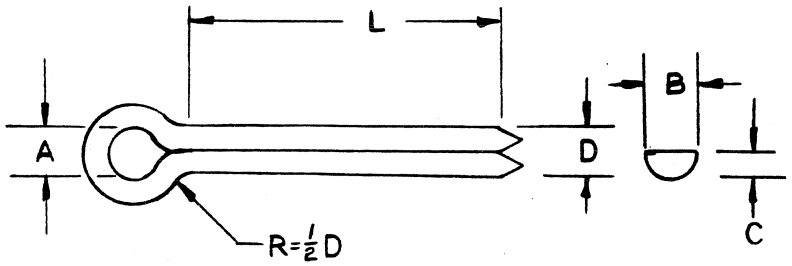
PRINT ISSUED	TITLE	PART NO.
	PIN, COTTER CHISEL POINT	23-102
LAST CHG. LTR.		SHEET OF



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

Recommended overall length of cotter pin be 25% of length of hole in parts being pinned.

23-102-304

Pin dia. in 1/32" — Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A.	9-18-68		(1)	GENERAL USE PART

Portland FREIGHTLINER CORPORATION Oregon 97208

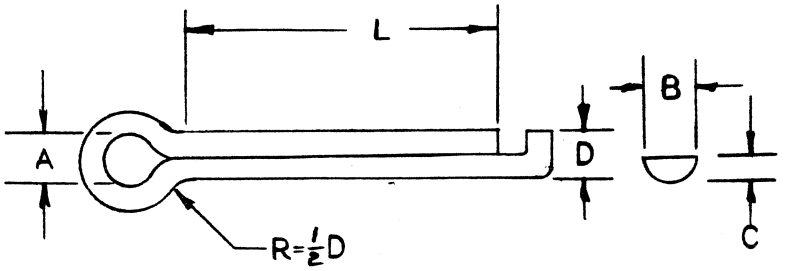
WAS	DATE	BY	CHG

WAS	DATE	BY	CHG

23-103

PRINT ISSUED	TITLE	PART NO.
	PIN, COTTER HAMMER LOCK	23-103
LAST CHG. LTR.		SHEET OF

WAS | DATE | BY | CHG



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

WAS | DATE | BY | CHG

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

Recommended overall length of cotter pin be 25% of length of hole in parts being pinned.

23-103-304

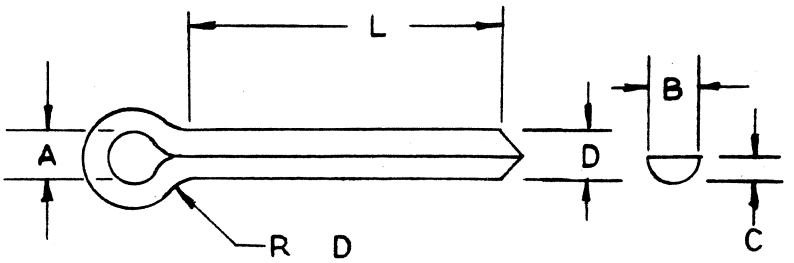
Pin dia. in 1/32" — Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K. J. A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K. J. A	9-18-68		(1)	GENERAL USE PART

Portland FREIGHTLINER CORPORATION Oregon 97208

PRINT ISSUED	TITLE	PART NO.
	PIN, COTTER BEVEL POINT	23-104
LAST CHG. LTR.		SHEET OF



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

Recommended overall length of cotter pin be 25% of length of hole in parts being pinned.

23-104-304

Pin dia. in 1/32" — Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A	9-18-68		(1)	GENERAL USE PART

Portland FREIGHTLINER CORPORATION Oregon 97208

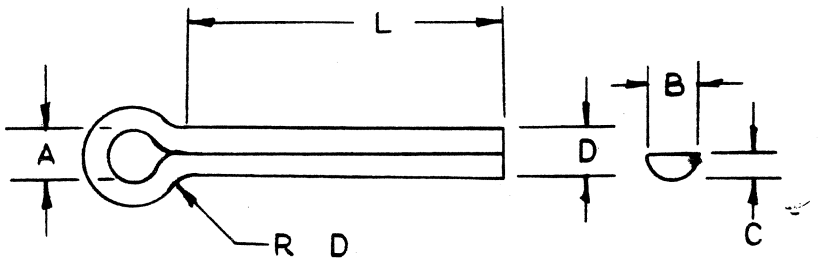
WAS / DATE / BY / CHG

WAS / DATE / BY / CHG

23-105

WAS | DATE | BY | CHG

PRINT ISSUED	TITLE	PART NO.
	PIN, COTTER STANDARD	23-105
LAST CHG. LTR.		SHEET OF



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

Recommended overall length of cotter pin be 25% of length of hole in parts being pinned.

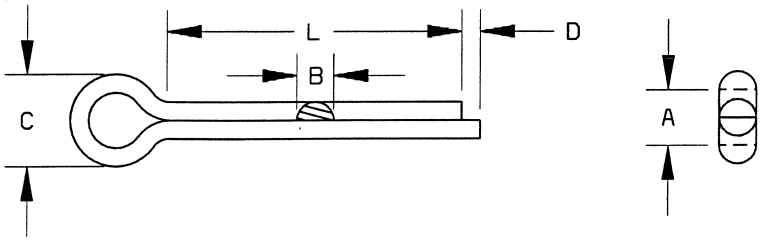
23-105-304

Pin dia. in 1/32" — Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A	9-18-68		(1)	GENERAL USE PART

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	COTTER PIN ANSI B18.8.1	23-00800	
DATE	07/12/99		SHEET	CHG. LTR.
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	1 OF 1	G



NOMINAL SIZE OR BASIC PIN DIAMETER	A		B		C	D	RECM HOLE SIZE	LENGTH	FREIGHTLINER PART NUMBER
	TOTAL SHANK DIAMETER		WIRE WIDTH		HEAD DIA.	EXTND PRONG LENGTH			
	MIN	MAX	MIN	MAX	MIN	MIN			
1/16 .062	.060	.056	.060	.044	.12	.03	.078	1/2	23-00800-202
								3/4	23-00800-203
								1	23-00800-204
3/32 .094	.090	.086	.090	.069	.19	.04	.109	3/4	23-00800-303
								1	23-00800-304
								1 1/2	23-00800-306
1/8 .125	.120	.116	.120	.093	.25	.06	.141	1	23-00800-404
								1 1/4	23-00800-405
								1 1/2	23-00800-406
								1 3/4	23-00800-407
								2	23-00800-408
								2 1/2	23-00800-410
								3	23-00800-412
5/32 .156	.150	.146	.150	.116	.31	.07	.172	3/4	23-00800-503
								1 1/2	23-00800-506
								1 3/4	23-00800-507
								2 1/2	23-00800-510
3/16 .188	.176	.172	.176	.137	.38	.09	.203	3/4	23-00800-603
								1	23-00800-604
								1 1/2	23-00800-606
								1 3/4	23-00800-607
								2	23-00800-608
								2 1/4	23-00800-609
								2 1/2	23-00800-610
								3	23-00800-612
1/4 .250	.225	.220	.225	.176	.50	.11	.266	1 1/4	23-00800-805
								3	23-00800-812

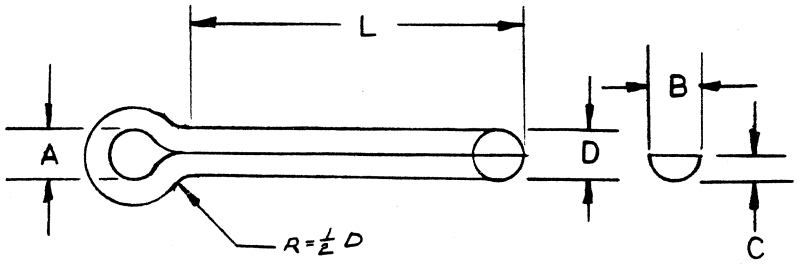
ENGINEERING NOTES:

1. MATERIAL: LOW CARBON STEEL.
2. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.8.1. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

CHG	JOB NO	DATE	BY	REVISION
G	PA2042-93	07/12/99	CGD	REVISED AND REDRAWN IN CATIA.

23-801

PRINT ISSUED		TITLE	PART NO.
		PIN, COTTER MITER END	23-801
LAST CHG. LTR.	A		SHEET OF



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

(A)

23-801-304

Pin dia. in 1/32"——┘ └——Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K. J. A.	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K. J. A.	9-18-68		(1)	GENERAL USE PART

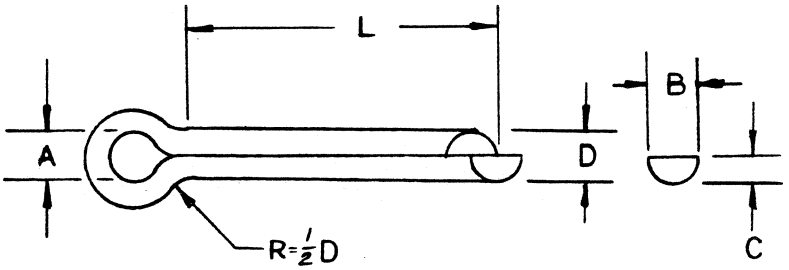
Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	NR	10-15-82	DELETED NOTE; JOB 60453

23-802

PRINT ISSUED	TITLE	PART NO.
	PIN, COTTER EXTENDED MITER END	23-802
LAST CHG. LTR. A		SHEET OF



D NOMINAL SIZE	A	B MAX.	B MIN.	C	RECMD HOLE SIZE
1/16	3/32	.061	.058	.050	5/64
3/32	1/8	.090	.086	.044	7/64
1/8	5/32	.122	.118	.060	9/64
5/32	5/32	.150	.146	.074	11/64
3/16	3/16	.176	.172	.087	13/64
1/4	1/4	.225	.220	.111	17/64

LENGTH	NOMINAL SIZE AND FREIGHTLINER PART NUMBER					
	1/16	3/32	1/8	5/32	3/16	1/4
1/2	-202	-302	-402	-502	-602	-802
3/4	-203	-303	-403	-503	-603	-803
1	-204	-304	-404	-504	-604	-804
1-1/4	-205	-305	-405	-505	-605	-805
1-1/2	-206	-306	-406	-506	-606	-806
1-3/4	-207	-307	-407	-507	-607	-807
2	-208	-308	-408	-508	-608	-808
2-1/4	-209	-309	-409	-509	-609	-809
2-1/2	-210	-310	-410	-510	-610	-810
3	-212	-312	-412	-512	-612	-812
3-1/2	-214	-314	-414	-514	-614	-814
4	-216	-316	-416	-516	-616	-816

(A)

23-802-304

Pin dia. in 1/32" — Pin length in 1/4" increments

(1) MATERIAL: Carbon Steel

COMPILED	K.J.A	DATE DRAWN		MATERIAL	NEXT ASSY. NO.
APPROVED	K.J.A	9-18-68		(1)	GENERAL USE PART

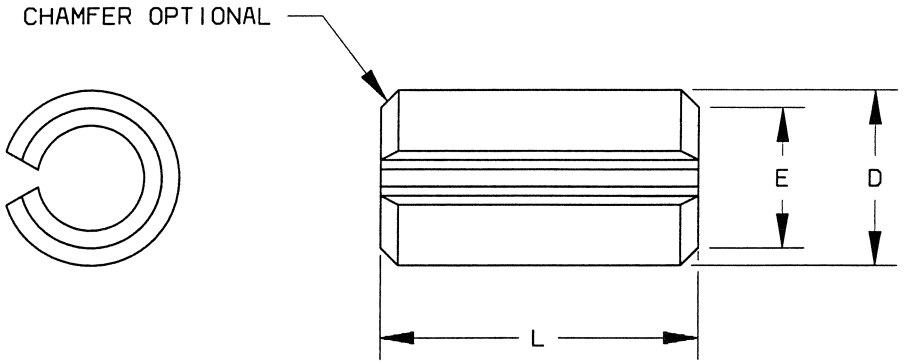
Portland FREIGHTLINER CORPORATION Oregon 97208

CHG	BY	DATE	WAS

CHG	BY	DATE	WAS
A	NR	10-15-82	DELETED NOTE; JDS 6045B

A

DRAWN	CGD	TITLE	DRAWING NUMBER	
APPRV	DAJ	SPRING TYPE STRAIGHT PIN SLOTTED	23-00803	
DATE	07/12/99			
CATIA ORIGINAL		FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. E



D NOMINAL DIAMETER	DOUBLE SHEAR STRENGTH (LB)	E MAX	RECOMMENDED HOLE SIZE MAX/MIN	FREIGHTLINER PART NUMBER
3/32	1000	.091	.097/.094	23-00809-L
1/8	1840	.122	.129/.125	23-00812-L
5/32	2880	.152	.160/.156	23-00816-L
3/16	4140	.182	.192/.187	23-00819-L
7/32	5640	.214	.224/.219	23-00822-L
1/4	7360	.245	.256/.250	23-00825-L
5/16	11500	.306	.318/.312	23-00831-L
3/8	16580	.368	.382/.375	23-00838-L
1/2	25800	.490	.510/.500	23-00850-L

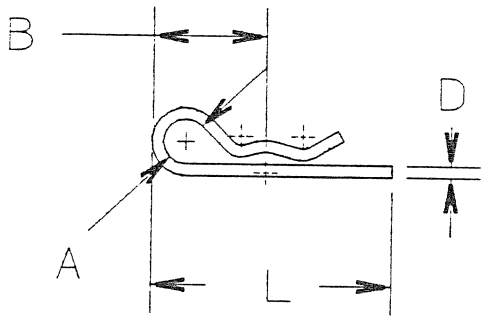
* LENGTH L TO BE IN SIXTEENTHS OF AN INCH.
EXAMPLE: 23-00825-016 IS A 1/4 INCH DIAMETER PIN 1 INCH LONG.

ENGINEERING NOTES:

1. MATERIAL: STEEL PER AISI 1070 TO AISI 1094 ROCKWELL HARDNESS "C" 46-53.
2. FINISH: PLAIN
3. MUST CONFORM TO SAE J496 AND MIL-P-10971.

CHG	JOB NO	DATE	BY	REVISION
E	PA2042-93	07/12/99	CGD	REVISED AND REDRAWN IN CATIA

DRAWN	EWB	TITLE	ITEM NUMBER
APPRV	RDF	PIN, HITCH	23-12012
DATE	05-10-88	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



NOM SIZE	D WIRE DIA	DRILL HOLE SIZE	MIN SHAFT DIA	MAX SHAFT DIA	L MAX OVERALL LENGTH	A INSIDE DIA OF EYE	B MAX	F/L NO.
3/32	.080	3/32	1/4	3/8	1-1/4	3/16	3/4	-000
3/16	.177	3/16	7/8	1-1/4	3-7/8	7/8	-	-001
9/16	.125	9/64	1/2	3/4	1-15/16	7/16	-	-002
3/8	.093	7/64	1/4	1/2	1-1/8	1/4	-	-003

1. MATERIAL: OIL TEMPERED SPRING WIRE ASTM A229.

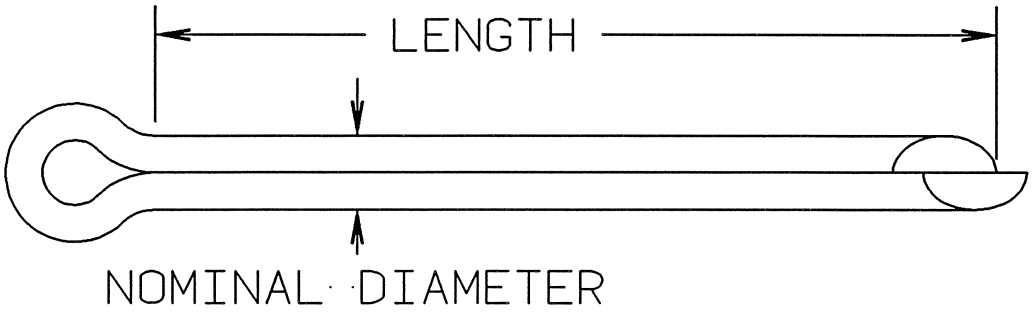
2. FINISH: ZINC PLATED WITH SUPPLEMENTARY CLEAR CHROMATE TREATMENT PER F/L SPEC 49-00005-403.

3. REFERENCE: WESTERN WIRE PRODUCTS 314/771-6100
   -000 WW CLIP NO. 13 OR EQUIVALENT.
   -001 WW CLIP NO. 8 OR EQUIVALENT.
   -002 WW CLIP NO. 16 OR EQUIVALENT.
   -003 WW CLIP NO. 33 OR EQUIVALENT.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P9118E-01	06-02-88	EWB	DOCUMENTED
A	PB1001-40	07-13-89	RDF	ADDED -001
B	PX1905-31	10/10/90	PCK	ADDED -002,-003

DRAWN	RDF	TITLE PIN, COTTER PLATED, SAE J487	ITEM NUMBER 23-12066
APPRV	PCK		
DATE	02/22/90	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1

UNLESS OTHERWISE NOTED, ALL DIMENSIONS IN INCHES.



NOMINAL SIZE	NOMINAL LENGTH	HOLE SIZE	FREIGHTLINER P/N
3/64	1/2	.062	23-12066-003
3/32	3/4	.094	23-12066-006
B 1/8	1 1/4	.141	23-12066-017

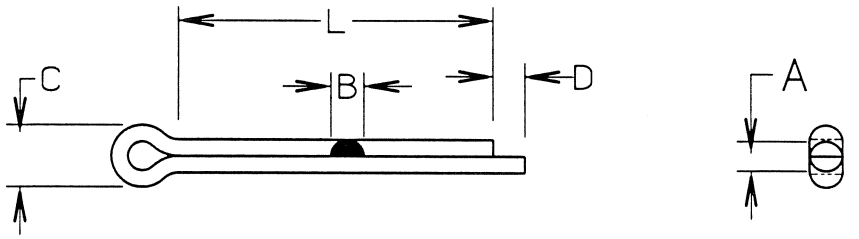
B

ENGINEERING NOTES:

1. DIMENSIONS PER ANSI/B18.8.1
2. MATERIAL- STEEL, ANSI/B18.8.1.
3. POINT- EXTENDED, SQUARE OR TAPER, PER ANSI/B18.8.1
4. FINISH- ZINC PLATE PER FREIGHTLINER SPEC 49-00005-403.

CHG	JOB/RLSE NO	DATE	BY	REVISION
-	P9196F-03	02/23/90	RDF	DOCUMENTED
A	P8249F-01	12/16/90	RDF	ADDED -006
B	P01731-01	12/09/96	DAJ	ANSI/B18.8.1 WAS SAE J487, RMVD NOTE 4, ADDED -017

DRAWN	RDF	TITLE	ITEM NUMBER
APPRV	PCK	COTTER PIN - SST ANSI B18.8.1	23-12107
DATE	06/06/92	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1



SIZE	A	B	C	D	L	HOLE SIZE	FREIGHTLINER PART NUMBER
	SHANK DIA	WIRE WIDTH	HEAD DIAMETER	EXTENDED PRONG LENGTH	LENGTH		
	MAX	MAX	MIN	MIN			
3/32	.090	.090	.19	.04	1.250	.109	23-12107-000
1/8	.120	.093	.25	.06	1.000	.141	23-12107-001

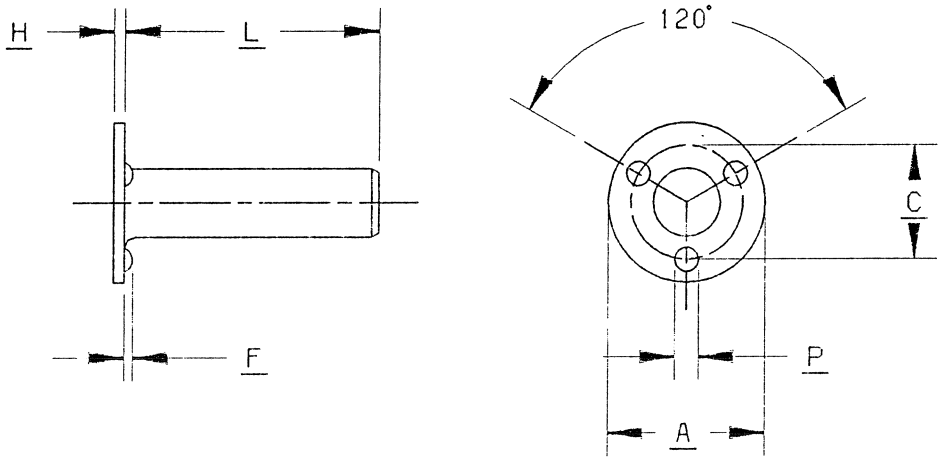
ENGINEERING NOTES:

1. DIMENSIONAL AND MECHANICAL PROPERTIES MUST CONFORM TO ANSI B18.8.1. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
2. MATERIAL: STAINLESS STEEL TYPE 302/304 PER ASTM A493.

CHG	JOB/RLSE NO	DATE	BY	REVISION
A	P0547J-03	10/20/93	ERK	REV. & RDRWN TO ANSI B18.8.1 FROM SAE J487
B	P10214-01	09/01/99	R2N	ADDED -001

ADRIENNE CHILBERG

DRAWN	DAJ	TITLE PIN PROJECTION WELD	DRAWING NUMBER 23-12280
APPRV	DAJ		
DATE	08/11/97	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1 / CHG. LTR. B
CATIA ORIGINAL			



	PIN BODY DIA	A HEAD DIA	F PROJECTION HEIGHT	H HEAD HEIGHT	P PROJECTION DIA	MANUFACTURER PART NUMBER ONB	L LENGTH	FREIGHTLINER PART NUMBER
	.163	.437	.028	.062	.086	MP-0163-S	5/8	23-12280-000
							7/8	23-12280-001
B	.250	.625	.038	.078	.104	MP-0250-S	1-1/2	23-12280-002
	.375	.875	.048	.109	.133	MP-0375-S	7/8	23-12280-003
							1	23-12280-004

ENGINEERING NOTES:

1. MATERIAL: STEEL, C1008-1010 HIGH-WELDING QUALITY, LOW CARBON STEEL
2. FINISH: PLAIN

CHG	JOB NO	DATE	BY	REVISION
-	P2A362-99	09/14/95	DAJ	INITIAL LOAD
B	P01102-01	08/11/97	DAJ	REVISED AND REDRAWN IN CATIA. ADDED -002 THRU -004.

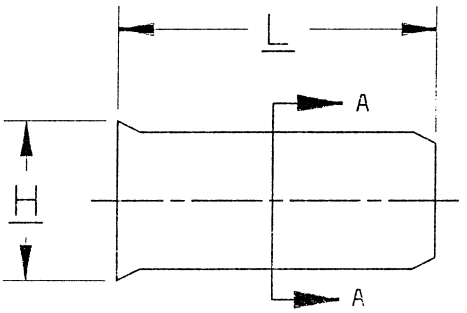
DRAWN FHC | APPRV DAJ | DATE 10/11/96 | CATIA ORIGINAL

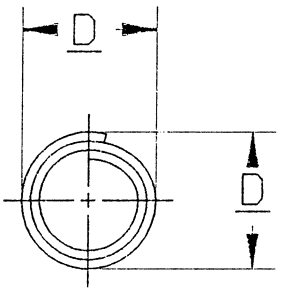
TITLE: PIN-HEADED HEAVY DUTY

FREIGHTLINER CORPORATION
PORTLAND, OREGON

DRAWING NUMBER: 23-12399

SHEET 1 OF 1 | CHG. LTR. B





Section A-A

NOMINAL PIN SIZE	DIMENSIONS (MAX/MIN)			RECOMMENDED HOLE SIZE	FREIGHTLINER PART NUMBER
	D	H	L		
.250	.268/.258	.310/.290	1.84/1.80	.252/.249	23-12399-001

B

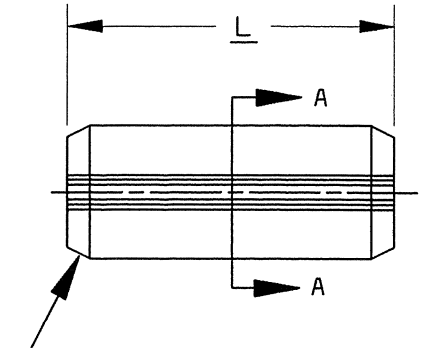
Engineering Notes:

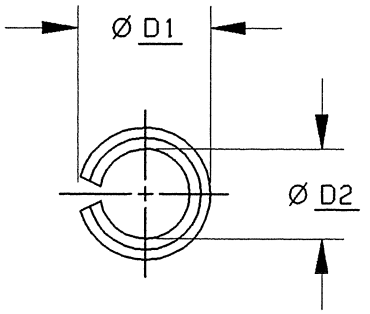
1. Material: Carbon Steel SAE 1070-1095
2. Finish: Plain
3. Above dimensions for reference only.
4. suggested Vendor: Spirol Series 400

B

CHG	JOB NO	DATE	BY	REVISION
-	P01340-01	10/11/96	FHC	INITIAL LOAD
A	PA2042-73	10/24/96	FHC	Material was Chrome Stainless Steel SAE S1420.
B	PA2042-76	04/17/97	DAJ	Revised dim h and hole size call-out. Added note 4.

DRAWN	DAJ	TITLE	DRAWING NUMBER	
APPRV	DAJ	PIN - SPRING STRAIGHT, SLOTTED	23-12541	
DATE	09/01/98	FREIGHTLINER CORPORATION PORTLAND, OREGON	SHEET 1 OF 1	CHG. LTR. -
CATIA ORIGINAL				





SECTION A-A

DOUBLE SHEAR STRENGTH	DIMENSIONS (MM)		RECOMMENDED HOLE SIZE		FREIGHTLINER PART NUMBER*
	D1 (NOM)	D2	MAX	MIN	
84.0	14	11.5	14.18	14.0	23-12541-L
98.0	16	13.5	16.18	16.0	23-12542-L

* COMPLETE PART NUMBER BY ADDING A 3 DIGIT DASH NUMBER EXPRESSING THE LENGTH "L" IN MILLIMETERS. E.G. 23-12541-014 IS A 14M DIA. SLOTTED STRAIGHT SPRING PIN 14 MM LONG.

ENGINEERING NOTES:

1. MATERIAL: STEEL PER AISI 1070 TO AISI 1094
   ROCKWELL HARDNESS "C" 46-53
2. FINISH: PHOSPHATE & OIL PER F/L 49-00006-041
3. MUST CONFORM TO DIN 7346

CHG	JOB NO	DATE	BY	REVISION
-	PF1027-13	09/01/98	DAJ	INITIAL LOAD