DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	TUBING-NYLON MONO CONSTRUCTION	48-00100	
DATE	08/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 3	CHG. LTR. T
CATIA ORIGINAL				

SCOPE: THIS SPECIFICATION SETS MINIMUM REQUIREMENTS FOR MONO TUBE, NONREINFORCED NYLON TUBING AS USED IN PORTIONS OF AUTOMOTIVE AIR BRAKE SYSTEMS OPERATING WITHIN A TEMPERATURE RANGE OF -40°F (-40°C) TO 200°F (93.3°C), WORKING PRESSURES BELOW 150 P.S.I.G., AND IN LOCATIONS FREE OF BATTERY ACID.

APPLICATION: THIS MATERIAL IS FOR USE IN PORTIONS OF AIR BRAKE SYSTEMS OTHER THAN COMPRESSOR DISCHARGE, FRAME-TO-AXLE OR TRACTOR-TO-TRAILER CONNECTIONS, AND WITHIN LIMITS OF TEMPERATURE, PRESSURE AS CITED ABOVE.

TUBE		MANUFACTURER'S NUMBER			FREIGHTLINER PART NUMBER
TUBE (NOM)	COLOR	SMC	PH	WH	
1/8	BLACK	4246-02207	PFT-2A-BLK	NT10002-BK	48-00100-810
	RED		PFT-2A-RED		48-00100-812
	YELLOW		PFT-2A-YEL		48-00100-814
	GREEN		PFT-2A-GRN		48-00100-815
	BLUE		PFT-2A-BLU		48-00100-816
	WHITE		PFT-2A-WHT		48-00100-819
	NAT. MILKY	4246-02277	PFT-2A-WHT		48-00100-829
5/32	BLACK		PFT-2.5A-BLK		PH PFT25ABLK
	GREEN		PFT-2.5A-GRN		PH PFT25AGRN
	RED		PFT-2.5A-RED		PH PFT25ARED
	SILVER		PFT-2.5A-SIL		PH PFT25ASIL
1/4	BLACK	4246-0410	PFT-4A-BLK	NT10004-BK	48-00100-010
	BROWN	4246-041C	PFT-4A-BRN		48-00100-011
	RED	4246-0412	PFT-4A-RED	NT10004-RD	48-00100-012
	ORANGE	4246-0413	PFT-4A-ORG	NT10004-OR	48-00100-013
	YELLOW	4246-0414	PFT-4A-YEL	NT10004-YW	48-00100-014
	GREEN	4246-0415	PFT-4A-GRN	NT10004-GR	48-00100-015
	BLUE	4246-0416	PFT-4A-BLU	NT10004-BU	48-00100-016
	GRAY	4246-0419	PFT-4A-SIL	NT10004-GY	48-00100-018
	WHITE	4246-0411	PFT-4A-WHT	NT10004-WH	48-00100-019
	TAN	4246-041E	PFT-4A-BRN	NT10004-TN	48-00100-021

CHG	JOB NO	DATE	BY	REVISION
-	P01213-01	12/10/96	FHC	INITIAL RELEASE
S	PA2042-78	08/14/97	DAJ	REVISED PH PART NUMBERS, -031 WAS WHT/BLK.
T	PA2042-97	10/13/99	LFB	ADDED 5/32 TUBING.

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	TUBING-NYLON MONO CONSTRUCTION	48-00100	
DATE	08/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2	CHG. LTR. S
CATIA ORIGINAL				

ENGINEERING NOTES:

1. CONSTRUCTION: SAE STANDARD J844 TYPE A & FMVSS 571.106 TUBING SHALL CONSIST OF A SINGLE WALL EXTRUSION OF 100% VIRGIN NYLON (POLYAMIDE) CONTAINING ADDITIVES WHICH PROVIDE HEAT AND LIGHT RESISTANCE. COLOR SHALL BE AS INDIDCATED.

2. DIMENSION 7 TOLERANCES: THE TUBING SHALL CONFORM TO DIMENSIONS AS SHOWN IN TABLE 1 UNDER ALL CONDITIONS OF MOISTURE.

TABLE 1

SAE J844 TYPE TUBE	NOM. TUBE O.D.	OUTSIDE DIAMETER		INSIDE DIAMETER BASIC	WALL THICKNESS	
		MAX.	MIN.		BASIC	TOLERANCE
A	1/4	.253	.247	.170	.040	±.003
A	1/8	.128	.122	.079	.023	±.003

3. MECHANICAL PROPERTIES: THE TUBING SHALL CONFORM TO MECHANICAL PROPERTIES SHOWN IN TABLE 2.

TABLE 2

SAE J844 TYPE TUBE	NOM. TUBE O.D.	MINIMUM BURST PRESSURE AT 75°F (PSI)	MINIMUM BEND RADIUS INCHES	MAXIMUM STIFFNESS LB.-PULL
A	1/4	1200	1.0	2
A	1/8	1000	.37	1

4. THIS TUBING SHALL BE TESTED BY METHODS OUTLINED IN SAE J844 FOR DIMENSIONAL REQUIREMENTS AND MECHANICAL PERFORMANCE.

5. MUST MEET APPLICABLE CURRENT REQUIREMENTS OF FMVSS 571.106.

CHG	JOB NO	DATE	BY	REVISION
-	P01213-01	12/10/96	FHC	INITIAL RELEASE
S	PA2042-78	08/14/97	DAJ	REVISED PH PART NUMBERS, -031 WAS WHT/BLK, SEE SHT 2.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	TUBING-NYLON MONO CONSTRUCTION	48-00100	
DATE	08/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 3	CHG. LTR. T
CATIA ORIGINAL				

TUBE		MANUFACTURER'S NUMBER			FREIGHTLINER PART NUMBER
TUBE (NOM)	COLOR	SMO	PH	WH	
1/4	PURPLE	4246-0410	PFT-4A-PUR		48-00100-027
	NAT. MILKY	4246-0417	PFT-4A-WHT		48-00100-029
	SILVER	4246-0410F	PFT-4A-SIL		48-00100-030
	DARK GREEN		PFT-4A-DKGRN		48-00100-031

ENGINEERING NOTES:

1. CONSTRUCTION: SAE STANDARD J844 TYPE A & FMVSS 571.106 TUBING SHALL CONSIST OF A SINGLE WALL EXTRUSION OF 100% VIRGIN NYLON (POLYAMIDE) CONTAINING ADDITIVES WHICH PROVIDE HEAT AND LIGHT RESISTANCE. COLOR SHALL BE AS INDIDCATED.

2. DIMENSION 7 TOLERANCES: THE TUBING SHALL CONFORM TO DIMENSIONS AS SHOWN IN TABLE 1 UNDER ALL CONDITIONS OF MOISTURE.

TABLE 1

SAE J844 TYPE TUBE	NOM. TUBE O.D.	OUTSIDE DIAMETER		INSIDE DIAMETER BASIC	WALL THICKNESS	
		MAX.	MIN.		BASIC	TOLERANCE
A	1/4	.253	.247	.170	.040	±.003
A	1/8	.128	.122	.079	.023	±.003
A	5/32	.159	.153	.092	.032	±.003

T

3. MECHANICAL PROPERTIES: THE TUBING SHALL CONFORM TO MECHANICAL PROPERTIES SHOWN IN TABLE 2.

CHG	JOB NO	DATE	BY	REVISION
-	P01213-01	12/10/96	FHC	INITIAL RELEASE
S	PA2042-78	08/14/97	DAJ	REVISED PH PART NUMBERS, -031 WAS WHT/BLK, SEE SHT 2.
T	PA2042-97	10/13/99	LFB	ADDED 5/32 TUBING.

DRAWN	DAJ	TITLE TUBING-NYLON MONO CONSTRUCTION	DRAWING NUMBER 48-00100	
APPRV	DAJ			
DATE	08/14/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 3 OF 3	CHG. LTR. T
CATIA ORIGINAL				

3. MECHANICAL PROPERTIES: THE TUBING SHALL CONFORM TO MECHANICAL PROPERTIES SHOWN IN TABLE 2.

TABLE 2

SAE J844 TYPE TUBE	NOM. TUBE O.D.	MINIMUM BURST PRESSURE AT 75°F (PSI)	MINIMUM BEND RADIUS INCHES	MAXIMUM STIFFNESS LB.-PULL
A	1/4	1200	1.0	2
A	1/8	1000	.37	1
T A	5/32	1200	.50	1

4. THIS TUBING SHALL BE TESTED BY METHODS OUTLINED IN SAE J844 FOR DIMENSIONAL REQUIREMENTS AND MECHANICAL PERFORMANCE.

5. MUST MEET APPLICABLE CURRENT REQUIREMENTS OF FMVSS 571.106.

CHG	JOB NO	DATE	BY	REVISION
-	P01213-01	12/10/96	FHC	INITIAL RELEASE
S	PA2042-78	08/14/97	DAJ	REVISED PH PART NUMBERS, -031 WAS WHT/BLK, SEE SHT 2.
T	PA2042-97	10/13/99	LFB	ADDED 5/32 TUBING

48-00101

Sheet 1 of

ORIGINAL JOB NO.	TITLE	PART NO.
76559	TUBING NYLON REINFORCED CONSTRUCTION	48-00101
LAST CHG LTR: L		SHEET 1 OF 3

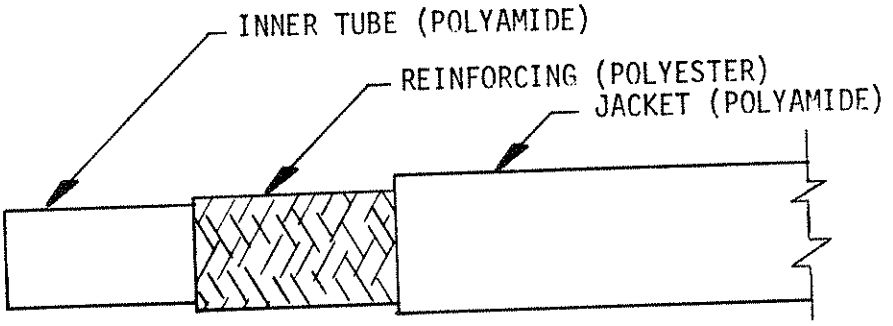
CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR
REVISED & REDRAWN	5-7-79	TD	76559	L

SCOPE Reinforced nylon air brake tubing for trucks, for use at temperatures between -40 F (-40 C) and +200 F (93.3 C), pressures below 150 p.s.i.g., and in an environment free of battery acid.

USE This material is for use in portions of air brake systems other than compressor discharge, frame-to-axle or tractor-to-trailer connections, and within limits of temperature, pressure as cited above.

SKETCH



SPECIFICATION NUMBERS

TUBE			MANUFACTURER'S NUMBER					FREIGHTLINER SPEC. NUMBER
O.D. NOM. (IN.)	I.D. BISIC (IN.)	COLOR	SMO	IB	PH	STX	WH	
3/8	.251	Black	3250-0610	C606*	PFT-6B*	4221-6	NT1006-BK	48-00101-010
		Brown			Spec'l Run			-011
		Red	3250-0612	C606*	PFT-6B*	4221-6-E	NT1006-RD	-012
		Orange	3250-0613	C606*	PFT-6B*	4221-6-K	NT10006-OR	-013
		Yellow	3250-0614	C606*	PFT-6B*	4221-6-H	NT10006-YW	-014
		Green	3250-0615	C606*	PFT-6B*	4221-6-B	NT10006-GN	-015
		Blue	3250-0616	C606*	PFT-6B*	4221-6-A	NT10006-BU	-016
		Violet			Not Avail.			-017
		Gray	3250-0619		PFT-6B*	4221-6-J	NT10006-GY	-018
		Tan			PFT-6B*	4221-6-F		-111
		Purple			Not Avail.	4221-6-D		-117
		Silver	3250-061F		PFT-6B*	4221-6-L		-120
1/2	.376	Black	3250-0810	C608*	PFT-8B*	4221-8	NT10008-BK	-020
		Brown			Spec'l Run			-021
		Red	3250-0812	C608*	Spec'l Run	4221-8-E	NT10008-RD	-022
		Orange	3250-0813	C608*	PFT-8B*	4221-8-K	NT10008-OR	-023
		Yellow	3250-0814	C608*		4221-8-H		-024
		Green	3250-0815	C608*		4221-8-B	NT10008-GN	-025

*Specify Color

		DATE DRAWN			
COMPILED	TD	5-7-79			
APPROVED	GEBO				

ORIGINAL JOB NO.	TITLE	PART NO.
	TUBING, NYLON REINFORCE CONSTRUCTION	48-00101
LAST CHG LTR L		SHEET 2 OF 3

TUBE			MANUFACTURER'S NUMBER					FREIGHTLINER SPEC. NUMBER
O.D. NOM. (IN.)	I.D. BASIC (IN.)	COLOR	SMO	IB	PH	STX	WH	
1/2	.376	Blue	3250-0816		PFT-8B*	4221-8-A		48-00101-026
		Violet			Not Avail.			-027
		Gray	3250-0819		PFT-8B*	4221-8-J		-028
		White			Not Avail.			-029
		Tan			PFT-8B*	4221-8-F		-121
		Purple	3250-081D		Not Avail.	4221-8-D		-127
		Silver	3250-081F		PFT-8B*	4221-8-L		-130
5/8	.441	Black	3250-1010	C610*	PFT-10B*		NT10010-BK	-030
		Red	3250-10123		Spec'l Run		NT10010-RD	-032
		Green	3250-10153		PFT-10B*		NT10010-GN	-035
3/4	.566	Black	3250-1210	C612*	PFT-12B*			-040
		Brown			Spec'l Run			-041
		Red	3250-1212		Spec'l Run			-042
		Orange	3250-1213		Seec'l Run			-043
		Yellow	3250-1214		Spec'l Run			-044
		Green	3250-1215	C612*	PFT-12B*			-045
		Blue	3250-1216		Spec'l Run			-046
		Violet			Not Avail.			-047
		Gray			Spec'l Run			-048
		White			Not Avail.			-049
		Tan			Spec'l Run			-141
		Purple			Not Avail.			-147

*Specify Color

SPECIFICATIONS

1. CONSTRUCTION: SAE Standard J844 Type B tubing shall consist of a core extruded of 100% virgin nylon (polyamide) containing additives which provide heat resistance. This core shall be reinforced with polyester braid or equivalent, followed by a protective covering (jacket) of 100% virgin nylon (polyamide) containing additives which provide heat and light resistance. The protective covering shall be bonded to the core through the interstices of the braid. The outer jacket shall be the color listed above, and the inner core shall be of a contrasting color.
2. INDENTIFICATION: Tubing furnished to these specifications shall be marked at intervals not greater than 18" in a legible manner with the name, number, type and size of tubing.

COMPILED	TD	DATE DRAWN			
APPROVED	Geeo	5-7-79			

CHANGE INFORMATION

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

CHANGE INFORMATION

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
L	76559	TD	5-7-79	REVISED & REDRAWN

Materials Specification

PRINT ISSUED	TITLE	PART NO.
1-15-71	TUBING, NYLON REINFORCED CONSTRUCTION	48-00101
LAST CHG. LTR. L		SHEET 3 OF 3

3. DIMENSIONS AND TOLERANCES: The tubing shall conform to dimensions as shown in Table 1 under all conditions of moisture.

TABLE #1

SAE J844 TYPE TUBE	NOM. TUBE O.D.	OUTSIDE DIAMETER (J)		INSIDE DIAMETER	WALL THICKNESS	
		MAX.	MIN.	BASIC	BASIC	TOLERANCE
B	3/8	0.379	0.371	0.251	0.062	± 0.004
B	1/2	0.505	0.495	0.376	0.062	± 0.004
B	5/8	0.630	0.620	0.441	0.092	± 0.005
B	3/4	0.755	0.745	0.566	0.092	± 0.005

4. MECHANICAL PROPERTIES: The tube shall conform to the mechanical properties shown in Table 2.

TABLE #2

TYPE TUBE	NOM. TUBE O.D.	MINIMUM BURST PRESSURE AT 75°F (PSI)	MINIMUM BEND RADIUS INCH	MAXIMUM STIFFNESS LB. - PULL
B	3/8	1400	1.5	8
B	1/2	950	2.0	20
B	5/8	900	2.5	50
B	3/4	800	3.0	80

5. This tubing shall be tested in accordance to methods outlined in SAE J844 for dimensional and mechanical performance requirement.
6. Must meet applicable current requirements of Federal Motor Vehicle Safety Standard 571.106.

CHG	BY	DATE	JOB NO	WAS

CHG	BY	DATE	WAS
L	TD	5-7-79	7653 REVISED & REDRAWN

COMPILED	TD.	DATE DRAWN		MATERIAL	
APPROVED	GEBO	5-7-79		(Ref. P.2)	

Portland FREIGHTLINER CORPORATION Oregon 97208

L K J F H G DEC

Materials Specification

PRINT ISSUED	TITLE	NO.
12/18/70	LOOM, NON-METALLIC	48-00102
LAST CHG. LTR. B		SHEET 1 OF 2

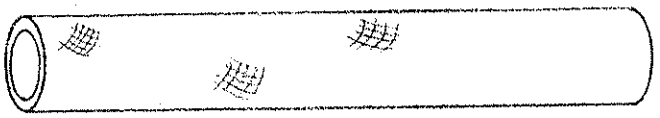
SCOPE

Non-metallic flexible, water-, oil- and acid- proof, fire and abrasions resistant loom.

APPLICATION

Protective cover for automotive wiring and metal tubing.

SKETCH



SPECIFICATION NUMBERS

NOMINAL SIZE	I.D. MIN.	I.D. MAX.	O.D. MIN.	O.D. MAX.	TENSILE REQUIREMENTS (LB)	FREIGHTLINER SPECIFICATION NUMBER
5/32	0.156	0.176	0.245	0.265	---	48-00102-001
3/16	0.187	0.207	0.287	0.307	75	-002
1/4	0.250	0.270	0.350	0.370	85	-003
5/16	0.312	0.332	0.412	0.432	100	-004
3/8	0.375	0.395	0.505	0.525	100	-005
7/16	0.437	0.457	0.567	0.587	150	-006
1/2	0.500	0.520	0.630	0.650	150	-007
9/16	0.562	0.582	0.722	0.742	150	-008
5/8	0.625	0.645	0.785	0.805	150	-009
11/16	0.687	0.707	0.847	0.867	150	-010
3/4	0.750	0.770	0.934	0.954	150	-011
13/16	0.812	0.832	0.996	1.016	150	-012
7/8	0.875	0.895	1.079	1.099	150	-013
15/16	0.937	0.957	1.141	1.161	150	-014
1	1.000	1.020	1.204	1.224	150	-015
1-1/8	1.125	1.145	1.330	1.350	150	-016

SPECIFICATIONS

1. Shall meet minimum applicable provisions of SAE Recommended Practice J562.

CHG	BY	DATE	WAS
A	HJR	11/11/70	Revised & Redrawn; Delete 1/8, add 5/32 and 15/16 sizes

CHG	BY	DATE	WAS

Was 23-9211 Series

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		11/11/70			INCH

Materials Specification

PRINT ISSUED	TITLE	NO.
12/18/70	LOOM, NON-METALLIC	48-00102
LAST CHG. LTR.		SHEET 2 OF 2

SPECIFICATIONS (Continued)

2. Construction - The loom shall be of single wall construction: Of closely woven yarn warp strands interlocking around twisted kraft paper fillers. Finished conduit shall be free from obstructions and shall permit easy introduction of the maximum size wire or other part for which it is normally suitable. Conduit in any length shall slip freely over a polished mandrel 12" long and equal to the diameter of the minimum inside diameter of the conduit specified. All material used in the construction of this conduit shall be electrically non-conducting.

3. Saturation - The conduit shall be thoroughly impregnated inside and out with an asphaltic compound or an equivalent water resisting compound, which, when dry shall be free from tackiness and gummy deposits. This impregnation is introduced to prevent moisture absorption, to bind the weave to the required wall strength, and to prevent fraying of yarn ends.

4. Finish - The outer surface of the conduit shall be thoroughly covered by an asphaltic or equivalent water resisting compound.

CHG	BY	DATE	WAS

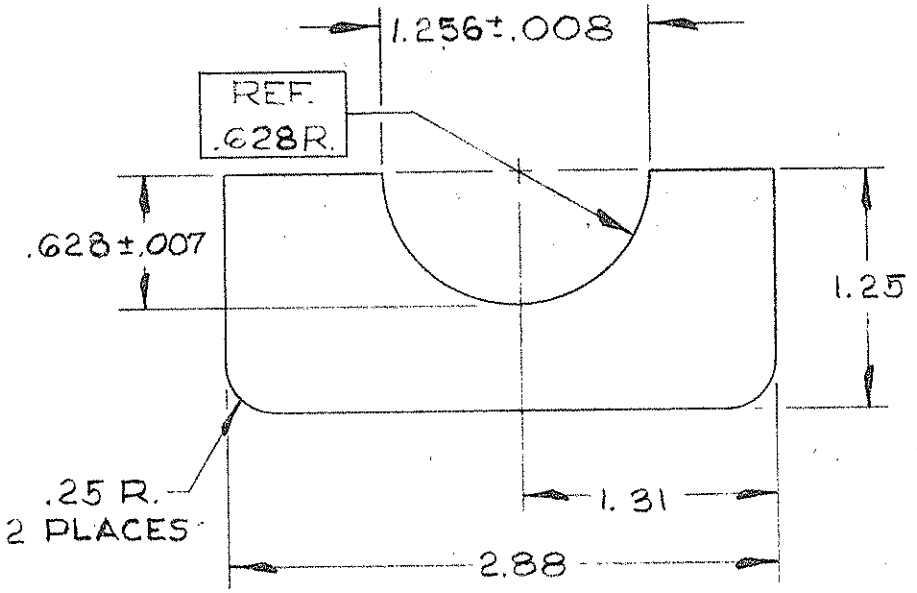
CHG	BY	DATE	WAS
A	HJR	11/11/70	Revised & Redrawn; Delete 1/8, add 5/32 and 15/16 sizes

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		11/11/70			INCH

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO.
8-18-70	CAP SPRING BRKT.- FRONT	48-00103
LAST CHG LTR		SHEET 1 OF 1

CHG	BY	DATE	WAS



1. .010R. ON ALL CORNERS UNLESS OTHERWISE SPECIFIED.

(2) ALUM. 6061-T6, EXTRUSION EXTRUSION DIE NO.

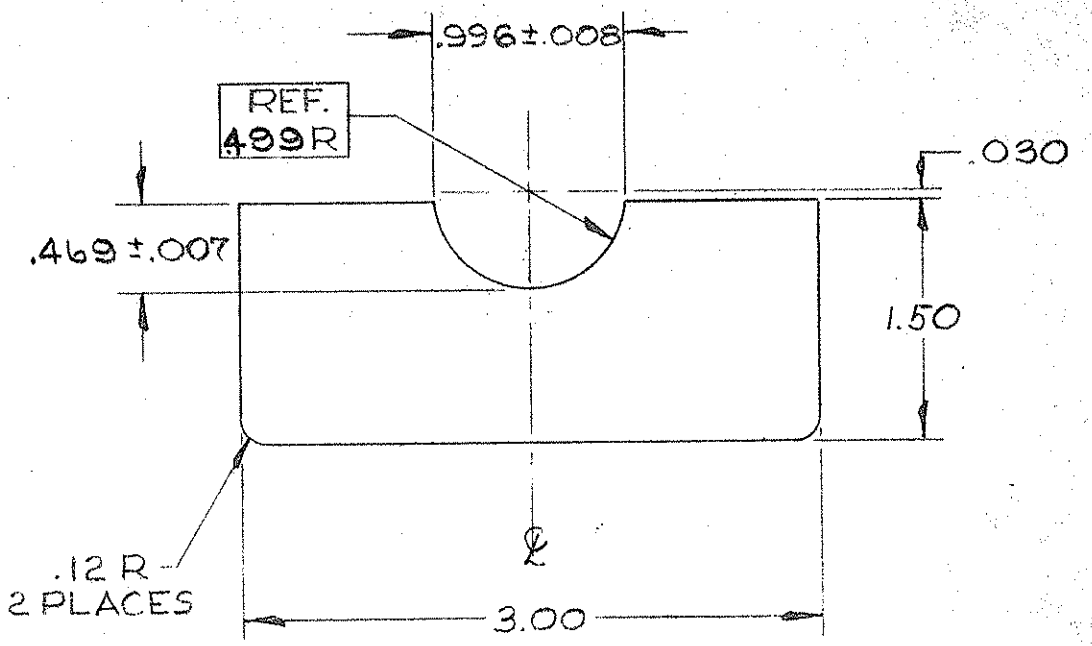
	MIN. PROPERTY		
TEMP.	ULTIMATE	YIELD	%ELONGATION
T4	35,000	21,000	25
T6	44,000	38,000	20

CHG	BY	DATE	WAS

COMPILED	RG	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	KNUDSON	6-30-70		(2)	16-9173

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO.
8/18/70	CAP SPRING BRACKET	48-00104
LAST CHG. LTR.		SHEET 1 OF 1



1. .010 R. ON ALL CORNERS UNLESS OTHERWISE SPECIFIED.
2. ALUM. 6061-T6, EXTRUSION EXTRUSION DIE NO.

	MIN. PROPERTY		
TEMP.	ULTIMATE	YIELD	%ELONGATION
T4	35,000	21,000	25
T6	44,000	38,000	20

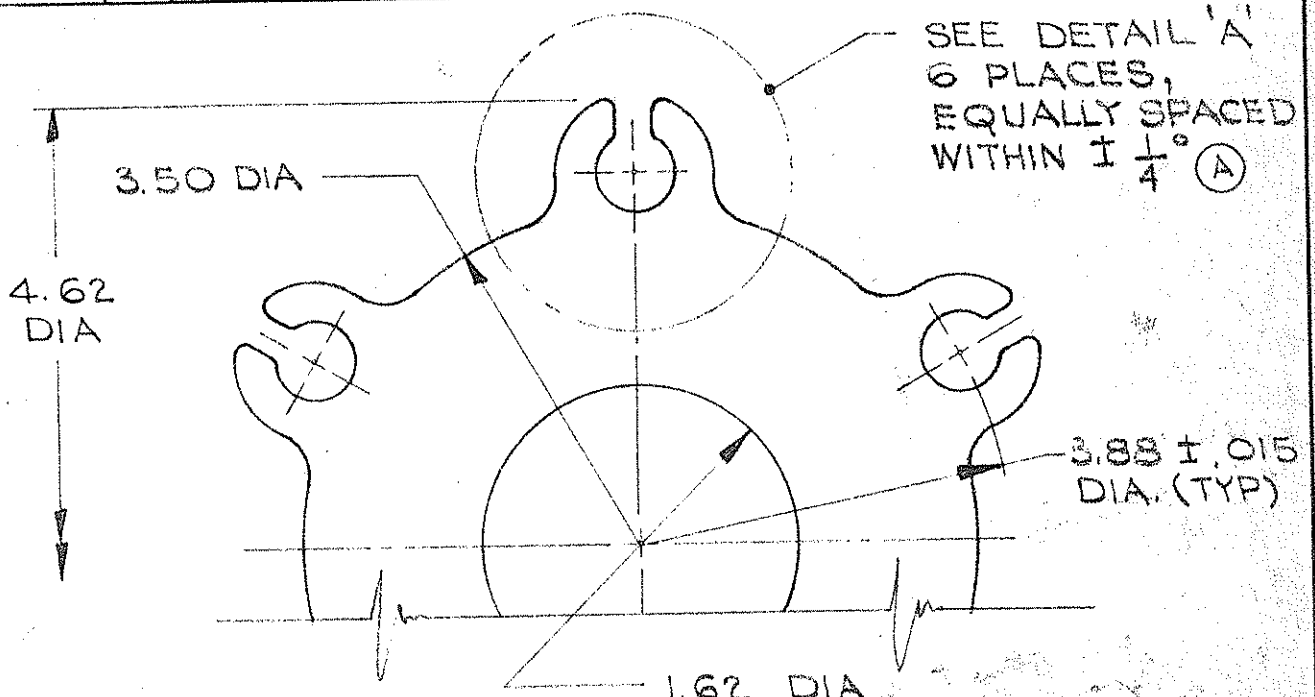
WAS	DATE	BY	CHG

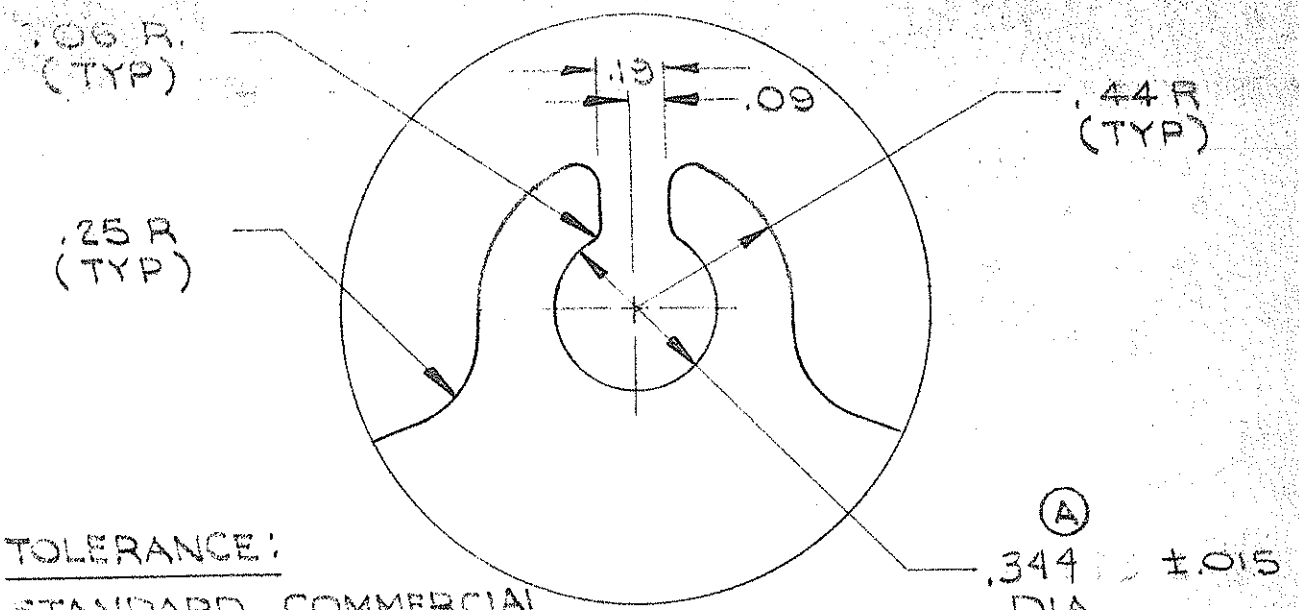
WAS	DATE	BY	CHG

COMPILED	RG	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	KWDEON	7-1-70		2	16-9122

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO.
7/20/71	FAN SPACER EXTRUSION	48-00105
LAST CHG. LTR. C		SHEET 1 OF 1





TOLERANCE:

STANDARD COMMERCIAL
EXCEPT AS NOTED

DETAIL 'A'

CHG	BY	DATE	WAS
A	RSS	11-12-70	± 1/2° 4062.5
B	AQ	7-14-71	ALUM 6063-T5
C	AQ	7-21-71	ALUM 2011-T3

COMPILED	D. LEL.	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED		7-6-70		ALUM (B)(C) 6262-T9	

Portland FREIGHTLINER CORPORATION Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	NO.
4/20/71	TAPE, VINYL FOAM DOUBLE TACK 16 LB DENSITY	48-00106
LAST CHG. LTR C		SHEET 1 OF 1

SCOPE: This specification identifies pressure-sensitive closed cellcross linked vinyl foam tape. (Adhesive both sides.)

APPLICATION:
Moisture and air sealant for mechanically fastened lap joints.

SPECIFICATION NUMBERS:

Thickness	Manufacturer's Numbers NTP	MMM**	FSN**	Freightliner Spec. No.*
1/32	V591	4432	2132	48-00106-1xx
1/16	V592	4416	2116	-2xx
3/32	V593	—	—	-3xx
1/8	V594	4408	2108	-4xx
3/16	V596	—	—	-5xx
1/4	V598	—	—	-6xx
3/8	V5912	—	—	-7xx
1/2	V5916	—	—	-8xx

*The first digit in the dash number indicates thickness in 1/32"s. The last two digits indicate width in 1/8" increments.

Example: 48-00106-208

2/32 or 1/16" Thick — 8/8 or 1" Wide

**Specify tape width in addition to number shown.

SPECIFICATIONS:

Density (lbs/cu. ft.)	10
Shore 00 Hardness (ASTM D2240)	60
Elongation (% at point of break) ASTM D1564 Die A	150
Oxidation Resistance	Excellent
Service Temperatures:	
a. Minimum	0°F
b. Maximum	+160°F (Up to +200°F intermittently)

Compressed Set (ASTM D1667) Compressed 30% of Original Height	% Loss From Original Height: 2
Compression Deflection Compressed 30% of Original Height	P.S.I.: 8
K Factor (Thermal Conductivity) (B.T.U.)(In.) / (Sq. Ft.)(Hr.)(°F)	.28
Color	White

WAS

CHG	DATE	BY

WAS

CHG	DATE	BY	Revised & Redrawn / Revised NTP Numbers / Add MMM, FSN No's.; J#A0556
A	11-30-70	HJR	
B	4-7-71	HJR	
C	12-20-73	HJR	

		DATE DRAWN			UNIT OF MEASURE
COMPILED	P.R.J.	11-30-70			INCH
APPROVED	H.J.R.				

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	ERK	TITLE TAPE GLAZING	ITEM NUMBER 48-00107
APPRV	ANF		
DATE	11/14/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SCOPE: THIS SPECIFICATION IDENTIFIES TYPES OF SEALING TAPES.

APPLICATION: TRUCK WINDOW GLASS INSTALLATION.

SPECIFICATION NUMBERS:

	THICKNESS (INCHES)	WIDTH (INCHES)	MATERIAL ①	MANUFACTURER'S NUMBER			FREIGHTLINER SPECIFICATION NUMBERS
				JM	SPC	ASK	
	.015	1.500	(A)	042400	-	-	48-00107-153
H	.062	1.500	(B)	-	75000642	-	-623
H	.078	1.500	(B)	-	75000731	-	-624
H	.062	2.250	(C)	-	-	DK-154 .062 X 2.25	-625
J	.094	1.500	(B)	-	75000641	-	-626

SPECIFICATIONS:

① MATERIAL:

(A) FRICTION TAPE; COTTON FABRIC IMPREGNATED WITH ELECTRICALLY NON-CONDUCTIVE MILD TACK ADHESIVE.

(B) ELASTOMERIC RUBBER OF SLIGHTLY TACKY NATURE, AGE RESISTANT, COTTON FIBER REINFORCED.

(C) CORK AND RUBBER COMPOSITE.

2. COLOR: BLACK

CHG	JOB/RLSE NO	DATE	BY	REVISION
G	P8321G-01	11/14/90	ERK	REVISED & REDRAWN; CHNGD -625 MANUFACTURER'S NO.
H	PX1902-26	12/07/90	ERK	ADD -624; CHNGD SPC PRODUCT NUMBERS
J	PX1902-34	04/25/91	ERK	ADD -626

Materials Specification

ORIGINAL JOB NO.	TITLE	PART NO.
B1599	LUBRICANT, CHASSIS	48-00109
LAST CHG LTR: A		SHEET 1 OF 1

SCOPE: This specification covers pumpable additive-type mineral oil base lubrication grease non-corrosive to metals.

APPLICATION: Used for general lubrication of chassis and universal joints.

SPECIFICATION NUMBERS:

DESCRIPTION	FREIGHTLINER SPECIFICATION NO.
Chassis Lubricant	48-00109-001

SPECIFICATIONS:

1. This grease must meet the following criteria:

   a. Mineral oil viscosity at 100°F Saybolt Standard Universal (SSU) min. 500
   b. Dropping point 350°F min
   c. ASTM D-566
   d. Readily pumpable in grease gun

2. Application Approvals

   This grease must meet all requirements of the following vendors:

   a. Rockwell International
   b. Eaton Corporation
   c. Dana Corporation

3. Approved Products

   The below listed vendor products have been tested and approved for use. All substitutions must be approved by Corporate Engineering.

a. Texaco	Marfax H.D. EP #1 & #2 Multifaf EP #1 & #2
b. Arco Oil Co.	Litholene EP #1 & #2
c. American Oil Co.	Amolith EP #1 & #2
d. City Service Oil Co.	Citgo Trojan EP #1 & #2
e. Mobil Oil Co.	Mobilux EP #1 & #2
f. Shell Oil Co.	Alvania EP #2

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR
Revised & Redrawn	6/18/81	RLE	B1599	A

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

COMPILED	Evens	DATE DRAWN		MATERIAL	UNIT OF MEASURE
APPROVED	[illegible]	6/18/81		①	LB.

EAC-830

Portland **FREIGHTLINER CORPORATION** Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	NO.
1-15-71	LUBRICANT, CHASSIS	48-00109
LAST CHG LTR		SHEET OF

SCOPE: This specification covers pumpable additive-type mineral oil base lubrication grease non-corrosive to metals.

APPLICATION: Used for general lubrication of chassis, universal joints, and water pump.

SPECIFICATION NUMBERS:

DESCRIPTION	FREIGHTLINER SPECIFICATION NO.
Chassis Lubricant	48-00109-001

SPECIFICATIONS:

(1) This lubricant shall contain:

1. Refined Mineral Oil and Soaps
2. Additives that provide:
   a. High resistance to water
   b. High film strength
   c. Protection against oxidation
   d. Protection against rust and corrosion of metal

2. This grease must meet the following:

1. Mineral Oil Viscosity 100°F Saybolt Standard Universal (SSU) Min. 500
2. Dropping Point 350°F (Min.)
3. ASTM D-566
4. Readily Pumpable in Grease Gun

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS

49-00008

COMPILED	HJR	DATE DRAWN		MATERIAL	UNIT OF MEASURE
APPROVED	Rollins	11-19-70		(1)	LB.

Portland FREIGHTLINER CORPORATION Oregon 97208

48-00110

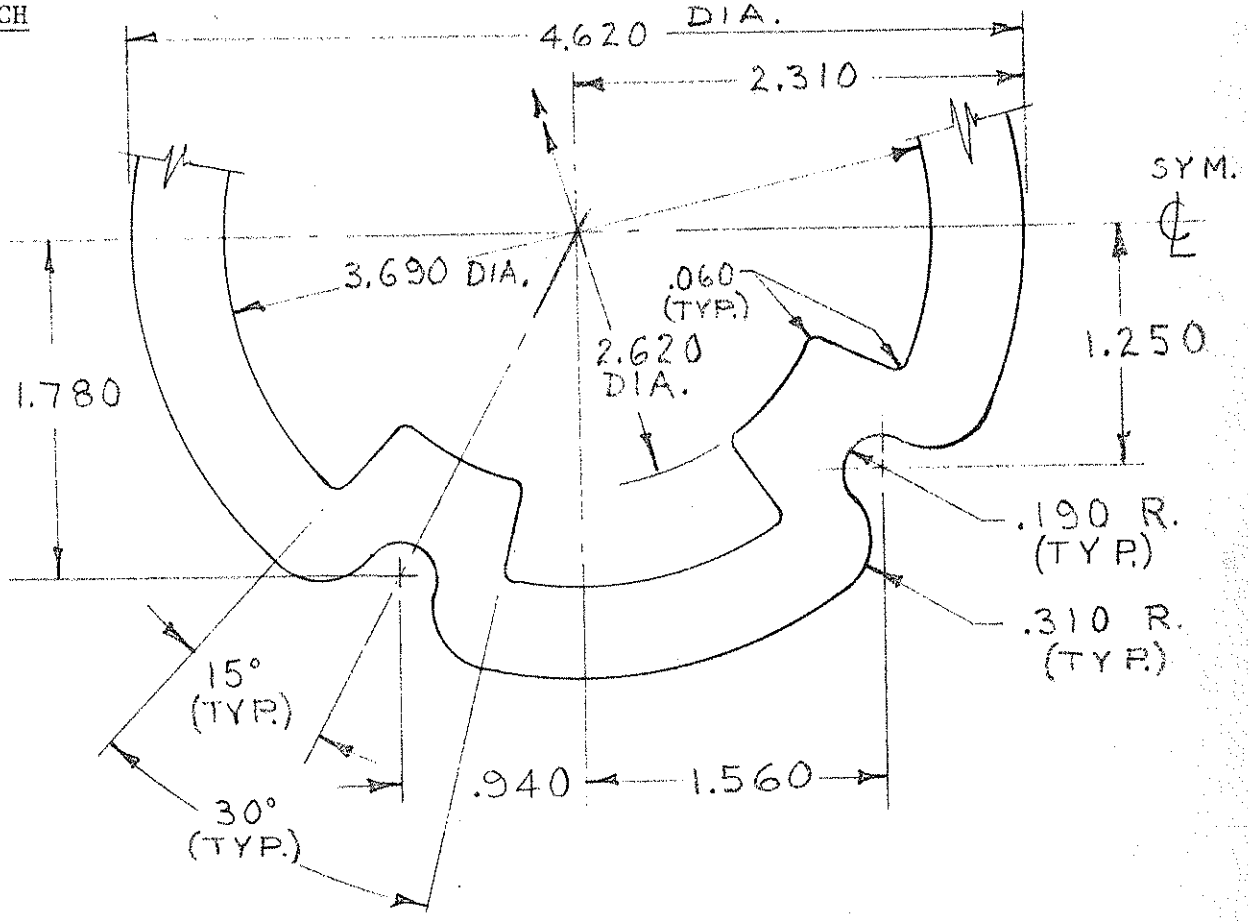
Materials Specification

PRINT ISSUED		TITLE	PART NO.
		SPACER, SHIFT LEVER	48-00110
LAST CHG. LTR.	A		SHEET 1 OF 1

SCOPE This specification identifies a specific light metal extrusion.

APPLICATION Shift lever spacer.

SKETCH



SPECIFICATION NUMBERS

	MATERIAL (1)	LB. PER FT.	EXTRUSION DIE NUMBER KAC	ALU		FREIGHTLINER SPECIFICATION NUMBER
	ALUM 6063-T6	8.438	52452	4203.S		48-00110

ENGINEERING NOTES

(1) Material: (See table)
2. Finish: As extruded.
3. Tolerances: Lineal as shown; Angular ± 1/2 degree; Twist per foot of length 3° (max.).
4. (Ref.) Next Assy Nos: 07-9937

CHG	DATE	BY	WAS

CHG	DATE	BY	WAS
A	12-11-72	HJR	Old Format; 2 decimal dimensions; J #60490

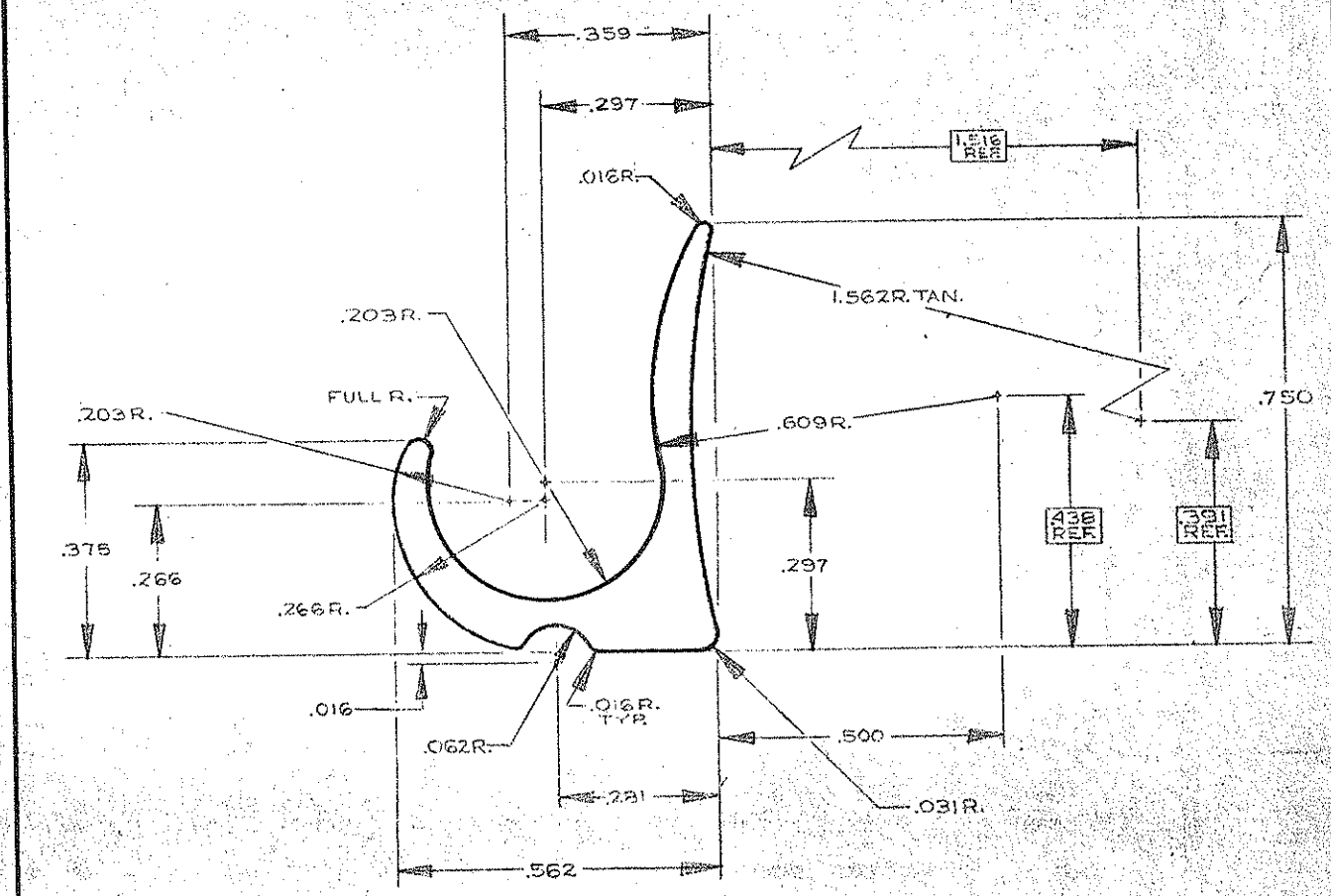
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COMPILED	HJR	DATE DRAWN		MATERIAL	UNIT OF MEASURE
APPROVED	Rollins	12-11-72		(1)	FT.

Portland FREIGHTLINER CORPORATION Oregon 97208

MATERIALS SPECIFICATION

PRINT ISSUED	TITLE	PART NO.
12/11/70	EXTRUSION, DRIP MOLDING ALUM.	48-00111
LAST CHG. LTR. A		SHEET 1 OF 1



FINISH	FL PART NO.
AS EXTRUDED	48-00111-0

(1.) ALUMINUM 6063 HEAT TREAT TO T-5 CONDITION

(2.) NEXT ASS'Y NO.S : 18-9324, 22-10946
03-10209, 03-10005

COMPILED	JVTK	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED		10-2-70		(1.)	(2.)

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CHG	BY	DATE	WAS
A	JVTK	10-29-70	DELETED -1

CHG	BY	DATE	WAS

48-00113

Materials Specification

PRINT ISSUED	TITLE	NO.
12/10/70	PAINT, HEAT RESIST ALUM.	48-00113
LAST CHG. LTR.		SHEET 1 OF 1

SCOPE: Covers manufacturing sources and general specifications of heat resistant protective coatings for parts in high temperature environment.

USE: Protective and decorative coating for exhaust system and other high temperature vehicle parts.

SPECIFICATION NUMBERS:

TEMPERATURE (MAX)	COLOR	MANUFACTURER'S NUMBER ①			FREIGHTLINER SPECIFICATION NUMBERS
		RST	DUP		
400°(204°C) - 500°F(260°C)	Alum	4115			48-00113-005
800°F (427°C)	Alum	4215	354-Y-794		48-00113-008
1200°F (649°C)	Alum	4315			48-00113-012 ②

ENGINEERING NOTES:

① RST = Rustoleum DUP = DuPont

② For proper adhesion, base metal must be clean and baked at 450°F (232°C) for 45 minutes before application.

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED	L.Dale	10-23-70			QUART

Portland FREIGHTLINER CORPORATION Oregon 97208

WAS | DATE | BY | CHG

WAS | DATE | BY | CHG

ORIGINAL JOB NO.	TITLE	PART NO.
2669B	FUEL, DIESEL	48-00114
LAST CHG LTR: C		SHEET 1 OF 2

SCOPE: This specification covers a middle distillate blend of petroleum refinery products.

APPLICATION: Automotive diesel engine fuel.

SPECIFICATION NUMBERS

Description	Unit of Measure	Freightliner Specification No.
Type T-T, Grade No. 2-D. A distillate fuel oil of lower volatility for engines in industrial and heavy mobil service.	GL	48-00114-001
	LR	48-00114-002

SPECIFICATIONS:

Test	ASTM Procedure	ASTM No. 2-D*	Freightliner
1. Flash Point, °F; Min.	D93	125	125
2. Cloud Point, °F, above 10 percentile minimum ambient Temp.	D2500	10	0
3. Water and Sediment, Vol. %	D1796	.05	.05
4. Carbon Residue, %; 10% residium	D524	.35	.25
5. Ash Weight, %	D482	.01	.01
6. Distillation Temp., °F; Min.	D86	540	540
@ 90% Point Max.	D86	640	640
7. Viscosity, Kinematic cST. @ 40°F, Min.	D445	1.9	1.9
Max.	D445	4.1	4.1
Saybolt, SUS @ 100 °F, Min.	D445	32.6	32.6
Max.	D445	40.1	40.1
8. Suipher, Weight %	D129	.50	.40
9. Copper Strip Corrosion, Number	D130	3	2
10. Cetane Number, Min.	D613	40	42
Max.	D613	None	50
11. Gravity, @ 60°F, API	D287	None	32-40
12 Pour Point, °F; Min. below lowest ambient Temp.	D97	None	10

*For Reference Only.

-000

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR
Revised & Redrawn	11-24-82	DJL	2669B	C

COMPILED	DJL	DATE DRAWN			
APPROVED		11-24-82			

ORIGINAL JOB NO.	TITLE	PART NO.
2669B	FUEL, DIESEL	48-00114
LAST CHG LTR: C		SHEET 1 OF 2

SCOPE: This specification covers a middle distillate blend of petroleum refinery products.

APPLICATION: Automotive diesel engine fuel.

SPECIFICATION NUMBERS

Description	Unit of Measure	Freightliner Specification No.
Type T-T, Grade No. 2-D. A distillate fuel oil of lower volatility for engines in industrial and heavy mobil service.	GL	48-00114-001
	LR	48-00114-002

SPECIFICATIONS:

Test	ASTM Procedure	ASTM No. 2-D*	Freightliner
1. Flash Point, °F; Min.	D93	125	125
2. Cloud Point, °F, above 10 percentile minimum ambient Temp.	D2500	10	0
3. Water and Sediment, Vol. %	D1796	.05	.05
4. Carbon Residue, %; 10% residium	D524	.35	.25
5. Ash Weight, %	D482	.01	.01
6. Distillation Temp., °F; Min.	D86	540	540
@ 90% Point Max.	D86	640	640
7. Viscosity, Kinematic cST. @ 40°F, Min.	D445	1.9	1.9
Max.	D445	4.1	4.1
Saybolt, SUS @ 100 °F, Min.	D445	32.6	32.6
Max.	D445	40.1	40.1
8. Sulpher, Weight %	D129	.50	.40
9. Copper Strip Corrosion, Number	D130	3	2
10. Cetane Number, Min.	D613	40	42
Max.	D613	None	50
11. Gravity, @ 60°F, API	D287	None	32-40
12 Pour Point, °F; Min. below lowest ambient Temp.	D97	None	10

*For Reference Only.

CHANGE INFORMATION				
LTR	JOB NO.	BY	DATE	
C	2669B	DJL	11-24-82	Revised & Redrawn

COMPILED	DJL	DATE DRAWN			
APPROVED	DJL	11-24-82			

EAC-826

Portland FREIGHTLINER CORPORATION Oregon 97208

C

Materials Specification

PRINT ISSUED	TITLE	PART NO.
8/13/71	BATTERY SAVER	48-00115
LAST CHG LTR: A		SHEET 1 OF 1

SCOPE

This specification identifies a compound for anticorrosion treatment for the terminals of lead-acid storage batteries.

APPLICATION

Protective coating for battery terminals, especially just before installation or storage.

SPECIFICATION NUMBERS

MANUFACTURER'S NUMBER		FREIGHTLINER SPECIFICATION NUMBERS
PSL	NOC	
JAX *	A202	48-00115

SPECIFICATIONS

1. Brush or spray liquid of proprietary composition.

* JAX Battery Saver

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		11-20-70			Ounce

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	HJR	5-23-72	Rev'd JAX data; Add NOC alternate; J #85580

PRINT ISSUED	TITLE	PART NO.
4/29/71	TAPE, VINYL FOAM 7 LB. DENSITY, SINGLE FACE	48-00116
LAST CHG LTR. A		SHEET 1 OF 1

CHG	BY	DATE	WAS

SCOPE: This specification identifies seven lb. density, pressure sensitive closed cell vinyl foam tape; pressure sensitive one side, with liner.

APPLICATION: Moisture and air sealant for overlapping surfaces.

SPECIFICATION NUMBERS:

Thickness (Inches)	Manufacturer's Numbers			Freightliner Specification Number
	NTP			
1/32	Not			48-00116-1xx
1/16	Currently			-2xx
3/32	Available			-3xx
1/8	V564			-4xx
3/16	V566			-5xx
1/4	V568			-6xx
3/8	V5612			-7xx
1/2	V5616			-8xx

The first digit in the dash number indicates thickness, the last two digits indicate width in 1/8" increments. Standard roll size widths 1/8" to 27".

Example: 48-00116-408

1/8" thick — 8/8" or 1" wide

CHG	BY	DATE	WAS
A	HJR	4-7-71	Revised NTP Numbers

SPECIFICATIONS:

Density (lbs./cu. ft.)		7
Shore 00 Hardness ASTM D2240		8
Elongation (% at point of break) ASTM D1564 Die A		150
Oxidation Resistance		excellent
Service Temperature	a. Minimum	-30°F
	b. Maximum	+180°F

Compressed Set (ASTM D1667)	% loss from original height
Compressed 25% of original height	3
Compressed 50% of original height	8

Compression Deflection	
Compressed 25% of original height	0.25 psi.
Compressed 50% of original height	1.5 psi.
K Factor (thermal conductivity) $\frac{(B.T.U.)(in.)}{(sq.\ ft.)(hr.)(°F)}$	0.32
Color	Black

		DATE DRAWN			Unit of Measure
COMPILED	HJR	11-25-70			Inch
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

48-00117

CHG	BY	DATE	WAS
A	HJR	4-7-71	Revised NPT Numbers

CHG	BY	DATE	WAS

PRINT ISSUED	TITLE	PART NO.
4/20/71	TAPE, VINYL FOAM 8 LB. DENSITY, SINGLE FACE	48-00117
LAST CHG. LTR. A		SHEET 1 OF 1

SCOPE: This specification identifies 8 lb./cu. ft. density pressure sensitive closed-cell vinyl foam tape; pressure-sensitive adhesive one side, with liner; smooth non-cling coating on top surface.

APPLICATION: Moisture and air sealant for overlapping surfaces.

SPECIFICATION NUMBERS:

Thickness (Inches)	Manufacturer's Numbers			Freightliner Specification Number
	NTP			
1/32	-			48-00117-1xx
1/16	V512			-2xx
3/32	-			-3xx
1/8	V514			-4xx
3/16	V516			-5xx
1/4	V518			-6xx
3/8	V5112			-7xx
1/2	V5116			-8xx

The first digit in the dash number indicates thickness, the last two digits indicate width in 1/8" increments. Standard roll size widths 1/8" to 27".

Example: 48-00117-208

1/16" thick — 8/8" or 1" wide

SPECIFICATIONS:

Density (lbs./cu. ft.)	8
Shore 00 Hardness ASTM D676	30
Elongation (% at point of break) ASTM D1564 Die A	190
Oxidation Resistance	excellent
Service Temperatures a. Minimum	-20°F
b. Maximum	+160°F (up to +200°F intermittently)
Compressed Set (ASTM D1667)	% loss from original height
Compressed 25% of original height	-
Compressed 50% of original height	-
Compression Deflection	P.S.I.
Compressed 30% of original height	3.3
Compressed 50% of original height	6
K Factor (thermal conductivity) $\frac{(B.T.U.)(in.)}{(sq.\ ft.)(hr.)(°F)}$	.28
Color	Aluminum Gray

COMPILED	HJR	DATE DRAWN			Unit of Measure
APPROVED		11-25-70			Inch

Portland FREIGHTLINER CORPORATION Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	PART NO.
4-2-71	SEALANT, CAULKING	48-00118
LAST CHG. LTR. C		SHEET 1 OF 1

CHG	BY	DATE	WAS	JOB NO.
B				

CHG	BY	DATE	WAS	JOB NO.
A	HJR	6-21-72	Add MMM & KEN, Form; Job #85700	A0834
B	HJR	8-9-76	Add FTI	B1542
C	RLE	1/29/81	Added-002	

SCOPE This specification identifies non-hardening adhesive putty-like caulking compounds capable of sealing moderate size gaps and holes in protected locations.

APPLICATION Closure of minor unexposed gaps and holes in the cab, protective housings, and certain ducts and airways (except engine air intake).

SPECIFICATION NUMBERS

COLOR	FORM	MANUFACTURER'S NUMBERS (OR DESCRIPTION)					FREIGHTLINER SPECIFICATION NUMBER
		MJW	MMM	KEN	FTI		
Grey	1/4 Dia.	"Mortite"	8568*	SP-4**	SP-1		48-00118-001
Black	1/4 Dia.		8578*				48-00118-002

*60 Ft. = Approx. 2 Lb. "Strip Caulk"
**"Seal N' Caulk."

SPECIFICATIONS

1. MATERIAL: Must be non-bleeding, relatively unaffected by heat, cold and moisture, and remain pliable indefinitely.

					Unit of Measure
COMPILED	HJR	DATE DRAWN			Ft.
APPROVED	Rollins	12-10-70			

Portland FREIGHTLINER CORPORATION Oregon 97208

C B

48-00119

Materials Specification

PRINT ISSUED	TITLE	PART NO.
8/20/71	ALUMILASTIC	48-00119
LAST CHG. LTR		SHEET 1 OF 1

WAS

CHG	BY	DATE

SCOPE

This specification describes a viscous, adhesive, water resistant, corrosion preventive coating for metals in contact.

APPLICATION

Especially for use between dissimilar metals, but frequently used between similar metals or alloys to prevent local corrosive effects; commonly used between vehicle frame and structural attachments.

SPECIFICATION NUMBERS

	MANUFACTURER'S NUMBER (OR DESCRIPTION)		FREIGHTLINER SPECIFICATION NUMBER
	PPC		
	Alumilastic "C" Consistency		48-00119

SPECIFICATIONS

1. Materials: A non-harding base with powdered metallic aluminum filler.

WAS

CHG	BY

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		7-28-71			GAL.

Portland FREIGHTLINER CORPORATION Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	PART NO.
8/20/71	MASTIX, GLASS	48-00120
LAST CHG LTR: A		SHEET 1 OF 1

SCOPE This specification identifies an automotive glazing bedding compound, a low-viscosity rubber-base non-hardening adhesive.

APPLICATION Windshield and stationary window sealing.

SPECIFICATION NUMBERS

DESCRIPTION		MANUFACTURER'S NUMBER			FREIGHTLINER SPECIFICATION NUMBER
COLOR		KEN	RSP		
Black		GM-1 *	110 LP **		48-00120

* "Glass Mastic"
** "Glastic"

SPECIFICATIONS

1. Material: Rubber base non-hardening adhesive and sealant.

CHG	BY	DATE	WAS
A	HJR	7-26-72	Add MFR Nos., KEN, RSP; Specs: J #85710

CHG	BY	DATE	WAS

ns

		DATE DRAWN			UNIT OF MEASURE
COMPILED	HJR	8-9-71			GAL.
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	ERK	TITLE HOSE-AIR BRAKE WIRE REINFORCED	ITEM NUMBER 48-00121
APPRV	ACL		
DATE	09/19/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

SCOPE: THIS SPECIFICATION IDENTIFIES MULTIPURPOSE SINGLE WIRE BRAID REINFORCED HOSE MEETING THE LATEST REQUIREMENTS OF SAE J1402 AI OR AII.

APPPLICATION: AIR STARTER, ENGINE FUEL, ENGINE OIL, CAB TILT SYSTEM, HEATER SYSTEM AND AIR BRAKE USES IN ENVIRONMENT FREE OF ABRASION. FOR USE WITH REUSABLE TYPE END FITTINGS ONLY.

SPECIFICATION NUMBERS:

HOSE DASH SIZE	I.D. NOM. (INCHES)	O.D. REF. (INCHES)	BEND RADIUS IN(MIN)	PRESSURE (PSI) MIN BURST	PRESSURE (PSI) MAX WORKING		FREIGHTLINER SPECIFICATION NUMBER
4	3/16	.48	.75	6000	1500		48-00121-004
5	1/4	.55	1.00	6000	1500		-005
6	5/16	.61	1.25	6000	1500		-006
8	13/32	.73	1.75	5000	1250		-008
10	1/2	.83	2.25	4000	1000		-010
12	5/8	.95	2.75	3000	750		-012
16	7/8	1.20	3.50	1600	400		-016
20	1-1/8	1.48	4.50	1250	300		-020

SPECIFICATIONS:

1. MATERIAL: MUST MEET APPLICABLE CURRENT REQUIREMENTS OF FEDERAL MOTOR VEHICLE SAFETY STANDARD #106.

   HOSE SIZES THROUGH SIZE 12 MUST MEET OR EXCEED REQUIREMENTS OF SAE J 1402 AI OR AII.

2. CONSTRUCTION: INNER TUBE----SEAMLESS SYNTHETIC RUBBER
   REINFORCEMENT-FIBER BRAID, STEEL WIRE BRAID ENCASED IN RUBBER
   COVER---------SYNTHETIC RUBBER IMPREGNATED TEXTILE BRAID.

3. TEMPERATURE RANGE: -40°F TO +250°F.

CHG	JOB/RLSE NO	DATE	BY	REVISION
J	P*A078-57	09/19/88	ERK	REVISED & REDRAWN
K	P*A078-84	11/16/88	ERK	REVISED SCOPE & APPLICATION

Materials Specification

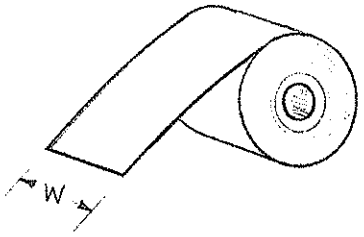
PRINT ISSUED	TITLE	PART NO.
6/22/71	TAPE, POLYETHYLENE ON CLOTH WATER RESISTANT, ADHESIVE	48-00122
LAST CHG. LTR. A		SHEET 1 OF 1

CHG	BY	DATE
WAS		

SCOPE This specification identifies a pressure sensitive water resistant tape of polyethylene film laminated to cloth and having a rubber and resin base adhesive coating.

APPLICATION Sealing of butt or lap joints (especially at junctions of air ducts), holding and sealing duct insulation, etc., but not for cab interior use (see note 9).

SKETCH



SPECIFICATION NUMBERS

W WIDTH (INCHES)	COLOR	MANUFACTURERS' NUMBERS					FREIGHTLINER SPECIFICATION NUMBER
		HMP	ARN	ARC	JM		
3	Silver	434	C520	CD1	357		48-00122-300

CHG	BY	DATE
A	HJR	7-25-72
WAS		Add note 9; J #30660

SPECIFICATIONS

1. Material: Polyethylene film
   Cotton cloth
   Adhesive: Resin and rubber base, water resistant
2. Thickness: 15 mils (.015 inches)
3. Unwind: 3.5 lbs/in.
4. Tensile Strength: Dry 40 - 45 lb./in.; wet, 40 lb./in.
5. Bursting strength: 75 psi
6. Water vapor transmission rate: .85 gms./24 hr.
7. Water penetration rate: .19 gm./24 hr./100 in.
8. Holding power new or aged tape, to steel or to backing:
   @ 68°F 30 min. +
   @ 155°F 24 hr. +
9. Flammability: Not in compliance with Federal Motor Vehicle Safety Standard 302, Flammability of Interior Materials.

		DATE DRAWN			UNIT OF MEASURE
COMPILED	HJR	5-18-71			FT.
APPROVED					

ns

Portland FREIGHTLINER CORPORATION Oregon 97208

48-00123

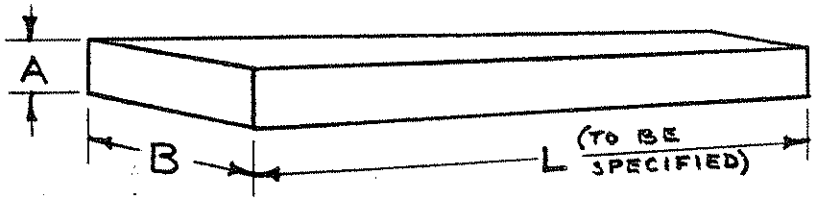
Materials Specification

PRINT ISSUED	TITLE	PART NO.
9-1-71	ELASTOMER, STRIP	48-00123
LAST CHG. LTR. C		SHEET 1 OF 1

SCOPE This specification identifies elastomer compounds of synthetic rubber, or combinations thereof.

APPLICATION As resilient gasket material for relatively large interface dimensions.

SKETCH



SPECIFICATION NUMBERS

	A THICKNESS (INCHES)	B WIDTH (INCHES)	COMPOSITION ①	REMARKS	FREIGHTLINER SPECIFICATION NUMBER
	.75	1.00	2BC41 (Formerly SC-41)	No radius at corners	48-00123-001
A	.12	6.50	2BC815A14C12		-002
A	2.00	13.00	BC41 Soft (Formerly SC-41)		-003
B	.50	1.00	2BC41		-004
C	.12	1.00	2BC610A.14, B.14, C.12, E.14, F.17		-005

SPECIFICATIONS

① Material shall conform to composition specifications per ASTM D2000 - SAE J200.

CHG	BY	DATE	WAS
A	RLR	8-13-71	Added -002,-003
B	HJR	7-7-72	Added -004; J #23440
C	TAL	7-30-79	Added -005 D1555

CHG	BY	DATE	WAS

ns

		DATE DRAWN			UNIT OF MEASURE
COMPILED	HJR	1-8-71			FT.
APPROVED					

Portland FREIGHTLINER CORPORATION Oregon 97208

C C

F-183

Materials Specification

PRINT ISSUED	TITLE	PART NO.
3/29/71	PIPE, ASA STD. GALVANIZED	48-00124
LAST CHG LTR. B		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	SW	2/12/81	Revised application and material; 0053A
B	FNF	4-30-87	REMOVE V.O.M. 40SBE

SCOPE

This specification identifies ASA standard galvanized steel pipe of commercial quality.

APPLICATION

For certain fluid duct applications and air brake systems.

SKETCH



SPECIFICATION NUMBERS

ASA STD PIPE (SCHED. 40) GALVANIZED

NOM SIZE (IN)	O.D. (IN)	I.D. (IN)	WALL THICKNESS (IN)	WEIGHT (LB/FT)	PROPERTIES I IN.^{4}	PROPERTIES A IN.^{2}	PROPERTIES r IN.	FREIGHTLINER SPECIFICATION NUMBER
1/8	.405	.269	.068	.24	.001	.072	.12	48-00124-001
1/4	.540	.364	.088	.42	.003	.125	.16	-002
3/8	.675	.493	.091	.57	.007	.167	.21	-003
1/2	.840	.622	.109	.85	.017	.250	.26	-004
3/4	1.050	.824	.113	1.13	.037	.333	.33	-006
1	1.315	1.049	.133	1.68	.087	.494	.42	-008
1-1/4	1.660	1.380	.140	2.27	.195	.669	.54	-010
1-1/2	1.900	1.610	.145	2.72	.310	.799	.62	-012
2	2.375	2.067	.154	3.65	.666	1.075	.79	-020
2-1/2	2.875	2.469	.203	5.79	1.530	1.704	.95	-025
3	3.500	3.068	.216	7.58	3.017	2.228	1.16	-030
3-1/2	4.000	3.548	.226	9.11	4.788	2.680	1.34	-035
4	4.500	4.026	.237	10.79	7.233	3.174	1.51	-040
5	5.563	5.047	.258	14.62	15.16	4.300	1.88	-050
6	6.625	6.065	.280	18.97	28.14	5.581	2.25	-060
8	8.625	7.981	.322	28.55	72.49	8.399	2.94	-080
10	10.750	10.020	.365	40.48	160.7	11.91	3.67	-100
12	12.750	12.000	.375	49.56	279.3	14.58	4.38	-120

SPECIFICATIONS

(1) Pipe herein described shall meet applicable provisions of the following Standard Specifications:-

Designation ASA	Designation ASTM	Title
B36.20	A120*	Black and Hot Dipped Zinc Coated Galvanized Welded and Seamless Steel Pipe for Ordinary Uses

* Alternate Materials: ASTM A106 or ASTM A53

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		3-5-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

6-18-87 BA

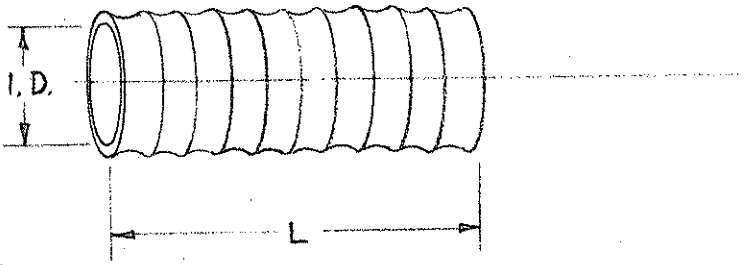
Materials Specification

PRINT ISSUED	TITLE	PART NO.
4/22/71	DUCT, FLEXIBLE WIRE REINFORCED	48-00125
LAST CHG LTR A		SHEET 1 OF 2

SCOPE This specification identifies spiral wire reinforced circular flexible duct for hot or cold air, dust, fumes, etc. Not recommended for liquids or abrasives.

APPLICATION Blower or fan air connection, defrosting, heating, venting and cooling ducts.

SKETCH



SPECIFICATION NUMBERS

NOM. SIZE (I.D.)		LB. PER FT.	INSIDE BEND R. (MIN.)	MANUFACTURER'S NUMBER FLE		FREIGHTLINER SPECIFICATION NUMBER
3/4		.082	.19	U1 - 3/4*		48-00125-075
7/8		.096	.22	- 7/8*		-088
1		.110	.25	- 1		-100
1-1/4		.138	.31	- 1-1/4		-125
1-1/2		.165	.38	- 1-1/2		-150
1-3/4		.192	.44	- 1-3/4		-175
2		.220	.50	- 2		-200
2-1/4		.248	.56	- 2-1/4*		-225
2-1/2		.275	.62	- 2-1/2		-250
2-3/4		.302	.69	- 2-3/4*		-275
3		.330	.75	- 3		-300
3-1/4		.358	.81	- 3-1/4*		-325
3-1/2		.385	.88	- 3-1/2		-350
3-3/4		.412	.94	- 3-3/4*		-375
4		.440	1.00	- 4		-400
4-1/2		.495	1.12	- 4-1/2*		-450
5		.550	1.25	- 5		-500
5-1/2		.605	1.38	- 5-1/2*		-550
6		.660	1.50	- 6		-600
6-1/2		.715	1.62	- 6-1/2*		-650
7		.770	1.75	- 7 *		-700
8		.880	2.00	- 8		-800

* Non-stock items; available on special order.

COMPILED	HJR	DATE DRAWN		MATERIAL	UNIT OF MEASURE
APPROVED		4-15-71		See Sht. 2	Foot

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS
A	HJR	12-11-72	See Page 2; J #60540

Materials Specification

PRINT ISSUED	TITLE	PART NO.
4/22/71	DUCT, FLEXIBLE WIRE REINFORCED	48-00125
LAST CHG. LTR: A		SHEET 2 OF 2

CHG	BY	DATE	WAS

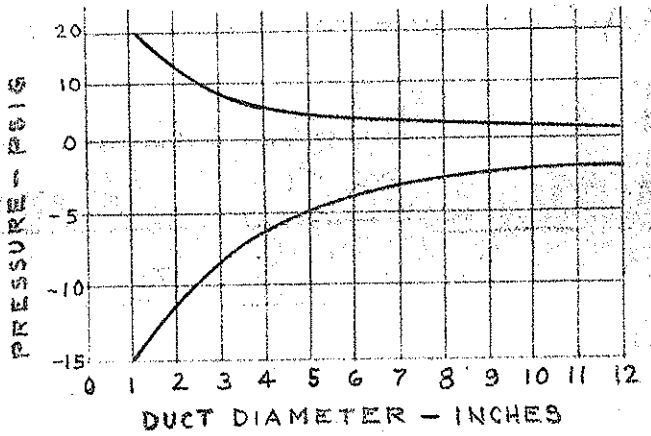
CHG	BY	DATE	WAS
A	HJR	12-11-72	Add Spec 3; J #60540

SPECIFICATIONS

1. Material: Cover, neoprene/fiber glass; Cord, neoprene/fiber glass; Wire helix, galvanized spring steel.
2. Construction: Cover consists of single-ply neoprene impregnated and coated woven fiber glass. Supporting galvanized spring steel wire helix is permanently bonded to cover. A neoprene coated fiber glass cord provides additional, external reinforcement.
3. Must pass requirements of Federal Motor Vehicle Safety Std #302, Flammability of Interior Materials.

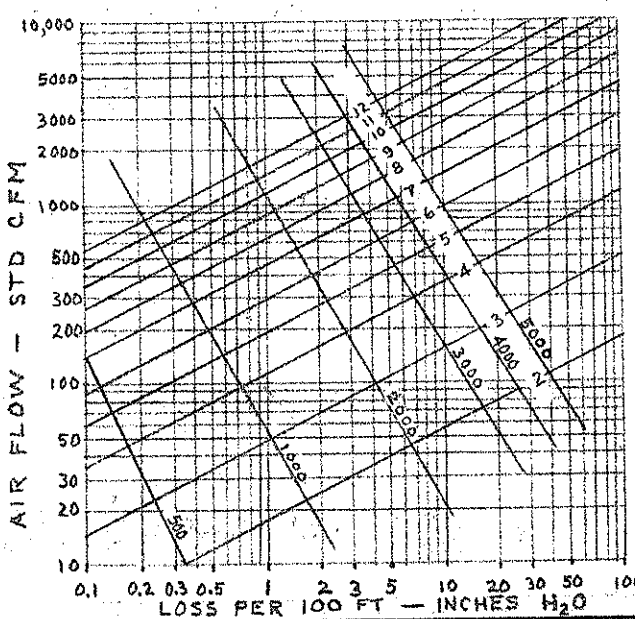
ENGINEERING NOTES

1. Air Leakage: 0.05 CFM/in. dia./ft. of length at 2 psig.
2. Compressed Length: 30% of extended length.
3. Temperature Range: -65°F (54°C)to +300°F (150°C).
4. Operating Pressure:



5. Air Friction Loss:

A. Straight Run



B. 90° Bends

One duct diameter bend is equivalent to 17 diameters of straight duct. (Average data with straight duct following bend.)

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED		4-15-71		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	PART NO.
10/25/71	TAPE, ELECTRICAL, PVC PRESSURE SENSITIVE ADHESIVE	48-00126
LAST CHG. LTR. F		SHEET 1 OF 1

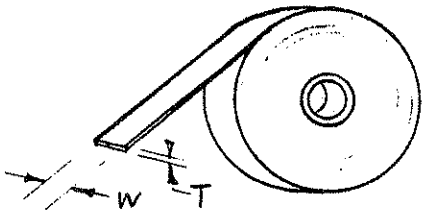
CHG	BY	DATE	WAS
D	HJR	8-13-74	Delete -010, Add -008; U#A0667
E	HJR	11-07-74	Add -12,-15 #JA0704
F	DDM	5-15-78	Add -18, J#C1500A

CHG	BY	DATE	WAS
A	HJR	10-12-71	-107, -207 Added
B	HJR	7-27-72	Add Note 3; J #30660
C	HJR	8-11-72	"not in cab","does not" J #30660

SCOPE: This specification describes pressure sensitive adhesive polyvinylchloride tape.

APPLICATION: For electric insulation, mechanical holding and protection, such as covering exposed wiring junctions, grouping wires into cable.

SKETCH



SPECIFICATION NUMBERS

T * THICKNESS (in.)	W WIDTH (in.)	COLOR	MANUFACTURER'S NUMBER			FREIGHTLINER SPECIFICATION NUMBER
			MMM	IDT		
.007	3/4	BLK	15			48-00126-007
.010	3/4	BLK	16			-008
.007	3/4	RED	35RED			-012
.007	3/4	GRN	35GRN			-015
.007	3/4	YLW	35YLW			-018
.0075	1-1/2	BLK		440		-107
.0075	2	BLK		440		-207

*Not including adhesive

SPECIFICATIONS

1. Tape shall consist of a uniform layer of the specified thickness, T, polyvinylchloride.

2. Tape is for use at temperatures not to exceed 80°C (176°F).

3. Flammability: The tape must meet Federal Motor Vehicle Safety Standard 302, Flammability of Interior Materials.

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		4-5-71			FT.

Portland FREIGHTLINER CORPORATION Oregon 97208

F E

DRIENNE CHILBERG

DRAWN	ERK	TITLE	DRAWING NUMBER	
APPRV	KCB	SHEET-ALUMINUM 3003	48-00127	
DATE	10/10/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. F
CATIA ORIGINAL				

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES

SCOPE: THIS SPECIFICATION IDENTIFIES ALUMINUM SHEET, 3003 ALLOY.

APPLICATION: USED MAINLY FOR DRAWING AND SPINNING FABRICATION.

THICKNESS INCHES	TEMPER	FREIGHTLINER PART NUMBER
.032	0	48-00127-002
.040		48-00127-003
.050		48-00127-004
.063		48-00127-005
.080		48-00127-007
.090		48-00127-008
.125		48-00127-010
.190		48-00127-014
.020	H14	48-00127-021
.050		48-00127-020
.090		48-00127-028
.090	H12	48-00127-029

ENGINEERING NOTES:

1. MATERIAL: ALUMINUM, ALLOY 3003.
2. MATERIAL SHALL CONFORM WITH APPLICABLE PROVISIONS OF ASTM B209.
3. MINIMUM MECHANICAL PROPERTIES:

TEMPER	TENSILE (KSI)	YEILD (KSI)	ELONGATION (% IN 2 INCHES)
0	14	5	20-25*
H12	17	12	6
H14	20	17	3-7*

* VARIES WITH THICKNESS.

CHG	JOB NO	DATE	BY	REVISION
F	PB4501-1	04/11/97	DAJ	REVISED AND REDRAWN IN CATIA. ADDED -029.

48-00128

LAST CHG. LTR E

SHEET, ALUMINUM, ALCLAD 3004

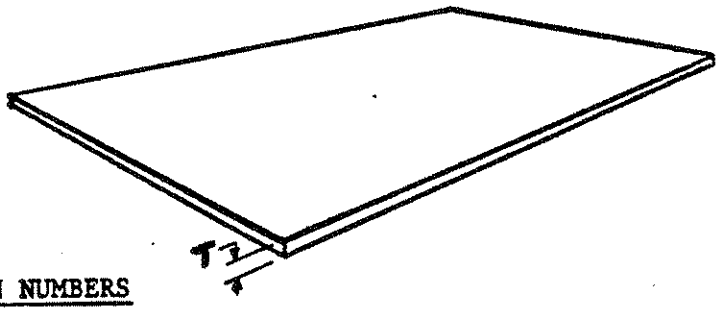
48-00128

SHEET 1 OF 1

SCOPE This specification identifies 3004 Alclad aluminum sheet with 7072 cladding alloy.

APPLICATION Similar to 3003, with somewhat greater strength and corrosion resistance.

SKETCH



SPECIFICATION NUMBERS

THICKNESS T	TEMPER		FREIGHTLINER SPECIFICATION NUMBER
.050	0		48-00128-
.050	H291		-050
.050	H32		
.125	0		Y 6-124
.125	H291		-125

SPECIFICATIONS

1. Sheet herein described shall meet applicable provisions of ASTM B209.
2. Mechanical Properties:

TEMPER	MINIMUM PROPERTIES		
	TENSILE ULT. K.S.I.	YIELD K.S.I.	ELONGATION % IN 2 INCHES
0	21	8	16 - 18*
H32	27	20	4
H291	-	-	-

*Varies with thickness.

		DATE DRAWN			UNIT OF MEASURE
COMPILED	HJR	12-11-72			
APPROVED	Rollins				

Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
D	HJR	12-11-72	Rev'd & Retyped; J#60>
E	ERK	09/08/88	REVISED - P*A078-55

E-183

Materials Specification

ORIGINAL JOB NO.		TITLE	PART NO.
		SHEET, ALUMINUM 5052	48-00129
LAST CHG LTR	G		SHEET 1 OF 2

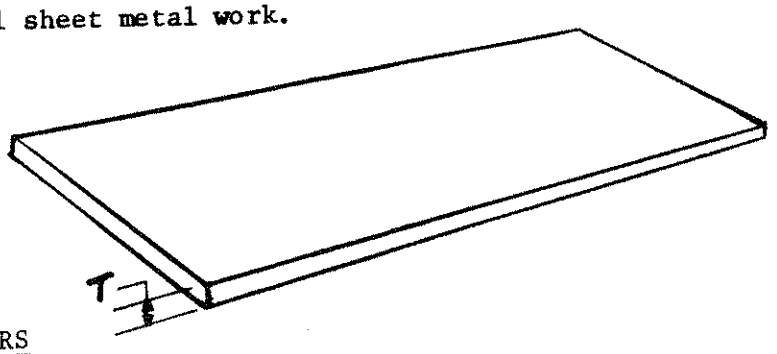
LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
F	C1649	CB	6/10/81	SEE SHEET 2
G	B1648	KRH	3/9/83	Added -032

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
B	A0829	HJR	5-11-76	Revised, Redrawn
C	65765	SB	2-23-78	See Sht. 2 #65765
D	77734	TD	4-16-79	See Sheet 2
E	67059	WTM	4-15-81	FROM: H32 TO: H32 OR H22

SCOPE This specification identifies 5052 aluminum sheet.

APPLICATION General sheet metal work.

SKETCH



SPECIFICATION NUMBERS

THICKNESS T (inches)	TEMPER	FREIGHTLINER SPECIFICATION NUMBER
.020	0	48-00129-000
.025	0	-001
.032	0	-002
.040	0	-003
.050	0	-004
.063	0	-005
.071	0	-006
.080	0	-007
.090	0	-008
.100	0	-009
.125	0	-010
.160*	0	-011
.173*	0	-012
.188*	0	-013
.190	0	-014
.204*	0	-015
.020	H32 or H22	-016
.025	H32 or H22	-017
.032	H32 or H22	-018
.040	H32 or H22	-019
.050	H32 or H22	-020
.063	H32 or H22	-021
.071	H32 or H22	-022
.080	H32 or H22	-023
.090	H32 or H22	-024
.100	H32 or H22	-025

THICKNESS T (inches)	TEMPER	FREIGHTLINER SPECIFICATION NUMBER
.125	H32/H22	48-00129-026
.160	H32/H22	-027
.173*	H32/H22	-028
.188*	H32/H22	-029
.190	H32/H22	-030
.204*	H32/H22	-031
.045*	H32/H22	-032
.020	H3E23	-100
.025	H3E23	-101
.032	H3E23	-102
.040	H3E23	-103
.050	H3E23	-104
.063	H3E23	-105
.071	H3E23	-106
.080	H3E23	-107
.090	H3E23	-108
.100	H3E23	-109
.125	H3E23	-110
.160	H3E23	-111
.173	H3E23	-112
.188	H3E23	-113
.190	H3E23	-114
.204	H3E23	-115

*Not listed by Ryerson as available.

(For Specification, see Sheet 2)

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		5-11-76			LB

Materials Specification

ORIGINAL JOB NO.	TITLE	PART NO.
	SHEET, ALUMINUM 5052	48-00129
LAST CHG LTR: G		SHEET 2 OF 2

SPECIFICATIONS

1. **Sheet** herein described shall meet applicable provisions of ASTM B209-78.
2. **Mechanical** Properties:

TEMPER	ULT. TENSILE STRENGTH ksi	YIELD POINT ksi	ELONG. % IN 2 IN.	WELDABILITY	MACHINABILITY	FORMABILITY 3003-0 = 10	HARDNESS BRINELL **
0	25 min.	9.5	(4)	Readily weldable.	Difficult	8.6	47
H32/H22	31 min.	23	(4)		Limited	6.8	60
H3E23	28-35	23	4 - 12*		Limited	6.8	68 approx.

* Varies with thickness
** Load, 500 kg; 10 mm ball.

3. Thickness Tolerance Per:
The Aluminum Association. Aluminum Standards & Data.

(4) Min. Elongation in 2in.

THICKNESS	TEMPER 0	TEMPER H32/H22
0.020-0.031	16%	5%
0.032-0.050	18	5
0.051-0.113	19	7
0.114-0.249	20	9

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
F	C1649	CB	6/10/81	ADDED NOTE 4
G	B1648	KRH	3/9/83	See Sheet 1

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
B	A0829	HJR	5-11-76	Added Sht 2
C	65765	SB	2-23-78	From 68 to 60 #65765
D	77734	TD	4-16-79	Added Note 3
E	67054	WTM	4-15-80	FROM B209-68 TO B209-78

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED		5-11-76			LB.

FREIGHTLINER CORPORATION

Oregon 97208

DRAWN	HJR	TITLE	DRAWING NUMBER	
APPRV	DAJ	SHEET - ALUMINUM 5052 VINYL COATED	48-00130	
DATE	12/07/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 2	CHG. LTR. V
CATIA ORIGINAL				

SCOPE: THIS SPECIFICATION IDENTIFIES: 5052 VINYL COATED ALUMINUM SHEET
1100 VINYL COATED ALUMINUM SHEET

SPECIFICATION NUMBERS:

VINYL	THICKNESS (BASE)	ALLOY	TEMPER (BASE)	MANUFACTURER		FREIGHTLINER SPECIFICATION NUMBER
				DSI	ARVINYL	
WALNUT	.030	5052	H32	DSI-ML752		48-00130-003
WALNUT	.063	5052	H32	DSI-ML752		48-00130-005
BLACK	.063	5052	H32	DSI/ML811		48-00130-010
HRZ WLNT	.063	1100	0			48-00130-019
HRZ WLNT	.063	5052	H32		77418-150	48-00130-020
HRZ WLNT	.063	5052	0		77418-150	48-00130-021
BURL	.063	5052	H32		77777-222	48-00130-022
BURL	.063	5052	0		77777-222	48-00130-023
CURL ELM	.080	5052	H32		77777-223	48-00130-024
CURL ELM	.080	5052	0		77777-223	48-00130-025
KIRKHAM BURL	.063	5052	H32		75229-150	48-00130-026
KIRKHAM BURL	.063	5052	0		75229-150	48-00130-027
SHADOW GRAY	.080	5052	H32	DSI-SR3322	75229-150	48-00130-030
SHADOW GRAY	.080	5052	0	DSI-SR3322	75229-150	48-00130-031
DRIFTWOOD BURL	.063	1100	0	DSI-BF4161	75264-150	48-00130-039
DRIFTWOOD BURL	.063	5052	H32	DSI-BF4161	75264-150	48-00130-040
DRIFTWOOD BURL	.063	5052	0	DSI-BF4161	75264-150	48-00130-041
ML800 BLK	.063	1100	0	DSI-ML800	△5	48-00130-049
ML800 BLK	.063	5052	0	DSI-ML800	△5	48-00130-051
V SHADOW WOOD	.080	5052	H32		77445-150	48-00130-052

CHG	JOB NO	DATE	BY	REVISION
V	P07030-17	09/30/99	SDL	REDRAWN ON CATIA; ADDED -052

DRAWN	HJR	TITLE	DRAWING NUMBER	
APPRV	ROLLINS	SHEET - ALUMINUM 5052 VINYL COATED	48-00130	
DATE	12/07/71	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 2 OF 2	CHG. LTR. V
CATIA ORIGINAL				

SPECIFICATIONS:

1. MATERIAL: ALUMINUM SHEET MEETING APPLICABLE SPECIFICATIONS
2. COATING: VINYL LAMINATE, .008-.010 THICK, MEETING APPLICABLE PROVISIONS OF ASTM D 1593 & 22-44745-001 FOR -024, -025, 22-44745-004 FOR -039, -040, -041, 22-44745-005 FOR -052.
3. MINIMUM MECHANICAL PROPERTIES:

ALLOY	SPEC.	TEMPER	TENSILE KSI	YIELD KSI	ELONGATION % IN 2 INCHES
5052	ASTM B209	0	25	9.5	19
5052	ASTM B209	H32	31	23	5-7*
1100	ASTM B209	0	13	5	35*

*VARIES WITH THICKNESS

4. COIL IS TO BE WOUND WITH VINYLCOATING TO INSIDE.

△5 -049 & -051 BLACK ARE SUITABLE FOR SILKSCREENED GRAPHICS
-010 BLACK IS NOT SUITABLE FOR SILKSCREENING.

CHG	JOB NO	DATE	BY	REVISION
V	P07030-17	09/30/99	SDL	REVISED & REDRAWN ON CATIA. ADDED ITEM -052

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	COIL PLATE AND SHEET ALUMINUM, 5454	48-00131	
DATE	01/23/98			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. E

SCOPE: THIS SPECIFICATION IDENTIFIES 5454 ALUMINUM SHEET, AND COIL PLATE.

APPLICATION: WELDED STRUCTURES AND GENERAL SHEET METAL WORK.

THICKNESS "T" IN INCHES (NOM)	TEMPER	FREIGHTLINER SPEC NUMBER
.125	0	48-00131-010
.188		48-00131-013
.063	H32	48-00131-021
.090		48-00131-024
.100		48-00131-025
.125 -0.0/+.014		48-00131-026
.160		48-00131-027
.188		48-00131-029
.250		48-00131-032

E

SPECIFICATIONS:

1. MATERIAL: SHEET & PLATE HEREIN DESCRIBED SHALL MEET APPLICABLE PROVISIONS OF ASTM B209.

2. MECHANICAL PROPERTIES:

TEMPER	MINIMUM PROPERTIES		
	TENSILE ULT.	YIELD	ELONG. % IN 2 INCHES
0	31 ksi	12 ksi	12 - 18*
H32	36 ksi	26 ksi	5 - 12*

* VARIES WITH THICKNESS

CHG	JOB NO	DATE	BY	REVISION
E	P04122-05	01/23/98	DAJ	REVISED AND REDRAWN IN CATIA. ADD TOLERANCE ON -026.

DRAWN	DAJ	TITLE	DRAWING NUMBER
APPRV	DAJ	SHEET-ALUMINUM 6061	48-00132
DATE	03/18/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			

SCOPE: THIS SPECIFICATION IDENTIFIES 6061 ALUMINUM SHEET.

APPLICATION: HEAVY-DUTY STRUCTURES REQUIRING GOOD CORROSION RESISTANCE.

THCKNSS	TEMPER	FREIGHTLINER SPEC NO
.050	0	48-00132-004
.063		48-00132-005
.071		48-00132-006
.080		48-00132-007
.100		48-00132-009
.125		48-00132-010
.188		48-00132-013
.190		48-00132-014
.204		48-00132-015
.063	T4	48-00132-031

THCKNSS	TEMPER	FREIGHTLINER SPEC NO
.025	T6	48-00132-017
.050		48-00132-020
.063		48-00132-021
.080		48-00132-023
.090		48-00132-024
.125		48-00132-026
.188		48-00132-029
.190		48-00132-030

SPECIFICATIONS:

1. MATERIAL: ALUMINUM 6061
2. SHEET HEREIN DESCRIBED SHALL MEET APPLICABLE PROVISIONS OF ASTM B209
3. MINIMUM MECHANICAL PROPERTIES:

TEMPER	TENSILE (ksi)	YIELD (ksi)	ELONG % IN 2"
0	20**	12**	14-18*
T4	30	16	16
T6	38	32	10

* VARIES WITH THICKNESS

** MAXIMUM MECHANICAL PROPERTIES

CHG	JOB NO	DATE	BY	REVISION
C	P2D210-25	03/18/98	DAJ	REVISED AND REDRAWN, ADDED 031.

48-00133

Materials Specification

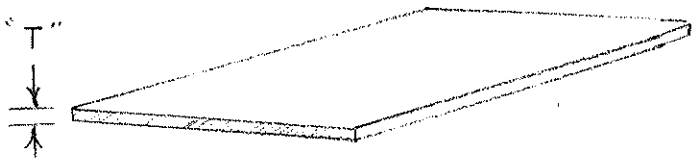
PRINT ISSUED	TITLE	PART NO.
9-1-71	SHEET, ALUMINUM, BLACK ANODIZED, 5052	48-00133
LAST CHG LTR		SHEET 1 OF 1

CHG	BY	DATE	WAS

SCOPE This specification describes black anodized sheet aluminum 5052.

APPLICATION Where decorative finish and/or where increased resistance to abrasion and corrosion are desired.

SKETCH



SPECIFICATION NUMBERS

"T" THICKNESS	TEMPER	FINISH	MIN. THICKNESS ANODIZING, INCHES	FREIGHTLINER SPECIFICATION NUMBERS
.020	H-32	Black Anodized	.0005	48-00133-001

CHG	BY	DATE	WAS

SPECIFICATIONS

1. Sheet herein described shall meet applicable provisions of ASTM B209-68.

		DATE DRAWN			UNIT OF MEASURE
COMPILED	RLR	8-24-71			LB.
APPROVED	[signature]				

ns

Portland FREIGHTLINER CORPORATION Oregon 97208

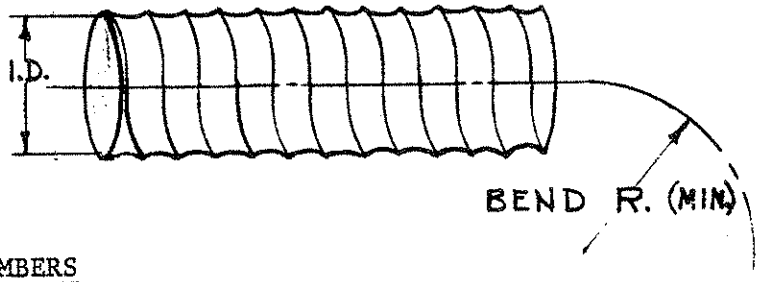
Materials Specifications

PRINT ISSUED	TITLE	PART NO.
	DUCT, FLEXIBLE COTTON-NEOPRENE, WIRE REINF.	48-00134
LAST CHG. LTR. B		SHEET 1 OF 2

SCOPE This specification identifies wire reinforced neoprene coated cotton duck tubing.

APPLICATION Light pressure or light suction air duct service.

SKETCH



SPECIFICATION NUMBERS

NOM. SIZE (I.D.)		BEND RADIUS R. (MIN)	MANUFACTURER'S NUMBER WWW	MANUFACTURER'S NUMBER EVR		FREIGHTLINER SPECIFICATION NUMBER	
1 1/2		.88		991		48-00134-150	A
2		2.10	*			-200	
2 1/2		1.50		996		-250	A
3		2.50				-300	
3		2.50		994		-301	B
3 1/2				1003		-350	E
4		3.00				-400	
5		3.50				-500	
6		4.00				-600	

* Bantam Duct ®; order by Name and Nominal Size.

SPECIFICATIONS

1. Material: Neoprene - Cotton with spring steel wire reinforcement.
2. Construction: Neoprene coated single ply light cotton cloth shaped with an internal spiral spring wire.
3. Temperature Range: -40°F to 180°F (-40° to 82°C).
4. Flammability: Must meet pertinent provisions of FMVSS #302.

CHG	BY	DATE	CHANGE INFORMATION
—	—	—	J #A0432
A	LD	4-14-80	ADDED -150 & -250
A1	LD	4-14-80	RFD# 76895
B	RMS	7-31-80	ADDED -301 & -350

WAS

CHG	BY	DATE

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED	Rolling	6-21-73			FT.

ns

Materials Specification

PRINT ISSUED		TITLE	PART NO.
		DUCT, FLEXIBLE COTTON-NEOPRENE, WIRE REINFORCEMENT	48-00134
LAST CHG. LTR.	B		SHEET 2 OF 2

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
		—	J #A0432
A	LD	4.14.80	SEE SHT 1
A1	LD	4-14-80	RFDC 76895
B	RWS	7-31-80	SEE SHT 1

ENGINEERING NOTES

1. Friction Losses

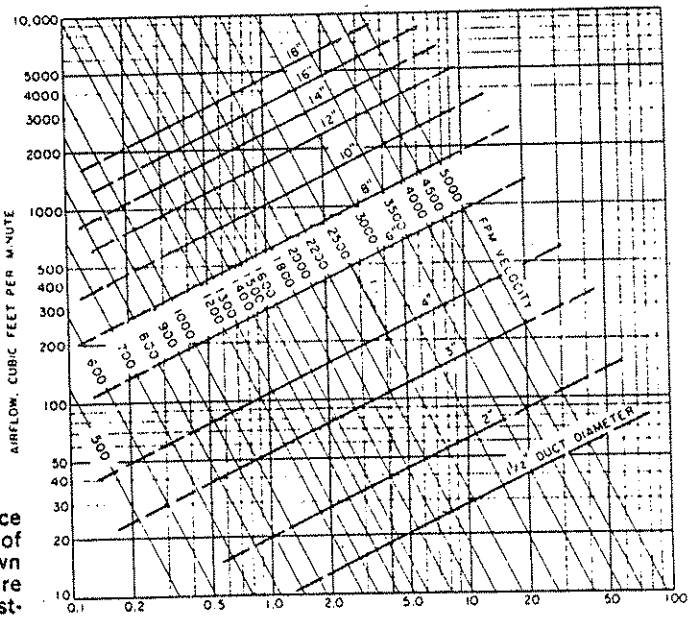
EXAMPLE 1

What is the resistance in inches of w.g. of a 25 ft. straight length of 4 in. ID **Flexaust** hose with air velocity 2500 fpm?

Value obtained directly from Chart 1 is 4.00 ins. w.g. for 100 ft. For 25 ft. would be 1.0 ins. w.g.

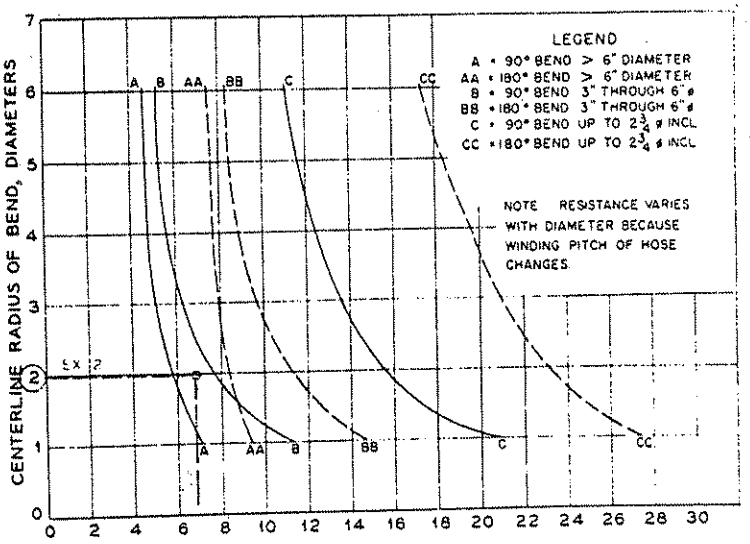
When the same hose length includes an elbow, its resistance will be increased. This increase can be calculated as that of added length to the actual straight length of hose. It is shown on Chart 2 as a number of equivalent diameters. These are converted to length in feet for which the appropriate resistance value from Chart 1 is then obtainable.

CHART 1



RESISTANCE, INCHES WATER PER 100 FEET, FOR STRAIGHT LENGTHS
NEGATIVE OR POSITIVE PRESSURE
(FOR LESSER OR GREATER LENGTHS IN DIRECT PROPORTION)

CHART 2



RESISTANCE FOR ELBOWS AND BENDS, IN EQUIVALENT DUCT DIAMETERS

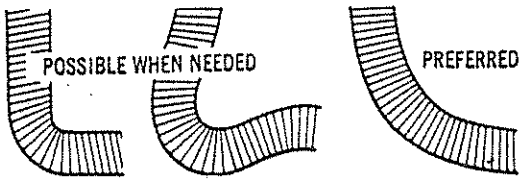
EXAMPLE 2

What is the resistance in inches of w.g., same velocity, for same hose as in Ex. 1 but having in its length a 90° elbow with centerline bending radius (CLBR) of two hose diameters (8 ins.)?

(1) Value from Chart 2 = 7.5 diameters
(2) 7.5 x 4 ins. . . . . = 2.5 ft.
(3) Value for 2.5 ft. (Chart 1) . . . . . = 0.10 ins. w.g.
(4) Resistance of straight hose plus resistance of elbow 1.0 plus 0.10 is total resistance factor = 1.10 ins. w.g.

An alternate procedure is as follows:

(5) Add 2.5 to 25 . . . . . = 27.5 ft.
Using value from Chart 1 as above the resistance is $\frac{27.5}{100} \times 4$ . . . . . = 1.10 ins. w.g.



INSTALL STRAIGHT RUN STRETCHED TAUT

For lower friction losses—Use larger diameter hose when practicable. Avoid both sharp and excessively wide turn elbows.

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED	Rollins	6-21-73			FT.

48-00136

Materials Specification

PRINT ISSUED		TITLE	PART NO.
		SHEET, ALUMINUM 5457	48-00136
LAST CHG. LTR.	—		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
—	—	—	J#A0623

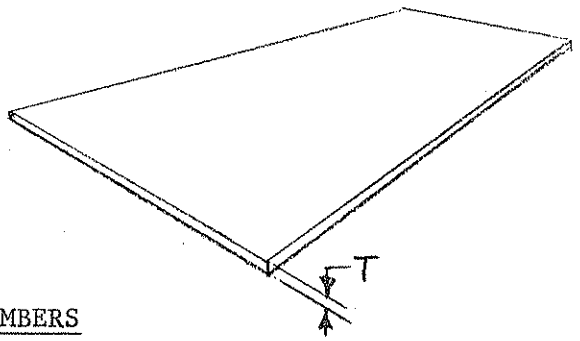
SCOPE

This specification identifies 5457 aluminum sheet.

APPLICATION

Radiator Grille

SKETCH



SPECIFICATION NUMBERS

T THICKNESS	TEMPER	FREIGHTLINER SPECIFICATION NUMBER
.032	0	48-00136-032
.063	0	-063
.080	0	-080
.090	0	-090
.100	0	-100
.125	0	-125

SPECIFICATIONS

1. Sheet herein described shall meet applicable provisions of ASTM B209-68.
2. Mechanical Properties:

TEMPER	MINIMUM PROPERTIES		
	TENSIL ULTIMATE K.S.I.	YIELD K.S.I.	ELONGATION MINIMUM % IN 2 INCHES
0	16 to 22	—	20

COMPILED	H.J.R.	DATE DRAWN			UNIT OF MEASURE
APPROVED	J.S.	5-23-74			SQ. FT.

48-00137

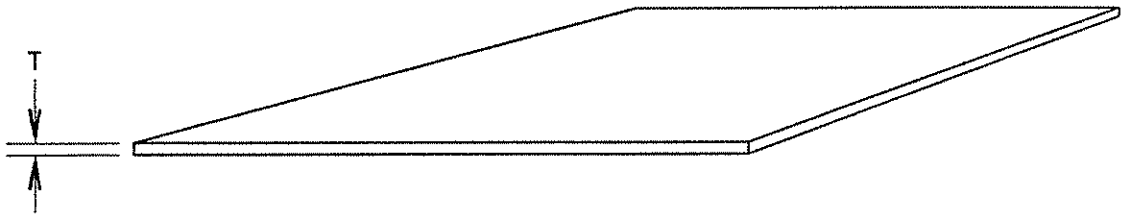
MATERIAL SPECIFICATION

ORIGINAL JOB NO.	TITLE	PART NO.
9633C	SHEET ALUMINUM 1100	48-00137
LAST CHG LTR: A		SHEET 1 OF 1

SCOPE: THIS SPECIFICATION IDENTIFIES 1100 ALUMINUM SHEET.

APPLICATION: SHEET METAL WORK.

SKETCH:



SPECIFICATION NUMBERS:

THICKNESS T	TEMPER		FREIGHTLINER SPECIFICATION NUMBER
.063 .020	H25 H24		48-00137-000 48-00137-001

SPECIFICATIONS:

1. SHEET HEREIN DESCRIBED SHALL MEET APPLICABLE PROVISIONS OF ASTM B209-68.

2. MECHANICAL PROPERTIES:

TEMPER	TYPICAL PROPERTIES		
	TENSILE ULTIMATE KSI	YEILD KSI	ELONGATION % IN 2 INCHES
H25	17.5-23.5	15.5-22.5	2%-5%
H24	16.0-21.0	14.0	3%

LTR	BY	DATE	CHANGE INFORMATION
A	SJF	05-06-85	REDRAWN TO CADAM; ADD-1
	9633L		

LTR	BY	DATE	CHANGE INFORMATION

DRAWN | DATE DRAWN | UNITT OF MEASURE | MASTER NUMBER

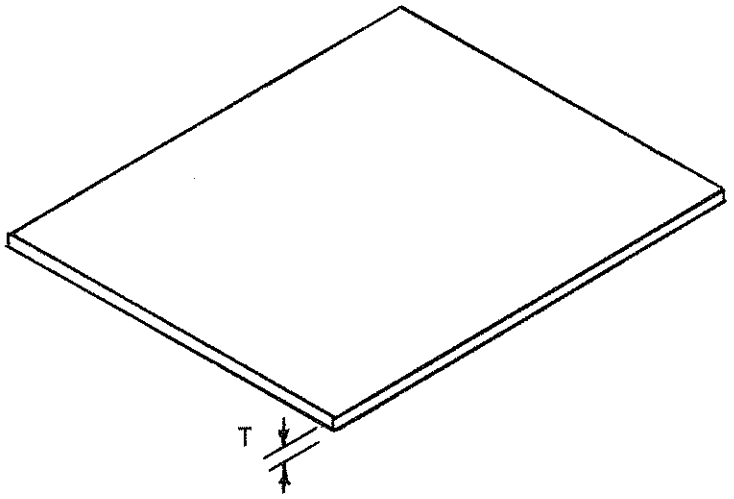
ORIGINAL JOB NO.	TITLE	PART NO.
66555	SHEET ALUMINUM 3004	48-00140
LAST CHG LTR A		SHEET 1 OF 1

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION
A	66555	DL	3-26-80	REVISED & REDRAWN

SCOPE This specification identifies 3004 Alum. sheet.

APPLICATION Skin material. Minimizes leuder lines.

SKETCH



SPECIFICATION NUMBERS

THICKNESS T	TEMPER		FREIGHTLINER SPECIFICATION NUMBER
.080	0		48-00140-080

LTR	JOB NO.	BY	DATE	CHANGE INFORMATION

SPECIFICATIONS

1. Sheet herein described shall meet applicable provisions of ASTM B209-60.
2. Mechanical Properties:

TEMPER	MINIMUM PROPERTIES		
	TENSILE ULT. K.S.I.	YIELD K.S.I.	ELONGATION % IN 2 INCHES
0	22	8.5	10 - 18*

* Varies With Thickness

		DATE DRAWN			UNIT OF MEASURE
COMPILED	JDC	9-5-79			LB.
APPROVED					

48-00176

Materials Specification

PRINT ISSUED	TITLE	PART NO.
9-1-71	PLATE, ALUMINUM 5052	48-00176
LAST CHG LTR D		SHEET 1 OF 1

K&R

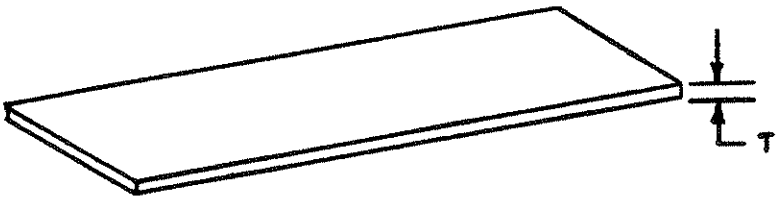
SCOPE

This specification identifies 5052 aluminum plate.

APPLICATION

General sheet metal work.

SKETCH



SPECIFICATION NUMBERS

TEMPER	THICKNESS T	FREIGHTLINER SPECIFICATION NUMBER
0	.250	48-00176-000
0	.313	-001
0	.375	-002
0	.500	-003
0	.625	-004
0	.750	-005
0	.875	-
0	1.000	-007
H-32	.250	-008
H-32	.313	-009
H-32	.375	-010
H-32	.500	-011
H-32	.625	-012
H-32	.750	-013
H-32	.875	-014
H-32	1.000	-015
H-32	1.250	-016
H-32	1.500	-017

SPECIFICATION

1. Plate herein described shall meet applicable provisions of ASTM B209.
2. Mechanical Properties:

TEMPER	MINIMUM PROPERTIES		
	TENSILE ULT. K.S.I.	YIELD K.S.I.	ELONGATION % IN 2 INCHES
0	25	9.5	18
H-32	31	23	11

CHG	BY	DATE	WAS
A	RWG	5-12-71	Revised & Redrawn
B	RLR	6-17-71	Added Note 2
C	RWG	8-13-71	.325; Added -016, -017
D	ERK	09/23/88	DWG. UPDATED-P*A078-59

CHG	BY	DATE	WAS

ns

COMPILED	RWG	DATE DRAWN			UNIT OF MEASURE
APPROVED		5-12-71			

Portland FREIGHTLINER CORPORATION Oregon 97208

Materials Specification

PRINT ISSUED	TITLE	PART NO.
9-23-71	PLATE, ALUMINUM 6061	48-00177
LAST CHG LTR: C		SHEET 1 OF 1

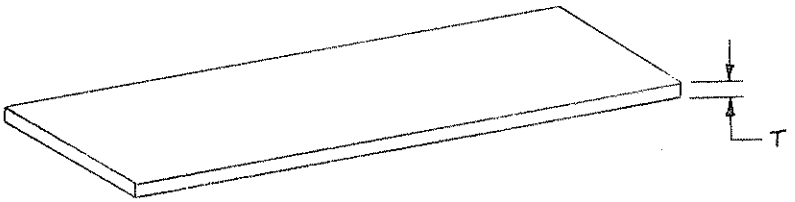
SCOPE

This specification identifies 6061 aluminum plate.

APPLICATION

Heavy-duty structures requiring good corrosion resistance.

SKETCH



SPECIFICATION NUMBERS

TEMPER	THICKNESS T	FREIGHTLINER SPECIFICATION NUMBER
T651	.250	48-00177-000
T651	.313	-001
T651	.375	-002
T651	.500	-003
T651	.625	-004
T651	.750	-005
T651	.875	-006
T651	1.000	-007
T651	1.250	-008
T651	1.500	-009
T651	1.750	-010
T651	2.000	-011

C

TEMPER	THICKNESS T	FREIGHTLINER SPECIFICATION NUMBER
0	.250	48-00177-100
0	.375	-101
0	.500	-102
0	.625	-103
0	.750	-104

SPECIFICATIONS

1. Plate herein described shall meet applicable provisions of ASTM B209-68.
2. Mechanical Properties:

TEMPER	MINIMUM PROPERTIES		
	TENSILE ULT. K.S.I.	YIELD K.S.I.	ELONGATION % IN 2 INCHES
T-6	45	35	4 - 10*

*Varies with Thickness

CHG	BY	DATE	WAS
A	RWG	5-12-71	Revised & Redrawn
B	RLR	6-17-71	Added Note 2
C	RWG	9-10-71	Added dash numbers

COMPILED	RWG	DATE DRAWN			UNIT OF MEASURE
APPROVED		5-12-71			LB.

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183

48-00179

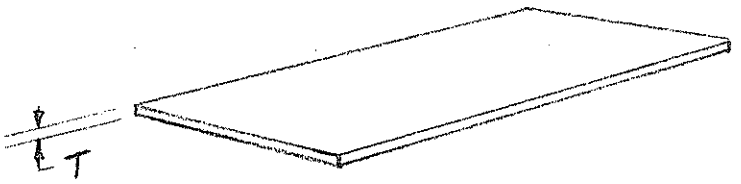
Materials Specification

PRINT ISSUED	TITLE	PART NO.
	PLATE, ALUMINUM 5086	48-00179
LAST CHG. LTR		SHEET 1 OF 1

SCOPE This specification describes 5086-H32 Aluminum Plate.

APPLICATION Superior resistance to atmospheric corrosion. Used for welded assemblies.

SKETCH



SPECIFICATION NUMBERS

T THICKNESS (INCHES)	TEMPER		FREIGHTLINER SPECIFICATION NUMBER
.250	H32		48-00179-025
.313			-031
.375			-038
.500			-050
.750			-075
1.000			-100

SPECIFICATIONS

1. Plate herein described shall meet applicable provisions of ASTM B209-68.

2. Mechanical Properties:

TEMPER	TYPICAL PROPERTIES		
	TENSILE ULT. k.s.i.	YIELD k.s.i.	ELONGATION % IN 2 inches
H32	42	30	12-16*

*Varies with thickness

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
—	—	—	Job No. 84160

ns

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED	Rollins	12-31-71			LB.

Portland FREIGHTLINER CORPORATION Oregon 97208

48-00180

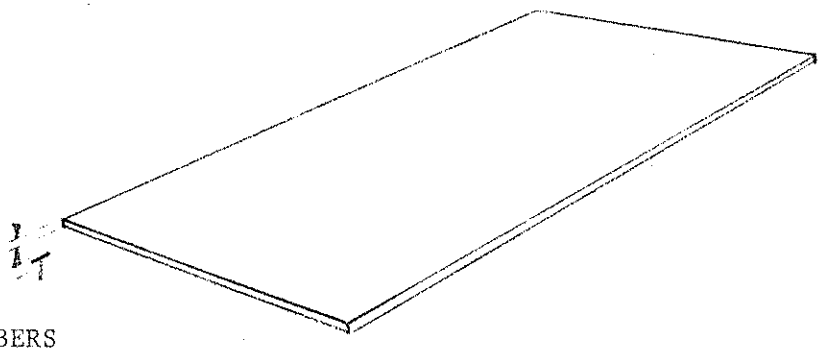
Materials Specification

PRINT ISSUED	TITLE	PART NO.
	SHEET, ALUM 5086	48-00180
LAST CHG. LTR		SHEET 1 OF 1

SCOPE This specification identifies 5086 aluminum sheet.

APPLICATION General structural use where good general workability and resistance to stress corrosion and superior resistance to atmospheric corrosion are desired.

SKETCH



SPECIFICATION NUMBERS

T THICKNESS INCHES		FREIGHTLINER SPECIFICATION NUMBERS
.063		48-00180-006
.090		-009
.125		-012
.160		-016
(.188)*		——
.190		-019

*Acceptable alternate for 0.190 thickness.

SPECIFICATIONS

1. Material must meet ASTM Spec B209.
2. Finish: Mill finish.
3. Mechanical Properties:

ALLOY & TEMPER	TENSILE STRENGTH		ELONGATION
	ULTIMATE (RANGE) K.S.I.	YIELD (MIN.) K.S.I.	IN 2" % MIN.
5086-H32	40-47	28	8

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
——	——	——	J #85630

ns

COMPILED	HJR	DATE DRAWN			UNIT OF MEASURE
APPROVED	Rollins	5-24-72			SQ. FT.

Portland FREIGHTLINER CORPORATION Oregon 97208

E-183