23-9068

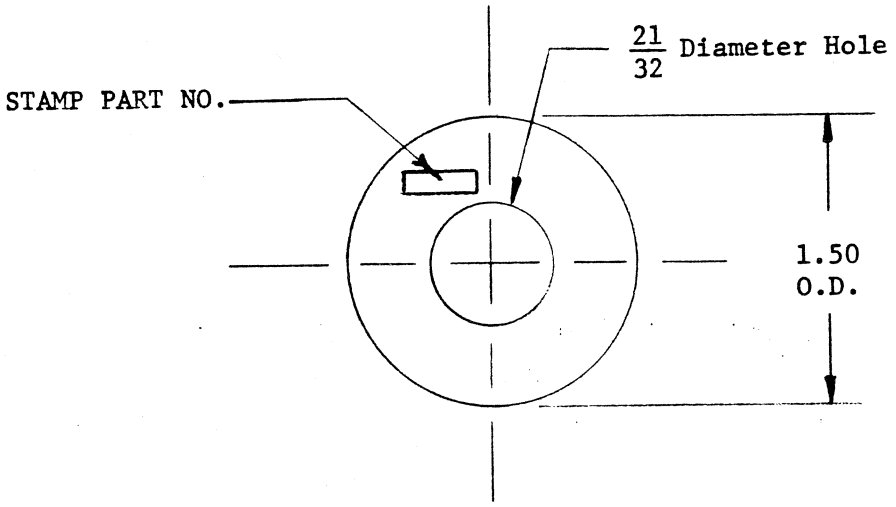
General Use Part

PRINT ISSUED	TITLE	PART NO.
6-1-70	SPACER 21/32 I.D. HOLE ALUMINUM	23-9068
LAST CHG. LTR. D		SHEET 1 OF 1

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
B	K.JA	5-7-70	REDRAWN & UPDATED
C	HJR	2-28-72	5/8 (in title); J#85170
D	YJY	3-3-82	X2; REPLACED BY 23-9291

SKETCH



PART NUMBERS

Length is called out with the dash number in hundredths

Example: 23-9068-025 = 0.25 Inches Long
23-9068-150 = 1.50 Inches Long

ENGINEERING NOTES

(1) Material: Aluminum Screw Stock of any one of the following alloys: 2011-T3; 2017-T451; 2024-T351; 6061-T651

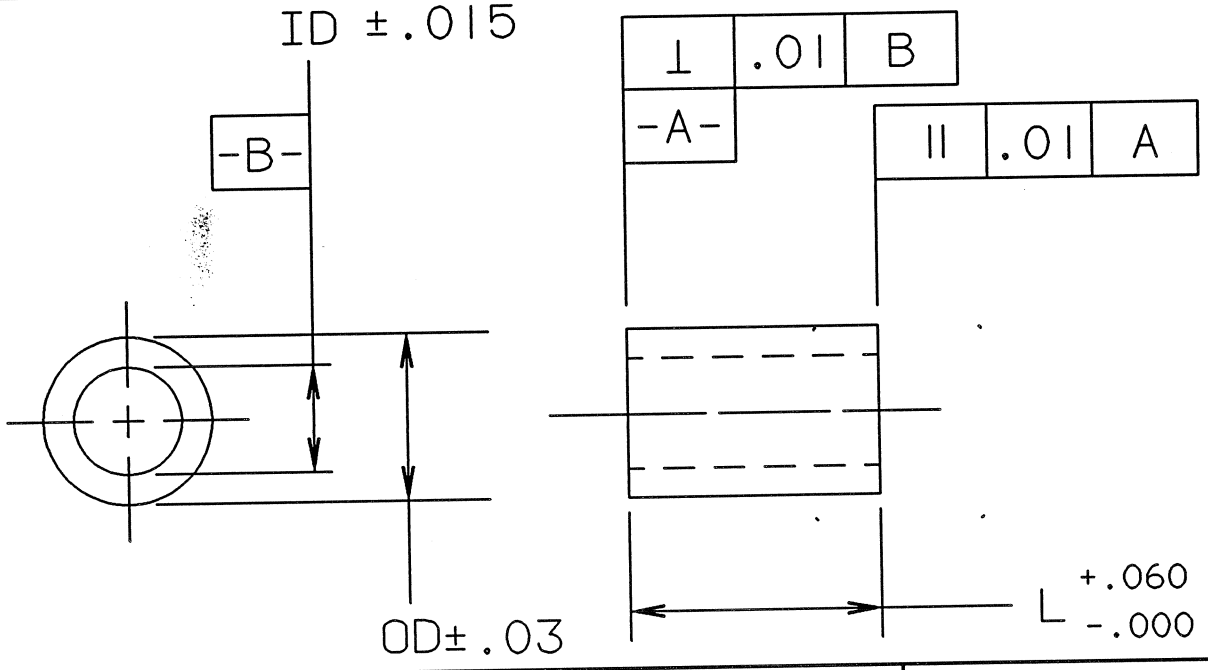
		DATE DRAWN		MATERIAL	
COMPILED	KJA	1-2-69		(1)	
APPROVED	K.J.A				

Portland FREIGHTLINER CORPORATION Oregon 97208

D

MFG X2

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .493 ID X .675 OD	23-09100
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.493	.675			23-09100-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-09100-050

SPACER 1.000 LONG = 23-09100-100

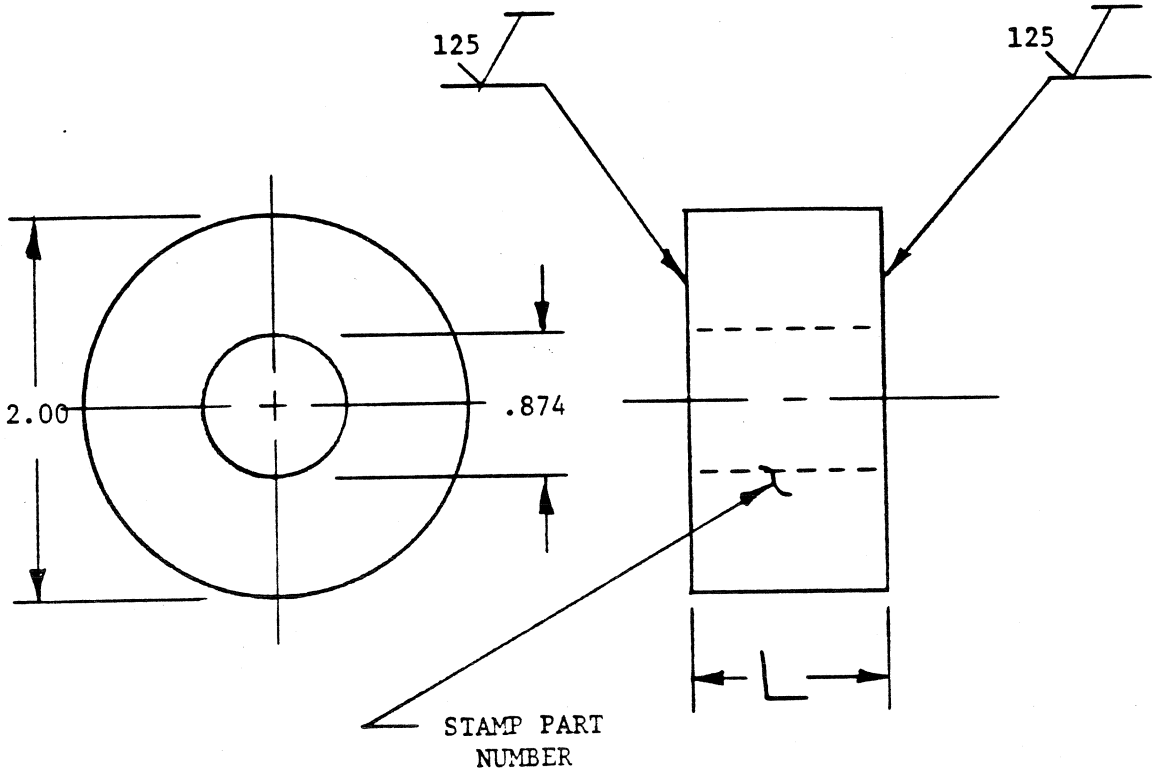
ENGINEERING NOTES

1. MATERIAL: 48-00132
   48-00177
   48-00327
   48-00402
   48-00176 (UP TO 3/8 LENGTH ONLY)
   48-00426

2. DEBURR
3. SPACERS UP TO 3/8" MAY BE PUNCHED ON N/C MACHINE.
4. T6 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
C	PA2120-00	05/26/95	JRT	ADDED OPTIONAL MATERIAL 48-00176
D	PA2042-69	05/15/96	DAJ	ADDED OPTIONAL MATERIAL 48-00426

PRINT ISSUED	TITLE	PART NO.
	SPACER 2.00 O.D. x .88 I.D. STEEL	23-9325
LAST CHG. LTR.		SHEET OF



NOTE:

A. "L" is called out by dash number in .01 inch.

EXAMPLE: 23-9325-025 = 0.25 thick
23-9325-125 = 1.25 thick

B. "L" dimension tolerance to be within ± .03.

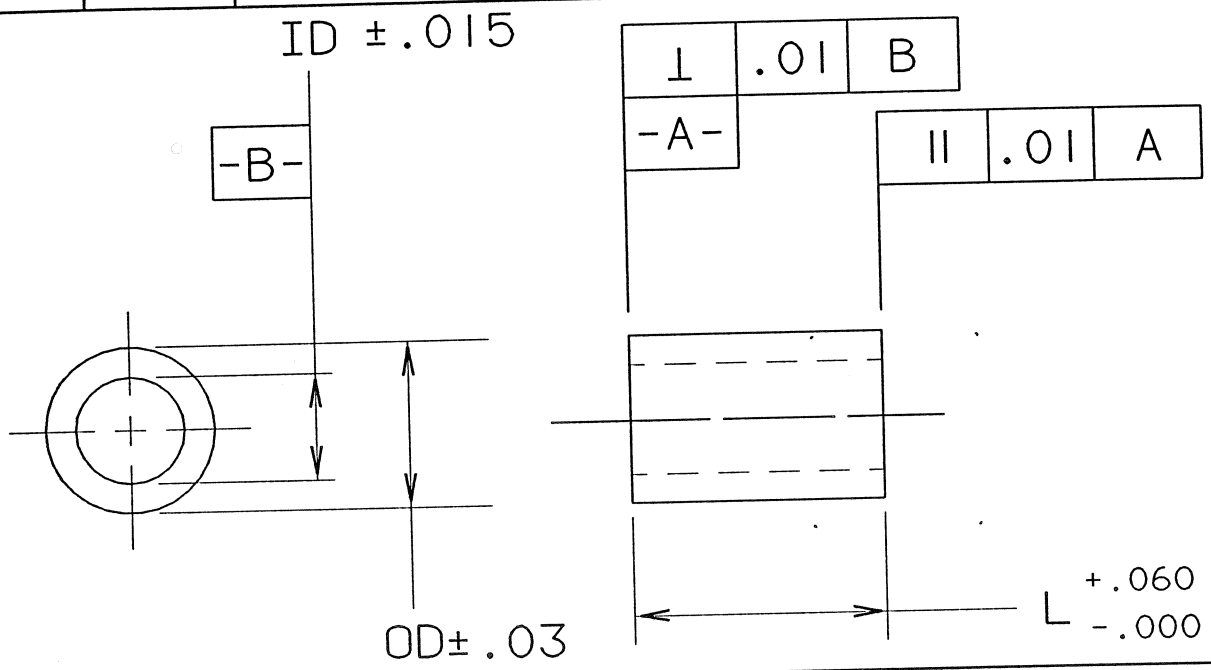
C. I.D. & O.D. to be per standard manufacturer's tolerance.

(1) Material: 2.00 O.D. x 9/16 wall tubing - cold drawn steel 1018

COMPILED	CWL	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED		4-8-70		(1)	VEHICLE

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .281 ID X 1.5 OD	23-09329
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.281	1.5			23-09329-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-09329-050
SPACER 1.000 LONG = 23-09329-100

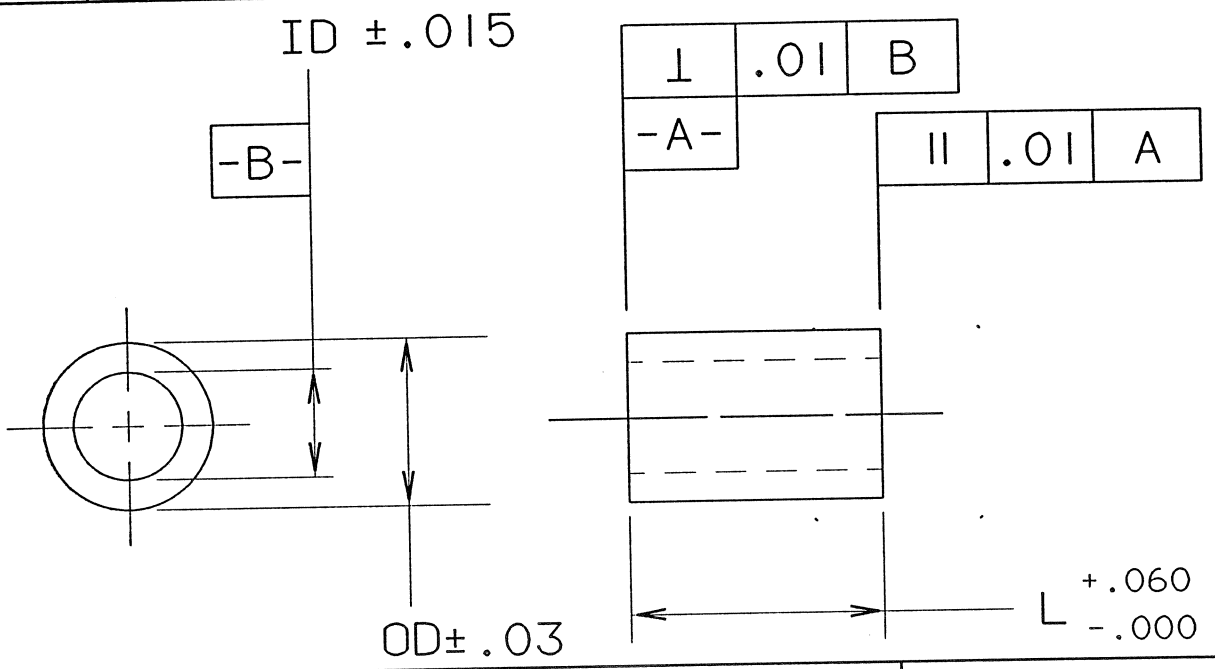
ENGINEERING NOTES

1. MATERIAL: 48-00132
48-00177
48-00326
48-00327
48-00329
AA 2017
48-03065-000
48-00176 (UP TO 1/2" THICK ONLY)

2. DEBURR
3. SPACERS UP TO 1/4" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
C	P5083H-01	04/20/92	ERK	ADDED OPTIONAL MATERIAL 48-03065-000
D	PA2137-37	05/10/95	DAJ	ADDED OPTIONAL MATERIAL 48-00176.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .406 ID X 1.5 OD	23-09330
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.406	1.5			23-09330-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-09330-050
SPACER 1.000 LONG = 23-09330-100

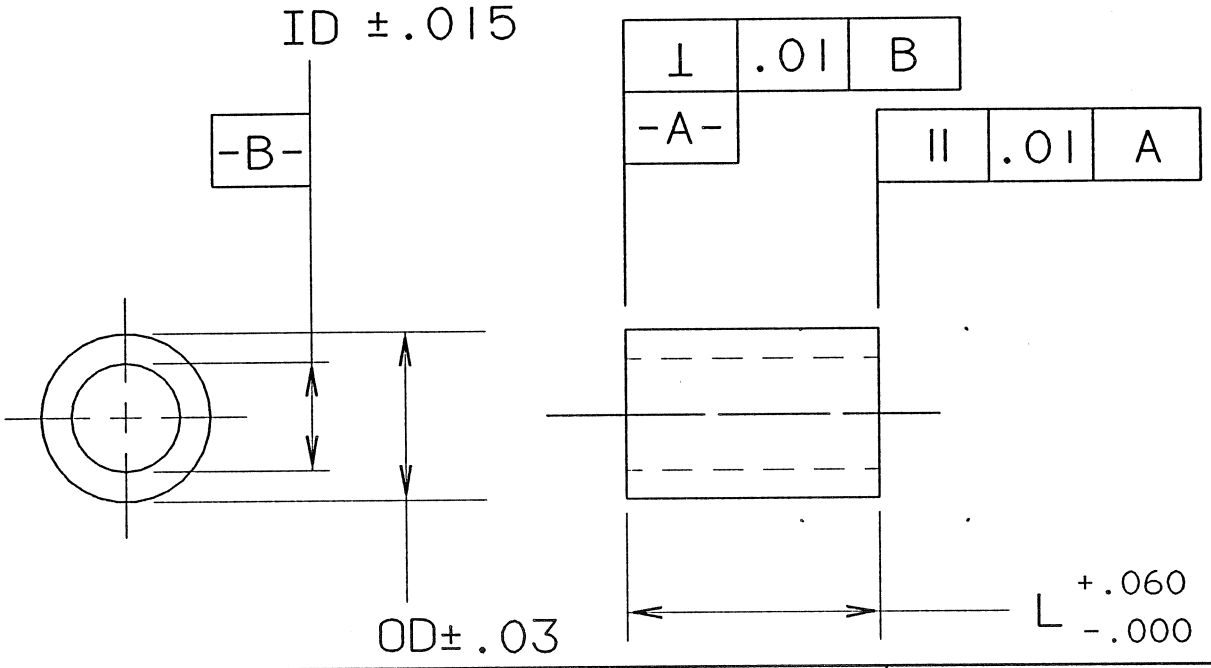
ENGINEERING NOTES

1. MATERIAL: 48-00132
48-00177
48-00326
48-00327
48-00329
AA 2017
48-03065-001
48-00176 (UP TO 1/2" THICK ONLY)

2. DEBURR
3. SPACERS UP TO 3/8" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
D	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
E	P5083H-01	04/20/92	ERK	ADDED OPTIONAL MATERIAL 48-03065-001.
F	PA2137-37	05/10/95	DAJ	ADDED OPTIONAL MATERIAL 48-00176.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .531 ID X 1.5 OD	23-09331
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.531	1.5			23-09331-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-09331-050
SPACER 1.000 LONG = 23-09331-100

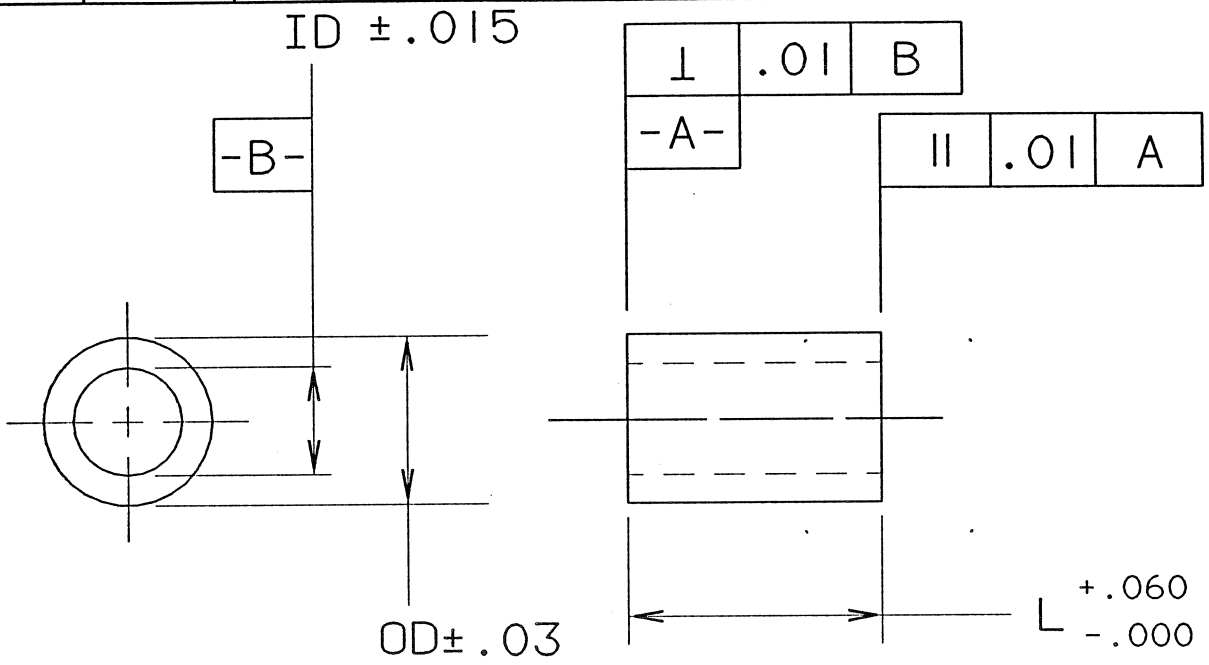
ENGINEERING NOTES

1. MATERIAL: 48-00132
48-00177
48-00326
48-00327
48-00329
48-00402
AA 2017
48-03065-002
48-00176 (UP TO 1/2" THICK ONLY)

2. DEBURR
3. SPACERS UP TO 1/2" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
C	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
D	P5083H-01	04/20/92	ERK	ADDED OPTIONAL MATERIAL 48-03065-002.
E	PA2137-36	05/03/95	DAJ	ADDED OPTIONAL MATERIAL 48-00176
F	PA2137-37	05/10/95	DAJ	ADDED RESTRICTION ON MATERIAL 48-00176.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .781 ID X 1.5	23-09332
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.781	1.5			23-09332-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

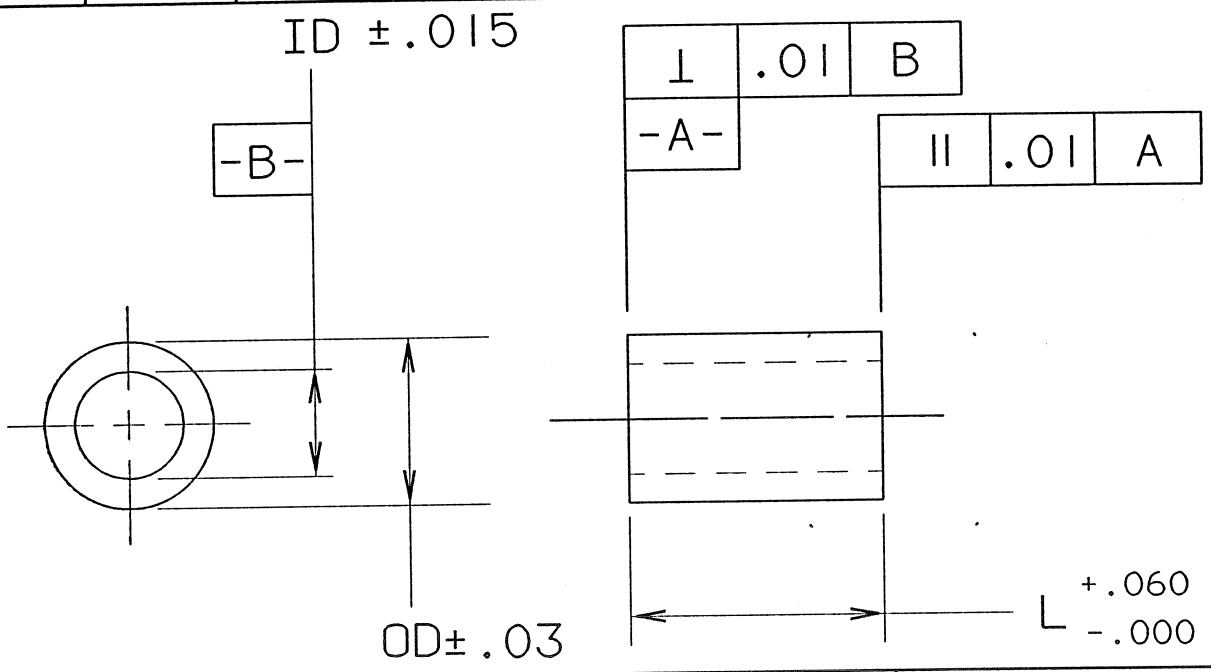
EXAMPLES: SPACER .500 LONG = 23-09332-050
SPACER 1.000 LONG = 23-09332-100

ENGINEERING NOTES

1. MATERIAL: 48-00132
48-00177
48-00326
48-00327
48-00329
48-00538
AA 2017
48-03065-003
48-00176 (UP TO 1/2" THICK ONLY)
2. DEBURR
3. SPACERS UP TO 1/2" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
C	P7187G-01	01/10/91	PCK	48-00538 WAS 48-00402
D	P5083H-01	04/20/92	ERK	ADDED OPTIONAL MATERIAL 48-03065-003.
E	PA2137-36	05/03/95	DAJ	ADDED OPTIONAL MATERIAL 48-00176
F	PA2137-37	05/10/95	DAJ	ADDED RESTRICTION ON MATERIAL 48-00176.

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .906 ID X 1.5 OD	23-09333
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.906	1.5			23-09333-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-09333-050
SPACER 1.000 LONG = 23-09333-100

ENGINEERING NOTES

1. MATERIAL: 48-00132
48-00177
48-00326
48-00327
48-00329
48-00402
AA 2017
48-00176 (UP TO 1/2" THICK ONLY)

2. DEBURR
3. SPACERS UP TO 1/2" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
C	PA2137-36	05/03/95	DAJ	ADDED OPTIONAL MATERIAL 48-00176
D	PA2137-37	05/10/95	DAJ	ADDED RESTRICTION ON MATERIAL 48-00176.

RELEASE NUMBER	REV LTR	ZONE	REVISION DESCRIPTION	BY/DATE
PP2006-02	-		DOCUMENTED	BKO 08/15/89
PX2403-20	A		30.0 WAS 25.0	RFZ 10/05/90

THIRD ANGLE PROJECTION	UNLESS OTHERWISE NOTED, DIMENSIONS AND TOLERANCES ARE DEFINED IN MILLIMETERS AND ACCORDING TO ANSI STANDARD Y14.5
TOLERANCE UNLESS OTHERWISE SPECIFIED LINEAR X X .XX ANGULAR MILLIMETERS ±1.5 ±1.5 ±.50 ±30 MIN	LAST CAD FILE CTC CADAM

APPLY, CAST, STAMP OR FORGE FREIGHTLINER AND SUPPLIER TRADE MARKS, AND FREIGHTLINER PART NUMBER AS SPECIFIED, OR IF NOT, IN A SUITABLE LOCATION
REMOVE ALL BURRS, AND ALL SHARP CORNERS AND EDGES.

SIMILAR TO	MATERIAL	MATL APPVD BY DATE
REF LAYOUT	HEAT TREAT	DRAWN BY DATE OUTEN 08/15/89
REF ORDER	FINISH	CHECKED BY DATE ELLISON 08/15/89
REF MODELS		APPVD BY DATE MOOERS 08/15/89

EQUIV.

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY DATA OF FREIGHTLINER CORPORATION, AND IS NOT FOR DISSEMINATION OR DISCLOSURE, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUBMITTED, EXCEPT AS AUTHORIZED IN WRITING BY FREIGHTLINER CORPORATION.

FREIGHTLINER CORPORATION

DESCRIPTION

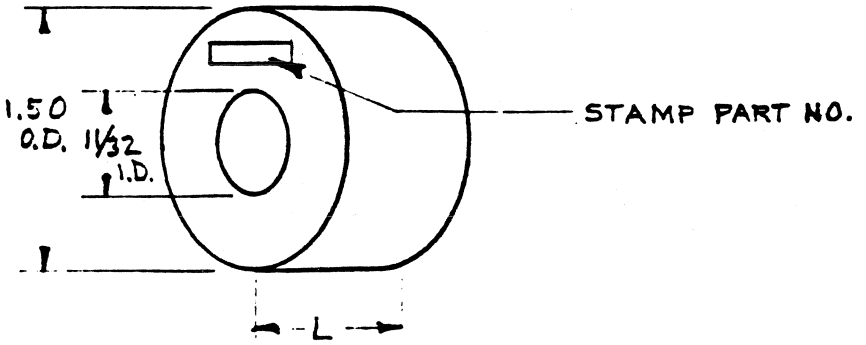
SPACER-TB,NYL,19 X 25

WEIGHT	LOC CODE	PART/DWG NO.	MASTER NO.
	C	680 991 00 40	
SCALE: FULL	DWG SIZE: B		SHEET NO.: 1 OF 1

General Use Part

PRINT ISSUED	TITLE	PART NO
	SPACER, TUBULAR ALUMINUM 11/32 I.D.	23-9993
LAST CHG LTR —		SHEET 1 OF 1

SKETCH



PART NUMBERS

I.D. INCHES	O.D. INCHES		FREIGHTLINER PART NUMBER *
11/32	1.50		23-9993-L

*Dash number, L = length in 1/100 inches.

Examples: Spacer 0.25" long = 23-9993-025
Spacer 1.50" long = 23-9993-150

ENGINEERING NOTES

1. Material: Any of the following round aluminum bar stocks:

48-00326 (2024-T351)
48-00327 (6061-T6511)
48-00329 (2011-T3)
or ----- (2017-T451)

2. Finish: Mill O.D. & I.D.
Ends: Smooth, Flat and Parallel

COMPILED	[illegible]	DATE DRAWN		NUMBER OF	
APPROVED	[illegible]	12-30-71		1	

Portland FREIGHTLINER CORPORATION Oregon 97203

WAS | CHG | BY | DATE

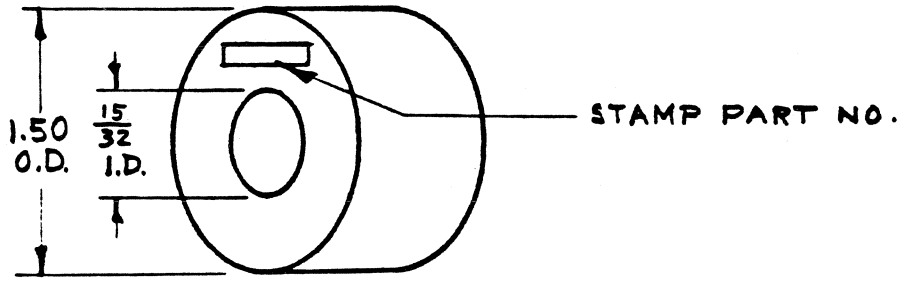
WAS Job No. 84410 | CHG | BY | DATE

ns

General Use Part

PRINT ISSUED	TITLE	PART NO.
	SPACER, TUBULAR ALUMINUM 15/32 I.D.	23-9994
LAST CHG LTR —		SHEET 1 OF 1

SKETCH



PART NUMBERS

I.D. INCHES	O.D. INCHES		FREIGHTLINER PART NUMBER *
15/32	1.50		23-9994-L

*Dash number, L = length in 1/100 inches.

Examples: Spacer 0.25" long = 23-9994-025
Spacer 1.50" long = 23-9994-150

ENGINEERING NOTES

1 Material: Any of the following round aluminum bar stocks:

48-00326 (2024-T351)
48-00327 (6061-T6511)
48-00329 (2011-T3)
or ----- (2017-T451)

2. Finish: Mill O.D. & I.D.
Ends: Smooth, Flat and Parallel

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

Portland · FREIGHTLINER CORPORATION · Oregon 97208

WAS | DATE | BY | CHG

WAS Job No. 84420 | DATE --- | BY — | CHG —

ns

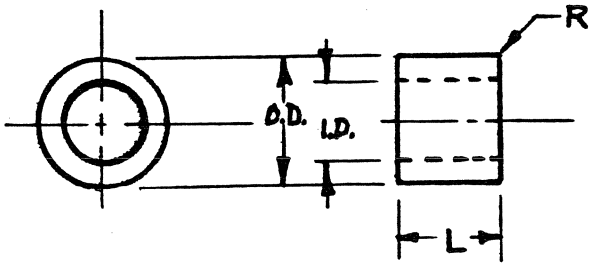
23-10041

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SPACER, TUBULAR STEEL, NARROW	23-10041
LAST CHG. LTR.	D		SHEET 1 OF 1

CHG	BY	DATE	WAS	JOB NO.
D	PCU	10/12/88	Deleted -656, 352326-90 -999, added-625	

SKETCH



PART NUMBERS

L LENGTH +.060 -.000	I.D. (REF.)	O.D. (REF.)	R	MATERIAL (1) (ALTERNATES)			FREIGHTLINER PART NUMBER
.313	.272	.438	.010 / .020	48-928-014 (48-927-000) (48-926-005)			23-10041-313
.625	.272	.438	.010 / .020	48-928-014 (48-927-000) (48-926-005)			-625

ENGINEERING NOTES

(1) Material: Butt-welded drawn-over-mandrel low carbon steel tube.

2. Finish: Zinc Plate per Freightliner Spec 49-00005-403.

CHG	BY	DATE	WAS	JOB NO
—	—	—	—	30500
A	HJR	12-13-74	Add -999 plating	A0722
B	DJL	2/13/78	-999 to OBS.	65756
C	RCF	1/4/80	Added -656	C1500D

ns

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	5-3-72		(1)	

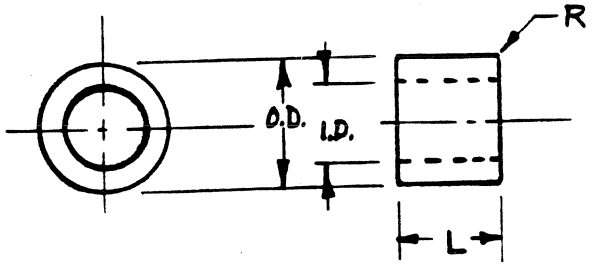
Portland FREIGHTLINER CORPORATION Oregon 97208

CB A - M/F

General Use Part

PRINT ISSUED		TITLE	PART NO.
		SPACER, TUBULAR STEEL, NARROW	23-10041
LAST CHG LTR	C		SHEET 1 OF 1

SKETCH



PART NUMBERS

L LENGTH +.060 -.000	I.D. (REF.)	O.D. (REF.)	R	MATERIAL (1) (ALTERNATES)		STATUS	FREIGHTLINER PART NUMBER
.313	.272	.438	.010 / .020	48-928-014 (48-927-000) (48-926-005)		C	23-10041-313
1.000	.272	.438	.010 / .020	48-928-014 (48-927-000) (48-926-005)		Obsolete Replaced by 04-9332-0	-999
.656	.272	.438	.010 / .020	48-928-014 (48-927-000) (48-926-005)		C	-656

ENGINEERING NOTES

(1) Material: Butt-welded drawn-over-mandrel low carbon steel tube.

2. Finish: Cadmium or Zinc Plated.

CHG	WAS	BY	DATE	JOB NO.
—	—	—	—	32500
A	Add -999 plating	HJR	12-13-74	A0722
B	-999 to OBS.	DJL	2/13/78	65756
C	Added -656	RCF	1/4/80	C1500D

CHG	WAS	DATE	BY	JOB NO.

COMPILED	HJR	DATE DRAWN		MATERIAL	
APPROVED	Rollins	5-3-72		(1)	

ns

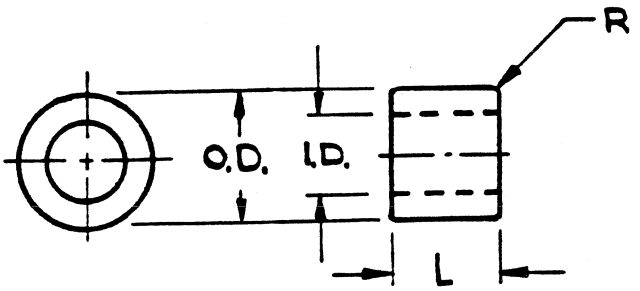
Portland FREIGHTLINER CORPORATION Oregon 9720[illegible]

C P A

General Use Part (R)

PRINT ISSUED		TITLE	PART NO.
		SPACER, TUBULAR STEEL, NARROW	23-10681
LAST CHG LTR	A		SHEET 1 OF 1

SKETCH



PART NUMBERS

L LENGTH + .060 - .000	I.D. (REF.)	O.D. (REF.)	R	MATERIAL (1) (ALTERNATES)		FREIGHTLINER PART NUMBER
.500	.584	.750	.010 / .020	48-928-056 48-926-017		23-10681-500
3.250						-325

ENGINEERING NOTES

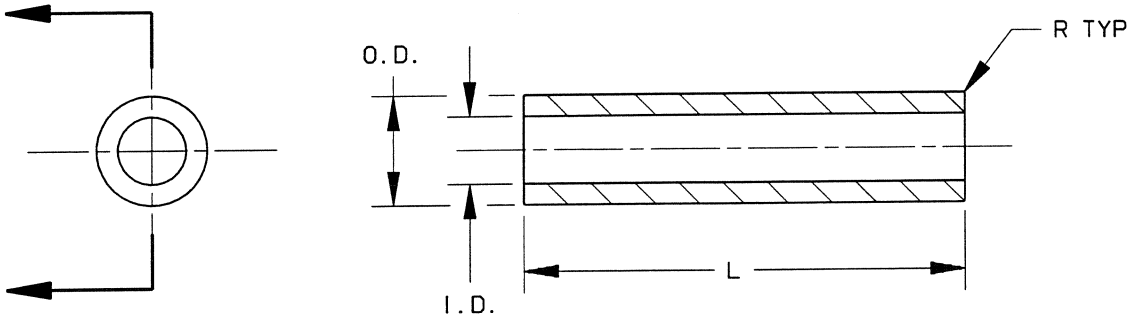
(1) Material: Butt-welded drawn-over-mandrel low carbon steel tube.

JOB NO	WAS	DATE	BY	CHG
A0709 A0759				
	Add -325	6-26-75	H.R	A

COMPILED	D.L.	DATE DRAWN		MATERIAL	
APPROVED		11-25-74		(1)	

Portland FREIGHTLINER CORPORATION Oregon 97208

DRAWN	LFB	TITLE SPACER-TUBULAR STEEL-NARROW	DRAWING NUMBER 23-10889
APPRV	DAJ		
DATE	02/04/00	FREIGHTLINER CORPORATION PORTLAND. OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



I.D. (REF) INCHES	O.D. (REF) INCHES	"R" INCHES	MATERIAL ⚠1	FREIGHTLINER PART NUMBER*
.385	.625	.010/.020	48-00928-042 OR EQUAL	23-10889-L

* L=LENGTH IN 100THS OF AN INCH. THUS 23-10889-350 EQUALS A SPACER 3.5 INCHES LONG.

ENGINEERING NOTES:

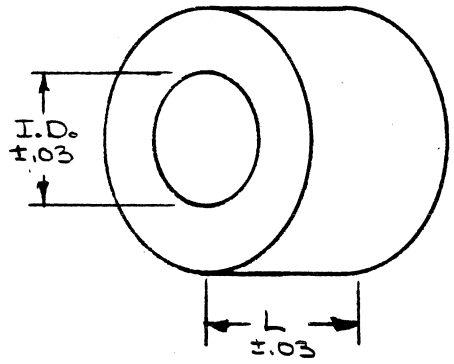
⚠1 MATERIAL: BUTT-WELDED DRAWN OVER MANDREL LOW CARBON STEEL.

2. FINISH: PLAIN.

CHG	JOB NO	DATE	BY	REVISION
C	H00056-08	02/04/00	LFB	REVISED AND REDRAWN IN CATIA. SOLID ADDED.

ORIGINAL JOB NO.	TITLE	PART NO.
B1549	SPACER, TUBULAR STEEL	23-11349
LAST CHG LTR		SHEET 1 OF 1

SKETCH



PART NUMBERS

I.D. INCHES	O.D. INCHES		FREIGHTLINER PART NO. *
29/32	1.75		23-11349-L

*Dash Number, L = length in 1/100 inches.

Examples: Spacer 0.25" long = 23-11349-025
Spacer 1.50" long = 23-11349-150

ENGINEERING NOTES

1 Material: Any of the following round steel bar stocks:

48-00827-012 (ASTM A576)
48-00829-030 (ASTM A108)
48-00830-029 (AISI 1042)
or
48-00833-175 (ASTM A108)

2. Finish: Mill O.D.
Ends: Smooth, Flat and Parallel

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

CHANGE INFORMATION	DATE	BY	JOB NO.	LTR

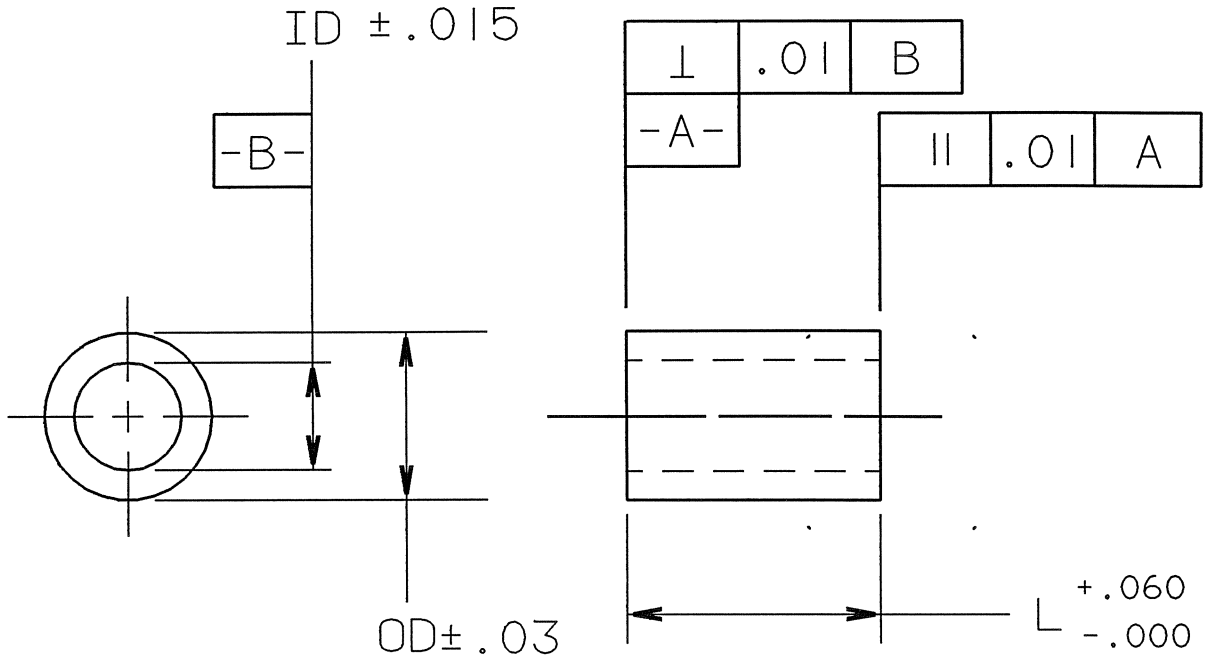
COMPILED	MDE	DATE DRAWN		MATERIAL	
APPROVED	HADDOCK	8/17/81		①	

EAC-830

Portland **FREIGHTLINER CORPORATION** Oregon 97208

M/F

DRAWN	PCK	TITLE	ITEM NUMBER
APPRV	ANF	SPACER, ALUMINUM, .406 ID X 1.00 OD	23-11427
DATE	01/10/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.406	1.000			23-11427-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-11427-050
SPACER 1.000 LONG = 23-11427-100

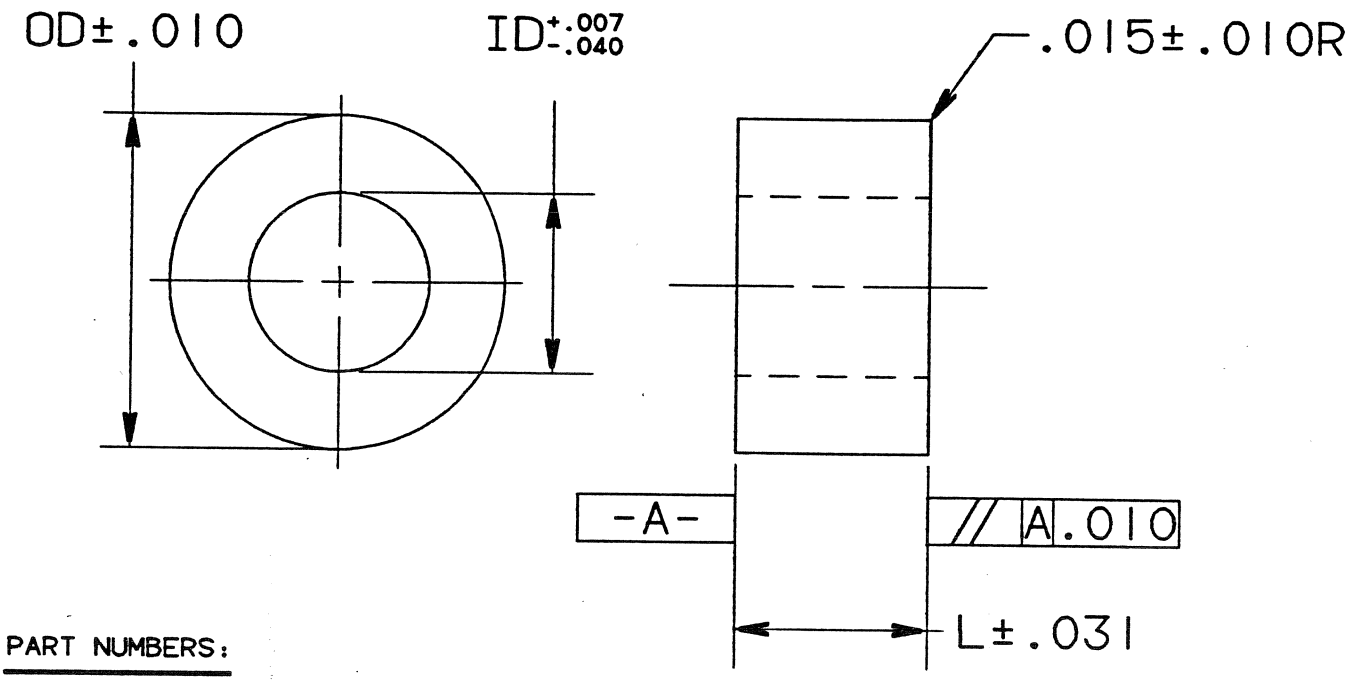
ENGINEERING NOTES

C

1. MATERIAL : 48-03087
   48-00132
   48-00176
   48-00177
   48-00326
   48-00327
   48-00329
   AA 2017
2. DEBURR
3. SPACERS UP TO 1/2" MAY BE PUNCHED ON N/C MACHINE
4. T3, T6, T351, T451 OR T651 TEMPERS

CHG	JOB/RLSE NO	DATE	BY	REVISION
B	P4681F-01	01/10/90	PCK	REVISED AND ADDED OPTIONAL MATERIAL
C	P3058J-01	01/25/94	ERK	ADDED MATERIAL 48-03087.

DRAWN	RDF	TITLE SPACER, STEEL TUBULAR	ITEM NUMBER 23-11709
APPRV	PCK		
DATE	09/15/88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBERS:

NOM SIZE (IN)	ID (IN)	OD (IN)	MATERIAL	ALT. MATERIAL	FREIGHTLINER PART NUMBER *
1/2	.562	1.062	48-00928-984 (A)	48-00928-318 (1)	23-11709-L
5/8	.688	1.312	48-00876-130 (1)	48-00876-127 (1)	23-11710-L
3/4	.812	1.562	48-00876-152	48-00876-160 (1)	23-11711-L
7/8	.938	1.750	48-00876-176 (1)	48-00876-040 (1)	23-11712-L
7/8	.938	1.500	48-00876-128	48-00876-032 (1)	23-11713-L

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLE: 1/2 ID SPACER 0.50" LONG = 23-11709-050
3/4 ID SPACER 1.25" LONG = 23-11711-125

GENERAL INFORMATION:

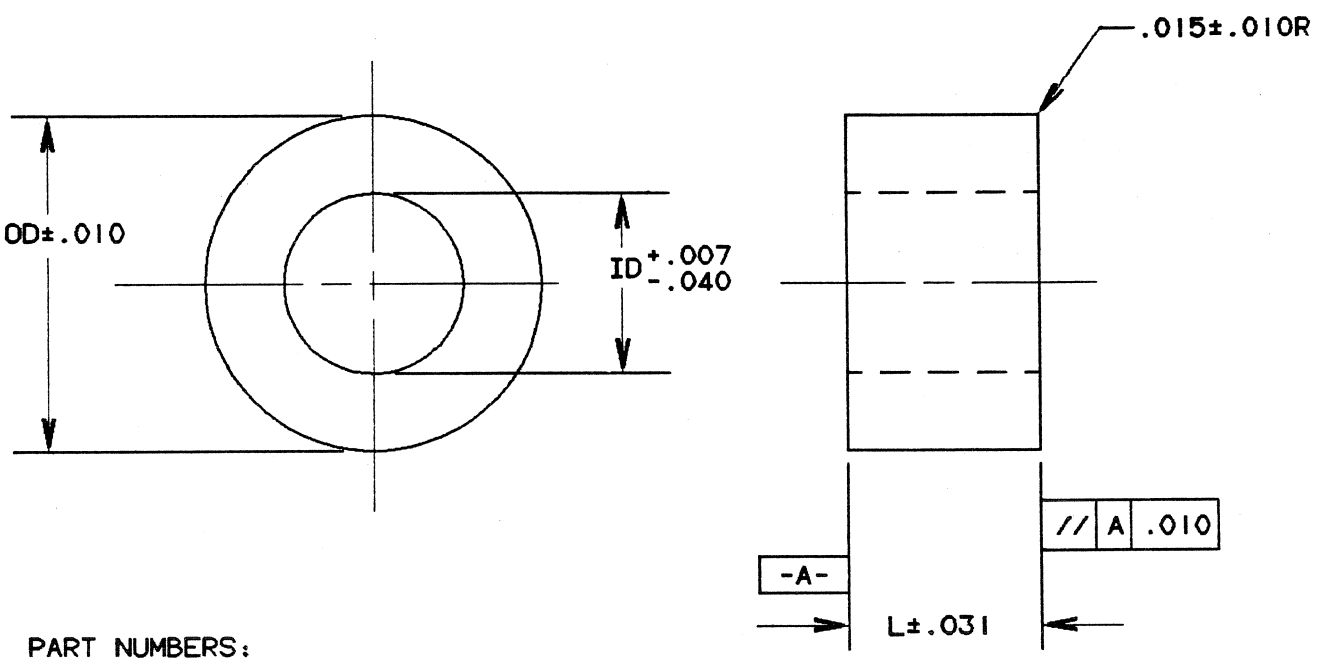
(1) REQUIRES MACHINING ON ID AND/OR OD.
2 FINISH: SMOOTH & FLAT.
3 TAG PART NO. IN BATCH LOTS.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P*A078-58	09/20/88	RDF	1-DOCUMENTED, PN FROM 23-11709/23-11713 TO 23-11709 2-FROM 48-00926-071,-072 TO 48-00928-984, -318

GENERAL USE PART

ORIGINAL JOB NO.	TITLE	PART NO.
2697B	SPACER, TUBULAR, STEEL	23-11709 THRU 23-11713
LAST CHG LTR: -		SHEET 1 OF 1

SKETCH:



PART NUMBERS:

NOM SIZE (IN)	ID (IN)	OD (IN)	MATERIAL	ALT. MATERIAL	FREIGHTLINER PART NUMBER *
1/2	.562	1.062	48-00926-071	48-00926-072 (1)	23-11709-L
5/8	.688	1.312	48-00876-130 (1)	48-00876-127 (1)	23-11710-L
3/4	.812	1.562	48-00876-152	48-00876-160 (1)	23-11711-L
7/8	.938	1.750	48-00876-176 (1)	48-00876-040 (1)	23-11712-L
7/8	.938	1.500	48-00876-128	48-00876-032 (1)	23-11713-L

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLE: 1/2 ID SPACER 0.50" LONG = 23-11709-050
3/4 ID SPACER 1.25" LONG = 23-11711-125

GENERAL INFORMATION:

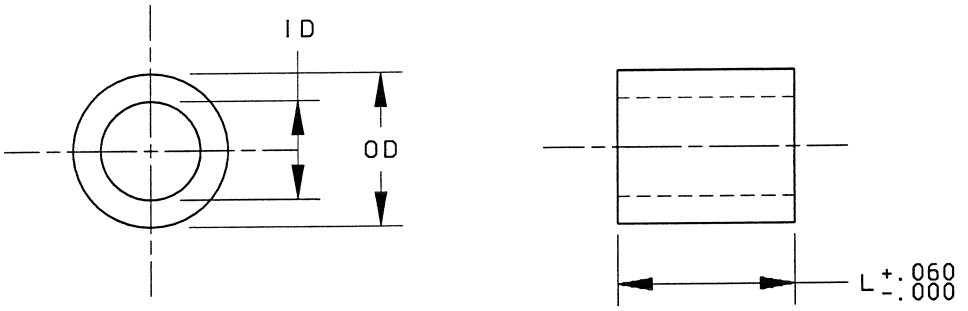
(1) REQUIRES MACHINING ON ID AND/OR OD.
2 FINISH: SMOOTH & FLAT.
3 TAG PART NO. IN BATCH LOTS.

COMPILED	JWL	DATE DRAWN	CADAM ORIGINAL	MATERIAL	MASTER NUMBER	
APPROVED	DJL	1-03-85		(1)	03330	00001

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

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

DRAWN	LFB	TITLE SPACER-TUBULAR, STEEL	DRAWING NUMBER 23-11720
APPRV	DAJ		
DATE	12/06/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



ID (REF)	OD (REF)	FREIGHTLINER PART NUMBER*
.562	.875	23-11720-L

* DASH NUMBER L = LENGTH IN 1/100 INCHES

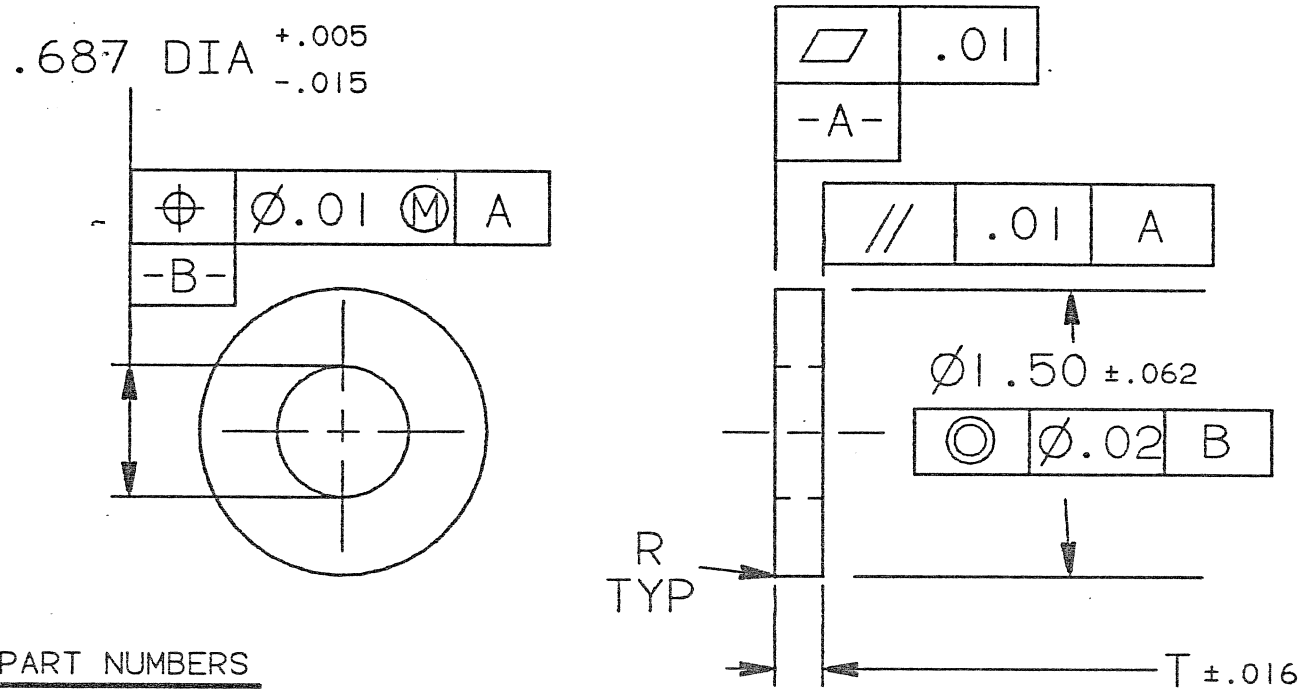
EXAMPLES: SPACER .500 LONG= 23-11720-050.
SPACER 1.000 LONG= 23-11720-100.

ENGINEERING NOTES:

1. MATERIAL: BUTT-WELDED DRAWN-OVER-MANDREL.
   LOW CARBON STEEL TUBING.
   48-00928-084.
2. FINISH: SMOOTH, FLAT AND PARALLEL.
3. TAG P/N AND CHANGE LETTER IN BATCH LOTS.
4. DEBURR.

CHG	JOB NO	DATE	BY	REVISION
C	P10739-01	12/06/99	LFB	REVISED AND REDRAWN IN CATIA.

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	SPACER, ZINC PLATED STEEL	23-11812
DATE	09/19/89	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



PART NUMBERS

ID REF	OD REF	R		FREIGHTLINER PART NUMBER
.687	1.500	.000/ .020		23-11812-012 23-11812-015 23-11812-019 23-11812-022 23-11812-025 23-11812-031 23-11812-038 23-11812-050 23-11812-075

* DASH NUMBER T = THICKNESS IN 1/100 INCHES
EXAMPLES: SPACER .250 THICK = 23-11812-025

ENGINEERING NOTES

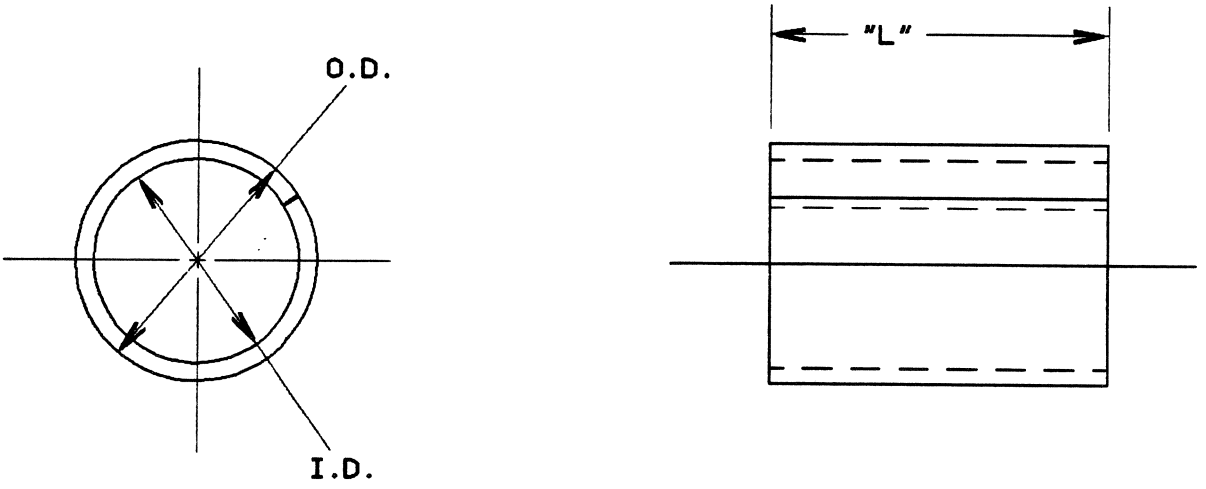
1. MATERIAL: 48-00826-019, BAR, STL, RND, HRLC, 1-1/2 DIA.
ALT MATERIAL : LOW CARBON STEEL: SAE 1010/1020, AISI 1010/1020.

2. FINISH: SMOOTH, FLAT AND PARALLEL.
ZINC PLATE PER FREIGHTLINER SPECIFICATION 49-00005-403

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	371065-90	09/19/89	RDF	REDRAWN, -075 ADDED
B	371065-91	10/03/89	RDF	-015, -022 DOCUMENTED, PRIMARY MATERIAL ADDED
C	P4420F-01	08/03/90	RDF	DELETED -006 (INACTIVE), ADDED -050

DRAWN	EMH	TITLE	DRAWING NUMBER
APPRV	RDF	SPACER STEEL, STD WALL	23-12007
DATE	12-15-87		
CADAM ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES | UNIT OF MEASURE: EA



WALL THK	NOM. O.D.	MIN. I.D.	MAX. I.D.	LENGTH TOL.	MFR CODE	VENDOR PART NO.	FREIGHTLINER PART NO.*
.094	1.250	1.017	1.047	1	CEM #	SP100 1X-.---FT	23-12007-L

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

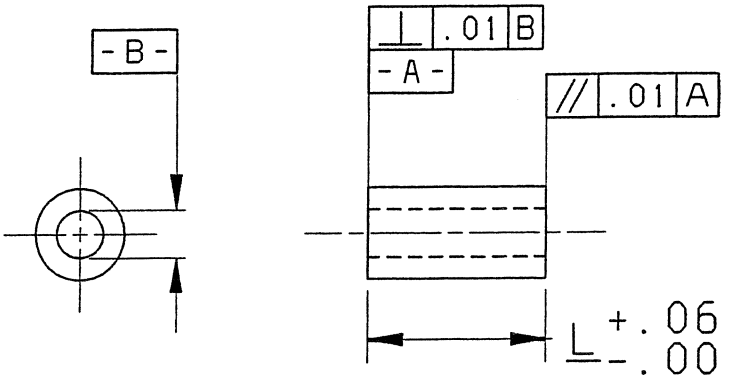
\# COMPLETE VENDOR P/N BY SUBSTITUTING ACTUAL LENGTH- E.G., SP 100 1X1.75FT IS LOW CARBON STEEL, ZINC PLATED, 1.000 I.D. BY 1.750 LENGTH. MINIMUM STANDARD LENGTH IS .625, MAXIMUM STANDARD LENGTH IS 6.000 STANDARD LENGTH INCREMENT IS .062 FROM .625 TO 1.000, .125 FROM 1.125 TO 2.00, .250 FROM .2.250 TO 6.000. SPECIAL LENGTHS AVAILABLE IF JUSTIFIED BY VOLUME.

1 ±.015 FOR LENGTH .625 TO 4.000, ±.020 FOR LENGTH 4.250 TO 6.000.

CHG	JOB NO	DATE	BY	REVISION
-	PL0230	12-14-87	EMH	ORIGINAL RELEASE

M/F

DRAWN	TMS	TITLE	DRAWING NUMBER	
APPRV	DAJ	SPACER-STEEL .260 ID X .500 OD	23-12165	
DATE	05/08/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				



DIMENSIONS			FREIGHTLINER PART NUMBER *
ID (REF IN)	OD (REF IN)		
.260	.500		23-12165-L

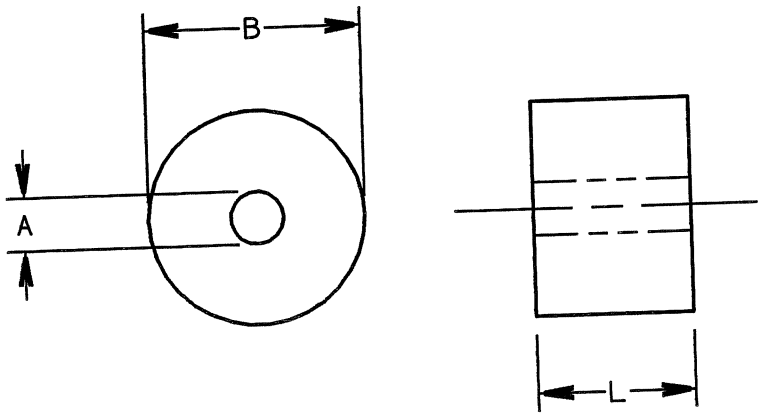
* THREE DIGIT DASH NUMBER "L" = LENGTH IN MILLIMETERS (MM).
E.G. SPACER 55MM LONG = 23-12165-055

ENGINEERING NOTES:

1. MATERIAL: 48-00876-002
48-00928-025

CHG	JOB NO	DATE	BY	REVISION
B	A49128-01	05/08/98	TMS	REVISED AND REDRAWN IN CATIA. ADD VARIABLE P/N NOTE

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	MDS	SPACER - NYLON 7.0MM ID X 28.5MM OD	23-12169
DATE	01/21/94	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

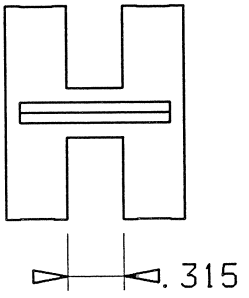


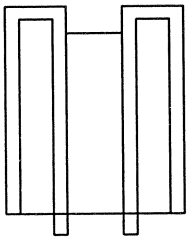
ID (A)	OD (B)	LENGTH (L)	VENDOR NUMBER	FREIGHTLINER PART NUMBER
			AFJ	
7.0	28.5	21.0	08-86842	23-12169-021

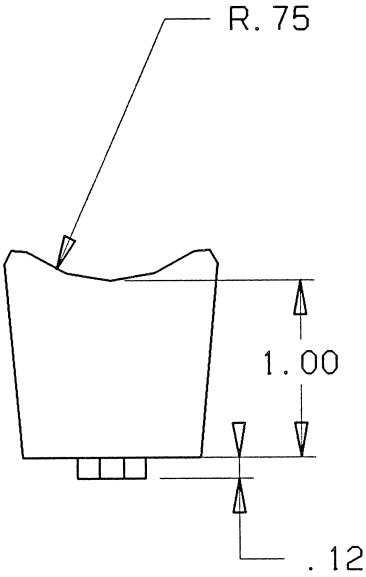
MATERIAL: NYLON 6/6 OR EQUIVALENT.

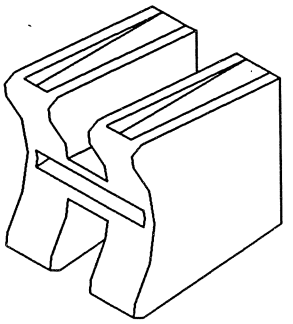
CHG	JOB/RLSE NO	DATE	BY	REVISION
-	PN0454-07	01/21/94	ERK	INITIAL RELEASE

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	ERK	SPACER-FRAME MOUNTED POLYPROPYLENE	23-12227	
DATE	03/30/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. B
CATIA ORIGINAL				

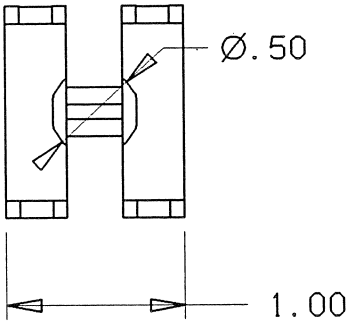








ISO VIEW



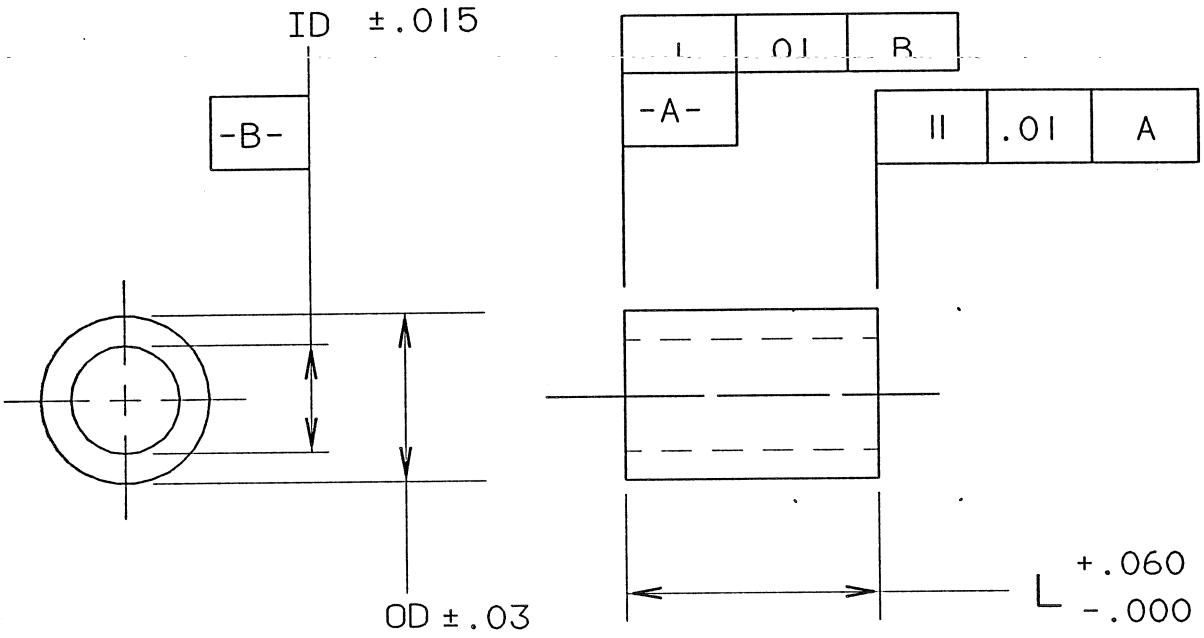
MANUFACTURER'S NUMBER	FREIGHTLINER PART NUM
PAN TMSH50-M160	23-12227-000

ENGINEERING NOTES:

1. MATERIAL: POLYPROPYLENE, GLASS FILLED
2. COLOR: BLACK
3. DIMENSIONS PROVIDED HERE AS REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P2A310-57	03/30/95	DAJ	INITIAL LOAD
A	P2A310-98	08/09/95	DAJ	REV PART GEOMETRY AND VENDOR P/N FROM TMSH50-M160.
B	P2A310-C2	01/08/96	DAJ	REVISED AND REDRAWN ON CATIA

DRAWN	ERK	TITLE	ITEM NUMBER
APPRV	MJP	SPACER - TUBULAR ALUMINUM, .375 I.D.	23-12240
DATE	04/28/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
.375	.750			23-12240-L*

* DASH NUMBER L = LENGTH IN 1/100 INCHES

EXAMPLES: SPACER .500 LONG = 23-12240-050
SPACER 1.000 LONG = 23-12240-100

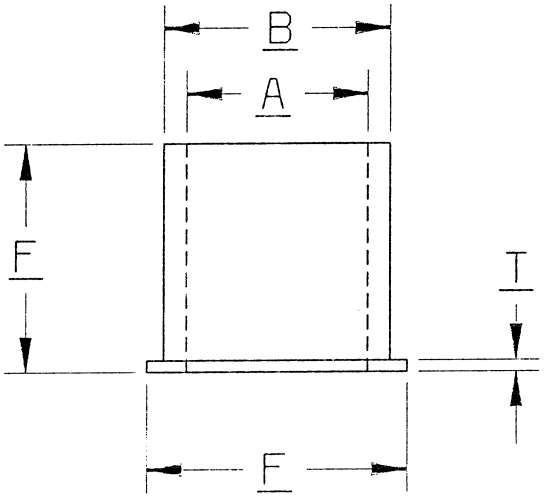
ENGINEERING NOTES

1. MATERIAL: 48-00403
2. DEBURR
3. SPACERS UP TO 3/8" MAY BE PUNCHED ON N/C MACHINE

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A412-56	04/28/95	ERK	INITIAL RELEASE

DRIENNE CHILBERG

DRAWN	DAJ	TITLE BEARING-NYLON FLANGED	DRAWING NUMBER 23-12241
APPRV	ERK		
DATE	04/28/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B
CATIA ORIGINAL			



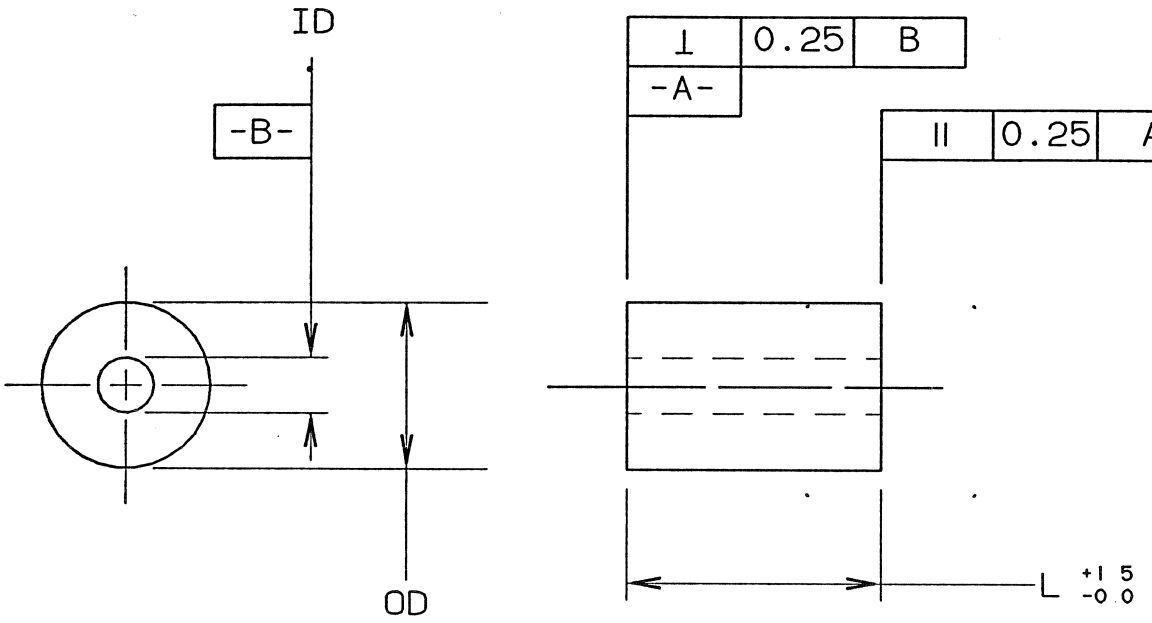
DIMENSIONS					MANUFACTURER'S P/N		FREIGHTLINER PART NUMBERS*
A	B	F	T	L		NYLOMATIC	
3/16	9/32	1/2	1/32	1/16		N5919	23-12241-000
1	1 1/4	1 7/16	1/16	1 1/4		NF16-2	23-12241-001

ENGINEERING NOTES:

1. MATERIAL: DELRIN
2. DIMENSIONS PROVIDED FOR REFERENCE.

CHG	JOB NO	DATE	BY	REVISION
-	P2A412-57	04/28/95	DAJ	INITIAL LOAD
A	P2A412-73	06/21/95	DAJ	VENDOR NUMBER WAS REVISED TO N5919 FROM N5916.
B	P02938-03	08/18/97	DRP	ADDED -001, REDRAWN ON CATIA.

DRAWN	ERK	TITLE SPACER ALUMINUM	ITEM NUMBER 23-12257
APPRV	FSC		
DATE	06/14/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



ID	OD			FREIGHTLINER PART NUMBER
10MM	32MM			23-12257-L*

* DASH NUMBER L = LENGTH IN MILLIMETERS.

EXAMPLES: SPACER 12MM LONG = 23-12257-012
SPACER 25MM LONG = 23-12257-025

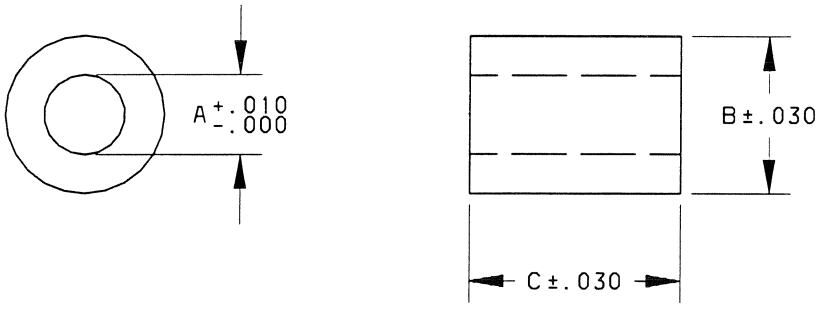
ENGINEERING NOTES

1. MATERIAL: 48-03188-000
2. DEBURR

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A182-18	06/14/95	ERK	INITIAL RELEASE
A	P2A182-21	07/11/95	JLR	ADDED -000 TO MATERIAL 48-03188.

23-12262 , C , NYLON

DRAWN	CGD	TITLE SPACER NYLON	DRAWING NUMBER 23-12262
APPRV	DAJ		
DATE	04/22/99	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. C
CATIA ORIGINAL			



A	B	C	FREIGHTLINER PART NUMBER
.380	.750	.313	23-12262-001
.189	.500	.250	23-12262-002
.252	.500	.125	23-12262-003
.197	.353	.157	23-12262-004
.504	.984	.984	23-12262-005 △3

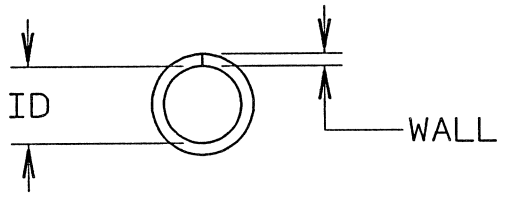
C

ENGINEERING NOTES:

1. MATERIAL: NYLON
2. COLOR: NATURAL
△3 COLOR: BLACK

CHG	JOB NO	DATE	BY	REVISION
B	P08413-01	04/22/99	CGD	REVISED AND REDRAWN IN CATIA. ADDED 23-12262-004.
C	P09037-01	06/22/99	CGD	ADDED 23-12262-005, ADDED NOTES 2 & 3.

DRAWN	ERK	TITLE SPACER ROLL FORMED	ITEM NUMBER 23-12291
APPRV	PGB		
DATE	10/31/95	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

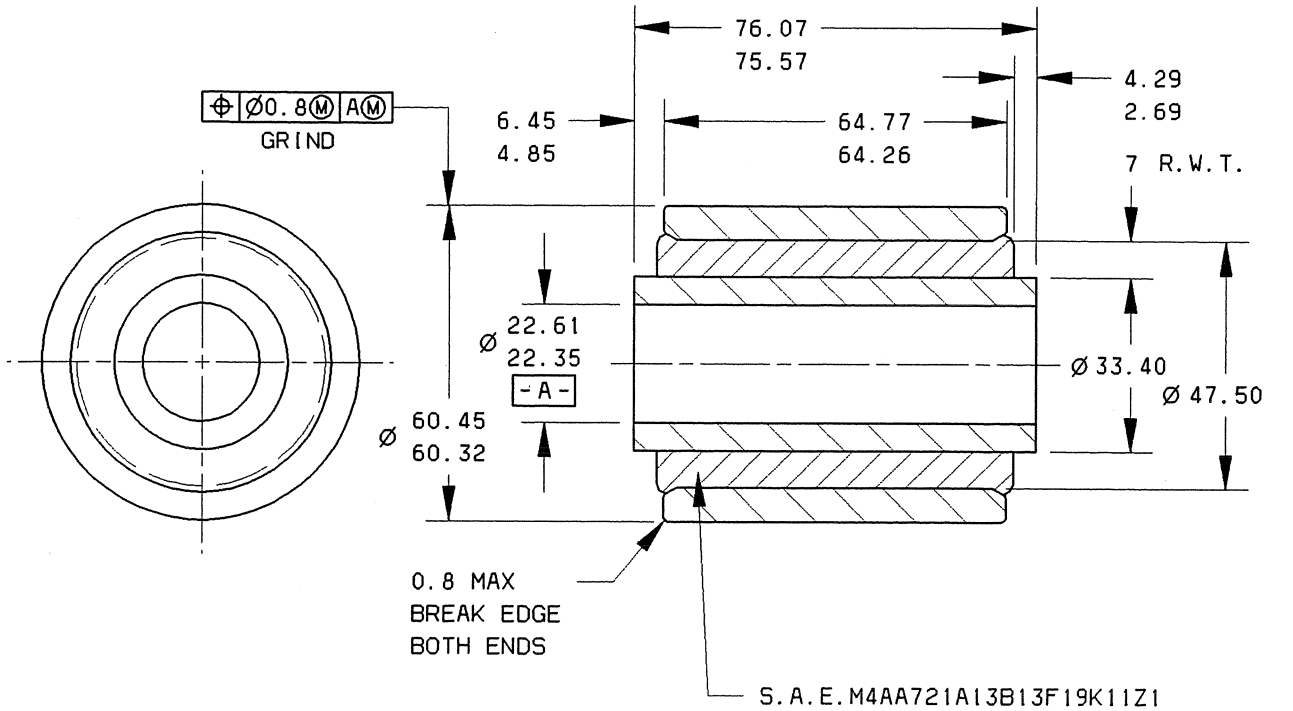


ID	WALL	OD (REF)	LENGTH	SUPPLIER SPIROL	FREIGHTLINER PART NUMBER
.198/.206	.027	.266	.125	SERIES SP-200	23-12291-001

1. MATERIAL: LOW CARBON STEEL
2. FINISH: ZINC PLATED

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P2A210-82	10/31/95	ERK	INITIAL RELEASE

DRAWN	IP	TITLE BUSHING-BONDED	DRAWING NUMBER 23-12563
APPRV	LKG		
DATE	11/11/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



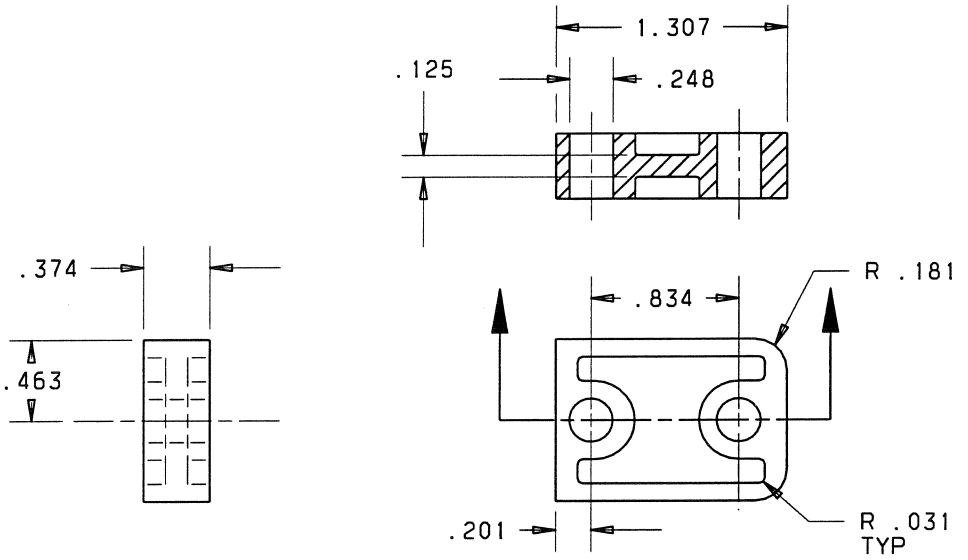
TOL (UOS): ±0.5
(UOS) BREAK SHARP EDGES 0.5 MAX
PHOSPHATE COAT METALS PER PS-119.0

NOTES:

1. ALL DIMENSIONS SHOWN ABOVE ARE FOR REFERENCE ONLY
2. VENDOR : TENNECO AUTOMOTIVE (CLEVITE)
   PART NO.: 837040

CHG	JOB NO	DATE	BY	REVISION
-	P03175-93	11/11/98	IP	INITIAL RELEASE

DRAWN	LFB	TITLE SPACER-CLIP VISOR ARM	DRAWING NUMBER 23-12778
APPRV	DAJ		
DATE	03/20/00	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. -
CATIA ORIGINAL			



-000 SHOWN

ENGINEERING NOTES:

1. MATERIAL: ABS 3300 BLACK.
2. SUGGESTED SUPPLIER: JACO PRODUCTS.
3. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
-	P11774-01	03/20/00	LFB	INITIAL RELEASE