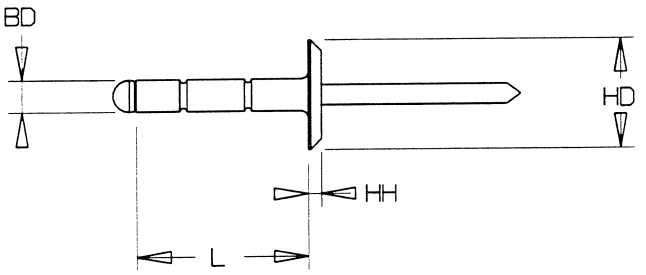
(1) Material: Rivet.....5056-F (QQ-A-430)
Stem.....4340 Steel
Lock Ring.....Monel (QQ-N-281)

2. Finish: Rivet.....Alumilite* (MIL-A-8625)
Stem.....Cadmium Plate (QQ-P-416) Type II
Lock Ring.....None

* Major portion of shank coated with black dry film coating or rivet sleeve coated with clear dry film coating.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		1-18-71		(1)	

DRAWN	RDF	TITLE	DRAWING NUMBER	
APPRV	PCK	RIVET-BLIND LARGE FLANGE	23-10000	
DATE	08/27/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. G
CATIA ORIGINAL				



NOM. DIA.	BD DIA.	HD DIA. (MAX)	HH (MAX)	L (MAX)	GRIP RANGE	HOLE SIZE	MANUFACTURER'S P/N	FREIGHTLINER PART NUMBER
1/8	.128	.386	.060	.410	.031/.187	.136 (#29)	AV: 1692-0410 ORNIT: U32080X POP: AD41-43BSLF	23-10000-400
				.530	.125/.312		AV: 1692-0414 POP: AD43-45BSLF	23-10000-401
3/16	.190	.637	.080	.550	.062/.250	.199 (#8)	AV: 1692-0613 ORNIT: U48103X POP: AD62-64BSLF	23-10000-600
				.780	.250/.500		AV: 1692-0621 ORNIT: U48169X POP: AD66-68BSLF	23-10000-601
				.780	.250/.500		AV: XXXX-XXXX ORNIT: XXXXXXX (2) POP: XXXX-XXXXXX	23-10000-603
				1.09	.500/.781		AV: 1692-0631 ORNIT: U48248X POP: AD68-612BSLF	23-10000-602
				1.15	.876/1.000		POP: BSL-616	23-10000-604

F

ENGINEERING NOTES:

1. MATERIAL: SLEEVE 5052 ALUMINUM,
   MANDREL-ZINC PLATED STEEL (AV & ORNIT)
   -PLAIN STEEL(POP)

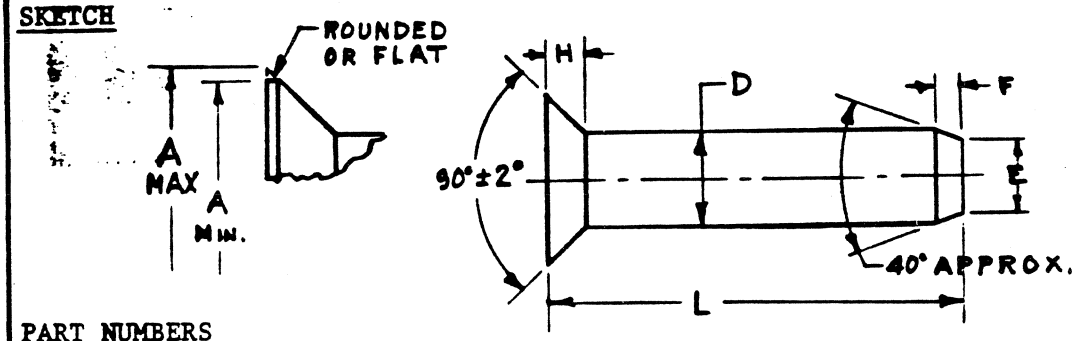
(2) FINISH: BODY-BLACK ANODIZED.
MANDREL-PLAIN (POP)
-ZINC PLATED (AV & ORNIT)

CHG	JOB NO	DATE	BY	REVISION
F	PA2042-83	03/20/98	DAJ	REVISED CHART GRAPHICS.
G	P10434-01	11/08/99	LFB	ADDED P/N 23-10000-603, ADDED FINISH NOTE.

General Use Part

PRINT ISSUED		TITLE	PART NO.
		RIVET, FLAT CSK HEAD STEEL	23-10201
LAST CHG. LTR.	A		SHEET 1 OF 1

SKETCH



PART NUMBERS

D L NOMINAL SIZE DIA x L	SHANK LENGTH MAX.	BASIC SHANK DIA	HEAD A DIA MAX.	HEAD A DIA MIN.	HEAD H HEIGHT REF.	POINT E DIA APPROX.	POINT F LENGTH APPROX.	FREIGHTLINER PART NUMBER*
1/8 x L	3/4	.125	.235	.217	.053	.102	.031	23-10201- 4XX
5/32 x L	1	.156	.293	.272	.066	.127	.039	- 5XX
3/16 x L	1	.188	.351	.326	.079	.154	.047	- 6XX
7/32 x L	1-3/8	.219	.413	.384	.094	.179	.055	- 7XX
1/4 x L	1-3/8	.250	.469	.437	.106	.204	.062	- 8XX
5/16 x L		.312	.588	.547	.133	--	--	- 1XX

* Dash Number: The last two digits indicate length in 1/16's of an inch.

ENGINEERING NOTES

(1) Material: Steel

2. Must meet applicable standards of ANSI B18.1.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	6-21-73		(1)	
APPROVED	Rollins				

Portland FREIGHTLINER CORPORATION Oregon 97208

A

CHG	BY	DATE

WAS

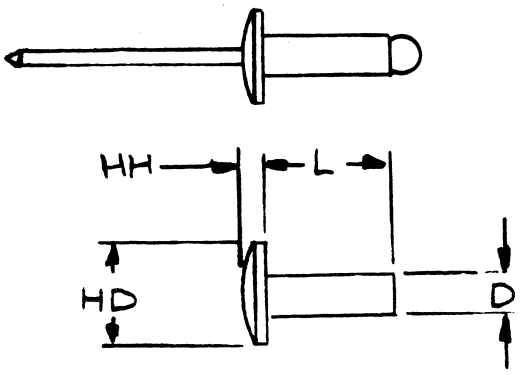
CHG	BY	DATE	
—	—	—	J #A0493
A	GB	2/20/81	D2271 ADDED - 1XX
A.	GB	2.20.81	REVISED DASH NOTE.

WAS D2171

ns

ORIGINAL JOB NO.	TITLE	PART NO.
	RIVET, BLIND PROTRUDING HEAD, ALUM	23-10281
LAST CHG LTR H		SHEET 1 OF 1

SKETCH:



PART NUMBERS:

NOM. SIZE	DIA D	LENGTH L	GRIP RANGE	HD	HH	HOLE SIZE	MFR'S NO. USH (1)	MFR'S NO. USH (2)	FREIGHTLINER PART NUMBER
5/32	.158	.650	.375 To .500	.295	.044	.166	AD-58-ABS		23-10281-508
		.525	.250 To .375				AD-56-ABS		-506
1/8	.125	.357	.188 To .250	.250	.035	.128 To .132	AD-44-ABS		-404
		.525	.312 .375				AD-46-ABS		-406
		.640	.376 .500				AD-48-ABS		-408
3/16	.187	.902	.625 To .750	.375	.053	.192 To .196	AD-612-ABS		-612
								AD-612-BS	-614
		.527	.251 .375					AD-66-BS	-660
		.690	.376 .500				AD-68-ABS		-608
		1.152	.876 1.000					AD-616-BS	-616
		.440	.126 .250					AD-64-BS	-640
3/32	.094	.375	.031 .125	.188	.032	.097-.100 #41		AD-32-BS	-302
			.125 .250					AD-34-BS	-304

ENGINEERING NOTES:

1 MATERIAL: Aluminum mandrel and rivet

2 MATERIAL: Steel mandrel, aluminum rivet

COMPILED	CHB	DATE DRAWN				
APPROVED		12/18/80			02180	00001

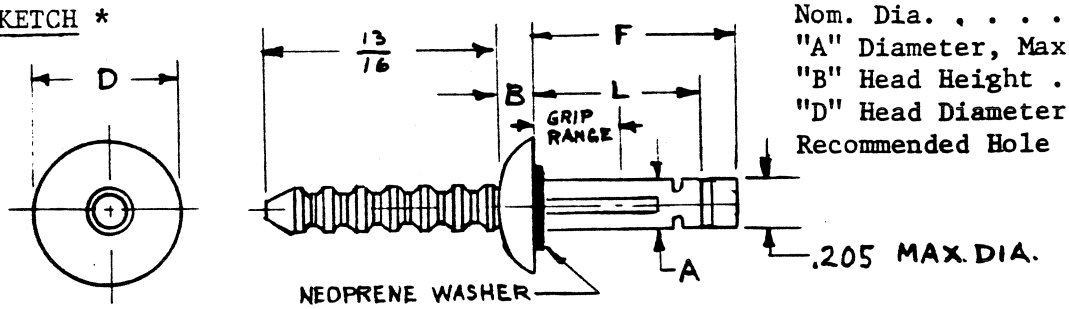
LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
G	16020	HEM	1-5-84	Add - 640
H	90658	RJN	2-2-84	ADDED -302, -304

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
D	97555	CHB	12/18/80	Added -660, Revise & Redrawn
E	C0164	N/A	6-15-81	AL. 646
F	D1500	SB	2/18/82	Add -408 & -608

General Use Part

ORIGINAL JOB NO.	TITLE	PART NO.
A0793	RIVET; BLIND	23 - 10871
LAST CHG LTR G		SHEET 1 OF

SKETCH *



Nom. Dia. . . . . 3/16"
"A" Diameter, Max.. . . . .205"
"B" Head Height . . .094"±.005"
"D" Head Diameter . .492/.446
Recommended Hole Size #4 (.209)

PART NUMBERS

GRIP RANGE	L ± .020	F	STATUS	MANUFACTURER'S NUMBER OLY		FREIGHTLINER PART NUMBER
.020/.375	.875	1.060	(4)	RV 6507-6-6W		23-10871-602
.020/.188	.750	.935	(4)	RV 6507-6-3-S-W		-603
.100/.287	.938MAX	.875 ±.020	(7)	RV 66X267		-608
.020/.500	1.000	1.185	(7) (5)	RVX A4220-8W		-708

* Bulb-Tite (Low Profile)

ENGINEERING NOTES

(1) MATERIAL: Rivet, 5056 Alum.; Stem, 2017 Alum.; Washer Seal, Neoprene.

2. FINISH: Rivet, Plain; Stem, Alodine #1000.

3. TOOLING: RV 66X267 Series blind rivets can only be installed with the RV958 pulling heads.

(4) Replaced by 23-10871-608.

(5) The -708 can be used interchangeably with -608. The -708 can use any 5/32" pulling head (ideal for sales and service work with standard blind rivet tools). The -708 stem does not break flush, requires grinding.

6. SURFACE COATING: Medium Aerospace lube for sleeves, and light Aerospace lube for pins.

7. 23-10871-608 Replaced by 23-11675-601
23-10871-708 Replaced by 23-11675-602

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		7-27-76		(1)	

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
E	77922	SK	1/6/79	Revised Note 3 & -608
F	76669	TDT	12/28/79	Revised Note 5
G	K0183	CAJ	8/10/84	Added Note 7

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	A0852	DL	12-16-76	Add. -608
B	65585	DC	2-6-78	Add-603 & NOTE (4)
C	65935	SB	4-19-78	Add-708 & NOTE (5)
D	E0288	JC	8-25-78	Add Note 6

E-183A Litho in USA Portland

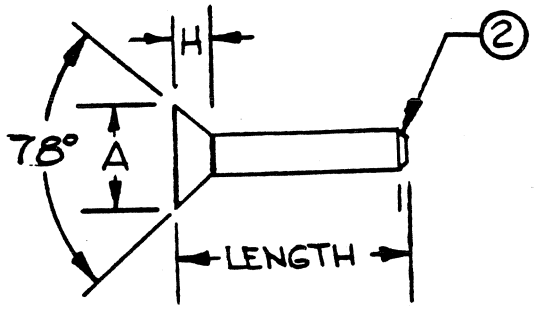
FREIGHTLINER CORPORATION Oregon 97208

M/F

G B C D E F

General Use Part

ORIGINAL JOB NO.	TITLE	PART NO.
80432	RIVET, COUNTER SUNK HEAD - STAINLESS STEEL	23-11019
LAST CHG LTR		SHEET 1 OF 1



(Ref.)
A = 1.81 D
H = 0.50 D

where D is basic diameter of rivet shank.

PART NUMBERS

NOM. SIZE DIA. X LENGTH	A (APPROX)	H (APPROX)	FREIGHTLINER PART NUMBER*
1/8 x 1/4	0.226	0.062	23-11019-404
5/32 x 1/4	0.283	0.078	23-11019-504
5/16			-505
3/8			-506
7/16			-507
1/2			-508
9/16			-509
5/8			-510
3/16 x 3/8	0.340	0.094	23-11019-606
7/16			-607
1/2			-608
9/16			-609
5/8			-610
3/4			-612
1			-616
1-1/4			-620
1/4 x 5/8	0.452	0.125	23-11019-810
3/4			-812

*Dash number expresses diameter in 32nd's (first digit) and length in 16th's (last two digits).

ENGINEERING NOTES

(1) Material: AISI 302
(2) Point: (for small rivets) per American Standard B18.1.
(3) Manufacturer: Allfast

		DATE DRAWN		MATERIAL	
COMPILED	HJR	12-28-76		(1)	
APPROVED					

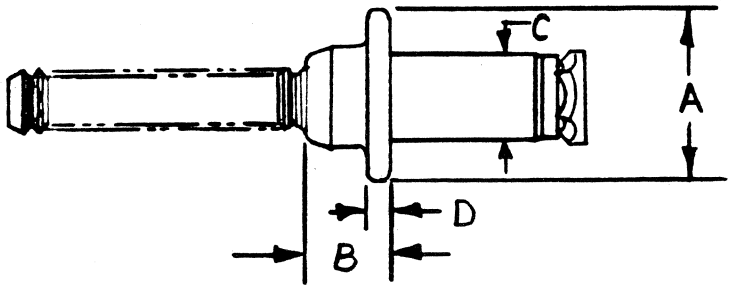
CHANGE INFORMATION | DATE | BY | JOB NO. | LTR

CHANGE INFORMATION | DATE | BY | JOB NO. | LTR

ORIGINAL JOB NO.	TITLE	PART NO.
C1369	RIVET, BLIND, WIDE GRIP 3/8"	23-11047
LAST CHG LTR —		SHEET 1 OF 1

SCOPE: This specification describes a 3/8" rivet with .25 grip range for blind application.

APPLICATIONS: Places where blind fasteners are needed but the grip varies, such as, fiberglass parts.



SPECIFICATIONS:

DIA.	MIN. GRIP	MAX. GRIP	MANUFACTURERS NUMBER HBM		FREIGHTLINER NUMBER
3/8	.062	.250	DR-R12-4		23-11047-004
	.251	.500	DR-R12-8		-008
	.501	.750	DR-R12-12		-012
	.751	1.000	DR-R12-16		-016

ENGINEERING SPECIFICATIONS:

A	B	C	D	MIN. SHEAR	MIN. TENSILE
.750 ± .062	.359 ± .031	.395 ± .005	.062	6,100 lbs.	3,100

HOLE DIAMETER
.420 ± .010

MATERIAL: Sleeve: Low carbon steel, zinc plated with wax film lubrication.

Pin: Medium high carbon steel with wax film lubrication.

COMPILED	CHB	DATE DRAWN			
APPROVED	GEH	10/30/79			

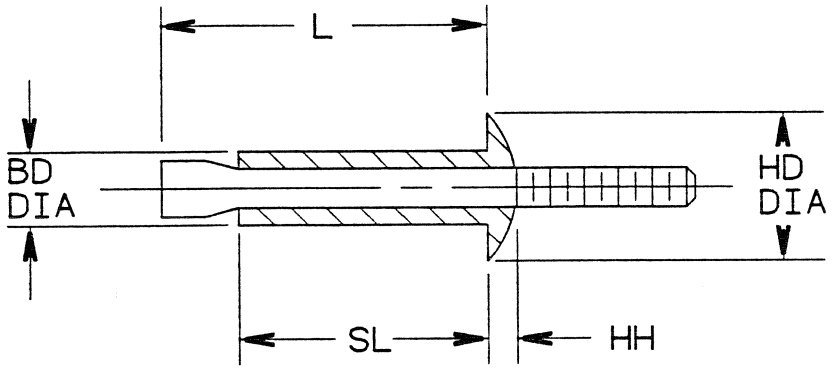
CHANGE INFORMATION | DATE | BY | JOB NO. | LTR

CHANGE INFORMATION | DATE | BY | JOB NO. | LTR

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	MONOBOLT/MAGNA-LOK PROTRUDING HEAD	23-11052
DATE	09/28/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

UNLESS OTHERWISE NOTED, ALL DIMENSIONS IN INCHES.

SKETCH



PART NUMBERS:

NOM DIA	BD DIA	SL	HD DIA	HH	L MAX	GRIP RANGE	HOLE SIZE	MANUFACTURER'S NUMBER		FREIGHTLINER PART NUMBER
								AV MONOBOLT	HBM MAGNA-LOK	
3/16	.186 TO .1905	.400 TO .415	.360 TO .395	.067 TO .095	.716	.064 TO .270	.193 TO .201	2771-0613	UMGLP-R6-4	23-11052-001
3/16	.186 TO .1905	.525 TO .590	.360 TO .395	.067 TO .095	.962	.064 TO .437	.193 TO .201	2771-0617	UMGLP-R6-E	-002
1/4	.2546 TO .2570	.544 TO .560	.500 TO .525	.096 TO .127	.970	.080 TO .375	.261 TO .272	2771-0817	UMGLP-R8-6	-101
1/4	.2546 TO .2570	.744 TO .810	.500 TO .525	.096 TO .127	1.405	.080 TO .625	.261 TO .272	2771-0824	UMGLP-R8-E	-102

ENGINEERING NOTES:

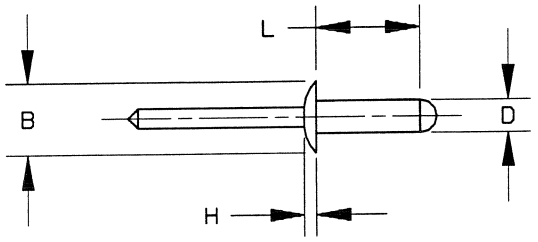
1 MATERIAL: STEEL, ZINC PLATED.

2. FOR 1/4" MONOBOLT/MAGNALOK : MINIMUM SHEAR STRENGTH 2400 LBS.
MINIMUM TENSILE STRENGTH 2150 LBS.

FOR 3/16" MONOBOLT/MAGNALOK : MINIMUM SHEAR STRENGTH 1430 LBS.
MINIMUM TENSILE STRENGTH 1007 LBS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	P4386F-01	09/28/89	RDF	REVISED TO CONFORM W/ SPECIFICATIONS OF HUCK & AVDEL MAGNA-LOK FROM MGLP-XX TO UMGLP-XX

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-BLIND DOME HEAD, STEEL	23-11053	
DATE	08/31/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. C
CATIA ORIGINAL				



D DIAMETER	GRIP RANGE (NOM)	HEAD		L	MANUFACTURER'S PN		FREIGHTLINER PART NUMBER
		DIA. B	HEIGHT H		AV	POP	
.188	.048-.187	.410	.070	.500	1624-0612	-	23-11053-000
.188	.156-.250	.410	.070	.590	1624-0616	-	23-11053-001
.188	.187-.250	.375	.055	.440	-	SD64BS	23-11053-002
.156	.251-.375	.312	.043	.525	-	SD56BS (2)	23-12543-000
.250	.376-.500	.500	.073	.740	-	SD88BS (2)	23-12501-000

ENGINEERING NOTES:

1. MATERIAL - RIVET: STEEL, ZINC COATED
MANDREL: STEEL, PHOSPHATE COATED

(2) MATERIAL - RIVET: STEEL, ZINC COATED
MANDREL: STEEL, ZINC COATED

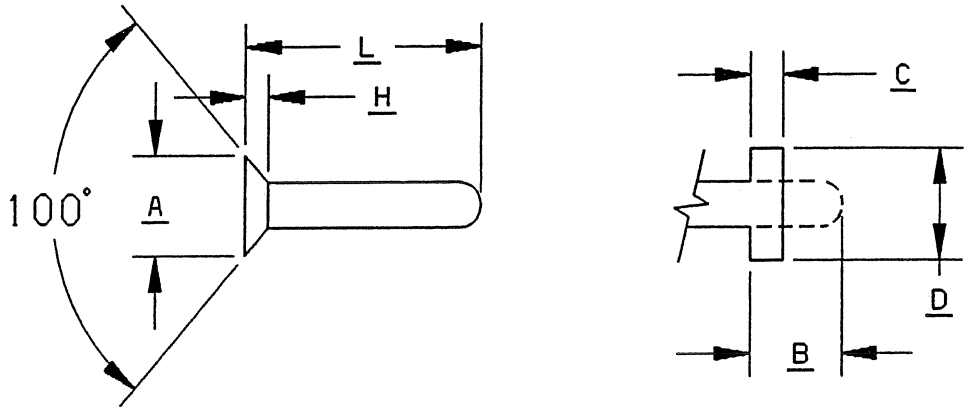
3. MECHANICAL PROPERTIES: (ULTIMATE)

DIAMETER	REC: HOLE SIZE	SHEAR STRENGTH	TENSILE STRENGTH
.156 (5/32)	0.162 (#20)	410 LBS	560 LBS
.188 (3/16)*	0.193 (#10)	950 LBS	800 LBS
.188 (3/16)	0.193 (#10)	590 LBS	815 LBS
.250 (1/4)	0.258 (#F)	1245 LBS	1505 LBS

* AV 1624 SERIES ONLY

CHG	JOB NO	DATE	BY	REVISION
B	P06263-02	08/31/98	DAJ	RVSD & RDRWN. ADDED -002, 23-12543 & 23-12501.
C	PA2042-98	11/29/99	LFB	ADDED SOLID. CORRECTED TEXT THICKNESS.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-COUNTER SUNK 100°, AL	23-11060	
DATE	06/25/98			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A



NOM SIZE DIA	A	B	C	D	H	L	VENDOR/PN MS	FREIGHTLINER PART NUMBER*
5/32	.277	.132-.179	.065-.088	.200-.235	.055	3/8	MS20426AD 5-6	23-11060-404
3/16	.344	.159-.215	.077-.105	.240-.280	.070	3/8	MS20426AD 6-6	23-11060-404
3/16	.344	.159-.215	.077-.105	.240-.280	.070	1/2	MS20426AD 6-8	23-11060-404

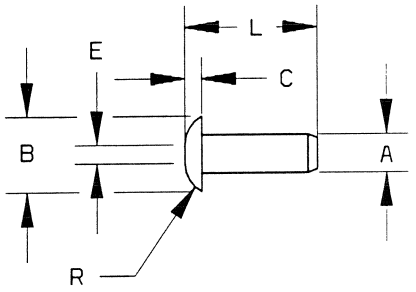
* DASH NUMBER EXPRESSES DIAMETER IN 32nd's (FIRST DIGIT) AND LENGTH IN 16th's (LAST TOW DIGITS)

ENGINEERING NOTES:

1. MATERIAL: ALUM ALLOY 2117-T4
2. FINISH: YELLOW ANODIZED
3. DIMENSIONS ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
A	PA2042-84	06/25/98	DAJ	REVISED & REDRAWN IN CATIA, REMOVED INACTIVE PARTS.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET UNIVERSAL HEAD	23-11061	
DATE	10/29/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



B

NOM. SIZE A DIA	NOM. SIZE L LENGTH	B HEAD DIA	C HEAD HEIGHT	E	R RADIUS	GRIP RANGE	MANUFACTURER'S PART NUMBER ARMY/NAVY SPEC	FREIGHTLINER PART NUMBER*
1/8	3/8	.250	.054	.063	.108	.179/.230	AN-470-4-6	23-11061-406
	1/2					.296/.350	AN-470-4-8	23-11061-408
5/32	5/16	.312	.067	.078	.135	.125/.187	AN-470-5-5	23-11061-505
	3/8					.188/.249	AN-470-5-6	23-11061-506
	7/16					.250/.314	AN-470-5-7	23-11061-507
	1/2					.315/.375	AN-470-5-8	23-11061-508
	5/8					.429/.481	AN-470-5-10	23-11061-510
	3/4					.531/.587	AN-470-5-12	23-11061-512
3/16	5/16	.375	.082	.094	.164	.121/.175	AN-470-6-5	23-11061-605
	3/8					.176/.219	AN-470-6-6	23-11061-606
	7/16					.220/.276	AN-470-6-7	23-11061-607
	1/2					.277/.335	AN-470-6-8	23-11061-608
	9/16					.336/.394	AN-470-6-9	23-11061-609
	5/8					.395/.453	AN-470-6-10	23-11061-610
	3/4					.514/.569	AN-470-6-12	23-11061-612
1/4	1/2	.500	.107	.125	.217	.217/.265	AN-470-8-8	23-11061-808
	5/8					.340/.385	AN-470-8-10	23-11061-810
	3/4					.446/.491	AN-470-8-12	23-11061-812
	7/8					.549/.602	AN-470-8-14	23-11061-814

* DASH NO. EXPRESSES DIA. IN 32ND'S (FIRST DIGIT) AND LENGTH IN 16THS (LAST TWO DIGITS).

ENGINEERING NOTES:

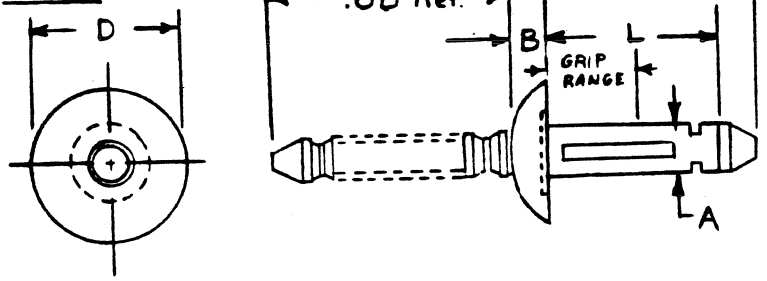
1. MATERIAL: 2117-T4.
2. POINT: (FOR SMALL RIVETS) PER AMERICAN STD B18.1.

CHG	JOB NO	DATE	BY	REVISION
B	PA2042-97	10/29/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED GRIP RANGE.

General Use Part

ORIGINAL JOB NO.	TITLE	PART NO.
77584	RIVET, BLIND 1/4" Ⓐ	23-11122
LAST CHG LTR B		SHEET 1 OF 1

SKETCH *



Normal Diameter	1/4 " Ⓐ
"A" Diameter, Max	.246
"B" Head Height	.111"+.005"
"D" Head Diameter	.550"7.535"
Recommended Hole Size	.250

PART NUMBERS

GRIP RANGE	L ±.020	F MAX.	STATUS	MANUFACTURER'S NUMBER OLY	FREIGHTLINER PART NUMBER
.125/.375	1.045	1.255	C	RV66X253-8-8 Ⓑ	23-11122-000

* Bulb-Tite (Low Profile)

ENGINEERING NOTES:

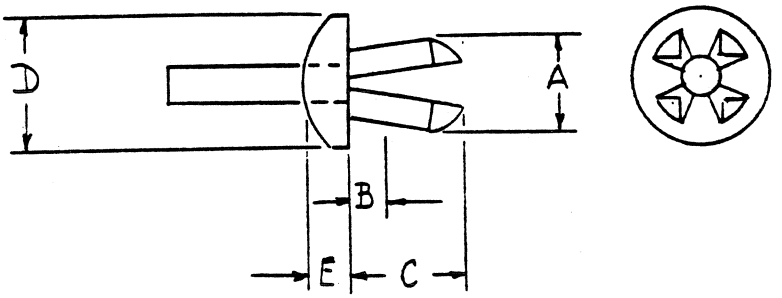
Ⓐ 1. Material: Rivet, 5056 Alum.; Stem, 2017 Alum.
2. Finish: Rivet, Std. Finish; Stem, Alodine #1000 Ⓑ
3. Lubrication Requirements: Rivet, None; Stem, Medium Aerospace Lube
4. RV66X253-8-8 Blind Rivets can only be installed with the RV8840-8 Ⓑ Pulling Head
5. Lbs. Pushout: 50 lbs. Minimum

COMPILED	JSJ	DATE DRAWN		Material	
APPROVED	Gebo	8-14-78		①	

CHANGE INFORMATION

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	90743	SW	9-5-8	3/16" TO 1/4" ADDED 1/4"
B	0075A	NR	5-20-81	2. CHG JEWEL TO STD.
B1	0075A	NR	5-20-81	XA 4258-8 TO RV66X253-8-8

ORIGINAL JOB NO.	TITLE	PART NO.
C1124	ONE PIECE-SELF EXPANDING BLIND PLASTIC RIVET	23-11146-
LAST CHG LTR		SHEET 1 OF 1



PART NUMBER	NOMINAL HOLE A	PANEL RANGE B	PRONG LENGTH C	HEAD STYLE	HEAD DIA. D	HEAD HEIGHT E	FREIGHTLINER P/N
201-120741-00	.187	.062-.187	.280-.310	BINDER	.437	.075	23-11146-001

ENGINEERING NOTES

1. MANUFACTURER - FASTEX - DES PLAINES, IL.
2. SUPPLIER - MODERN FASTENER - TEMPLE CITY, CA.

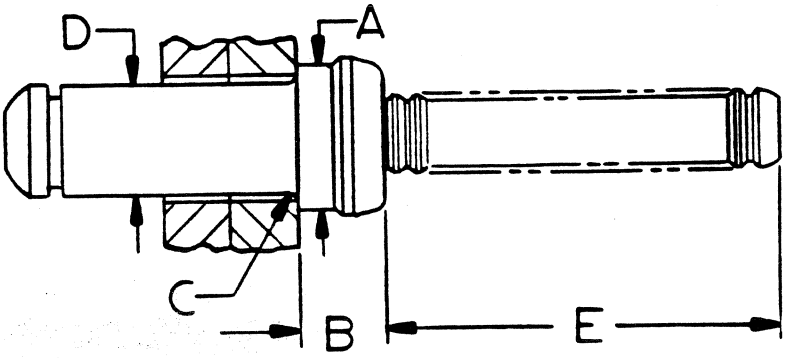
CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	TR

COMPILED	GEH	DATE DRAWN			
APPROVED	DRS	11/13/78			

ORIGINAL JOB NO.	TITLE	PART NO.
C1369	Blind Rivet 5/16" Structural, High Clamp	23-11172
LAST CHG LTR		SHEET 1 OF 1

Sketch



Part Number

Nom. Dia.	~~Group~~ Range	Manufacturers Part Number HBM		F/L Part #
5/16	.188-.312	BOM R10-4		23-11172-004
	.313-.437	-6		-006
	.438-.562	-8		-008
	.563-.687	-10		-010
	.688-.812	-12		-012
	.813-.937	-14		-014
	.938-1.062	-16		-016

Specifications

1. Dimensions; A = .478-.468, B = .266-.278; C(MAX) = .025; D = .346-.332
   E(MIN) = 1.280

2. Minimum Strengths; Shear = 8050
   Tensile = 5200
   Clamp = 2100

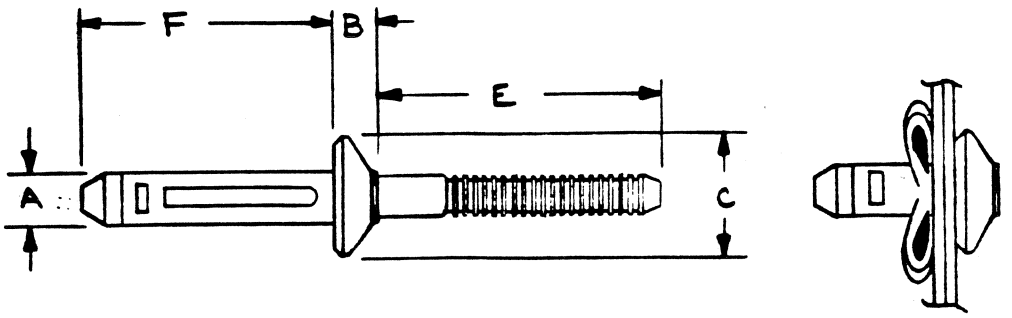
3. Hole Diameter; .348-.368

CHANGE INFORMATION	DATE	BY	JOB NO.

CHANGE INFORMATION	DATE	BY	JOB NO.

COMPILED	C BLAKEWOOD	DATE DRAWN		
APPROVED	G HADLEY	12-18-78		

ORIGINAL JOB NO.	TITLE	PART NO.
C1500D	RIVET, BLIND, DOME HEAD	23-11188
LAST CHG LTR: A		SHEET 1 OF 1



NOM. RIVET DIA.	B	C	A RIVET DIA.	E REF.	F REF.	RECOM. HOLE SIZE	RIVET COLOR & FINISH	MAX. REACH	FINISH GRIP RANGE	(OLY*) MFR'S NO.	F/L NO.
3/16	.088	.442	.205	.81	1.44	#4 DRILL .209	BLACK ALODINE	.750	.020 - .250	RV66X294 (A)	23-11188-001
							PLAIN			RV66X290 (A)	23-11188-002

* Bulb-Tite (low profile).

SPECIFICATIONS

1 **Material**: Rivet = 5056 ALUM; Stem = 2017 ALUM.
2 **Head** Style: Capable.
3 **Stem** Finish: Alodine 1000.
4 **Lubrication** Requirements: Rivet = None; Stem = Medium Aerospace **Lube**.
5 **Tools** Required: Rivets can be installed with the RV858B-6 or RB8840B-6 pulling heads.
6 Pushout Lbs. Required: 25 Lbs. Min.

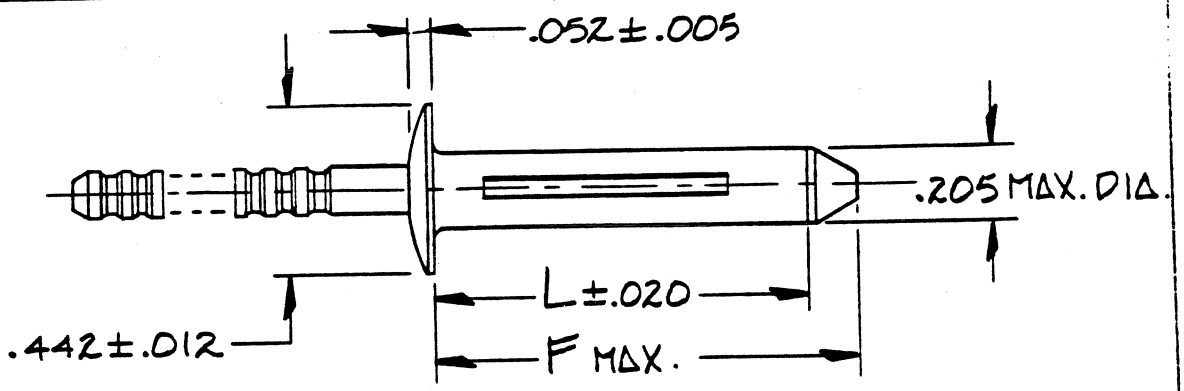
CHANGE INFORMATION	DATE	BY	JOB NO.	TR

CHANGE INFORMATION	DATE	BY	JOB NO.	TR
1. FROM RV66X290-B TO RV66X294-2 FROM RV66X290-P TO RV66X290	4-10-80	KRS	C1500D	

COMPILED	PD/KW	DATE DRAWN		MATERIAL	
APPROVED		8-8-79		1	

ORIGINAL JOB NO.	TITLE	PART NO.
C1456	RIVET, BLIND, THIN HEAD	23-11268
LAST CH. LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

DIA.	GRIP RANGE	L	F	MANUFACTURERS NUMBER		FREIGHTLINER NUMBER
				OLY		
3/16	.250/.500	1.000	1.185	RV6602-6-8C		23-11268-008

ENGINEERING NOTES

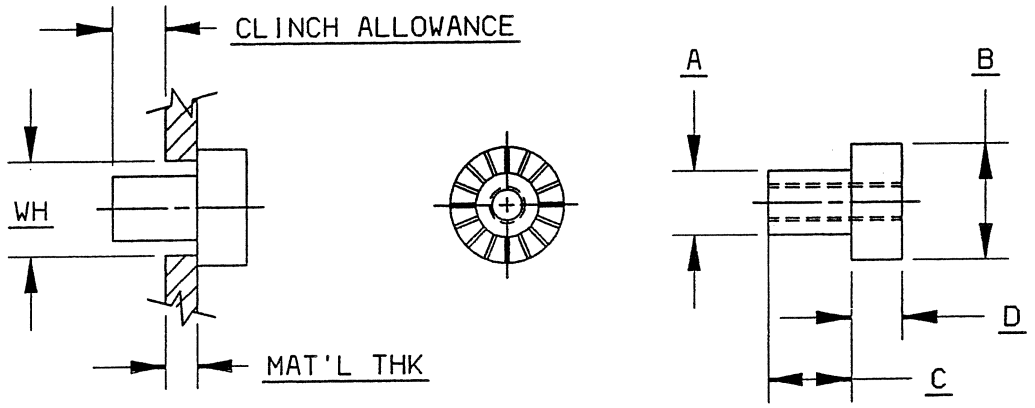
1. Hole Size: #4 (.209 dia.).
2. Material: Rivet - 5056 Aluminum
   Stem - 2017 Aluminum
3. Stem Breaks Flush at Minimum Grip, Below Head in Thicker Grips.

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

		DATE DRAWN			
COMPILED	JS	2-12-80			
APPROVED	GEH				

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET THREADED	23-11275	
DATE	08/08/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. K
CATIA ORIGINAL				



THREAD SIZE	DIMENSIONS					MAT'L THK	CLINCH ALLOW. MIN/MAX	MANUFACTURER ID/PART NO.	FREIGHTLINER PART NUMBER
	WH	A	B	D	C REF				
10-32	.257 .265	.247 .253	.399 .413	.128 .142	5/32	.023 .050	.106 .133	CRM / R6027X5/32 TWS / 1032-1000	23-11275-050
10-32					3/16	.055 .082		CRM / R6027X3/16 TWS / 1032-1000	23-11275-150
10-24	.257 .265	.247 .253	.399 .413	.128 .142	5/32	.023 .050	.106 .133	CRM / R6024X5/32 TWS / 1024-1000	23-11275-051
10-24					3/16	.055 .082		CRM / R6024X3/16 TWS / 1024-1000	23-11275-351
10-24					7/32	.086 .113		CRM / R6024X7/32 TWS / 1024-1000	23-11275-151
10-24					1/4	.117 .144		CRM / R6024X1/4 TWS / 1024-1000	23-11275-251
1/4-20	.338 .348	.325 .330	.465 .474	.182 .192	7/32	.044 .071	.148 .175	CRM / R6033X7/32 TWS / 2520-1000	23-11275-081
1/4-20					1/4	.075 .102		CRM / R6033X1/4 TWS / 2520-1000	23-11275-281
1/4-20					9/32	.106 .133		CRM / R6033X9/32 TWS / 2520-1000	23-11275-381
5/16-18	.432 .442	.419 .423	.525 .535	.240 .252	9/32	.057 .088	.193 .224	TWS / 3118-1000	23-11275-451

ENGINEERING NOTES:

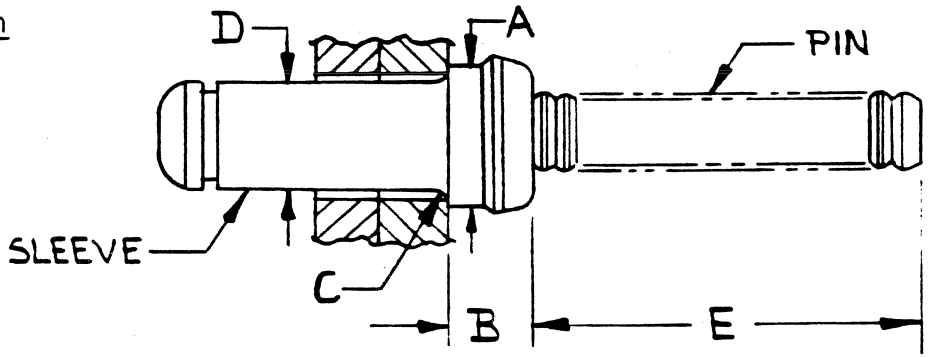
1. MATERIAL: STEEL-ZINC PLATE PER 49-00005-403
2. FINISH: YELLOW CHROMATE DIP THE -050 & -150 PER 49-00005-203
   TO AID SHOP IN DISTINGUISHING 10-32 FINE THREAD FROM 10-24.
3. .010" SERRATIONS NOT INCLUDED IN HEAD THICKNESS.
4. ALTERNATE: 23-11275-281 FOR 23-11275-081

K

CHG	JOB NO	DATE	BY	REVISION
J	PA2042-78	08/08/97	DAJ	REVISED AND REDRAWN IN CATIA, ADDED NOTE 3 & 4.
K	PA2042-84	06/01/98	DAJ	REVERSED THE ORDER OF PARTS IN NOTE 4.

ORIGINAL JOB NO.	TITLE	PART NO.
K0143	Blind Rivet 1/4" Structural, High Clamp	23-11483
LAST CHG LTR: A		SHEET 1 OF 1

Sketch



Part Number

Nom. Dia.	Grip Range	Manufacturers Part Number HBM		Freightliner Part Number
1/4	.093-.156	BOM R8-2		23-11483-002
	.157-.219	-3		-003
	.220-.281	-4U		-004
	.282-.344	-5		-005
	.345-.406	-6		-006
	.407-.469	-7		-007
	.470-.531	-8		-008
	.532-.594	-9		-009
	.595-.656	-10		-010
	.657-.719	-11		-011
	.720-.781	-12		-012

Specifications

1. Dimensions: A = .380-.368, B = .205-.225, C (MAX) = .020, D = .275-.262
   E (MIN) = .860

2. Minimum Strengths: Shear = 5100
   Tensile = 3250
   Clamp =

3. Hole Diameter: .277-.292

4. Sleeve Material: Carbon Steel
   Finish: Zink plating per spec. ASTM A164 type RS

5. Pin Material: Alloy Steel
   Finish: None

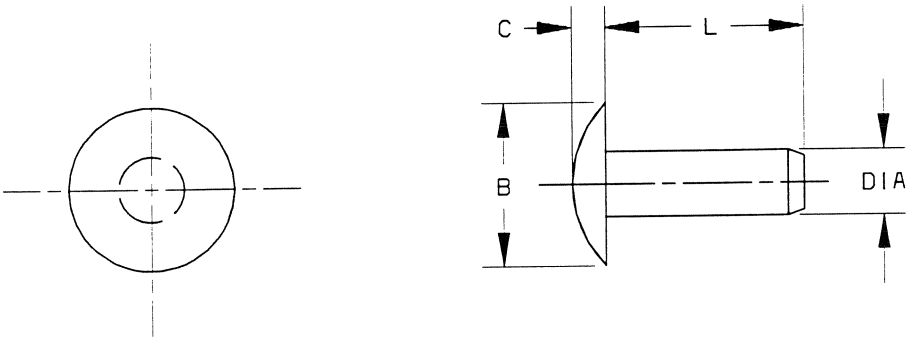
CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR
BOM R8-4 TO R8-4U	3-13-84	CJ	K0178	A

COMPILED	RLD	DATE DRAWN			
APPROVED		8-10-83			

M/F

DRAWN	LFB	TITLE RIVET-BRAZIER HEAD ALUMINUM, MODIFIED	DRAWING NUMBER 23-11634
APPRV	DAJ		
DATE	10/28/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



NOM. SIZE		B HEAD DIA	C HEAD HEIGHT	PCS PER POUND	GRIP RANGE	MANUFACTURER'S PART NUMBER ARMY/NAVY SPEC	FREIGHTLINER PART NUMBER*
DIA.	LENGTH						
1/4	3/8	.468	.094	-	.104/.175	AN 456AD8-6	23-11634-806
1/4	7/16	.468	.094	292	.176/.216	AN 456AD8-7	23-11634-807
1/4	1/2	.468	.094	269	.217/.265	AN 456AD8-8	23-11634-808
1/4	9/16	.468	.094	250	.266/.339	AN 456AD8-9	23-11634-809
1/4	5/8	.468	.094	233	.340/.385	AN 456AD8-10	23-11634-810
1/4	3/4	.468	.094	205	.446/.491	AN 456AD8-12	23-11634-812

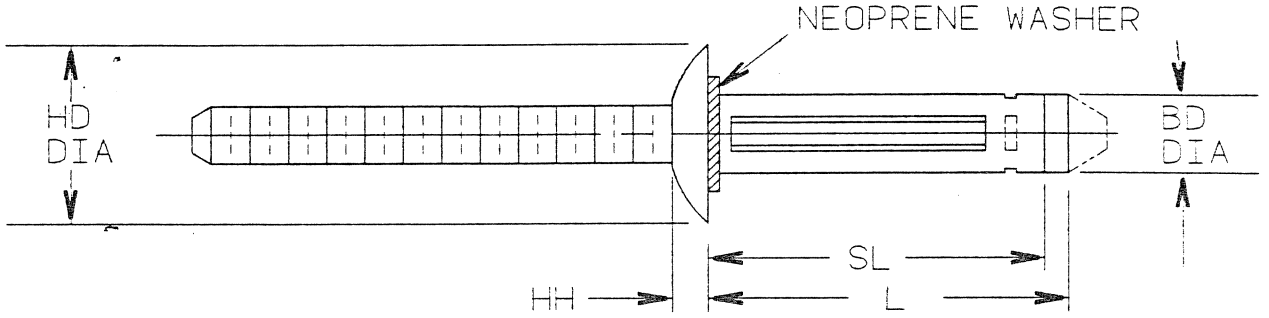
* DASH NUMBER EXPRESSES DIAMETER IN 32ND'S (FIRST DIGIT) AND LENGTH IN 16TH'S (LAST TWO DIGITS)

ENGINEERING NOTES:

1. THIS IS A MODIFIED SOLID RIVET WITH A 3/16 STYLE BRAZIER HEAD AND A 1/4 DIAMETER SHANK TO BE USED IN OVERSIZE HOLES.
2. MATERIAL: ALUMINUM ALLOY 1100-F.

CHG	JOB NO	DATE	BY	REVISION
C	PA2042-97	10/28/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED GRIP RANGE.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	RIVET, BLIND	23-11675
DATE	08/30/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM DIA	BD MAX	SL ± .020	HD DIA	HH	L MAX	GRIP RANGE	HOLE SIZE	MANUFACTURER'S NUMBER OLY	FREIGHTLINER PART NUMBER
3/16	.205	.875	.446 TO .492	.089 TO .099	.938 MAX	.100 TO .287	#4 .209	RV66X323W (5)	23-11675-601
3/16	.205	1.000	.446 TO .492	.089 TO .099	1.185	.050 TO .500	#4 .209	RV66X324-6-8W (6) RV6607-6-8W NEW	23-11675-602
3/16	.205	1.250	.446 TO .492	.089 TO .099	1.435	.050 TO .750	#4 .209	RV66X324-6-12W (6)	23-11675-603

ENGINEERING NOTES:

(1) MATERIAL: RIVET, 5056 (56S) ALUM; STEM, 2017 (17ST) ALUM; WASHER SEAL, NEOPRENE.

2. FINISH: RIVET, NONE; STEM, ALODINE #1000

3. SURFACE COATING: NO LUBRICATION ON THE SLEEVE, LUBRICATION ON THE STEM ONLY

4. TOOLING: RV66X323 SERIES BLIND RIVETS CAN ONLY BE INSTALLED WITH THE RV958S PULLING HEAD. RV66X324 SERIES BLIND RIVETS CAN BE INSTALLED WITH EITHER THE RV958S, OR PREFERED RV355-5, RV3355-5 PULLING HEADS.

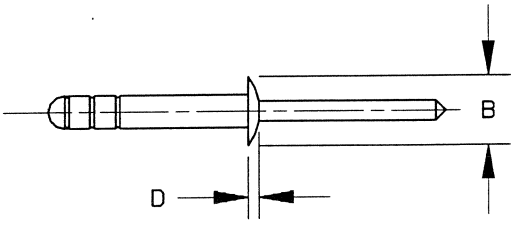
(5) RIVET HEAD IS SWAGED AT THE STEM TO SEAL IT & STEMS WILL BREAK FLUSH WITH THE TOP OF RIVET HEAD ±1/32"

(6) STEMS WILL BREAK APPROXIMATELY 1/16" ABOVE RIVET HEAD WHEN INSTALLED IN MAXIMUM GRIP & MUST BE GROUND FLUSH WHEN USED IN VISIBLE PLACES TO RESEMBLE A BRAZIER HEAD RIVET.

7. THE -602 &-603 CAN BE USED INTERCHANGEABLY WITH -601 & ARE MOST COMMONLY USED FOR SALES AND SERVICE WORK USING STANDARD BLIND RIVET TOOLS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	341316-91	08/30/88	PCK	REDRAWN/DOCUMENTED. ADDED -603
C	P5525G-01	09/25/90	SJT	REVISED MANUFACTURER'S NUMBERS.

DRAWN	BT	TITLE	DRAWING NUMBER	
APPRV	DEGG	RIVET-BREAKSTEM BLIND LO-PRO STAINLESS STEEL STEM	23-11690	
DATE	09/13/84	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. D
CATIA ORIGINAL				



PART NUMBERS

A DIA.	HOLE SIZE	GRIP RANGE	D	B DIA.	L	MANUFACTURER'S PART NUMBER	FREIGHTLINER PART NUMBER
.188	.199	.062 TO .250	.061	.394	.418	AV: 1663-0613 ORNIT: UN48103D POP: AD62-64SSBS	23-11690-000
.188	.199	.187 TO .457	.061	.394	.606	AV: 1663-0619 ORNIT: UN48151D POP: AD63-66SSBS	23-11690-001
.188	.199	.500 TO .781	.060	.394	.976	AV: 1663-0631	23-11690-002

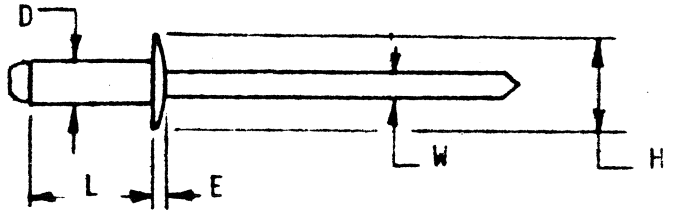
ENGINEERING NOTES:

1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. MATERIAL:BODY-5052 AL ALLOY
   STEM-STAINLESS STEEL
3. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
B	PA2042-70	06/18/96	FHC	REVISED AND REDRAWN. ADDED POP PART NUMBERS.
C	PA2042-76	12/20/96	DAJ	ADDED ORNIT AS AN APPROVED SUPPLIER.
D	PA2042-98	11/19/99	LFB	ADDED SOLID. CORRECTED TEXT THICKNESS.

ORIGINAL JOB NO.	TITLE	PART NO.
L0204	RIVET, BLIND 5/32	23-11716
LAST CHG LTR		SHEET 1 OF 1

SKETCH (CHERRY N RIVET)



PART NUMBERS

D	GRIP RANGE	HOLE SIZE	E	L	H	W	MFR P/N TWS	FREIGHTLINER PART NO.
5/32	.126/ .250	.160/ .164	.045	.425	.312	.095	CCP-54	23-11716-001

ENGINEERING NOTES

(1) MATERIAL: RIVET.....STAINLESS STEEL (300 SERIES)
STEM .....STAINLESS STEEL (300 SERIES)

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

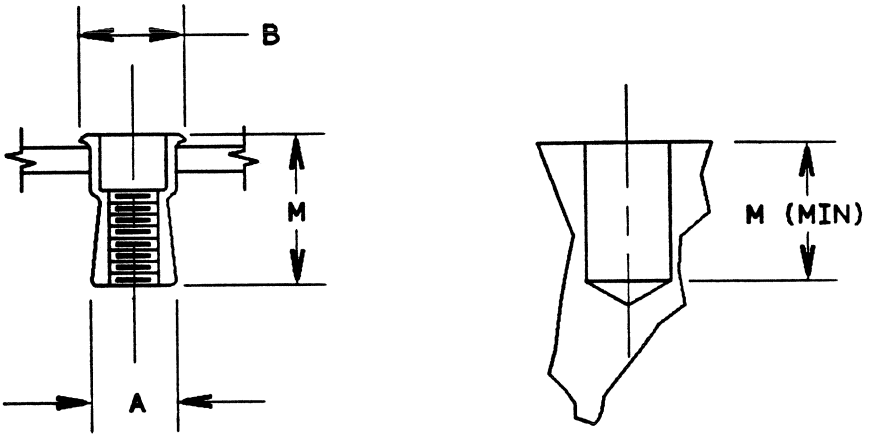
COMPILED	KRH	DATE DRAWN		MATERIAL	MASTER NUMBER	
APPROVED	KRH	1-31-85		(1)	02180	000D1

FREIGHTLINER CORPORATION
Oregon 97208

GENERAL USE PART

ORIGINAL JOB NO.	TITLE	PART NO.
1011D	RIVET, THREADED SUPERSERT	23-11775
LAST CHG LTR		SHEET 1 OF 1

SKETCH:



PART NUMBERS:

THREAD SIZE	HOLE DIA.	A DIM.	B DIM.	M DIM.	WT. PER 1000	MANUF. NO. AV	FREIGHTLINER PART NUMBER
8-32 UNC	.257-.265	.250 (MAX)	.274 (MAX)	.455 (MAX)	2.27 LB	FB05-0814	23-11775-508
10-24 UNC	.288-.298	.281- (MAX)	.309- (MAX)	.455 (MAX)	2.99 LB	FB05-1014	23-11775-510
10-32 UNC	.288-.298	.281- (MAX)	.309- (MAX)	.455 (MAX)	2.86 LB	FB07-1014	23-11775-710
1/4-20	.383-.395	.375- (MAX)	.404- (MAX)	.525 (MAX)	5.26 LB	FB04-0816	23-11775-408

NOTE: NON-GRIP SENSITIVITY; IE, ONE LENGTH SUPERSERT INSERT IN ANY AVAILABLE THREAD SIZE WILL FUNCTION IN ALL MATERIAL THICKMESSES FROM .031".

SPECIFICATIONS:

MATERIAL: LOW CARBON STEEL.

FINISH: ZINC PLATED, PASSIVATED.

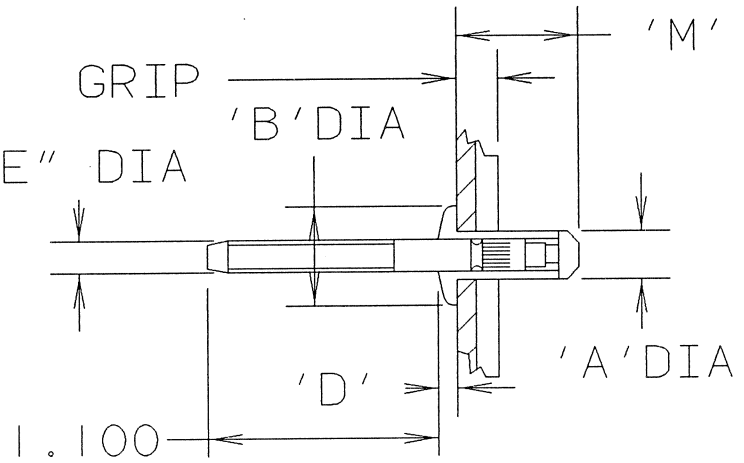
UNITS: INCHES

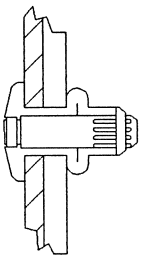
COMPILED	RDS	DATE DRAWN	CADAM ORIGINAL	UNIT OF MEASURE	MASTER NUMBER	
APPROVED	SEE	10-10-85		EA	02060	000D1

CHANGE INFORMATION | LTR | JOB NO. | BY | DATE

CHANGE INFORMATION | LTR | JOB NO. | BY | DATE

DRAWN	DWP	TITLE	ITEM NUMBER
APPRV	NER	RIVET-BLIND, PROTRUDING HEAD STRUCTURAL, BULB TYPE	23-11857
DATE	07/29/87	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1





INSTALLED FASTENER

	MATERIAL	FINISH
BODY AND STEM	CARBON STEEL	ZINC PLATED AND PASSIVATED EXCEPT AS NOTED

SIZE	MANUFACTURER'S PART NUMBER HUCK	GRIP RANGE	LENGTH 'M' MAX	*SINGLE SHEAR MIN.	FREIGHTLINER PART NO.
1/4"	MBCP-R8-M3	.110-.189	.627	3600 LBS F	23-11857-000
	MBCP-R8-M4	.150-.229	.700	3600 LBS F	-007
	MBCP-R8-M5	.189-.268	.706	3600 LBS F	-001
	MBCP-R8-M6BL	.229-.306	.746	3600 LBS F	-006 (2)
	MBCP-R8-M7	.268-.346	.785	3600 LBS F	-002
	MBCP-R8-M9	.346-.425	.864	3600 LBS F	-003
	MBCP-R8-M11	.425-.504	.943	3600 LBS F	-004
	MBCP-R8-M13	.504-.583	1.022	3600 LBS F	-005

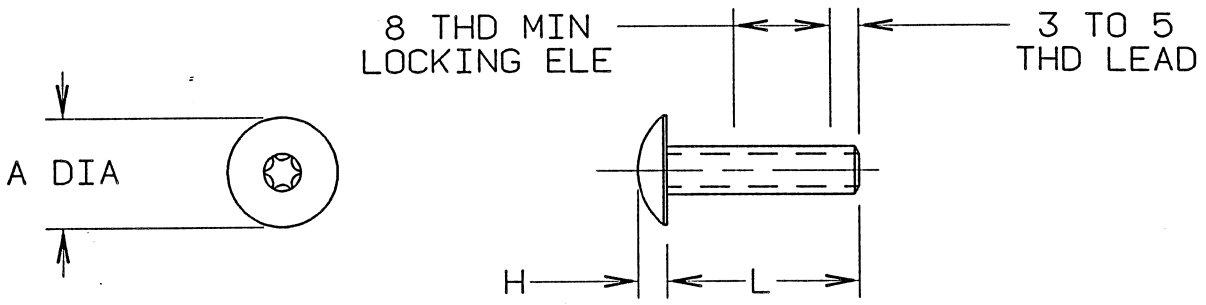
SIZE	'A' DIA	'B' DIA	'D'	'E' MAX	RECOM-MENDED HOLE SIZE	*MIN ULT TENSILE
1/4"	.253-.2570	.505-.525	.094-.122	.167	.261-.272	1700 LBS F

NOTES 1. *SINGLE SHEAR AMD ULTIMATE TENSILE STRENGTHS QUOTED RELATE TO NOMINAL HOLE DIAMETER AND MAXIMUM SHEET THICKNESS.

(2) PART -006 INCLUDES ZINC PLATED AND PASSIVATED FINISH WITH BLACK CHROMATE.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PA2024-65	02/15/91	SJT	REVISED "M" DIMENSIONS. CORRECTED HUCK NUMBERS.
D	P2A220-35	11/21/94	DAJ	ADDED -005.
E	P2A220-50	02/13/95	DAJ	ADDED -006, DROPPED AVDEL P/N & DIM 1.100 WAS 1.200
F	P2A220-C5	11/16/95	DAJ	ADDED -007, ADDED BL TO VENDOR NUMBER ON -006
G	P2A220-C0	12/14/95	DAJ	REVISED GRIP RANGE TO .229-.306 FROM .288-.306

DRAWN	RJN	TITLE	ITEM NUMBER
APPRV	PWS	SCREW, TRUSS HEAD, INTERNAL TORX STAINLESS, LOCKING	23-12011
DATE	05/23/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD	TORX RECESS	A MAX	H MAX	L LENGTH	FREIGHTLINER PART NUMBER
1/4-20 UNC	T27	.573	.150	.750	23-12011-075
1/4-20 UNC	T27	.573	.150	1.000	23-12011-100
1/4-20 UNC	T27	.573	.150	1.500	23-12011-150
1/4-20 UNC	T27	.573	.150	1.750	23-12011-175 (1)
1/4-20 UNC	T27	.573	.150	2.000	23-12011-200 (1)
1/4-20 UNC	T27	.573	.150	2.500	23-12011-250
5/16-18 UNC	T40	.698	.183	.750	23-12096-075
5/16-18 UNC	T40	.698	.183	1.000	23-12096-100
5/16-18 UNC	T40	.698	.183	1.250	23-12096-125
5/16-18 UNC	T40	.698	.183	4.000	23-12096-400 (1)

ENGINEERING NOTES:

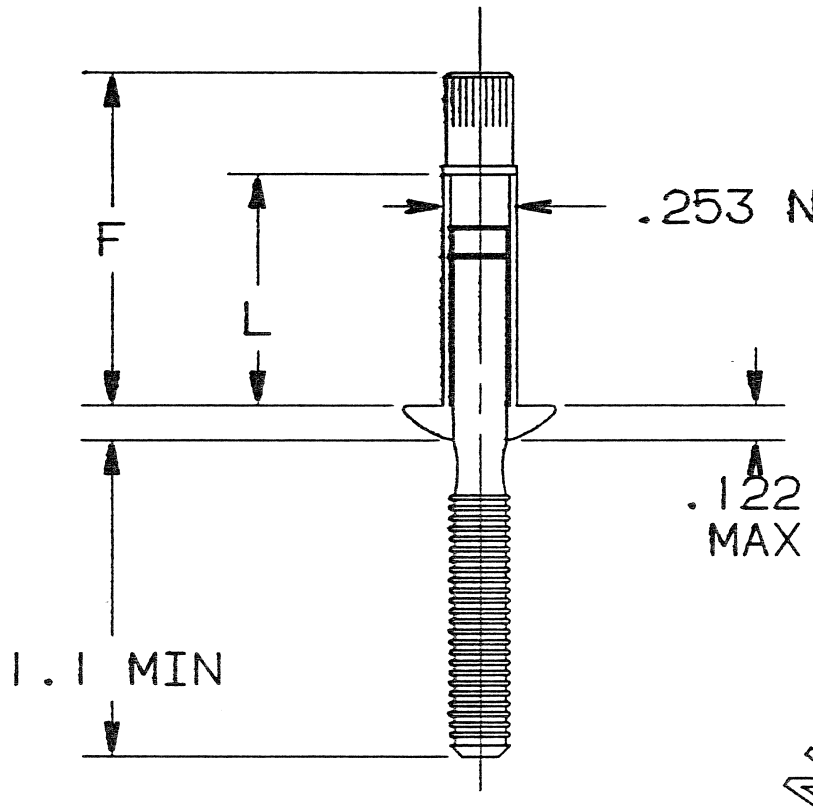
MATERIAL: STAINLESS STEEL PER ASTM F593, GROUP 1, CONDITION CW.
FINISH: PLAIN
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: PER CAMCAR STANDARD TXH-206.

LOCKING ELEMENT TO CONSIST OF NYLON PATCH APPLIED TO THREADS IN AREA SPECIFIED. MAINTAIN CLEAR LEAD AS SHOWN. PERFORMANCE TO MEET IFI STANDARD 124.

(1) LOCKING ELEMENT LENGTH = L-.500±.188

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P2A250-06	01/24/94	ERK	ADDED 23-12096-100
D	P2A242-38	05/05/95	ERK	ADDED 23-12096-075
E	P2A224-02	05/17/95	DAJ	ADDED 23-12011-100
F	P2A182-28	10/11/95	JAV	ADDED 23-12096-400
G	P2A182-29	10/26/95	DAJ	ADDED LOCKING ELEMENT NOTE DELTA 1.

DRAWN	DEM	TITLE	ITEM NUMBER
APPRV	RDF	RIVET, BLIND, 1/4, MAGNA-BULB PROTRUDING HEAD	23-12052
DATE	08-29-89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NON-PREFERRED-
USE 23-11857

HUCK PART NUMBER	MIN. GRIP	MAX. GRIP	"L" MAX	"F" MAX	HOLE SIZE	F/L PART NO.
HBM MBP-R8-7	.320	.400	.805	1.160	.261/.272	23-12052-001

MATERIAL: BODY AISI 1006, STEM AISI 10B22

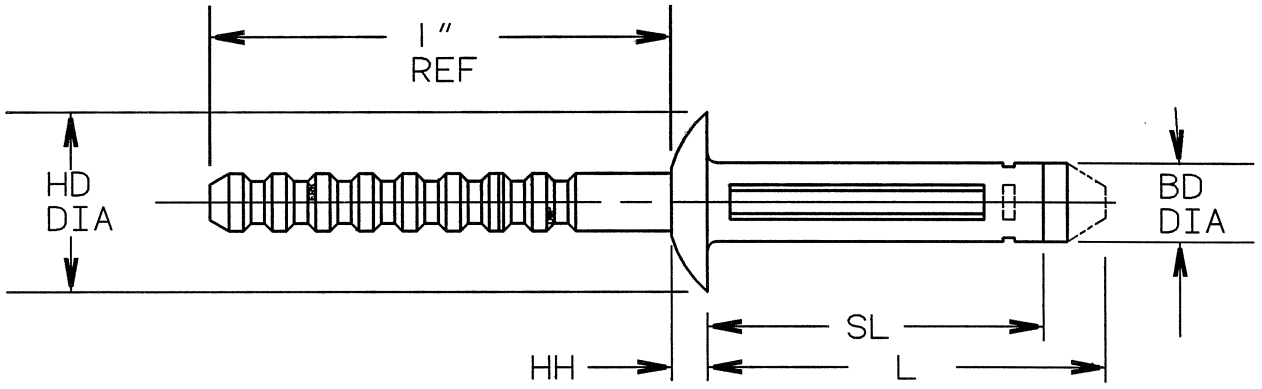
PROPERTIES: TENSILE 2000 LBS, SHEAR 3500 LBS

FINISH: ZINC AND YELLOW DICHROMATE PER FREIGHTLINER SPECIFICATION 49-00005-203

LUBRICATION: NONE

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P1575F-01	08/28/89	RDF	DOCUMENTED

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	DWP	RIVET-BLIND, AL BULB TITE	23-12154
DATE	07/20/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



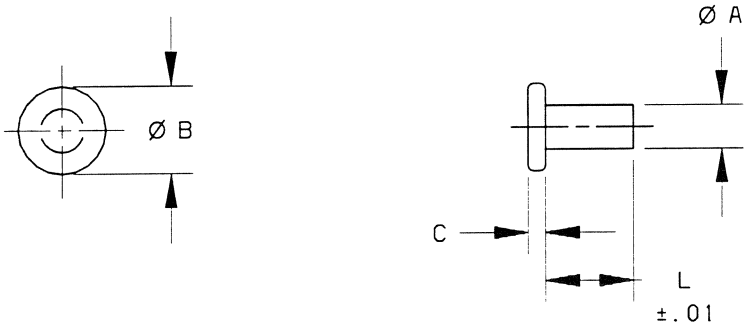
NOM DIA	BD MAX	SL ± .020	HD DIA	HH	L MAX	GRIP RANGE	HOLE SIZE	MANUFACTURER'S NUMBER OLY	FREIGHTLINER PART NUMBER
3/16	.205	.750	.430 TO .455	.047 TO .057	.935	.125 TO .250	#4 .209	RV6602-6-4	23-12154-601

ENGINEERING NOTES:

1. MATERIAL: RIVET, 5056 (56S) ALUM; STEM, 2017 (17ST) ALUM;
2. FINISH: RIVET, NONE; STEM, NONE
3. STEM BREAKS FLUSH WHEN INSTALLED IN MIN. GRIP AND WILL BREAK BELOW THE RIVET HEAD IN THICKER GRIPS.
4. TOOLING: INSTALL WITH RV355-5 PULLING HEAD.
5. MINIMUM LBS. PUSHOUT REQUIRED: 25 LBS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P3709H-03	07/20/93	ERK	INITIAL RELEASE

DRAWN	LFB	TITLE RIVET-ALUMINUM FLATHEAD, SOLID	DRAWING NUMBER 23-12155
APPRV	DAJ		
DATE	11/01/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. A
CATIA ORIGINAL			



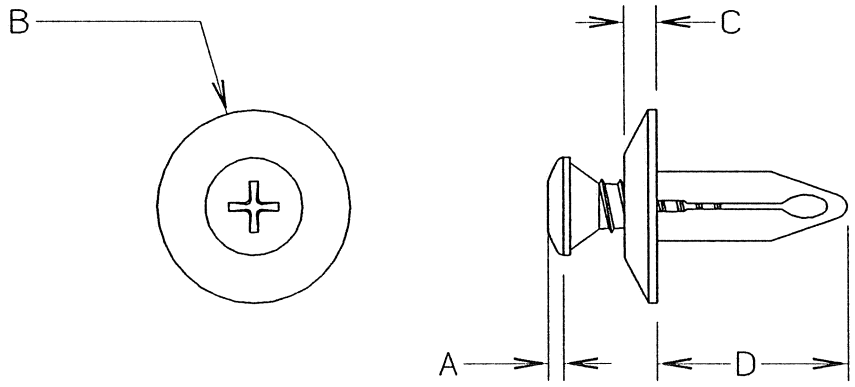
NOM. SIZE	A DIA	B	C	GRIP RANGE	L LENGTH	FREIGHTLINER PART NUMBER*
1/8	.125	.250	.050	.095/.130	.250	23-12155-401

ENGINEERING NOTES:

1. MATERIAL: ALUMINUM ALLOY 2117 T4.
2. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. RIVETS SHALL CONFORM WITH ANSI B18.1.1 OR AN-442 FOR FLAT HEAD RIVETS.

CHG	JOB NO	DATE	BY	REVISION
A	PA2042-97	11/01/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED GRIP RANGE.

DRAWN	ERK	TITLE PANEL FASTENER SCREW TYPE, CROSS RECESS	ITEM NUMBER 23-12164
APPRV	NZ		
DATE	10/26/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



HOLE DIA. (IN)	PANEL RANGE (IN)	A (IN)	B (IN)	C (IN)	D (IN)	MFR NUMBER		FREIGHTLINER PART NUMBER
						PHILLIPS	ARDEN	
.248-.258	.098-.236	.030	.700	.118	.689		08-85007	23-12164-001
.228	.177-.295	.098	.433	.059	.787	M60-0580-06		-002

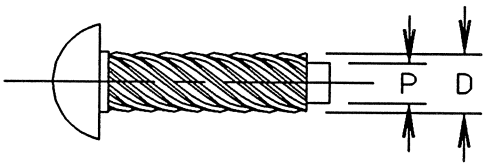
A

GENERAL INFORMATION:

1. MATERIAL: PLASTIC
2. COLOR: BLACK.
3. HEAD STYLE: CROSS RECESS
4. DIMENSIONS LISTED ARE NOMINAL.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P8631E-09	10/26/93	ERK	INITIAL RELEASE
A	PM0609-01	12/13/94	DAJ	ADDED -002

DRAWN	DAJ	TITLE DRIVE SCREW ROUND HEAD, U DRIVE	ITEM NUMBER 23-12188
APPRV	ERK		
DATE	08/26/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & LENGTH	D OUTSIDE DIA	P PILOT DIA	HOLE DIAMETER	KANEBRIDGE PART NUMBERS	FREIGHTLINER PART NUMBERS*
6 X 3/8	.140	.116	.120	-	23-10138-038
10 X 5/8	.182	.150	.161	1010U	23-12188-105

ENGINEERING NOTES:

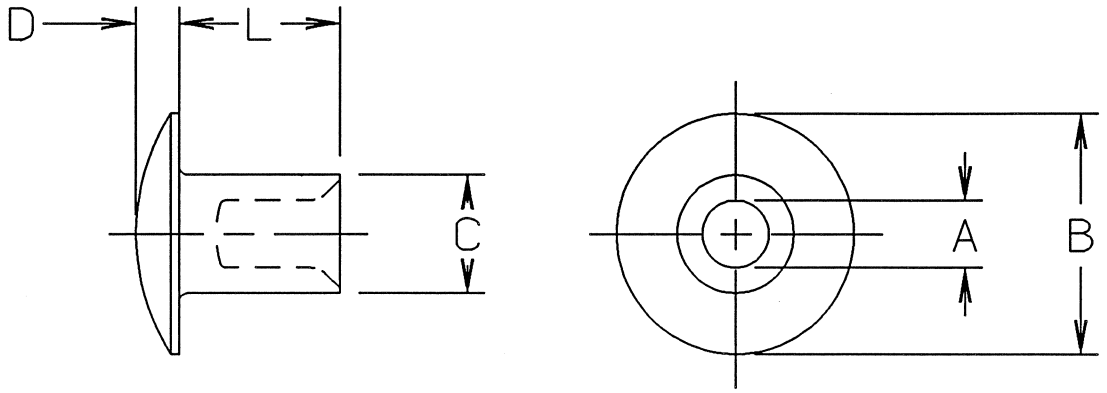
MATERIAL: HARDENED STEEL

FINISH: ZINC PLATE

DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P1942J-01	08/26/94	DAJ	INITIAL LOAD
A	PA2042-63	02/12/96	ERK	CHARTED 23-10138-038

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	RIVET-HENROB BRAZER HEAD	23-12207
DATE	01/26/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



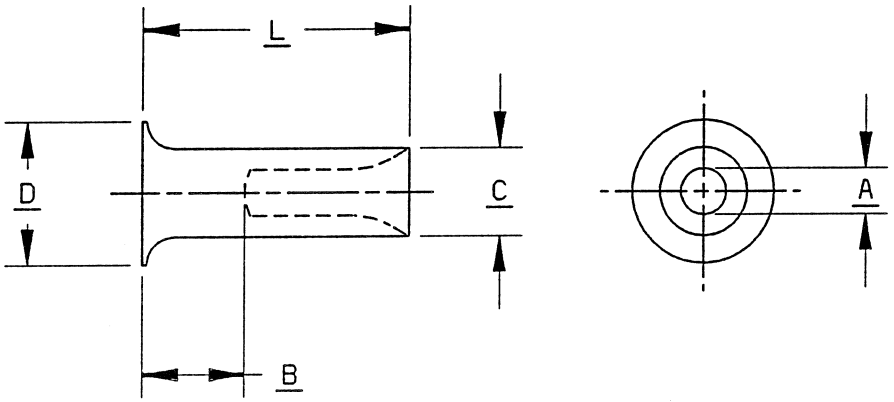
	DIMENSION						GRIP RANGE	VEN NUM		FREIGTHLINER PART NUMBER
	A	B	C	D	E	L		HENROB	TYPE	
A	2.7	9.4/9.7	4.75	2.2	5.0	6.5	2.9-4.3	KA0D44GH05/NAP	C	23-12207-000
B								KA0D44GH05/K04	S	23-12207-100

ENGINEERING NOTES:

1. MATERIAL: BORON STEEL
2. FINISH: ZINC/TIN CO-DEPOSIT MECHANICAL PLATING, SUPER PASSIVATION.
3. TYPE INDICATES C FOR CASSETTE (MANUAL TOOL) OR S FOR SPOOL (ROBOT TOOL). B

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-46	01/26/95	DAJ	INITIAL LOAD
A	PA2137-44	05/12/95	DAJ	REVISED DIMENSION "D". MFG P/N WAS KA0D44GZ04.
B	P2A220-C0	12/14/95	DAJ	ADDED THE -100 PART AND THE PROCESS INDICATOR/NOTE.
C	P00482-02	09/18/96	JCT	REVISED FINISH NOTE AND MFG'S PART NUMBERS.

DRAWN	DAJ	TITLE RIVET-HENROB C/S HEAD	DRAWING NUMBER 23-12208
APPRV	DAJ		
DATE	01/29/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. D
CATIA ORIGINAL			



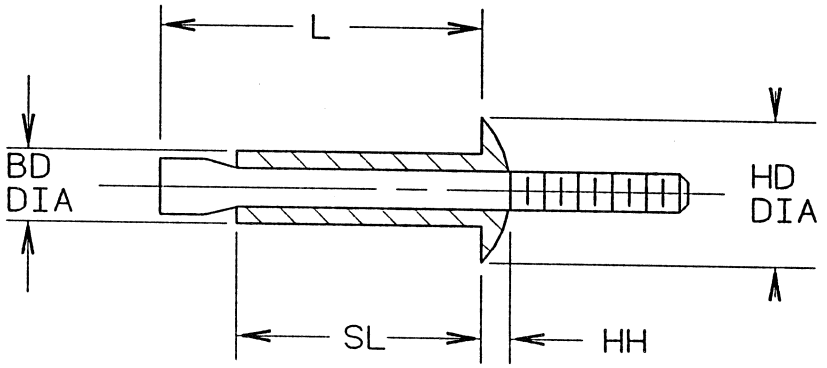
DIMENSIONS					GRIP RANGE	VENDOR/PN		FREIGHTLINER PART NUMBER
A	B	C	D	L		HENROB	TYPE	
3.2	3.0	5.30	7.75	9.0	5.5	K50944AH05/BCG	C	23-12208-000
						K50944AH05/ZC4	S	23-12208-100
3.5	1.0	5.30	7.75	6.5	3.2-6.0	C50D44AH05/BCE	C	23-12208-001
						C50D44AH05/ZCS	S	23-12208-101
3.2	4.0	5.30	7.75	10.0	6.0-7.0	K51044AH05/BCV	C	23-12208-002
						K51044AH05/ZD4	S	23-12208-102
D 3.2	3.0	5.30	7.75	8.0	5	K50844AY04/C05	S	23-12208-103

ENGINEERING NOTES:

1. MATERIAL: BORON STEEL
2. FINISH: ZINC/TIN CO-DEPOSIT MECHANICAL PLATING, SUPER PASSIVATION
3. TYPE INDICATES C FOR CASSETTE (MANUAL TOOL) AND S FOR SPOOL (ROBOT TOOL)

CHG	JOB NO	DATE	BY	REVISION
C	P2D220-C1	01/29/98	DAJ	REVISED AND REDRAWN IN CATIA, ADDED -002.
D	PA2042-83	03/02/98	DAJ	K50844AY04/C05 WAS K50844A401/C05.

DRAWN	DAJ	TITLE MONOBOLT/MAGNA-LOK PROTRUDING HEAD	ITEM NUMBER 23-12211
APPRV	ERK		
DATE	02/06/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBERS:

	NOM DIA	BD DIA	SL	HD DIA	HH	L MAX	GRIP RANGE	HOLE SIZE	MANUFACTURER'S NUMBER HBM MAGNA-LOK	FREIGHTLINER PART NUMBER
	3/16	.186 TO .1905	.400 TO .415	.360 TO .395	.067 TO .095	.716	.064 TO .270	.193 TO .201	UMGLP-B6-4	23-12211-000
A C	1/4	.2546 TO .2570	.544 TO .560	.500 TO .525	.096 TO .127	.970	.080 TO .375	.261 TO .272	UMGLP-B8-6 ALT P/N MGLP-B8-6	-100
B C	1/4	.253	.810	.525	.117	1.220	.350 TO .625	.261 TO .272	UMGLP-B8-10 ALT P/N MGLP-B8-10	-101

ENGINEERING NOTES:

1 MATERIAL: ALUMINIUM

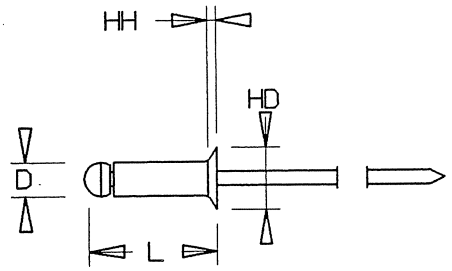
2. FOR 3/16" MONOBOLT/MAGNALOK: MINIMUM SHEAR STRENGTH 700 LBS.
MINIMUM TENSILE STRENGTH 500 LBS.

3. FOR 1/4" MONOBOLT/MAGNALOK: MINIMUM SHEAR STRENGTH 1300 LBS.
MINIMUM TENSILE STRENGTH 890 LBS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-46	02/06/95	DAJ	INITIAL LOAD
A	P2A230-39	06/12/95	ERK	ADDED -100
B	P02829-13	07/28/97	PTF	ADDED -101
C	P02211-26	03/03/98	PTF	ADDED ALTERNATE P/N FOR -100 & -101

ADRIENNE CHILBERG

DRAWN	JCT	TITLE	DRAWING NUMBER
APPRV	DAJ	RIVET - BLIND 120° COUNTERSUNK	23-12218
DATE	02/10/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



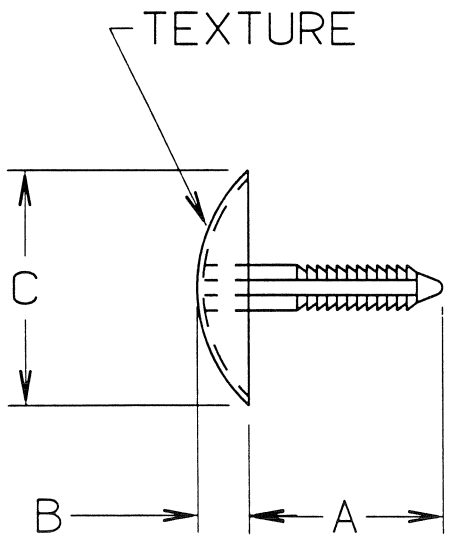
NOM. DIA.	DIMENSIONS (NOM.)				GRIP RANGE	HOLE SIZE	STRENGTH (TYP.)		FREIGHTLINER PART NUMBER
	D	HD	HH	L			SHEAR	TENSILE	
5/32	.156	.281	.040 REF.	.690 MAX.	.251-.375	.160-.164	320	450	23-12218-005

ENGINEERING NOTES:

1. MATERIAL: SLEEVE-5052 ALUMINUM
   MANDREL-STEEL
2. APPROVED SUPPLIERS: HUCK OR ENGINEERING APPROVED EQUIVALENT

CHG	JOB NO	DATE	BY	REVISION
-	P01170-04	2/10/97	JCT	INITIAL LOAD

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	RETAINER-NYLON TEXTURED	23-12235
DATE	04/27/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



DIMENSIONS			TEXTURE	HOLE DIA	PNL THK	SOURCE		FREIGHTLINER PART NUMBER
A	B	C				MFG	PART#	
1.060	.100	.700	TEN-1141	.250	.800-.110	ARDEN	05-52767	23-12235-000
.820	.100	1.00	MATTE	.406	.565-.115	ARDEN	N1-00161	23-12235-001
1.060	.100	.700	TEN-1141	.250	.800-.110	ARDEN	05-52767	23-12235-002
.820	.100	1.00	MATTE	.406	.565-.115	ARDEN	N1-00161	23-12235-003

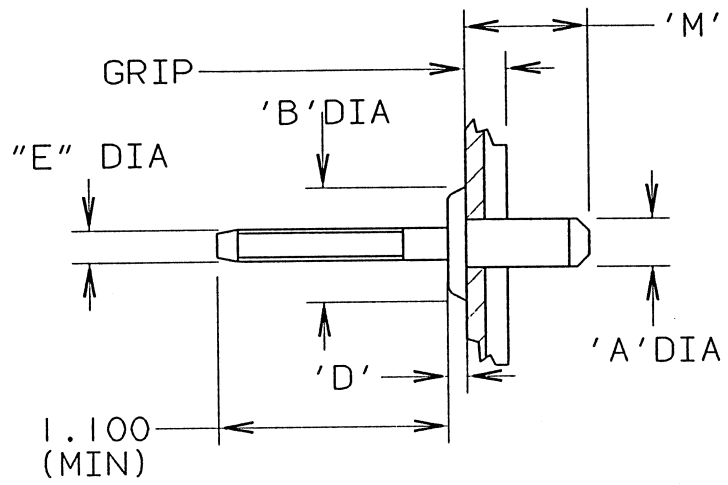
A

ENGINEERING NOTES:

1. MATERIAL -------- NYLON
2. COLOR -000 & -001 SHADOW GRAY PER 49-00091-002.
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
4. EQUIVALENT ACCEPTABLE WITH ENGINEERING APPROVAL.
5. COLOR -002 AND -003 SAHARA TAUPE PER 49-00091-017.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-65	04/27/95	DAJ	INITIAL LOAD
A	P9174H-01	04/17/96	W S	ADDED -001
B	P04977-29	09/10/99	JCT	ADDED -002, -003

DRAWN	ERK	TITLE RIVET - BLIND BREAKSTEM, AVEX	ITEM NUMBER 23-12252
APPRV	TAL		
DATE	05/24/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



COMPONENT	MATERIAL	FINISH
BODY	ALUMINUM ALLOY	N/A
STEM	CARBON STEEL	ZINC YELLOW CHROMATE

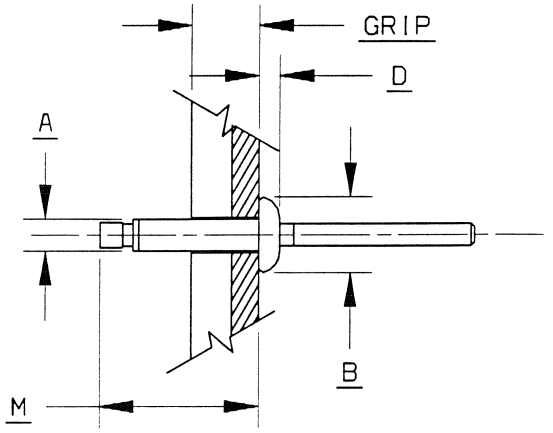
SIZE	MANUFACTURER'S PART NUMBER AV	GRIP RANGE	LENGTH 'M' MAX	*SINGLE SHEAR MIN.	FREIGHTLINER PART NO.
1/4"	1610-4506	.080-.350	.675	460 LBF	23-12252-001

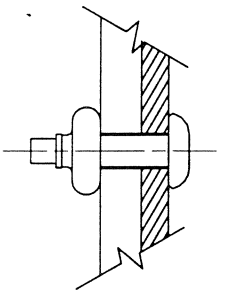
SIZE	'A' DIA	'B' DIA	'D'	'E' MAX	RECOM-MENDED HOLE SIZE	*MIN ULT TENSILE
1/4"	.250- .260	.500- .530	.095- .105	.157	.261- .275	560 LBS F

NOTES 1. *SINGLE SHEAR AND ULTIMATE TENSILE STRENGTHS QUOTED RELATE TO NOMINAL HOLE DIAMETER AND MAXIMUM SHEET THICKNESS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A242-45	05/24/95	ERK	INITIAL RELEASE

DRAWN	SBM	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-BLIND, PROTRUDING HEAD STRUCTURAL, HEAD	23-12265	
DATE	07/21/95			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. C





INSTALLED

	MATERIAL	FINISH
BODY AND STEM	CARBON STEEL	ZINC PLATED AND PASSIVATED

	SIZE	MANUFACTURER'S PART NUMBER HUCK	GRIP RANGE	LENGTH 'M' MAX	*SINGLE SHEAR MIN.	FREIGHTLINER PART NUMBER
C	3/16	MBP-R6-M4	.126-.189	.705	1700 LBS F	23-12265-000
		MBP-R6-M5	.165-.228	.744	1700 LBS F	23-12265-001
		MBP-R6-M6	.205-.268	.784	1700 LBS F	23-12265-002
		MBP-R6-M7	.244-.307	.823	1700 LBS F	23-12265-003

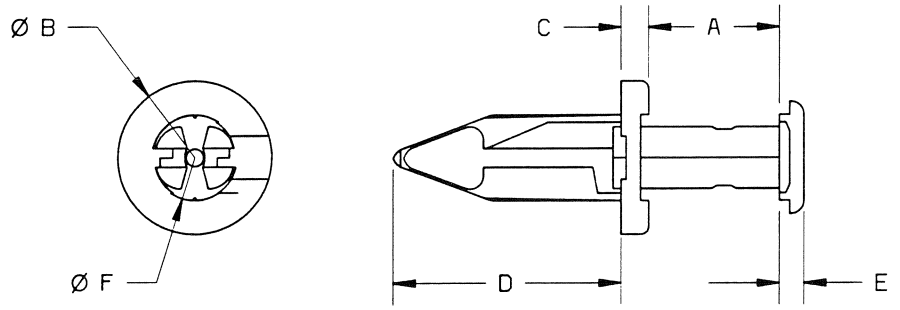
SIZE	'A' DIA	'B' DIA	D	RECOMMENDED HOLE SIZE	*MIN ULT TENSILE
3/16	.187	.385	.101	.191-.201	850 LBS F

ENGINEERING NOTES:

1. *SINGLE SHEAR AMD ULTIMATE TENSILE STRENGTHS QUOTED RELATE TO NOMINAL HOLE DIAMETER AND MAXIMUM SHEET THICKNESS.

CHG	JOB NO	DATE	BY	REVISION
B	P02469-02	04/24/97	DAJ	REVISED AND REDRAWN IN CATIA, ADDED -003.
C	PA2042-97	11/12/99	LFB	REVISED "M" VALUES.

DRAWN	CGD	TITLE RIVET-PUSH REUSABLE, NYLON	DRAWING NUMBER 23-12274
APPRV	DAJ		
DATE	07/21/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. A
CATIA ORIGINAL			



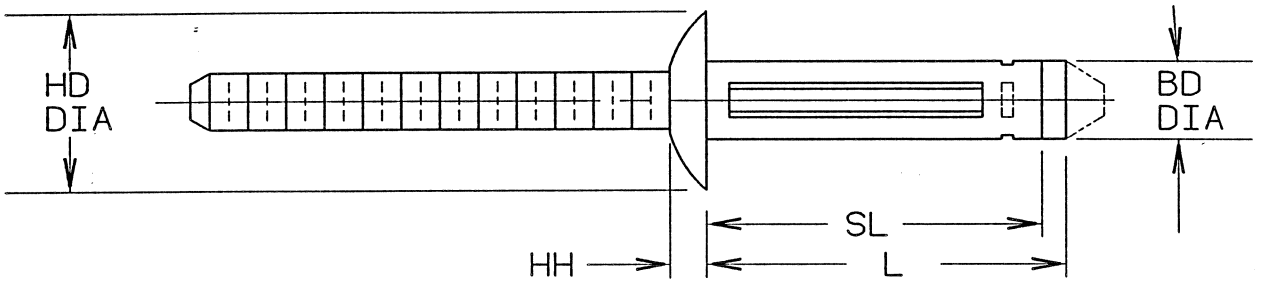
HOLE DIAMETER	PANEL RANGE	DIMENSIONS						MFR NUMBER	FREIGHTLINER PART NUMBER
		A	B	C	D	E	F		
.248-.275	.098-.350	.531	1.00	.098	.897	.137	.401	ARF 08-86544	23-12274-000
.315-.325	.118-.315	.091	.591	.106	.787	-	-	ITW M30-0800-16	23-12274-001

ENGINEERING NOTES:

1. MATERIAL: NYLON 408
2. COLOR: BLACK
3. DIMENSIONS LISTED ARE NOMINAL AND ARE PROVIDED FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
A	P07252-20	07/21/99	CGD	REVISED AND REDRAWN IN CATIA, ADDED 23-12274-001

DRAWN	DAJ	TITLE RIVET-BLIND	ITEM NUMBER 23-12283
APPRV	ERK		
DATE	10/03/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM DIA	BD MAX	SL ± .020	HD DIA	HH	L MAX	GRIP RANGE	HOLE SIZE	MANUFACTURER'S NUMBER OLY	FREIGHTLINER PART NUMBER
3/16	.205	1.000	.446 TO .492	.089 TO .099	1.185	.050 TO .500	#4 .209	RV66X324-6-8 (6)	23-12283-602
3/16	.205	1.250	.446 TO .492	.089 TO .099	1.435	.050 TO .750	#4 .209	RV66X324-6-12 (6)	23-12283-603

ENGINEERING NOTES:

(1) MATERIAL: RIVET, 5056 (56S) ALUM; STEM, 2017 (17ST) ALUM

2. FINISH: RIVET, NONE; STEM, ALODINE #1000

3. SURFACE COATING: NO LUBRICATION ON THE SLEEVE, LUBRICATION ON THE STEM ONLY

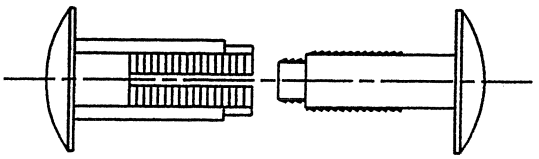
4. TOOLING: RV66X323 SERIES BLIND RIVETS CAN ONLY BE INSTALLED WITH THE RV958S PULLING HEAD.
RV66X324 SERIES BLIND RIVETS CAN BE INSTALLED WITH EITHER THE RV958S, OR PREFERED RV355-5, RV3355-5 PULLING HEADS.

(5) RIVET HEAD IS SWAGED AT THE STEM TO SEAL IT & STEMS WILL BREAK FLUSH WITH THE TOP OF RIVET HEAD ±1/32"

(6) STEMS WILL BREAK APPROXIMATELY 1/16" ABOVE RIVET HEAD WHEN INSTALLED IN MAXIMUM GRIP & MUST BE GROUND FLUSH WHEN USED IN VISIBLE PLACES TO RESEMBLE A BRAZIER HEAD RIVET.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P4635M-01	10/03/95	DAJ	INITIAL LOAD

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-NYLON RATCHET TYPE	23-12314	
DATE	04/21/98			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B



ASSEMBLED PANEL THICKNESS RANGE	VENDOR/NUMBER		FREIGHTLINER SPEC NUMBER
	AFJ	FAS	
.346 - .500	08-80960	-	23-12314-001
.235 - .297	236-170406-00	-	23-12314-002

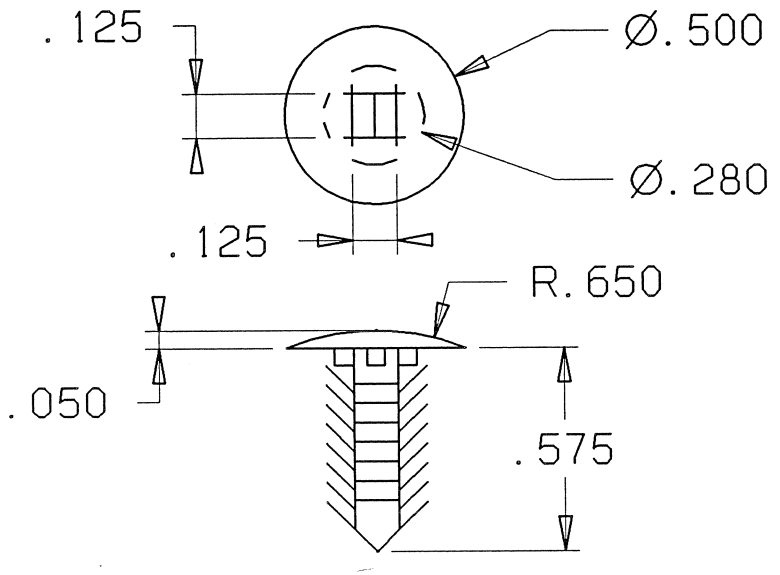
B
A

SPECIFICATIONS:

1. MATERIAL: NYLON 66
2. ASSEMBLY TO FIT .281 DIAMETER HOLE
3. DIMENSIONS LISTED ARE NOMINAL.

CHG	JOB NO	DATE	BY	REVISION
A	P00699-85	04/21/98	DAJ	REVISED AND REDRAWN IN CATIA, ADD -002.
B	PA2042-84	07/30/98	DAJ	REMOVED REDUNDANT COLUMN FROM CHART.

DRAWN	GAC	TITLE	DRAWING NUMBER	
APPRV	DAJ	RETAINER NYLON FASTENER	23-12320	
DATE	02/09/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



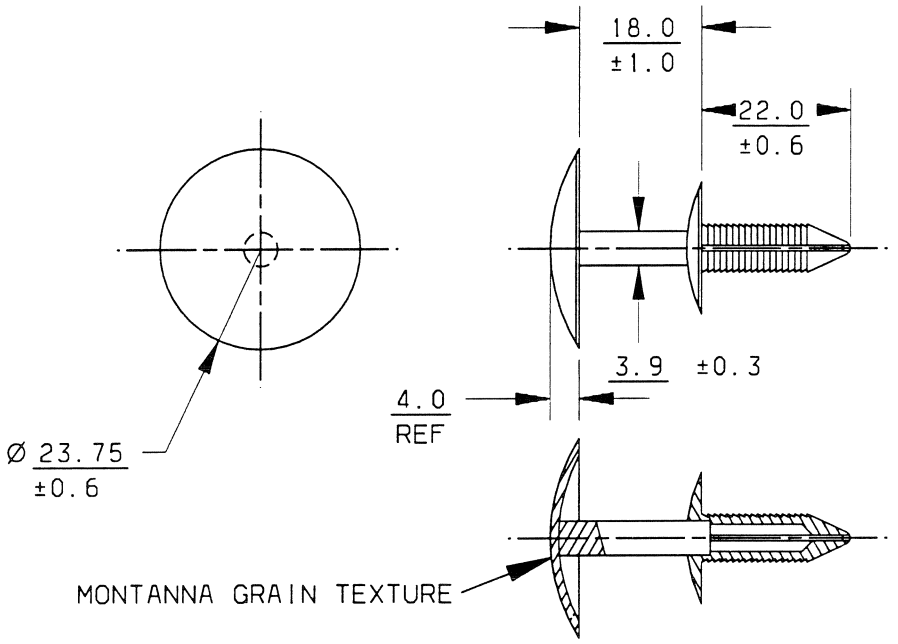
SOURCE		FREIGHTLINER PART NUMBER
MFG	PART #	
AFJ	08-89756	23-12320-000

SPECIFICATIONS:

1. MATERIAL:------NYLON 6/6
2. COLOR----------NATURAL
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY
4. EQUIVALENT ACCEPTABLE WITH ENGINEERING APPROVAL

CHG	JOB NO	DATE	BY	REVISION
-	P2A223-78	02/09/96	GAC	INITIAL RELEASE

DRAWN	DAJ	TITLE RIVET PLASTIC	DRAWING NUMBER 23-12337
APPRV	DAJ		
DATE	10/21/97		
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B



HOLE SIZE DIA	COLOR	VENDOR/PN ITW DELTAR	FREIGHTLINER PART NUMBER
6.8	BEIGE	30068002-5004D05081	23-12337-001
6.8	SLATE GRAY	30068002-5004D05080	23-12337-002
6.8	SHADOW GRAY	TBD	23-12337-003
6.8	VOLCANO GRAY	TBD	23-12337-004
6.8	PACIFICA RED	TBD	23-12337-005
6.8	SAHARA TAUPE	TBD	23-12337-006

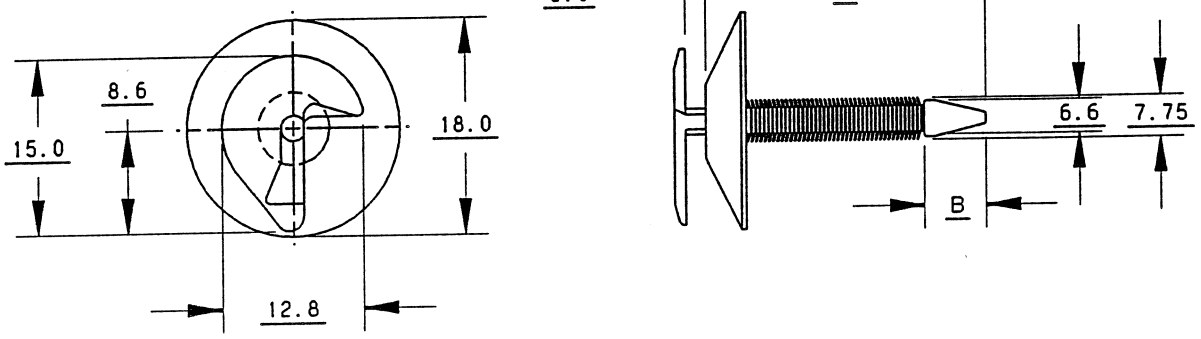
A

ENGINEERING NOTES:

1. MATERIAL: NYLON
2. JOINT THICKNESS (MAX): 5.0 WITH 6.8 DIA HOLE IN 0.9 THICK PRIMARY PANEL.

CHG	JOB NO	DATE	BY	REVISION
A	P03259-06	10/21/97	DAJ	REVISED & REDRAWN IN CATIA, ADDED -003,-004 & -005.
B	P04977-29	09/10/99	GJB	ADDED -006

DRAWN	FHC	TITLE RETAINER-PANEL FASTENER QUARTER-TURN	DRAWING NUMBER 23-12378
APPRV	DAJ		
DATE	06/05/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. E
CATIA ORIGINAL			



E

A	B	HOLE DIA.	SUPPLIER ITW DELTAR	FREIGHTLINER PART NUMBER
26.3	6.0	6.76-7.26	DPW 0131	23-12378-000
12.7	1.5	6.76-7.26	M36-0700-11	23-12378-001

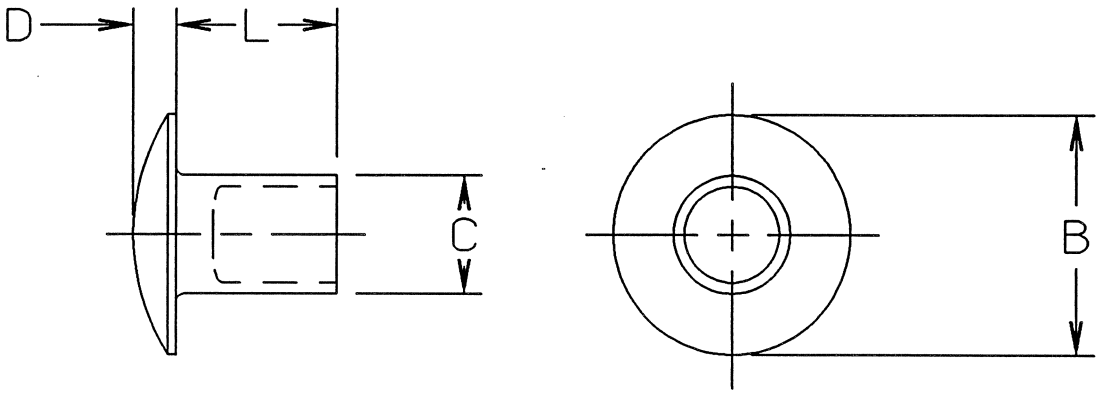
E

ENGINEERING NOTES:

1. MATERIAL: ZYTEL 408 OR EQUIVALENT.
2. COLOR: NATURAL (WHITE)
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
4. HEAD ROTATES INTO A 9.14-9.65 DIA. HOLE OR A 6.60 X 12.90 OVAL SLOT IN A 2.5 PANEL.

CHG	JOB NO	DATE	BY	REVISION
A	PA2042-70	06/28/96	FHC	REVISED TABLE, ADDED SUPPLIER AND HOLE DIAMETER
B	PA2042-71	08/27/96	FHC	REVISED HOLE DIA. DIMEN AND RMVD PNL THK COLUMN.
C	P6918P-11	09/12/96	FHC	CHANGED COLOR FROM BLACK TO NATURAL.
D	P02873-01	05/27/97	DAJ	REVISED THE HEAD DIMENSIONS.
E	P04104-02	02/20/98	DAJ	ADDED DIM 'A' AND PART NUMBER 23-12378-001.

DRAWN	DAJ	TITLE RIVET-TUBULAR TRUSS HEAD, SST	ITEM NUMBER 23-12390
APPRV	DAJ		
DATE	08/05/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



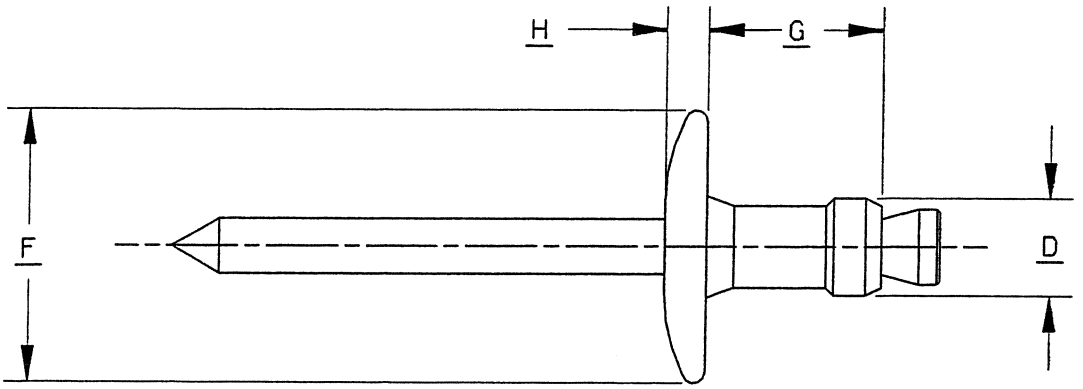
DIMENSION (MIN/MAX)				GRIP RANGE	VEN/NUM	FREIGTHLINER PART NUMBER
B	C	D	L		ALLIED TUBULAR RIVET	
.370/ .380	.182/ .188	.058/ .068	.369/ .379	.240/ .250	E-367X3/8	23-12390-000

ENGINEERING NOTES:

1. MATERIAL: 430 STAINLESS STEEL
2. FINISH: PLAIN

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PB3504-04	08/05/96	DAJ	INITIAL LOAD

DRAWN	DAJ	TITLE RIVET-BLIND BRIV	DRAWING NUMBER 23-12502
APPRV	DAJ		
DATE	03/13/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



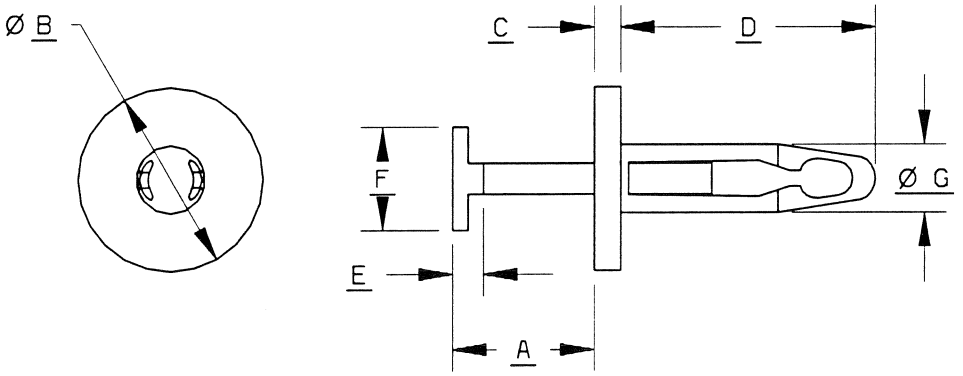
GRIP RANGE	DIMENSIONS				HOLE SIZE	TYP STRNGTH (LBF)		VENDOR/PN	FREIGHTLINER PART NUMBER
	D	G (MAX)	H	F		SHEAR	TENSION	AVDEL	
.125/ .175	.1205 .1245	.252	.032 .039	.368 .382	.1285/ .1315	230	370	1810-5880 S	23-12502-000

ENGINEERING NOTES:

1. MATERIAL: LOW CARBON STEEL (SAE 1008)
2. FINISH: PLAIN
3. HEAT TREATMENT: ANNEALED

CHG	JOB NO	DATE	BY	REVISION
-	P04714-01	03/13/98	DAJ	INITIAL RELEASE

DRAWN	DAO	TITLE RIVET-PUSH REUSABLE, NYLON	DRAWING NUMBER 23-12697
APPRV	DAJ		
DATE	10/18/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



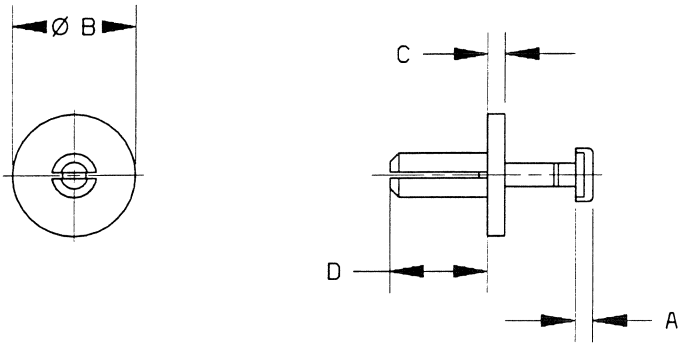
HOLE DIAMETER	PANEL RANGE	DIMENSIONS							MFR NUMBER	FREIGHTLINER PART NUMBER
		A	B	C	D	E	F	G		
6.28-6.52	8.0-10.00	13.7	17.8	2.5	24.5	3.0	10.0	6.6	ITW M30-0640-02	23-12697-000

ENGINEERING NOTES:

1. MATERIAL: NYLON 6/6
2. COLOR: BLACK
3. DIMENSIONS LISTED ARE NOMINAL AND ARE PROVIDED FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P07658-48	10/18/99	DAO	INITIAL RELEASE

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	RIVET-PUSH REUSABLE, OPEN PRONG, NYLON	23-12704	
DATE	10/29/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



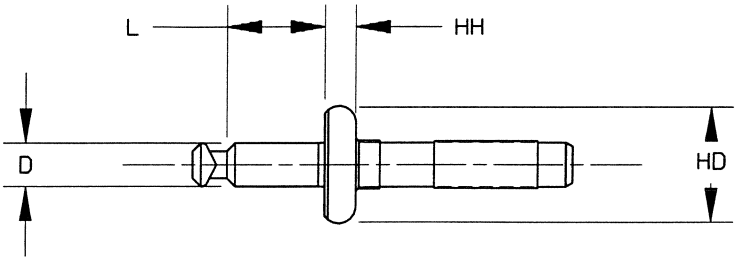
HOLE DIAMETER	PANEL RANGE	DIMENSIONS				MFR NUMBER	FREIGHTLINER PART NUMBER
		A	B	C	D		
.244-.262	.060-.228	.098	.700	.098	.559	M30-0630-08	23-12704-000

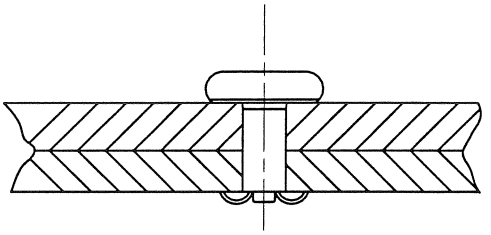
ENGINEERING NOTES:

1. MATERIAL: NYLON 6/6
2. COLOR: BLACK
3. DIMENSIONS ARE PROVIDED FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P05733-23	10/29/99	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE RIVET-BLIND GRIP SPLIT, SELF PLUGGING, PULL	DRAWING NUMBER 23-12750
APPRV	DAJ		
DATE	01/14/00	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM			





AFTER INSTALLATION

NOM. SIZE	DIA D	LENGTH L. MAX	GRIP RANGE	HD	HH	HOLE SIZE	MANUFACTURER'S HUCK	FREIGHTLINER PART NUMBER
6.4	6.4	14.86	3.17/8.26	15.87	4.47	6.53/6.63	TABS83MBEL	23-12750-000

ENGINEERING NOTES:

1. MATERIAL: RIVET: ALUMINUM SAE J454 TEMPER F-H32.
MANDREL: STEEL. ZINC PLATE W/GREEN CHROMATE.

2. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P10433-02	01/14/00	LFB	INITIAL RELEASE