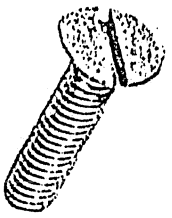
FLAT HEAD SLOTTED MACHINE SCREWS

USS & SAE THREAD



NOM. SIZE	PART NUMBER UNC	PART NUMBER UNF
1/4	23-09632- *	23-09633- *
5/16	23-09634- *	23-09635- *
3/8	23-09636- *	23-09637- *
7/16	23-09638- *	23-09639- *
1/2	23-09640- *	23-09641- *
9/16	23-09642- *	23-09643- *
5/8	23-09644- *	23-09645- *
3/4	23-09646- *	23-09647- *
7/8	23-09648- *	23-09649- *
1	23-09650- *	23-09651- *
1-1/8	23-09652- *	23-09653- *
1-1/4	23-09654- *	23-09655- *

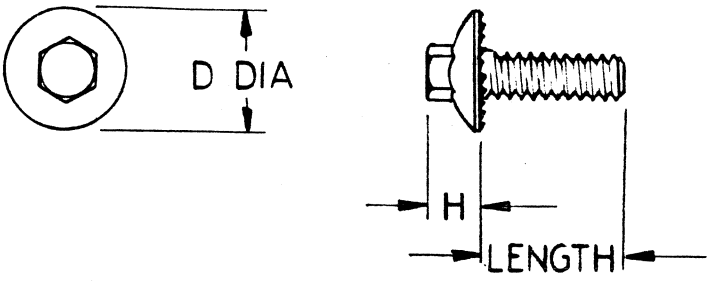
* TO COMPLETE PART NUMBER, ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE: 23-09633-125, IS A 1/4-28 X 1-1/4 FLAT HEAD SLOTTED CAP SCREW.

23-9137

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, LARGE FLANGE, SERRATED WASHER AND HEX HEAD	23-9137
LAST CHG LTR: A		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD SIZE	D DIA.	H HEIGHT	LENGTH	MANUFACTUER'S DESIGNATION MF		FREIGHTLINER PART NUMBER
3/8-16 NC	.915 / .890	.349 / .332	.75	31WLBS3816		23-9137-000

SPECIFICATIONS

(1) Material: Case hardened, low carbon steel.

2. Finish: Zinc plated.

CHG	BY	DATE	WAS

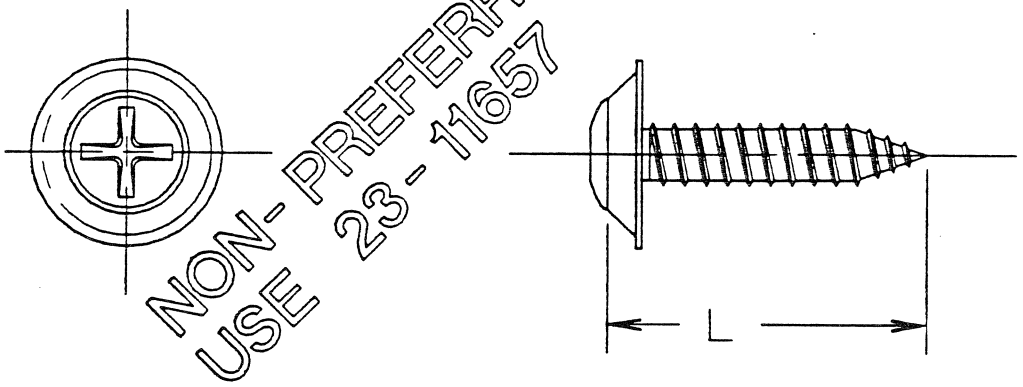
CHG	BY	DATE	WAS
A	DL	3-7-73	Revised & Redrawn; J #A0136

ns

COMPILED	DL	DATE DRAWN		MATERIAL	
APPROVED	Rollins	3-7-73		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TPG,OVAL WASHER HEAD CROSS RECESS	23-09323
DATE	02/09/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

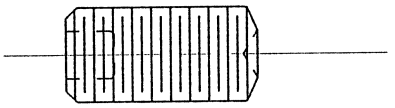


NOTE THAT LENGTH IS MEASURED TO HEAD OF SCREW, NOT BOTTOM OF WASHER

SCREW		WASHER TYPE	FREIGHTLINER PART NUMBER		
SIZE	LENGTH (L)		SATIN BLACK	CHROME	GRAY
6	5/8	COUNTERSUNK	23-09323-001	-	-
6	3/4	COUNTERSUNK	-	-	-
6	1	COUNTERSUNK	-	-	-
6	1-1/4	COUNTERSUNK	-004	-	-
8	5/8	FLUSH	-	-	-
8	5/8	COUNTERSUNK	-006	-206	-
8	3/4	COUNTERSUNK	-007	-	-
8	7/8	FLUSH	-	-	-
8	1	COUNTERSUNK	-009	-209	-
8	1-1/4	COUNTERSUNK	-010	-	-510
10	5/8	COUNTERSUNK	-011	-	-
10	3/4	COUNTERSUNK	-012	-	-
10	1	COUNTERSUNK	-013	-	-
10	1-1/4	COUNTERSUNK	-014	-	-

CHG	JOB/RLSE NO	DATE	BY	REVISION
E	PM0459-01	02/09/90	RDF	REDRAWN, ADDED GRAY NUMBERS,SHT 2, DELETED INACTIVE

DRAWN	RDF	TITLE SCREW-SET SOCKET HEAD, CUP POINT	ITEM NUMBER 23-09456
APPRV	PCK		
DATE	03/31/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE	HEX SOCKET SIZE	SHORTEST PRACTICAL LENGTH	FREIGHTLINER PART NUMBER
6-32	0.062	0.188	23-09456-0XX
8-32	0.078	0.188	23-09456-1XX
10-24	0.094	0.188	23-09456-2XX
10-32	0.094	0.188	23-09456-3XX
1/4-20	0.125	0.188	23-09456-4XX
3/8-16	0.188	0.375	23-09456-6XX
5/8-11	0.312	0.630	23-09456-9XX

C

LAST 2 DIGITS OF DASH NUMBER REPRESENT LENGTH X .01 INCH, E.G. 23-09456-375 IS A 10-32 X 3/4" SETSCREW. STANDARD LENGTH INCREMENTS ARE .125" UP TO 1", .250" FROM 1.00" TO 2.00", AND .500" OVER 2.00" LENGTH.

ALL PERTINENT DIMENSIONS TO CONFORM TO ANSI B18.3. MATERIAL TO CONFORM TO ASTM F912.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P3175F-01	03/31/89	RDF	REDRAWN ON CADAM
B	478038-02	11/16/91	K R	DELETED UNUSED NUMBERS.5/8-11 WAS 3/8-24
C	PH0622-03	02/01/95	ERK	ADDED 1/4-20

General Use Part

PRINT ISSUED	TITLE	PART NO.
10/7/70	SETSCREW — SOCKET HEAD CUP POINT	23-9456
LAST CHG LTR		SHEET 1 OF 1

SIZE	MANUFACTURER'S NUMBER AUV		FREIGHTLINER NUMBER
6-32 x 3/16"	5365		23-9456-019
6-32 x 1/4"	5366		-025
6-32 x 5/16"	5367		-031
6-32 x 3/8"	5368		-038
8-32 x 3/16"	5369		-119
8-32 x 1/4"	5370		-125
8-32 x 5/16"	5371		-131
8-32 x 3/8"	5372		-138
8-32 x 1/2"	5373		-150
	(UNC)	(UNF)	UNC / UNF.
10 x 3/16"	5374	5394	23-9456-219 / 23-9456-319
10 x 1/4"	5375	5395	-225 / -325
10 x 5/16"	5376	5396	-231 / -331
10 x 3/8"	5377	5397	-238 / -338
10 x 1/2"	5378	5398	-250 / -350
1/4 x 1/4"	5379	5399	-425 / -725
1/4 x 5/16"	5380	5400	-431 / -731
1/4 x 3/8"	5381	5401	-438 / -738
1/4 x 7/16"	5382	5402	-444 / -744
1/4 x 1/2"	5383	5403	-450 / -750
5/16 x 1/4"	5384	5404	-525 / -825
5/16 x 5/16"	5385	5405	-531 / -831
5/16 x 3/8"	5386	5406	-538 / -838
5/16 x 7/16"	5387	5407	-544 / -844
5/16 x 1/2"	5388	5408	-550 / -850
3/8 x 5/16"	5389	5409	-631 / -931
3/8 x 3/8"	5390	5410	-638 / -938
3/8 x 7/16"	5391	5411	-644 / -944
3/8 x 1/2"	5392	5412	-650 / -950
3/8 x 5/8"	5393	5413	-662 / -962

		DATE DRAWN		MATERIAL	NEXT ASSY. NO.
COMPILED	H.J.R.	7-16-70		STEEL	N22-70010
APPROVED					

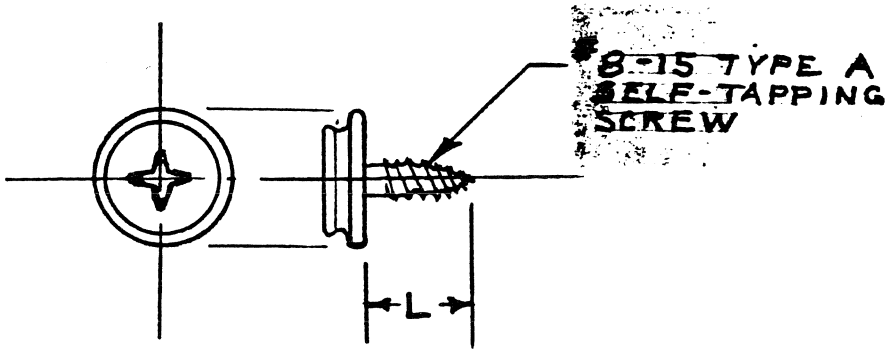
Portland FREIGHTLINER CORPORATION Oregon 97208

23-9696

General Use Part

PRINT ISSUED	TITLE	PART NO.
3/29/71	STUD, CURTAIN SNAP CROSS RECESS	23-9696
LAST CHG. LTR. A		SHEET 1 OF 1

SKETCH



PART NUMBERS

L THREAD LENGTH		MANUFACTURER'S NUMBER UCF		FREIGHTLINER PART NUMBER
3/8		XX-10362-12		23-9696-012
5/8		XX-10362-20		-020
3/8		(3) XX-10362-12-K5500		-112

ENGINEERING NOTES

(1) Material: Steel, Bright Finish

2 Installation Tool: No. 169N Hand Screwdriver

(3) Material: Steel, Black Finish

CHG	BY	DATE	WAS
A	PCK	12/02/88	Added -112 Per Job 357000-90

CHG	BY	DATE	WAS

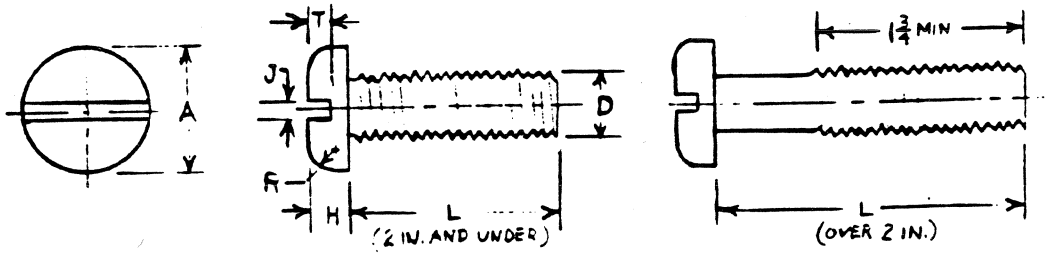
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-16-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PART ISSUED	TITLE	NO
1/29/71	SCREW, MACHINE, PAN HEAD SLOTTED, Cd PLATED	23-9702 thru 9725
LAST CHG LTR		SHEET 1 OF 2

SKETCH:



PART NUMBERS:

Nominal Size	D Diameter of Screw Basic	A Head Dia. Max.	A Head Dia. Min.	H Head Height Max.	H Head Height Min.	J Width of Slot Max.	J Width of Slot Min.	T Depth of Slot Max.	T Depth of Slot Min.	R Head Radius Max.
2	0.0860	0.167	0.155	0.053	0.045	0.031	0.023	0.031	0.022	0.035
4	0.1120	0.219	0.205	0.068	0.058	0.039	0.031	0.040	0.030	0.042
6	0.1380	0.270	0.256	0.082	0.072	0.048	0.039	0.050	0.037	0.046
8	0.1640	0.322	0.306	0.096	0.085	0.054	0.045	0.058	0.045	0.052
10	0.1900	0.373	0.357	0.110	0.099	0.060	0.050	0.063	0.053	0.061
12	0.2160	0.425	0.407	0.125	0.112	0.067	0.056	0.077	0.061	0.078
1/4	0.2500	0.492	0.473	0.144	0.130	0.075	0.064	0.087	0.070	0.087
5/16	0.3125	0.615	0.594	0.178	0.162	0.084	0.072	0.106	0.085	0.099
3/8	0.3750	0.740	0.716	0.212	0.195	0.094	0.081	0.124	0.100	0.143

All dimensions are given in inches.

Nominal Size Thds. Per In., and Series Designation		Freightliner Part Number*
2-56	UNC	23-9702
2-64	UNF	23-9703
4-40	UNC	23-9704
4-48	UNF	23-9705
6-32	UNC	23-9706
6-40	UNF	23-9707
8-32	UNC	23-9708
8-36	UNF	23-9709
10-24	UNC	23-9710
10-32	UNF	23-9711

Nominal Size Thds. Per In., and Series Designation		Freightliner Part Number*
12-24	UNC	23-9712
12-28	UNF	23-9713
1/4-20	UNC	23-9714
1/4-28	UNF	23-9715
5/16-18	UNC	23-9716
5/16-24	UNF	23-9717
3/8-16	UNC	23-9718
3/8-24	UNF	23-9719

*To complete part number add a three-digit dash number expressing the length in hundredths of an inch.

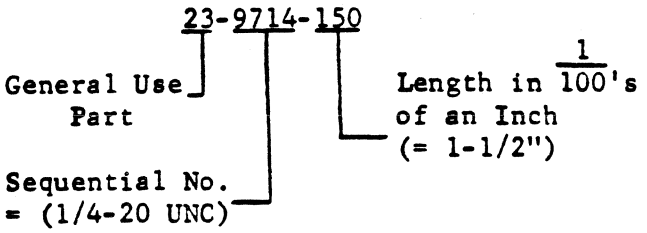
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		8-3-70		(See Sht. 2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	NO.
1/29/71	SCREW, MACHINE, PAN HEAD SLOTTED, Cd PLATED	23-9702 thru 9725
LAST CHG LTR		SHEET 2 OF 2

ENGINEERING NOTES:

1. Example of Part No.:



Originally was FC210

2. Application:

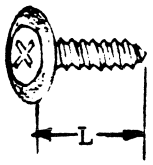
Use pan head machine screws in lieu of round, truss, fillister, etc., per I.F.I. recommendation.

3. Material: Cd. Plated Steel

4. Except as otherwise noted, these screws shall meet all pertinent provisions of the current SAE Standard J478.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		8-3-70		3	

PRINT ISSUED	TITLE	PART NO.
6-22-70	PHILLIPS OVAL WASHER HEAD TAPPING SCREW	23-9323
LAST CHG LTR D		SHEET 1 OF 1



SCREW SIZE	SCREW (L) LENGTH	TYPE WASHER	FREIGHTLINER PART NUMBER	
6	5/8	countersunk	23-9323-001	-201
6	3/4	"	-002	-202
6	1	"	-003	-203
6	1-1/4	"	-004	-204
8	5/8	flush	-005	-205
8	5/8	countersunk	-006	-206
8	3/4	"	-007	-207
8	7/8	flush	-008	-208
8	1	countersunk	-009	-209
8	1-1/4	"	-010	-210
10	5/8	"	-011	-211
10	3/4	"	-012	-212
10	1	"	-013	-213
10	1-1/4	"	-014	-214
		FINISH:	SATIN BLACK	CHROME

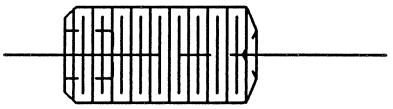
(1)- Material
a. bolt = steel
b. washer = steel

CHG	BY	DATE	WAS
A	KJA	6-10-70	Added Finish Callout
B	RC	4-19-77	PHOSPHATE & OIL FINISH COAT
C	TC	10-25-78	ADDED DASH #'S FOR CHROME C1379
D	TD	2-12-79	CHANGED FINISH CALLOUT 73611

COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	T.J.A	5-20-70		(1)	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	RDF	TITLE SCREW-SET SOCKET HEAD, CUP POINT	ITEM NUMBER 23-09456
APPRV	PCK		
DATE	03/31/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



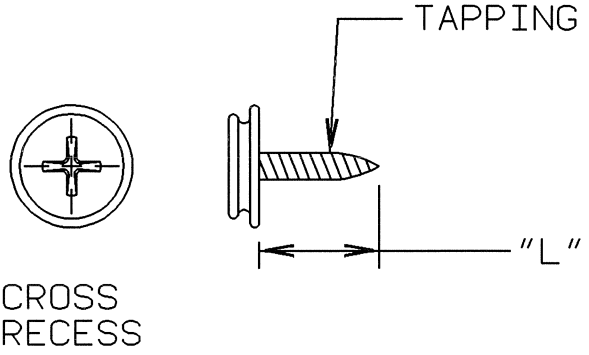
NOMINAL SIZE	HEX SOCKET SIZE	SHORTEST PRACTICAL LENGTH	FREIGHTLINER PART NUMBER
6-32	0.062	0.188	23-09456-0XX
8-32	0.078	0.188	23-09456-1XX
10-24	0.094	0.188	23-09456-2XX
10-32	0.094	0.188	23-09456-3XX
1/4-20	0.125	0.188	23-09456-4XX
3/8-16	0.188	0.375	23-09456-6XX
5/8-11	0.312	0.630	23-09456-9XX
3/4-10	0.375	0.625	23-12363-0XX

LAST 2 DIGITS OF DASH NUMBER REPRESENT LENGTH X .01 INCH, E.G. 23-09456-375 IS A 10-32 X 3/4" SETSCREW. STANDARD LENGTH INCREMENTS ARE .125" UP TO 1", .250" FROM 1.00" TO 2.00", AND .500" OVER 2.00" LENGTH.

ALL PERTINENT DIMENSIONS TO CONFORM TO ANSI B18.3. MATERIAL TO CONFORM TO ASTM F912.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P3175F-01	03/31/89	RDF	REDRAWN ON CADAM
B	478038-02	11/16/91	K R	DELETED UNUSED NUMBERS.5/8-11 WAS 3/8-24
C	PH0622-03	02/01/95	ERK	ADDED 1/4-20
D	751042-05	05/06/96	DAJ	ADDED 23-12363

DRAWN	RDF	TITLE STUD, CURTAIN SNAP CROSS OR TORX RECESS	ITEM NUMBER 23-09696
APPRV	ANF		
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



PART NUMBERS

	SCREW SIZE	LENGTH "L"	DRIVE & SIZE CROSS RECESS	POINT TYPE	MFR'S P/N DOT	FREIGHTLINER PART NUMBER
C	8-18	3/8	#1	AB	XX10362-4	(1) 23-09696-012
C	8-18	5/8	#1	AB	XX10362-7	(1) 23-09696-020
C	8-18	3/8	#1	AB	XX10362-4 K5500	(2) 23-09696-112

CROSS RECESS IS NON-PREFERRED-SEE SHT 2 FOR TORX DRIVE

(1) MATERIAL: STEEL, BRIGHT FINISH

(2) MATERIAL: STEEL, BLACK FINISH

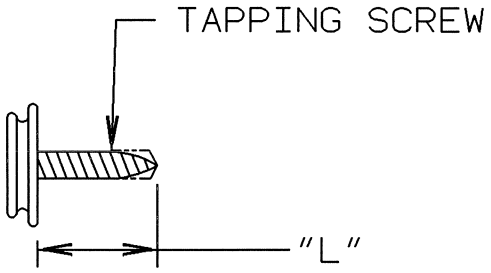
3. CROSS RECESS: TYPE I PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED -720 ON SHT 2
C	PM0446-37	07/22/92	ERK	REVISED VENDOR P/N'S; ADDED -724 ON SHT 2
D	P2180J-01	09/29/93	ERK	SEE SHEET 2
E	P5323H-01	04/27/94	ERK	SEE SHEET 2
F	P5323H-03	01/31/95	DAJ	ADDED -730, SEE SHEET 2

DRAWN	RDF	TITLE STUD, CURTAIN SNAP CROSS OR TORX RECESS	ITEM NUMBER 23-09696
APPRV	ANF		
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2



TORX



PART NUMBERS:

SCREW SIZE	LENGTH "L"	DRIVE & SIZE TORX	POINT TYPE	MFR'S P/N DOT	FREIGHTLINER PART NUMBER
8-18	5/8	T20	AB	XX103047-2A K1105	(1) 23-09696-720
8-18	5/8	T20	AB	XX103047-2C	(2) 23-09696-724
8-18	7/8	T20	AB	-	(2) 23-09696-728
8-18	5/8	T20	(5) BSD	-	(2) 23-09696-732
8-18	1/2	T20	AB	-	(2) 23-09696-730

(1) MATERIAL: STEEL, BRIGHT FINISH

(2) MATERIAL: STEEL, BLACK FINISH

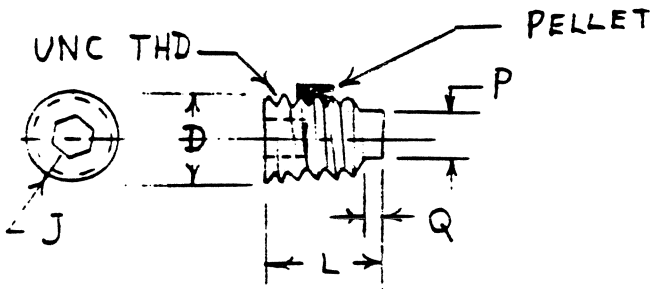
4. TORX RECESS: T20 PER CAMCAR STANDARD TXH-202.

(5) BSD IN ACCORDANCE WITH SAE J78.

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2, -720
C	PM0446-37	07/22/92	ERK	REVISED VENDOR P/N'S; ADDED -724
D	P2180J-01	09/29/93	ERK	ADDED -728
E	P5323H-01	04/27/94	ERK	ADDED SELF DRILLING TAP SCREW 23-09696-732.
F	P5323H-03	01/31/95	DAJ	ADDED -730

PRINT ISSUED	TITLE	PART NO
3/29/71	SET SCREW, HALF DOG POINT HEX SOCKET, UNC THD, NYLON LOCK	23-9780 thru 23-9792
LAST CHG LTR		SHEET OF

SKETCH



PART NUMBERS

THREAD (UNC)	D MAJ. DIA.	J HEX SOCKET	P DIA. (MAX.)	Q LENGTH (MIN.)	FREIGHTLINER PART NUMBER *
2-56	.0854	.035	.057	.020	23-9780-L
4-40	.1112	.050	.075	.026	9781
6-32	.1372	1/16	.092	.032	-9782
8-32	.1631	5/64	.109	.037	-9783
10-24	.1890	3/32	.127	.041	-9784
1/4 -20	.2489	1/8	5/32	.059	-9785
5/16-18	.3113	5/32	13/64	.074	-9786
3/8 -16	.3737	3/16	1/4	.089	-9787
7/16-14	.4361	7/32	19/64	.104	-9788
1/2 -13	.4985	1/4	11/32	.120	-9789
5/8 -11	.6234	5/16	15/32	.148	-9790
3/4 -10	.7482	3/8	9/16	.180	-9791
7/8 - 8	.8731	1/2	21/32	.211	-9792

* To complete the part number, add a 3-digit dash number, L, expressing the length in hundredths of an inch, thus: For a 3/8-16 half-dog point set screw 1/2 inch long, write 23-9787-050.

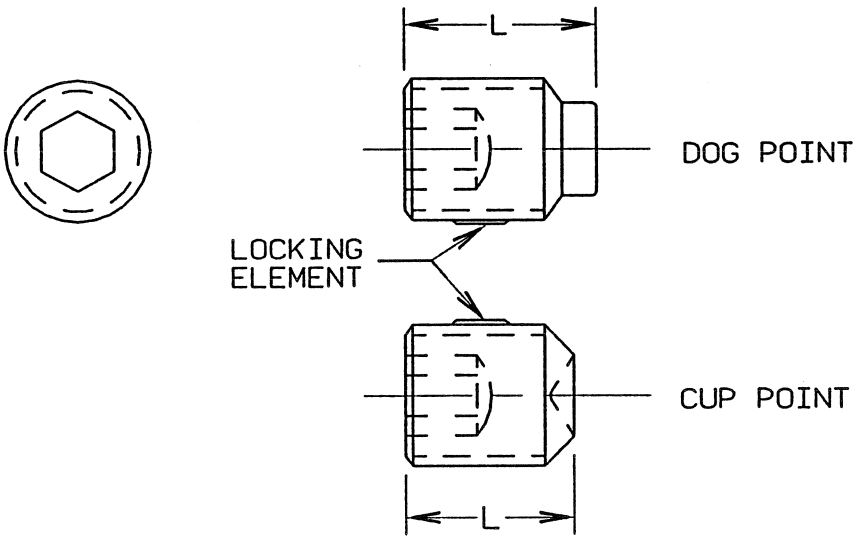
ENGINEERING NOTES

(1) Material: Grade 8 Bolt Material, RHN C (Min.) 36; Except Pellet, Zytel 101 or equal.

2. Set screws shall conform to applicable provisions of Am. Std. B18.3.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		2-11-71		(1)	

DRAWN	HJR	TITLE SET SCREW-HALF DOG POINT HEX SOCKET WITH LOCKING ELEMENT	ITEM NUMBER **23-09787**
APPRV	REW		
DATE	02/11/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE	HEX SOCKET SIZE(IN)	LENGTH (IN) L	POINT	FREIGHTLINER PART NUMBER
3/8-16	3/16	.500	DOG	23-09787-050
1/4-20	1/8	.375	CUP	23-09787-038

ENGINEERING NOTES:

1. MATERIAL: SCREW-CARBON STEEL, HARDENED.
2. FINISH PHOSHATE AND OIL PER FREIGHTLINER SPEC. 49-00006-041.
3. DIMENSIONS: TO CONFORM TO ANSI B18.3.
4. LOCKING ELEMENT: TO MEET REQUIREMENTS OF IFI 124.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	PA2042-26	09/08/92	ERK	REVISED AND REDRAWN; ADDED PHOS & OIL FINISH
B	PA2042-48	09/13/94	DAJ	ADDED -038, CUP POINT DIAGRAM

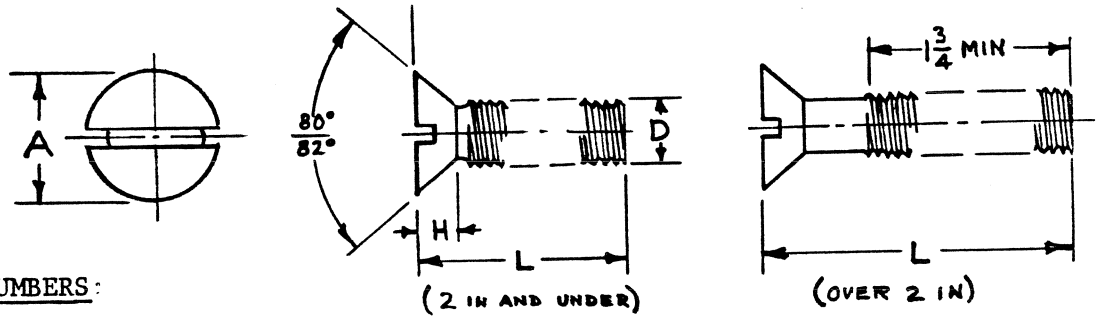
Thru 23-9829

General Use Part

PRINT ISSUED	TITLE	PART NO.
1/29/71	SCREW, MACHINE FLAT HEAD SLOTTED PLAIN	23-9802 Thru 9829
LAST CHG. LTR. B		SHEET 1 OF 2

B

SKETCH:



PART NUMBERS:

Screw Size	D Diam. of Screw Basic	L These Lengths & Shorter are Undercut	A Head Diameter Max. Sharp	A Head Diameter Min. Sharp	A Head Diameter Abs. Min.	H Head Hgt. Ref.	Thread UNC	Thread UNF	Freightliner Part Numbers
2	0.0860	1/8	0.172	0.156	0.147	0.051	2-56	2-64	23-9802-L 23-9803-L
4	0.1120	3/16	0.225	0.207	0.195	0.067	4-40	4-48	23-9804-L 23-9805-L
6	0.1380	3/16	0.279	0.257	0.244	0.083	6-32	6-40	23-9806-L 23-9807-L
8	0.1640	1/4	0.332	0.308	0.292	0.100	8-32	8-36	23-9808-L 23-9809-L
10	0.1900	5/16	0.385	0.359	0.340	0.116	10-24	10-32	23-9810-L 23-9811-L
12	0.2160	3/8	0.438	0.410	0.389	0.132	12-24	12-28	23-9812-L 23-9813-L
1/4	0.2500	7/16	0.507	0.477	0.452	0.153	1/4-20	1/4-28	23-9814-L 23-9815-L
5/16	0.3125	1/2	0.635	0.600	0.568	0.191	5/16-18	5/16-24	23-9816-L 23-9817-L
3/8	0.3750	9/16	0.762	0.722	0.685	0.230	3/8-16	3/8-24	23-9818-L 23-9819-L
7/16	0.4375	5/8	0.812	0.767	0.723	0.223	7/16-14	7/16-20	23-9820-L 23-9821-L
1/2	0.5000	3/4	0.875	0.831	0.775	0.223	1/2-13	1/2-20	23-9822-L 23-9823-L
9/16	0.5625	13/16	1.000	0.950	0.889	0.260	9/16-12	9/16-18	23-9824-L 23-9825-L
5/8	0.6250	15/16	1.125	1.069	1.002	0.298	5/8-11	5/8-18	23-9826-L 23-9827-L
3/4	0.7500	1-1/8	1.375	1.306	1.230	0.372	3/4-10	3/4-16	23-9828-L 23-9829-L

COMPILED	R.R.	DATE DRAWN		MATERIAL	
APPROVED		1-8-71		(See Sht 2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	1-11-72	Job #84250: (See P.2)
B	HJR	4-10-73	Add "Plain" to title; J #A0258.

23-9802 Thru 23-9829

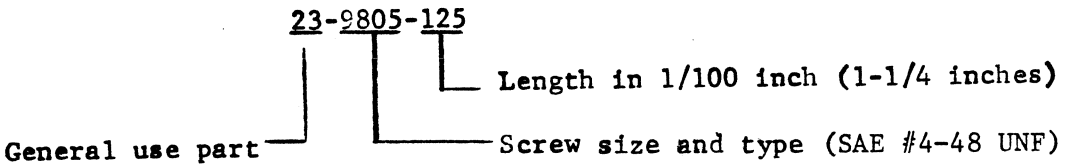
General Use Part

PRINT ISSUED	TITLE	PART NO.
1/29/71	SCREW, MACHINE FLAT HEAD SLOTTED PLAIN	23-9802 Thru 9829
LAST CHG. LTR. B		SHEET 2 OF 2

B

ENGINEERING NOTES

1. Example of part number:



A (2) Material: Steel, Grade 2 Bolt Material

3. This product shall conform to applicable provisions of American Standard B18.6.3 for flat head machine screws.

B 4. Finish: Plain.

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	1-11-72	Job #84250; Gr. 5
B	HJR	4-10-73	Add note 4; J #A0258

COMPILED	R.R.	DATE DRAWN		MATERIAL	
APPROVED		1-8-71		(2)	

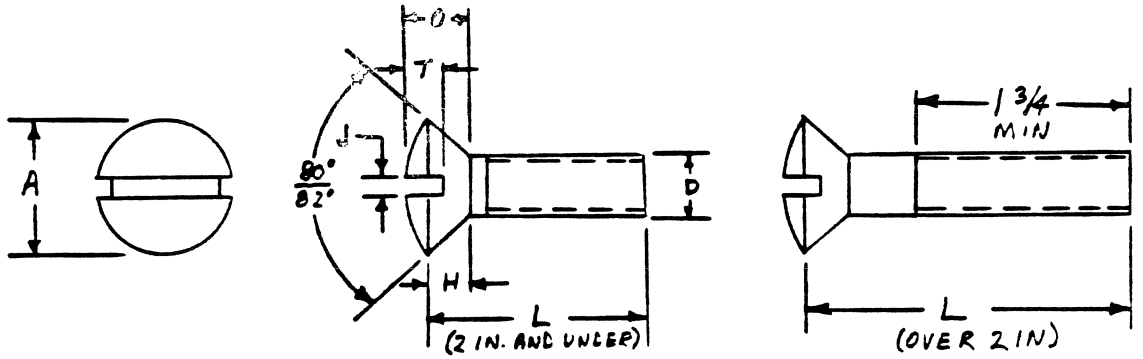
Portland FREIGHTLINER CORPORATION Oregon 97208

B

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, MACHINE, OVAL HEAD, SLOTTED BRIGHT FINISH	23-9832 thru 23-9859
LAST CHG LTR A		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	D BASIC	L ②	A MAX SHARP	A MIN SHARP	H REF	O MAX	J MAX	T MAX		FREIGHTLINER PART NUMBER
2 -56 UNC 2 -64 UNF	.0860	1/8	.172	.156	.051	.080	.031	.045		23-9832 -9833
4 -40 UNC 4 -48 UNF	.1120	3/16	.225	.207	.067	.104	.039	.059		-9834 -9835
6 -32 UNC 6 -40 UNF	.1380	3/16	.279	.257	.083	.128	.048	.074		-9836 -9837
8 -32 UNC 8 -36 UNF	.1640	1/4	.332	.308	.100	.152	.054	.088		-9838 -9839
10 -24 UNC 10 -32 UNF	.1900	5/16	.385	.359	.116	.176	.060	.103		-9840 -9841
12 -24 UNC 12 -28 UNF	.2160	3/8	.438	.410	.132	.200	.067	.117		-9842 -9843
1/4 -20 UNC 1/4 -28 UNF	.2500	7/16	.507	.477	.153	.232	.075	.136		-9844 -9845
5/16 -18 UNC 5/16 -24 UNF	.3125	1/2	.635	.600	.191	.290	.084	.171		-9846 -9847
3/8 -16 UNC 3/8 -24 UNF	.3750	9/16	.762	.722	.230	.347	.094	.206		-9848 -9849
7/16 -14 UNC 7/16 -20 UNF	.4375	5/8	.812	.767	.223	.345	.094	.210		-9850 -9851
1/2 -13 UNC 1/2 -20 UNF	.5000	3/4	.875	.831	.223	.354	.106	.216		-9852 -9853
9/16 -12 UNC 9/16 -18 UNF	.5625	13/16	1.000	.950	.269	.410	.118	.250		-9854 -9855
5/8 -11 UNC 5/8 -18 UNF	.6250	15/16	1.125	1.069	.298	.467	.133	.285		-9856 -9857
3/4 -10 UNC 3/4 -16 UNF	.7500	1-1/8	1.375	1.306	.372	.578	.149	.353		-9858 -9859

* Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-9833-075 specifies a No. 2-64 UNF, Grade 2, Oval Head Machine Screw 3/4" long.

ENGINEERING NOTES

① Material: Steel, Grade 2 Bolt Material, Bright Finish
② These lengths and shorter are undercut.

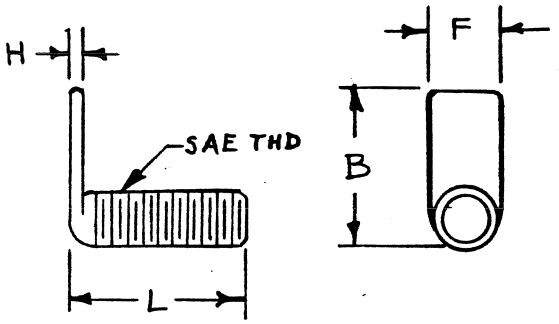
COMPILED	RWG	DATE DRAWN		MATERIAL	
APPROVED	E.H	3-22-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, WELD (PLAIN SPADE), #10-24	23-9880
LAST CHG. LTR.		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD SAE	B	F	H	L	MANUFACTURER'S NUMBER GR		FREIGHTLINER PART NUMBER *
#10-24	11/16	5/16	1/16	3/8	LJ-1024-S-0375		23-9880-038
				1/2	-0500		-050
				5/8	-0625		-062
				3/4	-0750		-075
				7/8	-0875		-088
				1	-1000		-100
				1-1/8	-1125		-112
				1-1/4	-1250		-125

*Dash number is length in 1/100's inch.

ENGINEERING NOTES

(1) Material: Steel

WAS	DATE	BY	CHG

WAS	DATE	BY	CHG
J#84530	—	—	—

ns

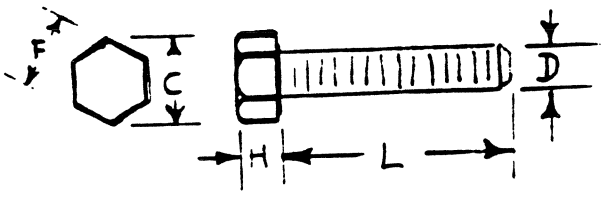
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	12-30-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO
3/29/71	SCREW, MACHINE, HEX HD. Cd PLATE, GR. 2	23-9882 thru 23-9899
LAST CHG LTR: B		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD	D DIAM. (BASIC)	F FLATS (MAX)	C CORNERS (MIN)	H HEIGHT (MAX)		FREIGHTLINER PART NUMBER *
2-56 UNC 2-64 UNF	.0860	.125	.134	.040		23-9882-L -9883
4-40 UNC 4-48 UNF	.1120	.188	.202	.060		-9884 -9885
6-32 UNC 6-40 UNF	.1380	.250	.272	.093		-9886 -9887
8-32 UNC 8-36 UNF	.1640	.250	.272	.110		-9888 -9889
10-24 UNC 10-32 UNF	.1900	.312	.340	.120		-9890 -9891
12-24 UNC 12-28 UNF	.2160	.312	.340	.155		-9892 -9893
1/4 -20 UNC 1/4 -28 UNF	.2500	.375	.409	.190		-9894 -9895
5/16-18 UNC 5/16-24 UNF	.3125	.500	.545	.230		-9896 -9897
3/8 -16 UNC 3/8 -24 UNF	.3750	.562	.614	.295		-9898 -9899

* Complete part number by adding a 3-digit dash number expressing the length, L, in 100ths of an inch. Thus for a Hex Head Machine Screw 1/4-28 UNF x 1.50", write 23-9895-150.

ENGINEERING NOTES

1. Material: Steel, Grade 2 Bolt Material per SAE Std. J429.
2. Finish: Cadmium plate.
3. Must conform to all applicable provisions of SAE Std. J105, general and dimensional data for Hex Bolts.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	2-17-71		(1)	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

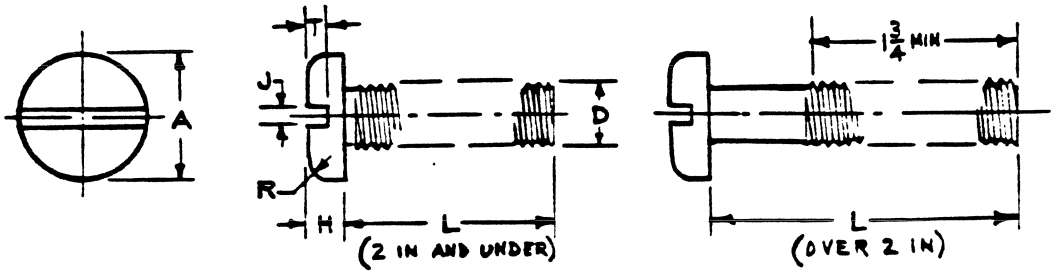
A	HJR	2-14-72
B	HJR	12-1-73

Cr. 5: J #5030 new F&C Dim's; J#A0564

General Use Part

PRINT ISSUED	TITLE	PART NO
1/29/71	SCREW, MACHINE, PAN HEAD SLOTTED, CHROME PLATED	23-9902 thru 23-9919
LAST CHG LTR		SHEET 1 OF 2

SKETCH



PART NUMBERS

Nominal Size Thds Per In., and Series Designation		Freightliner Part Nos.*
2-56	UNC	23-9902
2-64	UNF	23-9903
4-40	UNC	23-9904
4-48	UNF	23-9905
6-32	UNC	23-9906
6-40	UNF	23-9907
8-32	UNC	23-9908
8-36	UNF	23-9909
10-24	UNC	23-9910
10-32	UNF	23-9911

Nominal Size Thds Per In., and Series Designation		Freightliner Part Nos.*
12-24	UNC	23-9912
12-28	UNF	23-9913
1/4-20	UNC	23-9914
1/4-28	UNF	23-9915
5/16-18	UNC	23-9916
5/16-24	UNF	23-9917
3/8-16	UNC	23-9918
3/8-24	UNF	23-9919

*To complete part number, add a three digit dash number expressing the length in hundredths of an inch, thus 23-9914-225 denotes a screw 2.25 inches long.

ENGINEERING NOTES

1. Dimensions: (See Sketch)

Nominal Size	D Diameter of Screw Basic	A Head Dia. Max	A Head Dia. Min	H Head Height Max	H Head Height Min	J Width of Slot Max	J Width of Slot Min	T Depth of Slot Max	T Depth of Slot Min	R Head Radius Max
2	0.0860	0.167	0.155	0.053	0.045	0.031	0.023	0.031	0.022	0.035
4	0.1120	0.219	0.205	0.068	0.058	0.039	0.031	0.040	0.030	0.042
6	0.1380	0.270	0.256	0.083	0.072	0.048	0.039	0.050	0.037	0.046
8	0.1640	0.322	0.306	0.096	0.085	0.054	0.045	0.058	0.045	0.052
10	0.1900	0.373	0.357	0.110	0.099	0.060	0.050	0.063	0.053	0.061
12	0.2160	0.425	0.407	0.125	0.112	0.067	0.056	0.077	0.061	0.078
1/4	0.2500	0.492	0.473	0.144	0.130	0.075	0.064	0.087	0.070	0.087
5/16	0.3125	0.615	0.594	0.178	0.162	0.084	0.072	0.106	0.085	0.099
3/8	0.3750	0.740	0.716	0.212	0.195	0.094	0.081	0.124	0.100	0.143

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		12-31-70		(See Sht. 2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO
1/29/71	SCREW, MACHINE, PAN HEAD SLOTTED, CHROME PLATED	23-9902 thru 23-9919
LAST CHG LTR		SHEET 2 OF 2

ENGINEERING NOTES (Cont.)

2. Application: Use pan head machine screws in lieu of round, truss, fillister, etc., per I.F.I. recommendation.

(3) Material: Steel, chrome plated.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	12-31-70		(3)	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

23-9932 thru 23-9959

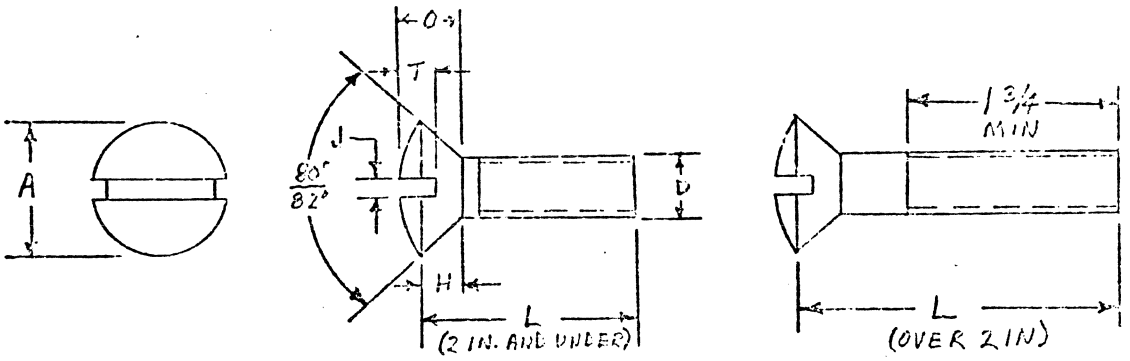
General Use Part

PRINT ISSUED	TITLE	PART NO.
3/31/71	SCREW, MACHINE, OVAL HEAD, SLOTTED CHROME PLATED	23-9932 thru 23-9959
LAST CHG LTR A		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	2-14-72	Gr. 5; J #85040

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	D BASIC	L ②	A MAX SHARP	A MIN SHARP	H REF	O MAX	J MAX	T MAX		FREIGHTLINER PART NUMBER
2 -56 UNC 2 -64 UNF	.0860	1/8	.172	.156	.051	.080	.031	.045		23-9932 -9933
4 -40 UNC 4 -48 UNF	.1120	3/16	.225	.207	.067	.104	.039	.059		-9934 -9935
6 -32 UNC 6 -40 UNF	.1380	3/16	.279	.257	.083	.128	.048	.074		-9936 -9937
8 -32 UNC 8 -36 UNF	.1640	1/4	.332	.308	.100	.152	.054	.088		-9938 -9939
10 -24 UNC 10 -32 UNF	.1900	5/16	.385	.359	.116	.176	.060	.103		-9940 -9941
12 -24 UNC 12 -28 UNF	.2160	3/8	.438	.410	.132	.200	.067	.117		-9942 -9943
1/4 -20 UNC 1/4 -28 UNF	.2500	7/16	.507	.477	.153	.232	.075	.136		-9944 -9945
5/16 -18 UNC 5/16 -24 UNF	.3125	1/2	.635	.600	.191	.290	.084	.171		-9946 -9947
3/8 -16 UNC 3/8 -24 UNF	.3750	9/16	.762	.722	.230	.347	.094	.206		-9948 -9949
7/16 -14 UNC 7/16 -20 UNF	.4375	5/8	.812	.767	.223	.345	.094	.210		-9950 -9951
1/2 -13 UNC 1/2 -20 UNF	.5000	3/4	.875	.831	.223	.354	.106	.216		-9952 -9953
9/16 -12 UNC 9/16 -18 UNF	.5625	13/16	1.000	.950	.269	.410	.118	.250		-9954 -9955
5/8 -11 UNC 5/8 -18 UNF	.6250	15/16	1.125	1.069	.298	.467	.133	.285		-9956 -9957
3/4 -10 UNC 3/4 -16 UNF	.7500	1-1/8	1.375	1.306	.372	.578	.149	.353		-9958 -9959

A * Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-9933-075 specifies a No. 2-64 UNF, Grade 2, Oval Head Machine Screw 3/4" long.

ENGINEERING NOTES

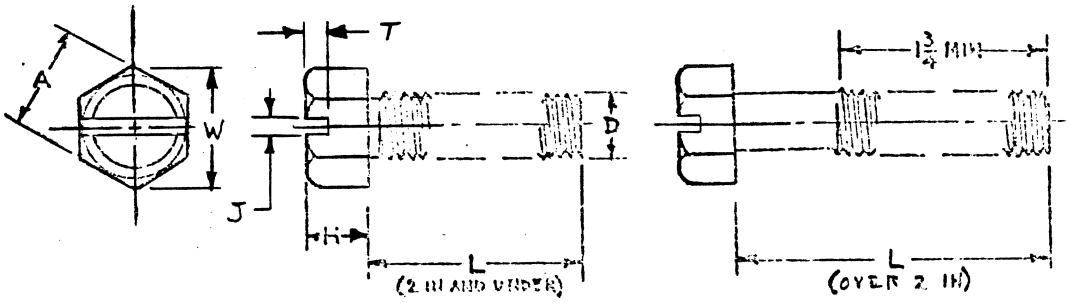
A ① Material: Steel, Grade 2 Bolt Material, Chrome Plated
② These lengths and shorter are undercut.

COMPILED	RNG	DATE DRAWN		MATERIAL	
APPROVED	Rall	3-22-71		①	

General Use Part

PRINT ISSUED	TITLE	PART NO.
3/31/71	SCREW, MACHINE HEXAGON HEAD, GR. 2	23-9962 thru 23-9979
LAST CHG. LTR. A		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE, THREADS PER INCH, SERIES DESIGNATION	FREIGHTLINER PART NUMBER
2-56 UNC	23-9962
2-64 UNF	23-9963
4-40 UNC	23-9964
4-48 UNF	23-9965
6-32 UNC	23-9966
6-40 UNF	23-9967
8-32 UNC	23-9968
8-36 UNF	23-9969
10-24 UNC	23-9970
10-32 UNF	23-9971

NOMINAL SIZE, THREADS PER INCH SERIES DESIGNATION	FREIGHTLINER PART NUMBER
12-24 UNC	23-9972
12-28 UNF	23-9973
1/4-20 UNC	23-9974
1/4-28 UNF	23-9975
5/16-18 UNC	23-9976
5/16-24 UNF	23-9977
3/8-16 UNC	23-9978
3/8-24 UNF	23-9979

ENGINEERING NOTES

1. Dimensions: (See Sketch)

NOM. SIZE	D DIAMETER OF SCREW	A WIDTH ACROSS FLATS		W WIDTH ACROSS CORNERS	H HEAD HEIGHT		J WIDTH OF SLOT		U WASHER THICKNESS		T DEPTH OF SLOT
	BASIC	MAX	MIN	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
2	0.0860	0.125	0.120	0.134	0.050	0.040	0.035	0.027	0.016	0.010	0.030
4	0.1120	0.187	0.181	0.202	0.060	0.049	0.039	0.031	0.019	0.011	0.036
6	0.1380	0.250	0.244	0.272	0.093	0.080	0.048	0.039	0.025	0.015	0.046
8	0.1640	0.250	0.244	0.272	0.110	0.096	0.054	0.045	0.031	0.019	0.066
10	0.1900	0.312	0.305	0.340	0.120	0.105	0.060	0.050	0.031	0.019	0.072
12	0.2160	0.312	0.305	0.340	0.155	0.139	0.067	0.056	0.039	0.022	0.093
1/4	0.2500	0.375	0.367	0.409	0.190	0.172	0.075	0.064	0.050	0.030	0.101
5/16	0.3125	0.500	0.489	0.545	0.230	0.208	0.084	0.072	0.055	0.035	0.122
3/8	0.3750	0.462	0.551	0.614	0.295	0.270	0.094	0.081	0.063	0.037	0.156

(2) Material: Grade 2 Bolt Material

3. Finish: Electro galvanize or cadmium plate.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-23-71		(2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

CHG	BY	DATE	WAS

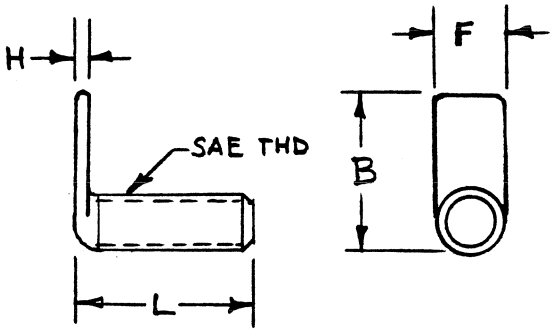
CHG	BY	DATE	WAS
A	HJR	2-14-72	Gr. 5; J #85050

23-9985

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, WELD (PLAIN SPADE) (3/8-24)	23-9985
LAST CHG. LTR.	–		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD SAE	B	F	H	L	MANUFACTURER'S NUMBER GR		FREIGHTLINER PART NUMBER *
3/8-24	1	19/32	5/32	3/4	LJ-3824-S-0750		23-9985-075
					-0875		-088
				1	-1000		-100
				1-1/4	-1250		-125
				1-1/2	-1500		-150
				1-3/4	-1750		-175
				2	-2000		-200
				2-1/4	-2250		-225
				2-1/2	-2500		-250
				3	-3000		-300
				3-1/4	-3250		-325

*Dash number is length in 1/100's inch.

ENGINEERING NOTES

(1) Material: Steel

CHG	BY	DATE	WAS
			J #92060

CHG	BY	DATE	WAS

ns

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-6-72		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

Thru 23-1

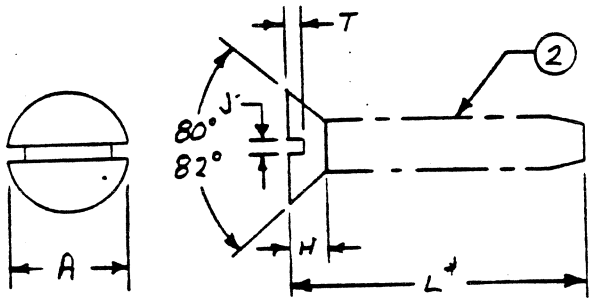
WAS | DATE | BY | CHG

WAS | DATE | BY | CHG

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, TAPPING FLAT HEAD SLOTTED	23-10002 Thru 23-10008
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L ③	A	H	J Max	T Max		FREIGHTLINER PART NUMBER*
2-32	.086	3/16	0.172	0.051	0.031	0.023		23-10002
4-24	.112	1/4	0.225	0.067	0.039	0.030		23-10003
6-20	.138	5/16	0.279	0.083	0.048	0.038		23-10004
8-18	.164	7/16	0.332	0.100	0.054	0.045		23-10005
10-16	.190	1/2	0.385	0.116	0.060	0.053		23-10006
12-14	.216	9/16	0.438	0.132	0.067	0.060		23-10007
1/4-14	.250	5/8	0.507	0.153	0.075	0.070		23-10008
5/16-12	.313	13/16	0.635	0.191	0.084	0.083		23-10009

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10006-.75 specifies a flat head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.
③ These lengths or shorter are undercut.

COMPILED	PG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

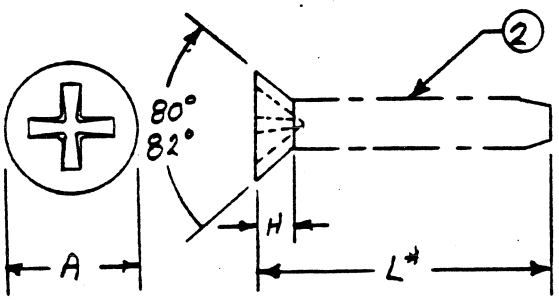
Portland FREIGHTLINER CORPORATION Oregon 97209

E-195

General Use Part

PRINT ISSUED	TITLE	PART NO.
3/31/71	SCREW, TAPPING FLAT HEAD CROSS RECESSED	23-10012 Thru 23-10017
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L ③	A	H		FREIGHTLINER PART NUMBER*
2-32	.086	3/16	0.172	0.051		23-10012
4-24	.112	1/4	0.225	0.067		23-10013
6-20	.138	5/16	0.279	0.083		23-10014
8-18	.164	7/16	0.332	0.100		23-10015
10-16	.190	1/2	0.385	0.116		23-10016
12-14	.216	9/16	0.438	0.132		23-10017
1/4-14	.250	5/8	0.507	0.153		23-10018
5/16-12	.313	13/16	0.635	0.191		23-10019

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10013-075 specifies a 4-24 flat head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.
③ These lengths or shorter are undercut.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

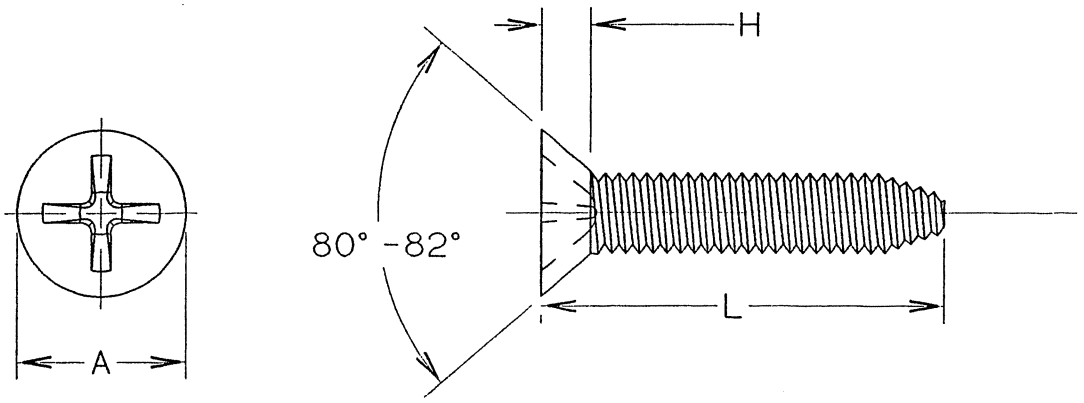
WAS 23-10011

CHG	BY	DATE

WAS

CHG	BY	DATE

DRAWN	R G	TITLE	ITEM NUMBER
APPRV	R G	SCREW-TAPPING, FLAT HEAD CROSS RECESSED	23-10014
DATE	03/24/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREADS	BASIC DIA	L	A	H		FREIGHTLINER PART NUMBER*
6-20	.138	5/16	0.279	0.083		23-10014-L
8-18	.164	7/16	0.332	0.100		23-10015-L
10-16	.190	1/2	0.385	0.116		23-10016-L
1/4-14	.250	5/8	0.507	0.153		23-10018-L

* COMPLETE PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE: 23-10014-075 SPECIFIES A 6-20 FLAT HEAD SCREW 3/4 INCH LONG.

ENGINEERING NOTES:

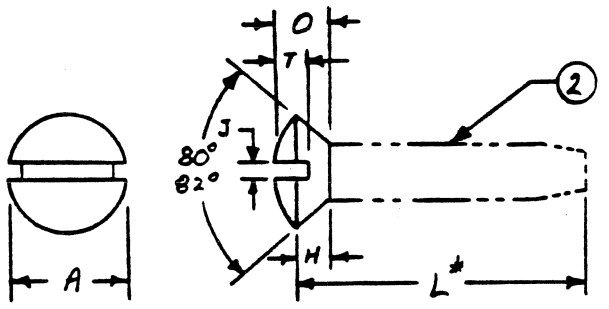
MATERIAL: STEEL, CADIUM OR ZINC PLATED.
THREADS: TYPE AB OF AMERICAN STANDARDS B18.6.4.
THESE LENGTHS OR SHORTER ARE UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P*0677-01	03/24/71	R G	INITIAL RELEASE
A	PA2042-52	03/28/95	DAJ	REVISED AND REDRAWN, ADDED ZINC TO NOTE.

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, TAPPING OVAL HEAD SLOTTED	23-10022 Thru 23-10029
LAST CHG. LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L ③	A	H	O Max	J Max	T Max		FREIGHTLINER PART NUMBER*
2-32	.086	3/16	0.172	0.051	0.080	0.031	0.045		23-10022
4-24	.112	1/4	0.225	0.067	0.104	0.039	0.059		23-10023
6-20	.138	5/16	0.279	0.083	0.128	0.048	0.074		23-10024
8-18	.164	7/16	0.332	0.100	0.152	0.054	0.088		23-10025
10-16	.190	1/2	0.385	0.116	0.176	0.060	0.103		23-10026
12-14	.216	9/16	0.438	0.132	0.200	0.067	0.117		23-10027
1/4-14	.250	5/8	0.507	0.153	0.232	0.075	0.136		23-10028
5/16-12	.313	13/16	0.635	0.191	0.290	0.084	0.171		23-10029

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10023-075 specifies a number 4-24 oval head tapping screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.
③ These lengths or shorter are undercut.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

Thru 23-10029

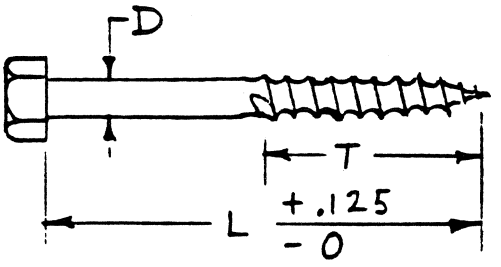
CHG	BY	DATE	WAS

CHG	BY	DATE	WAS

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, LAG, HEX HD. ¼"	23-10030
LAST CHG LTR		SHEET 1 OF 1

SCREW



PART NUMBERS

SIZE D X L	T (approx.)		FREIGHTLINER PART NUMBER *
¼ x 2½	1.75		23-10030-250

* Dash Number is length, L, of screw in 1/100's of an inch.

ENGINEERING NOTES

1. MATERIAL: Low Carbon Steel
2. FINISH: Zn or Cd Plate
3. Shall meet all pertinent provisions of SAE Std J 103.

CHG	BY	DATE	WAS
			J #83680

CHG	BY	DATE	WAS
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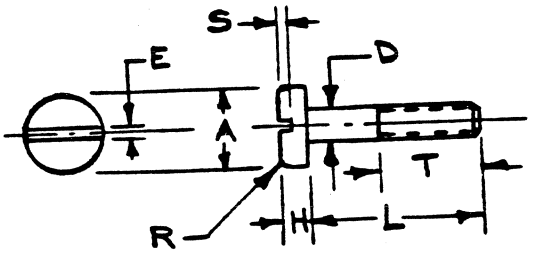
COMPILED	H.J.R.	DATE DRAWN		MATERIAL	
APPROVED	Rolling	3-20-72		1	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED		TITLE	PART NO.
		CAP SCREW, SLOTTED PAN HEAD GRADE 8 SPECIAL	23-10031
LAST CHG. LTR	B		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD	A MAX.	H (REF.)	T THREAD LENGTH	FINISH (2)	S	E	R	D	FREIGHTLINER PART NUMBER *
1/4 -28 UNF	.720 .715	.182 .168	.630 .720	Z	.064 .075	.05 .07	.050 .070	.250 .245	23-10031-100

*Dash number is length, L, in 1/100's of an inch.

ENGINEERING NOTES

(1) Material: Steel, SAE Grade 8

(2) Finish: Commercial Zinc Plate, Z.

3. Must conform to ASA Stds B18.2.1-1965, B18.6.3-1962, & B18.3-1961, except as noted.

CHG	BY	DATE	WAS
—	—	——	Pre-released
A	HJR	4-28-72	.630/.620 ; Redraw J #30500
B	DL	2-21-73	Rev. Tol's; J#A0120

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	4-28-72		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

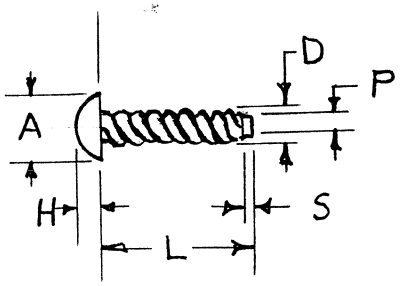
ns

23-10138 thru 23-10141

PRINT ISSUED		TITLE	PART NO.
		SCREW, DRIVE ROUND HEAD, TYPE "U"	23-10138 thru 10141
LAST CHG. LTR.	A		SHEET 1 OF 1

CHG	BY	DATE	WAS

SKETCH



PILOT LENGTH	
WHEN L =	S
1/8 thru 5/16	.047
3/8 thru 1/2	.062
5/8 thru 3/4	.078
1" & Over	.125

PART NUMBERS

NOM. SIZE	D MAX. - MIN.	A MAX. - MIN.	H MAX.	P	MANU... NO.	FREIGHTLINER PART NUMBER *
#6	.140 - .136	.260 - .240	.103	.116 -		23-10138-L
#8	.167 - .162	.309 - .287	.120	.1...		23-10139-L
#10	.182 - .177	.359 - .334	.1...			23-10140-L
#12	.212 - .206	.408 - .3...				23-10141-L

REMOVE & DESTROY

*Complete part ... by adding dash number, L, expressing length in 1/100's of an inch. Examp... 23-10138-038 is #6 Drive Screw 3/8" long.

CHG	BY	DATE	WAS
A	HJR	5-15-73	Part No. Example Added; J #A0419
-	-	-	J #A0291

ENGINEERING NOTES

1. Material: Steel
2. Must conform to provisions of 1970 draft revision of ANSI B18.6.4 1966.
3. Finish: Cd or Zn Plate
4. Recommended Hole Size:

SIZE	DRILL	HOLE DIA.
#6	31	.120
#8	27	.144
#10	20	.161
#12	11	.191

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	4-11-73		1	

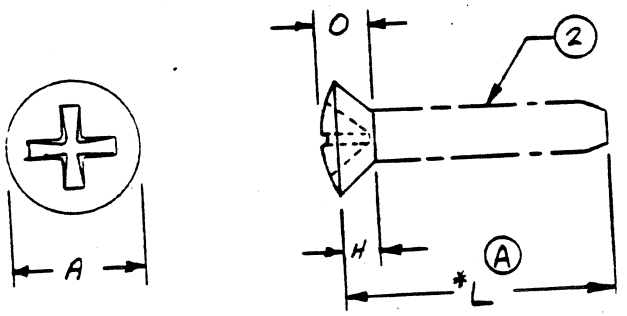
ns

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PART NO.	TITLE	PART NO.
DATE ISSUED 3/3/71	SCREW, TAPPING OVAL HEAD CROSS RECESS	23-10032 Thru 23-10[illegible]2
LAST CHG LTR A		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L ③	A	H	O Max		FREIGHTLINER PART NUMBER*
2-32	.086	3/16	0.172	0.051	0.[illegible]		23-1[illegible]032
4-24	.112	1/4	0.225	0.067	0.1[illegible]		23-1[illegible]033
6-20	.138	5/16	0.279	0.083	0.[illegible]		23-1[illegible]034
8-18	.164	7/16	0.332	0.100	0.152		23-1[illegible]035
10-16	.190	1/2	0.385	0.116	0.17[illegible]		23-1[illegible]036
12-14	.216	9/16	0.438	0.132	0.20[illegible]		23-1[illegible]037
1/4-14	.250	5/8	0.507	0.153	0.232		23-1[illegible]038
5/16-12	.313	13/16	0.635	0.191	.290		23-1[illegible]039

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10032-075 specifies a 4-24 oval head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.
③ These lengths or shorter are undercut.

WAS "L" excld to "L" incld H dim. 7466

CHG	BY	DATE
A	D.S.	7-13-78
	D.S.	7-13-78

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

FREIGHTLINER CORPORATION Oregon 97208

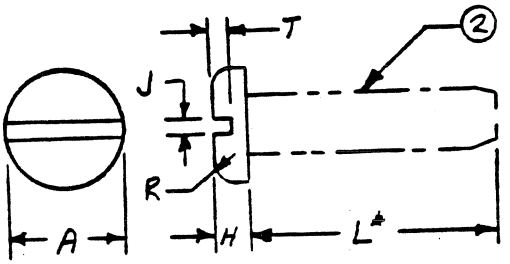
General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, TAPPING PAN HEAD, SLOTTED	23-10042 Thru 23-10049
LAST CHG LTR		SHEET 1 OF 1

Thru 23-10049

WAS | DATE | BY | CHG

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS	BASIC DIA.	A MAX.	H MAX.	R MAX.	J MAX.	T MAX.		FREIGHTLINER PART NUMBER*
2-32	.086	0.167	0.053	0.035	0.031	0.031		23-10042
4-24	.112	0.219	0.069	0.042	0.039	0.040		23-10043
6-20	.138	0.270	.082	0.048	0.047	0.050		23-10044
8-18	.164	0.322	0.096	0.052	0.054	0.059		23-10045
10-16	.190	0.373	0.110	0.061	0.060	0.060		23-10046
12-14	.216	0.425	0.125	0.078	0.167	0.077		23-10047
1/4-14	.250	0.492	.144	0.087	0.175	0.087		23-10048
5/16-12	.313	0.615	0.173	0.099	0.084	0.136		23-10049

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10043-075 SPECIFIES A PAN HEAD SCREW 3/4" LONG.

ENGINEERING NOTES

1. Material: Steel, Cadmium Plated
2. Thread: Type AB of American Standard B18.6.4.

		DATE DRAWN		MATERIAL	
COMPILED	RG	3-24-71		1	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

GENERAL USE PART

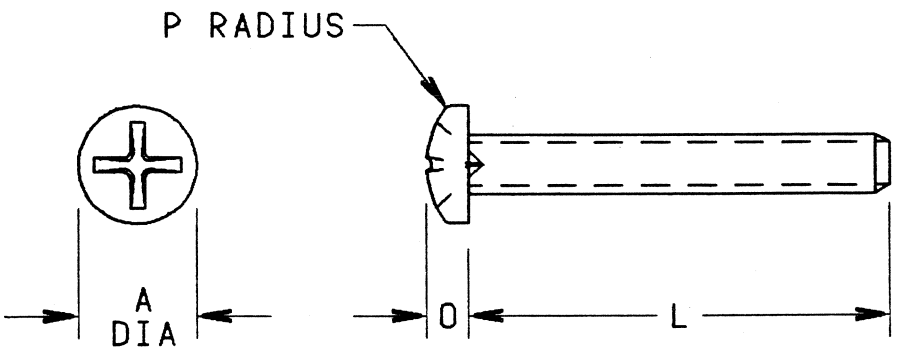
23-10052 THRU 23-10059

ORIGINAL JOB NO.	TITLE	PART NO.
1596C	SCREW, TAPPING PAN HEAD, RECESSED	23-10052 THRU 23-10059
LAST CHG LTR: A		SHEET 1 OF 1

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	1596C	FEF	01-31-84	REVISED & REDRAWN

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS	BASIC DIA	A DIA MAX	O MAX	P RADIUS MIN		FREIGHTLINER PART NUMBER*
2-32	.086	.167	.062	.010		23-10052-L
4-24	.112	.219	.080	.010		23-10053-L
6-20	.138	.270	.097	.015		23-10054-L
8-18	.164	.322	.115	.015		23-10055-L
10-16	.190	.373	.133	.020		23-10056-L
12-14	.216	.425	.151	.025		23-10057-L
1/4-14	.250	.492	.175	.035		23-10058-L
5/16-12	.313	.615	.218	.040		23-10059-L

* COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE: 23-10053-075 SPECIFIES A NUMBER 4-24 PAN HEAD SCREW 3/4 OF AN INCH LONG.

ENGINEERING NOTES:

(1) MATERIAL: STEEL, ZINC PLATED.

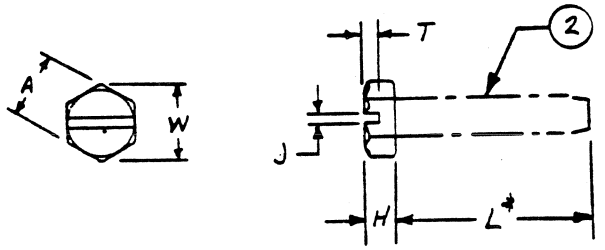
2. THREAD: TYPE AB OF AMERICAN STANDARD B18.6.4.

COMPILED	FEF	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED		01-31-84		(1)	01160	000D1

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, TAPPING HEX HEAD SLOTTED	23-10062 Thru 23-10068
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS PER INCH	BASIC DIA.	A Max	W Min	H Max	J Max	T Max		FREIGHTLINER PART NUMBER*
2-32	.086	0.125	0.134	0.050	-	-		23-10062
4-24	.112	0.187	0.202	0.060	0.039	0.036		23-10063
6-20	.138	0.250	0.272	0.093	0.048	0.046		23-10064
8-18	.164	0.250	0.272	0.110	0.054	0.056		23-10065
10-16	.190	0.312	0.340	0.120	0.060	0.072		23-10066
12-14	.216	0.312	0.340	0.155	0.067	0.093		23-10067
1/4-14	.250	0.375	0.409	0.190	0.075	0.101		23-10068
5/16-12	.3125	0.500	0.545	0.230	0.084	0.122		23-10069

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10063-075 specifies a 4-24 hex head screw 3/4 inch long.

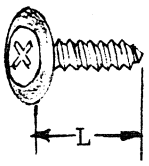
ENGINEERING NOTES

(1) Material: Steel, Cadmium Plated.
(2) Thread: Type AB of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		(1)	

WAS 23-10060
CHG BY DATE
WAS
CHG BY DATE

PRINT ISSUED	TITLE	PART NO.
6-22-70	PHILLIPS OVAL WASHER HEAD TAPPING SCREW	23-9323
LAST CHG. LTR. D		SHEET 1 OF 1



SCREW		TYPE WASHER	FREIGHTLINER PART NUMBER	
SIZE	(L) LENGTH			
6	5/8	countersunk	23-9323-001	-201
6	3/4	"	-002	-202
6	1	"	-003	-203
6	1-1/4	"	-004	-204
8	5/8	flush	-005	-205
8	5/8	countersunk	-006	-206
8	3/4	"	-007	-207
8	7/8	flush	-008	-208
8	1	countersunk	-009	-209
8	1-1/4	"	-010	-210
10	5/8	"	-011	-211
10	3/4	"	-012	-212
10	1	"	-013	-213
10	1-1/4	"	-014	-214
		FINISH:	SATIN BLACK	CHROME

(1)- Material
a. bolt = steel
b. washer = steel

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	KJA	6-10-70	Added Finish Callout
B	RC	4-19-77	PHOSPHATE & OIL FINISH (NOW)
C	TC	10-25-78	ADD'D DASH #'S FOR CHROME C1379
D	TD	2-12-79	CHANGED FINISH CALLOUT 73611

D

B

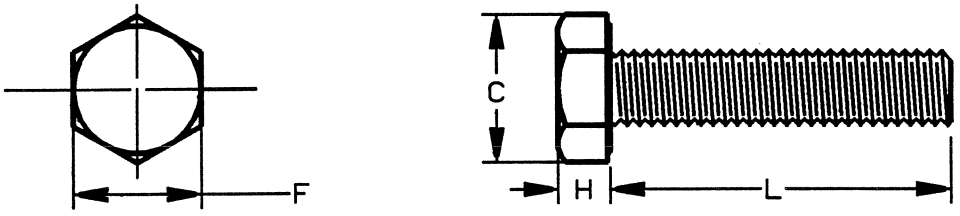
COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED		5-20-70		(1)	Vehicle

Portland FREIGHTLINER CORPORATION Oregon 97208

D C B

E-183

DRAWN	HJR	TITLE	ITEM NUMBER
APPRV	ROLLINS	SCREW -MACHINE HEX HEAD, CAD PLATED	**23-09882**
DATE	02/17/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD	BASIC DIAM.	F BASIC	C MAX	H MAX	FREIGHTLINER PART NUMBER
6-32 UNC	.1380	.250	.272	.093	23-09886-L
8-32 UNC	.1640	.250	.272	.110	23-09888-L
10-24 UNC 10-32 UNF	.1900	.312	.340	.120	23-09890-L 23-09891-L
12-24 UNC	.2160	.312	.340	.155	23-09892-L
1/4-20 UNC 1/4-28 UNF	.2500	.375	.409	.190	23-09894-L 23-09895-L
5/16-18 UNC 5/16-24 UNF	.3125	.500	.545	.230	23-09896-L 23-09897-L
3/8-16 UNC 3/8-24 UNF	.3750	.562	.614	.295	23-09898-L 23-09899-L

*

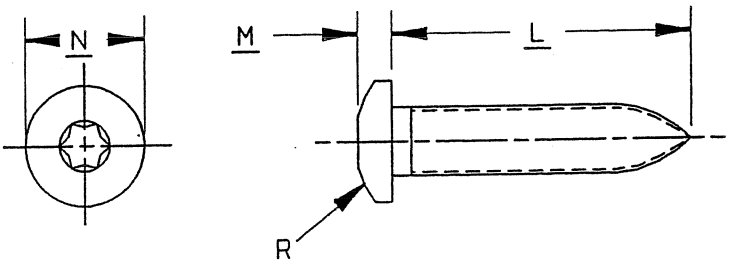
COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. E.G. 23-09894-150 IS A 1/4-20 UNC MACHINE SCREW 1 AND 1/2 INCHES LONG.

ENGINEERING NOTES:

1. MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.
2. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.
3 FINISH: CADMIUM PLATE PER FREIGHTLINER SPECIFICATION 49-00012-130.

CHG	JOB/RLSE NO	DATE	BY	REVISION
D	PA2042-41	10/08/93	ERK	REDRAWN; REVISED MATERIAL

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING, PLATED PAN HEAD, TORX OR CROSS RECESS	23-10052	
DATE	06/15/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. F
CATIA ORIGINAL				



INTERNAL TORX SHOWN

THREAD SIZE	BASIC DIA	DIMENSIONS			FREIGHTLINER PART NUMBERS*
		R (BASIC)	N (MAX)	M (MAX)	
4-24	.112	.010	.219	.068	23-10052-L
6-20	.138	.015	.270	.097	23-10054-L
8-18	.164	.015	.322	.115	23-10055-L
10-16	.190	.020	.373	.133	23-10056-L
12-14	.216	.025	.425	.151	23-10057-L
1/4-14	.250	.035	.492	.175	23-10058-L
5/16-12	.313	.040	.615	.218	23-10059-L

F

* COMPLETE PART NUMBER BY ADDING A 3-DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE 23-10058-162 SPECIFIES A 1/4-14 CROSS RECESS TAPPING SCREW 1 5/8 INCH LONG.

FOR "TORX" DRIVE SCREW DESIGNATIONS: THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS: EXAMPLE 23-10056-715 IS AN INTERNAL TORX 10-16 TAPPING SCREW 1 5/8 INCH LONG.

7 - REPRESENT "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH (7 MAX)

ENGINEERING NOTES:

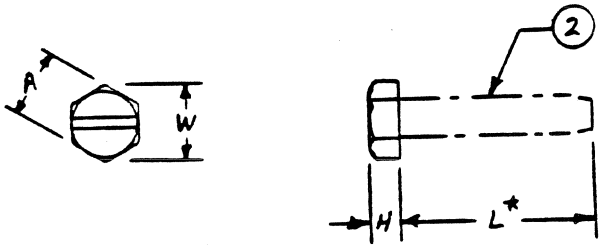
1. MATERIAL: STEEL PER SAE J933
2. FINISH: ZINC PLATE, TYPE III, CLASS 3, PER F/L SPECIFIACTION 49-00005-403 AND WAX.
3. DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. CROSS RECESS: TYPE 1 PER ANSI B18.6.4
5. THREAD & POINT: TYPE AB PER ANSI B18.6.4
6. TORX RECESS: PER CAMCAR STANDARD TXH-206.

CHG	JOB NO	DATE	BY	REVISION
F	P04345-09	06/15/98	DAJ	REVISED AND REDRAWN IN CATIA, ADDED SPEC 23-10052.

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, TAPPING HEX HEAD	23-10072 Thru 23-10079
LAST CHG LTR		SHEET OF

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS PER INCH	BASIC DIA.	A Max	W Min	H Max		FREIGHTLINER PART NUMBER*
2-32	.086	0.125	0.134	0.050		23-10072
4-24	.112	0.187	0.202	0.060		23-10073
6-20	.138	0.250	0.272	0.093		23-10074
8-18	.164	0.250	0.272	0.110		23-10075
10-16	.190	0.312	0.340	0.120		23-10076
12-14	.216	0.312	0.340	0.155		23-10077
1/4-14	.250	0.375	0.409	0.190		23-10078
5/16-12	.3125	0.500	0.545	0.230		23-10079

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10073-075 specifies a 4-24 hex head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

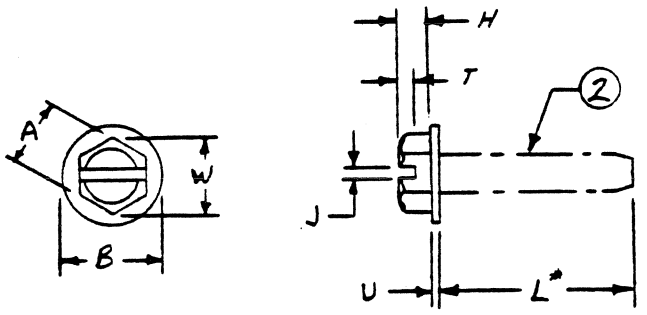
PRINT ISSUED	TITLE	PART NO.
3/31/71	SCREW, TAPPING HEX WASHER HEAD SLOTTED	23-10082 Thru 23-10089
LAST CHG LTR: A		SHEET 1 OF 1

Thru 23-10089

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	1-17-72	1/4-14; Job #84510

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS PER INCH	BASIC DIA.	A Max	W Min	H Max	B Max	U Max	J Max	T Max		FREIGHTLINER PART NUMBER*
2-32	.086	0.125	0.134	0.050	0.166	0.016	-	-		23-10082
4-24	.112	0.187	0.202	0.060	0.243	0.019	0.039	0.042		23-10083
6-20	.138	0.250	0.272	0.093	0.328	0.025	0.048	0.053		23-10084
8-18	.164	0.250	0.272	0.110	0.348	0.031	0.054	0.074		23-10085
10-16	.190	0.312	0.340	0.120	0.414	0.031	0.060	0.080		23-10086
12-14	.216	0.312	0.340	0.155	0.432	0.039	0.067	0.103		23-10087
14 -14**	.242	0.438	0.500	0.180	0.440	0.045	0.075	0.111		23-10088
5/16-12**	.3125	0.500	0.545	0.230	0.676	0.055	0.084	0.134		23-10089

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10083-075 specifies a 4-24 hex washer lead screw 3/4 inch long.

**Slot Optional

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type AB of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

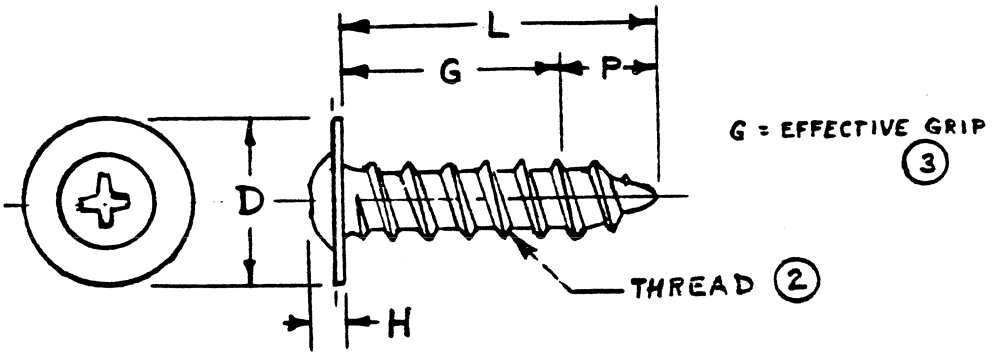
Portland FREIGHTLINER CORPORATION Oregon 97208

A

General Use Part

PRINT ISSUED	TITLE	PART NO.
1-29-71	SCREW, TAPPING CROSS RECESS - WASHER HEAD	23-10092 Thru 10099
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

Size	Thread: Basic Dia.	Thread: Threads Per Inch	Thread: P	Head: D	Head: H	Manufacturer's No.: CFS	Freightliner Part Number*
2	.086	32	.119				23-10092-L
4	.112	24	.160				23-10093-L
6	.138	20	.193	.38	.12	(4)	23-10094-L
8	.164	18	.224				23-10095-L
10	.190	16	.256				23-10096-L
12	.216	14	.296				23-10097-L
1/4	.250	14	.335				23-10098-L
5/16	.312	12	.418				23-10099-L

*Complete the part number by adding a three digit dash number to indicate length in hundredths of an inch, thus: 23-XXXXX-125 specifies a part 1.25 inches long.

ENGINEERING NOTES

(1) Material: Steel, Cad. Plated

(2) Thread: Type AB of American Standard B18.6.4 per I.F.I. Engineering Recommendation Number 2.

(3) Effective Grip: G = L - P

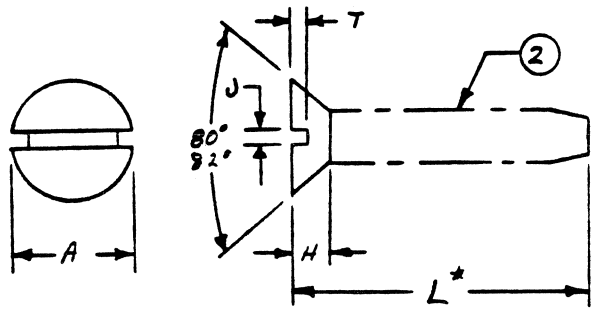
(4) No number; order by description.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		7-10-70		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, MACHINE TAPPING FLAT HEAD, SLOTTED	23-10102 Thru 23-10117
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIA.	L THESE LENGTHS OR SHORTER ARE UNDERCUT	A MAX.	H Ref.	J Max.	J Min.	T Max.		FREIGHTLINER PART NUMBER
4-40- UNC	.112	1/4	0.225	0.067	0.039	0.031	0.030		23-10102
4-48- UNF									23-10103
6-32- UNC	.138	5/16	0.279	0.083	0.048	0.039	0.038		23-10104
6-40- UNF									23-10105
8-32- UNC	.164	7/16	0.332	0.100	0.054	0.045	0.045		23-10106
8-36- UNF									23-10107
10-24- UNC	.190	1/2	0.385	0.116	0.060	0.050	0.053		23-10108
10-32- UNF									23-10109
12-24- UNC	.216	9/16	0.438	0.132	0.067	0.056	0.060		23-10110
12-28 UNF									23-10111
1/4-20- UNC	.250	5/8	0.507	0.153	0.075	0.064	0.070		23-10112
1/4-28- UNF									23-10113
5/16-18-UNC	.313	5/8	0.635	0.191	0.084	0.072	0.088		23-10114
5/16-24-UNF									23-10115
3/8-16- UNC	.375	5/8	0.762	0.230	0.094	0.081	0.106		23-10116
3/8-24- UNF									23-10117

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10103-075 specifies a number 4-48 UNF flat head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated
② Thread: Type F of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED	G.W	3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

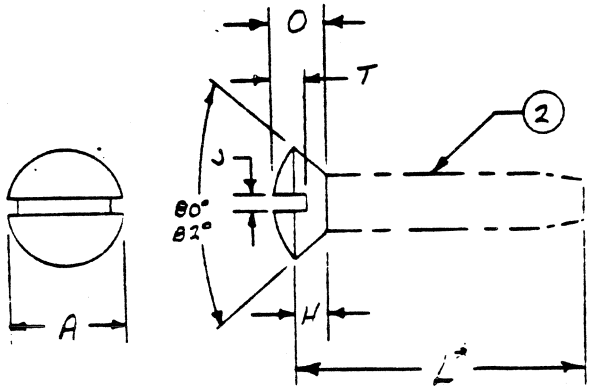
Thru 23-10117

CHG	BY	DATE	WAS

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, MACHINE TAPPING OVAL HEAD, SLOTTED	23-1[illegible]122 Thru 23-1[illegible]137
LAST CHG LTR		SHEET OF

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIA.	L THESE LENGTHS OR SHORTER ARE UNDERCUT	A MAX.	H Ref.	J Max.	J Min.	T Max.	Max.	FREIGHTLINER PART NUMBER
4-40- UNC 4-48- UNF	.112	1/4	0.225	0.067	0.039	0.031	0.05	.1[illegible]	23-1[illegible]122 23-1[illegible]123
6-32- UNC 6-40- UNF	.138	5/16	0.279	0.083	0.048	0.039	0.07[illegible]	.12[illegible]	23-1[illegible]12 23-1[illegible]125
8-32- UNC 8-36- UNF	.164	7/16	0.332	0.100	0.054	0.045	0.0[illegible]	.152	23-1[illegible]12 23-1[illegible]127
10-24- UNC 10-32- UNF	.190	1/2	0.385	0.116	0.060	0.050	0.103	.17[illegible]	23-1[illegible]12 23-1[illegible]12
12-24- UNC 12-28 UNF	.216	9/16	0.438	0.132	0.067	0.056	0.117	.2[illegible]	23-1[illegible]13[illegible] 23-1[illegible]131
1/4-20- UNC 1/4-28- UNF	.250	5/8	0.507	0.153	0.075	0.064	0.13[illegible]	.232	23-1[illegible]132 23-1[illegible]133
5/16-18-UNC 5/16-24-UNF	.313	5/8	0.635	0.191	0.084	0.072	0.171	.2[illegible]	23-1[illegible]13[illegible] 23-1[illegible]135
3/8-16- UNC 3/8-24- UNF	.375	5/8	0.762	0.230	0.094	0.081	0.2[illegible]6	.347	23-1[illegible]13[illegible] 23-1[illegible]137

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10123-075 specifies a [illegible]-[illegible] UNF oval head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated
② Thread: Type F of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED	[illegible]	3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

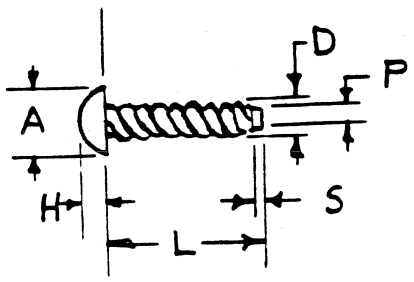
Thru 23-10137

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS

PRINT ISSUED		TITLE	PART NO
		SCREW, DRIVE ROUND HEAD, TYPE "U"	23-10138 thru 10141
LAST CHG LTR	A		SHEET 1 OF 1

SKETCH



PILOT LENGTH	
WHEN L =	S
1/8 thru 5/16	.047
3/8 thru 1/2	.062
5/8 thru 3/4	.078
1" & Over	.125

PART NUMBERS

NOM. SIZE	D MAX. - MIN.	A MAX. - MIN.	H MAX.	P	MANUFACTURER'S NO.	FREIGHTLINER PART NUMBER *
#6	.140 - .136	.260 - .240	.103	.116 - .112		23-10138-L
#8	.167 - .162	.309 - .287	.120	.136 - .132		23-10139-L
#10	.182 - .177	.359 - .334	.137	.150 - .146		23-10140-L
#12	.212 - .206	.408 - .382	.153	.177 - .173		23-10141-L

*Complete part number by adding dash number, L, expressing length in 1/100's of an inch. Example: 23-10138-038 is #6 Drive Screw 3/8" long.

ENGINEERING NOTES

(1) Material: Steel

2. Must conform to provisions of 1970 draft revision of ANSI B18.6.4 1966.

3. Finish: Cd or Zn Plate

4. Recommended Hole Size:

SIZE	DRILL	HOLE DIA.
#6	31	.120
#8	27	.144
#10	20	.161
#12	11	.191

CHG	BY	DATE	WAS
A	HJR	5-15-73	Part No. Example Added; J #A0419
-	-	-	J #A0291

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	4-11-73		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

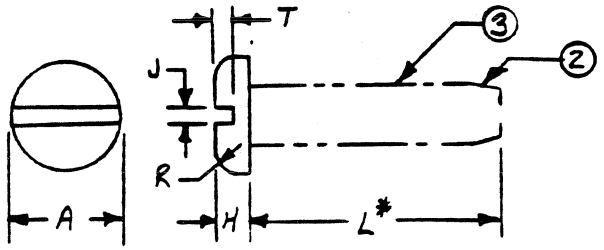
WAS 23-10141

CHG | BY | DATE

General Use Part

PRINT ISSUED	TITLE	PART NO
3/31/71	SCREW, MACHINE TAPPING PAN HEAD SLOTTED	23-10142 Thru 23-10157
LAST CHG LTR: A		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIA.	A Max	H Max	R Max	J Max	T Max		FREIGHTLINER PART NUMBER*
4-40- UNC	.112	0.219	0.068	0.042	0.039	0.040		23-10142
4-48- UNF								23-10143
6-32- UNC	.138	0.270	0.082	0.046	0.048	0.050		23-10144
6-40- UNF								23-10145
8-32- UNC	.164	0.322	0.096	0.052	0.054	0.058		23-10146
8-36- UNF								23-10147
10-24- UNC	.190	0.373	0.110	0.061	0.060	0.068		23-10148
10-32- UNF								23-10149
12-24- UNC	.216	0.425	0.125	0.078	0.067	0.077		23-10150
12-28- UNF								23-10151
1/4-20- UNC	.250	0.492	0.144	0.087	0.075	0.087		23-10152
1/4-28- UNF								23-10153
5/16-18-UNC	.313	0.615	0.178	0.099	0.084	0.106		23-10154
5/16-24-UNF								23-10155
3/8-16- UNC	.375	0.740	0.212	0.143	0.094	0.124		23-10156
3/8-24- UNF								23-10157

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10143-075 specifies a number 4-48-UNF Pan Head Slotted Machine Screw 3/4 inch long.

ENGINEERING NOTES

1. Material: Steel, Cadmium Plated
2. Point: Type F of American Standard B18.6.4 (Thread cutting)
3. Thread: SAE UNC and UNF.

		DATE DRAWN		MATERIAL	
COMPILED	RG	3-24-71		①	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

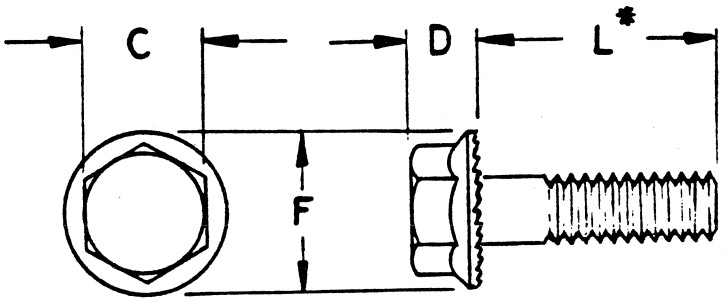
CHG	BY	DATE	WAS
A			
	HJR	3-15-72	Thd & point notes rev'd J #85390.
A			

E-183

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, MACHINE, HEX SERRATED WASHER HEAD SPECIAL, GRADE 8	23-10161
LAST CHG. LTR A		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE AND THREADS PER INCH	C HEX	F DIA	D	MANUFACTURER'S NUMBER GR		FREIGHTLINER PART NUMBER*
1/4-2[illegible] UNC	.375	.500	.210	HT-1420 S 0625		23-10161-L

*Complete part number by adding a three-digit dash number expressing length in hundredths of an inch; thus, 23-10161-075 represents a screw 3/4" long.

ENGINEERING NOTES

1. Material: Grade 8 Bolt Material
2. Finish: Cadmium or Zinc Plate

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
-	-	-	J #A0133
X	IIJR	4-23-73	1/4-28 UNC; J #A0342

COMPILED	D. Le L.	DATE DRAWN		MATERIAL	
APPROVED	Rollins	3-2-73		(1)	

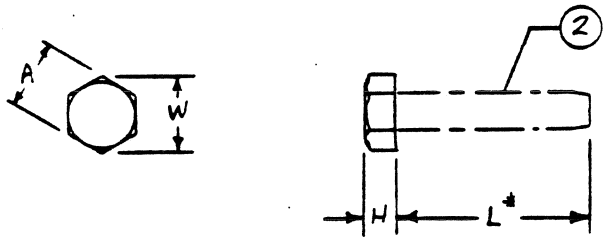
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Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO.
3/31/71	SCREW, MACHINE TAPPING HEX HEAD	23-10162 Thru 23-10177
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIA.	A Max	W Min	H Max		FREIGHTLINER PART NUMBER*
4-40- UNC	.112	0.187	0.202	0.060		23-10162
4-48- UNF						23-10163
6-32- UNC	.138	0.250	0.272	0.093		23-10164
6-40- UNF						23-10165
8-32- UNC	.164	0.250	0.272	0.110		23-10166
8-36- UNF						23-10167
10-24- UNC	.190	0.312	0.340	0.120		23-10168
10-32- UNF						23-10169
12-24- UNC	.216	0.312	0.340	0.155		23-10170
12-28- UNF						23-10171
1/4-20- UNC	.250	0.375	0.409	0.190		23-10172
1/4-28- UNF						23-10173
5/16-18-UNC	.313	0.500	0.545	0.230		23-10174
5/16-24-UNF						23-10175
3/8-16- UNC	.375	0.562	0.614	0.295		23-10176
3/8-24- UNF						23-10177

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10163-075 specifies a 4-48 hex head screw 3/4 inch long.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type F of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		①	

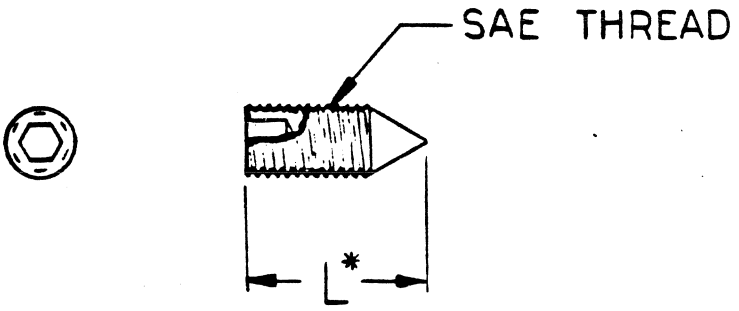
Portland FREIGHTLINER CORPORATION Oregon 97208

thru 23-10181

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SET SCREW, HEX SOCKET CONE POINT	23-10178 thru 10181
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD UNF		FREIGHTLINER PART NUMBER *
12--28		23-10178-L
1/4 -28		23-10179-L
5/16-24		23-10180-L
3/8 -24		23-10181-L

*To complete part number, add a three-digit dash number expressing length in hundredths of an inch.

ENGINEERING NOTES

1. Material: Grade 8 Bolt Material.

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
New			Job No. 60710

ns

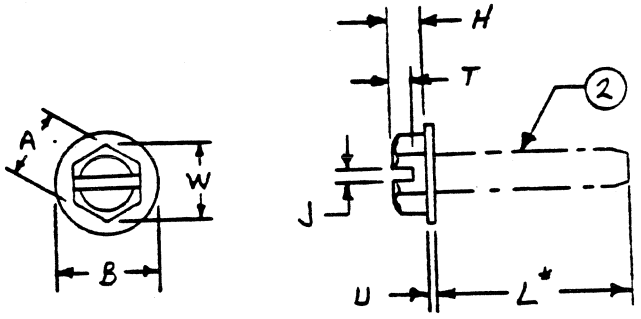
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rolins	1-11-73		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

DATE ISSUED	TITLE	PART NO.
3/31/71	SCREW, MACHINE TAPPING HEX WASHER HEAD SLOTTED	23-10182 Thru 23-10187
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIA.	A Max	W Min	H Max	E Max	U Max	J Max	T Max		FREIGHTLINER PART NUMBER*
4-40- UNC 4-48- UNF	.112	0.187	0.202	0.060	0.243	0.019	0.03[illegible]	[illegible]2		23-10182 23-1[illegible]
6-32- UNC 6-40- UNF	.138	0.250	0.272	0.093	[illegible]	[illegible]	[illegible]	[illegible]		23-1[illegible] 23-1[illegible]
8-32- UNC 8-36- UNF	.164	0.250	0.272	0.110	[illegible]	[illegible]	[illegible]	[illegible]		23-1[illegible] 23-10187
10-24- UNC 10-32- UNF	.190	0.312	0.340	0.120	[illegible]	[illegible]	[illegible]	[illegible]		23-1[illegible] 23-1[illegible]
12-24- UNC 12-28- UNF	.216	0.312	0.340	0.155	[illegible]	[illegible]	[illegible]	[illegible]		23-1[illegible] 23-1[illegible]
1/4-20- UNC 1/4-28- UNF	.250	0.375	0.409	0.190	[illegible]	[illegible]	[illegible]	.111		23-1[illegible] 23-1[illegible]
5/16-18-UNC 5/16-24-UNF	.313	0.500	0.545	0.230	[illegible]	[illegible]	[illegible]	[illegible]		23-1[illegible] 23-1[illegible]
3/8-16- UNC 3/8-24- UNF	.375	0.562	0.614	0.295	[illegible]	[illegible]	[illegible]	.15[illegible]		23-1[illegible] 23-1[illegible]

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10[illegible]-075 specifies a [illegible] UNF hex washer [illegible] screw.

ENGINEERING NOTES

① Material: Steel, Cadmium Plated.
② Thread: Type F of American Standard B18.6.4.

COMPILED	RG	DATE DRAWN		MATERIAL	
APPROVED	[illegible]	3-24-71		①	

Portland FREIGHTLINER CORPORATION Oregon 97208

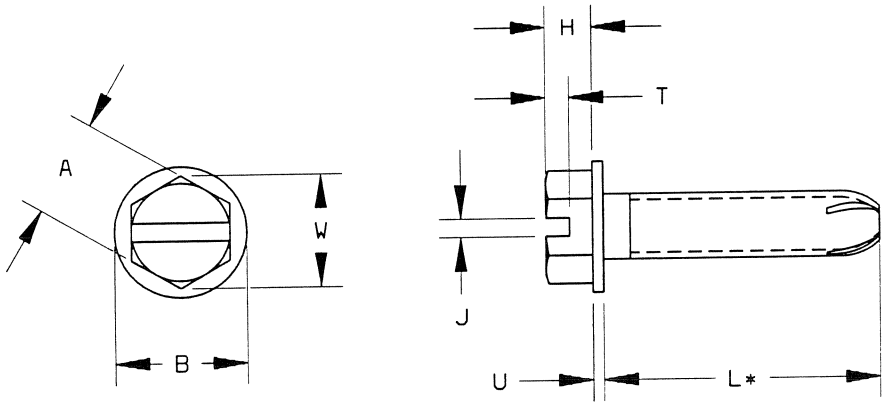
WAS 23-10117

CHG	BY	DATE

WAS

CHG	BY	DATE

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, TAPPING HEX WASHER HEAD, SLOTTED	23-10189	
DATE	08/27/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A
CATIA ORIGINAL				



NOMINAL SIZE & THREAD	BASIC DIA.	A MAX	W MIN	H MAX	B MAX	U MAX	J MAX	T MAX	FREIGHTLINER PART NUMBER*
3/8-16 UNC	0.375	0.562	0.614	0.295	0.780	0.063	0.094	0.168	23-10196-L

* COMPLETE PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE: 23-10196-225 SPECIFIES A 3/8-16 UNC HEX WASHER HEAD SCREW 2-1/4" LONG.

ENGINEERING NOTES:

1. MATERIAL: STEEL, CADMIUM PLATED.
2. THREAD: TYPE F OF AMERICAN STANDARD B18.6.4.

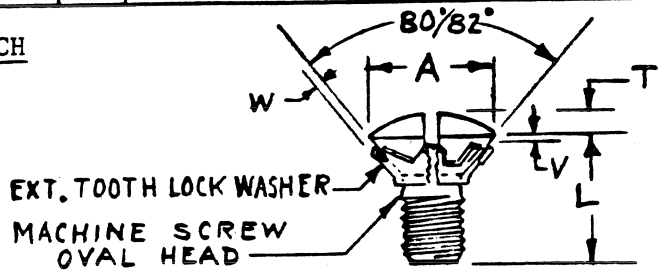
CHG	JOB NO	DATE	BY	REVISION
A	P09070-05	08/27/99	CGD	REVISED AND REDRAWN IN CATIA.

thru 23-10217

General Use Part

PRINT ISSUED	TITLE	PART NO.
4/14/71	SEMS, OVAL HEAD, SLOTTED MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10202 thru 23-10217
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA SHARP	T RISE (NOM.)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF		FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF						23-10202-L 3
6-32 UNC 6-40 UNF	.279	.045	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.052	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.060	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.068	.025	.041		23-10210 1
1/4 -20 UNC 1/4 -28 UNF	.507	.079	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.099	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.117	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

WAS	DATE	BY	CHG

WAS	DATE	BY	CHG

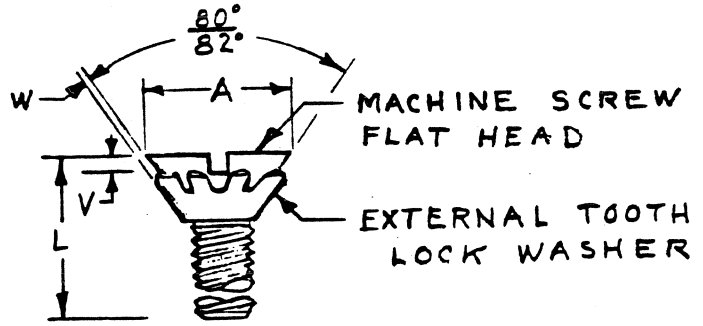
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO.
4/14/71	SEMS, FLAT HEAD, SLOTTED MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10222 thru 23-10237
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA. (SHARP)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF		FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF					23-10222-[illegible] 3
6-32 UNC 6-40 UNF	.279	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.025	.041		23-10230 1
1/4 -20 UNC 1/4 -28 UNF	.507	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	3-24-71		(1)	
APPROVED	[illegible]				

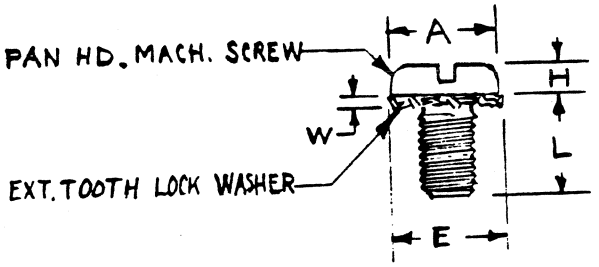
Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

General Use Part

PRINT ISSUED	TITLE	PART NO.
4/12/71	SEMS, PAN HEAD, SLOTTED MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10242 thru 23-10257
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	HEAD		LOCKWASHER			FREIGHTLINER PART NUMBER *
	A MAX	H MAX	W MAX	E MAX		
4-40 UNC 4-48 UNF	.219	.068	.020	0.230		23-10242-L 3
6-32 UNC 6-40 UNF	.270	.082	.020	.285		4 5
8-32 UNC 8-36 UNF	.322	.096	.023	.320		6 7
10-24 UNC 10-32 UNF	.373	.110	.024	.381		8 9
12-24 UNC 12-28 UNF	.425	.125	.027	.410		23-10250 1
1/4 -20 UNC 1/4 -28 UNF	.492	.144	.028	.510		2 3
5/16-18 UNC 5/16-24 UNF	.615	.178	.034	.610		4 5
3/8 -16 UNC 3/8 -24 UNF	.740	.212	.040	.760		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

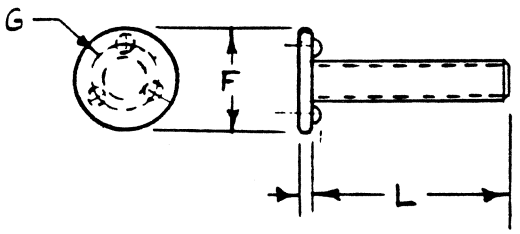
		DATE DRAWN		MATERIAL	
COMPILED	HJR	3-24-71		(1)	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG | BY | DATE | WAS
23-10257

PRINT ISSUED	TITLE	PART NO.
	SCREW, PROJECTION WELD, ¼"	23-10258
LAST CHG. LTR.		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD SAE	F HEAD DIA.	G LOC. CIRCLE	H ±.005	MANUFACTURERS' NUMBER			FREIGHTLINER PART NUMBER*
				ONB	GR		
¼-20	9/16	.406	.078	HW-2116	MN-1420-S-1000		23-10258-L

*Complete part number with a 3-digit dash number expressing length, L, of the screw in 1/100's of an inch.

ENGINEERING NOTES

(1) MATERIAL: Steel (SAE 1010).

CHG	BY	DATE	WAS

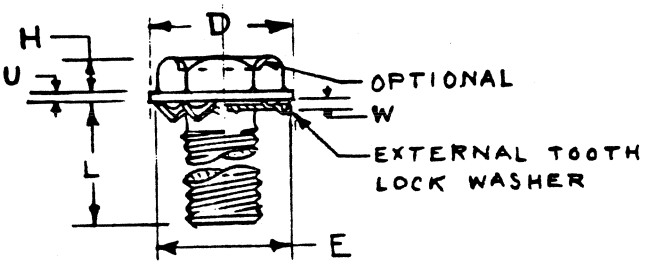
CHG	BY	DATE	WAS
—	—	—	J#A0545

COMPILED	H.J.R.	DATE DRAWN		MATERIAL	UNIT OF MEASURE
APPROVED	Rollins	12-4-73		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO.
4/12/71	SEMS, HEXAGON WASHER HEAD MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10262 thru 23-10277
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	WASHER		HEAD	LOCKWASHER		FREIGHTLINER PART NUMBER *
	D DIA.	U MAX.	H MAX.	W MAX.	E MAX.	
4-40 UNC 4-48 UNF						23-10262-L 3
6-32 UNC 6-40 UNF	.328	.025	.093	.023	.317	4 5
8-32 UNC 8-36 UNF	.348	.031	.110	.023	.317	6 7
10-24 UNC 10-32 UNF	.414	.031	.120	.205	.406	8 9
12-24 UNC 12-28 UNF	.432	.039	.155	.027	.406	23-10270 1
1/4 -20 UNC 1/4 -28 UNF	.520	.050	.190	.028	.580	2 3
5/16-18 UNC 5/16-24 UNF	.676	.055	.230	.034	.654	4 5
3/8 -16 UNC 3/8 -24 UNF	.780	.063	.295	.040	.760	6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

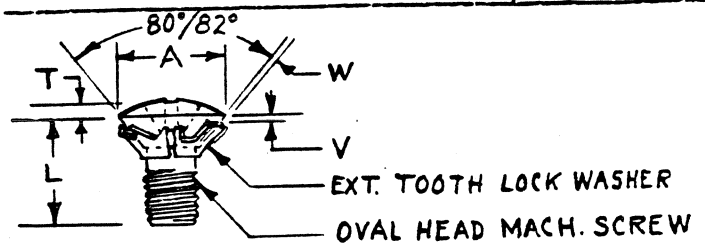
COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

General Use Part

PRINT ISSUED	TITLE	PART NO
4/12/71	SEMS, OVAL HEAD, CROSS RECESS MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10282 thru 23-10297
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA SHARP	T RISE (NOM.)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF	.	FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF						23-102[illegible]-L
6-32 UNC 6-40 UNF	.279	.045	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.052	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.060	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.068	.025	.041		23-10290 1
1/4 -20 UNC 1/4 -28 UNF	.507	.079	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.099	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.117	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	R 11	3-24-71		(1)	

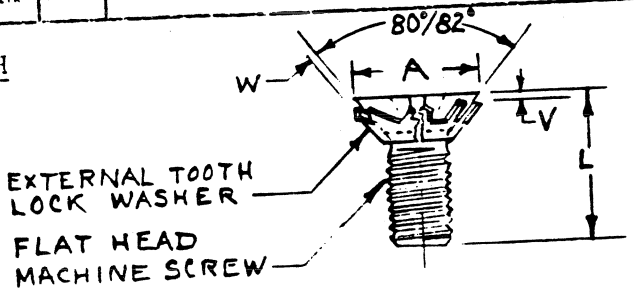
Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

General Use Part

PRINT ISSUED	TITLE	PART NO.
4/12/71	SEMS, FLAT HEAD, CROSS RECESS MACHINE SCREW WITH EXT. TOOTH LOCK WASHER	23-10302 thru 23-10317
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA (SHARP)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF		FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF					23-10302-L 3
6-32 UNC 6-40 UNF	.279	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.025	.041		23-10310 1
1/4 -20 UNC 1/4 -28 UNF	.507	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

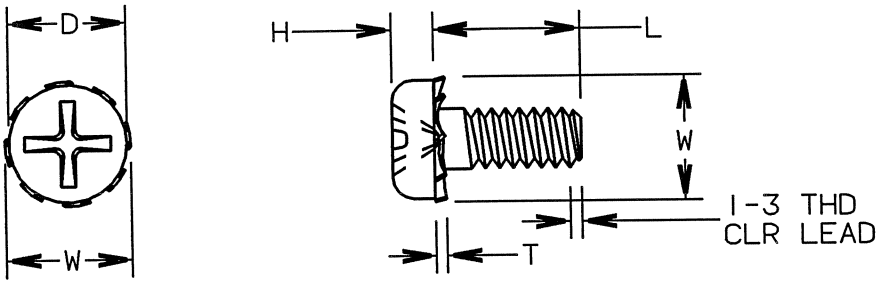
(1) Material: SAE 1010 Steel with commercial Cadmium plate finish.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	[signature]	3-24-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

WAS | DATE | BY | CHG

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE, PAN HEAD SEMS, ETLW, PLATED, CROSS OR TORX RECESS	23-10322
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



THREAD SIZE	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	"W" WASHER DIA MAX	"T" WASHER THICK MAX	FREIGHTLINER PART NUMBER
4 - 40 UNC	.219	.080	.230	.020	23-10322-L
6 - 32 UNC	.270	.097	.285	.020	23-10324
8 - 32 UNC	.322	.115	.320	.023	23-10326
10 - 24 UNC 32 UNF	.373	.133	.381	.024	23-10328 23-10329
12 - 24 UNC 28 UNF	.425	.151	.410	.027	23-10330 23-10331
1/4 - 20 UNC	.492	.175	.510	.028	23-10332

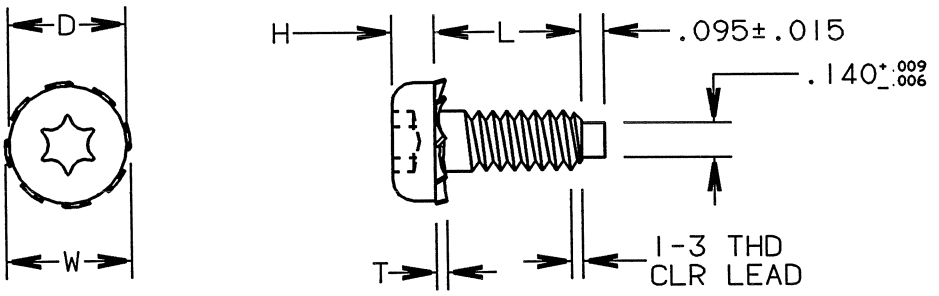
COMPLETE CROSS RECESS SCREW PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10332-162 IS A 1/4-20 CROSS RECESS PAN HEAD SEMS MACHINE SCREW. 1-5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:
MATERIAL: STEEL, GRADE 2, PER SAE SPECIFICATION J429.
FINISH ZINC PLATE TYPE III CLASS 3 PER F/L SPEC 49-00005-403 & WAX.
DIMENSIONS: PER ANSI B18.6.3 & B18.13. ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.4.
EXTERNAL TOOTH LOCK WASHER PER ANSI B18.21.1.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
G	P0271G-01	03/08/90	RDF	ADDED LOCKING PATCH REQUIREMENT FOR 23-10330 SERIES
H	PA2042-42	11/04/93	ERK	CLARIFIED DOG POINT SPECIFICATION.
J	PA2042-44	02/28/94	ERK	DOG PT. REF. RMVD FROM SHEET #1, REV.ON SHEET #2.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE, PAN HEAD SEMS, PLATED, ETLW, CROSS OR TORX RECESS	23-10322
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2



THREAD SIZE	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	"W" WASHER DIA MAX	"T" WASHER THICK MAX	FREIGHTLINER PART NUMBER
12 - 24 UNC	.425	.151	.410	.027	23-10330-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)

E.G. 23-10330-715 IS A 12-24 TORX DRIVE PAN HEAD SEMS MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:
MATERIAL: STEEL, GRADE 2, PER SAE SPECIFICATION J429.
FINISH ZINC PLATE TYPE III CLASS 3 PER F/L SPEC 49-00005-403 & WAX.
DIMENSIONS: PER ANSI B18.6.3 & B18.13. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T27 PER CAMCAR STANDARD TXH-202.
EXTERNAL TOOTH LOCK WASHER PER ANSI B18.21.1.

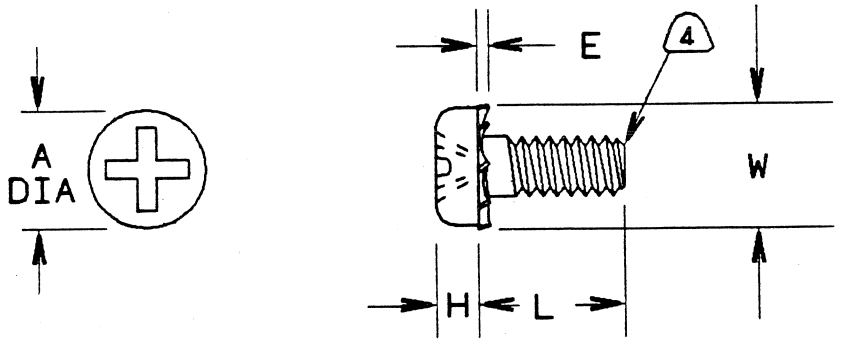
23-10330 SERIES SCREWS ARE TO INCLUDE A DOG POINT & 5-7 THREAD LOCKING PATCH PER IFI 125. MAINTAIN 1-3 THREAD CLEAR LEAD.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
G	P0271G-01	03/08/90	RDF	ADDED LOCKING PATCH REQUIREMENT FOR 23-10330 SERIES
H	PA2042-42	11/04/93	ERK	SEE SHEET 1.
J	PA2042-44	02/28/94	ERK	ADDED DIMENSIONS FOR DOG POINT.

23-10322 THRU 23-10337

ORIGINAL JOB NO.	TITLE	23-10322 THRU 23-10337
5232C	MACHINE SCREW, PAN HEAD, CROSS RECESS DRIVE WITH EXTERNAL TOOTH LOCK WASHER (SEMS)	
LAST CHG LTR: D		SHEET 1 OF 1

SKETCH:



PART NUMBERS:

NOMINAL SIZE & THREADS	HEAD		LOCKWASHER		FREIGHTLINER PART NUMBERS*
	A MIN/MAX	H MIN/MAX	E MIN/MAX	W MIN/MAX	
4-40 UNC 4-48 UNF	.205/.219	.058/.068	.012/.020	.220/.230	23-10322-L 23-10323-L
6-32 UNC 6-40 UNF	.256/.270	.072/.082	.014/.020	.270/.285	23-10324-L 23-10325-L
8-32 UNC 8-36 UNF	.306/.322	.085/.096	.018/.023	.305/.320	23-10326-L 23-10327-L
10-24 UNC 10-32 UNF	.357/.373	.099/.110	.018/.024	.365/.381	23-10328-L 23-10329-L
(3) 12-24 UNC 12-28 UNF	.407/.425	.112/.125	.020/.027	.395/.410	23-10330-L 23-10331-L
1/4-20 UNC 1/4-28 UNF	.473/.492	.130/.144	.023/.028	.494/.510	23-10332-L 23-10333-L
5/16-18 UNC 5/16-24 UNF	.594/.615	.162/.178	.028/.034	.588/.610	23-10334-L 23-10335-L
3/8-16 UNC 3/8-24 UNF	.716/.740	.195/.212	.032/.040	.740/.760	23-10336-L 23-10337-L

*L = LENGTH IN HUNDREDTHS OF AN INCH TO 1-1/2 INCHES IN STEPS OF 1/8 INCH.

ENGINEERING NOTES:

(1) MATERIAL: SAE 1010 LOW CARBON STEEL.

2. FINISH: CADMIUM PLATE TYPE TS BRIGHT PER 49-00012-230 OR ZINC PLATE TYPE IV CLASS 3 PER 49-00005-403.

(3) 23-10330-L SCREWS TO USE A SIZE 10 SCREW TYPE 2 CROSS RECESS.

(4) 23-10330-L SCREWS TO INCLUDE A DOG POINT.

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
C1	5232C	DJL	11-12-84	REVISED & REDRAWN
C2	5232C	DJL	11-12-84	ADDED ZINC PLATE
D	1918D	EAM	06-12-85	ADDED NOTES 3 & 4

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

COMPILED	DJL	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED	DJL	11-12-84		(1)	01070	000D1

PORTLAND FREIGHTLINER CORPORATION OREGON 97208

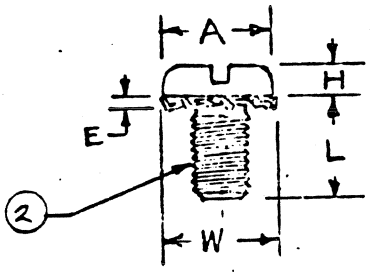
EAC-826

thru 23-10357

General Use Part

PRINT ISSUED	TITLE	PART NO.
6/22/71	SEMS, MACHINE SCREW PAN HEAD, SLOTTED, TAPPING	23-10342 thru 23-10357
LAST CHG LTR: A		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	HEAD		LOCKWASHER			FREIGHTLINER PART NUMBER *
	A MAX	H MAX	E MAX	W MAX		
4-40 UNC 4-48 UNF	.219	.068	.020	0.230		23-10342-L 3
6-32 UNC 6-40 UNF	.270	.082	.020	.285		4 5
8-32 UNC 8-36 UNF	.322	.096	.023	.320		6 7
10-24 UNC 10-32 UNF	.373	.110	.024	.381		8 9
12-24 UNC 12-28 UNF	.425	.125	.027	.410		23-10350 1
1/4 -20 UNC 1/4 -28 UNF	.492	.144	.028	.510		2 3
5/16-18 UNC 5/16-24 UNF	.615	.178	.034	.610		4 5
3/8 -16 UNC 3/8 -24 UNF	.740	.212	.040	.760		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with Commercial Cadmium Finish

(2) Thread: Type F

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	6-7-71	E, W HEADING REVISED

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97209

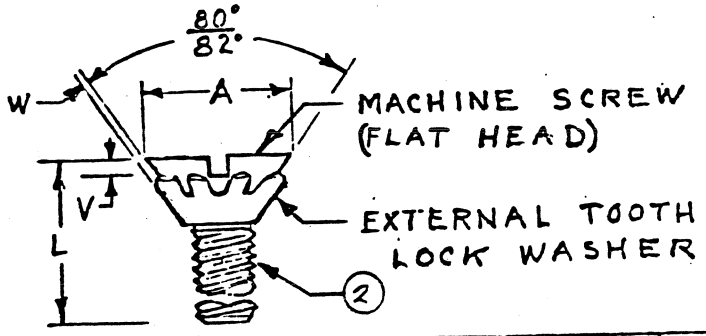
E-193

General Use Part

Print 23-10377

PRINT ISSUED	TITLE	PART NO.
4/12/71	SEMS, MACHINE SCREW FLAT HEAD, SLOTTED, TAPPING	23-10362 thru 23-10377
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA. (SHARP)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF		FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF					23-10362-L 3
6-32 UNC 6-40 UNF	.279	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.025	.041		23-10370 1
1/4 -20 UNC 1/4 -28 UNF	.507	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with *Commercial Cadmium Finish*

(2) Thread: Type F

		DATE DRAWN		MATERIAL	
COMPILED	HJR	3-24-71		(1)	
APPROVED	*Ford*				

Portland FREIGHTLINER CORPORATION Oregon 97208

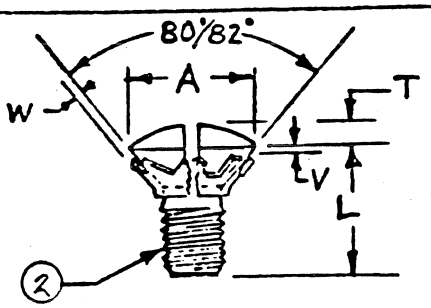
WAS / DATE / BY / CHG

WAS / DATE / BY / CHG

General Use Part

PRINT ISSUED	TITLE	PART NO.
4/12/71	SEMS, MACHINE SCREW OVAL HEAD, SLOTTED, TAPPING	23-10382 thru 23-10397
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD	A DIA SHARP	T RISE (NOM.)	W LOCKWASHER THICK. (MAX)	V FLUSH TO MINUS TOL. OF		FREIGHTLINER PART NUMBER *
4-40 UNC 4-48 UNF						23-10382-L 3
6-32 UNC 6-40 UNF	.279	.045	.020	.026		4 5
8-32 UNC 8-36 UNF	.332	.052	.020	.030		6 7
10-24 UNC 10-32 UNF	.385	.060	.025	.036		8 9
12-24 UNC 12-28 UNF	.438	.068	.025	.041		23-10390 1
1/4 -20 UNC 1/4 -28 UNF	.507	.079	.025	.047		2 3
5/16-18 UNC 5/16-24 UNF	.635	.099	.028	.060		4 5
3/8 -16 UNC 3/8 -24 UNF	.762	.117	.034	.072		6 7

*L = Length in hundredths of an inch, to 1½" in steps of 1/8".

ENGINEERING NOTES

(1) Material: SAE 1010 Steel with *Commercial Cadmium Finish*

(2) Thread: Type F

COMPILED	EJR	DATE DRAWN		MATERIAL	
APPROVED		3-24-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

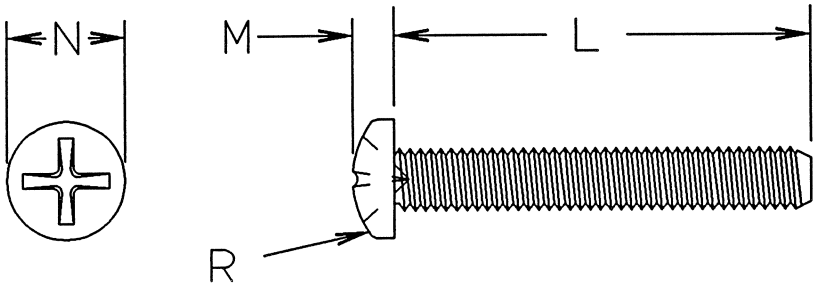
WAS thru 23-10397

CHG	BY	DATE

WAS

CHG	BY	DATE

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE, PAN HEAD TORX OR CROSS RECESS, PLATED	23-10402
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



THREAD SIZE	BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
4-40 UNC	.112	.010	.219	.080	23-10402-L
5-44 UNF	.125	.015	.245	.089	23-10405-L
6-32 UNC	.138	.015	.270	.097	23-10406-L
8-32 UNC	.164	.015	.322	.115	23-10408-L
10-24 UNC 10-32 UNF	.190	.020	.373	.133	23-10410-L 23-10411-L
1/4-20 UNC 1/4-28 UNF	.250	.035	.492	.175	23-10414-L 23-10415-L
5/16-18 UNC 5/16-24 UNC	.312	.040	.615	.218	23-10416-L 23-10417-L
3/8-16 UNC	.375	.040	.740	.261	23-10418-L

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

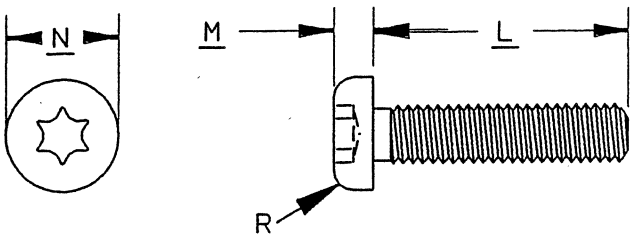
FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10410-162 IS A 10-24 PAN HEAD CROSS RECESS MACHINE SCREW 1-5/8 INCH LONG.

ENGINEERING NOTES:

K MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.
FINISH: ZINC PLATE TYPE III CLASS 3 PER F/L SPEC 49-00005-403 & WAX.
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.3.
THREADS: UN2A PER ANSI B1.1.

CHG	JOB/RLSE NO	DATE	BY	REVISION
G	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
H	P6517G-02	03/28/91	SJT	SEE SHEET 2
J	P8041H-01	07/30/92	ERK	SEE SHEET 2
K	PA2042-41	10/12/93	ERK	REVISED MATERIAL
L	P2A362-55	02/18/96	DAJ	SEE SHEET 2

DRAWN	DAJ	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-MACHINE, PAN HEAD TORX OR CROSS RECESS, ZN PLATED	23-10402
DATE	08/02/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. M
CATIA ORIGINAL			



INTERNAL TORX SHOWN

NOMINAL SIZE AND THREAD	BASIC DIA.	TORX RECESS	N HEAD DIA	M HEAD HEIGHT	R RADIUS	FREIGHTLINER PART NUMBER
4-40 UNC	.112	T10	.219	.080	.010	23-10402-L
5-44 UNF	.125	T10	.245	.089	.015	23-10405-L
6-32 UNC	.138	T15	.270	.097	.015	23-10406-L
8-32 UNC	.164	T20	.322	.115	.015	23-10408-L
10-24 UNC 10-32 UNF	.190	T25	.373	.133	.020	23-10410-L 23-10411-L
1/4-20 UNC 1/4-28 UNF	.250	T30	.492	.175	.035	23-10414-L 23-10415-L
5/16-18 UNC	.312	T45	.615	.218	.040	23-10416-L
3/8-16 UNC	.375	T50	.740	.261	.040	23-10418-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH. E.G. 23-10410-162 IS A 10-24 PAN HEAD CROSS-RECESS MACHINE SCREW 1-5/8 INCH LONG.

FOR "TORX" DRIVE SCREW DESIGNATION: THREE DIGIT DASH NUMBER (-715) INDICATES AS FOLLOWS: EXAMPLE 23-10410-715 IS AN INTERNAL TORX 10-24 MACHINE SCREW 1-5/8 INCH LONG.

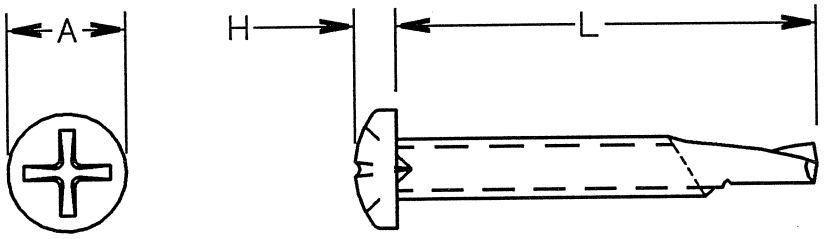
7 - REPRESENT "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
5 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHT OF AN INCH (7 MAX)

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.
FINISH: ZINC PLATE TYPE III CLASS 3 PER F/L SPEC 49-00005-403.
DIMENSIONS: PER ANSI B18.6.3 ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS-RECESS: TYPE 1 PER ANSI B18.6.3.
TORX RECESS: PER CAMCAR STANDARD TXH-202.
THREADS: UN2A PER ANSI B1.1.

CHG	JOB NO	DATE	BY	REVISION
M	P05573-02	08/02/98	DAJ	REVISED AND REDRAWN IN CATIA.

DRAWN	HJR	TITLE	ITEM NUMBER
APPRV	ROLLINS	SCREW-TAPPING, PAN HEAD, CROSS RECESS DRILLING, BSD, STYLE #3.	23-10424
DATE	03/09/72	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE	BASIC SCREW DIA	"A" HEAD DIA MAX	"H" HEAD HEIGHT MAX		FREIGHTLINER PART NUMBER *
6-20	.138	.270	.097		23-10426-L
8-18	.164	.322	.115		23-10427-L
10-16	.190	.373	.133		23-10428-L
1/4-14	.250	.492	.175		23-10429-L

*DASH NUMBER: L = LENGTH IN 1/100'S OF AN INCH.

ENGINEERING NOTES:

1. MATERIAL: CARBON STEEL PER SAE J78.
2. THREAD TYPE: BSD, STYLE #3.
3. FINISH: ZINC PLATE PER FREIGHTLINER SPECIFICATION 49-00005-403.
4. DIMENSIONS ARE FOR REFERENCE ONLY. REFER TO SAE J78 AND ANSI B18.6.4.

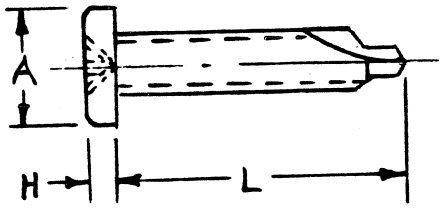
CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PA2042-38	08/19/93	ERK	REDRAWN: FINISH TO ZINC PLATE FROM CAD PLATE.

thru 23-10429

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, THREAD FORMING, CROSS RECESS PAN HEAD, DRILL POINT	23-10424 thru 23-10429
LAST CHG LTR			SHEET 1 OF 1

SKETCH



PART NUMBERS

NOM. SIZE	BASIC SCREW DIAMETER	HEAD A DIA. (MAX)	HEAD H HEIGHT		FREIGHTLINER PART NUMBER *
2-32	.0860	.167	.062		23-10424-L
4-24	.1120	.219	.080		23-10425-
6-20	.1380	.270	.097		23-10426-
8-18	.1640	.322	.115		23-10427
10-16	.1900	.373	.133		23-10428
1/4-16	.2500	.492	.175		23-10429

*Dash number, L, is length in 1/100's of an inch.

ENGINEERING NOTES

(1) Material: Carbon Steel, Cadmium Plated

2. Thread: Sheet metal type. (AB Type)

3. Point: Drill type #2 or #3

WAS	DATE	BY	CHG

WAS	DATE	BY	CHG
J #85250	—	—	—

ns

		DATE DRAWN		MATERIAL	
COMPILED	HJR	3-9-72		(1)	
APPROVED	Rollins				

Portland FREIGHTLINER CORPORATION Oregon 97208

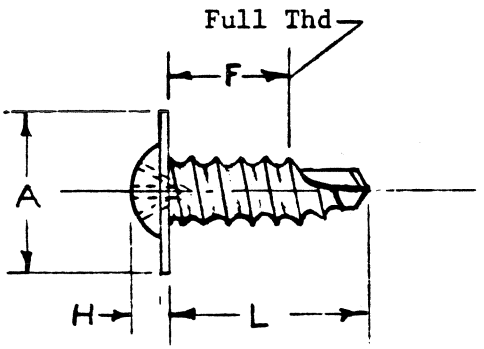
M/F

General Use Part

thru 23-10461

ORIGINAL JOB NO.	TITLE	PART NO.
A0521	TEKS, CROSS RECESS OVAL WASHER HEAD	23-10456 thru 10461
LAST CHG LTR —		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE	F (MAX)	A	H	MANUFACTURER'S NUMBER NS		FREIGHTLINER PART NUMBER *
#2-32	L- 0.09					23-10456-L
4-24	L- 0.11			Order		23-10457-L
6-20	L- 0.11			by		23-10458-L
8-18	L- 0.12			descrip-		23-10459-L
10-16	L- 0.20			tion		23-10460-L
1/4-16	L- 0.30					23-10461-L

*Complete part number by adding 3-digit dash number, L, expressing length of screw in 1/100's of an inch.
Thus for #8-18 x 5/8 TEKS, write 23-10459-062.

ENGINEERING NOTES

(1) MATERIAL: Carbon Steel
2. FINISH: Cadmium Plate

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		8-12-76		(1)	

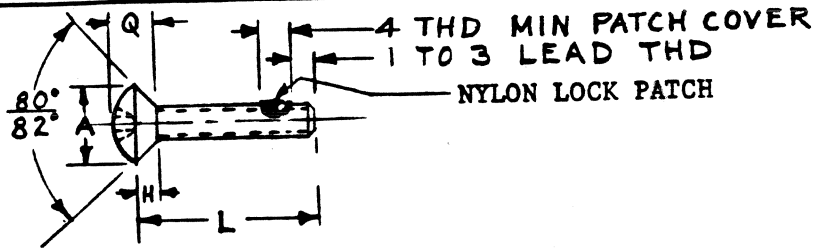
CHANGE INFORMATION | DATE | BY | JOB NO. | LTR

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

General Use Part

PRINT ISSUED	TITLE	PART NO.
9/13/71	MACHINE SCREW, CROSS RECESS, OVAL HEAD NYLON LOCK, GRADE 2	23-10472 thru 23-10501
LAST CHG. LTR C		SHEET OF

SKETCH



PART NUMBERS

THREAD	A MAX	H REF	Q REF	FINISH	MANUFACTURER'S NUMBER NYK		FREIGHTLINER PART NUMBER *
4-40 UNC -48 UNF	.225	.067	.104	C	P34DS440R☐C 448		23-10472-L 3
6-32 UNC -40 UNF	.279	.083	.128	C	632 640		4 5
8-32 UNC -36 UNF	.332	.100	.152	C	832 836		6 7
10-24 UNC -32 UNF	.385	.116	.176	C	1024 1032		8 9
12-24 UNC -28 UNF	.438	.132	.200	C	—		23-10480 1
1/4 -20 UNC -28 UNF	.507	.153	.232	C	420 428		2 3
5/16-18 UNC -24 UNF	.635	.191	.290	C	518 524		4 5
3/8 -16 UNC -24 UNF	.762	.230	.347	P	P34DS616R☐P 624		6 7
7/16-14 UNC -20 UNF	.812	.223	.345	P	714 720		8 9
1/2 -13 UNC -20 UNF	.875	.223	.354	P	813 820		23-10490 1
9/16-12 UNC -18 UNF	1.000	.260	4.10	P	912 918		2 3
5/8 -11 UNC -18 UNF	1.125	.298	.467	P	1011 1018		4 5
3/4 -10 UNC -16 UNF	1.375	.372	.578	P	1210 1216		6 7
7/8 - 9 UNC -14 UNF				P	—		8 9
1 - 8 UNC -14 UNF				P	—		23-10500 1

☐ = 1 or 2 digits for length in 1/16th's of an inch.

*Complete part number by adding a three-digit dash number expressing length in hundredths of an inch.

ENGINEERING NOTES

1. Material: Steel, SAE Grade 2, with nylon locking element.
2. Finish: Commercial Cadmium Plate = C, Plain = P.
3. All sizes must conform to ASA Stds B18.2.1-1965, B18.6.3-1962, & B18.3 -1961.
4. Clearance holes should be approx. .015" larger than screw diameter.
5. For best lock torque and reusability, mating threads should be countersunk approx. 90° x 1/32" larger than major thread diameter.

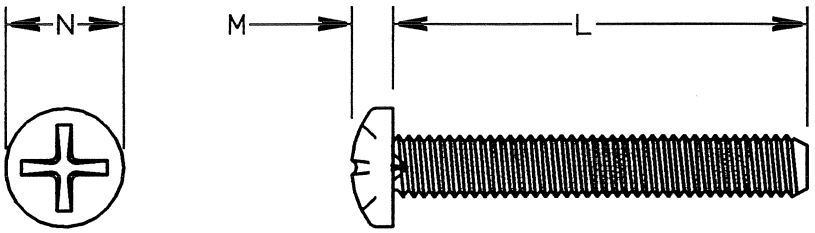
		DATE DRAWN		MATERIAL	
COMPILED	HJR	4-2-71		①	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	5-6-71	NYK Numbers Added
B	HJR	8-27-71	Deleted Cd Plate 3/8"& Cr. 5; J #85090
C	HJR	2-14-72	

DRAWN	HJR	TITLE	ITEM NUMBER
APPRV	ROLLINS	SCREW-MACHINE, PAN HEAD CROSS RECESS, PATCH LOCK	23-10502
DATE	04/02/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD	BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10-32 UNF	.190	.061	.373	.133	23-10509-L
1/4-20 UNC	.250	.087	.492	.175	23-10512-L
5/16-18 UNC	.313	.099	.615	.218	23-10514-L

*

COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. E.G. 23-10512-150 IS A 1/4-20 UNC MACHINE SCREW 1 AND 1/2 INCHES LONG.

ENGINEERING NOTES:

F 1. MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

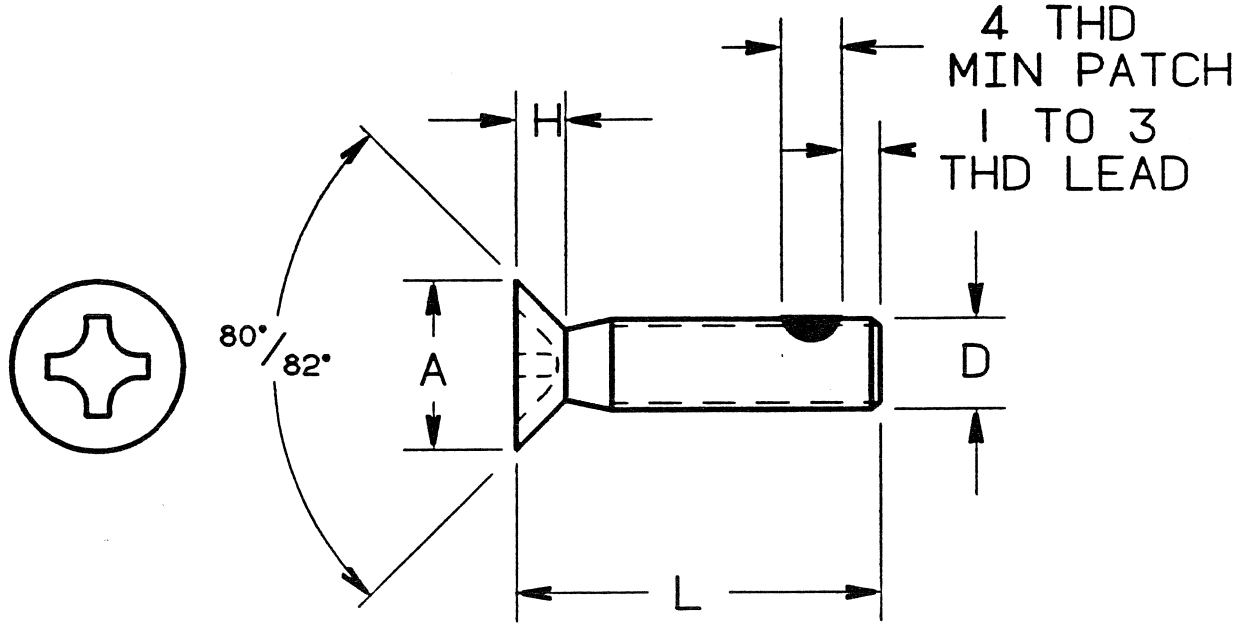
2. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.

3. FINISH: CADMIUM PLATE PER FREIGHTLINER SPECIFICATION 49-00012-130.

G 4. LOCKING PERFORMANCE: MUST MEET PERFORMANCE REQUIREMENTS OF IFI 124.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	PA2042-41	10/08/93	ERK	REDRAWN; REVISED MATERIAL
G	PA2042-42	11/04/93	ERK	LOCKING PERFORMANCE ADDED.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	MACHINE SCREW FLAT HEAD CROSS RECESS, LKG	23-10543
DATE	07/20/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM SIZE	D	A (MAX)	H (MAX)	L
	BODY DIA	HEAD DIA	HEAD HEIGHT	LENGTH
1/4-20	.250	.507	.153	23-10542-L*
1/4-28				23-10543-L*

*COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH.

MATERIAL: STEEL, GRADE 2 PER SAE J429

FINISH: CADMIUM PLATE PER FREIGHTLINER SPEC 49-00012-130

DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. REFER TO ANSI B18.6.3 FOR DETAILS

LOCKING PERFORMANCE MUST MEET REQUIREMENTS OF IFI124

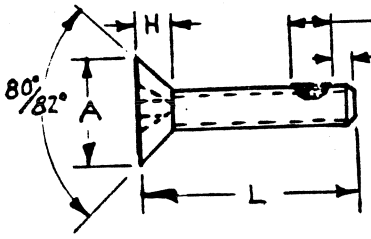
CHG	JOB/RLSE NO	DATE	BY	REVISION
D	P*K068-14	07/20/88	PCK	DOCUMENTED

General Use Part

thru 23-10561

DRAWN	TITLE	PART NO.
8-2-71	MACHINE SCREW, CROSS RECESS, 82° FLAT HEAD NYLON LOCK, GRADE 2	23-10532 thru 23-10561
LAST CHG LTR C		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD	A MAX	H REF	FINISH ②	MANUFACTURER'S NUMBER NYK		FREIGHTLINER PART NUMBER *
4-40 UNC -48 UNF	.225	.067	C	P32DS440R☐C 448		23-10532-L 3
6-32 UNC -40 UNF	.279	.083	C	632 640		4 5
8-32 UNC -36 UNF	.332	.100	C	832 836		6 7
10-24 UNC -32 UNF	.385	.116	C	1024 1032		8 9
12-24 UNC -28 UNF	.438	.132	C	—		23-10540 1
1/4 -20 UNC -28 UNF	.507	.153	C	420 428		2 3
5/16-18 UNC -24 UNF	.635	.191	C	518 524		4 5
3/8 -16 UNC -24 UNF	.762	.230	P	P32DS616R☐P 624		6 7
7/16-14 UNC -20 UNF	.812	.223	P	714 720		8 9
1/2 -13 UNC -20 UNF	.875	.223	P	813 820		23-10550 1
9/16-12 UNC -18 UNF	1.000	.260	P	912 918		2 3
5/8 -11 UNC -18 UNF	1.125	.298	P	1011 1018		4 5
3/4 -10 UNC -16 UNF	1.375	.372	P	1210 1216		6 7
7/8 - 9 UNC -14 UNF			-	—		8 9
1 - 8 UNC -14 UNF			-	—		23-10560 1

☐ = 1 or 2 digits for length in 1/16th's of an inch.

*Complete part number by adding a three-digit dash number expressing length in hundredths of an inch.

ENGINEERING NOTES

1) Material: Steel, SAE Grade 2, with nylon locking element.
2) Finish: Commercial Cadmium Plate = C; Plain = P
3) All sizes must conform to ASA Stds B18.2.1-1965, B18.6.3-1962, & B18.3 -1961.
4) Clearance holes should be approx. .015" larger than screw diameter.
5) For best lock torque and reusability, mating threads should be countersunk approx. 90° x 1/32" larger than major thds d. diameter.

COMPILED	HJR	DATE DRAWN	MATERIAL
APPROVED		4-2-71	①

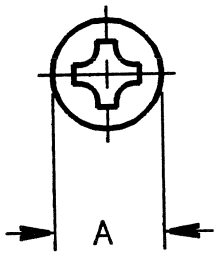
Portland FREIGHTLINER CORPORATION Oregon 97203

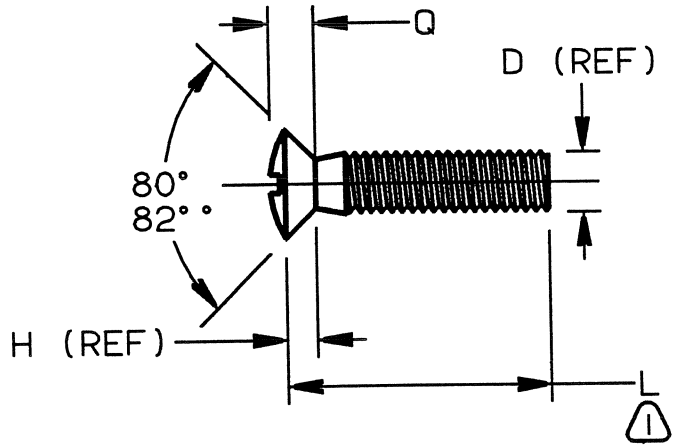
CHG	BY	DATE	WAS
A	HJR	5-6-71	NYK Numbers Added
B	HJR	6-25-71	Delete Cd Plt 3/8& Over
C	HJR	2-14-72	Gr. 5; J #85070

CHG	BY	DATE	WAS

D-388

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	MACHINE SCREW, OVAL HEAD	23-10602
DATE	08/15/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2





NOMINAL SIZE & THREAD	D BASIC	L ⚠1	A MAX	A MIN	H REF	Q MAX	FREIGHTLINER PART NUMBER
8-32 UNC	.164	1/4	.332	.292	.100	.152	23-10608
10-24 UNC	.190	5/16	.385	.340	.116	.176	23-10610
10-32 UNF	.190	5/16	.385	.340	.116	.176	23-10611
1/4-20 UNC	.250	7/16	.507	.452	.153	.232	23-10614
3/8-16 UNC	.375	9/16	.762	.685	.230	.347	23-10618

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

COMPLETE CROSS RECESS PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER TO INDICATE LENGTHS IN ONE-HUNDREDTHS OF AN INCH, E.G., 23-10608-050 INDICATES A 8-32 UNC CROSS-RECESSED MACHINE SCREW, 1/2 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: BLACK OXIDE.

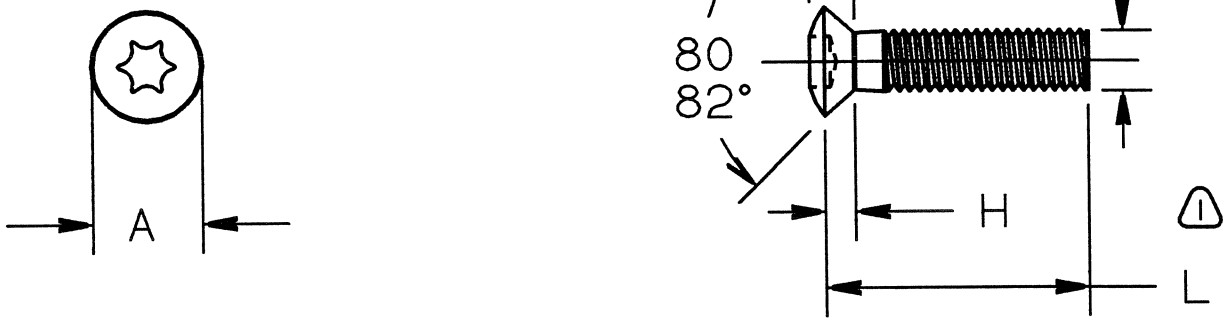
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

CROSS RECESS: TYPE 1 PER ANSI B18.6.3.

⚠1 THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P*A078-45	08/15/88	PCK	REDRAWN/DOCUMENTED
D	PM0421-38	08/14/89	RDF	ADDED SHT 2, 23-10610
E	PA2042-41	10/12/93	ERK	REVISED MATERIAL

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	MACHINE SCREW, OVAL HEAD	23-10602
DATE	08/15/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2



NOMINAL SIZE & THREAD	D BASIC	L ①	A MAX	A MIN	H REF	Q MAX	FREIGHTLINER PART NUMBER
10-24 UNC	.190	5/16	.385	.340	.116	.176	23-10610-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS:

FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)

E.G. 23-10610-715 IS A 10-24 TORX DRIVE MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: BLACK OXIDE.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

TORX RECESS: T20 PER CAMCAR STANDARD TXH-208.

① THIS LENGTH AND SHORTER UNDERCUT.

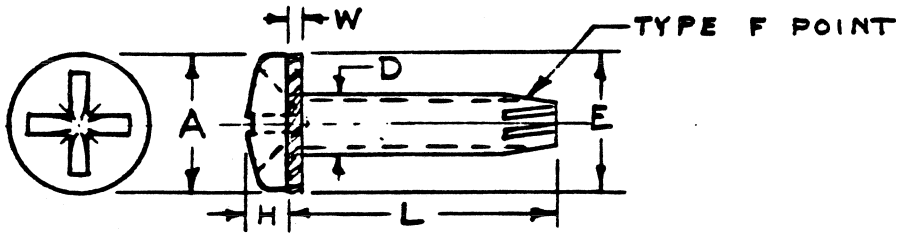
CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P*A078-45	08/15/88	PCK	REDRAWN/DOCUMENTED
D	PM0421-38	08/14/89	RDF	ADDED SHT 2, 23-10610
E	PA2042-41	10/12/93	ERK	SEE SHEET 1

23-10632 thru 23-10647

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SEMS, TAPPING SCREW RECESSED PAN HEAD TYPE F POINT W/ EXT. TOOTH LOCK WASHER	23-10632 thru 23-10647
LAST CHG LTR			SHEET 1 OF 1

SKETCH



PART NUMBERS

SCREW SIZE & THREAD	D BASIC	A MAX	H MAX	LOCK WASHER W MAX	LOCK WASHER E MAX		FREIGHTLINER PART NUMBER *
4 -40 UNC 4 -48 UNF	.1120	.219	.080	.020	.220		23-10632 3
6 -32 UNC 6 -40 UNF	.1380	.270	.097	.020	.270		4 5
8 -32 UNC 8 -36 UNF	.1640	.322	.115	.023	.320		6 7
10 -24 UNC 10 -32 UNF	.1900	.373	.133	.024	.381		8 9
12 -24 UNC 12 -28 UNF	.2160	.425	.151	.027	.410		23-10640 1
1/4 -20 UNC	.2500	.492	.175	.028	.510		2
1/4 -28 UNF							
5/16 -18 UNC 5/16 -24 UNF	.3125	.615	.218	.032	.635		4 5
3/8 -16 UNC 3/8 -24 UNF	.3750	.740	.261	.040	.760		6 7

*Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-10643-075 specifies a 1/4-28 UNF, Grade 5, Recessed Pan Head Tapping Screw 3/4" long.

ENGINEERING NOTES

1. Material: Steel, Grade 5 Bolt Material, Bright Finish
2. Screws must meet applicable provisions of ANSI B18.6.4 (Slotted and) Recessed Head Tapping Screws.
3. Lock washers must meet applicable provisions of ANSI B27.1 Lock Washers.

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
—	—	—	J# 30414 A03596

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	4-23-71		1	

thru 23-10674

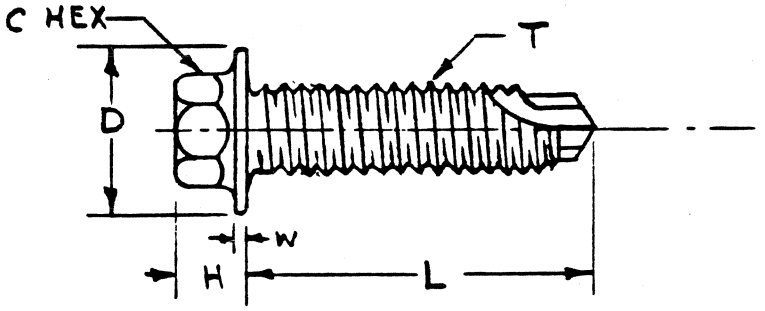
General Use Part

PRINT ISSUED		TITLE	PART NO.
		TEKS, HEX WASHER HEAD	23-10661 thru 23-10674
LAST CHG. LTR	–		SHEET 1 OF 1

JOB NO	WAS	DATE	BY	CHG

JOB NO	WAS	DATE	BY	CHG
A0676	—	—	—	—

SKETCH



PART NUMBERS

T THREAD	C HEX	D WASHER DIA.	H HEIGHT MAX.	W THICK. MAX.	MATERIAL THICKNESS RANGE (IN.)		FREIGHTLINER PART NUMBER*
#4-24 -40 ⊕	.187-.181	.243-.225	.079	.019	.090-.110		23-10661-L
							2-L
#6-20 -32	.250-.244	.328-.302	.118	.025			3-L
							4-L
#8-18 32		.348-.322	.141	.031	.100-.140		5-L
							6-L
#10-16 24 32	.312-.305	.414-.384	.151	.031	.110-.175		7-L
							8-L
							9-L
#12-14		.432-.398	.194	.039	.110-.210		70-L
#14-24 10					.110-.250		1-L
							2-L
1/4-14 -20	.375-.367	.520-.480	.240	.050			3-L
							4-L

⊕ Not yet available.

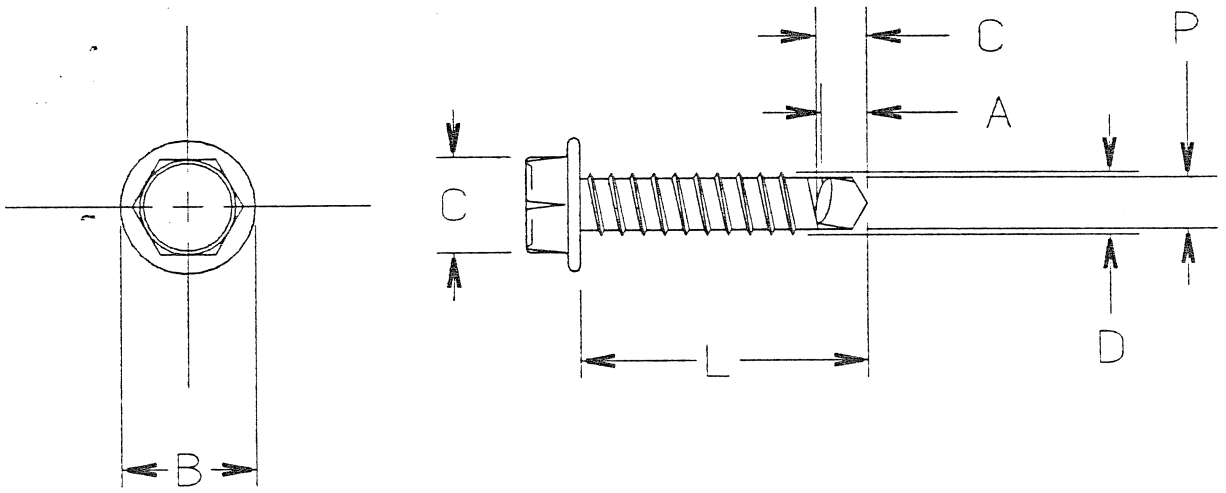
* Complete part number by adding 3-digit dash number, L, indicating length in 1/100's of an inch.

ENGINEERING NOTES

1. Material: Carbon Steel, Hardened
2. Finish: Cadmium Plated
3. Point: Drill Type #2 or #3.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	CRL	9-5-74		(1)	

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TPG, HEX WASHER HEAD SELF DRLG BSD TYPE 3	23-10667
DATE	03/16/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



SIZE	B WASHER MAX	"C" HEX MAX	"D" MAJOR DIA		"P" POINT DIA		"C" FLUTE LENGTH MIN	"A" PILOT LENGTH		FREIGHTLINER PART NUMBER *
			MAX	MIN	MAX	MIN		MAX	MIN	
10-16	.414	.312	.189	.183	.155	.151	.250	.230	.200	23-10667-XXX
1/4-14	.520	.375	.246	.240	.207	.203	.313	.330	.300	23-10673-XXX

* COMPLETE PART NUMBER BY ADDING 3-DIGIT DASH NUMBER, EXPRESSING LENGTH "L" OF SCREW IN 1/100'S OF AN INCH. THUS FOR A 10-16 X 1-1/4 WRITE 23-10667-125. NOTE THAT LENGTH INCLUDES DRILL POINT.

ENGINEERING NOTES:

1 MATERIAL: CASE-HARDENED CARBON STEEL, PER SAE J78.
2 FINISH: ZINC, PER F/L SPEC 49-00005-403.
3 POINT & THREADS: TYPE BSD, STYLE 3, PER SAE J78.
4 HEAD: HEX WASHER HEAD, UNSLOTTED, PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	PM0459-03	03/16/90	RDF	REDRAWN ON CADAM, DELETED INACTIVE ITEMS
B	P5527G-01	09/26/90	SJT	REVISED "B" DIMENSION.

23-10683 thru 23-10692

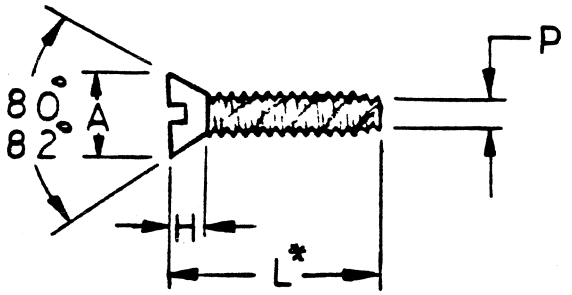
General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, THREAD FORMING SLOTTED FLATHEAD, LOCKING	23-10683 thru 10692
LAST CHG LTR		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
-	-	-	Job #60570

SKETCH



PART NUMBERS

SIZE AND THREAD	A SHARP MAX	A FLAT OR ROUND	H (REF)	P MAX. - MIN.	MANUFACTURER'S DESIGNATION SSW		FREIGHTLINER PART NUMBER*
4-40	.225 - .195		.067	.086 - .077	Use "size		23-10683-L
5-40	.252 - .220		.075	.099 - .090	plus des-		23-10684
6-32	.279 - .244		.083	.106 - .095	cription"		23-10685
					when		
8-32	.332 - .292		.100	.132 - .121	ordering.		23-10686
10-24	.385 - .340		.116	.147 - .133			23-10687
10-32	.385 - .340		.116	.158 - .147			23-10688
12-24	.438 - .389		.132	.173 - .159			23-10689
1/4 -20	.500 - .452		.140	.198 - .181			23-10690
5/16-18	.625 - .567		.177	.255 - .236			23-10691
3/8 -16	.750 - .682		.210	.310 - .289			23-10692

*To complete part number, add a three-digit dash number, L, expressing length in hundredths of an inch. Thus, 23-10685-050 indicates a #6-32 screw 1/2" long.

ENGINEERING NOTES

1. Material: Steel SAE 1022 heat treated to minimum ultimate tensile strength of 135,000 psi.
2. Must meet all pertinent provisions of ANSI B18.6.2 and B18.6.3.
3. Locking feature: Thread-rolling thread form (Ref. U. S. Pat. #3,455,360 by Southern Screw Co.)
4. Finish: Zinc; cadmium optional.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	1-11-73		1	

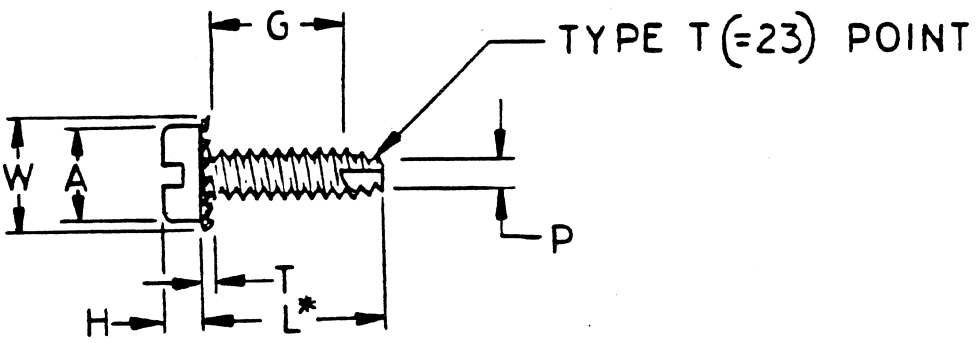
Portland FREIGHTLINER CORPORATION Oregon 97208

ns

E-183

PRINT ISSUED	TITLE	PART NO.
	SEMS, SLOTTED PAN HEAD TAPPING SCREW WITH EXT. TOOTH LOCKWASHER	A23-10693 thru 10700
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE	HEAD A DIAM. (MAX)	HEAD H HEIGHT (MAX)	POINT P MAX. - MIN.	LOCKWASHER W MAX.	LOCKWASHER T MAX.		FREIGHTLINER PART NUMBER*
4-40	.219	.068	.086 - .077	.260	.019		A23-10693-L
6-32	.270	.082	.106 - .095	.320	.022		A23-10694
8-32	.322	.096	.132 - .121	.381	.023		A23-10695
10-24	.373	.110	.147 - .133	.410	.025		A23-10696
12-24	.425	.125	.173 - .159	.475	.028		A23-10697
1/4-20	.492	.144	.198 - .181	.510	.028		A23-10698
5/16-18	.615	.178	.255 - .236	.610	.034		A23-10699
3/8-16	.740	.212	.310 - .289	.694	.040		A23-10700

*Complete part number by adding a three-digit dash number, L, expressing length in hundredths of an inch.

ENGINEERING NOTES

1 Material: Steel; must meet applicable provisions of ANSI B18.13 for screw and washer assemblies (sems).

		DATE DRAWN		MATERIAL	
COMPILED	HJR	12-19-72		(1)	
APPROVED	F. Hins				

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS
			thru A23-10700

CHG	BY	DATE	WAS
-	-	-	Job #60630

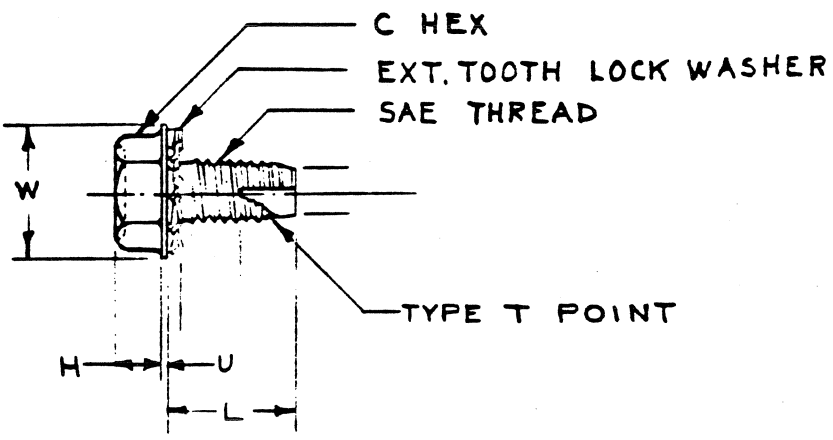
A23-10718

PRINT ISSUED	TITLE	PART NO.
	SEMS, HEX WASHER HEAD TAPPING, TYPE T, WITH EXT. TOOTH LOCKWASHER	23-10718
LAST CHG. LTR —		SHEET 1 OF 1

CHG	BY	DATE	WAS	JOB NO.

CHG	BY	DATE	WAS	JOB NO.
—	—	---	———	A0696

SKETCH



PART NUMBERS

Thread SAE	C HEX	H	U	W	LOCK WASHER O.D.	LOCK WASHER THK		FREIGHTLINER PART NUMBER *
#10-32	.312 .305	.120 .105	.031 .019	.414 .384	.383 .372	.025 .020		23-10718-L

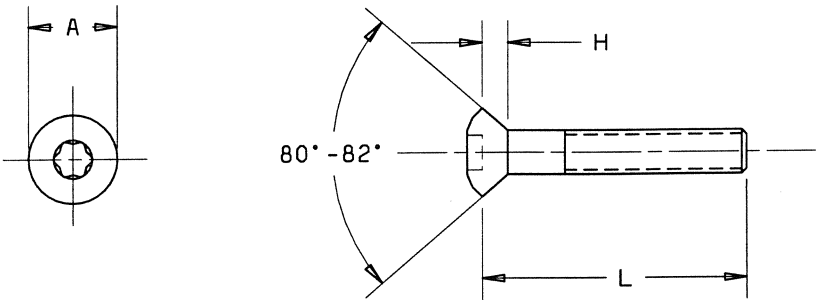
* Complete part number by adding 3 digit dash number, L, indicating length in 1/100's of an inch.

SPECIFICATIONS

1. Material: Carbon Steel
2. Finish: Zinc or Cadmium plated
3. Construction: Must meet pertinent requirements of ANSI B18.6.4 1966 and B18.13 1965.

COMPILED	HJR	DATE DRAWN			
APPROVED	CPL	10-24-74			

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, OVAL HEAD INTERNAL TORX, ZINC PLATED	23-10724	
DATE	03/17/00	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. C
CATIA ORIGINAL				



INTERNAL TORX SHOWN

NOMINAL SIZE AND THREADS	NOMINAL DIA	A MAX EDGE SHARP	H MAX		FREIGHTLINER PART NUMBER
6-32 UNC	.138	.279	.083		23-10724-7XX
10-32 UNF	.190	.385	.116		23-10729-7XX
12-24 UNC	.216	.438	.132		23-10730-7XX
1/4-20 UNC	.250	.507	.153		23-10732-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT- 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- X INDICATES WHOLE INCHES.
THIRD DIGIT- X INDICATES EIGHTHS OF AN INCH (7 MAX).
E.G. 23-10732-715 IS A 1/4-20 TORX DRIVE MACHINE SCREW 1 5/8 INCHES LONG.

FOR CROSS RECESS, COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. E.G. 23-10724-150 IS A 6-32 UNC MACHINE SCREW 1 AND 1/2 INCHES LONG.

ENGINEERING NOTES:

1. MATERIAL: STEEL
2. FINISH: ZINC PLATE PER FTL 49-00005-403.
3. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.
4. THREAD : SAE UNC AND UNF.
5. TORX RECESS: PER CAMCAR STANDARD TXH-208.

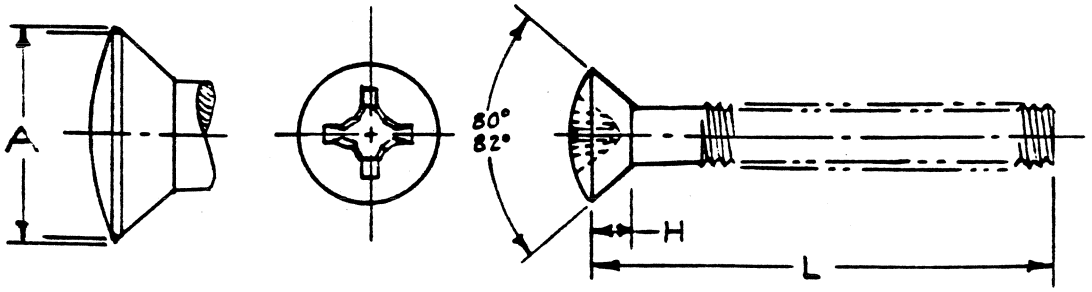
CHG	JOB NO	DATE	BY	REVISION
C	H07377-03	03/17/00	LFB	REDRAWN IN CATIA.

thru 23-10737

General Use Part

PRINT ISSUED	TITLE	PART NO.
10/29/71	SCREW, MACHINE, CROSS RECESS OVAL HEAD, BRIGHT	23-10722 thru 23-10737
LAST CHG. LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIAMETER	A MAX.	H REF.		FREIGHTLINER PART NUMBER *
4 -40 UNC 4 -48 UNF	.112	.225	.067		23-10722 -10723
6 -32 UNC 6 -40 UNF	.138	.279	.083		-10724 -10725
8 -32 UNC 8 -36 UNF	.164	.332	.100		-10726 -10727
10 -24 UNC 10 -32 UNF	.190	.385	.116		-10728 -10729
12 -24 UNC 12 -28 UNF	.216	.438	.132		-10730 -10731
1/4 -20 UNC 1/4 -28 UNF	.250	.507	.153		-10732 -10733
5/16-18 UNC 5/16-24 UNF	.313	.635	.191		-10734 -10735
3/8 -16 UNC 3/8 -24 UNF	.375	.762	.230		-10736 -10737

*Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-10723-075 specifies a number 4-48 UNF oval head screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel

2. Thread: SAE UNC and UNF

3. Finish: Bright

WAS				
DATE				
BY				
CHG				

WAS				
DATE				
BY				
CHG				

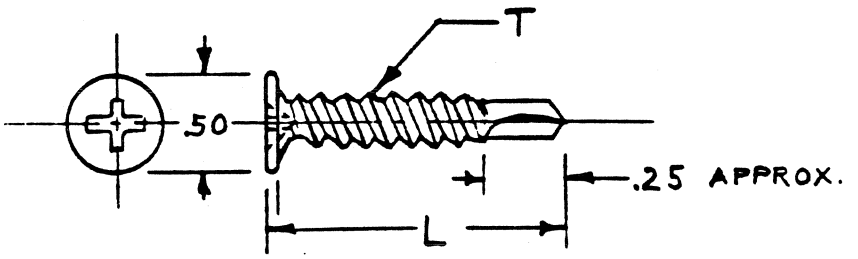
ns

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	CJ4	10-7-71		(1)	

General Use Part

PRINT ISSUED	TITLE	PART NO.
	TEKS, PLYMETAL, CROSS RECESS WAFER HEAD	23-10738
LAST CHG. LTR.		SHEET 1 OF 1

SKETCH



PART NUMBERS

T THREAD	POINT TYPE	L LENGTH	G MAT'L THICKNESS	MANUFACTURER'S NUMBER		FREIGHTLINER PART NUMBER *
				SI		
#10-24	TEK 3	.75	.090-.250	632-101210-02		23-10738-075

* Three-digit dash number indicates length in 1/100'ths of an inch.

ENGINEERING NOTES

(1) MATERIAL: Carbon Steel

2 FINISH: Cadmium or Zinc Plate

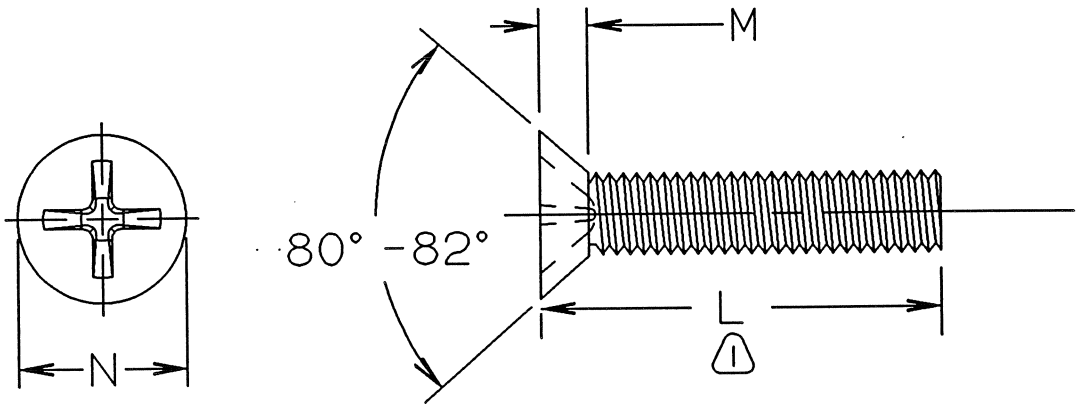
COMPILED	H.J.R.	DATE DRAWN		MATERIAL	
APPROVED	CRS	12-11-74		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

JOB NO.	WAS	DATE	BY	CHG

JOB NO.	WAS	DATE	BY	CHG
A0720	—	—	—	—

DRAWN	HJR	TITLE SCREW-MACHINE FLAT HEAD, CROSS RECESS	ITEM NUMBER 23-10766
APPRV	ROLLINS		
DATE	12/12/72	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBER

NOMINAL SIZE & THREADS	NOM DIA	N MAX DIA	M REF	L (1)		FREIGHTLINER PART NUMBER
6-32	.138	.279	.083	.188		23-10768-L
8-32	.164	.332	.100	.250		23-10770-L
10-24 10-32	.190	.385	.116	.313		23-10772-L 23-10773-L
12-24	.216	.438	.132	.375		23-10774-L
1/4-20	.250	.507	.153	.438		23-10776-L
3/8-16	.375	.762	.230	.563		23-10780-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10770-150 IS A 8-32 FHCR MACHINE SCREW 1 1/2 INCHES LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

C FINISH: ZINC PLATE PER FREIGHTLINER SPEC. 49-00005-403.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

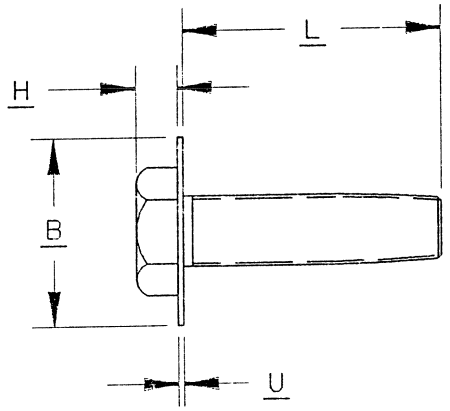
CROSS RECESS: TYPE 1 PER ANSI B18.6.3.

THREADS: UN2A PER ANSI B1.1.

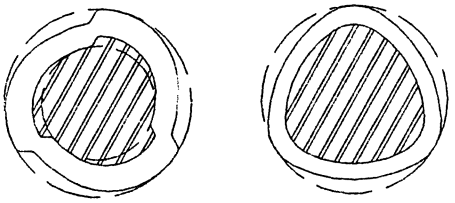
(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PA2042-41	10/11/93	ERK	REDRAWN; REVISED MATERIAL
C	PA2042-70	06/24/96	DAJ	FINISH WAS CADIUM PLATE

DRAWN	SJT	TITLE	DRAWING NUMBER	
APPRV	RDF	SCREW-HEX WASHER HEAD THREAD ROLLING	23-10796	
DATE	04/05/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. F
CATIA ORIGINAL				



THREAD CROSS SECTIONS



ROLOK TAPTITE

THREAD SIZE	WIDTH ACROSS FLATS (MAX)	H (MAX)	B (MAX)	U (MAX)	FREIGHTLINER PART NUMBER
8-32	.250	.110	.348	.031	23-10796-L
10-24	.312	.120	.414	.031	23-10797-L
12-24	NOT FOR NEW DESIGN				23-10799-L
1/4-20	.375	.190	.520	.050	23-10800-L

COMPLETE PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.

EXAMPLE: 23-10800-075 SPECIFIED A 1/4-20 THREAD ROLLING SCREW 3/4" LONG.

THREAD SIZE	MATERIAL TYPE	MATERIAL THICKNESS (STEEL AND ALUMINUM)			
		.063-.078	.125-.266	.250-.328	.313-.500
8-32	STELL	#26 (.147)	3.8M (.150)	#23 (.154)	-
	ALUM	#26 (.147)	3.8M (.150)	#24 (.152)	-
10-24	STEEL	#19 (.166)	11/64 (.172)	#16 (.177)	-
	ALUM	#19 (.166)	#19 (.166)	#18 (.170)	-
1/4-20	STEEL	7/32 (.219)	5.7M (.224)	#1 (.228)	A (.234)
	ALUM	7/32 (.219)	#2 (.221)	5.7M (.224)	#1 (.228)

ENGINEERING NOTES:

1. MATERIAL: STEEL, PER SAE J81
2. FINISH: ZINC OR CADMIUM PLATED AND WAX.
3. HEAD: HEX WASHER HEAD, PER ANSI B18.6.4
4. THREADS: TYPE TT (TAPTITE II) OR RL (ROLOK) PER SAE J81

CHG	JOB NO	DATE	BY	REVISION
F	PA2042-76	04/18/97	DAJ	REVISED AND REDRAWN IN CATIA. FINISH WAS CAD ONLY.

23-10802

PRINT ISSUED		TITLE	PART NO.
		SCREW, MACHINE FLAT HEAD SLOTTED PLATED	23-10802
LAST CHG. LTR.	A		SHEET 1 OF 2

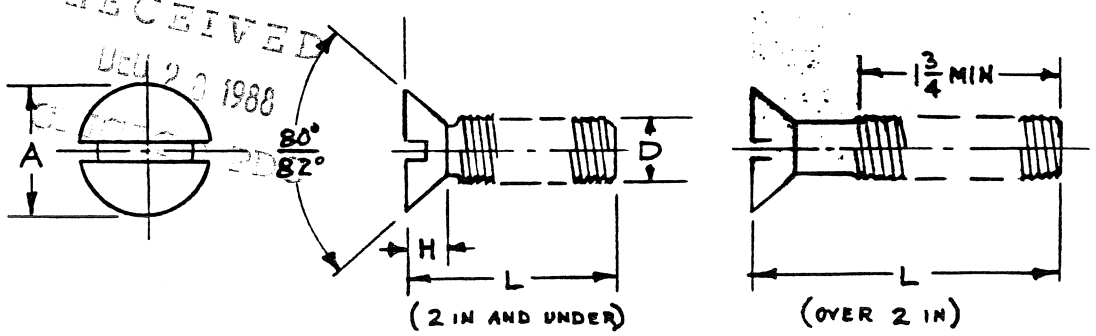
CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
-	-	-	Job #A0258
A	ANF	11/18/88	Dwg No was 23-10802/ 23-10829

P*A078-82 ns

SKETCH

RECEIVED DEC 23 1988



PART NUMBERS

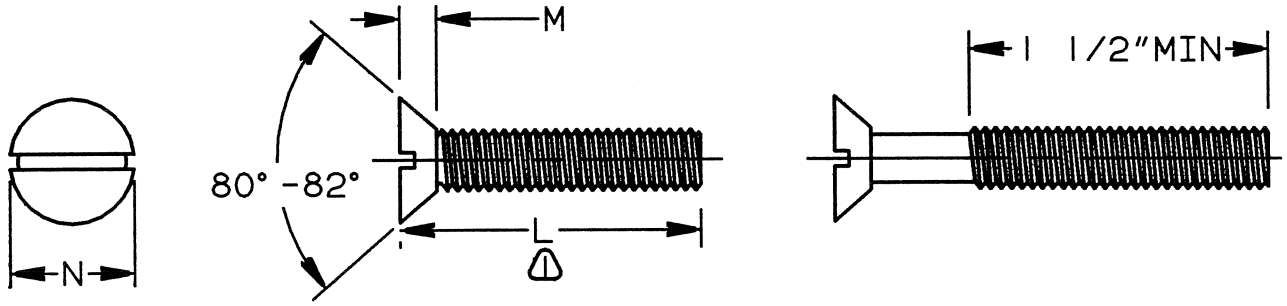
SCREW SIZE	D DIAM. OF SCREW	L THESE LENGTHS AND SHORTER ARE UNDERCUT	A HEAD DIAMETER MAX. SHARP	A HEAD DIAMETER MIN. SHARP	A HEAD DIAMETER ABS. MIN.	H HEAD HEIGHT REF.	THREAD UNC	THREAD UNF	FREIGHTLINER PART NUMBER
2	0.0860	1/8	0.172	0.156	0.147	0.051	2-56	2-64	
4	0.1120	3/16	0.225	0.207	0.195	0.067	4-40	4-48	
6	0.1380	3/16	0.279	0.257	0.244	0.083	6-32	6-40	
8	0.1640	1/4	0.332	0.308	0.292	0.100	8-32	8-36	
10	0.1900	5/16	0.385	0.359	0.340	0.116	10-24	10-32	23-10811-L
12	0.2160	3/8	0.438	0.410	0.389	0.132	12-24	12-28	
1/4	0.2500	7/16	0.507	0.477	0.452	0.153	1/4-20	1/4-28	23-10814-L 23-10815-L
5/16	0.3125	1/2	0.635	0.600	0.568	0.191	5/16-18	5/16-24	
3/8	0.3750	9/16	0.762	0.722	0.685	0.230	3/8-16	3/8-24	
7/16	0.4375	5/8	0.812	0.767	0.723	0.223	7/16-14	7/16-20	
1/2	0.5000	3/4	0.875	0.831	0.775	0.223	1/2-13	1/2-20	
9/16	0.5625	13/16	1.000	0.950	0.889	0.260	9/16-12	9/16-18	
5/8	0.6250	15/16	1.125	1.069	1.002	0.298	5/8-11	5/8-18	
3/4	0.7500	1-1/8	1.375	1.306	1.230	0.372	3/4-10	3/4-16	

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	4-10-73		(SEE SHT. 2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

DRAWN	HJR	TITLE	ITEM NUMBER
APPRV	ROLLINS	SCREW-MACHINE FLAT HEAD, SLOTTED	23-10802
DATE	04/10/73	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



(2 INCHES AND LESS) (OVER 2 INCHES)

PART NUMBER

NOMINAL SIZE & THREADS	NOM DIA	N		M REF	L (1)	FREIGHTLINER PART NUMBER
		MAX DIA SHARP	MIN EDGE ROUNDED OR FLAT			
10-32	.190	.385	.340	.116	.313	23-10811-L
1/4-20	.250	.507	.452	.153	.438	23-10814-L
1/4-28	.250	.507	.452	.153	.438	23-10815-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10811-150 IS A 10-32 FHS MACHINE SCREW 1 1/2 INCHES LONG.

ENGINEERING NOTES:

B

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: CADMIUM PLATE PER FREIGHTLINER SPEC. 49-00012-130 OR ZINC PLATE PER FREIGHTLINER SPECIFICATION 49-00005-403.

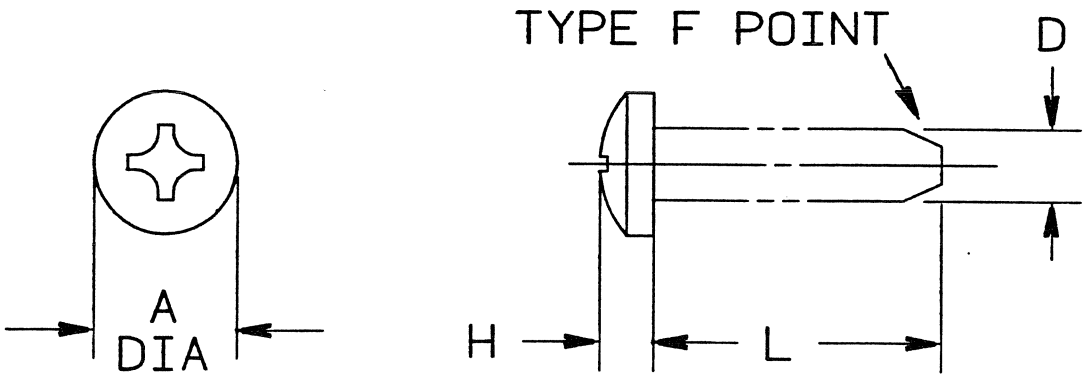
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

THREADS: UN2A PER ANSI B1.1.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	PA2042-41	10/12/93	ERK	REDRAWN; REVISED MATERIAL.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-TAPPING PAN HEAD CROSS RECESS, TYPE F	23-10832
DATE	08/16/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM SIZE	D(MAX) BODY DIA	A(MAX) HEAD DIA	H(MAX) HEAD HEIGHT	FREIGHTLINER PART NUMBER*
8-32 UNC	.164	.322	.115	23-10836
10-24 UNC	.190	.373	.133	23-10838
10-32 UNF	.190	.373	.133	23-10839
12-24 UNC	.216	.425	.151	23-10840

*COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTHS IN ONE-HUNDRETHS OF AN INCH. EXAMPLE: 23-10836-050 SPECIFIES A NUMBER 8-32 UNC PAN HEAD TAPPING SCREW 1/2 INCH LONG.

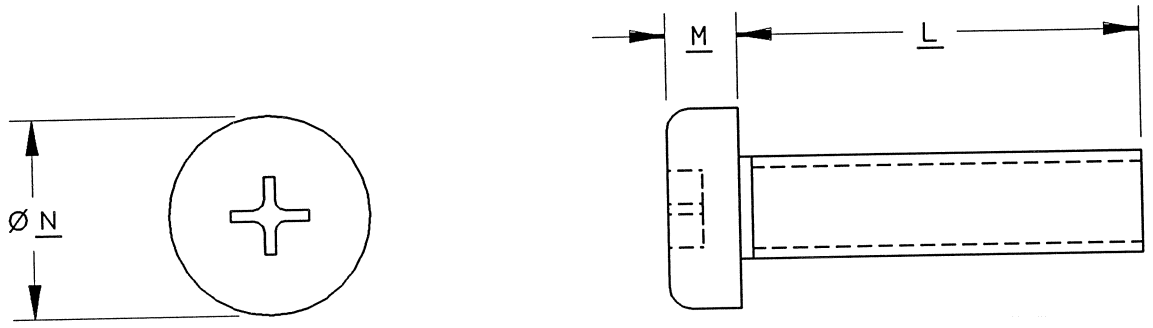
DIMENSIONS ARE FOR REFERENCE ONLY. REFER TO ANSI B18.6.4 FOR DIMENSIONAL AND MECHANICAL PROPERTIES

MATERIAL: CARBON STEEL, CASE HARDENED
FINISH: ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403
POINT: TYPE F

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P*A078-46	08/16/88	PCK	REDRAWN/DOCUMENTED

)RIENNE CHILBERG

DRAWN	SJT	TITLE	DRAWING NUMBER	
APPRV	RDF	SCREW-MACHINE, PAN HEAD TORX OR CROSS RECESS, PHOS OIL	23-10852	
DATE	03/08/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2	CHG. LTR. F
CATIA ORIGINAL				



THREAD SIZE	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
4-40 UNC	.219	.068	23-10854-L
8-32 UNC	.322	.115	23-10858-L
10-24 UNC	.373	.133	23-10860-L
10-32 UNF	.373	.133	23-10861-L
1/4-20 UNC	.492	.175	23-10864-L

CROSS RECESS IS NON-PREFERRED
SEE SHT 2 FOR TORX DRIVE

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH. E.G. 23-10860-150 IS A 10-24 PAN HEAD CROSS RECESS MACHINE SCREW 1-1/2 INCHES LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: PHOS & OIL PER F/L SPEC 49-00006-041.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

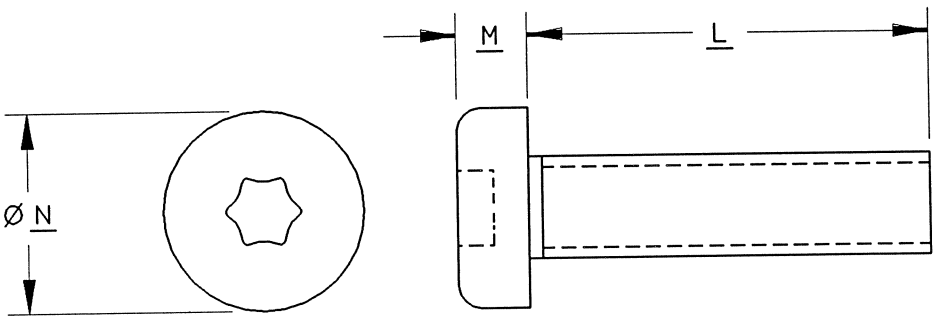
CROSS RECESS: TYPE 1 PER ANSI B18.6.3.

THREADS: UN2A PER ANSI B1.1.

CHG	JOB NO	DATE	BY	REVISION
C	P6517G-02	03/08/91	SJT	REVISED AND REDRAWN, ADDED SHT 2, TORX
D	PA2042-41	10/12/93	ERK	REVISED MATERIAL
E	P00262-04	10/01/96	FHC	REVISED AND REDRAWN, ADDED 23-10854, SEE SHT 2.
F	P00262-05	10/28/96	DAJ	ADDED 23-10854, REMOVED #4 FROM SHT2.

)RIENNE CHILBERG

DRAWN	SJT	TITLE	DRAWING NUMBER	
APPRV	RDF	SCREW-MACHINE, PAN HEAD TORX OR CROSS RECESS, PHOS OIL	23-10852	
DATE	03/08/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2	CHG. LTR. F
CATIA ORIGINAL				



THREAD SIZE	TORX RECESS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10-24 UNC	T-25	.373	.133	23-10860-7LL
1/4-20 UNC	T-30	.492	.175	23-10864-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTS OF AN INCH (7) MAX

E.G. 23-10860-715 IS A 10-24 TORX DRIVE MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: PHOS & OIL PER F/L SPEC 49-00006-041.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

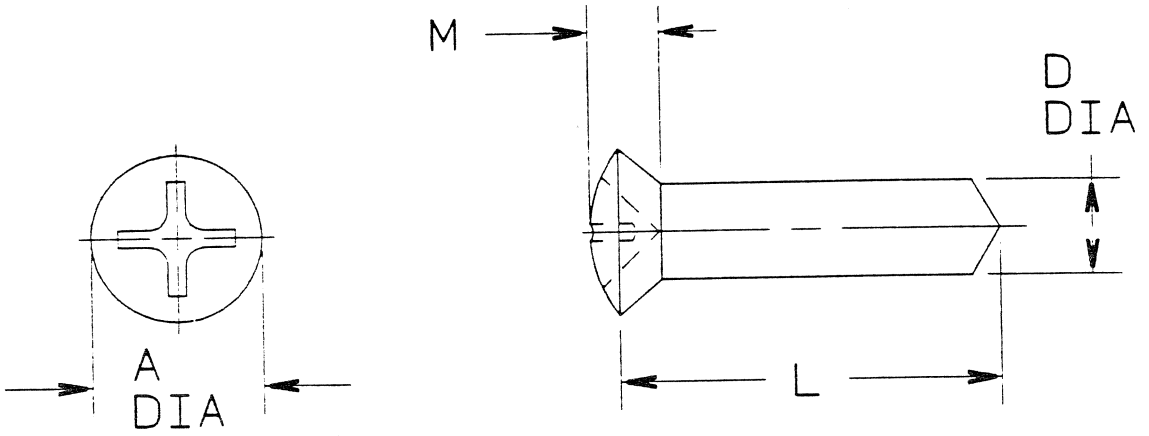
TORX RECESS: PER CAMCAR STANDARD TXH-202.

THREADS: UN2A PER ANSI B1.1.

CHG	JOB NO	DATE	BY	REVISION
C	P6517G-02	03/08/91	SJT	REVISED AND REDRAWN, ADDED SHT 2, TORX
D	PA2042-41	10/12/93	ERK	REVISED MATERIAL
E	P00262-04	10/01/96	FHC	REVISED AND REDRAWN IN CATIA, ADDED 23-10854 TO SHT1
F	P00262-05	10/28/96	DAJ	REMOVED 4-40 SPEC FROM SHT 2

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-TAPPING, TYPE AB OVAL HEAD CROSS RECESS, SST	23-10874
DATE	05/19/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX		M MAX		FREIGHTLINER * PART NUMBER
		MAX SHARP	ABS MIN			
6-20	.138	.279	.244	.128		23-10874-050 -062

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.

EXAMPLE: 23-10874-050 SPECIFIES A 6-20 OVAL HEAD TAPPING SCREW 1/2 INCH LONG.

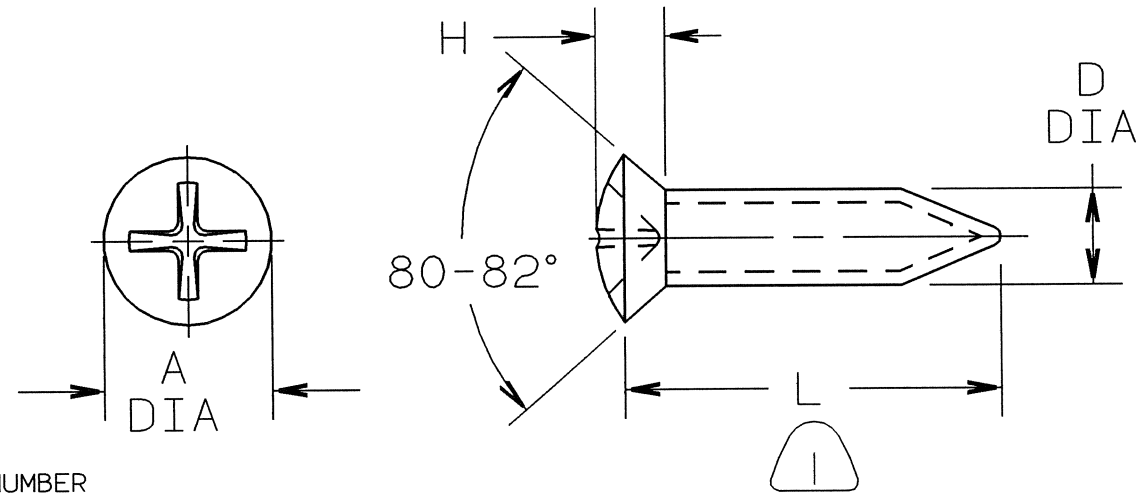
ENGINEERING NOTES

1. MATERIAL: STAINLESS STEEL, TYPE 302 TO 305, COLD WORKED
   TENSILE STRENGTH: 80,000 PSI MIN
   YIELD STRENGTH: 40,000 PSI MIN
2. DIMENSIONS PER ANSI B18.6.4
3. FINISH: PLAIN
4. POINT: TYPE AB PER ANSI B18.6.4
5. RECESS TYPE: TYPE 1

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P3971F-01	05/19/89	PCK	DOCUMENTED. DWG NUMBER WAS 23-10872/23-10879

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, TYPE AB, SST OVAL HEAD TORX OR CROSS RECESS	23-10875
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC DIA	A MAX		H MAX	L (1)		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
8-18	.164	.332	.292	.152	7/16		23-10875-062 -075 -100 -125

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10875-162 IS AN 8-18 PHCR TAPPING SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

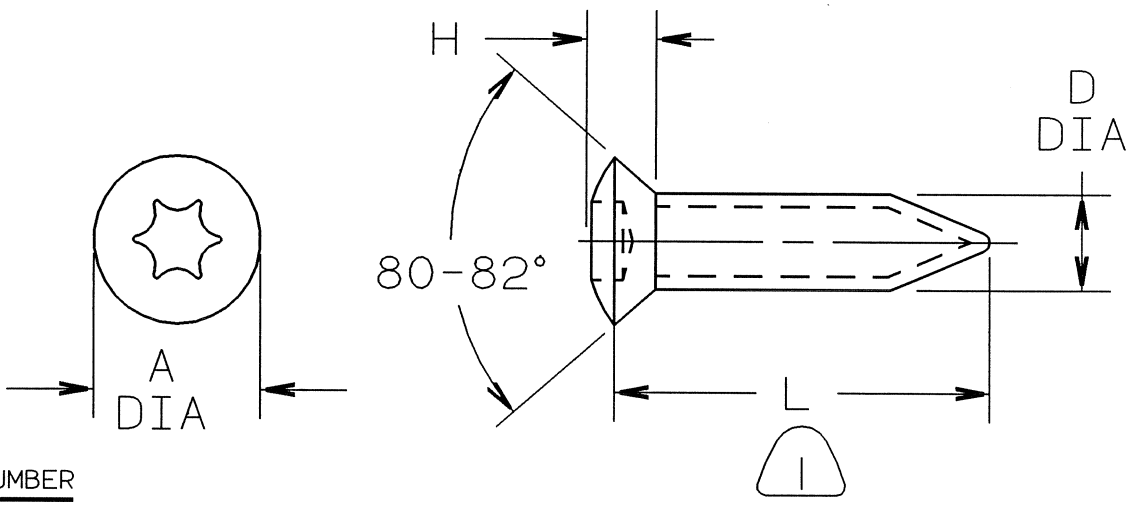
MATERIAL: STAINLESS STEEL PER ASTM F593, GROUP 1, CONDITION CW.
FINISH: PLAIN.
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.4.
THREAD & POINT: TYPE AB PER ANSI B18.6.4.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
D	PA2042-05	01/15/92	RDF	CORRECTED HEAD HEIGHT AND UNDERCUT LENGTH
E	PA2042-14	03/17/92	ERK	CORRECTED HEAD HEIGHT AND UNDERCUT LENGTH
F	PA2042-36	06/07/93	ERK	SEE SHEET #2

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, TYPE AB, SST OVAL HEAD CROSS OR TORX RECESS	23-10875
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC DIA	A MAX		H MAX	L 1		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
F 8-18	.164	.332	.292	.152	1/4		23-10875-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-10875-715 IS AN 8-18 OHIT TAPPING SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: STAINLESS STEEL PER ASTM F593, GROUP 1, CONDITION CW.
FINISH: PLAIN
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T20 PER CAMCAR STANDARD TXH-208.
THREAD & POINT: TYPE AB PER ANSI B18.6.4

1 THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
D	PA2042-05	01/15/92	RDF	CORRECTED HEAD HEIGHT AND UNDERCUT LENGTH
E	PA2042-14	03/17/92	ERK	SEE SHEET #1
F	PA2042-36	06/07/93	ERK	CORRECTED HEAD HEIGHT

23-10872 Thru 23-10879

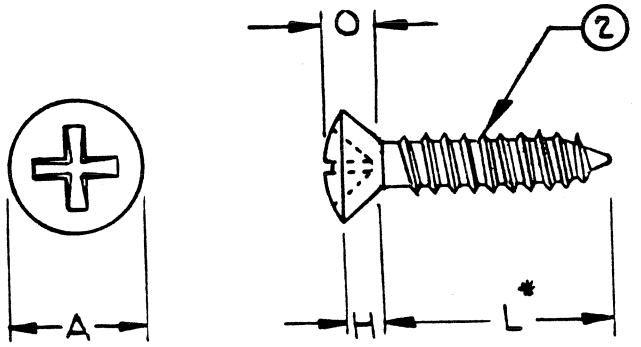
General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, TAPPING OVAL HEAD CROSS RECESS, STAINLESS STEEL	23-10872 Thru 23-10879
LAST CHG LTR	A		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
—	D.L.	3-15-74	J#A0552
A	TD	10.2.79	J# 76885 Rev. Threads

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L ③	A	H	O MAX	FREIGHTLINER PART NUMBER*
2-32	.086	3/16	0.172	0.051	0.080	23-10872
4-24	.112	1/4	0.225	0.067	0.104	23-10873
6-20	.138	5/16	0.279	0.083	0.128	23-10874
8-18	.164	7/16	0.332	0.100	0.152	23-10875
10-16	.190	1/2	0.385	0.116	0.176	23-10876
12-14	.216	9/16	0.438	0.132	0.200	23-10877
1/4-14	.250	5/8	0.507	0.153	0.232	23-10878
5/16-12	.313	13/16	0.635	0.191	0.290	23-10879

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10874-062 specifies a 6-20 oval head screw 5/8 inch long.

ENGINEERING NOTES

① Material: Stainless steel
② Thread: Type AB of American Standard B18.6.4.
③ These lengths or shorter are undercut.

COMPILED	D.LeL.	DATE DRAWN		MATERIAL	
APPROVED	Jim S.	3-19-74		①	

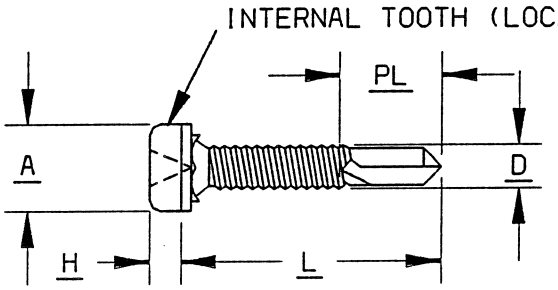
Portland FREIGHTLINER CORPORATION Oregon 97208

A

M/F

DRAWN	D L	TITLE	DRAWING NUMBER	
APPRV	J S	SCREW-SELF-DRILLING, PAN HEAD W/ LOCK WASHER, CROSS RECESS OR TORX DRIVE	23-10890	
DATE	02/14/74	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. D
CATIA ORIGINAL				

D



NOM. SIZE &THREADS PER. IN.	(REF) D THD DIA	(REF) PL POINT LGHT	A DIA.	H	FREIGHTLINER PART NUMBER
8-32	.164	.202	.322 .306	.115 .105	23-10891-L
10-24	.190	.258	.373 .357	.133 .122	23-10892-L
12-24	.216	.293	.425 .407	.151 .139	23-10893-L

COMPLETE THE PART NUMBER FOR CROSS RECESS SCREW BY ADDING A 3 DIGIT NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE:23-10891-100 IS A 8-32 SCREW, 1.00 INCH LONG.

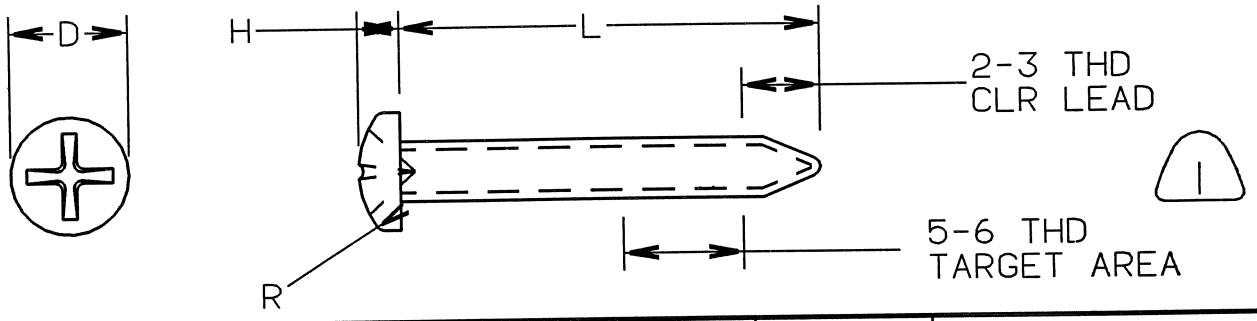
FOR "TORX" DRIVE SCREW DESIGNATION: THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS:
7 - REPRESENTS "TORX" DRIVE.
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH DIMENSION.
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH.
(E.G., -712 INDICATES A 1 1/4" SCREW)

ENGINEERING NOTES:

1. MATERIAL: CARBON STEEL PER SAE SPECIFICATION J78
2. FINISH: ZINC PLATED PER FL 49-00005-403.
3. TORX RECESS: 8/32 T20, 10-24 T25, 12-24 T27 PER CAMCAR STANDARD TXH 202.

CHG	JOB NO	DATE	BY	REVISION
B	P*A076-82	11/18/88	ANF	DWG. NO. WAS 23-10890/23-10894
C	PA2042-70	06/24/96	FHC	REVISED AND REDRAWN, FINISH WAS CAD, ADDED NOTE 3.
D	PA2042-83	03/23/98	DAJ	ADDED DIMENSION 'D' AND 'PL.'

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, BLACK PAN HEAD, TORX OR CROSS RECESS	**23-10896**
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
4 - 24	.112	.010	.219	.080	23-10896-L
6 - 20	.138	.015	.270	.097	23-10897-L
8 - 18	.164	.015	.322	.115	23-10898
10 - 16	.190	.020	.373	.133	23-10899

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-10898-162 IS A 10-16 PHCR TAPPING SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

MATERIAL: STEEL PER SAE J933

FINISH: BLACK PHOSPHATE AND SPECIAL OIL PER GM4435M, CODE A.

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

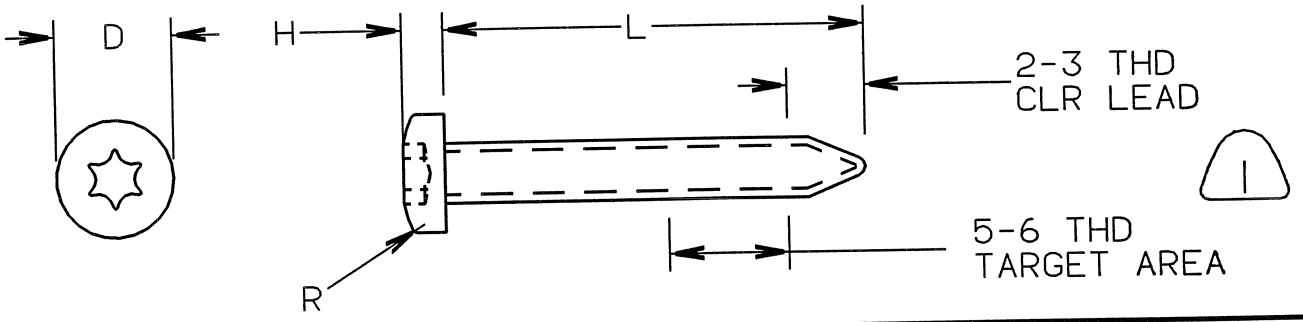
CROSS RECESS: TYPE 1 PER ANSI B18.6.4

THREAD & POINT: TYPE AB PER ANSI B18.6.4

1 23-10899-075 & -125 TO HAVE LOCKING PATCH IN TARGET AREA, PER IFI 125. MAINTAIN 2-3 THREAD CLEAR LEAD.

CHG	JOB/RLSE NO	DATE	BY	REVISION
D	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
E	PM0433-04	03/22/90	RDF	RESTORED LOCKING PATCH ON 23-10899-075 & -125
F	P6517G-02	03/21/91	SJT	SEE SHEET 2 OF 2,FINISH SPEC GM6174 TO GM4435M
G	435548-04	01/18/93	ERK	SEE SHEET 2 OF 2
H	PA2042-33	02/26/93	ERK	REMOVED REFERENCE TO 168 HOURS OF SALT SPRAY.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, BLACK PAN HEAD, TORX OR CROSS RECESS	**23-10896**
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2



THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
6 - 20	.138	.015	.270	.097	23-10897-7XX
8 - 18	.164	.015	.322	.115	23-10898-7XX
10 - 16	.190	.020	.373	.133	23-10899-7XX
1/4 - 14	SEE DRAWING 23-11426				

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-10899-715 IS A 10-16 PHIT TAPPING SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: STEEL PER SAE J933

FINISH: BLACK PHOSPHATE AND SPECIAL OIL PER GM4435M, CODE A.

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

TORX RECESS: #8 - T20 PER CAMCAR STANDARD TXH-202.
#10- T25 PER CAMCAR STANDARD TXH-202.

THREAD & POINT: TYPE AB PER ANSI B18.6.4

1 23-10899-706 & -712 TO HAVE LOCKING PATCH IN TARGET AREA, PER IFI 125. MAINTAIN 2-3 THREAD CLEAR LEAD.

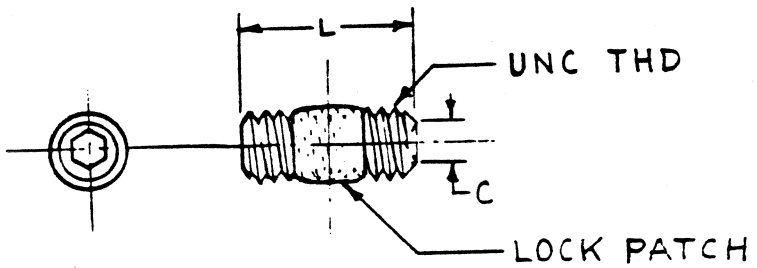
CHG	JOB/RLSE NO	DATE	BY	REVISION
D	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
E	PM0433-04	03/22/90	RDF	ADDED LOCKING PATCH ON 23-10899-706 & -712
F	P6517G-02	03/21/91	SJT	ADDED NOT REF TO 23-11426,SPEC GM6174 TO GM4435M
G	435548-04	01/18/93	ERK	ADDED 23-10897-7XX
H	PA2042-33	02/26/93	ERK	REMOVED REFERENCE TO 168 HOURS OF SALT SPRAY.

thru 23-10912

General Use Part

PRINT ISSUED	TITLE	PART NO
	SET SCREW, LOCKING, HEX SOCKET CUP POINT, UNC	23-10909 thru 23-10912
LAST CHG. LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD UNC	C CUP DIA. MAX.	C CUP DIA. MIN.		P** PATCH LOCATION	L LENGTH	FREIGHTLINER PART NUMBER
#10-24	.102	.088		Std	3/16 1/4 5/16 3/8	23-10909-019 -025 -031 -038
1/4-20	.132	.118		Std	1/4 5/16 3/8 1/2 3/4 1	23-10910-025 -031 -038 -050 -075 -100
				.38 .50	1-1/4	-125
5/16-18	.172	.156		Std	1/2	23-10911-050
3/8-16	.212	.194		Std	1/4 3/8 1/2	23-10912-025 -038 -050

*Dash number indicates length in 1/100's of an inch.
**"Std" means central placement of lock patch approximately 5 threads wide, but allowing minimum of 2 thread lead.

ENGINEERING NOTES

(1) MATERIAL:
SCREW: Carbon Steel, Hardened.
LOCK PATCH: Nylon Type, for Moderate Locking. Color Optional.

2. FINISH: Plain
3. Set screws shall conform to all pertinent provisions of 1970 Draft Revision of ANSI B18.6.3 1956.

		DATE DRAWN		MATERIAL	
COMPILED	HJR	10-23-75		(1)	
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

JOB NO	WAS	DATE	BY	CHG

JOB NO	WAS	DATE	BY	CHG
A0786				

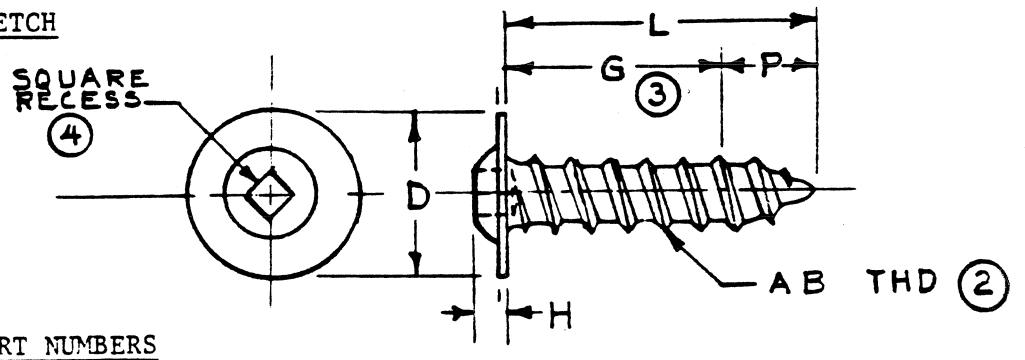
23-10918 thru 23-10923

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, TAPPING SQUARE RECESS, WASHER HEAD, AB THD	23-10918 thru 23-10923
LAST CHG LTR	—		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

SKETCH



PART NUMBERS

SIZE	BASIC DIA.	THREAD THREADS PER INCH	HEAD P	HEAD D	HEAD H	ROBERTSON RECESS		FREIGHTLINER PART NUMBER*
6	.138	20	.193	.38	.12	#1		23-10918-L
8	.164	18	.224			#2		23-10919-L
10	.190	16	.256					23-10920-L
12	.216	14	.296			#3		23-10921-L
1/4	.250	14	.335					23-10922-L
5/16	.312	12	.418					23-10923-L

*Complete the part number by adding a three digit dash number to indicate length in hundredths of an inch, thus: 23-XXXXX-125 specifies a part 1.25 inches long.

ENGINEERING NOTES

(1) Material: Steel, AISI 1022 case hardened and bright zinc plated.

(2) Thread: Type AB of American Standard B18.6.4 per IFI Engineering Recommendation Number 2 (=SAE type A).

(3) Effective Grip: G = L - P

(4) Robertson No. 1 Square Recess for No. 6 Screw Size
No. 2 Square Recess for No. 8 & No. 10 Screw Size
No. 3 Square Recess for No. 12 & 1/4 & 5/16 Screw Size

CHG	BY	DATE	WAS	JOB NO

CHG	BY	DATE	WAS	JOB NO
—	—	—	—	A0795

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	GR	12-22-75		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

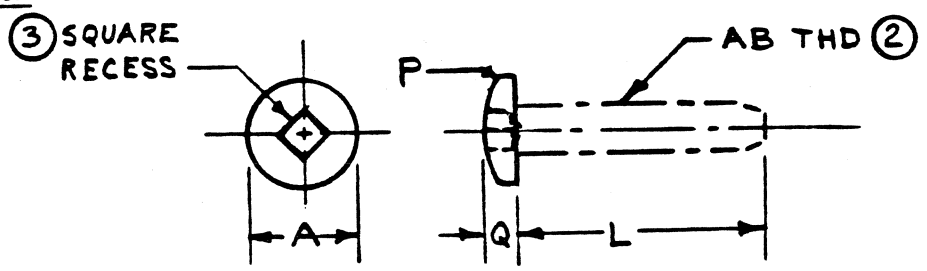
thru 23-10929

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SCREW, TAPPING SQUARE RECESS, PAN HEAD, AB THD	23-10924 thru 23-10929
LAST CHG LTR —		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

SKETCH



PART NUMBERS

NOMINAL SIZE & THREADS	BASIC DIA.	A MAX.	Q MAX.	P MIN.	FREIGHTLINER PART NUMBER*
6-20	.138	0.270	.097	.015	23-10924-L
8-18	.164	0.322	.115	.015	23-10925-L
10-16	.190	0.373	.133	.020	23-10926-L
12-14	.216	0.425	.151	.025	23-10927-L
1/4-14	.250	0.492	.175	.035	23-10928-L
5/16-12	.313	0.61	.218	.040	23-10929-L

*Complete part number by adding a three digit dash number to indicate length, L, in hundredths of an inch. Example: 23-10928-075 specifies a 1/4"-14 tapping screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel, cadmium plated

(2) Thread: Type AB of American Standard B18.6.4 (=SAE type A).

(3) Robertson No. 1 Square Recess for No. 6 Screw Size
No. 2 Square Recess for No. 8 & No. 10 Screw Size
No. 3 Square Recess for No. 12& 1/4 & 5/16 Screw Size

JOB NO	WAS	DATE	BY	CHG

JOB NO	WAS	DATE	BY	CHG
A0795	—	—	—	—

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	CG	12-22-75		(1)	

23-1 thru 23-10935

General Use Part

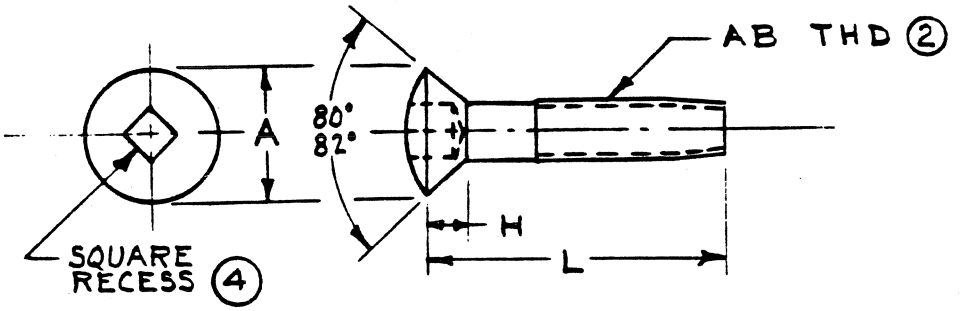
PRINT ISSUED		TITLE	PART NO
		SCREW, TAPPING SQUARE RECESS, OVAL HEAD, AB THD	23-10930 thru 23-10935
LAST CHG LTR	—		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

CHG	BY	DATE	WAS	JOB NO

CHG	BY	DATE	WAS	JOB NO
—	—	—	—	A0795

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L (3)	A	H	J MAX.		FREIGHTLINER PART NUMBER*
6-20	.138	5/16	0.279	0.083	0.128		23-10930-L
8-18	.164	7/16	0.332	0.100	0.152		23-10931-L
10-16	.190	1/2	0.385	0.116	0.176		23-10932-L
12-14	.216	9/16	0.438	0.132	0.200		23-10933-L
1/4-14	.250	5/8	0.507	0.153	0.232		23-10934-L
5/16-12	.313	13/16	0.635	0.191	0.290		23-10935-L

*Complete the part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10930-075 specifies a #6-20 oval head screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel, cadmium plated.

(2) Thread: Type AB of American Standard B18.6.4 (=SAE type A).

(3) These lengths or shorter are undercut.

(4) Robertson No. 1 Square Recess for No. 6 Screw Size
No. 2 Square Recess for No. 8 & No. 10 Screw Size
No. 3 Square Recess for No. 12, 1/4 & 5/16 Screw Size

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		12-22-75		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

23-10936 thru 23-10941

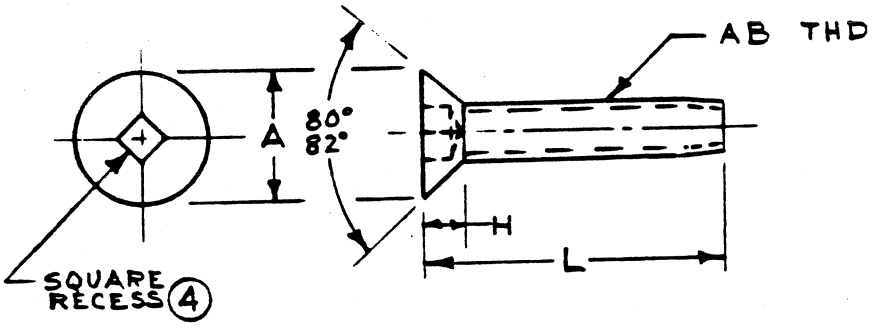
General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, TAPPING SQUARE RECESS, FLAT HEAD, AB THD	23-10936 thru 23-10941
LAST CHG LTR	—		SHEET 1 OF 1

JOB NO	WAS	DATE	BY	CHG

SPECIAL FOR CANADIAN USE

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L (3)	A	H		FREIGHTLINER PART NUMBER*
6-20	.138	5/16	0.279	0.083		23-10936
8-18	.164	7/16	0.332	0.100		23-10937
10-16	.190	1/2	0.385	0.116		23-10938
12-14	.216	9/16	0.438	0.132		23-10939
1/4-14	.250	5/8	0.507	0.153		23-10940
5/16-12	.313	13/16	0.635	0.191		23-10941

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10936-075 specifies a #6-20 flat head screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel Cadmium Plated.

2 Thread: Type AB of American Standard B18.6.4 (=SAE type A).

(3) These lengths or shorter are undercut.

(4) Robertson No. 1 Square Recess for No. 6 Screw Size
No. 2 Square Recess for No. 8 & No. 10 Screw Size
No. 3 Square Recess for No. 12, 1/4 & 5/16 Screw Size

JOB NO	WAS	DATE	BY	CHG
A0795	—	—	—	—

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		12-22-75		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

23-10942 thru 23-10953

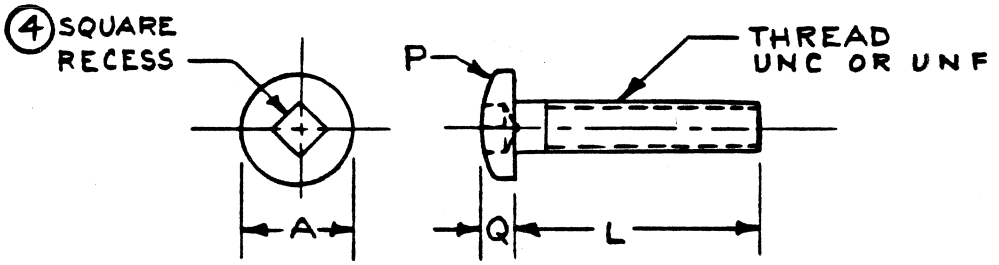
General Use Part

PRINT ISSUED		TITLE	PART NO
		SCREW, MACHINE SQUARE RECESS, PAN HEAD	23-10942 thru 23-10953
LAST CHG LTR	-		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

JOB NO				
WAS				
DATE				
BY				
CHG				

SKETCH



PART NUMBERS

NOMINAL SIZE AND THREAD	D BASIC	A MAX.	Q MAX.	P MIN.	FREIGHTLINER PART NUMBER*
6-32 UNC	.1380	.270	.097	.015	23-10942-L
6-40 UNF					23-10943-L
8-32 UNC	.1640	.322	.115	.015	23-10944-L
8-36 UNF					23-10945-L
10-24 UNC	.1900	.373	.133	.020	23-10946-L
10-32 UNF					23-10947-L
12-24 UNC	.2160	.425	.151	.025	23-10948-L
12-28 UNF					23-10949-L
1/4-20 UNC	.2500	.492	.175	.035	23-10950-L
1/4-28 UNF					23-10951-L
5/16-18 UNC	.3125	.615	.218	.040	23-10952-L
5/16-24 UNF					23-10953-L

*Complete part number by adding three digit dash number expressing length in hundredths of an inch. Example: 23-10942-075 specifies a 4-48 UNF pan head machine screw 3/4" long.

JOB NO	A0795			
WAS	—			
DATE	—			
BY	—			
CHG	—			

ENGINEERING NOTES

(1) Material: Steel SAE grade 2 bolt material

2 Unless otherwise noted, these screws shall meet all pertinent provisions of SAE standard J478a.

3 Application: Use pan head machine screws in lieu of round, truss, fillister, etc., per I.F.I. recommendations.

(4) Robertson No. 1 Recess for No. 6 Screw Size.
No. 2 Recess for No. 8 & No. 10 Screw Size.
No. 3 Recess for No. 12, 1/4 & 5/16 Screw Size.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		12-22-75		(1)	

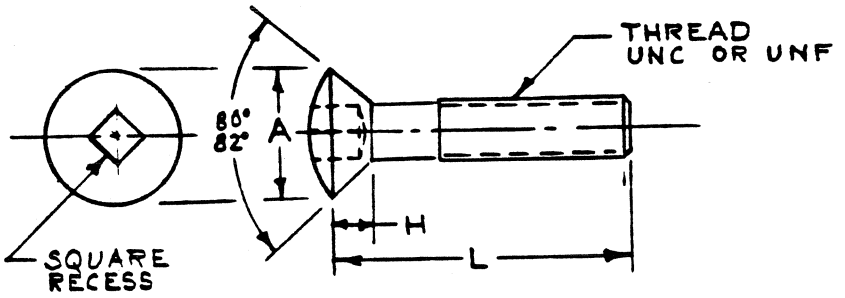
thru 23-10965

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SCREW, MACHINE SQUARE RECESS, OVAL HEAD, BRIGHT	23-10954 thru 23-10965
LAST CHG LTR	—		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIAMETER	A MAX.	H REF.		FREIGHTLINER PART NUMBER*
6-32 UNC 6-40 UNF	.138	.279	.083		23-10954-L 23-10955-L
8-32 UNC 8-36 UNF	.164	.332	.100		23-10956-L 23-10957-L
10-24 UNC 10-32 UNF	.190	.385	.116		23-10958-L 23-10959-L
12-24 UNC 12-28 UNF	.216	.438	.132		23-10960-L 23-10961-L
1/4-20 UNC 1/4-28 UNF	.250	.507	.153		23-10962-L 23-10963-L
5/16-18 UNC 5/16-24 UNF	.313	.635	.191		23-10964-L 23-10965-L

*Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-10954-075 specifies a number 4-48 UNF oval head screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel, SAE grade 2 bolt material.

2 Thread: SAE UNC and UNF.

3 Finish: Bright

4 Robertson No. 1 Recess for No. 6 Screw Size.
No. 2 Recess for No. 8 & No. 10 Screw Size.
No. 3 Recess for No. 12, 1/4 & 5/16 Screw Size.

5 Unless otherwise noted, these screws shall meet all pertinent provisions of SAE standard J478a.

		DATE DRAWN		Material	
COMPILED	HJR	12-22-75		(1)	
APPROVED	CK				

Portland FREIGHTLINER CORPORATION Oregon 97208

JOB NO	WAS	DATE	BY	CHG

JOB NO	WAS	DATE	BY	CHG
A0795				

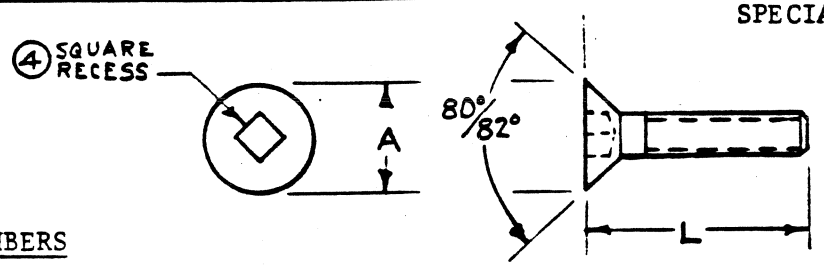
thru 23-10977

General Use Part

PRINT ISSUED	TITLE	PART NO
	SCREW, MACHINE SQUARE RECESS FLAT HEAD, CD PLATE	23-10966 thru 23-10977
LAST CHG LTR —		SHEET 1 OF 1

SPECIAL FOR CANADIAN USE

SKETCH



PART NUMBERS

THREAD	A MAX.	H REF.	FINISH ②		FREIGHTLINER PART NUMBER*
6-32 UNC	.279	.083	C		23-10966-L
-40 UNF					23-10967-L
8-32 UNC	.332	.100	C		23-10968-L
-36 UNF					23-10969-L
10-24 UNC	.385	.116	C		23-10970-L
-32 UNF					23-10971-L
12-24 UNC	.438	.132	C		23-10972-L
-28 UNF					23-10973-L
1/4-20 UNC	.507	.153	C		23-10974-L
-28 UNF					23-10975-L
5/16-18 UNC	.635	.191	C		23-10976-L
-24 UNF					23-10977-L

*Complete part number by adding a three digit dash number expressing length in hundredths of an inch.

ENGINEERING NOTES

(1) Material: Steel, SAE grade 2 bolt material.
(2) Finish: C = commercial cadmium plate.
3. Unless otherwise noted these screws shall meet all pertinent provisions of SAE standard J478a.
(4) Robertson No. 1 Recess for No. 6 Screw Size
No. 2 Recess for No. 8 & No. 10 Screw Size
No. 3 Recess for No. 12, 1/4 & 5/16 Screw Size

JOB NO	WAS	DATE	BY	CHG

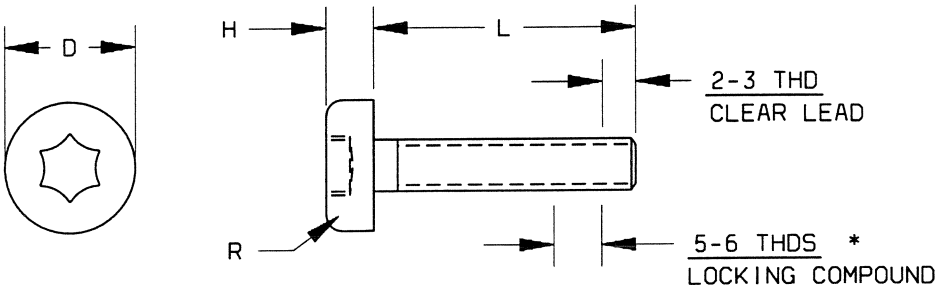
JOB NO	WAS	DATE	BY	CHG
A0[illegible]5	—	—	—	—

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	CB	12-22-75		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

MF

DRAWN	DAJ	TITLE SCREW-MACHINE PAN HEAD	DRAWING NUMBER 23-11152
APPRV	DAJ		
DATE	05/29/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. G
CATIA ORIGINAL			



INTERNAL TORX SHOWN

NOMINAL SIZE AND THREAD	BASIC DIA.	TORX RECESS	D HEAD DIA	H HEAD HEIGHT	R RADIUS	FREIGHTLINER PART NUMBER
5-40 UNC	.125	T10	.245	.089	.015	23-11154-L
8-32 UNC	.164	T20	.322	.115	.015	23-11158-L
10-24 UNC	.190	T25	.373	.133	.020	23-11160-L
10-32 UNC	.190	T25	.373	.133	.020	23-11161-L
1/4-20 UNC	.250	T30	.492	.175	.035	23-11164-L *
5/16-18 UNC	.312	T40	.615	.218	.040	23-12522-L *

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-11164-162 IS A 1/4-20 MACHINE SCREW 1-5/8 INCH LONG.

FOR "TORX" DRIVE SCREW DESIGNATION: THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS: EXAMPLE 23-12522-712 IS AN INTERNAL TORX 5/16-18 MACHINE SCREW 1-1/4" LONG.

7 - REPRESENT "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHT OF AN INCH (7 MAX)

* PART NUMBER'S INCLUDE PATCH PER NOTE #7. ALL OTHERS DO NOT HAVE LOCK PATCH.

ENGINEERING NOTES:

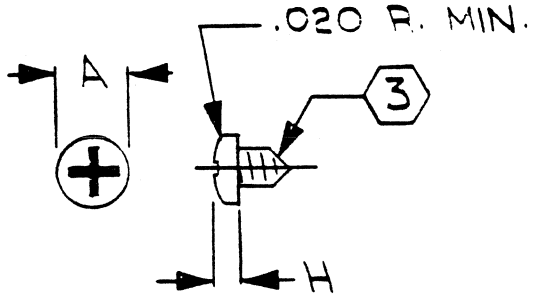
1. MATERIAL: GRADE 2 PER SAE STANDARD J429
2. FINISH: PHOS & OIL PER F/L SPEC 49-00006-041.
3. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STD TXH-202.
5. CROSS RECESS: TYPE 1 PER ANSI B18.6.3.
6. THREADS: UN2A PER ANSI B1.1.
7. LOCKING ELEMENT MUST MEET REQUIREMENT OF IFI 125.

CHG	JOB NO	DATE	BY	REVISION
E	P00699-A1	05/29/98	DAJ	REVISED AND REDRAWN IN CATIA, ADDED 23-12522-L.
F	PA2042-91	04/08/99	CGD	ADDED ASTERISK AND RELATED NOTE.
G	PA2042-93	07/09/99	CGD	CREATED SOLID MODEL.

GENERAL USE PART

ORIGINAL JOB NO.	TITLE	PART NO.
C1500A	SCREW, TAPPING PAN HEAD CROSS RECESSED	23-11197
LAST CHG LTR		SHEET 1 OF 1

SKETCH



Size & Threads Per Inch	Basic Dia.	A		H			FREIGHTLINER PART NUMBER *
		Max.	Min.	Max.	Min.		
10-12	.190	.373	.357	.133	.122		23-11197-L

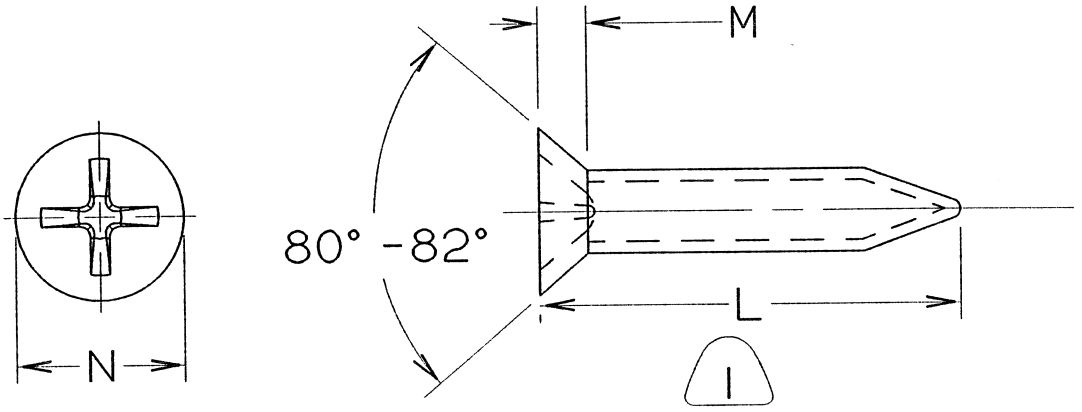
* Complete the part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-11197-025 specifies a #10-12 pan head screw, 1/4" inch long.

ENGINEERING NOTES

1. Material: Steel
2. Finish: Parkerized
3. Thread: Type A

COMPILED	McIntosh	DATE DRAWN		Material	Unit of Measure
APPROVED	NJH	5-16-79		1	EACH

DRAWN	SJT	TITLE	ITEM NUMBER
APPRV	RDF	SCREW-TAPPING, FLAT HEAD TORX OR CROSS RECESS	23-11226
DATE	03/22/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



PART NUMBER

NOMINAL SIZE & THREADS	NOM DIA	N DIA		M REF	L (1)		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
10-16	.190	.385	.340	.116	.50		23-11226-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11226-162 IS A 10-16 FHCR TAPPING SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

MATERIAL: STEEL, PER SAE J933.

FINISH: BLACK PHOSPHATE AND SPECIAL OIL PER GM4435M, CODE A. COATED PARTS SHALL WITHSTAND A MINIMUM OF 72 HOURS SALT SPRAY PER ASTM B117.

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

CROSS RECESS: TYPE 1 PER ANSI B18.6.4.

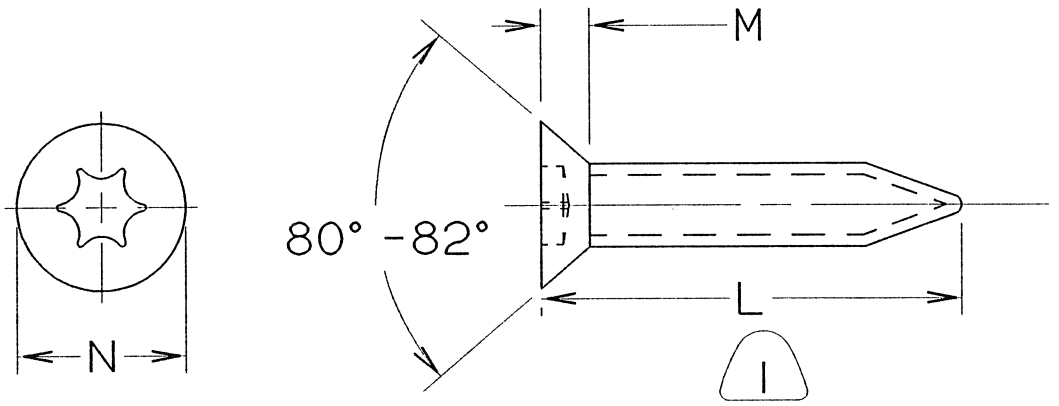
THREADS & POINT: TYPE AB PER ANSI B18.6.4.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P6517G-02	3/22/91	SJT	REDRAWN, ADDED SHT 2, SPEC GM6174 TO GM4435M
B	PA2042-51	02/15/95	ERK	SALT SPRAY HOURS CHANGED FROM 168 TO 72 HOURS

DRAWN	SJT	TITLE	ITEM NUMBER
APPRV	RDF	SCREW-TAPPING, FLAT HEAD TORX OR CROSS RECESS	23-11226
DATE	03/22/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



PART NUMBER

NOMINAL SIZE & THREADS	NOM DIA	N DIA		M REF	L (1)	TORX DRIVE SIZE	FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
10-16	.190	.385	.340	.116	.31	T 20	23-11226-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX)

E.G. 23-11226-715 IS A 10-16 FHIT TAPPING SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: STEEL, 2 PER SAE J933.

FINISH: BLACK PHOSPHATE AND SPECIAL OIL PER GM4435M, CODE A. COATED PARTS SHALL WITHSTAND A MINIMUM OF 72 HOURS SALT SPRAY PER ASTM B117.

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

TORX RECESS: PER CAMCAR STANDARD TXH-203.

THREADS & POINT: TYPE AB PER ANSI B18.6.4.

(1) THIS LENGTH AND SHORTER UNDERCUT.

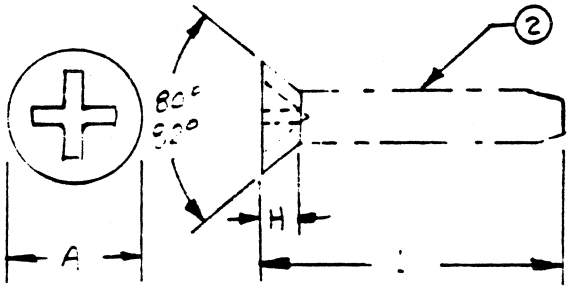
CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P6517G-02	03/22/91	SJT	REDRAWN, ADDED SHT 2, FINISH SPEC GM6174 TO GM4435M
B	PA2042-51	02/15/95	ERK	SALT SPRAY HOURS CHANGED FROM 168 TO 72 HOURS.

Thru 23-11227

ORIGINAL JOB NO.	TITLE	PART NO.
C1500B	SCREW, TAPPING FLAT HEAD CROSS RECESSED	23-11222 Thru 23-11227
LAST CHG LTR		SHEET 1 OF 1

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

SKETCH



SIZE & THREADS PER INCH	BASIC DIA.	L 3	A	H	FREIGHTLINER PART NUMBER *
2-32	.086	3/16	0.172	0.051	23-11222-L
4-24	.112	¼	0.225	0.067	23-11223-L
6-18	.138	5/16	0.279	0.083	23-11224-L
8-15	.164	7/16	0.332	0.100	23-11225-L
10-12	.190	½	0.385	0.116	23-11226-L
12-11	.216	9/16	0.438	0.132	23-11227-L

* Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-10013-075 specifies a 4-24 flat head screw 3/4 inch long.

ENGINEERING NOTES

1 Material: Steel.

2 Thread: Type AB of American Standard B18.6.4.

3 These lengths or shorter are undercut.

4 Finish: Parkerized.

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

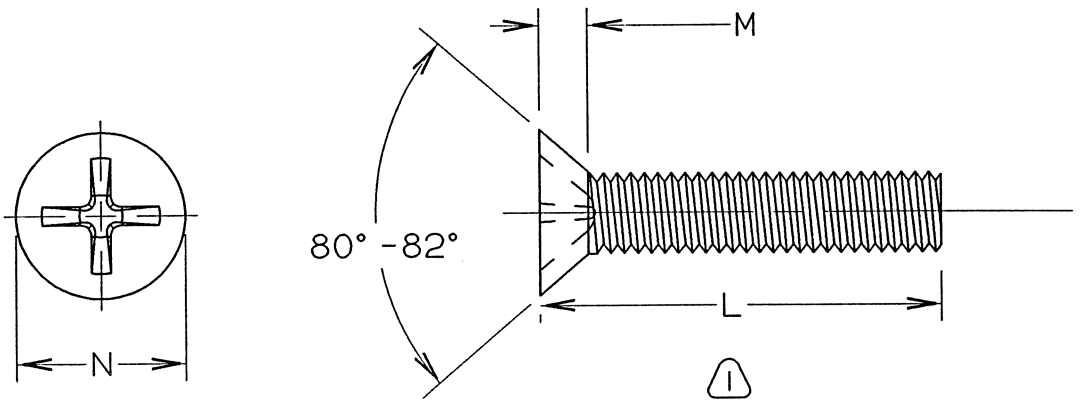
COMPILED	GF	DATE DRAWN		MATERIAL	
APPROVED	BAK	7-5-79		1	

E-359 5-79

Portland **FREIGHTLINER CORPORATION** Oregon 97208

M/F

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-MACHINE, FLAT HEAD TORX OR CROSS RECESS, PHOS & OIL	23-11228
DATE	11/29/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



PART NUMBER

NOMINAL SIZE & THREADS	NOM DIA	N DIA		M REF	L (1)		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
8-32 8-36	.164	.332	.292	.100	.25		23-11232-L 23-11233-L
10-24 10-32	.190	.385	.340	.116	.31		23-11234-L 23-11235-L
1/4-20	.250	.507	.452	.153	.44		23-11238-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11232-162 IS A 8-32 FHCR MACHINE SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

E

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: PHOSPHATE AND OIL PER FREIGHTLINER SPEC. 49-00006-041

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

CROSS RECESS: TYPE 1 PER ANSI B18.6.3.

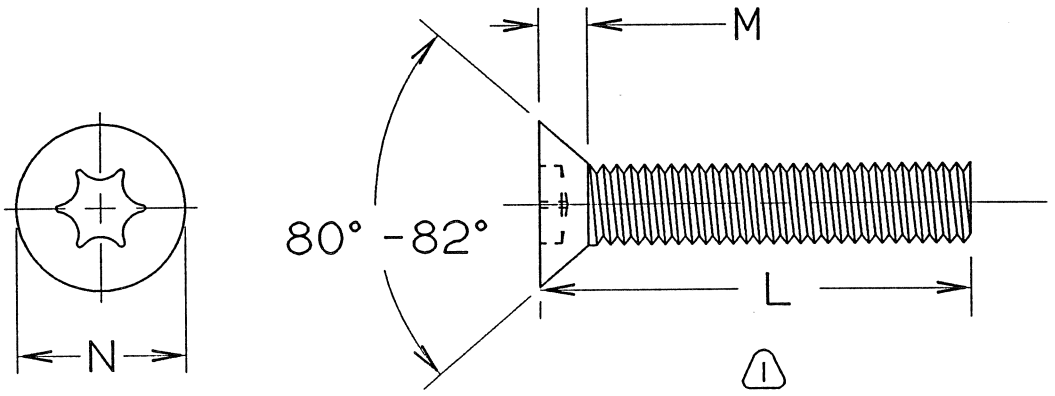
THREADS: UN2A PER ANSI B1.1.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P*P293-07	11/29/89	PCK	REVISED & REDRAWN, ADDED SHT 2 & 23-11230 ON SHT 2
D	P6517G-02	03/11/91	SJT	REVISED GEOMETRY, ADDED 23-11234-7LL ON SHT 2
E	PA2042-41	10/12/93	ERK	REVISED MATERIAL
F	P2A364-A2	09/13/95	DAJ	ADDED 23-12279, SEE SHEET 2

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-MACHINE, FLAT HEAD TORX OR CROSS RECESS, PHOS & OIL	23-11228
DATE	11/29/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



NOMINAL SIZE & THREADS	NOM DIA	N DIA		M REF	L (1)	TORX DRIVE SIZE	FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
6-32	.138	.279	.244	.083	.19	T 10	23-11230-7LL
10-24	.190	.385	.340	.116	.31	T 20	23-11234-7LL
10-32	.190	.385	.340	.116	.31	T 20	23-11235-7LL
F 1/4-20	.250	.507	.452	.153	.44	T 27	23-12279-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX)

E.G. 23-11230-715 IS A 6-32 FHIT MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.
FINISH: PHOSPHATE AND OIL PER FREIGHTLINER SPEC. 49-00006-041
DIMENSIONS: PER ANSI B18.6.3.
TORX RECESS: PER CAMCAR STANDARD TXH-203.
THREADS: UN2A PER ANSI B1.1.
ABOVE DIMENSIONS FOR REFERENCE ONLY.

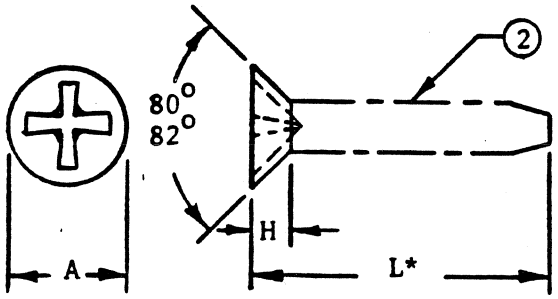
(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P*P293-07	11/29/89	PCK	REVISED & REDRAWN, ADDED SHT 2 & 23-11230
D	P6517G-02	03/11/91	SJT	REVISED GEOMETRY, ADDED 23-11234-7LL
E	PA2042-41	10/12/93	ERK	SEE SHEET 1
F	P2A364-A2	09/13/95	DAJ	ADDED 23-12279

23-11258 thru 23-11265

ORIGINAL JOB NO.	TITLE	PART NO.
C0910A	SCREW, TAPPING FLAT HEAD CROSS RECESSED WITH BLACK OXIDE FINISH	23-11258 thru 23-11265
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

SIZE & THREADS PER INCH	BASIC DIA.	L (3)	A	H		FREIGHTLINER PART NUMBER *
2-32	.086	3/16	0.172	0.051		23-11258
4-24	.112	1/4	0.225	0.067		23-11259
6-20	.138	5/16	0.279	0.083		23-11260
8-18	.164	7/16	0.332	0.100		23-11261
10-16	.190	1/2	0.385	0.116		23-11262
12-14	.216	9/16	0.438	0.132		23-11263
1/4-14	.250	5/8	0.507	0.153		23-11264
5/16-12	.313	13/16	0.635	0.191		23-11265

* Complete part number by adding a three digit dash number to indicate length in hundredths of an inch. Example: 23-11259-075 specifies a 4-24 flat head screw 3/4 inch long.

ENGINEERING NOTES

(1) Material: Steel, Black Oxide Finish.
(2) Thread: Type AB of American Standard B18.6.4.
(3) These lengths or shorter are undercut.

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

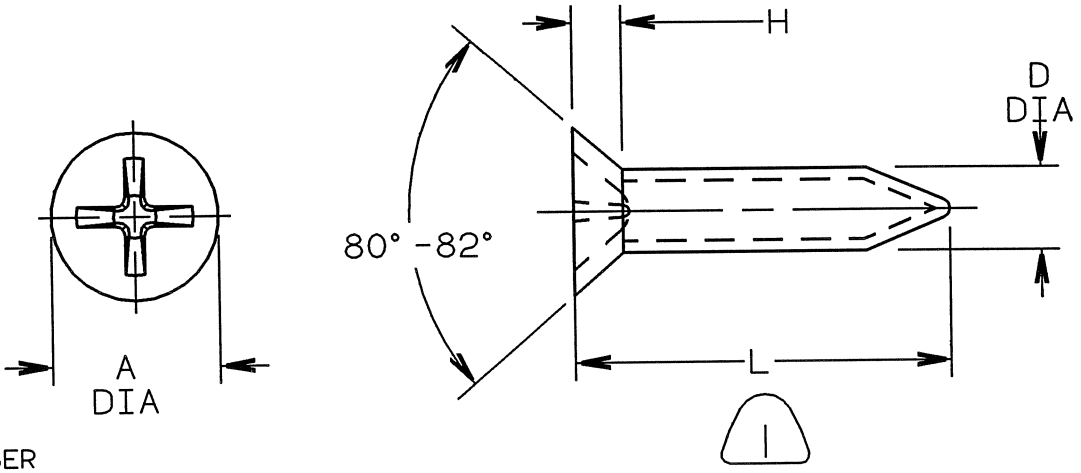
CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

COMPILED	MP	DATE DRAWN		MATERIAL	
APPROVED	REL	10/17/79		(1)	

M/F

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, BLACK, TYPE AB FLAT HEAD TORX OR CROSS RECESS	23-11261
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX		H REF	L		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
8-18 10-16	.164 .190	.332 .385	.292 .340	.100 .116	7/16 1/2		23-11261-L 23-11262-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11262-162 IS A 10-16 FHCR TAPPING SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

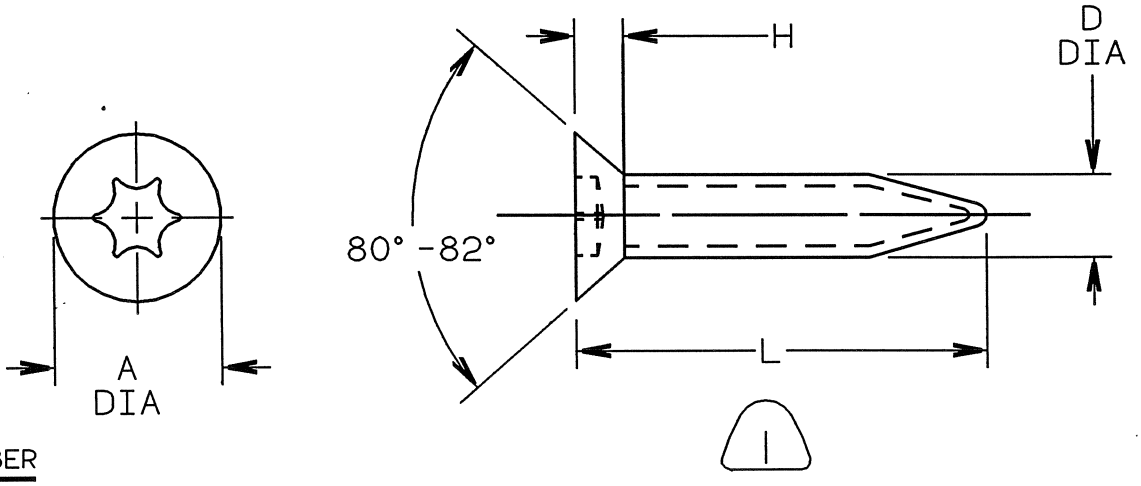
MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174.
B DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.4.
THREAD & POINT: TYPE AB PER ANSI B18.6.4.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
B	PA2042-33	02/26/93	ERK	REMOVED REFERENCE TO 240 HOURS OF SALT SPRAY
C	PA2042-44	02/25/94	ERK	SEE SHEET #2.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-TAPPING, BLACK, TYPE AB FLAT HEAD TORX OR CROSS RECESS	23-11261
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC DIA	A MAX		H REF	L		FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
8-18	.164	.332	.292	.100	7/16		23-11261-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-11261-715 IS AN 8-18 FHIT TAPPING SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

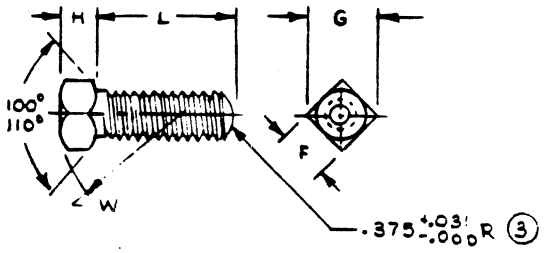
MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174.
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T20 PER CAMCAR STANDARD TXH-203.
THREAD & POINT: TYPE AB PER ANSI B18.6.4.

THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
B	PA2042-33	02/26/93	ERK	RMVD 240 HRS SALT SPRAY REF; TORX T15 FROM T20.
C	PA2042-44	02/25/94	ERK	TO TORX T20 FROM T15.

ORIGINAL JOB NO.	TITLE	PART NO.
D2372	SETSCREW, SQUARE HEAD GRADE 5	23-11286
LAST CHG LTR A		SHEET 1 OF 1

SKETCH



PART NUMBERS

THREAD	F BASIC	G MAX.	H MAX.	W NOM.	EQUIV. VENDOR PART NUMBER	FREIGHTLINER PART NUMBER*
1/2 - 13 UNC	.500	.707	.389	1.25	SP/500551-12	23-11286-L

* To complete part number add 3-digit dash number expressing length, L, in 1/100's of an inch. Thus for a 1/2 - 13 UNC x 2.00" square head setscrew, write 23-11286 -200.

ENGINEERING NOTES

(1) MATERIAL: SAE Grade 5 Bolt Material

2. Thread Form, Thread Length and Other Dimensional Characteristics of the Setscrew Shall Meet Pertinent Provisions of SAE Standard J102.

(3) Oval point radius, slight flat permissible.

COMPILED	SJH	DATE DRAWN		MATERIAL	
APPROVED	TD	5/16/80		(1)	

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	66910	SM	10/14/80	Added Oval Point Info.

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

23-11286

E-183A Litho in USA Portland

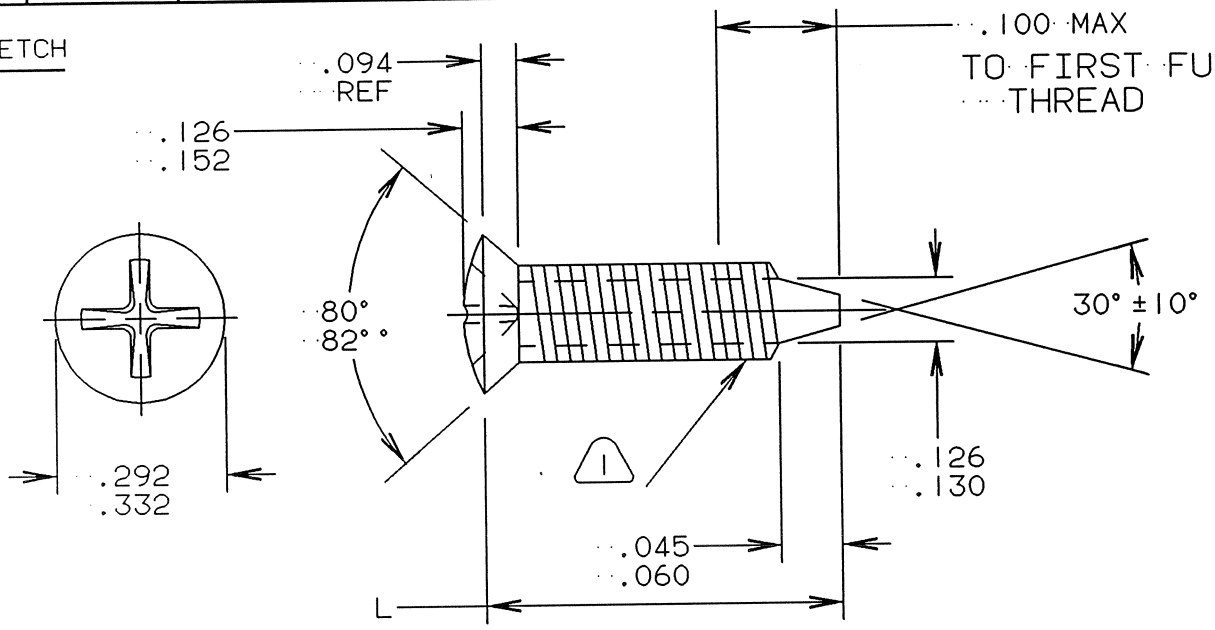
FREIGHTLINER CORPORATION

M/F Oregon 97208

A

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-10B THREAD, DOG POINT, BLACK #8 OVAL HEAD TORX OR CROSS RECESS	23-11344
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	BASIC DIA	CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE	FREIGHTLINER PART NUMBER
10-16	.190		23-11344-L

23-11344 IS A 10B SCREW WITH A #8 CROSS RECESS OVAL HEAD & A #10 BODY, 10-16 THREADS AND A 1/2 DOG POINT.

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11344-162 IS A 10-16 OHCR DOG POINT SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

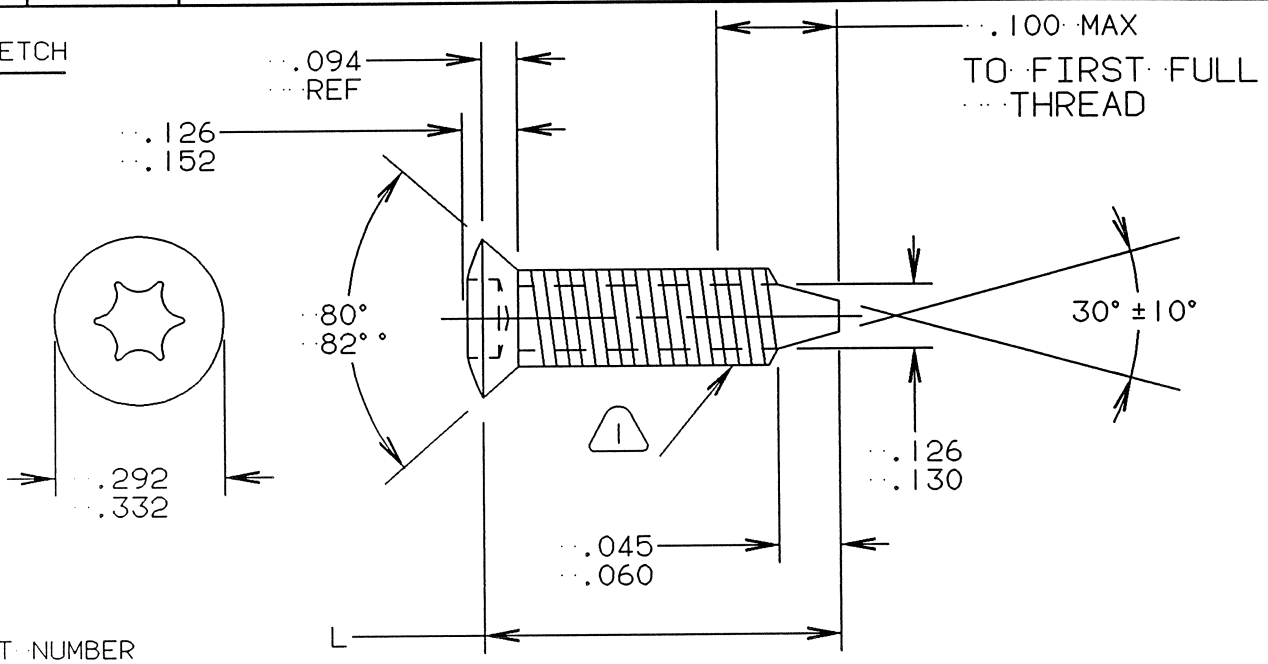
(1) PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125 (FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174 OR GM 6047.
COATED PARTS SHALL WITHSTAND A MINIMUM OF 168 HOURS SALT SPRAY PER ASTM B117.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
CROSS RECESS: TYPE 1, #2, PER ANSI B18.6.4.
THREAD: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
G	PA2042-42	11/03/93	ERK	REVISED SALT SPRAY HOURS TO 168 FROM 240.
H	PA2042-73	09/17/96	JCT	ADDED GM 6047 TO FINISH NOTE.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-10B THREAD, DOG POINT, BLACK #8 OVAL HEAD TORX OR CROSS RECESS	23-11344
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	BASIC DIA		FREIGHTLINER PART NUMBER
10-16	.190		23-11344-7XX

23-11344 IS A 10B SCREW WITH A #8 TORX DRIVE OVAL HEAD & A #10 BODY, WITH 10-16 THREADS AND A 1/2 DOG POINT.

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-11344-715 IS A 10-16 OHIT DOG POINT SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

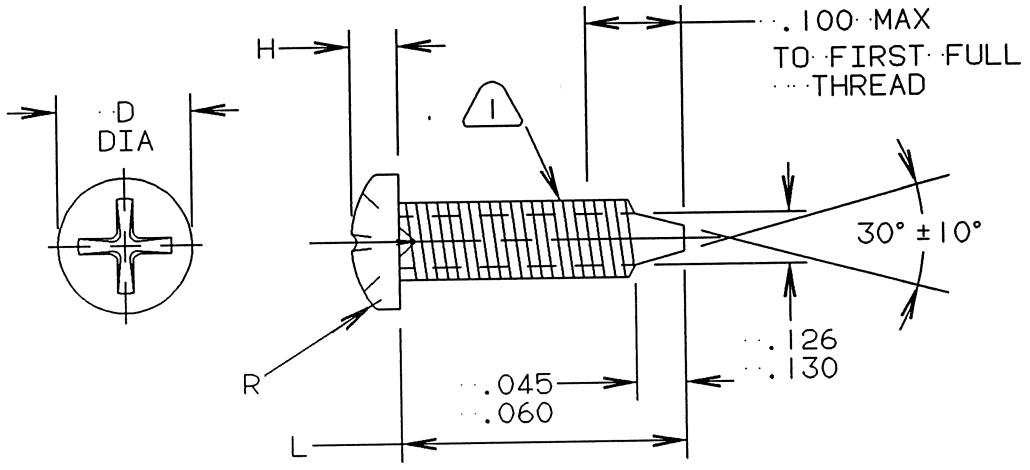
(1) PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125 FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174 OR GM 6047.
G COATED PARTS SHALL WITHSTAND A MINIMUM OF 168 HOURS SALT SPRAY PER ASTM B117.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
TORX RECESS: T20 PER CAMCAR STANDARD TXH-208.
THREAD/POINT: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
G	PA2042-42	11/03/93	ERK	REVISED SALT SPRAY HOURS TO 168 FROM 240.
H	PA2042-73	09/17/96	JCT	ADDED GM 6047 TO FINISH NOTE.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-10B THREAD, DOG POINT, BLACK PAN HEAD TORX OR CROSS RECESS	23-11345
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

SKETCH



PART NUMBER

THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 - 16	.190	.020	.373	.133	23-11345-L

23-11345 IS A 10B PHCR SCREW WITH A 1/2 DOG POINT.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11345-162 IS A 10-16 PHCR DOG POINT SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

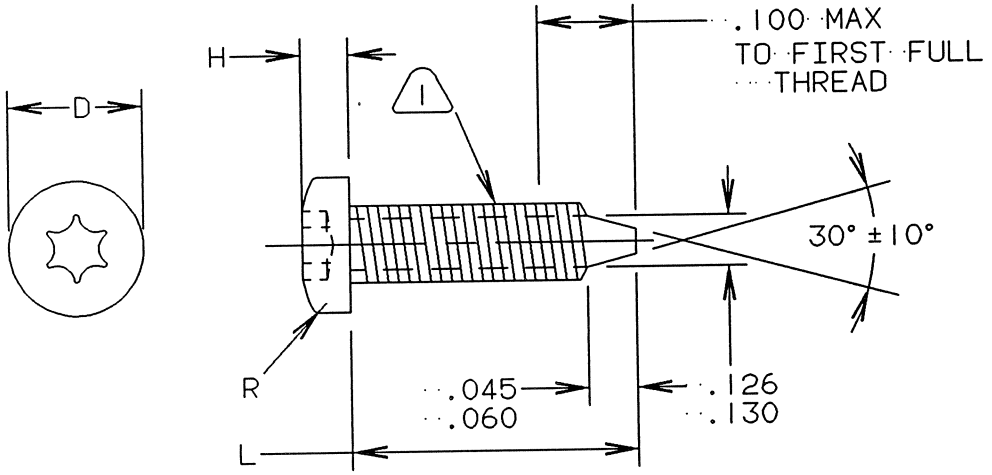
1. PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125 FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174 OR GM 6047.
COATED PARTS SHALL WITHSTAND A MINIMUM OF 168 HOURS SALT SPRAY PER ASTM B117.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
CROSS RECESS: TYPE 1, #2, PER ANSI B18.6.4.
THREAD: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
D	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
E	PA2042-42	11/03/93	ERK	REVISED SALT SPRAY HOURS TO 168 FROM 240.
F	PA2042-73	09/17/96	JCT	ADDED GM 6047 TO FINISH NOTE.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-10B THREAD, DOG POINT, BLACK PAN HEAD TORX OR CROSS RECESS	23-11345
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH



PART NUMBER

THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 - 16	.190	.020	.373	.133	23-11345-7XX

23-11345 IS A 10B PHIT SCREW WITH A 1/2 DOG POINT.
FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-11345-715 IS A 10-16 PHIT DOG POINT SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

1. PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125, FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: BLACK PHOSPHATE/ORGANIC/OIL TYPE (BRITEGARD) PER GM 6174.
OR GM 6047.
COATED PARTS SHALL WITHSTAND A MINIMUM OF 168 HOURS SALT SPRAY PER ASTM B117.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
TORX RECESS: T25 PER CAMCAR STANDARD TXH-202.
THREAD/POINT: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
D	PM0433-02	06/26/89	RDF	REVISED & REDRAWN, ADDED SHT 2
E	PA2042-42	11/03/93	ERK	REVISED SALT SPRAY HOURS TO 168 FROM 240.
F	PA2042-73	09/17/96	JCT	ADDED GM 6047 TO FINISH NOTE.

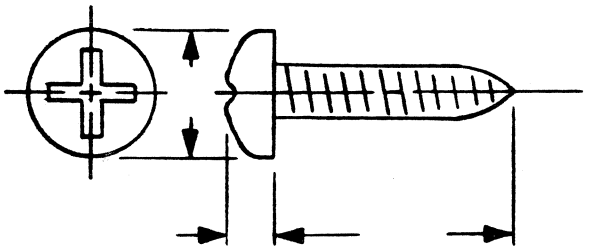
23-11426

ORIGINAL JOB NO.	TITLE	PART NO.
N0126	SCREW, TAPPING, CROSS RECESS PAN HEAD TYPE AB THREAD, BLACK	23-11426
LAST CHG LTR		SHEET 1 OF 1

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

SKETCH



SIZE	BASIC DIAM. D	A (MAX.)	B (MAX.)		FREIGHTLINER PART NUMBER*
¼-14	0.250	0.492	0.175		23-11426-L

*Add 3-digit dash number, L, to indicate length of screw in 1/100's of an inch.
Example: A #6 screw 3/4" long is written 23-11426-075.

ENGINEERING NOTES

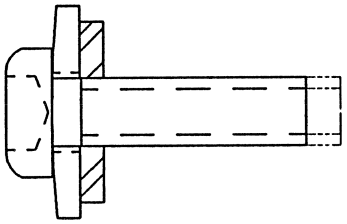
1. MATERIAL: Steel
2. FINISH: Black oxide.
3. Must meet pertinent provisions of 1970 Draft Revision of ANSI B18.6.4 1966.

PRE-RELEASE PRINT

COMPILED	DMC1	DATE DRAWN		MATERIAL	
APPROVED		12-16-82		(1)	

DRAWN	SJT	TITLE SCREW, MACHINE, TORX WITH AL/NPRN WASHER	ITEM NUMBER A23-11466
APPRV	RDF		
DATE	06/04/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH:

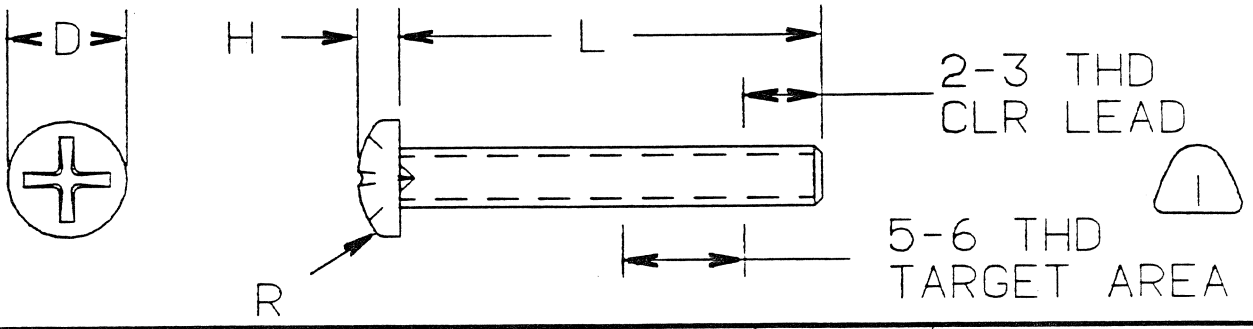


PART NUMBERS:

NOMINAL SIZE & THREAD	SCREW PART NUMBER	WASHER PART NUMBER		FREIGHTLINER ASSY NUMBER
10-32 UNF	23-11661-706	23-11465-010		A23-11466-101
	23-11661-707	23-11465-020		A23-11466-102
	23-11661-707	23-11465-030		A23-11466-103
	23-12269-704	23-11465-010		A23-11466-104

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P6517G-03	06/04/91	SJT	REDRAW, ADDED TORX, REVISED SCREW PART NUMBER
C	P3392J-01	03/22/94	ERK	ADDED A23-11466-102.
D	P3392J-02	05/18/95	DAJ	ADDED A23-11466-103.
E	P2A230-46	07/28/95	ERK	ADDED A23-11466-104.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE,PAN HEAD, LOCKING ZINC PLT, CROSS OR TORX RECESS	23-11476
DATE	03/23/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 - 24	.190	.020	.373	.133	23-11476-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11476-162 IS A 10-24 PHCR MACHINE SCREW 1 5/8 INCH LONG.

CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

ENGINEERING NOTES:

MATERIAL: STEEL, GRADE 2, PER SAE J429.
FINISH: ZINC & WAX, PER F/L SPEC 49-00005-403.
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.3
THREAD: 10-24 UNC 2A,PER ANSI B1.1

1 ALL ITEMS TO HAVE LOCKING PATCH IN TARGET AREA, PER IFI 125. MAINTAIN 2-3 THREAD CLEAR LEAD.

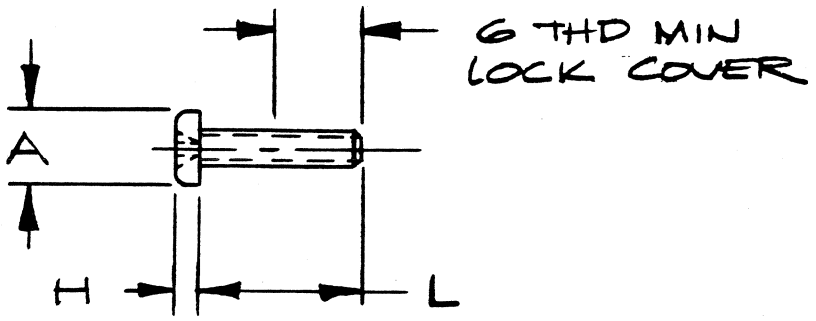
CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P2478D-01	03/23/90	RDF	REDRAWN, DELETED INACTIVE NUMBERS, ADDED SHT 2

01070 00001

ORIGINAL JOB NO.	TITLE	PART NO.
M0238	MACHINE SCREW, CROSS RECESS, PAN HEAD, LOCKING	23-11476 thru 23-11479
LAST CHG LTR A		SHEET 1 OF 1

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	M0238	DL	9-30-83	ORIG. JOB NO. WAS 9140 B

SKETCH:



PART NUMBERS:

Thread	A Max	H Ref	Manufacturers Number	Freightliner Part Number*
10-24 UNC	.372	.133		23-11476-L
10-32 UNF	.372	.133		23-11477-L
1/4-20 UNC	.492	.175		23-11478-L
1/4-28 UNF	.492	.175		23-11479-L

*Complete part number by adding a three-digit dash number expressing length in hundredths of an inch.

ENGINEERING NOTES

(1) Material: Steel, cadmium plated

(2) Locking feature to be microencapsulated fastener adhesive, 3M scotch-grip 2353 or engineering approved equivalent.

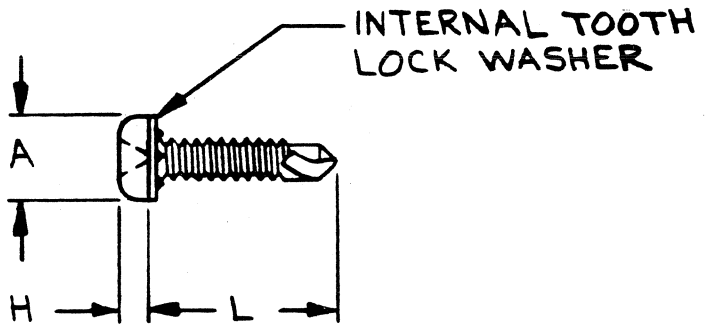
COMPILED	PWS	DATE DRAWN		MATERIAL	
APPROVED	BBK	6-30-83		(1) (2)	

thru 23-11494

ORIGINAL JOB NO.	TITLE	PART NO.
E0589	SCREW, SELF-DRILLING, CROSS RECESS PAN HEAD WITH LOCK WASHER, STAINLESS STEEL	23-11490 thru 23-11494
LAST CHG LTR		SHEET 1 OF 1

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

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	A DIA	H		FREIGHTLINER PART * NUMBER
6-32	.270 .256	.115 .105		23-11490-L
8-32	.322 .306	.115 .105		-11491
10-24	.373 .357	.133 .122		-11492
12-24	.425 .407	.151 .139		-11493
1/4-20	.492 .473	.175 .162		-11494

*Complete part number by adding a three-digit dash number to indicate length, L, in hundreths of an inch.

Example: 23-11490-100 specifies a 6-32 screw 1.000 inch long.

ENGINEERING NOTES:

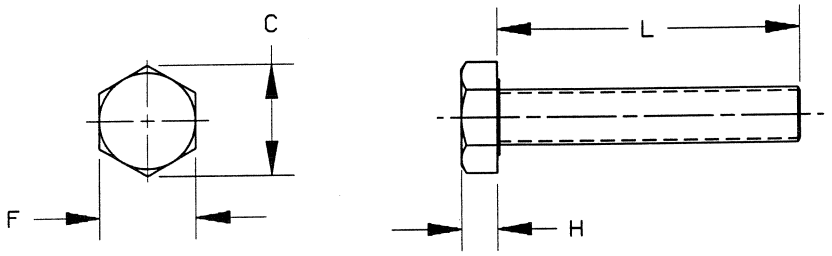
(1) Material: Stainless steel, Type 302
Alternate Material: Stainless steel, Type 303

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

PRE-RELEASE PRINT

COMPILED	FEF	DATE DRAWN		Material	
APPROVED		10-13-83		(1)	

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-CAP, HEX HEAD STAINLESS STEEL	23-11505	
DATE	08/20/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. F
CATIA ORIGINAL				



THREAD SIZE	"F" ACROSS FLATS	"C" ACROSS CORNERS	"H" HEAD HEIGHT	FREIGHTLINER PART NUMBER	
1/4 - 20 UNC 28 UNF	7/16	.505	.163	23-11505-L 23-11506-L	
5/16 -18 UNC 24 UNF	1/2	.577	.211	23-11507-L 23-11508-L	
3/8 - 16 UNC 24 UNF	9/16	.650	.243	23-11509-L 23-11510-L	
7/16 -14 UNC	5/8	.722	.291	23-11511-L	
1/2 - 13 UNC	3/4	.866	.323	23-11512-L	E
9/16 -12 UNC	13/16	.938	.371	23-11513-L	E

COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING THE LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11509-300 IS A 3/8-16 CAPSCREW 3 INCHES LONG.

ENGINEERING NOTES:

F 1. MATERIAL: STAINLESS STEEL, TYPE 302/304/302HQ
2. ALL DIMENSIONS ARE FOR REFERENCE ONLY. FOR DETAILS SEE ANSI B18.2.1
F 3. HEAD MARKING PER ASTM F593 IS OPTIONAL.

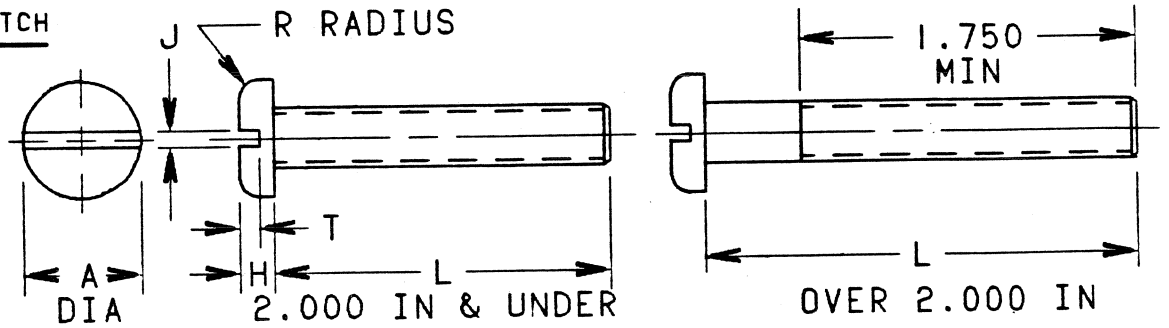
CHG	JOB NO	DATE	BY	REVISION
E	P09150-02	08/20/99	CGD	REVISED AND REDWN IN CATIA, ADDED 23-11512, 23-11513
F	PA2042-98	12/02/99	LFB	ADDED 304/302HQ TO NOTE 1. ADDED NOTE 3.

23-11560 THRU 23-11577

GENERAL USE PART

ORIGINAL JOB NO.	TITLE	PART NO.
0312C	SCREW, MACHINE, PAN HEAD, SLOTTED STAINLESS STEEL	23-11560 THRU 23-11577
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOM SIZE & THREADS	FREIGHTLINER PART NUMBER *
2-56 UNC	23-11560-L
2-64 UNF	23-11561-L
4-40 UNC	23-11562-L
4-48 UNF	23-11563-L
6-32 UNC	23-11564-L
6-40 UNF	23-11565-L
8-32 UNC	23-11566-L
8-36 UNF	23-11567-L
10-24 UNC	23-11568-L
10-32 UNF	23-11569-L
12-24 UNC	23-11570-L
12-28 UNF	23-11571-L
1/4-20 UNC	23-11572-L
1/4-28 UNF	23-11573-L
5/16-18 UNC	23-11574-L
5/16-24 UNF	23-11575-L
3/8-16 UNC	23-11576-L
3/8-24 UNF	23-11577-L

* COMPLETE PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE: 23-11572-225 SPECIFIES A 1/4-20 UNC PAN HEAD, MACHINE SCREW 2.250 INCHES LONG.

ENGINEERING NOTES:

1. DIMENSIONS (SEE SKETCH).

NOM SIZE	BSC MAJ DIA	A DIA		H		J		T		R RADIUS MAX
		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
2	.086	.167	.155	.053	.045	.031	.023	.031	.022	.035
4	.112	.219	.205	.068	.058	.039	.031	.040	.030	.042
6	.138	.270	.256	.083	.072	.048	.039	.050	.037	.046
8	.164	.322	.306	.096	.085	.054	.045	.058	.047	.052
10	.190	.373	.357	.110	.099	.060	.050	.063	.053	.061
12	.216	.425	.407	.125	.112	.067	.056	.077	.061	.078
1/4	.250	.492	.473	.144	.130	.075	.064	.087	.070	.087
5/16	.313	.615	.594	.178	.162	.084	.072	.106	.085	.099
3/8	.375	.740	.716	.212	.195	.094	.081	.124	.100	.143

2. APPLICATION: USE PAN HEAD MACHINE SCREWS IN LIEU OF ROUND, TRUSS, FILLISTER, ETC., PER IFI RECOMMENDATIONS.

(3) MATERIAL: STAINLESS STEEL, TYPE 316.

COMPILED	FEF	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED		12-01-83		(3)	01070	000D1

CHANGE INFORMATION	DATE	BY	JOB NO.
TR			

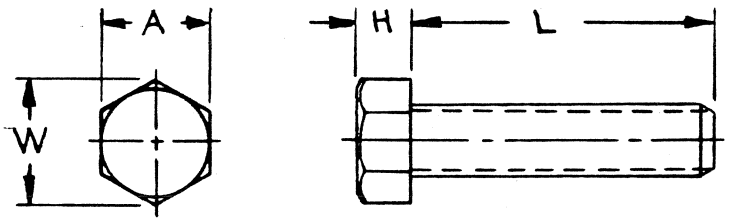
CHANGE INFORMATION	DATE	BY	JOB NO.
R			

23-11578 Thru 23-11593

General use parts

ORIGINAL JOB NO.	TITLE	PART NO.
0312C	SCREW, MACHINE TAPPING, HEX HEAD, STAINLESS STEEL	23-11578 Thru 23-11593
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

NOM SIZE & THREAD	BSC MAJ DIA	A MAX	W MIN	H MAX		FREIGHTLINER PART NUMBER *
4-48 UNF	.112	.187	.202	.060		23-11579-L
6-32 UNC 6-40 UNF	.138	.250	.272	.093		23-11580-L 23-11581-L
8-32 UNC 8-36 UNF	.164	.250	.272	.110		23-11582-L 23-11583-L
10-24 UNC 10-32 UNF	.190	.312	.340	.120		23-11584-L 23-11585-L
12-24 UNC 12-28 UNF	.216	.312	.340	.155		23-11586-L 23-11587-L
1/4-20 UNC 1/4-28 UNF	.250	.375	.409	.190		23-11588-L 23-11589-L
5/16-18 UNC 5/16-24 UNF	.313	.500	.545	.230		23-11590-L 23-11591-L
3/8-16 UNC 3/8-24 UNC	.375	.562	.614	.295		23-11592-L 23-11593-L

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch.

Example: 23-11579-075 specified a 4-48 Hex head screw 3/4 inch long.

ENGINEERING NOTES:

(1) Material: Stainless steel, type 316

2. Thread: type F of American Standard B18.6.4.

COMPILED	FEF	DATE DRAWN		MATERIAL	Master Number	
APPROVED		11-30-83		(1)	01130	00001

CHANGE INFORMATION | DAT | BY | JOB NO. | R

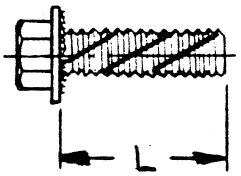
CHANGE INFORMATION | DATE | BY | JOB NO. | R

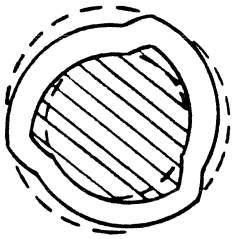
23-11594 Thru 23-11598

General use parts

ORIGINAL JOB NO.	TITLE	PART NO.
0312C	SCREW, HEX, SERRATED, WASHER HEAD, THREAD ROLLING, STAINLESS STEEL	23-11594 Thru 23-11598
LAST CHG LTR		SHEET 1 OF 1

SKETCH





THREAD CROSS SECTION

PART NUMBERS

NOM SIZE & THREADS		MANUFACTURER'S DESIGNATION SSW		FREIGHTLINER PART NUMBER *
8-32		"Rolok" brand use "size plus description" when ordering		23-11594-L
10-24				23-11595-L
10-32				23-11596-L
12-24				23-11497-L
1/4-20				23-11498-L

*Complete the part number by adding a three digit dash number to indicate length in hundredths of an inch.

Example: 23-11598-075 specifies a 1/4-20 thread rolling screw 3/4 inch long.

PILOT HOLE CHART

NOM SIZE & THREADS	MATERIAL TYPE	MATERIAL SIZE .063-.078	.125-.266	.250-.328	.313-.500	
8-32	STL	#26 (.147)	#25 (.1495)	#23 (.154)	-	
	AL	#26 (.147)	#25 (.1495)	#24 (.152)	-	
10-24	STL	#19 (.166)	.172	#16 (.177)	-	
	AL	#19 (.166)	#19 (.166)	#18 (.170)	-	Drill Size
10-32	STL	#17 (.173)	#16 (.177)	#15 (.180)	-	
	AL	#17 (.173)	#17 (.173)	#16 (.177)	-	
12-24	STL	#11 (.191)	# 8 (.199)	.203	-	
	AL	#11 (.191)	# 9 (.196)	# 8 (.199)	.203	
1/4-20	STL	.219	# 2 (.221)	# 1 (.228)	A (.234)	
	AL	.219	# 2 (.221)	# 2 (.221)	#1 (.228)	

ENGINEERING NOTES

(1) Material: Stainless steel, type 316.

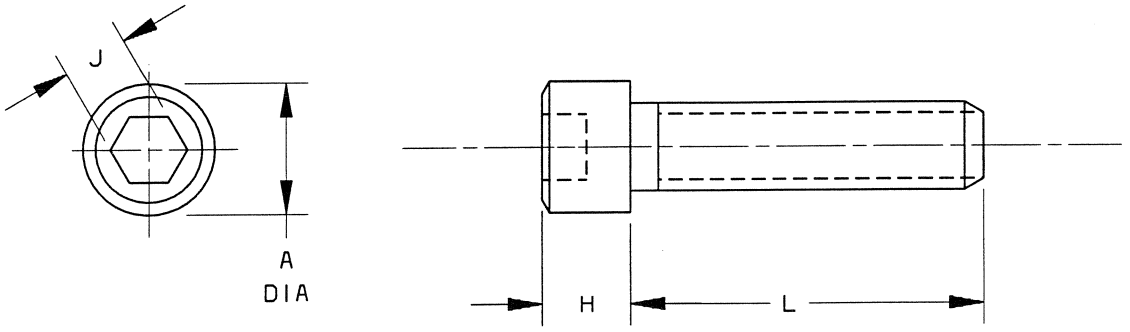
2. Head: Hex head with dimensions conforming to ANSI B18.6.4.

3. Threads: Roll forming threads. (Roll forms mating threads in unthreaded holes.

COMPILED	FEF	DATE DRAWN		MATERIAL	Master number	
APPROVED		11-29-83		(1)	01130	00001

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

DRAWN	LFB	TITLE SCREW-CAP, HEX SOCKET HEAD STAINLESS STEEL	DRAWING NUMBER 23-11529
APPRV	DAJ		
DATE	11/23/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. D
CATIA ORIGINAL			



THREAD SIZE	"J" SOCKET (NOM)	"A" DIA MAX	"H" HEAD HEIGHT	FREIGHLINER PART NUMBER
1/4-20 UNC	.188	.375	.250	23-11529-L
5/16-18 UNC	.250	.469	.312	23-11531-L

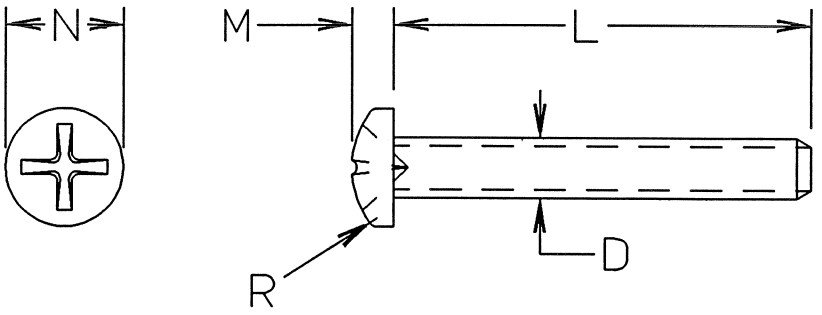
COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING THE LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11529-150 IS A 1/4-20 CAPSCREW 1.50 INCHES LONG.

ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL, TYPE 302.
   ALTERNATIVE MATERIAL: STAINLESS STEEL TYPE 304.
2. ALL DIMENSIONS ARE FOR REFERENCE ONLY. FOR DETAILS SEE ANSI B18.3.

CHG	JOB NO	DATE	BY	REVISION
D	P09748-13	11/23/99	LFB	REVISED AND REDRAWN IN CATIA.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE, PAN HEAD, SST TORX OR CROSS RECESS	23-11601
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



THREAD SIZE	"D" BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
6 -32 UNC 6 -40 UNF	.138	.015	.270	.097	23-11605-L 23-11606-L
8 -32 UNC	.164	.015	.322	.115	23-11607-L
10 -24 UNC 10 -32 UNF	.190	.020	.373	.133	23-11609-L 23-11610-L
1/4-20 UNC 1/4-28 UNF	.250	.035	.492	.175	23-11613-L 23-11614-L
5/16-18 UNC	.313	.040	.615	.218	23-11615-L

FOR CROSS RECESS SCREWS, COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING LENGTH "L" IN HUNDREDTHS OF AN INCH.
E.G. 23-11609-162 IS A 10-24 PHCR MACHINE SCREW 1 5/8 INCH LONG.

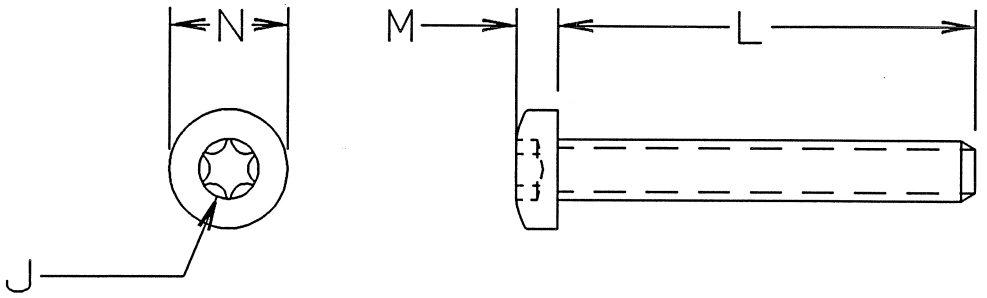
CROSS RECESS IS NON-PREFERRED- SEE SHT 2 FOR TORX DRIVE

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.
CROSS RECESS: TYPE 1 PER ANSI B18.6.3.
THREADS: UN2A PER ANSI B1.1

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
D	P6517G-01	01/11/91	SJT	SEE SHEET 2 OF 2
E	P6517G-02	03/11/91	SJT	SEE SHEET 2 OF 2
F	P00946-01	09/17/96	JCT	SEE SHEET 2 OF 2

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SCREW-MACHINE, PAN HEAD, SST TORX OR CROSS RECESS	23-11601
DATE	06/26/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2



THREAD SIZE	NOM DIA	"J" TORX RECESS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
8-32 UNC	.164	T20	.322	.115	23-11607-7LL
10-24 UNC	.190	T25	.373	.133	23-11609-7LL
10-32 UNF	.190	T25	.373	.133	23-11610-7LL
1/4-20 UNC	.250	T30	.492	.175	23-11613-7LL

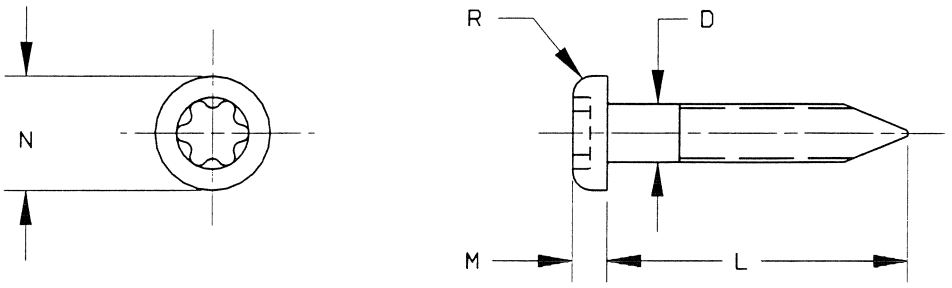
FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX)
E.G. 23-11609-715 IS A 10-24 PHIT MACHINE SCREW 1 5/8 INCH LONG.

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-202.
THREADS: UN2A PER ANSIB1.1.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PM0433-02	06/26/89	RDF	REVISED AND REDRAWN, ADDED SHT 2
D	P6517G-01	01/11/91	SJT	ADDED 23-11609-7XX
E	P6517G-02	03/11/91	SJT	ADDED 23-11610-7LL, CHANGED "X" TO "L"
F	P00946-01	09/17/96	JCT	ADDED 23-11607-7LL

DRAWN	LFB	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-TAPPING, PAN HEAD, TORX CROSS RECESS, STAINLESS STEEL	23-11619
DATE	11/10/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



INTERNAL TORX SHOWN

NOMINAL SIZE & THREADS	BASIC DIA	DIMENSIONS			FREIGHTLINER PART NUMBERS*
		R (BASIC)	N (MAX)	M (MAX)	
6-20	.138	.015	.270	.097	23-12724-L
8-18	.164	.015	.322	.115	23-11622-L
10-16	.190	.020	.373	.133	23-11623-L

* COMPLETE PART NUMBER BY ADDING A 3-DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE 23-11622-075 SPECIFIES AN 8-18 CROSS RECESS TAPPING SCREW 3/4 INCH LONG.

FOR "TORX" DRIVE SCREW DESIGNATIONS: THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS: EXAMPLE 23-11623-715 IS AN INTERNAL TORX 10-16 TAPPING SCREW 1 5/8 INCH LONG.

7 - REPRESENT "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH (7 MAX)

ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL PER ASTM F593, GROUP 1, CONDITION CW.
2. FINISH: PLAIN
3. DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. CROSS RECESS: TYPE 1 PER ANSI B18.6.4
   TORX RECESS: PER CAMCAR STANDARD TXH-202.
5. THREAD & POINT: TYPE AB PER ANSI B18.6.4

CHG	JOB NO	DATE	BY	REVISION
C	P10252-11	11/10/99	LFB	REVISED AND REDRAWN IN CATIA. ADDED 23-12724-L.

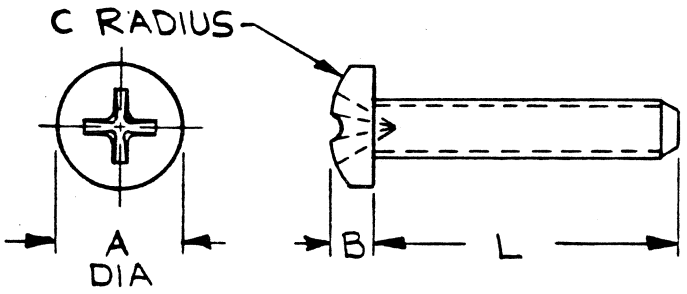
23-11619 Thru 23-11626

General use parts

ORIGINAL JOB NO.	TITLE	PART NO.
0312C	SCREW, TAPPING. STAINLESS STEEL PAN HEAD, CROSS RECESSED	23-11619 Thru 23-11626
LAST CHG LTR		SHEET 1 OF 1

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

SKETCH



PART NUMBERS

NOM SIZE & THREADS	BSC MAJ DIA	A DIA MAX	B MAX	C RADIUS MIN		FREIGHTLINER PART NUMBER *
2-32	.086	.167	.062	.010		23-11619-L
4-24	.112	.219	.080	.010		23-11620-L
6-20	.138	.270	.097	.015		23-11621-L
8-18	.164	.322	.115	.015		23-11622-L
10-16	.190	.373	.133	.020		23-11623-L
12-14	.216	.425	.151	.025		23-11624-L
1/4-14	.250	.492	.175	.035		23-11625-L
5/16-12	.313	.615	.218	.040		23-11626-L

*Complete part number by adding a three digit dash number to indicate length in hundredths of an inch.

Example: 23-11620-075 specifies a number 4-24 pan head screw 3/4 inch long.

Engineering Notes:

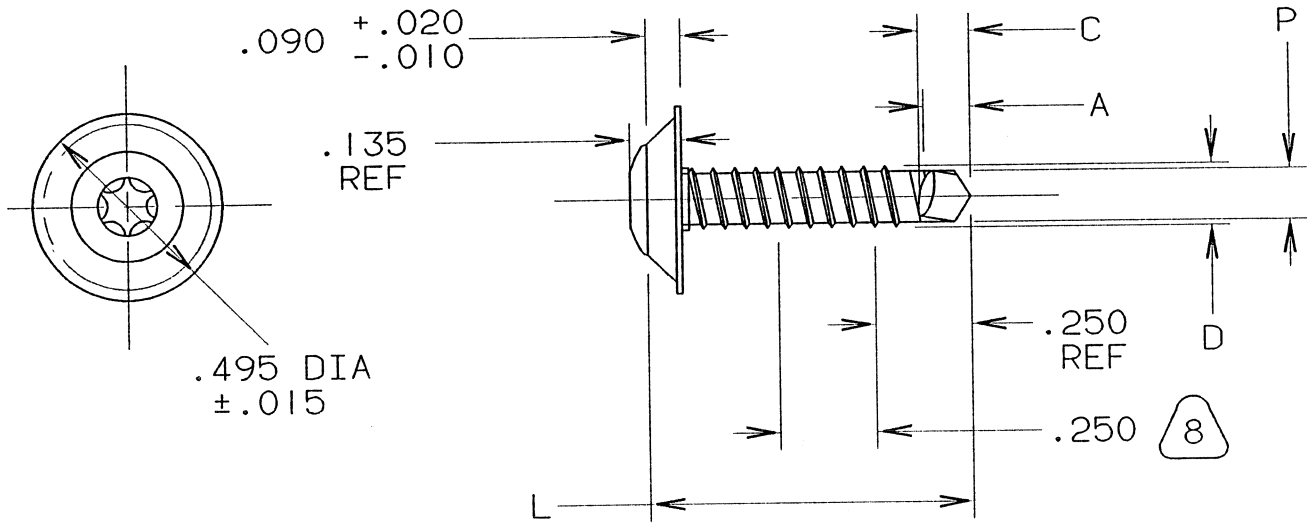
(1) Material: Stainless steel, type 316.

2. Thread: Type AB of American Standard B18.6.4.

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

COMPILED	FEF	DATE DRAWN		Material	Master Number	
APPROVED	DL	11-28-83		(1)	01160	00001

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-TPG,OVAL WASHER HEAD TORX RECESS, SELF DRLG BSD TYPE I	23-11657
DATE	09/29/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



SIZE	"D" MAJOR DIA		"P" POINT DIA		"C" FLUTE LENGTH MIN	"A" PILOT LENGTH		FINISH (2)	FREIGHTLINER PART NUMBER *
	MAX	MIN	MAX	MIN		MAX	MIN		
8-18	.166	.161	.113	.110	.157	.150	.120	BLACK	23-11657-3XX
								CHROME	23-11657-4XX
								GRAY	23-11657-5XX
10-16	.189	.183	.127	.123	.157	.150	.120	BLACK	23-12099-3XX

* COMPLETE PART NUMBER BY ADDING LAST 2 DIGITS TO DASH NUMBER, EXPRESSING LENGTH OF SCREW IN 1/8'S OF AN INCH. THUS FOR A BLACK 8-18 X 1-1/4 WRITE 23-11657-310. NOTE LENGTH IS MEASURED FROM HEAD, NOT BOTTOM OF WASHER.

ENGINEERING NOTES:

(1) MATERIAL: CARBON STEEL.

(2) FINISH:
BLACK - PHOSPHATE / OIL , PER GM 4435M,CODE A WITH SPECIAL OIL.
CHROME - INTERIOR CHROME PLATE PER F/L 49-00002-003.
PLATED PARTS SHALL DEMONSTRATE A MINIMUM OF 4 HOURS RESISTANCE WHEN CASS TESTED PER ASTM B 368.
GRAY- VISIBLE PORTION OF INSTALLED HEAD PAINTED TO MATCH SUBMITTED UPHOLSTERY SAMPLES.
REFEREE SAMPLE MAINTAINED IN PORTLAND ENGINEERING STANDARDS.
-3XX SERIES PARTS ARE MATERIAL FOR -5XX SERIES.

CHG	JOB/RLSE NO	DATE	BY	REVISION
H	PM0459-01	02/09/90	RDF	ADDED SHT 2, GRAY SPECS, IFI 124 TO NOTE 8
J	P4111H-01	10/22/91	K R	ADDED 23-12099
K	PA2042-12	02/24/92	K R	REVISED FINSH NOTE.GM4435M WAS GM6174
L	PA2042-33	02/26/93	ERK	REMOVED REFERENCE TO 168 HOURS OF SALT SPRAY.
M	PA2042-51	02/15/95	ERK	ADDED (8)

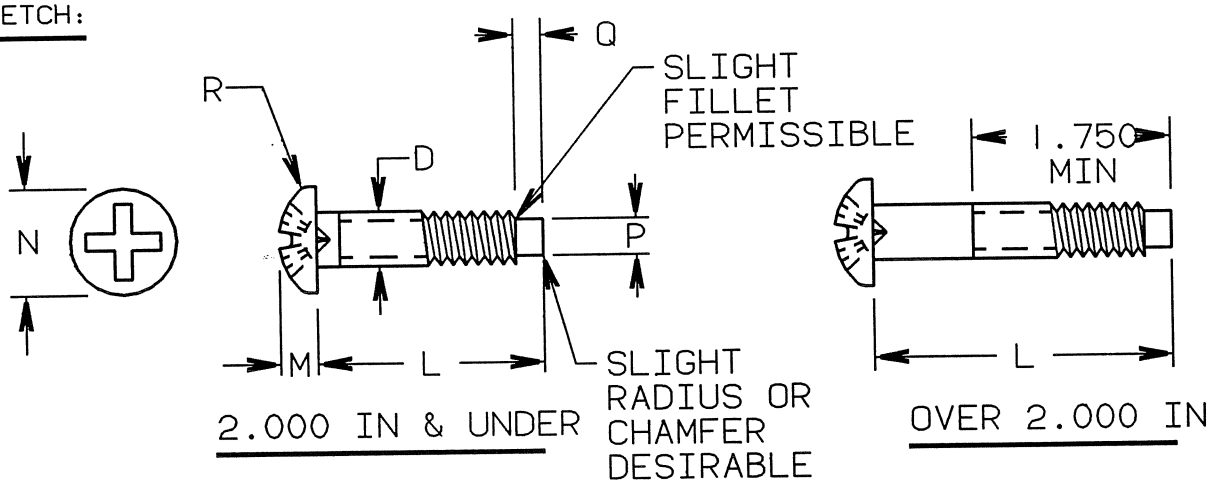
DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-TPG,OVAL WASHER HEAD SELF DRLG BSD TYP I	23-11657
DATE	09/29/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

3. POINT SIMILAR TO CAMCAR TYPE 1, FOR MATERIALS UP TO .035 THICKNESS.
4. THREAD - TYPE BSD MEETING THE REQUIREMENTS OF SAE J78.
5. RECESS TORX T-20 FOR #8 SCREW,T-25 FOR #10 SCREW
6. WASHER IS TO TURN FREELY ON SCREW.
7. SUGGESTED VENDOR: CAMCAR TEXTRON (CMR).
8. APPLY CHEMICAL THREAD LOCKING COMPOUND, PER IFI 124, TO .250 APPROXIMATE MINIMUM TARGET AREA.

CHG	JOB/RLSE NO	DATE	BY	REVISION
H	PM0459-01	02/09/90	RDF	ADDED SHT 2, GRAY SPECS, IFI 124 TO NOTE 8
J	P4111H-01	10/22/91	K R	ADDED 23-12099
K	PA2042-12	02/24/92	K R	SEE SHEET 1
L	PA2042-33	02/26/93	ERK	SEE SHEET 1
M	PA2042-51	02/15/95	ERK	SEE SHEET 1

DRAWN	SJT	TITLE	ITEM NUMBER
APPRV	RDF	SCREW, MACHINE, PAN HEAD, TORX OR CROSS RECESS, DOG POINT	23-11661
DATE	06/04/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2

SKETCH:



PART NUMBERS:

NOMINAL SIZE & THREADS	D DIA BASIC	N DIA MAX	M MAX	R MIN	P		Q		FREIGHTLINER PART NUMBERS*
					MIN	MAX	MIN	MAX	
10-32 UNF	.190	.373	.133	.020	.120	.127	.085	.095	23-11661-L

* COMPLETE PART NUMBER BY ADDING A THREE DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE: 23-11661-062 SPECIFIES A 10-32 UNF PAN HEAD MACHINE SCREW 5/8" LONG.

CROSS RECESS IS NON-PREFERED
SEE SHEET 2 FOR TORX DRIVE

ENGINEERING NOTES:

1 MATERIAL: STEEL, GR2 PER SAE J429.

2. UNLESS OTHERWISE NOTED, THESE SCREWS SHALL MEET ALL PERTINENT PROVISIONS OF ANSI B18.6.3. DOG POINT SHALL CONFORM TO ANSI B18.6.

3. FINISH: SERMAGARD OR EMPIGARD PER F/L SPEC 49-00081-000.

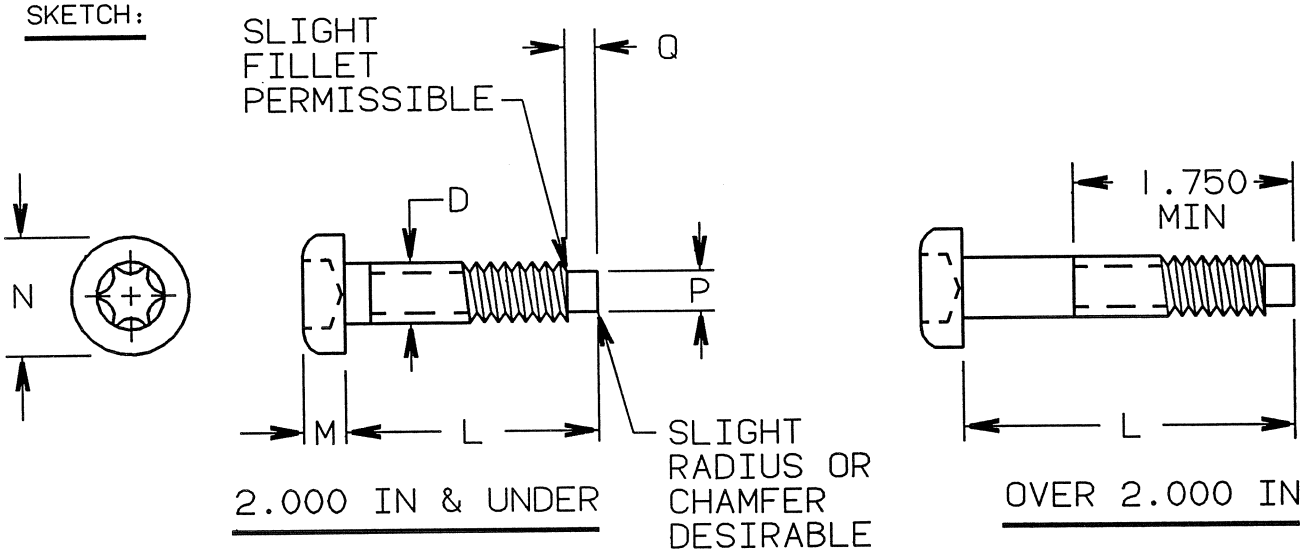
4. THE AXIS OF THE DOG POINT SHALL NOT BE ECCENTRIC WITH THE AXIS OF THE SCREW BY MORE THAN 0.005 INCH.

5 CROSS RECESS: SHALL MEET ALL PROVISIONS OF ANSI B18.6.3 FOR CROSS RECESSED PAN HEAD MACHINE SCREWS, TYPE II.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P6517G-03	06/04/91	SJT	REDRAWN, ADDED TORX, ADDED PAGE 2
B	P3392J-01	03/22/94	ERK	ANSI B18.6.3 AND B18.6 I.P.O. SAE J478.

DRAWN	SJT	TITLE	ITEM NUMBER
APPRV	RDF	SCREW, MACHINE, PAN HEAD TORX OR CROSS RECESS, DOG POINT	23-11661
DATE	06/04/91	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2

SKETCH:



PART NUMBERS:

NOMINAL SIZE & THREADS	D DIA BASIC	N		M		P		Q		FREIGHTLINER PART NUMBERS*
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
10-32 UNF	.190	.357	.373	.122	.133	.120	.127	.085	.095	23-11661-7XX

*FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-11661-715 IS A 10-32 UNF PAN HEAD MACHINE SCREW, 1 5/8 INCH LONG.

ENGINEERING NOTES:

1 MATERIAL: STEEL. GRADE 2 PER SAE J429.

2. UNLESS OTHERWISE NOTED, THESE SCREWS SHALL MEET ALL PERTINENT PROVISIONS OF ANSI B18.6.3. DOG POINT SHALL CONFORM TO ANSI B18.6. REFERENCE DETAILS SHOWN ABOVE.

3. FINISH: SERMAGARD OR EMPIGARD PER F/L SPEC 49-00081-000.

4. THE AXIS OF THE DOG POINT SHALL NOT BE ECCENTRIC WITH THE AXIS OF THE SCREW BY MORE THAN 0.005 INCH.

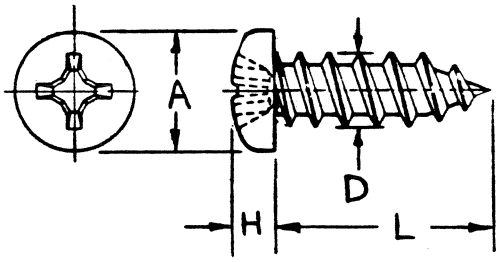
5. TORX RECESS: T25 PER CAMCAR STD TXH-202.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P6517G-03	06/04/91	SJT	REDRAWN, ADDED TORX, ADDED PAGE 2
B	P3392J-01	03/22/94	ERK	ANSI B18.6.3 & B18.6 I.P.O. SAE J478.

RELEASE NO.	DESCRIPTION	DOCUMENT NO.
2862C	SCREW, TAPPING, CROSS RECESS PAN HEAD TYPE AB, PHOSPHATE FINISH	23-11671 thru 23-11674
LAST REV LTR		SHEET 1 OF 1

LTR	RLSE NO.	BY	DATE	REVISION DESCRIPTION

SKETCH:



PART NUMBERS:

SIZE	D BASIC	A MAX.	H MAX.	FREIGHTLINER PART NO.'S *
# 8	.1640	.322	.115	23-11671-L
#10	.1900	.373	.133	23-11672-L
1/4	.2500	.492	.175	23-11673-L
5/16	.3125	.615	.218	23-11674-L

* Add 3-digit dash number, L, to indicate length of screw in 1/100's of an inch. Example: A #8 screw 3/4" long is written 23-11671-075.

ENGINEERING NOTES:

1. Material: Steel
   Finish: Phosphate Finish

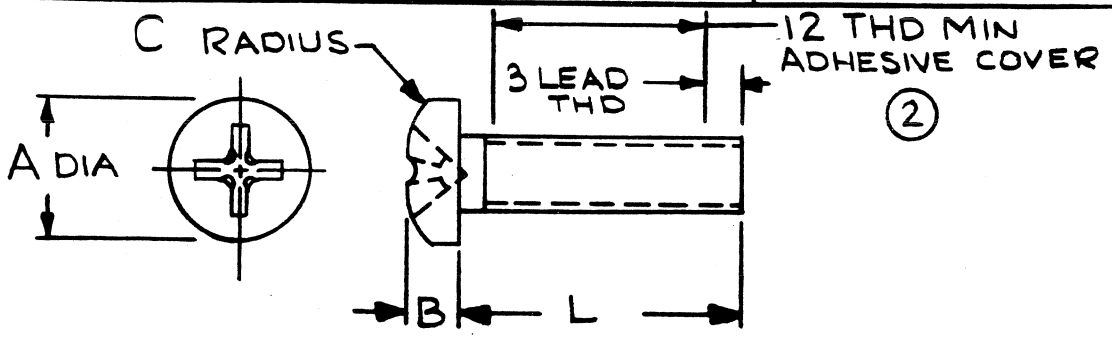
2. Must meet pertinent provisions of 1970 Draft Revision of ANSI B18.6.4 1966.

LTR	RLSE NO.	BY	DATE	REVISION DESCRIPTION

DRAWN BY	KCB	DATE DRAWN			MASTER NO.
APVD BY		6/13/84			01160

FREIGHTLINER CORPORATION

ORIGINAL JOB NO.	TITLE	PART NO.
L0193	SCREW, MACHINE, STAINLESS STEEL PAN HEAD, CROSS RECESS LOCKING	23-11685
LAST CHG LTR		SHEET 1 OF 1



PART NUMBERS

NOM SIZE & THREADS	BSC MAJ DIA	A DIA MAX	B MAX	C RADIUS MIN		FREIGHTLINER PART NUMBER*
10-24 UNC	.190	.373	.133	.020		23-11685-L

*Complete part number by adding a three digit dash number expressing length in hundredths of an inch.

Example: 23-11685-075 specifies a 10-24 UNC machine screw 3/4 inch long.

ENGINEERING NOTES:

(1) Material: Stainless steel type 302 or 304.
Ultimate strength: 80,000 psi min.
Yield strength: 40,000 psi min.

(2) Locking element to consist of nylon patch applied externally to threads in area specified. Locking element performance shall be:

First installation: #10 17 in-lb. max.
First removal: #10 2.5 in-lb. min breakaway.
Fifth removal: #10 2.0 in-lb. min breakaway.

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

COMPILED	DATE DRAWN		MATERIAL	MASTER	NUMBER
APPROVED	7-18-84		(1)	01070	000D1

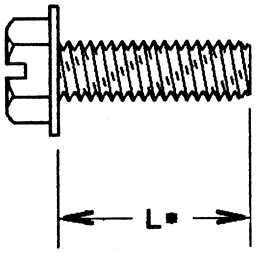
GENERAL USE PART

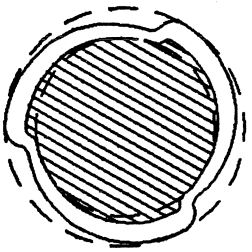
23-11714

ORIGINAL JOB NO.	TITLE	PART NO.
8143C	SCREW, HEX, SERRATED WASHER HEAD, THREAD ROLLING 5/16-18	23-11714
LAST CHG LTR		SHEET 1 OF 1

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

SKETCH:





THREAD CROSS-SECTION

PART NUMBERS:

THREAD SIZE		MANUFACTURER'S DESIGNATION SSW	FREIGHTLINER SPECIFICATION NUMBER
5/16-18		"ROLOK" BRAND. USE SIZE PLUS DESCRIPTION WHEN ORDERING.	23-11714-L*

*COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE: 23-11714-050 SPECIFIES A 5/16-18 THREAD ROLLING SCREW 1/2 INCH LONG.

PILOT HOLE CHART

MATERIAL TYPE	MATERIAL THICKNESS-INCHES				
	.063-.140	.125-.266	.250-.328	.313-.500	
STEEL	9/32 (.281)	9/32 (.281)	7.25M (.285)	L (.290)	DRILL SIZE

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

SPECIFICATIONS:

(1) MATERIAL: SAE 1022 STEEL HEAT TREATED TO 135,000 PSI MIN TENSILE.

2. FINISH: CADMIUM PLATE AND WAX ONLY.

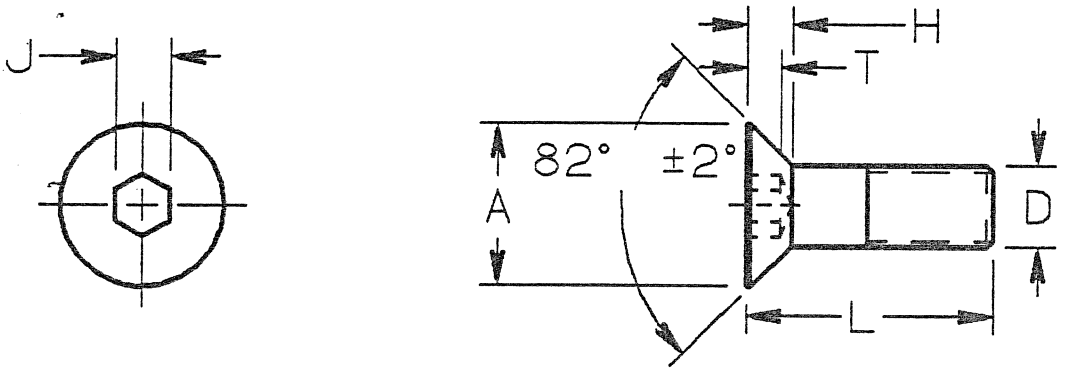
3. HEAD: HEX HEAD WITH DIMENSIONS CONFORMING TO ANSI B18.6.4.

4. THREADS: ROLL FORMING THREADS (ROLL FORMS MATING THREADS IN UNTHREADED HOLES).

COMPILED	DJL	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED	DJL	01-14-85		(1)	01130	000D1

PORTLAND FREIGHTLINER CORPORATION OREGON 97208

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-CAP, FLAT HEAD TORX & HEX SOCKET PLATED	23-11815
DATE	07/14/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2



NOM SIZE	D		A		H		J	T
	BODY DIA		HEAD DIA		HEAD HT		HD. SKT	ENGA.
	MAX	MIN	MAX	MIN	REF.	FLUSH TOL.	NOM.	MIN.
1/4-20 1/4-28	.2500	.2435	.531	.480	.161	.016	5/32	.111
3/8-16	.3750	.3678	.781	.720	.234	.018	7/32	.159

NOM SIZE & THREADS	FREIGHTLINER PART NUMBER*	NOM SIZE & THREADS	FREIGHTLINER PART NUMBER*
1/4-28	23-11816-L	3/8-16	23-11819-L

HEX RECESS IS NON-PREFERRED
SEE SHEET 2 FOR TORX DRIVE

* ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN ONE-HUNDREDTH OF AN INCH. THUS FOR A 1/4-28 CAPSCREW 1"LONG, WRITE 23-11816-100

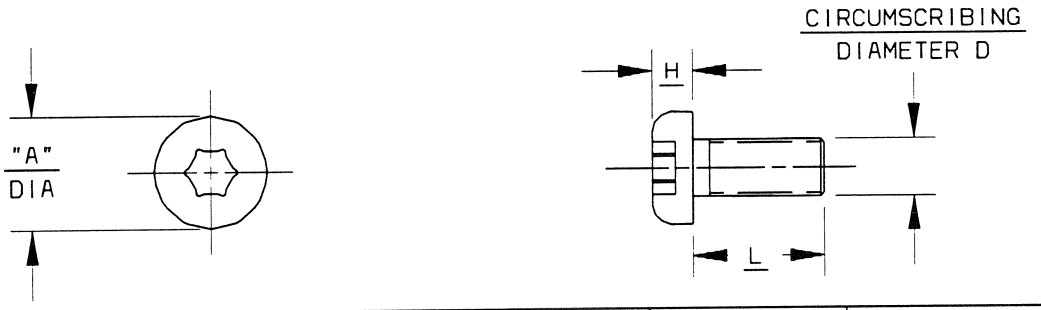
MATERIAL: ASTM A574

FINISH: ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403

DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. REFER TO ANSI B18.3 FOR DETAILS

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	330953-81	07/14/88	PCK	REDRAWN/DOCUMENTED
B	P5236G-01	09/12/90	SJT	ADDED "NON-PREFERRED" NOTE & PAGE 2.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING, PAN HEAD INTERNAL TORX, THREAD ROLLING	23-11829	
DATE	10/18/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. C
CATIA ORIGINAL				



THREAD SIZE	HEAD HEIGHT "H" MAX/MIN	HEAD HEIGHT "H" MAX/MIN	TORX DRIVE SIZE	MIN CLCE HOLE DIA "D"	PILOT HOLE DIA MAX/MIN	FREIGHTLINER PART NUMBER *
8-16	.322/.306	.115/.105	T20	.179	.144/.162	23-12067-L
10-14	.373/.357	.133/.122	T25	.212	.189/.170	23-11829-L
1/4-10	.492/.473	.175/.162	T30	.276	.243/.218	23-11831-L

THREAD SIZE	HOLE SIZES FOR VARIOUS % OF THREAD ENGAGEMENT				
	100	90	80	70	60
8-16	.144	.148	.151	.155	.158
10-14	.170	.174	.177	.181	.185
1/4-10	.218	.223	.228	.233	.238

SPECIFYING LENGTHS IN HUNDREDTHS OF AN INCH. THUS 23-11831-100 IS A 1/4-10 TWIN LEAD TORX PAN HEAD SCREW. ONE INCH LONG.

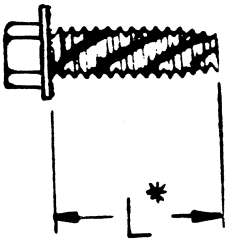
ENGINEERING NOTES:

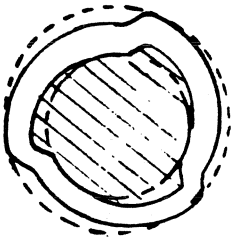
1. MATERIAL: C1021/C1022 LOW CARBON STEEL. THROUGH HARDENED AND TEMPERED TO RC 33-39.
2. FINISH: ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403 AND WAX.
3. DIMENSIONS ARE FOR REFERENCE ONLY.
4. THREAD ENGAGEMENT SHOULD BE IN THE 60-90% RANGE. PILOT HOLE DIAMETER SHOULD BE ADJUSTED BASED ON MATERIAL AND THICKNESS. MINIMUM THREAD DEPTH ENGAGEMENT TO BE TWO SCREW DIAMETERS.
5. MANUFACTURER: CAMCAR TEXTRON OR ENGINEERING APPROVED EQUIVALENT.

CHG	JOB NO	DATE	BY	REVISION
C	P06868-69	10/18/99	LFB	REVISED AND REDRAWN IN CATIA.

ORIGINAL JOB NO.	TITLE	PART NO.
P2861D	SCREW, HEX, SERRATED WASHER HEAD, THREAD ROLLING	23-11832
LAST CHG LTR		SHEET 1 OF 1

SKETCH





Thread Cross Section

PART NUMBERS

THREAD SIZE		MANUFACTURER'S DESIGNATION SSW	FREIGHTLINER PART NUMBER*
3/8-16		"Rolok" brand. Use "size plus description" when ordering.	23-11832-L

* Complete the part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-10800-075 specifies a 1/4-20 thread rolling screw 3/4" long.

PILOT HOLE CHART

THREAD SIZE	MATERIAL TYPE	MATERIAL SIZE .125-.266	.250-.328	.313-.500		DRILL SIZE
3/8-16	STEEL	#8.75M(.344)	#S (.348)	#9M (.354)		
	ALUM	#8.6M (.339)	11/32(.344)	#S (.348)		

SPECIFICATIONS

1. Material: SAE 1022 steel heat treated to 135,000 p.s.i. min. tensile.
2. Finish: Cadmium plate and wax only.
3. Head: Hex head with dimensions conforming to ANSI B18.6.4.
4. Threads: Roll forming threads. (Roll forms mating threads in unthreaded holes.)

COMPILED	FHF	DATE DRAWN		MATERIAL	MASTER NUMBER
APPROVED	TJW	6-25-86		(1)	01130 000D1

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

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

23-12226 thru 23-12241

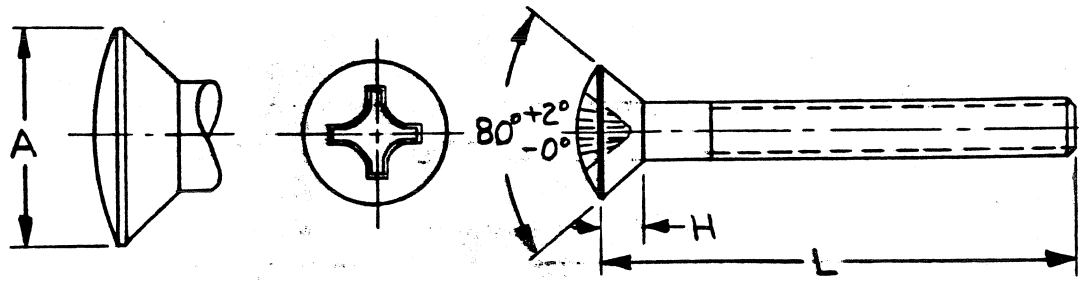
General Use Parts

ORIGINAL JOB NO.	TITLE	PART NO.
L0156	SCREW, MACHINE, CROSS RECESS OVAL HEAD, STAINLESS STEEL	23-12226 thru 23-12241
LAST CHG LTR: A		SHEET 1 OF 1

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	TR
315 to 302	05-09-84	RJN	L0156	A

SKETCH



PART NUMBERS

NOMINAL SIZE & THREAD	BASIC DIAMETER	A MAX	H REF		FREIGHTLINER PART NUMBER*
4-40 UNC 4-48 UNF	.112	.225	.067		23-12226-L -12227
6-32 UNC 6-40 UNF	.138	.279	.083		-12228 -12229
8-32 UNC 8-36 UNF	.164	.332	.100		-12230 -12231
10-24 UNC 10-32 UNF	.190	.385	.116		-12232 -12233
12-24 UNC 12-28 UNF	.216	.438	.132		-12234 -12235
1/4-20 UNC 1/4-28 UNF	.250	.507	.153		-12236 -12237
5/16-18 UNC 5/16-24 UNF	.313	.635	.191		-12238 -12239
3/8-16 UNC 3/8-24 UNF	.375	.762	.230		-12240 -12241

* Complete part number by adding a three-digit dash number to indicate length in hundredths of an inch. Example: 23-12227-075 specifies a number 4-48 UNF oval head screw 3/4 inch long.

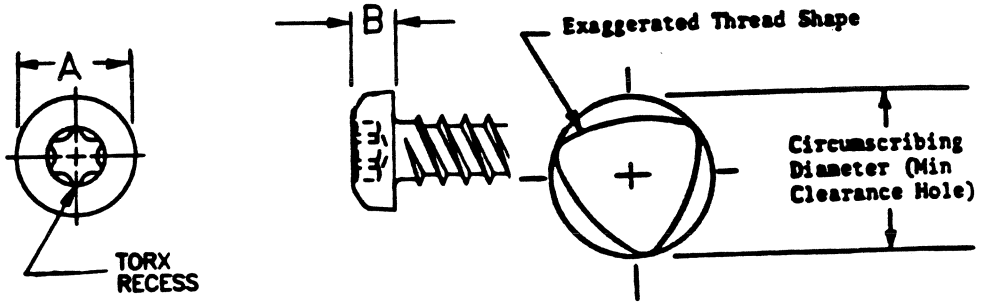
ENGINEERING NOTES:

(1) Material: Stainless Steel, Type 302

COMPILED	FEF	DATE DRAWN		Material	Master Number	
APPROVED		10-11-83		(1)	01060	000D1

ORIGINAL JOB NO.	TITLE	PART NO.
6395D	TORX PAN HEAD PLASTIC FASTENING SCREW	23-11829/23-11831
LAST CHG LTR		SHEET 1 OF 1

SKETCH



SPECIFICATIONS

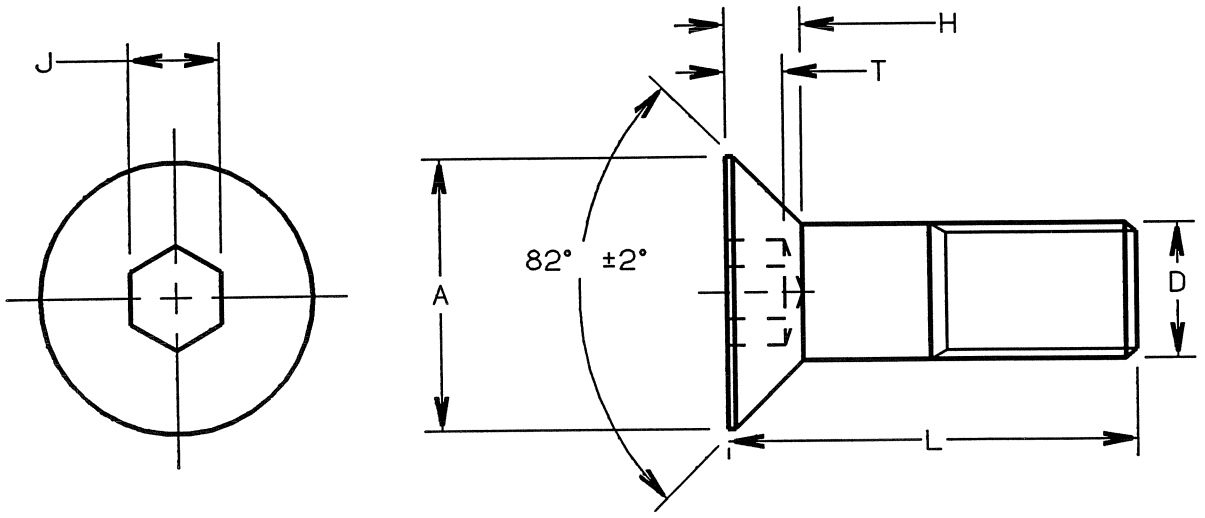
NOM. SIZE	'A' HEAD DIA	'B' HEAD HEIGHT		LENGTH TOLERANCE		TORX DRIVE SIZE	MIN CLEARANCE HOLE	PILOT HOLE		FREIGHTLINER PART NO.
		MAX	MIN	UNDER .75 LG	OVER .75 LG			MAX	MIN	
10-14	0.373 / 0.357	0.133	0.122	±0.03	±0.05	T25	0.212	.189	.170	23-11829
12-14	0.425 / 0.407	0.151	0.139	±0.03	±0.05	T27	0.232	.207	.188	23-11830
1/4-10	0.492 / 0.473	0.175	0.162	±0.03	±0.05	T30	0.276	.243	.218	23-11831

NOTES:

1. This is a triroundular (thread-rolling-see sketch) double lead screw for fastening plastics. Minimum thread engagement should be two screw diameters. Trade name is Twin-Lead Plastite.
2. Material: C1021/C1022 low carbon steel, through-hardened and tempered to Rc 33-39.
3. Finish: Zinc Plate per ASTM A164, clear chromated, and waxed.
4. Head Style: STD Trox Pan Head per ANSI B18.64-80 or latest revision.
5. Pilot Hole diameters must be adjusted to modulus of each plastic and length of thread engagement.
6. Complete Freightliner part number with 3-digit dash number specifying length in hundredths; i.e., 23-11829-075 is a 10-14 X 3/4, twin lead torx pan head Plastite screw.
7. Available from: Camcar Textron - Belvidere, IL (815) 544-0331

		DATE DRAWN		UNIT OF MEASURE	MASTER NUMBER
COMPILED	FHF	6/4/86		EA	01160 000D1
APPROVED	TJW				

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-FL HD HEX SKT STAINLESS STEEL	23-11839
DATE	06/01/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM SIZE	D		A		H		J	T
	BODY DIA		HEAD DIA		HEAD HT		HD. SKT	ENGA.
	MAX	MIN	MAX	MIN	REF.	FLUSH TOL.	NOM.	MIN.
1/4 — 20 28	.2500	.2435	.531	.480	.161	.016	5/32	.111
5/16-18	.3125	.3053	.656	.600	.198	.017	3/16	.135
3/8-16	.3750	.3678	.781	.720	.234	.018	7/32	.159
1/2-13	.5000	.4919	.937	.872	.251	.018	5/16	.172

NOM SIZE & THREADS	FREIGHTLINER PART NUMBER*	NOM SIZE &THREADS	FREIGHTLINER PART NUMBER*
1/4-20	23-11839-L	3/8-16	23-11843-L
1/4-28	23-11840-L	1/2-13	23-11847-L
5/16-18	23-12145-L		

C

* ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN ONE-HUNDREDTHS OF AN INCH. THUS FOR A 1/4-28 CAPSCREW 1" LONG, WRITE 23-11840-100.

MATERIAL: AISI 302/304 STAINLESS STEEL

TENSILE STRENGTH(MIN): 75,000 PSI. BRINNELL HARDNESS 160 AVE.

DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. REFER TO ANSI B18.3 FOR DETAILS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	325091-05	06/01/88	PCK	REDRAWN/DOCUMENTED
B	P9498F-01	05/10/90	PCK	ADDED 3/8-16 SCREW(23-11843)
C	445150-08	04/27/93	ERK	ADDED 5/16-18 SCREW(23-12145)

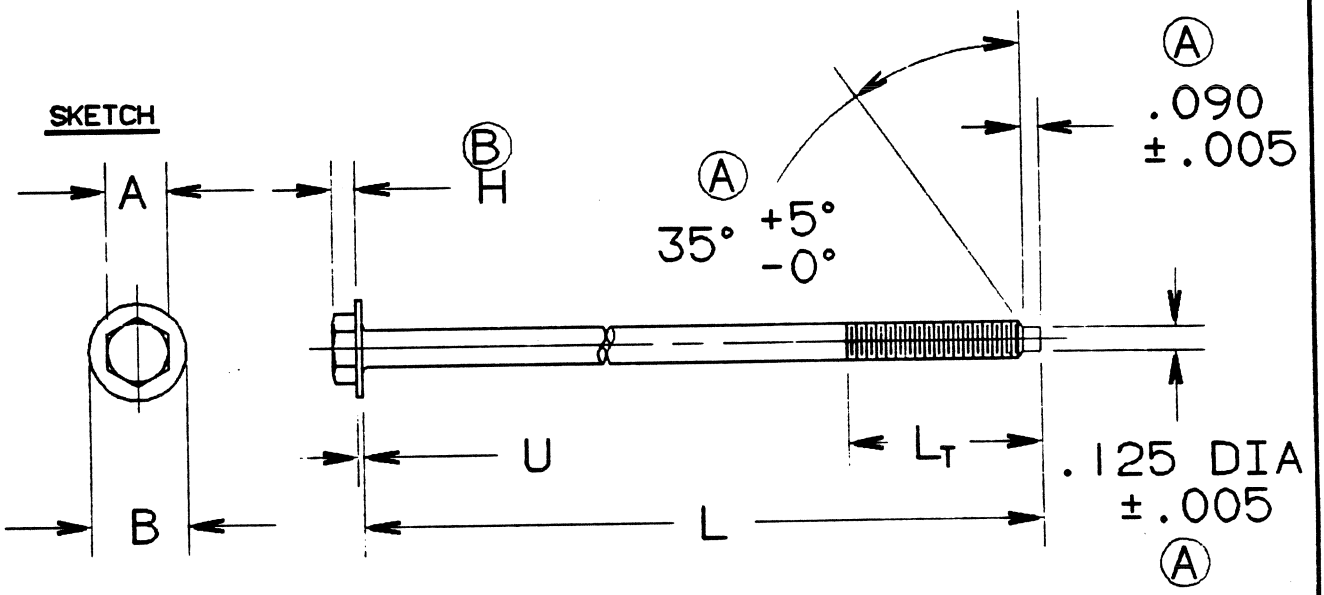
GENERAL USE PART

ORIGINAL JOB NO.	TITLE	PART NO.
M0305	HEX WASHER HEAD SCREW	23-11852
LAST CHG LTR: D		SHEET 1 OF 1

23-11852

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

SKETCH



PART NUMBERS (B)(D)

THREAD	WIDTH ACROSS FLATS "A"		HEAD HEIGHT "H"		WASHER DIA "B"		WASHER THICK "U"		THREAD LENGTH "L_T"	LENGTH "L"	FREIGHTLINER PART NUMBER
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	±.125	±.062	
10-24 UNC	.312	.305	.120	.105	.500	.440	.031	.019	1.000	5.000	23-11852-500

ENGINEERING NOTES:

(1) MATERIAL: STEEL, SAE GRADE 5 SCREW MATERIAL

2. FINISH: ZINC OR CADMIUM PLATED

(C) 3. LOCKING FEATURE TO BE MICROENCAPSULATED FASTENER ADHESIVE, 3M SCOTCH-GRIP 2353 OR ENGINEERING APPROVED EQUIVALENT.

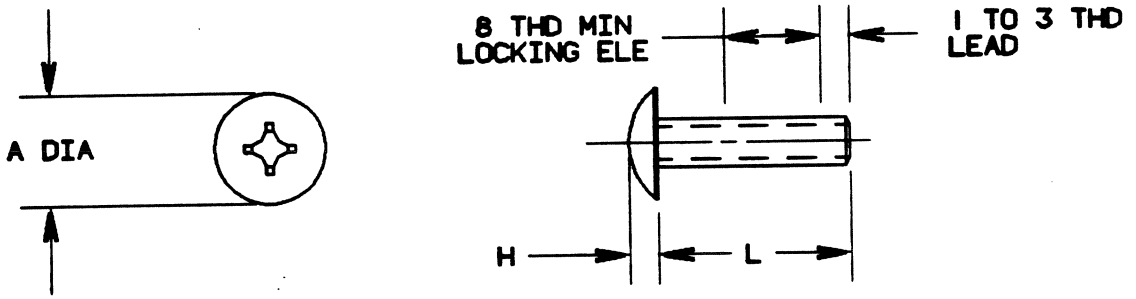
LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	0305	TNN	11-20-86	ADDED DIM'S FOR DOG POINT
B	M0305	TNN	02-06-87	.230-.208 TO .120-.105
C	M0305	TNN	03-18-87	ADDED NOTE 3
D	2691E	DWP	07-10-87	DELETED CORNER WIDTH DIM

COMPILED	TNN	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED		10-10-86		(1)		

PORTLAND FREIGHTLINER CORPORATION OREGON 97208

DRAWN	RJN	TITLE	DRAWING NUMBER	
APPRV	PWS	SCREW, TRUSS HD, CROSS RECESS TYPE 1, STAINLESS, LOCKING	23-11864	
DATE	09-17-87	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CADAM ORIGINAL				

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES | UNIT OF MEASURE: EA



PART NUMBERS

THREAD	A MAX	H MAX		FREIGHTLINER PART NUMBER *
1/4-20 UNC	.573	.150		23-11864-L

* COMPLETE PART NUMBER BY ADDING A 3-DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE 23-11864-075 SPECIFIES 1/4-20 UNC, SCREW, 3/4" LONG.

ENGINEERING NOTES

1 MATERIAL: STAINLESS STEEL, TYPE 302 OR 304
ULTIMATE STRENGTH: 80,000 PSI MIN
YIELD STRENGTH: 40,000 PSI MIN

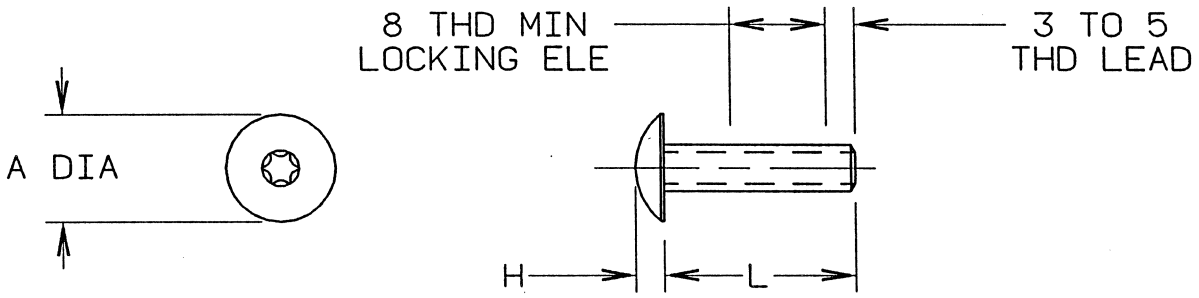
2 MUST MEET ALL APPLICABLE PROVISIONS OF SAE J478

3 LOCKING ELEMENT TO CONSIST OF NYLON PATCH APPLIED EXTERNALLY TO THREADS IN AREA SPECIFIED. LOCKING PERFORMANCE SHALL BE:
FIRST INSTALLATION: 30 IN-LB MAX
FIRST REMOVAL: 5 IN-LB MIN BREAKAWAY
FIFTH REMOVAL: 3.5 IN-LB MIN BREAKAWAY

CHG	JOB NO	DATE	BY	REVISION
-	PL0233	09-17-87	RJN	ORIGINAL RELEASE

M/F

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	.625	23-12011-062
				.750	23-12011-075
				1.000	23-12011-100
				1.250	23-12011-125
				1.500	23-12011-150
				1.750	23-12011-175 (1)
				2.000	23-12011-200 (1)
				2.500	23-12011-250
5/16-18 UNC		.698	.183	.750	23-12096-075
				1.000	23-12096-100
				1.250	23-12096-125
				2.750	23-12096-275
				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. EXCEPT -400 THREAD LENGTH TO BE 2.0 MIN. ABOVE DIMENSIONS FOR REFERENCE ONLY.

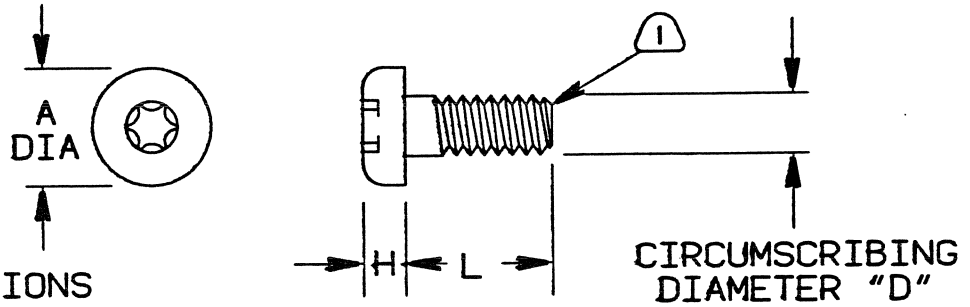
TORX RECESS: PER CAMCAR STANDARD TXH-206.

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 = 1.500±.188

CHG	JOB/RLSE NO	DATE	BY	REVISION
F	P2A182-28	10/11/95	JAV	ADDED 23-12096-400
G	P2A182-29	10/26/95	DAJ	ADDED LOCKING ELEMENT NOTE DELTA 1.
H	P6626P-01	03/07/96	ERK	ADDED 23-12096-275; REVISED NOTE
J	P00187-04	09/05/96	DAJ	ADDED 23-12011-125
K	P02211-38	01/22/98	BKA	ADDED 23-12011-025

DRAWN	RDF	TITLE SCREW-MACHINE, PAN HEAD THREAD ROLLING, T-20 INTERNAL TORX	ITEM NUMBER 23-12022
APPRV	PCK		
DATE	11/29/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



SPECIFICATIONS

NOMINAL SIZE & TPI	HEAD		DIAMETER "D"		FREIGHTLINER PART NUMBER *
	A MIN/MAX	H MIN/MAX	MAX BODY	MAX POINT	
10-24 UNC	.357/.373	.122/.133	.194	.153	23-12022-L

*L = LENGTH IN HUNDREDTHS OF AN INCH IN STEPS OF 1/8 INCH
MINIMUM LENGTH = 3/8

DIMENSIONS FOR REFERENCE ONLY.

HEAD DIMENSIONS TO CONFORM TO SAE SPECIFICATION J478
DRIVE RECESS TO BE TORX T-20 PER CAMCAR SPECIFICATION TXH-202.
THREAD AND POINT DIMENSIONS TO CONFORM TO SAE SPEC.J81, TABLE 1
FOR SCREWS 1.25 LONG OR LESS, THREADS ARE TO EXTEND TO WITHIN
[illegible] PITCHES OF HEAD. FOR SCREWS MORE THAN 1.25 LONG, MINIMUM
L FORM THREAD LENGTH TO BE 1.14

(1) POINT LENGTH .083/.146

MIN TENSILE STRENGTH: 2,350 LBS
MIN TORSIONAL STRENGTH: 65 IN LBS
MAX DRIVING TORQUE @ 100% THREAD ENGAGAGEMENT: 35 IN LBS
CLAMP LOAD: 900 LB @ 55 IN LBS TORQUE

MECHANICAL & PERFORMANCE DATA FOR REFERENCE ONLY.
FOR DETAILS SEE SAE SPECIFICATION J81, SEC 2.3

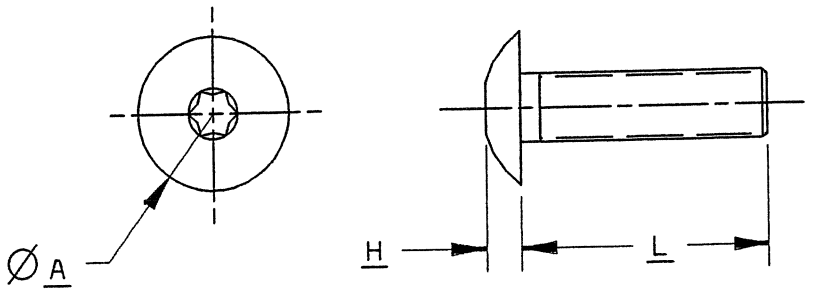
FINISH: PHOS AND OIL PER FREIGHTLINER SPEC 49-00006-041.

THREAD ENGAGEMENT SHOULD BE IN THE 60-90% RANGE. PILOT HOLE DIAMETER SHOULD BE ADJUSTED BASED ON MATERIAL AND THICKNESS.

% THD ENGAGEMENT	100	90	80	75	70	60	50	40
PILOT HOLE DIA.	.163	.166	.169	.170	.172	.175	.178	.180

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	89248E-11	11/29/88	RDF	DOCUMENTED

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TRUSS HEAD STAINLESS STEEL	23-12033	
DATE	05/20/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



INTERNAL TORX SHOWN

THREAD SIZE	DIMENSIONS				FREIGHTLINER PART NUMBERS*
	A (MAX)	A (MIN)	H (MAX)	H (MIN)	
1/4-20 UNC	.573	.546	.150	.133	23-12521-L (4)
5/16-18 UNC	.698	.666	.183	.162	23-12033-L

B

* COMPLETE PART NUMBER BY ADDING A 3-DIGIT DASH NUMBER EXPRESSING LENGTH IN HUNDREDTHS OF AN INCH. EXAMPLE 23-12033-150 SPECIFIES A 5/16-18 TRUSS HEAD SCREW, 1 1/2" LONG.

FOR "TORX" DRIVE SCREW DESIGNATIONS: THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS: EXAMPLE 23-12521-712 IS AN INTERNAL TORX 1/4-20 TRUSS HEAD SCREW 1 1/4" LONG.

7 - REPRESENT "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH (7 MAX)

ENGINEERING NOTES:

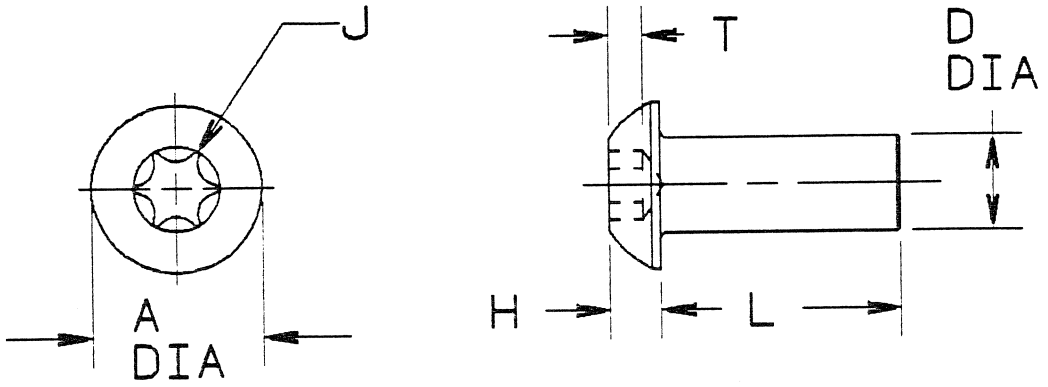
1. MATERIAL: STAINLESS STEEL TYPE 302 OR 304,
   ULTIMATE STRENGTH: 80,000 PSI MIN
   YIELD STRENGTH: 40,000 PSI MIN
2. MUST MEET ALL APPLICABLE PROVISIONS OF ANSI B18.6.3
3. TORX RECESS: PER CAMCAR STANDARD TXH-206.

(4) PASSIVATE AND BLACK OXIDE FINISH PER FL 49-00037-000.

CHG	JOB NO	DATE	BY	REVISION
B	P01634-19	05/20/98	DAJ	REVISED AND REDRAWN IN CATIA, ADDED SPEC 23-12521-L.

DRAWN	PCK	TITLE SCREW-CAP, BUTTON HEAD INTERNAL TORX	ITEM NUMBER 23-12035
APPRV	ANF		
DATE	05/02/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX	H MAX	J TORX SOCKET	T MIN	L LENGTH		FREIGHTLINER PART NUMBER
1/2-13	.500	.875	.265	T-55	.140	1.25		23-12035-125

*A THREE-DIGIT DASH NUMBER INDICATES LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE, 23-12035-125 INDICATES A CAPSCREW 1.25 INCHES LONG.
ABOVE DIMENSIONS FOR REFERENCE ONLY

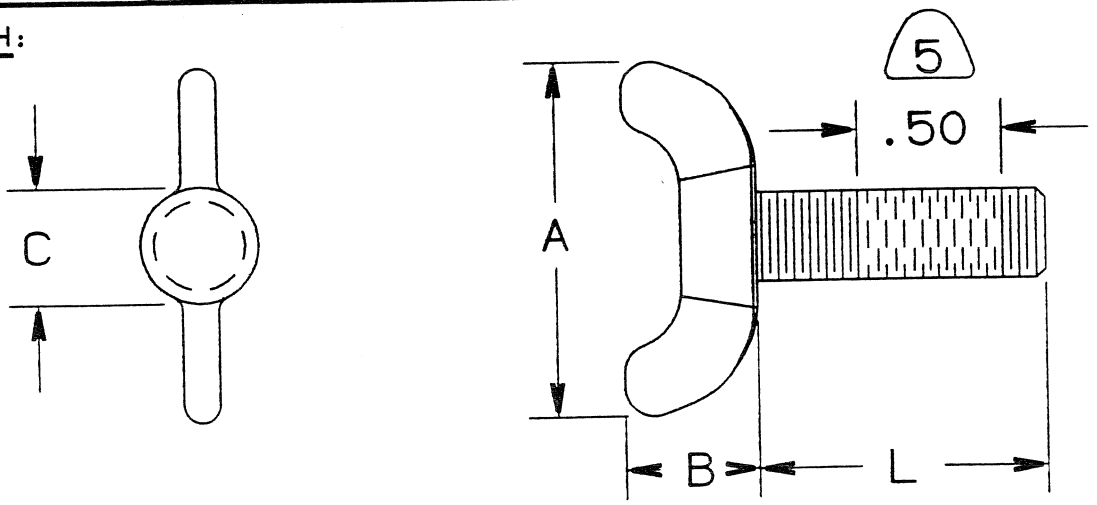
ENGINEERING NOTES

1. MATERIAL: STEEL, PER ASTM F835
2. DIMENSIONS PER ANSI B18.3. THREADS CLASS 3A AFTER PLATING. DRIVE RECESS TO BE TORX T-55 PER CAMCAR SPECIFICATION TXH-403.
3. FINISH: ZINC PLATE WITH CLEAR PHOSPHATE CONVERSION COATING PER FREIGHTLINER SPEC 49-00005-403.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P3503F-01	05/02/89	PCK	DOCUMENTED

DRAWN	CASE	TITLE	ITEM NUMBER
APPRV	PCK	WINGBOLT OVAL WASHER HEAD	23-12036
DATE	04/27/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH:



NOMINAL SCREW SIZE	"A" WING SPREAD		"B" WING HT		"C" BOSS DIA		"L" (6) LENGTH	FREIGHTLINER PART NUMBER *
	MAX	MIN	MAX	MIN	MAX	MIN		
5/16-18	1.75	1.38	0.88	0.61	0.62	0.50	1.5	23-11657-012

LAST 2 DIGITS OF DASH NUMBER EXPRESSES LENGTH OF SCREW IN 1/8'S OF AN INCH. THUS 23-12036-012 REPRESENTS A 1.5 INCH BOLT.

ENGINEERING NOTES:

1. WINGSCREW SIMILAR TO ASTM B18.17 TYPE B, STYLE 1.
2. MATERIAL: CARBON STEEL PER ASTM B18.17.
3. ZINC PLATE PER F/L SPEC 49-00005-103.
4. THREAD PER ANSI B1.1, CLASS 2A.

(5) APPLY NYLON THREAD LOCKING COMPOUND TO .500 APPROXIMATE MINIMUM TARGET AREA. MAINTAIN 1-3 THREAD CLEAR LEAD.

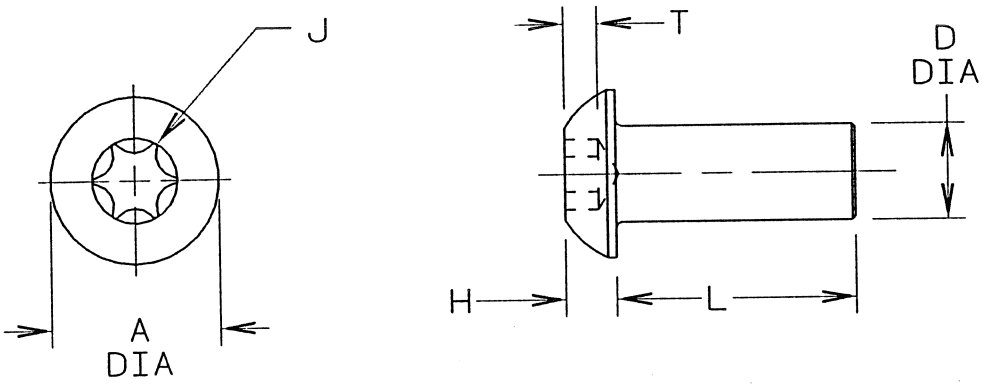
(6) SCREWS ARE NORMALLY AVAILABLE IN LENGTHS BETWEEN .50 AND 3 INCHES

7. ALL DIMENSIONS ARE IN INCHES

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	357387-92	04/27/89	PCK	DOCUMENTED

DRAWN	PCK	TITLE SCREW-CAP, BUTTON HEAD INTERNAL TORX	ITEM NUMBER 23-12039
APPRV	ANF		
DATE	05/02/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX	H MAX	J TORX DRIVE	T MIN	L LENGTH	FREIGHTLINER PART NUMBER
5/16-18	.312	.547	.166	T-40	.090	1.0 1.5	23-12039-100 -150
3/8-16	.375	.656	.199	T-45	.105	1.0	23-12253-100

D

ENGINEERING NOTES

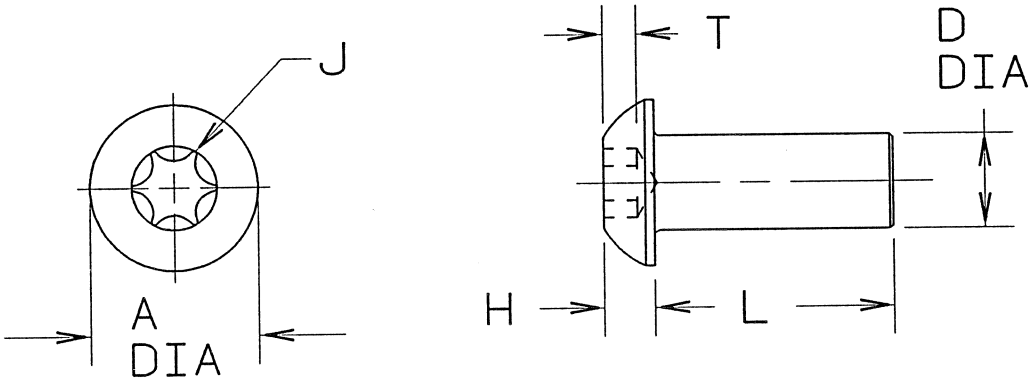
1. MATERIAL: STEEL, PER ASTM F835
2. DIMENSIONS PER ANSI B18.3. THREADS CLASS 3A AFTER PLATING. TORX DRIVE PER CAMCAR SPECIFICATION TXH-403.
3. FINISH: ZINC PLATE PER FREIGHTLINER SPECIFICATION 49-00005-403
4. PARTS MUST BE FREE FROM HYDROGEN EMBRITTLEMENT
5. BUTTON HEAD CONFIGURATION WILL NOT DEVELOP FULL TENSILE STRENGTH OF SHANK.
6. TORQUE RECOMENDATIONS:

FT. LBS.	SIZE	
	5/16	3/8
MIN	14	24
TARGET	16	28
MAX	17	31

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PH0324-02	05/02/89	ANF	DOCUMENTED
A	PA2029-71	03/19/91	PCK	ADDED 23-12039-050
B	PA2029-83	06/03/91	K R	DELETED 23-12039-050
C	PA2042-06	01/23/92	RDF	ADDED TORQUE RECOMMENDATIONS
D	P2A242-45	05/25/95	ERK	ADDED 23-12253-100

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-CAP, BUTTON HEAD, INTERNAL TORX, SST	23-12040
DATE	05/02/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX	H MAX	J TORX SOCKET	T MIN	L LENGTH		FREIGHTLINER PART NUMBER
5/16-18	.312	.547	.166	T-40	.090	1 1.25 1.5		23-12040-100 -125 -150

B

* A THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH. EXAMPLE, 23-12040-100 SPECIFIES A BUTTON HEAD INTERNAL TORX CAPSCREW 1 INCH LONG. ABOVE DIMENSIONS FOR REFERENCE ONLY

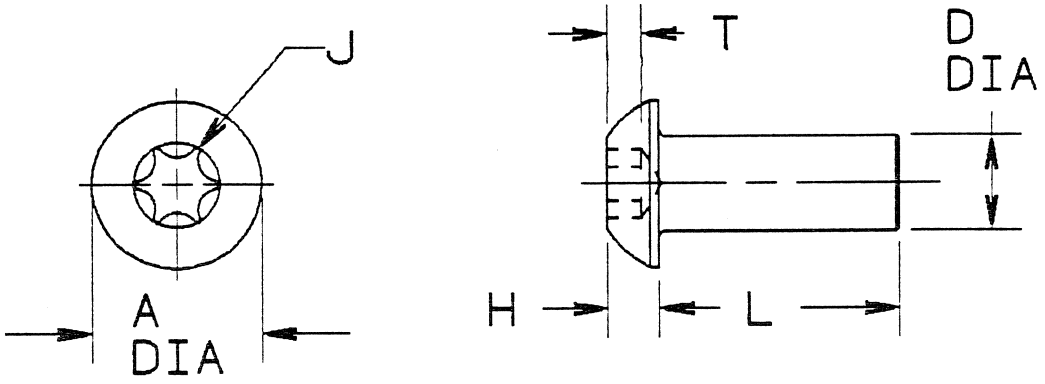
ENGINEERING NOTES

1. MATERIAL: STAINLESS STEEL, PER ASTM F879 GROUP 1 CW
2. DIMENSIONS PER ANSI B18.3.
   DRIVE RECESS TO BE TORX T-40 PER CAMCAR SPECIFICATION TXH-403.
3. FINISH: PLAIN
4. BUTTON HEAD CONFIGURATION WILL NOT DEVELOP FULL TENSILE STRENGTH OF SHANK.
5. TORQUE RECOMENDATIONS: MIN 13 FT-LBS
   TARGET 15 FT-LBS
   MAX 16 FT-LBS

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PH0324-02	05/02/89	ANF	DOCUMENTED
A	PA2042-06	01/23/92	RDF	ADDED TORQUE RECOMMENDATIONS
B	P3894J-02	04/08/96	DAJ	ADDED -125

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-CAP, BUTTON HEAD, INTERNAL TORX, SST	23-12041
DATE	05/02/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

NOM. SIZE & THREADS PER INCH	D BASIC	A MAX	H MAX	J TORX SOCKET	T MIN	L LENGTH		FREIGHTLINER PART NUMBER
1/2-13	.500	.875	.265	T-55	.140	1.25		23-12041-125

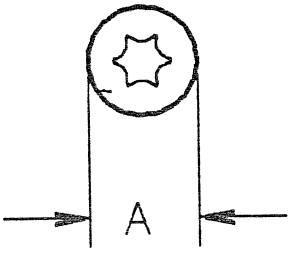
- A THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH. EXAMPLE.23-12041-125 INDICATES A CAPSCREW 1.25 INCHES LONG. ABOVE DIMENSIONS FOR REFERENCE ONLY

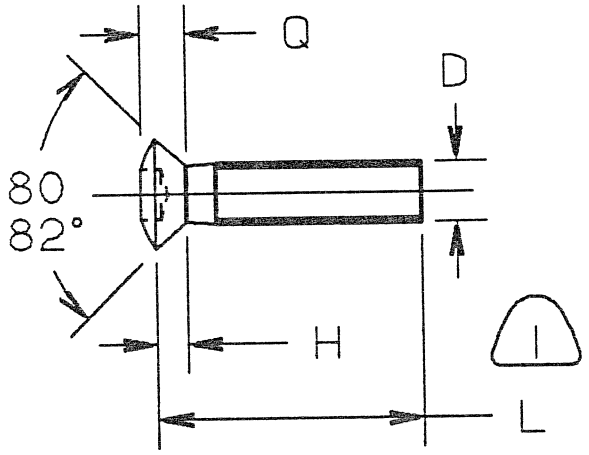
ENGINEERING NOTES

1. MATERIAL: STAINLESS STEEL, PER ASTM F879 GROUP 1 CW
2. DIMENSIONS PER ANSI B18.3.
   DRIVE RECESS TO BE TORX T-55 PER CAMCAR SPECIFICATION TXH-403.
3. FINISH: PLAIN

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P3503F-01	05/02/89	ANF	DOCUMENTED

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SCREW-MACHINE, OVAL HEAD INT. TORX BLACK FINISH	23-12071
DATE	10/17/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1





NOMINAL SIZE & THREAD	D BASIC	L (1)	A MAX	A MIN	H REF	Q MAX	FREIGHTLINER PART NUMBER
1/4-20UNC	.250	7/16	.507	.452	.153	.232	23-12071-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS:

FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)

E.G. 23-12071-715 IS A 1/4-20 TORX DRIVE MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

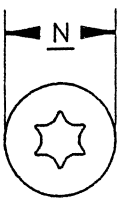
MATERIAL: STEEL, GRADE 2 PER SAE J429.
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T30 PER CAMCAR STANDARD TXH-208.

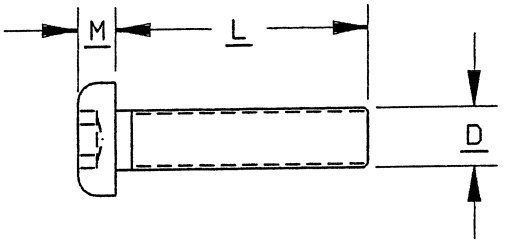
(1) THIS LENGTH AND SHORTER UNDERCUT.

FINISH: REFLECTALLOY ZINC-NICKEL (ALKALINE) WITH BLACK CHROMATE (AN ALKALINE NON-CYANIDE ZINC-NICKEL PLATING), BY MCGEAN-ROHCO, CLEVELAND, OHIO 216.441.4900. MUST WITHSTAND MINIMUM OF 1000 HOURS SALT SPRAY (ASTM B117) TO 5% RED RUST HEAD COVERAGE. ONLY MCGEAN-ROHCO SHALL BE USED FOR THE PLATING OPERATION.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PX1907-11	10/17/90	PCK	DOCUMENTED

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-THREAD ROLLING PANHEAD, INTERNAL TORX, ZN	23-12082	
DATE	04/27/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A
CATIA ORIGINAL				





THREAD CROSS-SECTION



THREAD SIZE	N		M		TORX RECESS	MIN CLCE HOLE DIA D	PILOT HOLE DIA		FREIGHTLINER PART NUMBER
	MIN	MAX	MIN	MAX			MIN	MAX	
8-32	.306	.322	.105	.115	T20	.167	.144	.152	23-12082-7LL
10-24	.357	.373	.122	.133	T25	.212	.170	.189	23-12512-7LL
1/4-20	.473	.492	.162	.175	T30	.276	.218	.243	23-12513-7LL

COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER
AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INIDICATES WHOLE INCHES
THIRD DIGIT - L INDICATES EIGHT OF AN INCH (7 MAX).
E.G. 23-12082-715 IS A 8-32 PAN HEAD SCREW 1 5/8 INCHES LONG.

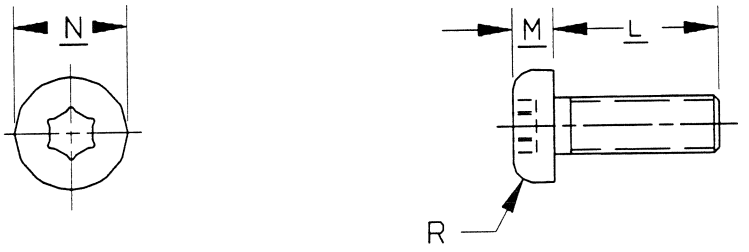
THREAD SIZE	HOLE SIZES FOR VARIOUS % OF THREAD ENGAGEMENT				
	100	90	80	70	60
8-32	.144(#27)	.146	.148	.150	.152(#24)
10-24					
1/4-20					

ENGINEERING NOTES:

1. MATERIAL: CASE HARDENED STEEL PER SAE J81.
2. FINISH: ZINC PLATE PER F/L SPEC 49-00005-403 AND WAX.
3. DIMENSIONS: THREADS AND POINT PER SAE J81. HEAD PER ANSI B.18.6.4, ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STD TXH-202.
5. MANUFACTURER: CAMCAR TAPTITE, SEMBLEX ROLOK, OR ENGINEERING STANDARDS APPROVED EQUIVALENT.
6. THREAD ENGAGEMENT SHOULD BE IN THE 60-90% RANGE. PILOT HOLE DIAMETER SHOULD BE ADJUSTED BASED ON MATERIAL AND THICKNESS. MINIMUM THREAD DEPTH ENGAGEMENT TO BE TWO SCREW DIAMETERS.

CHG	JOB NO	DATE	BY	REVISION
A	P2D360-65	04/27/98	DAJ	RVSD & RDRWN IN CATIA, ADDED 23-12512 AND 23-12513.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD TORX, ALKALINE ZN-FE PLTD, BLACK	23-12090	
DATE	10/18/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. D



THREAD SIZE	BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD DIA MAX	FREIGHTLINER PART NUMBER *
1/4-20 UNC	.250	.035	.492	.175	23-12090-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFIGANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES.
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAXIMUM).

E.G. 23-12090-710 IS A 1/4-20 TORX DRIVE MACHINE SCREW, 1 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

DIMENSIONS: PER ANSI B18.6.3 ABOVE DIMENSIONS FOR REFERENCE ONLY.

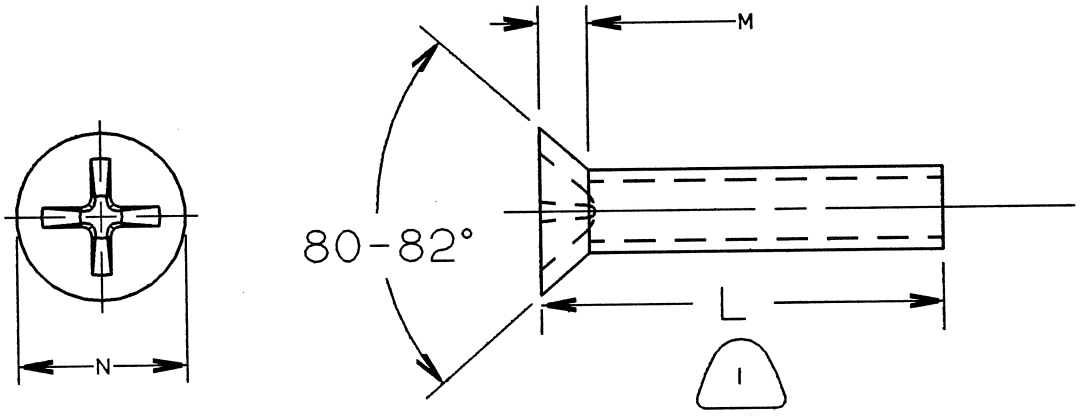
TORX RECESS: 1/4: T-30 PER CAMCAR STANDARD TXH-202.

THREADS: UN2A PER ANSI B1.1.

FINISH: REFLECTALLOY ZINC-IRON (ALKALINE) WITH BLACK CHROMATE (AN ALKALINE NON-CYANIDE ZINC-IRON PLATING), BY MCGEAN-ROHCO, CLEVELAND, OHIO 216.441.4900. MUST WITHSTAND MINIMUM OF 600 HOURS SALT SPRAY (ASTM B117) TO 5% RED RUST HEAD COVERAGE. ONLY MCGEAN-ROHCO OR APPLICATOR APPROVED BY MCGEAN-ROHCO MUST BE USED FOR THE PLATING OPERATION.

CHG	JOB NO	DATE	BY	REVISION
D	P06868-69	10/18/99	LFB	REVISED AND REDRAWN IN CATIA.

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	-	SCREW-MACHINE, FLAT HEAD CROSS RECESS, GRADE 8, PHOS & OIL	23-12109
DATE	05/04/92	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBERS:

NOMINAL SIZE & THREADS	NOM DIA	N DIA		M REF	L (1)	LENGTH (INCH)	FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN				
1/4-20	.250	.507	.452	.153	.44	1.500	23-12109-150

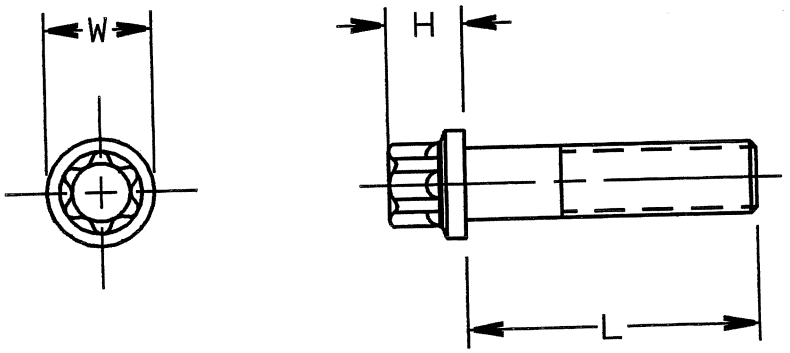
SPECIFICATIONS:

1. MATERIAL: STEEL, GRADE 8 PER SAE J429.
2. FINISH: PHOSPHATE AND OIL PER FREIGHTLINER SPEC. 49-00006-041.
3. DIMENSIONS: PER ANSI B18.6.3 ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. CROSS RECESS: TYPE 1 PER ANSI B18.6.3.
4. THREADS: UN2A PER ANSI B1.1.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	485398-07	05/04/92	ERK	INITIAL RELEASE

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	TAL	SCREW - EXTERNAL TORX, GRADE 8 ORGANIC COATED WITH LOCK	23-12125
DATE	10/19/92	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



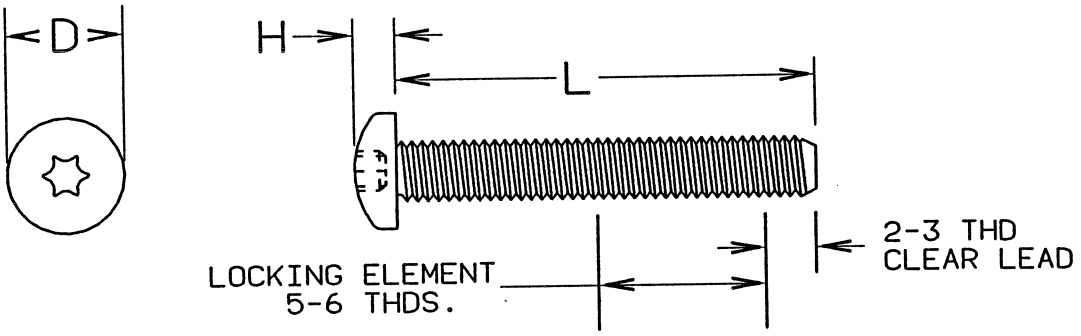
SCREW SIZE	DRIVE SIZE	WIDTH (W)	HEIGTH (H)	LENGTH (L)	FREIGHTLER PART NUMBER
3/8-16 UNC	E12	.562 .542	.394 .384	1.50	23-12125-150

1. MATERIAL :GRADE 8/8.2 PER SAE STANDARD SAE J429
2. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.2.1. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
3. FINISH TO BE BRIGHT SILVER FINISH PER FREIGHTLINER SPECIFICATION 49-00081.
4. THREAD FORM:UNC/UNF CLASS 2A
5. BASIC THREAD LENGTH(REF):
   TWICE DIA+1/4(FOR LENGTHS UPTO 6 INCHES)
   TWICE DIA+1/2(FOR LENGTHS ABOVE 6 INCHES)

A
B

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PH0335-29	10/19/92	ERK	INITIAL RELEASE
A	P7015H-01	05/18/93	ERK	ADDED IFI 124 LOCKING REQUIREMENT.
B	P2719J-01	01/04/94	ERK	REMOVED IFI 124 LOCKING REQUIREMENT.

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE, PAN HEAD, TORX RECESS PHOS & OIL, W/LOCKING ELEMENT	23-12128
DATE	12/08/92	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD SIZE	BASIC DIA	TORX DRIVE SIZE	"D" HEAD DIA	"H" HEAD HEIGHT	"L" LENGTH (INCH)	FREIGHTLINER PART NUMBER
10-24	.190	T25	.373	.133	.500	23-12128-050
					1.000	23-12128-100

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: PHOS & OIL, PER F/L SPEC 49-00006-041.

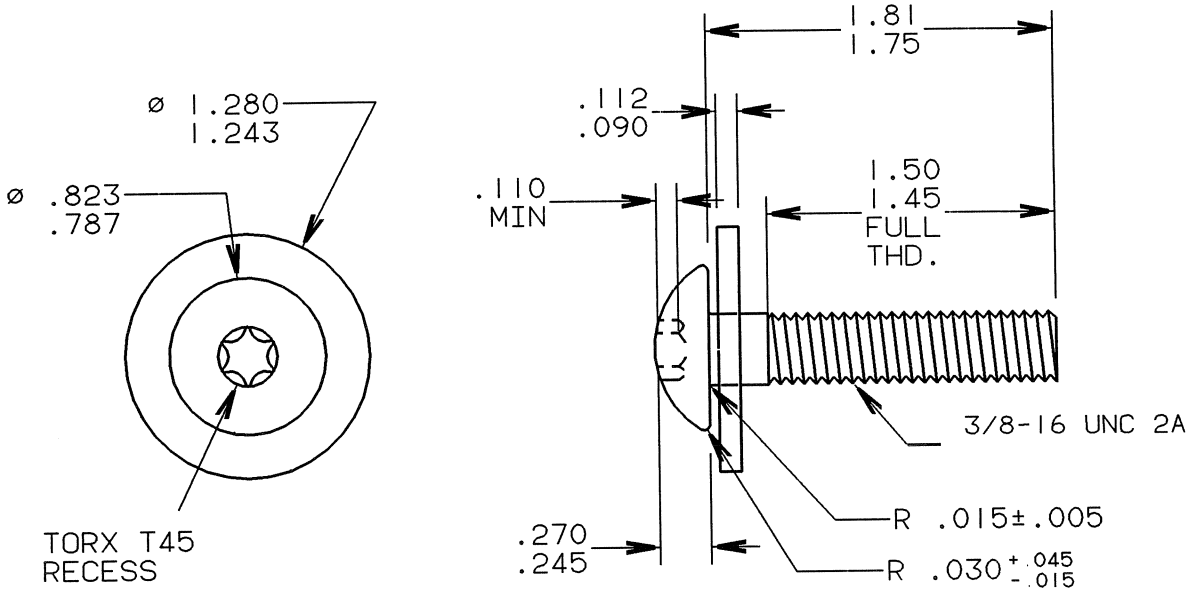
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

TORX RECESS: PER CAMCAR STANDARD TXH-202.

LOCKING ELEMENT: CHEMICAL COATING MEETING THE FOLLOWING REQUIREMENTS:
- PREVAILING ON TORQUE: 11 IN.LBS. MAX.
- BREAKAWAY TORQUE: 15 IN.LBS. MIN.
- PREVAILING OFF TORQUE: 9 IN.LBS. MIN.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P8884G-01	12/08/92	ERK	INITIAL RELEASE.
A	PA2042-41	10/15/93	ERK	REVISED MATERIAL
B	P3501J-02	08/05/94	DAJ	ADDED -100

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	TAG	SCREW & WASHER ASSEMBLY TORX DRIVE	23-12136
DATE	01/19/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



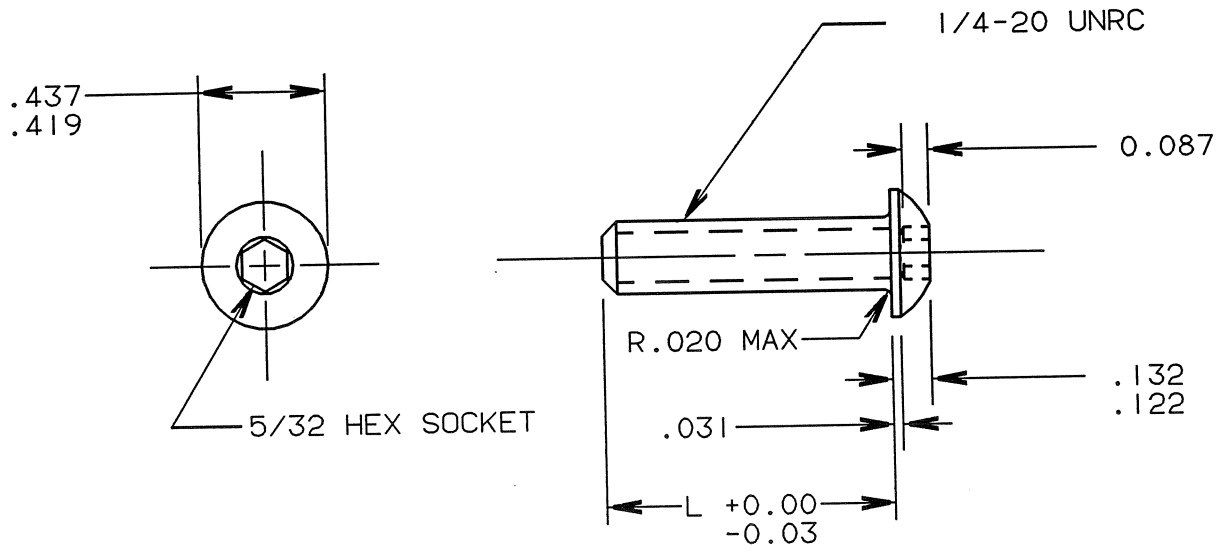
THREAD SIZE	NOMINAL LENGTH (INCHES)		FREIGHTLINER PART NUMBER
3/8-16	1.75		23-12136-175

NOTES:

1. MATERIAL: BOLT & WASHER 300 SERIES STAINLESS STEEL 78,000 PSI MINIMUM TENSILE STRENGTH.
2. FINISH: PASSIVATE
3. .010 CROWN ALLOWABLE ON FLAT WASHER (CAPTIVE).
4. WASHER MUST BE CAPTIVE AND SPIN FREELY AFTER THREAD FORMING.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P5602H-01	01/19/93	ERK	INITIAL RELEASE

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	ERK	SCREW, CAP, BUTTON HEAD HEX SOCKET, 1/4-20, STAINLESS	23-12146
DATE	04/28/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



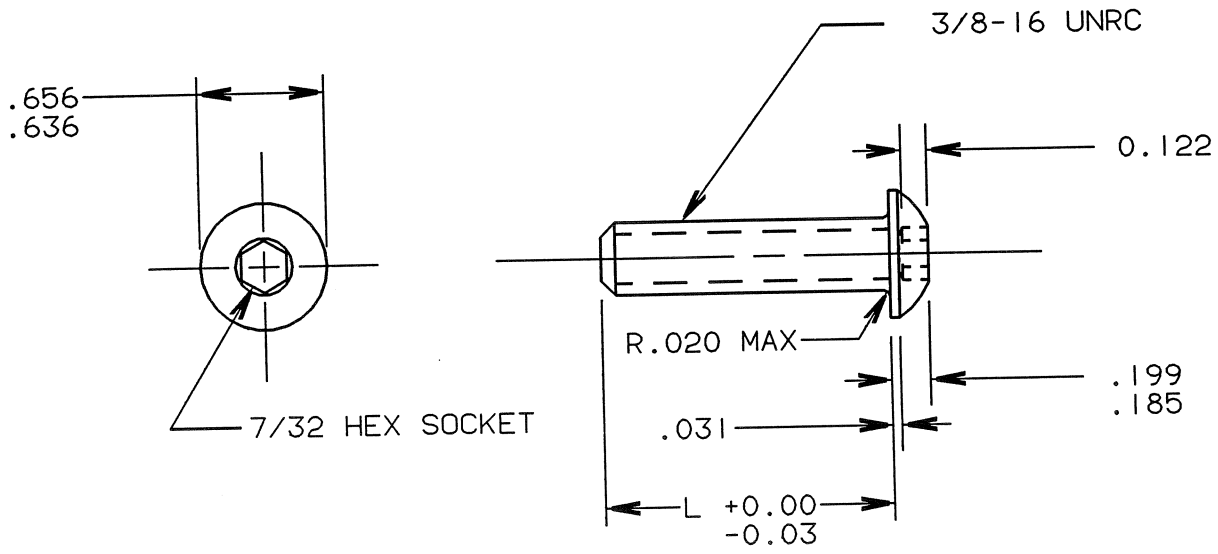
SIZE	LENGTH (L) (INCHES)		FREIGHTLINER PART NUMBER
1/4-20	.750		681 990 00 25
	1.000		681 990 01 25
	1.250		23-12146-125

1. MATERIAL: STAINLESS STEEL, TYPE 302 OR 304.

2. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PA2026-98	04/28/93	ERK	23-12146 INITIAL RELEASE; CHART 681 990 00/01 25.

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	ERK	SCREW, CAP, BUTTON HEAD HEX SOCKET, 3/8-16, STAINLESS	23-12147
DATE	04/28/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



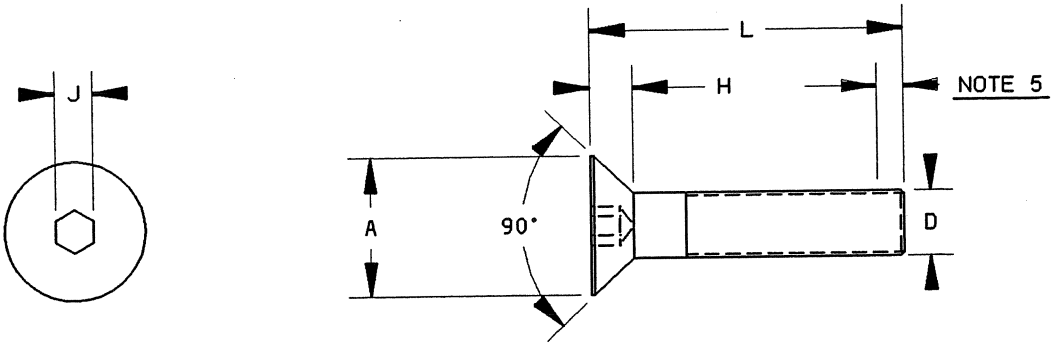
SIZE	LENGTH (L) (INCHES)		FREIGHTLINER PART NUMBER
3/8-16	1.250		23-12147-125

1. MATERIAL: STAINLESS STEEL, TYPE 302 OR 304.
2. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PA2026-98	04/28/93	ERK	INITIAL RELEASE.

ADRIENNE CHILBERG

DRAWN	ERK	TITLE SCREW-MACHINE, FLAT HEAD HEX SOCKET, YELLOW ZN, CL 10.9	DRAWING NUMBER 23-12149
APPRV	NNZ		
DATE	05/05/93	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B
CATIA ORIGINAL			



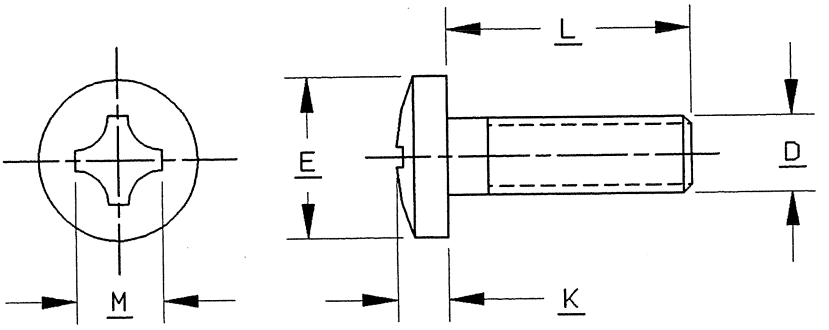
	NOM. SIZE	A HEAD DIA. NOM.	D BODY DIA. NOM.	H HEAD HT. REF.	J HD. SKT. NOM.	L LENGTH	FREIGHTLINER PART NUMBER
B	M08 X 1.25	17.92	8.00	4.96	5.0	20	23-12149-080
						35	23-12149-081
						40	23-12149-082

ENGINEERING NOTES:

1. MATERIAL: STEEL, PROPERTY CLASS 10.9 PER ISO 898/1.
2. FINISH: ZINC PLATE AND COLORED DICHROMATE PER FREIGHTLINER SPEC 49-00005-203. SCREWS ARE TO BE FREE FROM HYDROGEN EMBRITTLEMENT.
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. REFER TO DIN 7991 OR IFI 535.
4. LOCKING PERFORMANCE TO CONFORM WITH IFI 525.
- B 5. TWO TO THREE THREADS FREE OF ANEROBIC MATERIAL.

CHG	JOB NO	DATE	BY	REVISION
-	P7528H-02	05/05/93	ERK	INITIAL RELEASE
A	P6655G-01	07/13/93	ERK	ADDED -082
B	P00410-21	03/20/97	DAJ	ADDED -080 AND NOTE 5

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, FILLISTER HEAD CROSS RECESS, ZN, CL 4.8	23-12166	
DATE	09/30/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



DIA D	M4	M5	M6	M8
E	8	10	12	16
K	3.1	3.8	4.6	6
M	4.6	5.6	6.8	9
PHILLIPS SIZE	2	2	3	4

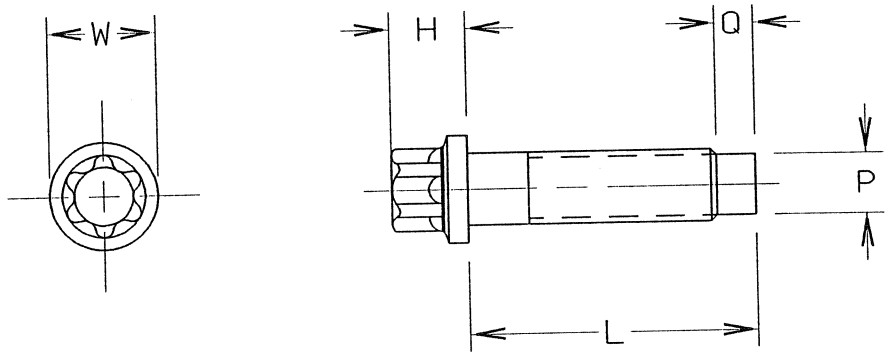
BASIC SIZE	M4 X 0.7	M5 X 0.8	M6 X 1.0	M8 X 1.25
LENGTH	FREIGHTLINER PART NUMBER			
10		007985 005144	007985 006161	007985 008135
16		007985 005171	007985 006193	
25			007985 006137	007985 008152
35			23-12166-003	
40	007985 004152			
45			007985 006163	
50			23-12166-001	
70			23-12166-004	
80			23-12166-002	

ENGINEERING NOTES:

1. MATERIAL: CLASS 4.8 PER DIN 267 PART 3.
2. FINISH: ZINC PLATE PER DBL 8451.22
3. SCREWS SHALL CONFORM TO DIN 7985 FORM A.
4. DIMENSIONS ARE PROVIDED FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
B	PA2042-85	09/30/98	DAJ	REVISED & REDRAWN IN CATIA, ADDED 007985 006137.

DRAWN	DAJ	TITLE SCREW - EXTERNAL TORX GRADE 2, DOG POINT	ITEM NUMBER 23-12172
APPRV	ERK		
DATE	10/14/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

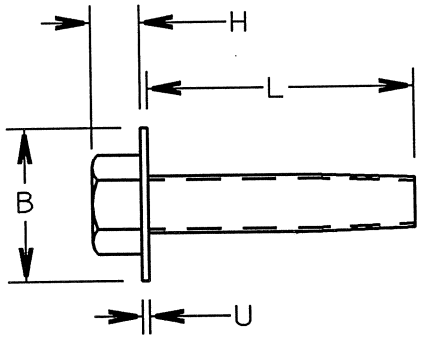


SCREW SIZE	DRIVE SIZE	WIDTH (W)	HEIGTH (H)	LENGTH (L)	POINT (P)	POINT (Q)	FREIGHTLER PART NUMBER
5/16-18 UNC	E10	.500 .480	.323 .313	1.500	.203 .195	.161 .151	23-12172-150

1. MATERIAL: GRADE 2 PER SAE STANDARD SAE J429
2. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.2.1. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
3. ZINC PLATE PER FL 49-00005-403
4. THREAD FORM: UNC/UNF CLASS 2A
5. BASIC THREAD LENGTH(REF):
   TWICE DIA+1/4(FOR LENGTHS UPTO 6 INCHES)
   TWICE DIA+1/2(FOR LENGTHS ABOVE 6 INCHES)
6. TORX DRIVE: E10 PER CAMCAR STANDARD TXH-101A.
7. DOG POINT: PER ANSI B18.6.2

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-32	10/14/94	DAJ	INITIAL LOAD

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	MBAU	SCREW-TAPPING, HEX HEAD THREAD ROLLING	23-12176
DATE	03/23/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD CROSS SECTIONS



ROLOK TAPTITE

SPECIFICATION NUMBER:

THREAD SIZE	"L" LENGTH	WIDTH ACROSS FLATS (MAX)	"H" HEAD HT (MAX)	"B" WASHER DIA (MAX)	"U" WASHER THK (MAX)	FREIGHTLINER PART NUMBER
3/8-16	1.125	.562	.295	.780	.063	23-12176-112

SUGGESTED PILOT HOLE SIZES

THREAD SIZE	MATERIAL TYPE	MATERIAL THICKNESS			
		.063 - .090	.091 - .250	.251 - .312	.313 - .500
3/8-16	STEEL	.335-.344	.344-.348	.345-.351	.348-.351
	ALUM	.335-.344	.344-.348	.344-.348	.344-.348

SPECIFICATIONS:

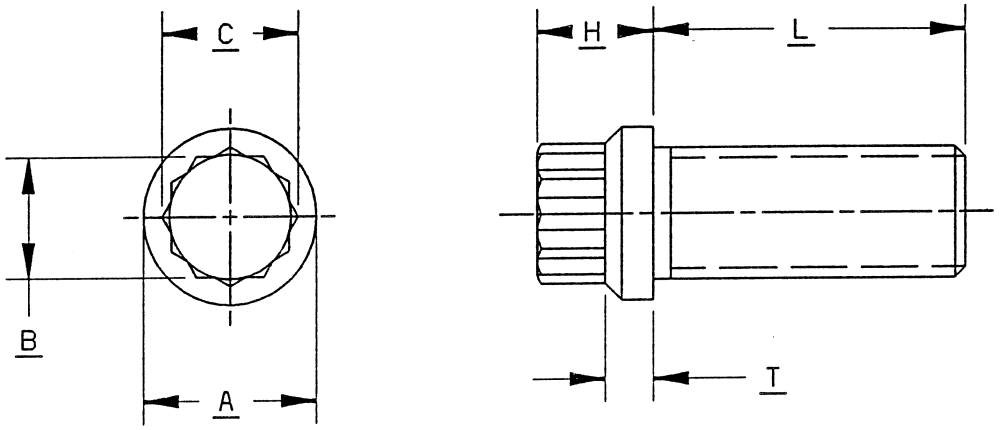
MATERIAL: STEEL, SAE 1022, 135,000 MIN. TENSILE.
FINISH: ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403.
HEAD: HEX WASHER HEAD, PER ANSI B18.2.1.
THREADS: TYPE TT (TAPTITE II) OR RL (ROLOK) PER SAE J81.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PA2103-44	03/23/94	ERK	INITIAL RELEASE FOR MBAU

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE SCREW-SOCKET HEAD 12 POINT, METRIC	DRAWING NUMBER 23-12186
APPRV	DAJ		
DATE	07/03/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B
CATIA ORIGINAL			

B



NOMINAL BODY SIZE	A FLANGE DIA	B (MAX) WIDTH (FLATS)	C (MIN) WIDTH (CORNERS)	H HEIGHT (HEAD)	T HEIGHT (COLLAR)	L LENGTH	FREIGHTLINER PART NUMBER
M10	15.82±.13	10.01	11.2	9.89±.11	4.32±.18	30.0	23-12186-303

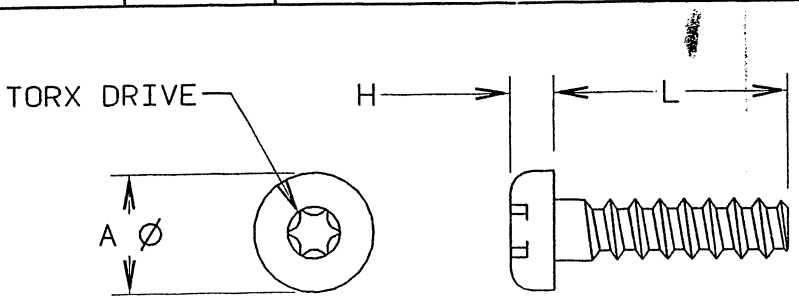
A

ENGINEERING NOTES:

1. MATERIAL: STEEL, PROPERTY CLASS 12.9 PER ISO 898/1
2. FINISH: BLACK
3. FASTENER SHALL CONFORM TO APPLICABLE PROVISIONS OF ISO R 861 AND/OR DIN 912.

CHG	JOB NO	DATE	BY	REVISION
-	PF0943-03	07/19/94	ERK	INITIAL RELEASE
A	PA2042-78	07/03/97	DAJ	REVISED AND REDRAWN IN CATIA, REVISED NOTE 1.
B	PA2042-82	12/09/97	DAJ	REVISED 'L' DIMENSION.

DRAWN	DAJ	TITLE SCREW, THREADFORMING PLASTITE	ITEM NUMBER 23-12187
APPRV	ERK		
DATE	08/24/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD CROSS-SECTIONS



PLASTITE ®

THREAD SIZE	HEAD DIA "A" MAX/MIN	HEAD HEIGHT "H" MAX/MIN	TORX DRIVE SIZE	HOLE DIA MIN/MAX	FREIGHTLINER PART NUMBER *
6-19	.270/.256	.097/.087	T15	.118/.130	23-12187-L
8-16	.322/.306	.115/.105	T20	.144/.162	23-12129-L
10-14	.373/.357	.133/.122	T25	.180/.170	23-12194-L

THREAD SIZE	HOLE SIZES FOR VARIOUS % OF THREAD ENGAGEMENT				
	100	90	80	70	60
6-19	.118	.120	.123	.125	.128
8-16	.144	.148	.151	.155	.158
10-14	.170	.174	.177	.181	.185

* SPECIFYING LENGTH IN HUNDRETHS OF AN INCH. THUS 23-12187-100 IS A 6-19 TWIN LEAD TORX PAN HEAD SCREW ONE INCH LONG.

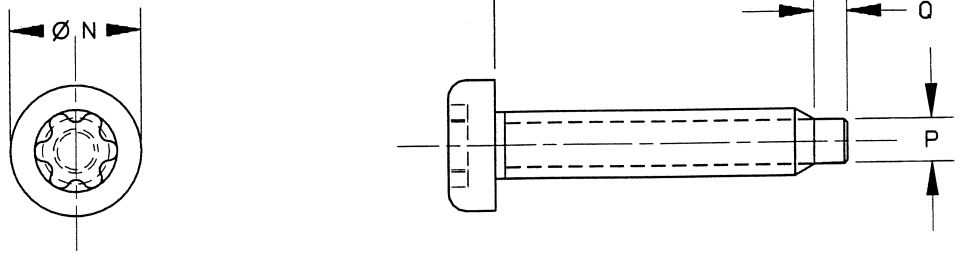
ENGINEERING NOTES:

DIMENSIONS PER ANSI B18.6.4 FOR REFERENCE ONLY.
HEAD DIMENSIONS TO CONFORM TO TORX PAN HEAD
MATERIAL: C1021/C1022 LOW CARBON STEEL, THROUGH HARDENED AND TEMPERED TO RC 33 - 39
FINISH: ZINC PLATE PER FREIGHTLINER SPEC. 49-00005-403 AND WAX IN ACCORDANCE TO INDUSTRY STANDARD.
THREAD ENGAGEMENT SHOULD BE IN THE 60-90% RANGE. PILOT HOLE DIAMETER SHOULD BE ADJUSTED BASED ON MATERIAL AND THICKNESS.
MINIMUM THREAD DEPTH ENGAGEMENT TO BE TWO SCREW DIAMETERS
MANUFACTURER: CAMCAR TEXTRON OR ENGINEERING APPROVED EQUIVALENT
·THIS FASTENER IS INTENDED FOR PLASTICS APPLICATIONS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A364-10	08/24/94	DAJ	INITIAL RELEASE
A	P2A412-52	04/18/95	DAJ	ADDED 23-12129, 23-12194 AND DIMENSIONS A AND H.

DEBBIE

DRAWN	LFB	TITLE SCREW-MACHINE PHIT, DOG POINT	DRAWING NUMBER 23-12195
APPRV	DAJ		
DATE	12/01/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



NOMINAL SIZE AND THREAD	BASIC DIA	N		M		P		Q		FREIGHTLINER PART NUMBER
		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
10-24 UNC	.190	.357	.373	.122	.133	.120	.127	.085	.095	23-12195-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12195-100 IS A 10-24 MACHINE SCREW, 1 INCH LONG.

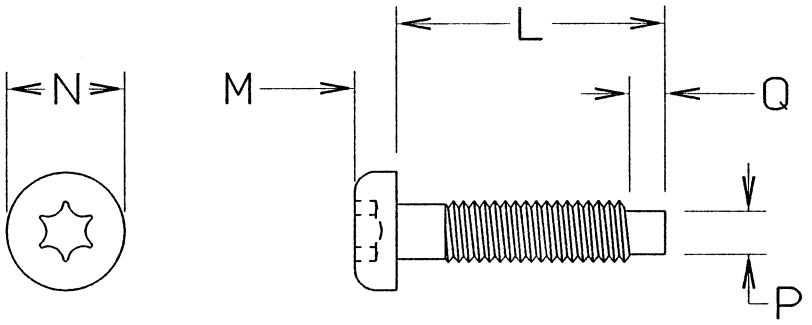
ENGINEERING NOTES:

A

1. MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING 70 MINIMUM.
2. FINISH: ZINC PLATE TYPE III, CLASS 3, PER F/L SPEC 49-00005-403 & WAX.
3. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: #6- T-15 PER CAMCAR STANDARD TXH-202
   #10- T-25 PER CAMCAR STANDARD TXH-202
   1/4- T-30 PER CAMCAR STANDARD TXH-202
5. THREADS: UN2A PER ANSI B1.1.
6. POINT: DOG POINT SHALL CONFORM TO ANSI B16.6.

CHG	JOB NO	DATE	BY	REVISION
C	PA2042-98	12/01/99	LFB	REDRAWN IN CATIA. REVISED MATERIAL NOTE.

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE PANHEAD, INTERNAL TORX, DOG POINT	23-12198
DATE	11/10/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	BASIC DIA	N		M		P		Q		FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
A 5/16-18 UNC	.312	.594	.615	.203	.218	.195	.203	.151	.161	23-12198-L

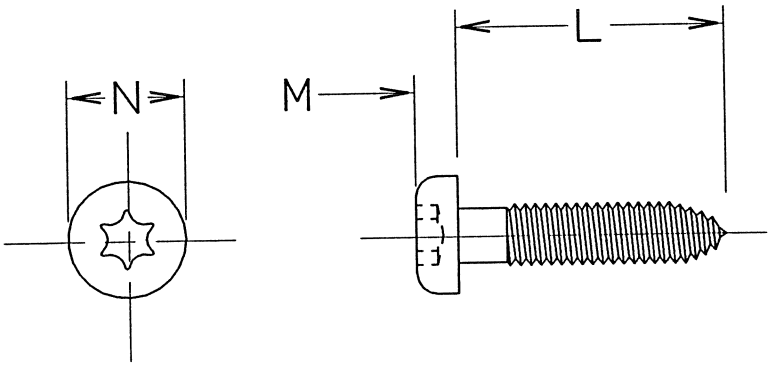
THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12198-100 IS A 5/16-18 MACHINE SCREW 1 INCH LONG.

ENGINEERING NOTES:

MATERIAL: GRADE 2 PER SAE STANDARD J429
FINISH: ZINC PLATE PER FL 49-00005-403
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
A TORX RECESS: 5/16 T-40 PER CAMCAR STANDARD TXH-202.
THREADS: UNC/UNF CLASS 2A
POINT: DOG POINT SHALL CONFORM TO ANSI B18.6.2
BASIC THREAD LENGTH (REF):
TWICE DIA+1/4(FOR LENGTHS UP TO 6 INCHES)
TWICE DIA+1/2 (FOR LENGTHS ABOVE 6 INCHES)

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-35	11/10/94	DAJ	INITIAL LOAD
A	PA2042-50	01/17/95	ERK	REVISED "M" DIMENSIONS, ADDED T-40 "TORX" RECESS

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE PANHEAD, INTERNAL TORX, CA POINT	23-12214
DATE	02/28/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	BASIC DIA	N		M		FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	
1/4-20 UNC	.250	.473	.492	.130	.144	23-12272-L
5/16-18 UNC	.312	.594	.615	.203	.218	23-12214-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12214-100 IS A 5/16-18 MACHINE SCREW 1 INCH LONG.

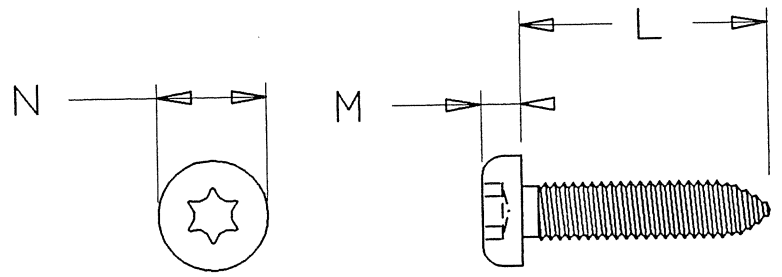
ENGINEERING NOTES:

MATERIAL: GRADE 5 PER SAE STANDARD J429
FINISH: ZINC PLATE PER FL 49-00005-403
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: 5/16 T-40 (1/4 T-30) PER CAMCAR STANDARD TXH-202.
THREADS: UNC/UNF CLASS 2A
POINT: CA POINT
BASIC THREAD LENGTH (REF):
TWICE DIA+1/4(FOR LENGTHS UP TO 6 INCHES)
TWICE DIA+1/2 (FOR LENGTHS ABOVE 6 INCHES)

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-46	02/28/95	DAJ	INITIAL LOAD
A	P2A220-90	08/16/95	DAJ	ADDED 23-12272 AND REV NOTE TO GR 5 FROM GR 2

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-MACHINE PANHEAD, INTERNAL TORX, CA POINT	23-12221
DATE	02/24/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



NOMINAL SIZE AND THREAD	BASIC DIA.	N		M		FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	
5/16-18 UNC	.312	.594	.615	.203	.218	23-12221-L

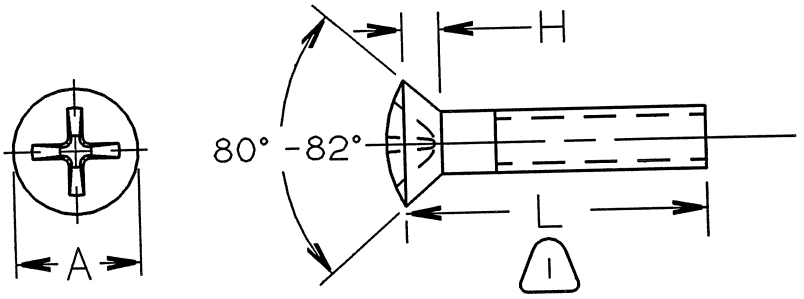
THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12221-150 IS A 5/16-18 MACHINE SCREW 1-1/2 INCH LONG.

FREIGHTLINER CORPORATION

MATERIAL: GRADE 5 PER SAE STANDARD J429
FINISH: PHOS & OIL PER F/L SPEC 49-00006-041.
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T-40 PER CAMCAR STD TXH-202.
POINT: CA POINT
THREADS: UNC CLASS 2A

CHG	JOB NO	DATE	BY	REVISION
-	P02318-01	02/24/97	DAJ	INITIAL RELEASE

DRAWN	FEF	TITLE	ITEM NUMBER
APPRV	DL	SCREW-MACHINE, CROSS RECESS OVAL HEAD, STAINLESS STEEL	23-12226
DATE	10/11/83	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREADS	NOMINAL DIAMETER	A		H	L (1)	FREIGHTLINER PART NUMBER *
		MAX EDGE SHARP	MIN EDGE ROUNDED			
4-40 UNC 4-48 UNF	.112	.225	.195	.067	.187	- -
6-32 UNC 6-40 UNF	.138	.279	.244	.083	.187	- -
8-32 UNC 8-36 UNF	.164	.332	.292	.100	.250	- -
D 10-24 UNC 10-32 UNF	.190	.385	.340	.116	.313	23-12232-L 23-12233-L
12-24 UNC 12-28 UNF	.216	.438	.389	.132	.375	- -
1/4-20 UNC 1/4-28 UNF	.250	.507	.452	.153	.438	23-12236-L -
5/16-18 UNC 5/16-24 UNF	.313	.635	.568	.191	.500	- -
3/8-16 UNC 3/8-24 UNF	.375	.762	.685	.230	.563	- -

* COMPLETE PART NUMBER BY ADDING A THREE-DIGIT DASH NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH. E.G. 23-12233-150 IS A 10-32 UNF MACHINE SCREW 1 AND 1/2 INCHES LONG.

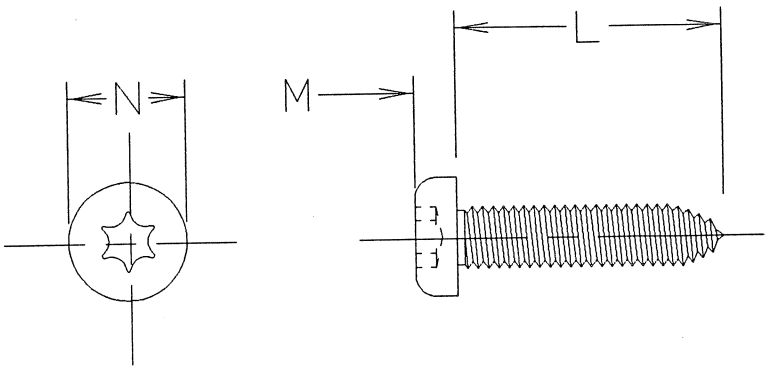
ENGINEERING NOTES:

MATERIAL: STAINLESS STEEL, TYPE 302.
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.
CROSS RECESS: TYPE 1 PER ANSI B18.6.3.

(1) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	PA2042-19	06/02/92	ERK	REVISED AND REDRAWN
D	421985-17	03/09/93	ERK	ADDED 23-12232

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE PANHEAD, INTERNAL TORX, CA POINT	23-12277
DATE	09/13/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	BASIC DIA	N		M		FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	
1/4-20 UNC	.250	.473	.492	.162	.176	23-12278-L
5/16-18 UNC	.312	.594	.615	.203	.218	23-12277-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12277-100 IS A 5/16-18 MACHINE SCREW 1 INCH LONG.

ENGINEERING NOTES:

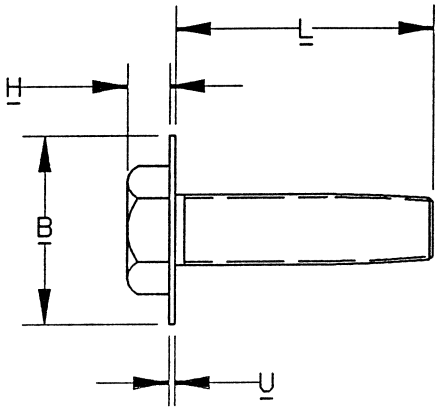
A

MATERIAL: GRADE 5/5.2 PER SAE STANDARD J429
FINISH: ZINC PLATE PER FL 49-00005-403
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: 5/16 T-40 (1/4 T-30) PER CAMCAR STANDARD TXH-202.
THREADS: UNC/UNF CLASS 2A
POINT: CA POINT

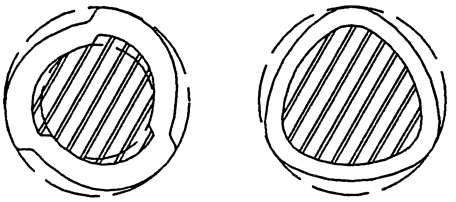
CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-97	09/13/95	DAJ	INITIAL LOAD
A	P2A220-D7	01/19/96	ERK	REV MTL: GRADE 5/5.2 IPO GRADE 5

ADRIENNE CHILBERG

DRAWN	MY	TITLE	DRAWING NUMBER	
APPRV	CEL	SCREW, HEX WASHER HEAD THREAD ROLLING	23-12237	
DATE	09/04/97			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B



THREAD CROSS SECTIONS



ROLOK TAPTITE

SPECIFICATION NUMBER:

THREAD SIZE	WIDTH ACROSS FLATS (MAX)	"H" (MAX)	"B" (MAX)	"U" (MAX)	FREIGHTLINER PART NUMBER *
5/16-18	.500	.230	.676	.055	23-12237-L

* THREE DIGIT DASH NUMBER INDICATES LENGTH IN HUNDREDTHS OF AN INCH. EG. 23-12237-075 IS A 5/16-18 SCREW 3/4 INCHES LONG.

PILOT HOLE CHART

THREAD SIZE	MATERIAL TYPE	MATERIAL THICKNESS			
		.063-.090	.091-.250	.251-.312	.313-.500
5/16-18	STEEL	.277-.284	.284-.288	.285-.290	.288-.290
	ALUM	.277-.284	.284-.288	.284-.288	.284-.288

SPECIFICATIONS:

MATERIAL: STEEL PER SAE J81

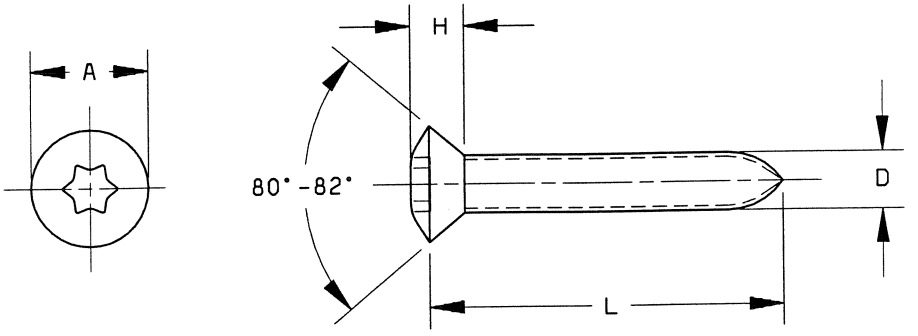
FINISH: ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403

DIMENSIONS: ABOVE DIMENSIONS FOR REFERENCE ONLY.
FOR DETAILS SEE ANSI B18.6.4

THREADS: TYPE TT (TAPTITE II) OR RL (ROLOK) PER SAE J81

CHG	JOB NO	DATE	BY	REVISION
-	P5984H-01	03/18/92	ERK	DOCUMENTED
A	P01210-05	09/04/97	MY	REDRAWN IN CATIA & PART NO -125 ADDED
B	P01210-13	10/25/97	LT	REVISED TO USE SIGNIFICANT NO. SYSTEM

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING, PLATED TYPE AB OVAL HEAD, INTERNAL TORX	23-12246	
DATE	03/09/00	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A
CATIA ORIGINAL				



THREAD SIZE	D BASIC DIA	A MAX		H MAX	FREIGHTLINER PART NUMBER
		MAX SHARP	ABS MIN		
8-18	.164	.332	.292	.152	23-12246-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT- 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- X INDICATES WHOLE INCHES.
THIRD DIGIT- X INDICATES EIGHTHS OF AN INCH (7 MAX).
E.G. 23-12246-715 IS AN 8-18 TORX DRIVE TAPPING SCREW 1 5/8 INCHES LONG.

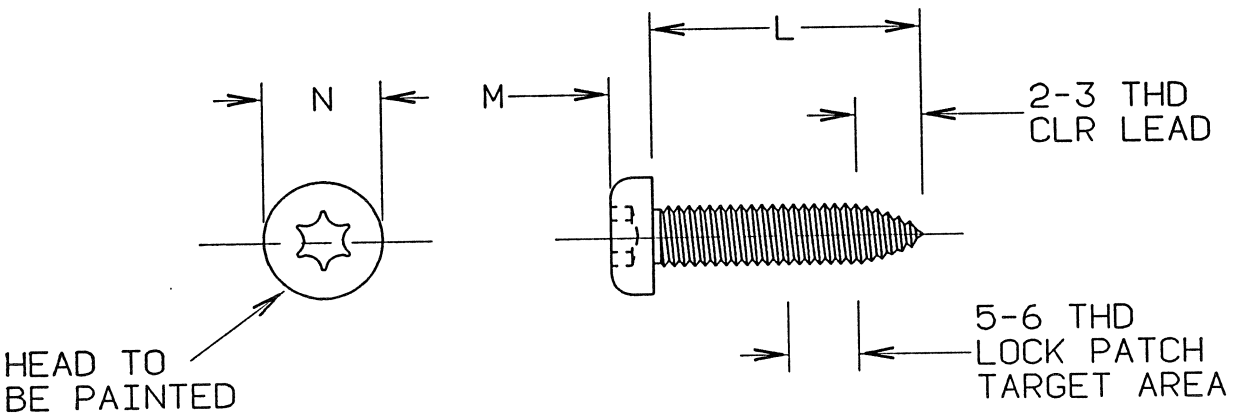
ENGINEERING NOTES:

1. MATERIAL: STEEL PER SAE J933.
2. FINISH: PHOSPHATE AND OIL PER FREIGHTLINER SPEC 49-00006-041.
3. DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS ARE FOR REFERENCE ONLY.
4. THREAD AND POINT: TYPE AB PER ANSI B18.6.4.
5. TORX RECESS: T-20 PER CAMCAR STANDARD TXH-208.

CHG	JOB NO	DATE	BY	REVISION
A	P11275-01	03/09/00	LFB	REDRAWN IN CATIA.

8/18/95 TIME 14:16 ACCESS NUM
ID=

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-TAPPING,PAINTED SLATE GREY PAN HEAD,INTERNAL TORX,LOCKING	23-12259
DATE	06/26/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD SIZE	BASIC DIAMETER	HEAD DIA "N" MAX	HEAD HEIGHT "M" MAX	TORX DRIVE SIZE	PILOT HOLE DIA MAX/MIN	FREIGHTLINER PART NUMBER *
10-16	.190	.373	.133	T25	.159/.148	23-12259-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTHS IN EIGHTHS OF AN INCH (7 MAX)

E.G. 23-12259-714 IS A 10-16 PAN HEAD INTERNAL TORX SCREW 1 1/2 IN.

ENGINEERING NOTES:

MATERIAL: STEEL PER SAE J933

A FINISH: ZINC PLATE PER FTL 49-00005-403,
PAINT HEAD SLATE GRAY PER FTL STD 49-00091-001.

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

TORX RECESS: T25 PER CAMCAR STANDARD TXH-202.

THREAD & POINT: TYPE AB PER ANSI B18.6.4

NOTE: 23-12259 IS IDENTICAL TO 23-10896 EXCEPT FINISH.

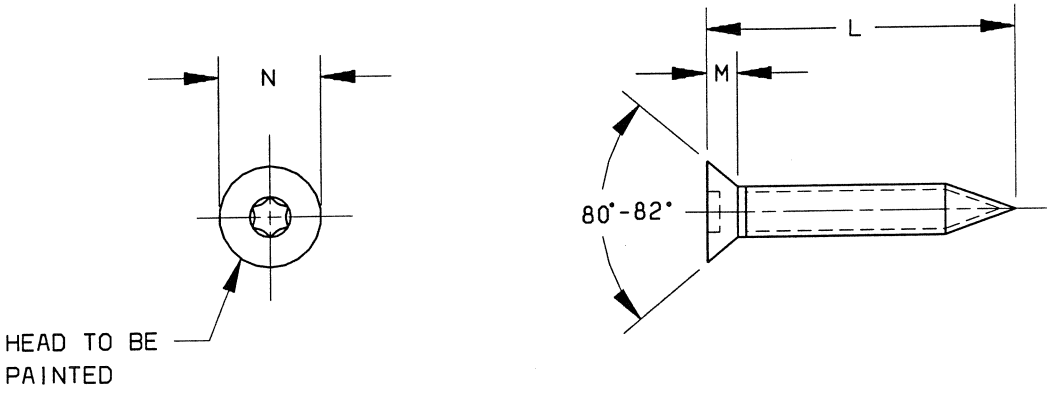
LOCKING ELEMENT MUST MEET REQUIREMENT OF IFI 124.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A262-B7	06/26/95	DAJ	INITIAL LOAD
A	P2A262-E0	08/01/95	ERK	MODIFIED FINISH

DEBBIE

DRAWN	LFB	TITLE SCREW-TAPPING, PAINTED SLATE GREY FLAT HEAD, INTERNAL TORX	DRAWING NUMBER 23-12263
APPRV	DAJ		
DATE	11/12/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			

C



THREAD SIZE	BASIC DIAMETER	HEAD DIA "N" MAX	HEAD DIA "M" MAX	TORX DRIVE SIZE	PILOT HOLE DIA MAX/MIN	FREIGHTLINER PART NUMBER
8-18	.164	.332	.100	T15	.148/.128	23-12263-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT- 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES.
THIRD DIGIT- L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX).

E.G. 23-12263-710 IS AN 8-18 FLAT HEAD INTERNAL TORX SCREW 1 IN. LONG.

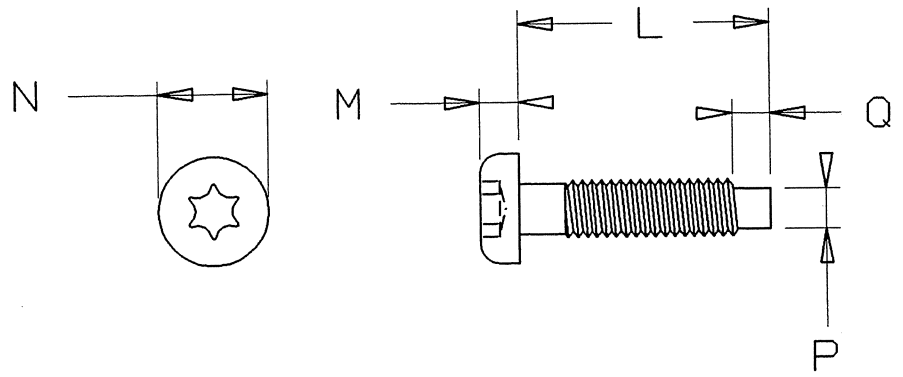
ENGINEERING NOTES:

MATERIAL: STEEL PER SAE J933.
FINISH: ZINC PLATE PER FTL 49-00005-403.
PAINT HEAD SLATE GRAY PER FTL STD 49-00091-001.
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T15 PER CAMCAR STANDARD TXH-203.
THREAD AND POINT: TYPE AB PER ANSI B18.6.4.

C

CHG	JOB NO	DATE	BY	REVISION
B	PA2042-97	11/12/99	LFB	REVISED AND REDRAWN IN CATIA. T15 WAS T20.
C	PA2042-98	12/02/99	LFB	REMOVED EQUIVALENCY NOTE. REVISED "L" DIM.

DRAWN	FHC	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-TAPPING, PANHEAD INTERNAL TORX, DOG POINT	23-12361
DATE	04/30/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



NOMINAL SIZE AND THREAD	BASIC DIA.	N		M		P		Q		J TORX RECESS	FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
10-16	.190	.357	.373	.122	.133	.120	.127	.085	.095	T25	23-12361-7XX

B

COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER.

C AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM

SECOND DIGIT - X INDICATES WHOLE INCHES

THIRD DIGIT - INDICATES EIGHT OF AN INCH (7 MAX).

E.G. 23-12361-715 IS A 10-16 TAPPING SCREW, 1 5/8 INCHES LONG.

FREIGHTLINER CORPORATION

MATERIAL: STAINLESS STEEL PER ASTM F593. GROUP 1,CONDITION CW.

FINISH: PLAIN

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

TORX RECESS:PER CAMCAR STD TXH-202.

POINT: DOG POINT SHALL COMFORM TO ANSI B18.6.2.

THREADS: TYPE B PER ANSI B18.6.4

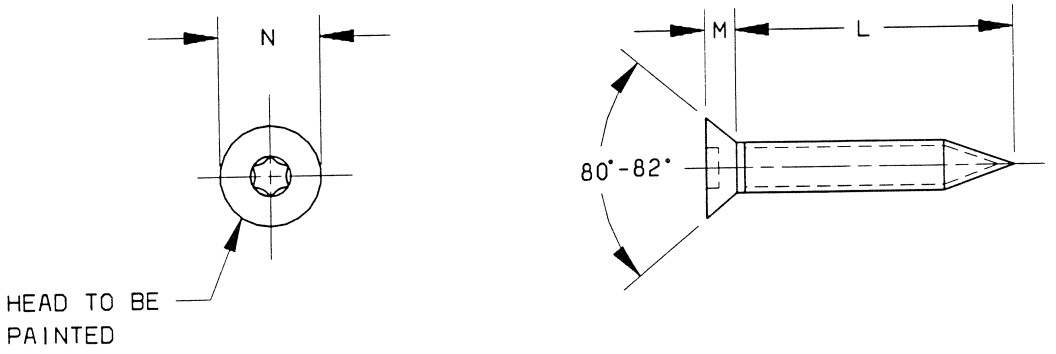
BASIC THREAD LENGHT (REF) :

TWICE DIA. + 1/4 (FOR LENGHTS UP TO 6 INCHES).

TWICE DIA. + 1/2 (FOR LENGHTS ABOVE 6 INCHES).

CHG	JOB NO	DATE	BY	REVISION
-	P6472P-01	04/30/96	FHC	INITIAL RELEASE
A	PA2042-71	08/12/96	FHC	REVISED TITLE AND THREAD NOTE.
B	PA2042-76	02/26/97	DAJ	"MAX" WAS "MIN"
C	PA2042-85	10/21/98	DAJ	REVISED WORD, TORX WAS TOPRX.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING, PAINTED SLATE GREY FLAT HEAD, INTERNAL TORX	23-12263	
DATE	11/12/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



THREAD SIZE	BASIC DIAMETER	HEAD DIA "N" MAX	HEAD DIA "M" MAX	TORX DRIVE SIZE	PILOT HOLE DIA MAX/MIN	FREIGHTLINER PART NUMBER
8-18	.164	.332	.100	T15	.148/.128	23-12263-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT- 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES.
THIRD DIGIT- L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX).

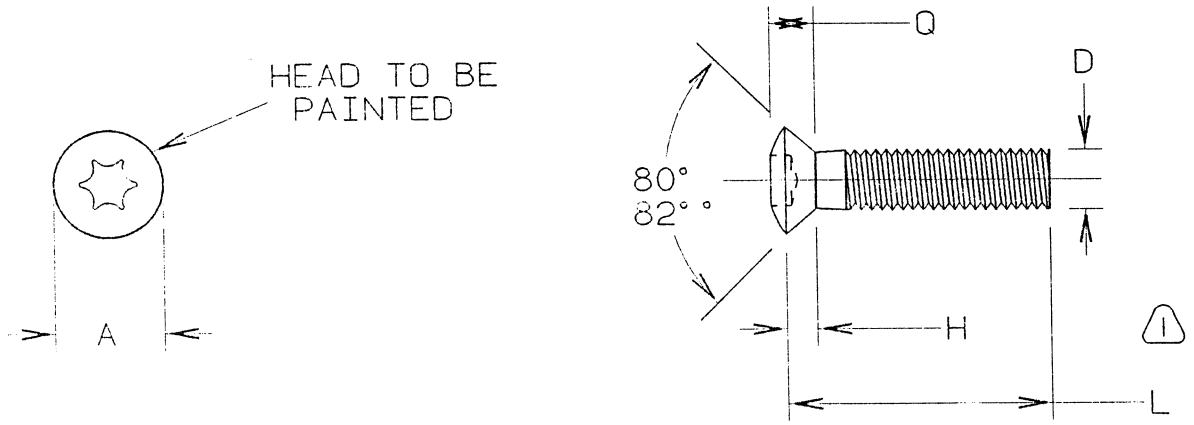
E.G. 23-12263-710 IS AN 8-18 FLAT HEAD INTERNAL TORX SCREW 1 IN. LONG.

ENGINEERING NOTES:

MATERIAL: STEEL PER SAE J933.
FINISH: ZINC PLATE PER FTL 49-00005-403.
PAINT HEAD SLATE GRAY PER FTL STD 49-00091-001.
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: T15 PER CAMCAR STANDARD TXH-203.
THREAD AND POINT: TYPE AB PER ANSI B18.6.4.
NOTE: 23-12263 IS IDENTICAL TO 23-11261 EXCEPT FINISH.

CHG	JOB NO	DATE	BY	REVISION
B	PA2042-97	11/12/99	LFB	REVISED AND REDRAWN IN CATIA. T15 WAS T20.

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	RPW	SCREW - MACHINE OVAL HEAD, INTERNAL TORX	23-12267
DATE	08/01/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	D BASIC	L ⚠1	A MAX	A MIN	H REF	Q MAX	FREIGHTLINER PART NUMBER
10-24 UNC	.190	5/16	.385	.340	.116	.176	23-12267-7XX

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS:

FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)

E.G. 23-12267-715 IS A 10-24 TORX DRIVE MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

B FINISH: ZINC PLATE PER 49-00005-403, PAINT HEAD SHADOW GRAY PER FTL STD 49-00091-002.

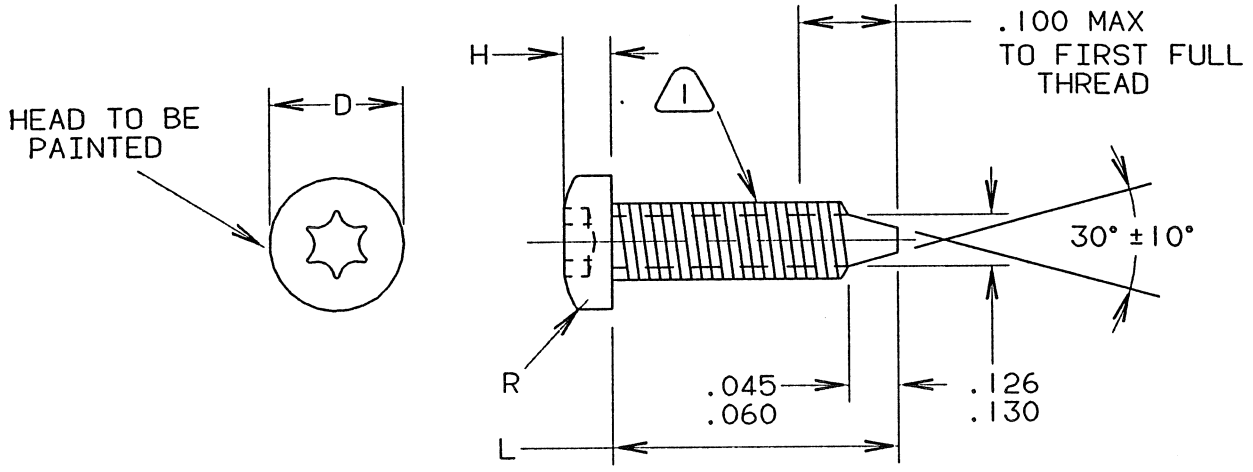
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

B TORX RECESS: T25 PER CAMCAR STANDARD TXH-208.

⚠1 THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A320-11	08/01/95	ERK	INITIAL RELEASE
A	PA2042-73	09/11/96	DAJ	FINISH SPEC WAS 49-00091-001.
B	PA2042-76	12/13/96	DAJ	REVISED NOTES, T25 WAS T20 AND SHADOW WAS SLATE.

DRAWN	ERK	SCREW - TAPPING PAN HEAD, INTERNAL TORX	23-12268
APPRV	RPW		
DATE	08/01/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBER

THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 - 16	.190	.020	.373	.133	23-12268-7XX

23-12268 IS A 10B PHIT SCREW WITH A 1/2 DOG POINT.

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-12268-715 IS A 10-16 PHIT DOG POINT SCREW 1 5/8 INCH LONG.

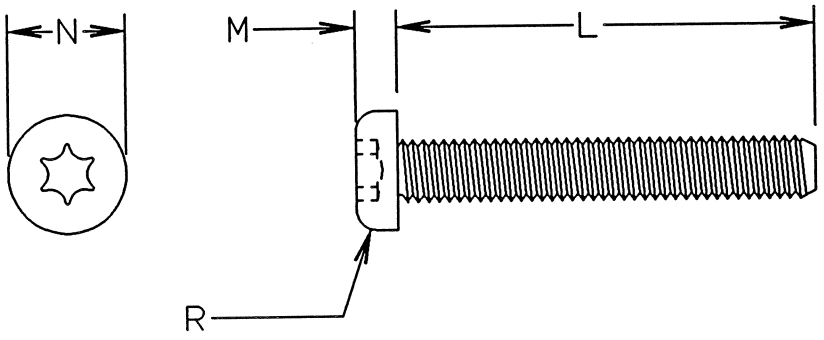
ENGINEERING NOTES:

(1) PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125, FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: ZINC PLATE PER FTL STD 49-00005-403.
PAINT HEAD SLATE GRAY PER FTL STANDARD 49-00091-001.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
TORX RECESS: T25 PER CAMCAR STANDARD TXH-202.
THREAD/POINT: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A320-11	08/01/95	ERK	INITIAL RELEASE

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	LT	SCREW - MACHINE PAN HEAD, TORX, 49-00081	23-12269
DATE	07/31/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD SIZE	TORX RECESS	BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 -32 UNF	T-25	.190	.020	.373	.133	23-12269-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX)

A E.G. 23-12269-715 IS A 10-32 TORX DRIVE MACHINE SCREW 1 5/8 INCH LONG.

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

FINISH: SERMAGARD OR EMPICARD PER FTL SPECIFICATION 49-00081-000.

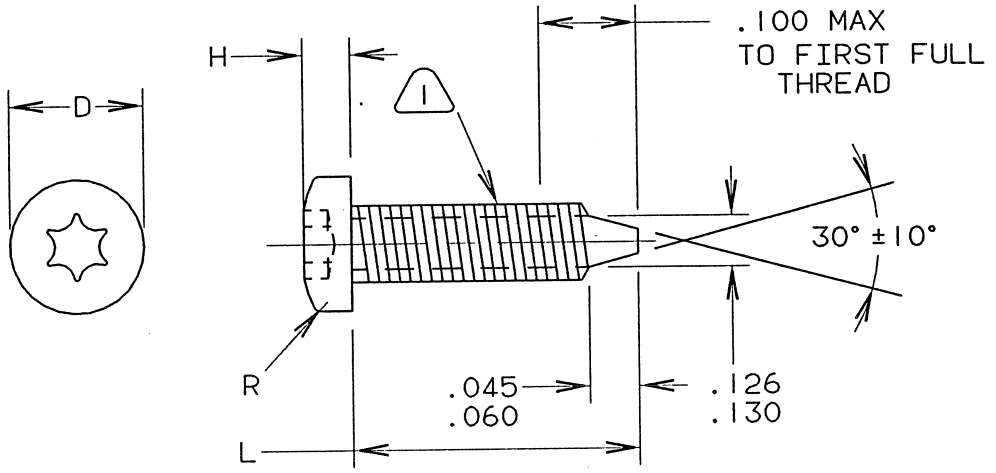
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

THREADS: UN2A PER ANSI B1.1.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A230-46	07/31/95	ERK	INITIAL RELEASE
A	PA2042-70	06/24/96	DAJ	REVISED EXAMPLE FROM 10-24 TO 10-32.

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	LT	SCREW-10B, DOG POINT, CAD PLATED PAN HEAD, TORX	23-12276
DATE	08/28/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SKETCH



PART NUMBER

THREAD SIZE	BASIC DIA	"R" RADIUS	"D" HEAD DIA MAX	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
10 - 16	.190	.020	.373	.133	23-12276-7XX

23-12276 IS A 10B PHIT SCREW WITH A 1/2 DOG POINT.

COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS:
FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- X INDICATES WHOLE INCHES
THIRD DIGIT - X INDICATES EIGHTHS OF AN INCH (7 MAX)
E.G. 23-12276-715 IS A 10-16 PHIT DOG POINT SCREW 1 5/8 INCH LONG.

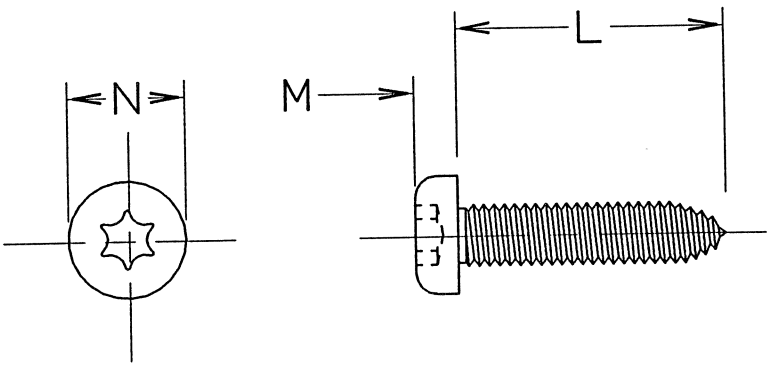
ENGINEERING NOTES:

1. PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125, FIRST 6 FULL THREADS.

MATERIAL: STEEL PER SAE J933.
FINISH: CAD PLATE PER FTL STD 49-00012-130.
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.
TORX RECESS: T25 PER CAMCAR STANDARD TXH-202.
THREAD/POINT: TYPE B PER ANSI B18.6.4.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A230-51	08/28/95	ERK	INITIAL RELEASE

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE PANHEAD, INTERNAL TORX, CA POINT	23-12277
DATE	09/13/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	BASIC DIA	N		M		FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	
1/4-20 UNC	.250	.473	.492	.162	.176	23-12278-L
5/16-18 UNC	.312	.594	.615	.203	.218	23-12277-L

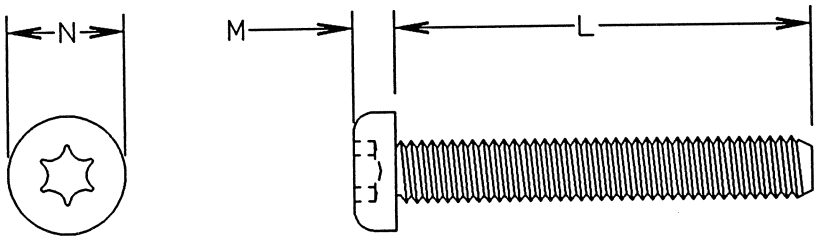
THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12277-100 IS A 5/16-18 MACHINE SCREW 1 INCH LONG.

ENGINEERING NOTES:

MATERIAL: GRADE 5 PER SAE STANDARD J429
FINISH: ZINC PLATE PER FL 49-00005-403
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: 5/16 T-40 (1/4 T-30) PER CAMCAR STANDARD TXH-202.
THREADS: UNC/UNF CLASS 2A
POINT: CA POINT

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A220-97	09/13/95	DAJ	INITIAL LOAD

DRAWN	BDM	TITLE	ITEM NUMBER
APPRV	ERK	SCREW-MACHINE PANHEAD, INTERNAL TORX, ZN PLATED	23-12331
DATE	03/12/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOMINAL SIZE & THREAD	BASIC DIA	N		M		L	FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX		
5/16-18 UNC	.312	.594	.615	.203	.218	2.50	23-12331-250

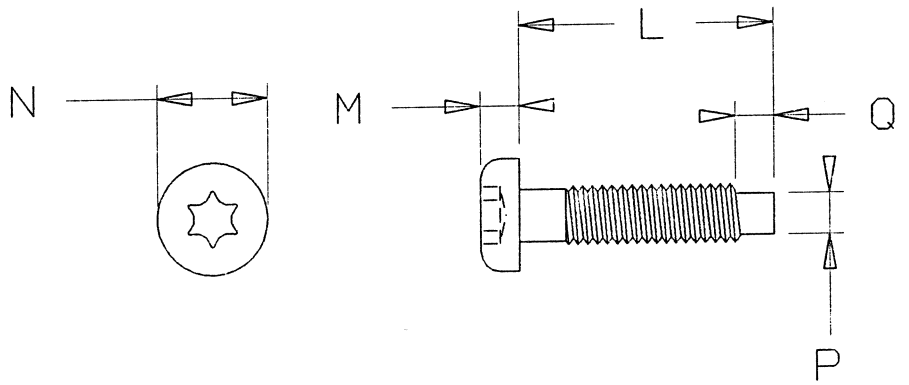
ENGINEERING NOTES:

MATERIAL: GRADE 5/5.2 PER SAE STANDARD J429
FINISH: ZINC PLATE PER FL 49-00005-403
DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: 5/16 T-40 PER CAMCAR STANDARD TXH-202.
THREADS: UNC/UNF CLASS 2A

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P6468P-01	03/12/96	BDM	INITIAL RELEASE

DRIENNE CHILBERG

DRAWN	FHC	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-TAPPING, PANHEAD INTERNAL TORX, DOG POINT	23-12361
DATE	04/30/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B
CATIA ORIGINAL			



NOMINAL SIZE AND THREAD	BASIC DIA.	N		M		P		Q		J TORX RECESS	FREIGHTLINER PART NUMBER
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
10-16	.190	.357	.373	.122	.133	.120	.127	.085	.095	T25	23-12361-7XX

B

COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER.
AS FOLLOWS: FIRST DIGIT - 7 INDICATES TOPRX DRIVE SYSTEM
SECOND DIGIT - X INDICATES WHOLE INCHES
THIRD DIGIT - INDICATES EIGHT OF AN INCH (7 MAX).
E.G. 23-12361-715 IS A 10-16 TAPPING SCREW, 1 5/8 INCHES LONG.

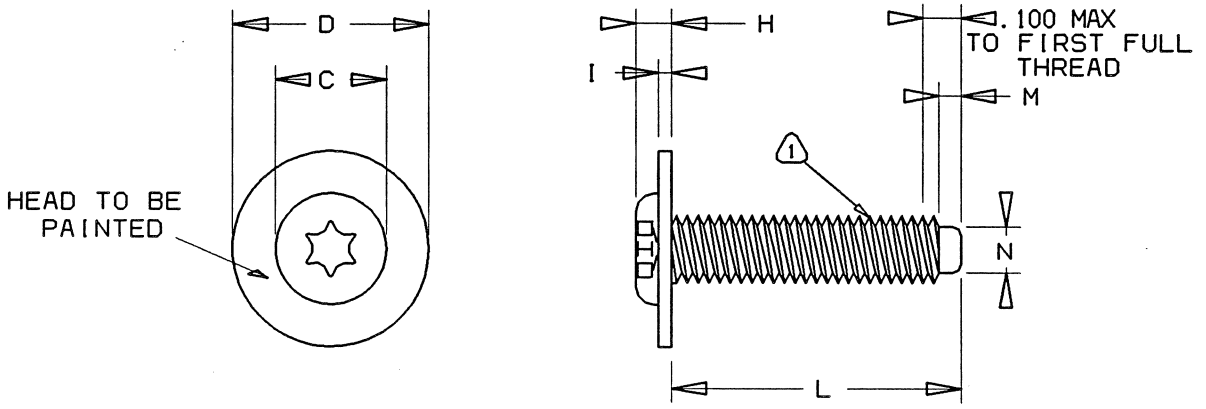
FREIGHTLINER CORPORATION

MATERIAL: STAINLESS STEEL PER ASTM F593. GROUP 1, CONDITION CW.
FINISH: PLAIN
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: PER CAMCAR STD TXH-202.
POINT: DOG POINT SHALL COMFORM TO ANSI B18.6.2.
THREADS: TYPE B PER ANSI B18.6.4
BASIC THREAD LENGHT (REF) :
TWICE DIA. + 1/4 (FOR LENGHTS UP TO 6 INCHES).
TWICE DIA. + 1/2 (FOR LENGHTS ABOVE 6 INCHES).

CHG	JOB NO	DATE	BY	REVISION
-	P6472P-01	04/30/96	FHC	INITIAL RELEASE
A	PA2042-71	08/12/96	FHC	REVISED TITLE AND THREAD NOTE.
B	PA2042-76	02/26/97	DAJ	"MAX" WAS "MIN"

ADRIENNE CHILBERG

DRAWN	FHC	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING WASHER HD, INTERNAL TORX, DOG PT	23-12385	
DATE	07/01/96			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



THREAD SIZE	BASIC DIA.	C	D		H		I		M		N		L		FREIGHTLINER PART NUMBER
		MAX	MIN	MAX	MIM	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
10-16	.190	.370	.520	.550	.115	.125	.030	.051	.045	.060	.123	.130	.7825	.8125	23-12385-000

ENGINEERING NOTES:

(1) PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND, SIMILAR TO IFI-125, FIRST 6 FULL THREADS.

MATERIAL: STAINLESS STEEL PER ASTM F593 GROUP 5.

FINISH: PAINT HEAD SLATE GRAY PER FTL STANDARD 49-00091-001.

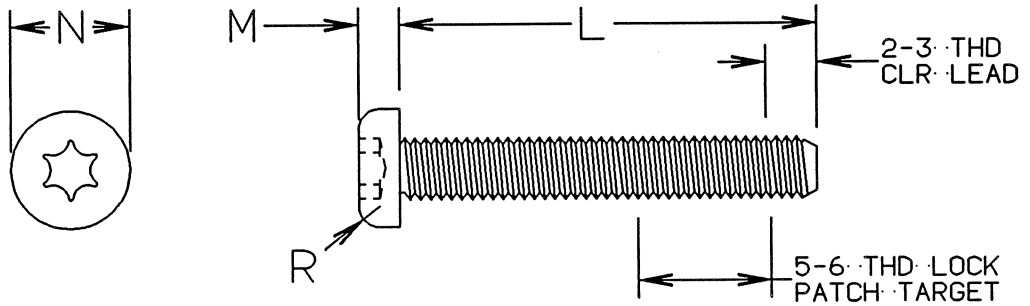
DIMENSIONS: PER ANSI B18.6.4, EXCEPT AS NOTED ABOVE.

TORX RECESS: T25 PER CAMCAR STANDARD TXH-202.

THREAD: TYPE B PER ANSI B18.6.4.

CHG	JOB NO	DATE	BY	REVISION
-	P00394-01	07/01/96	FHC	INITIAL RELEASE

DRAWN	DAJ	TITLE	ITEM NUMBER
APPRV	DAJ	SCREW-MACHINE, PHIT, ALKALINE ZN-FE PLTD, BLACK, LOCKING	23-12387
DATE	07/15/96	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



THREAD SIZE	BASIC DIA	"R" RADIUS	"N" HEAD DIA MAX	"M" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
1/4-20 UNC	.250	.035	.492	.175	23-12387-7LL

FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES
THIRD DIGIT - L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX)
E.G. 23-12387-706 IS A 1/4-20 TORX DRIVE MACHINE SCREW 3/4 INCH LONG

ENGINEERING NOTES:

MATERIAL: SAE 1010-1020 STEEL HAVING 60 KSI MINIMUM TENSILE STRENGTH AND ROCKWELL HARDNESS B SCALE READING BETWEEN 70 AND 100.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

TORX RECESS: 1/4:T-30 PER CAMCAR STANDARD TXH-202.

THREADS: UN2A PER ANSI B1.1.

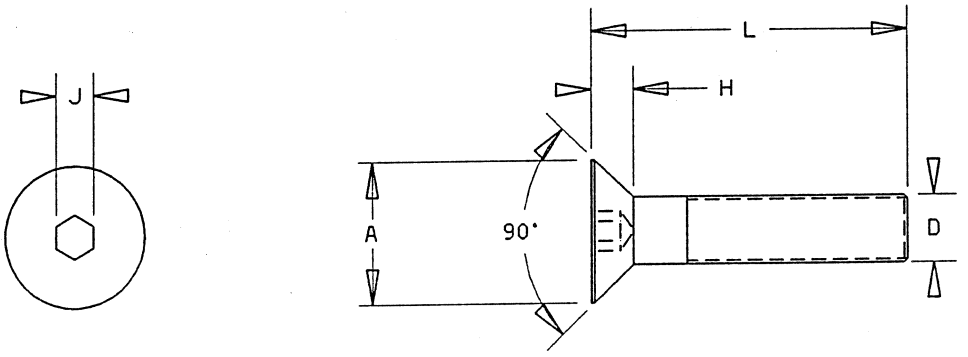
FINISH: REFLECTALLOY ZINC-IRON (ALKALINE) WITH BLACK CHROMATE (AN ALKALINE NON-CYANIDE ZINC-IRON PLATING), BY MCGEAN-ROHCO, CLEVELAND, OHIO 216.441.4900. MUST WITHSTAND MINIMUM OF 600 HOURS SALT SPRAY (ASTM B117) TO 5% RED RUST HEAD COVERAGE. ONLY MCGEAN-ROHCO OR APPLICATOR APPROVED BY MCGEAN-ROHCO MUST BE USED FOR THE PLATING OPERATION.

LOCKING ELEMENT MUST MEET REQUIREMENT OF IFI 125.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P00440-02	07/15/96	DAJ	INITIALLY LOADED

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE SCREW-MACHINE, FLAT HEAD HEX SOCKET, PLAIN, CL 10.9	DRAWING NUMBER 23-12416
APPRV	DAJ		
DATE	01/15/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. A
CATIA ORIGINAL			



NOM. SIZE	D BODY DIA. NOM.	A HEAD DIA. NOM.	H HEAD HT. REF.	J HD. SKT. NOM.	FREIGHTLINER PART NUMBER*
M08 X 1.25	8.00	17.92	4.96	5.0	23-12416-L
A M10 X 1.50	10.00	22.40	6.20	6.0	23-12456-L

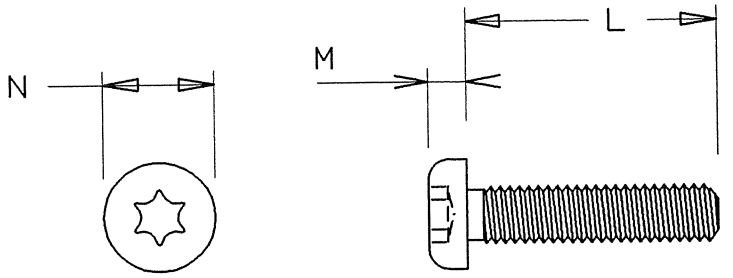
* ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN MILLIMETERS.
EG. 23-12416-025 IS A M8 FLAT HEAD HEX SOCKET SCREW 25MM LONG.

ENGINEERING NOTES:

1. MATERIAL: STEEL, PROPERTY CLASS 10.9 PER ISO 898/1.
2. FINISH: PLAIN
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. REFER TO DIN 7991 OR IFI 535.

CHG	JOB NO	DATE	BY	REVISION
-	PF1059-08	01/15/97	DAJ	INITIAL RELEASE
A	P03618-12	10/24/97	DAJ	CHARTED M10 SPEC UNDER 23-12456.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE PANHEAD, BRIGHT BLACK	23-12429	
DATE	05/12/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



NOMINAL SIZE AND THREAD	BASIC DIA.	TORX RECESS	N		M		FREIGHTLINER PART NUMBER
			MIN	MAX	MIN	MAX	
4-40 UNC	.112	T10	.205	.219	.070	.080	23-12429-L
6-32 UNC	.138	T15	.256	.270	.072	.082	23-12430-L
8-32 UNC	.164	T20	.306	.322	.085	.096	23-12431-L
10-24 UNC	.190	T25	.357	.373	.099	.110	23-12432-L

B

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12429-050 IS A NUMBER 4-40 MACHINE SCREW 1/2 INCH LONG.

ENGINEERING NOTES:

MATERIAL: GRADE 2 PER SAE STANDARD J429

FINISH: BLACK BRIGHT PER F/L SPEC 49-00037-000.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

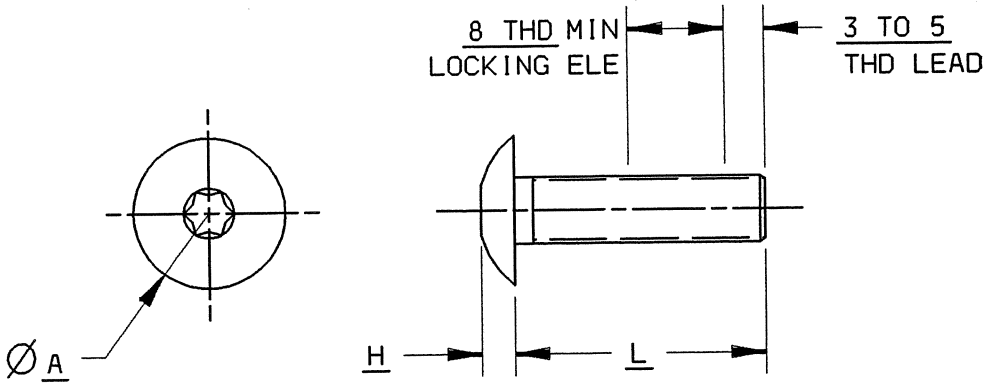
TORX RECESS: PER CAMCAR STD TXH-202.

THREADS: UN2A PER ANSI B1.1.

CHG	JOB NO	DATE	BY	REVISION
-	PB4502-62	05/12/97	DAJ	INITIAL RELEASE
A	PA2042-76	05/14/97	DAJ	TORX RECESS WAS .312 FOR THE 23-12429 PART.
B	PA2042-85	10/26/98	DAJ	.070 AND .080 WAS .058 AND .068.

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE SCREW-TRUSS HEAD INTERNAL TORX, SST, POLISHED	DRAWING NUMBER 23-12433
APPRV	DAJ		
DATE	05/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



THREAD SIZE	TORX RECESS	DIMENSIONS			FREIGHTLINER PART NUMBERS
		A (MAX)	H (MAX)	L	
1/4-20 UNC	T27	.573	.150	1.000	23-12433-100

ENGINEERING NOTES:

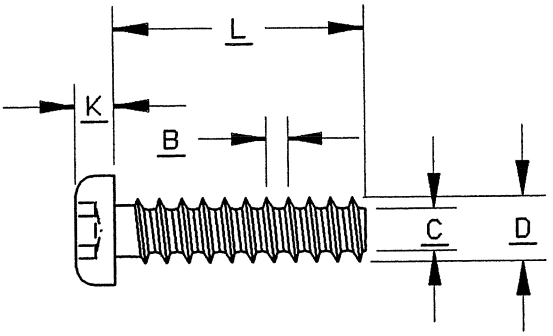
1. MATERIAL: STAINLESS STEEL PER ASTM F593, GROUP 1, CONDITION CW.
2. FINISH: ELECTRO-POLISHED
3. DIMENSIONS ARE FOR REFERENCE ONLY. FOR DETAILS SEE ANSI B18.6.3.
4. TORX RECESS: PER CAMCAR STANDARD TXH-206.
5. LOCKING ELEMENT TO CONSIST OF NYLON PATCH APPLIED TO THREADS IN AREA SPECIFIED. MAINTAIN CLEAR LEAD AS SHOWN. PERFORMANCE TO MEET IFI 124.

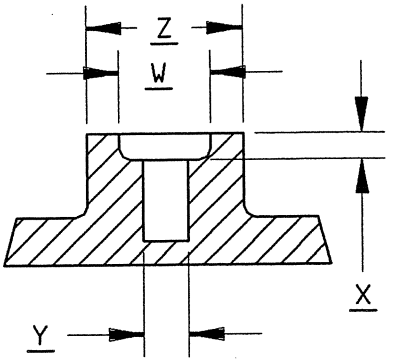
CHG	JOB NO	DATE	BY	REVISION
-	PB4501-K5	05/14/97	DAJ	INITIAL LOAD

ADRIENNE CHILBERG

DRAWING NUMBER

DRAWN	DAJ	TITLE SCREW-TAPPING PHIT, TYPE PT	23-12435
APPRV	DAJ		
DATE	05/12/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			





BOSS GEOMETRY

SIZE	W	X	Y (±.05)	Z
K50	5.0	1.5/ 2.5	3.9	9.0

DIMENSIONS				TORX RECESS	FREIGHTLINER PART NUMBER
B	C	D	K		
2.24	2.68	5.0	3.2	T20	23-12435-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN MILLIMETERS.
E.G.: 23-12435-025 IS A NUMBER M5 TAPPING SCREW 25MM LONG.

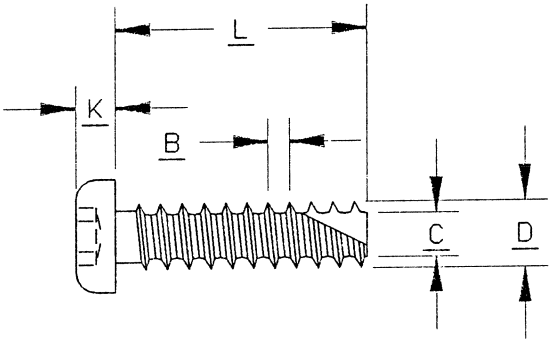
ENGINEERING NOTES:

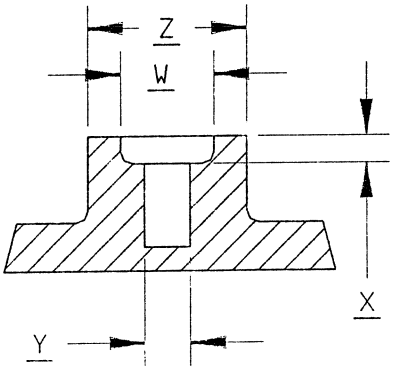
1. MATERIAL: STEEL, CASE HARDENED, HARDNESS 450HV.
2. FINISH: ZINC PLATE PER F/L SPEC 49-00005-403.
3. TORX RECESS: PER CAMCAR STD TXH-202.
4. SUGGESTED VENDOR: ATF INC., OR ENGINEERING APPROVED EQUIVALENT.
5. APPLICATION MATERIAL: NYLON 30% GLASS FILL.
6. HOLE SIZES VARY FOR DIFFERENT MATERIALS/APPLICATIONS, CONSULT MANUFACTURER'S GUIDE.

CHG	JOB NO	DATE	BY	REVISION
-	P02694-01	05/12/97	DAJ	INITIAL RELEASE

ORIENNE CHILBERG

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING PHIT, TYPE DURO-PT	23-12443	
DATE	06/02/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				





BOSS GEOMETRY (RECOMMENDED)

SIZE	W	X	Y	Z
K40	4.3	2.0	3.40/ 3.56	10.5

DIMENSIONS				TORX RECESS	FREIGHTLINER PART NUMBER
B	C	D	K		
1.04	2.93	4.0	3.0	T20	23-12443-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN MILLIMETERS.
E.G.: 23-12443-010 IS A NUMBER M4 TAPPING SCREW 10MM LONG.

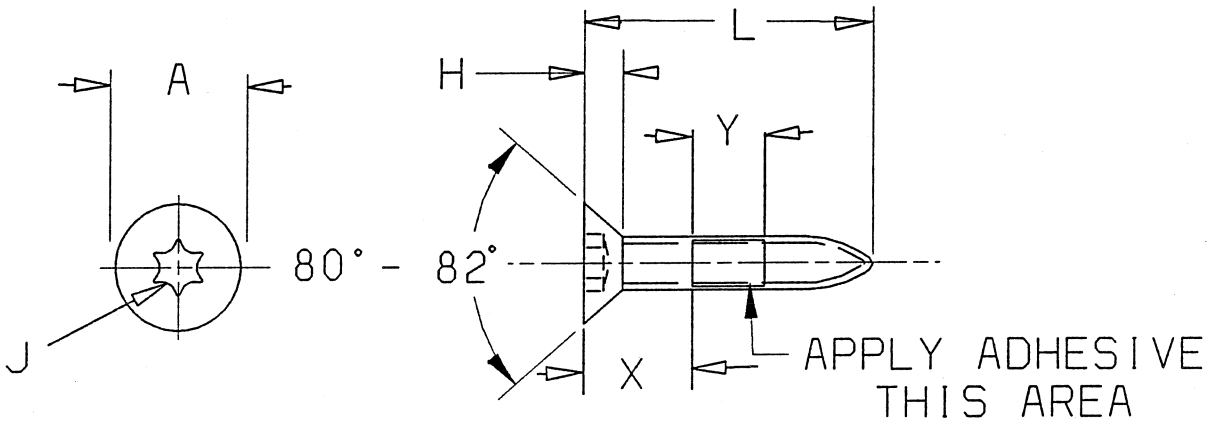
ENGINEERING NOTES:

1. MATERIAL: STEEL, THROUGH HARDENED, HARDNESS Rc 33-39
2. FINISH: ZINC PLATE PER F/L SPEC 49-00005-403.
3. TORX RECESS: PER CAMCAR STD TXH-202.
4. SUGGESTED VENDOR: CAMCAR, OR ENGINEERING APPROVED EQUIVALENT.
5. APPLICATION MATERIAL: THERMOSET PLASTICS

CHG	JOB NO	DATE	BY	REVISION
-	P02823-02	06/02/97	DAJ	INITIAL RELEASE

ADRIENNE CHILBERG

DRAWN	DW	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-TAPPING, FLAT HEAD INTERNAL TORX	23-12464	
DATE	11/13/97			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



NOMINAL SIZE AND THREAD	BASIC DIA.	"A" HEAD DIA.	"H" HEAD HEIGHT	"L" LENGTH	"X"	"Y"	J TORX RECESS	FREIGHTLINER PART NUMBER
6-20	.138	.304	.116	.500	.188	188	T15	23-12464-7XX

COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT DASH NUMBER.
AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - X INDICATES WHOLE INCHES
THIRD DIGIT - INDICATES EIGHT OF AN INCH (7 MAX).

FREIGHTLINER CORPORATION

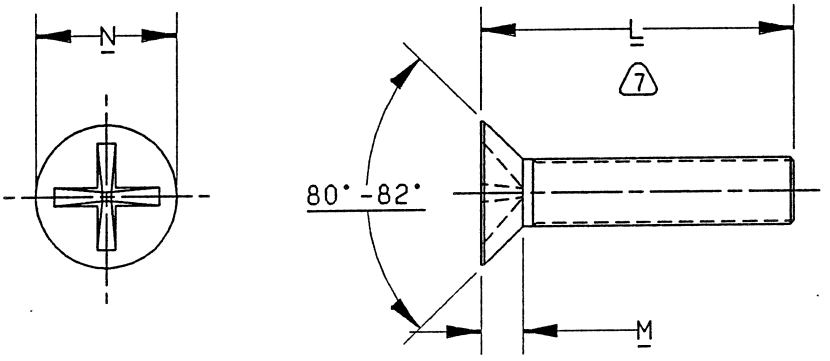
MATERIAL: STAINLESS STEEL PER ASTM F593. GROUP 1, CONDITION CW.
FINISH: BLACK OXIDE PER SPEC 49-00037
DIMENSIONS: PER ANSI B18.6.4. ABOVE DIMENSIONS FOR REFERENCE ONLY.
TORX RECESS: PER CAMCAR STD TXH-202.

THREADS: TYPE AB PER ANSI B18.64
BASIC THREAD LENGTH (REF) :
TWICE DIA. + 1/4 (FOR LENGHTS UP TO 6 INCHES).
TWICE DIA. + 1/2 (FOR LENGHTS ABOVE 6 INCHES).
SCREWS WITH MICROENCAPSULATED ADHESIVE SHALL CONFORM TO IFI 124/125

CHG	JOB NO	DATE	BY	REVISION
-	P04094-01	11/13/97	DAJ	INITIAL RELEASE

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE FLAT HEAD, SST	23-12467	
DATE	12/04/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



CROSS RECESS SHOWN

NOMINAL SIZE & THREADS	NOMINAL DIAMETER	N DIA. MAX SHARP	N DIA. ABS MIN	M REF	L (7)	TORX RECESS	FREIGHTLINER PART NUMBER*
10-32	.190	.385	.340	.116	.31	T-20	23-12467-L

* ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN ONE-HUNDREDTHS OF AN INCH. EQ. 23-12467-125 IS A CROSS RECESS 10-32 SCREW 1 1/4 INCHES LONG.

FOR "TORX" DRIVE SCREW DESIGNATIONS; THREE DIGIT DASH NUMBER (-712) INDICATES AS FOLLOWS: EQ. 23-12467-712 IS A INTERNAL TORX 10-32 SCREW 1 1/4 INCHES LONG.

7-REPRESENT "INTERNAL TORX" DRIVE.

1-(SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH DIMENSION.

2-(THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH.

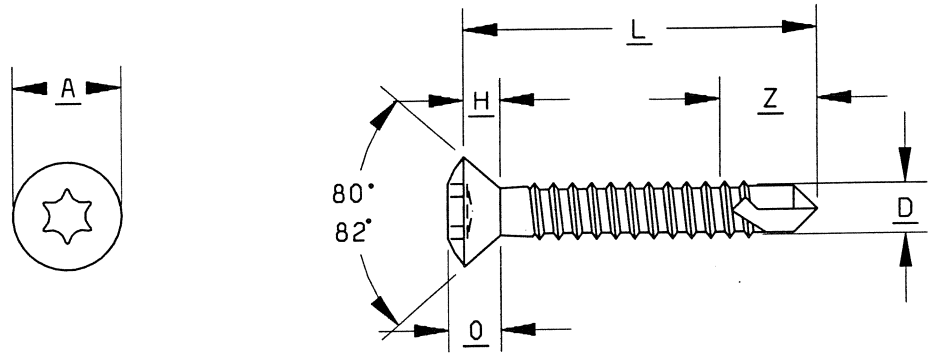
ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL PER ASTM F593. GROUP 1, CONDITION CW.
2. FINISH: PLAIN
3. DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSION FOR REFERENCE ONLY.
4. DRIVE: CROSS RECESS-TYPE 1 PER ANSI B18.6.3.
   TORX RECESS PER CAMCAR STANDARD TXH 202.
6. THREADS: UN2A PER ANSI B1.1.

(7) THIS LENGTH AND SHORTER UNDERCUT.

CHG	JOB NO	DATE	BY	REVISION
-	P02211-20	12/04/97	DAJ	INITIAL RELEASE

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, OVAL HEAD SELF DRLG BSD TYPE 3, BLACK	23-12496	
DATE	02/20/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A
CATIA ORIGINAL				



NOMINAL SIZE AND THREAD	BASIC DIA.	TORX RECESS	A		D		H	O		Z	FREIGHTLINER PART NUMBER
			MIN	MAX	MIN	MAX	NOM	MIN	MAX	NOM	
10-16	.190	T25	.340	.385	.183	.189	.116	.148	.176	.258	23-12496-7LL

A FOR TORX DRIVE SCREWS, COMPLETE PART NUMBER WITH A 3 DIGIT SIGNIFICANT
A DASH NUMBER AS FOLLOWS: FIRST DIGIT- 7 INDICATES TORX DRIVE SYSTEM.
SECOND DIGIT- L INDICATES LENGTH IN WHOLE INCHES.
THIRD DIGIT- L INDICATES LENGTH IN EIGHTHS OF AN INCH (7 MAX).

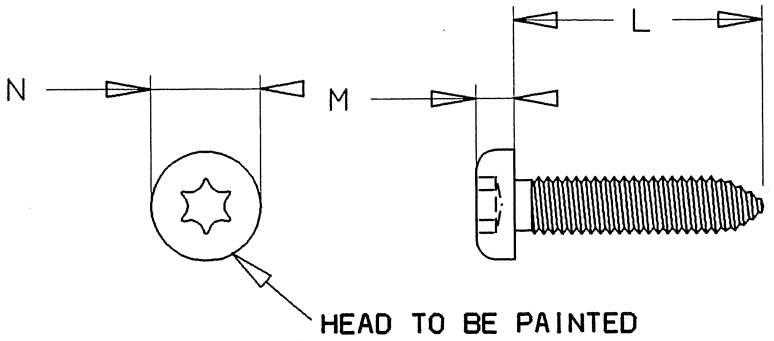
E.G. 23-12496-710 IS A 10-16 INTERNAL TORX SCREW 1 IN. LONG.

ENGINEERING NOTES:

1. MATERIAL: CASE-HARDENED CARBON STEEL, PER SAE J78
2. FINISH: BLACK PHOSPHATE/ORGANIC OIL PER GM 6174
3. DIMENSIONS: ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STD TXH-203.
5. THREADS/THREADS: TYPE BSD, STYLE 3, PER SAE J78
6. EFFECTIVE GRIP: LENGTH 'L' LESS DRILL POINT 'Z'

CHG	JOB NO	DATE	BY	REVISION
-	P04104-02	02/20/99	DAJ	INITIAL RELEASE
A	PA2042-98	11/18/99	LFB	23-12496-7LL WAS 23-12496-L. REVISED NOTE FOR TORX.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE ZN, SLATE GREY HEAD, CA POINT	23-12510	
DATE	04/21/98			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A



NOMINAL SIZE AND THREAD	BASIC DIA.	TORX RECESS	N		M		FREIGHTLINER PART NUMBER
			MIN	MAX	MIN	MAX	
5/16-18 UNC	.312	T40	.594	.615	.203	.218	23-12510-L

THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12510-075 IS A 5/16-18 MACHINE SCREW 3/4 INCH LONG.

FREIGHTLINER CORPORATION

MATERIAL: GRADE 5 PER SAE STANDARD J429

A FINISH: ZINC & WAX PER F/L SPEC 49-00005-403.
PAINT HEAD SLATE GREY PER F/L 49-00091-001.

DIMENSIONS: PER ANSI B18.6.3. ABOVE DIMENSIONS FOR REFERENCE ONLY.

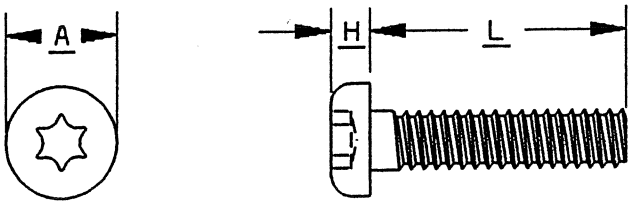
TORX RECESS: PER CAMCAR STD TXH-202.

POINT: CA POINT

THREADS: UNC CLASS 2A

CHG	JOB NO	DATE	BY	REVISION
-	P2D270-60	04/21/98	DAJ	INITIAL RELEASE
A	PA2042-85	07/30/98	DAJ	FINISH WAS PHOS & OIL.

DRAWN	DAJ	TITLE	DRAWING NUMBER
APPRV	DAJ	SCREW-THREADFORMING PLASTITE, SST	23-12544
DATE	09/03/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



INTERNAL TORX SHOWN

THREAD CROSS-SECTION



PLASTITE®

THREAD SIZE	A		H		TORX RECESS	HOLE DIA		FREIGHTLINER PART NUMBER
	MAX	MIN	MAX	MIN		MAX	MIN	
10-14	.373	.357	.133	.122	T25	.180	.170	23-12544-7LL

THREE DIGIT DASH NUMBER INDICATES LENGTH IN HUNDREDTHS OF AN INCH.
E.G.: 23-12544-075 IS A 10-14 SST TWIN LEAD CROSS-RECESS PAN HEAD SCREW 3/4 INCH LONG.

FOR 'TORX" DRIVE SCREW DESIGNATION: THREE DIGIT DASH NUMBER (-706) INDICATES AS FOLLOWS: EXAMPLE 23-12544-706 IS AN SST INTERNAL TORX TWIN LEAD PAN HEAD SCREW 3/4 INCH LONG.

7 - REPRESENT "INTERNAL TORX" DRIVE
0 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
6 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHT OF AN INCH (7 MAX)

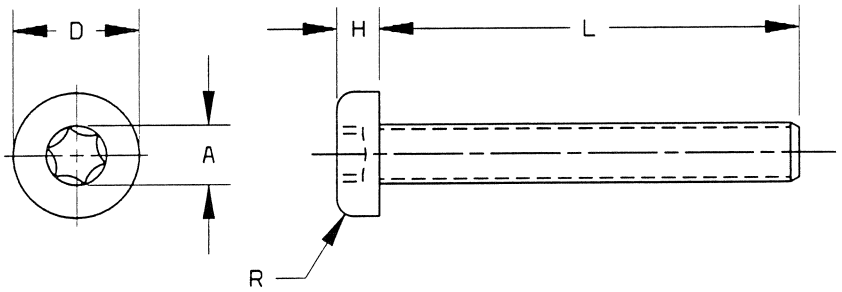
THREAD SIZE	HOLE SIZES FOR VARIOUS % OF THREAD ENGAGEMENT				
	100	90	80	70	60
10-14	.170	.174	.177	.181	.185

ENGINEERING NOTES:

1. MATERIAL: 300 SERIES STAINLESS STEEL
2. FINISH: PLAIN
3. DIMENSIONS: FOR REFERENCE ONLY. SEE ANSI B.18.6.4 FOR DETAILS
4. TORX RECESS: PER CAMCAR STD TXH-202.
5. MANUFACTURER: CAMCAR TEXTRON OR ENGINEERING APPROVED QUIVALENT.
6. THREAD ENGAGEMENT SHOULD BE IN THE 60-90% RANGE. PILOT HOLE DIAMETER SHOULD BE ADJUSTED BASED ON MATERIAL AND THICKNESS. MINIMUM THREAD DEPTH ENGAGEMENT TO BE TWO SCREW DIAMETERS.
7. THIS FASTENER IS INTENDED FOR PLASTICS APPLICATIONS.

CHG	JOB NO	DATE	BY	REVISION
-	P03783-08	09/03/98	DAJ	INITIAL LOAD

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD METRIC, ZN PLTD	23-12635	
DATE	06/22/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



THREAD SIZE	TORX RECESS	"A" BASIC DIA.	"R" RADIUS	"D" HEAD DIA.	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
M3.5 X 0.60	T-15	3.35	4.8	7.0	2.6	23-12635-7LL
M4.0 X 0.70	T-20	3.94	5.2	8.0	3.1	23-12636-7LL
M5.0 X 0.80	T-25	4.52	6.3	9.5	3.7	23-12637-7LL
M6.0 X 1.00	T-30	5.61	8.0	12.0	4.6	23-12638-7LL
M8.0 X 1.25	T-40	6.76	11.8	16.0	6.0	23-12639-7LL
M10.0 X 1.50	T-50	8.94	14.1	20.0	7.5	23-12640-7LL

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

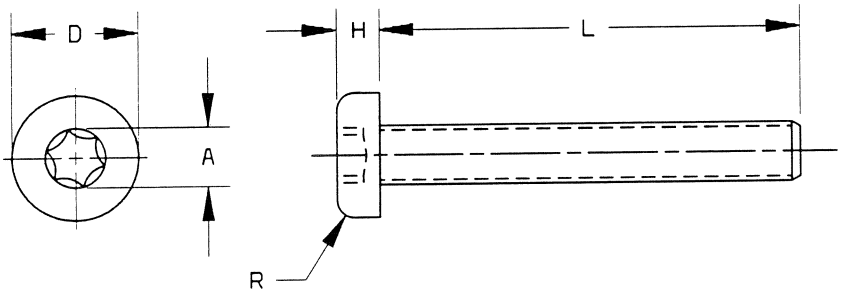
E.G. 23-12638-715 IS A M6-1.00 TORX DRIVE MACHINE SCREW 15MM LONG

ENGINEERING NOTES:

1. MATERIAL: STEEL, 5MM DIAMETER AND BELOW TO BE PROPERTY CLASS 4.8 OR 8.8 AT MANUFACTURERS DISCRETION. PARTS 6MM AND LARGER TO BE PROPERTY CLASS 8.8.
2. FINISH: ZINC PLATE, TYPE III, CLASS 3, PER F/L SPEC 49-00005-403 & WAX.
3. DIMENSIONS: PER ANSI B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STANDARD TXH-202.

CHG	JOB NO	DATE	BY	REVISION
-	P08912-02	06/22/99	CGD	INITIAL RELEASE

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD METRIC, SST	23-12641	
DATE	06/22/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



THREAD SIZE	TORX RECESS	"A" BASIC DIA.	"R" RADIUS	"D" HEAD DIA.	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
M3.5 X 0.60	T-15	3.35	4.8	7.0	2.6	23-12641-7LL
M4.0 X 0.70	T-20	3.94	5.2	8.0	3.1	23-12642-7LL
M5.0 X 0.80	T-25	4.52	6.3	9.5	3.7	23-12643-7LL
M6.0 X 1.00	T-30	5.61	8.0	12.0	4.6	23-12644-7LL
M8.0 X 1.25	T-40	6.76	11.8	16.0	6.0	23-12645-7LL
M10.0 X 1.50	T-50	8.94	14.1	20.0	7.5	23-12646-7LL

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

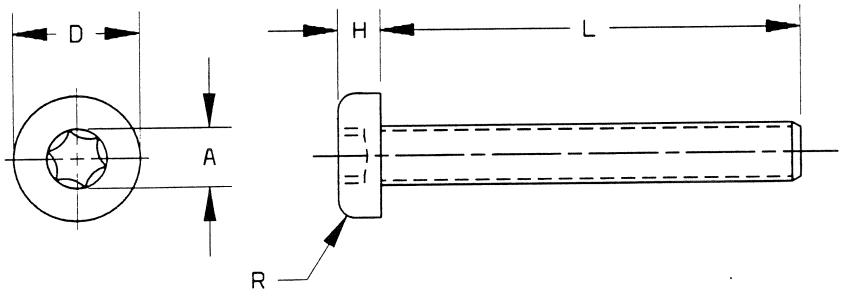
E.G. 23-12644-715 IS A M6-1.00 TORX DRIVE MACHINE SCREW 15MM LONG

ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL TYPE 302, 309 OR 18.8.
2. FINISH: PLAIN, PASSIVATE.
3. DIMENSIONS: PER ANSI B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STANDARD TXH-202.

CHG	JOB NO	DATE	BY	REVISION
-	P08912-02	06/22/99	CGD	INITIAL RELEASE

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD METRIC, ZN, IRON BLACK	23-12647	
DATE	06/22/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



THREAD SIZE	TORX RECESS	"A" BASIC DIA.	"R" RADIUS	"D" HEAD DIA.	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
M3.5 X 0.60	T-15	3.35	4.8	7.0	2.6	23-12647-7LL
M4.0 X 0.70	T-20	3.94	5.2	8.0	3.1	23-12648-7LL
M5.0 X 0.80	T-25	4.52	6.3	9.5	3.7	23-12649-7LL
M6.0 X 1.00	T-30	5.61	8.0	12.0	4.6	23-12650-7LL
M8.0 X 1.25	T-40	6.76	11.8	16.0	6.0	23-12651-7LL
M10.0 X 1.50	T-50	8.94	14.1	20.0	7.5	23-12652-7LL

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

E.G. 23-12650-715 IS A M6-1.00 TORX DRIVE MACHINE SCREW 15MM LONG

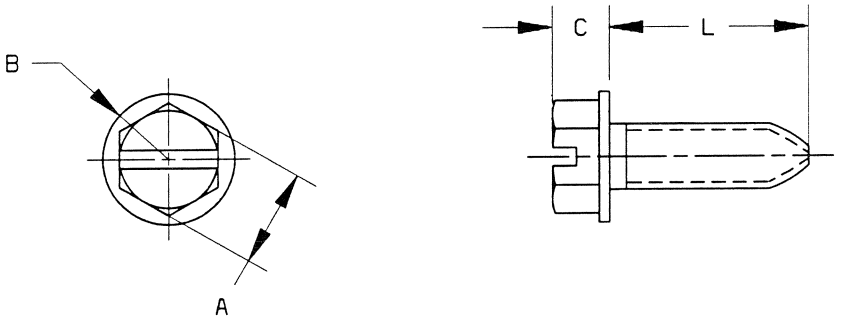
ENGINEERING NOTES:

1. MATERIAL: STEEL, 5MM DIAMETER AND BELOW TO BE PROPERTY CLASS 4.8 OR 8.8 AT MANUFACTURERS DISCRETION. PARTS 6MM AND LARGER TO BE PROPERTY CLASS 8.8.
2. FINISH: ZINC IRON BLACK (ZN FE BLK) PER 8451.93 OR EQUIVALENT
3. DIMENSIONS: PER ANSI B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STANDARD TXH-202.

CHG	JOB NO	DATE	BY	REVISION
-	P08912-02	06/22/99	CGD	INITIAL RELEASE

23-12665 , - , SCREW-HEX, TPG,

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-HEX, TPG, WASHER HD, ZN	23-12665	
DATE	06/29/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



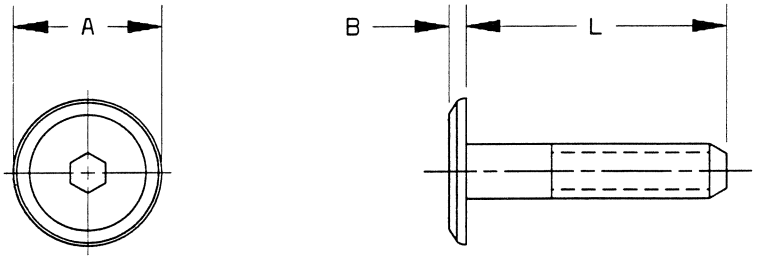
THREAD SIZE	DIMENSIONS			FREIGHTLINER PART NUMBER
	A	B	C	
1/4-14	.375	.500	.215	23-12665-L

ENGINEERING NOTES:

1. MATERIAL: CARBON STEEL
2. FINISH: ZINC, CLEAR PER F/L SPEC 49-00005-403
3. POINT: CA
4. DIMENSIONS SHOWN ABOVE ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P04980-02	06/29/99	CGD	INITIAL RELEASE

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE JOINT CONNECTOR, BRIGHT BLACK	23-12681	
DATE	09/03/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				



NOMINAL SIZE AND THREAD	BASIC DIA.	A	B		FREIGHTLINER PART NUMBER
			MIN	MAX	
1/4-20	1/4-20	17 MM ±.004	.078	.080	23-12681-L

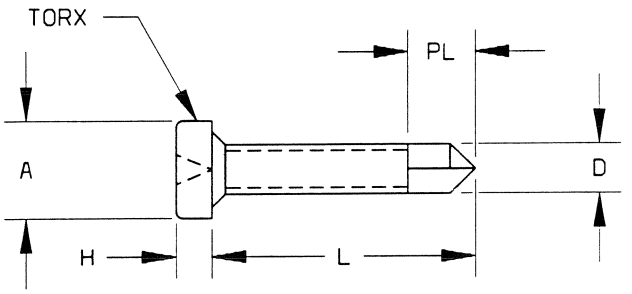
THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH.
E.G. 23-12681-050 IS A 1/4-20 MACHINE SCREW 1/2 INCH LONG.

ENGINEERING NOTES:

1. MATERIAL: GRADE 2 PER SAE STANDARD J429.
2. FINISH: BLACK BRIGHT PER F/L SPEC 49-00037-000.
3. UN2A PER ANSI B1.1.

CHG	JOB NO	DATE	BY	REVISION
-	P08535-03	09/03/99	CGD	INITIAL RELEASE

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-SELF-DRILLING, PAN HEAD BSD TYPE 3, CROSS RECESS OR TORX DRIVE	23-12696	
DATE	08/30/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



NOM. SIZE &THREADS PER INCH	(REF) D THD DIA	(REF) PL POINT LGHT	A DIA.	H	FREIGHTLINER PART NUMBER
10-16	.190	.258	.373 .357	.133 .122	23-12696-L

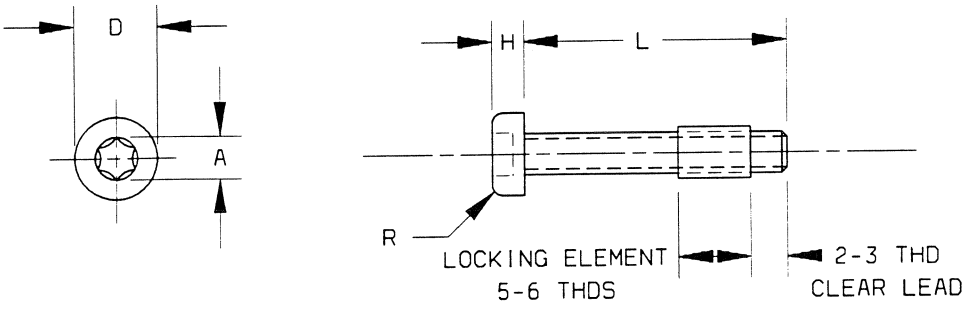
COMPLETE THE PART NUMBER FOR INTERNAL TORX SCREW BY ADDING A 3 DIGIT NUMBER TO INDICATE LENGTH IN HUNDREDTHS OF AN INCH.
EXAMPLE:23-10891-100 IS A 8-32 SCREW, 1.00 INCH LONG.

ENGINEERING NOTES:

1. MATERIAL: CARBON STEEL PER SAE SPECIFICATION J78
2. FINISH: PHOS & OIL PER FL 49-00006-041.
3. TORX RECESS: 8/32 T20, 10-24 T25, 12-24 T27 PER CAMCAR STANDARD TXH 202.

CHG	JOB NO	DATE	BY	REVISION
-	P10209-01	08/30/99	CGD	INITIAL RELEASE

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD METRIC, SST	23-12712	
DATE	11/12/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM				



THREAD SIZE	TORX RECESS	"A" BASIC DIA.	"R" RADIUS	"D" HEAD DIA.	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
M3.5 X 0.60	T-15	3.35	4.8	7.0	2.6	23-12712-7LL
M4.0 X 0.70	T-20	3.94	5.2	8.0	3.1	23-12713-7LL
M5.0 X 0.80	T-25	4.52	6.3	9.5	3.7	23-12714-7LL
M6.0 X 1.00	T-30	5.61	8.0	12.0	4.6	23-12715-7LL
M8.0 X 1.25	T-40	6.76	11.8	16.0	6.0	23-12716-7LL
M10.0 X 1.50	T-50	8.94	14.1	20.0	7.5	23-12717-7LL

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

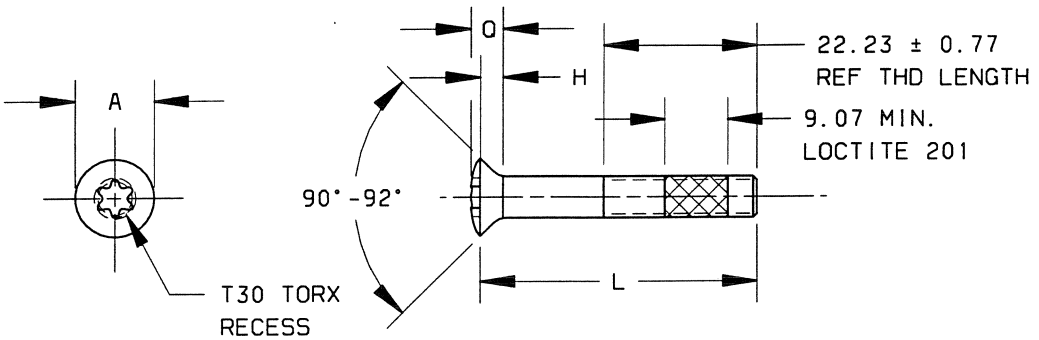
E.G. 23-12644-715 IS A M6-1.00 TORX DRIVE MACHINE SCREW 15MM LONG

ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL TYPE 302, 309 OR 18.8.
2. FINISH: PLAIN, PASSIVATE.
3. DIMENSIONS: PER ANSI B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STANDARD TXH-202.
5. LOCKING ELEMENT: PRE-APPLIED CHEMICAL THREAD LOCKING COMPOUND SIMILAR TO IFI-125, FIRST 6 FULL THREADS.

CHG	JOB NO	DATE	BY	REVISION
-	P10252-11	11/12/99	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE SCREW-OVAL HEAD PARTIAL THREAD, METRIC	DRAWING NUMBER 23-12730	
APPRV	DAJ			
DATE	11/24/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. A
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM				



NOMINAL SIZE AND THREAD	A		H	Q	FREIGHTLINER PART NUMBER
	MAX	MIN	REF	MAX	
M6 X 1.00	11.3	10.9	3.3	4.7	23-12730-7LL

A

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

E.G. 23-12730-740 IS AN M6-1.00 TORX DRIVE MACHINE SCREW 40MM LONG

ENGINEERING NOTES:

A 1. MATERIAL: CLASS 10.9, THRU HARDEN-Rc 33-39.

A 2. FINISH: ZINC IRON BLACK (ZN FE BLK), PER 8451.93 OR EQUIVALENT.

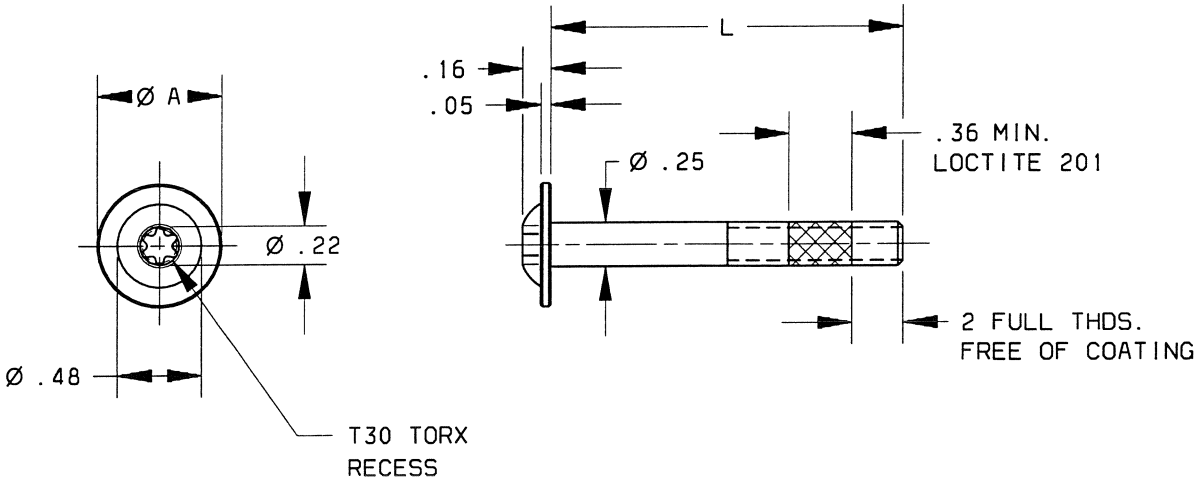
3. THREAD FORM: METRIC CLASS 6G.

4. SCREWS TO BE TREATED FOR HYDROGEN EMBRITTLEMENT.

5. SUGGESTED SUPPLIER: CAMCAR.

CHG	JOB NO	DATE	BY	REVISION
-	P07995-01	11/24/99	LFB	INITIAL RELEASE
A	P07995-09	02/07/00	LFB	REVISED DRAWING. OVAL HEAD WAS WASHER HEAD.

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-WASHER HEAD	23-12737	
DATE	11/26/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



THREAD SIZE	A DIM	FREIGHTLINER PART NUMBER*
1/4 - 20	0.70	23-12737-7LL

* COMPLETE PART NUMBER BY ADDING A 3-DIGIT DASH NUMBER.

FOR "TORX" DRIVE SCREW DESIGNATIONS: THREE DIGIT DASH NUMBER (-715) INDICATES AS FOLLOWS: 23-12737-715 IS AN INTERNAL TORX 10-16 TAPPING SCREW 1 5/8 INCH LONG.

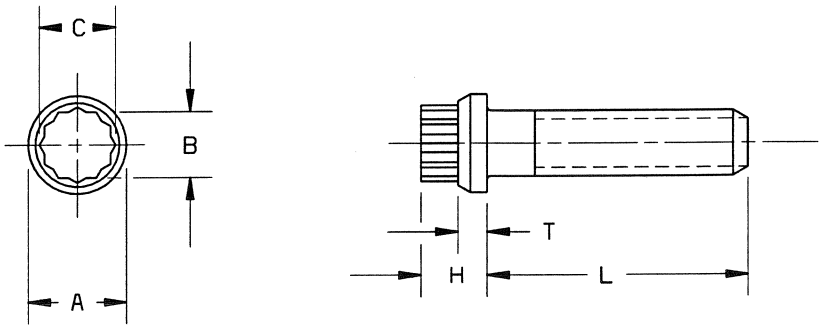
7 - REPRESENTS "INTERNAL TORX" DRIVE
1 - (SECOND DIGIT) REPRESENTS WHOLE INCH LENGTH
2 - (THIRD DIGIT) REPRESENTS LENGTH IN EIGHTS OF AN INCH (7 MAX)

ENGINEERING NOTES:

1. MATERIAL: LOW CARBON STEEL, THRU HARDEN-Rc 25-38.
2. FINISH: ZINC PLATE, FOLLOWED BY YELLOW CHROMATE COATING PER F/L SPEC 49-00005-202 FOR 96 HOUR SALT SPRAY PROTECTION.
3. IDENTIFY COMPONENT PER SPEC 49-00051.
4. THREAD FORM: UNC CLASS 2A.
5. SCREWS TO BE TREATED FOR HYDROGEN EMBRITTLEMENT.

CHG	JOB NO	DATE	BY	REVISION
-	P11262-01	11/26/99	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-SOCKET-HEAD 12 POINT, ZN PLD	23-12751	
DATE	01/21/00			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



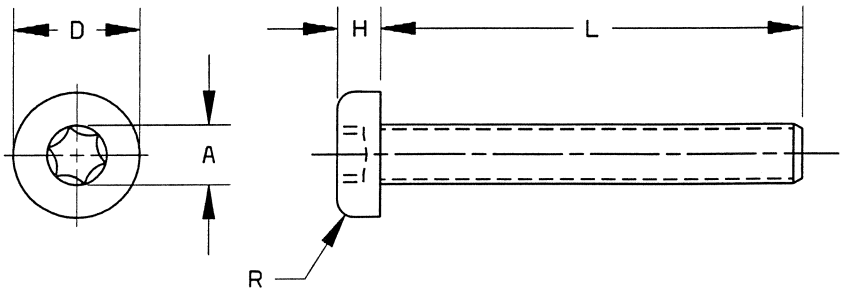
NOMINAL BODY SIZE	A-FLANGE DIA MAX/MIN	B-WIDTH ACROSS FLATS MAX/MIN	C-MIN WIDTH ACROSS CORNERS	H HEAD HEIGHT	T COLLAR HEIGHT	FREIGHTLINER PART NUMBER
3/8-16 UNC	.562/.550	.377/.368	.402	.375	.165	23-12751-L

ENGINEERING NOTES:

1. MATERIAL: GRADE 8 BOLT MATERIAL PER SAE STANDARD J429.
2. FINISH: ZINC PLATED PER FREIGHTLINER SPEC 49-00005-403.
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P11729-01	01/21/00	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-MACHINE, PAN HEAD METRIC, ZN, IRON BLACK	23-12758	
DATE	02/02/00			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



THREAD SIZE	TORX RECESS	"A" BASIC DIA.	"R" RADIUS	"D" HEAD DIA.	"H" HEAD HEIGHT MAX	FREIGHTLINER PART NUMBER
M5.0 X 0.80	T-25	4.52	6.3	9.5	3.7	23-12758-7LL
M6.0 X 1.00	T-30	5.61	8.0	12.0	4.6	23-12759-7LL
M8.0 X 1.25	T-40	6.76	11.8	16.0	6.0	23-12760-7LL
M10.0 X 1.50	T-50	8.94	14.1	20.0	7.5	23-12761-7LL

FOR "TORX" DRIVE SCREWS COMPLETE PART NUMBER WITH A THREE DIGIT SIGNIFICANT DASH NUMBER AS FOLLOWS: FIRST DIGIT - 7 INDICATES TORX DRIVE SYSTEM
SECOND DIGIT - L INDICATES LENGTH IN CM
THIRD DIGIT - L INDICATES LENGTH IN MM

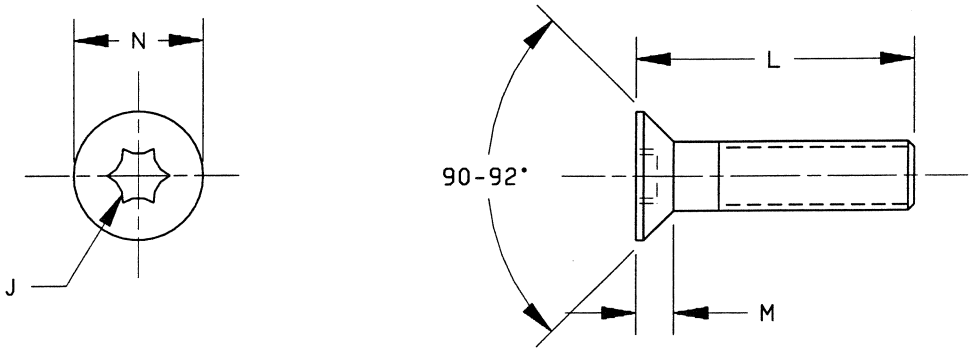
E.G. 23-12759-715 IS A M6-1.00 TORX DRIVE MACHINE SCREW 15MM LONG

ENGINEERING NOTES:

1. MATERIAL: STEEL, CLASS 10.9, ISO 898/1.
2. FINISH: ZINC IRON BLACK (ZN FE BLK) PER 8451.93 OR EQUIVALENT
3. DIMENSIONS: PER ASME B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. TORX RECESS: PER CAMCAR STANDARD TXH-202.

CHG	JOB NO	DATE	BY	REVISION
-	P09310-03	02/02/00	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE SCREW-MACHINE FLAT HEAD, SST	DRAWING NUMBER 23-12762
APPRV	DAJ		
DATE	02/05/00	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM			



NOMINAL SIZE AND THREADS	NOMINAL DIAMETER	"N" DIA. MAX	"N" DIA. MIN	"M" REF	"J" TORX RECESS	FREIGHTLINER PART NUMBER*
M5 X 0.8	5.0	9.3	8.9	2.7	T25	23-12762-L

* ADD A THREE DIGIT DASH NUMBER TO EXPRESS LENGTH IN MM.
EG. 23-12762-010 IS A CROSS RECESS M5 SCREW 10 MM LONG.

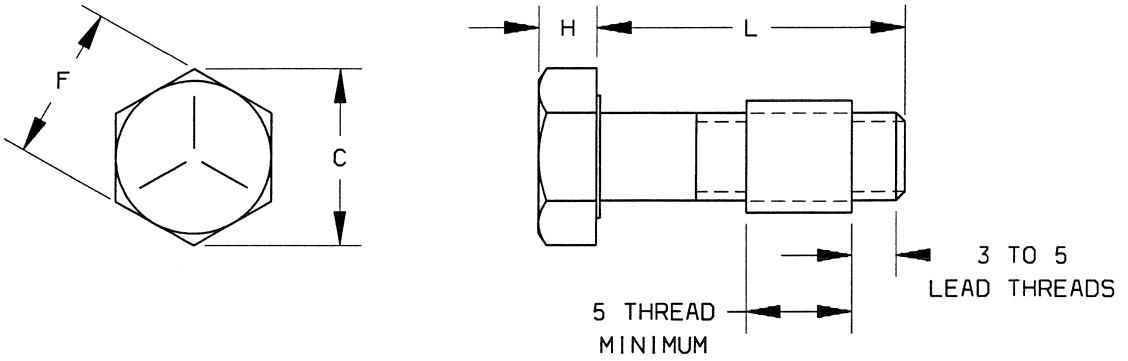
FOR "TORX" DRIVE SCREW DESIGNATIONS: THREE DIGIT DASH NUMBER (-710) INDICATES AS FOLLOWS: EG 23-12762-710 IS AN INTERNAL TORX SCREW 10 MM LONG.
7- REPRESENTS "INTERNAL TORX" DRIVE.
1- (SECOND DIGIT) INDICATES LENGTH IN CM.
0- (THIRD DIGIT) INDICATES LENGTH IN MM.

ENGINEERING NOTES:

1. MATERIAL: STAINLESS STEEL PER ASTM F738M. A1-70, A2-70 CONDITION CW.
2. FINISH: PLAIN.
3. DIMENSIONS: PER ASME B18.6.7M. ABOVE DIMENSIONS FOR REFERENCE ONLY.
4. DRIVE: CROSS RECESS- TYPE 1 PER ASME B18.6.7M.
TORX RECESS- PER CAMCAR STANDARD TMH-603.

CHG	JOB NO	DATE	BY	REVISION
-	P10252-01	02/05/00	LFB	INITIAL RELEASE

DRAWN	LFB	TITLE	DRAWING NUMBER	
APPRV	DAJ	SCREW-CAP, HEX GR. 5, ZINC, LOCKING	23-12775	
DATE	03/14/00			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -



NOMINAL SIZE THREADS PER INCH AND SERIES DESIGNATION	DIMENSIONS			FREIGHTLINER PART NUMBER *
	F (BASIC)	C (MAX)	H (MAX)	
1/2 -20-UNF	3/4	.866	.323	23-12775-L

* THREE DIGIT DASH NUMBER INDICATES LENGTHS IN HUNDREDTHS OF AN INCH. E.G. 23-12775-100 IS A 1/2-20 CAPSCREW 1 INCH LONG.

ENGINEERING NOTES:

1. MATERIAL: GRADE 5 BOLT MATERIAL PER SAE STANDARD J429.
2. ALL DIMENSIONS ARE FOR REFERENCE ONLY. FOR DETAILS SEE ANSI B18.2.1
3. FINISH: ZINC AND CLEAR PER FREIGHTLINER SPEC. 49-00005-403
4. BASIC THREAD LENGTH (REF):
   TWICE DIA. + 1/4 (FOR LENGTHS UP TO 6 INCHES).
   TWICE DIA. + 1/2 (FOR LENGTHS ABOVE 6 INCHES).
5. THREAD FORM: UNC 2A
6. LOCKING ELEMENT MUST CONFORM TO FFI 124.

CHG	JOB NO	DATE	BY	REVISION
-	P11258-01	03/10/00	LFB	INITIAL RELEASE