

5. APTA PR-M-RP-004-98

Recommended Practice for Second Hand and Reconditioned Type H-Tightlock Couplers

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Abstract: This recommend practice covers requirements for secondhand and reconditioned APTA approved Type H Tightlock couplers and their parts, coupler yokes, draft gear followers, connecting pins and other parts used in the coupler and yoke passenger car applications.

Keywords: secondhand couplers, reconditioned couplers

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APTA PR-M-RP-004-98

Recommended Practice for Second Hand and Reconditioned Type H-Tightlock Couplers

1. Overview

1.1 Scope and purpose

This recommended practice covers requirements for secondhand and reconditioned APTA approved Type H Tightlock couplers and their parts, coupler yokes, draft gear followers, connecting pins and other parts used in the coupler and yoke passenger car applications and do not cover requirements for proprietary parts except as noted in section 4.0.

The passenger rail industry will phase this recommended practice into practice over the six-month period from July 1 to December 31, 1999. The recommended practice takes effect January 1, 2000.

2. References

This standard shall be used in conjunction with the following publications. When the following standards are superseded by an approved revision, the revision shall apply.

AAR Specification M-206

AAR Specification M-212, Section 5.1

AAR Specification M-212, Section 5.2

AAR Standard S-100

APTA PR-M-RP-002-98 Recommended Practice for Inspection and Maintenance of Type H-Tightlock Couplers

3. Definitions, abbreviations, and acronyms

3.1 Definitions

For purposes of this specification, the following definitions shall apply:

3.1.1 secondhand: Secondhand is defined as any used component or assembly, meeting the requirements of this specification that can be reused without reconditioning, except where noted.

3.1.2 reconditioned: Reconditioned is defined as any component that has been rebuilt and/or heat treated in accordance with this specification.

3.1.3 new: New is defined as any component not previously used that meets the requirements of

APTA PR-M-RP-003-98¹, which may be used in assemblies defined by these specifications.

3.1.4 proprietary: Proprietary is defined as any component having an identification number other than current APTA or former AAR catalog numbers.

3.2 Controls

For purposes of this specification, the following controls shall apply:

3.2.1 Draft gear followers

Draft gear followers shall be reconditioned in accordance with *AAR Specification M-212, section 3.2.6*.

3.2.2 Knuckle pivot pins

Knuckle pivot pins may be reused if they meet the requirements outlined in *AAR Specification M-212*, current issue.

3.2.3 Coupler bodies and yokes

Only coupler bodies and yokes shall be reconditioned in accordance with this specification, Sections 6.1 and 6.2

3.2.4 Non-reconditioned parts

The following parts must not be reconditioned:

Coupler knuckles and locks

Knuckle throwers

Coupler shank bushings

knuckle pivot support pins,

Rotary locklift assemblies

Radial connections

Connecting pins

Radial connection seats

Coupler shank pin retaining keys

Yoke pin

Radial connection bushings

¹ For references in Italics, see Section 2.

3.2.5 Rotary locklift

Rotary locklift assemblies must not be used second hand.

4. Classification procedure

AAR Type T Tightlock couplers, parts and yokes must not be classified for further service.

Part or assembly classified as proprietary is suitable for secondhand classification or reconditioning after consulting with manufacturer to determine conformance with this specification.

The results of inspection and gaging will determine if part or assembly is suitable for secondhand classification or for reconditioning.

4.1 Parts inspections

Parts to be classified must be disassembled for inspection.

Parts must be clean and free of dirt, paint, rust and scale which may interfere with gaging and inspection.

Parts must be visually inspected for cracks, fractures, sections broken out, worn surfaces, distortion, surface upset and service notches.

4.2 Purchasing gages

The various gages listed in this specification may be purchased from the Standard Coupler Manufacturers.

5. Secondhand acceptance requirements

5.1 Parts and assemblies

Parts and assemblies must be evaluated in accordance with the procedures in Section 4 and meet the requirements of *APTA PR-M-RP-002-98*². Parts or assemblies must not be painted.

5.2 Dry lubricant

Only dry lubricant shall be applied to the coupler head or the coupler head fittings. This lubricant may be applied using a water, alcohol, or other non-petroleum based carrier.

5.3 Debris

Part or assembly must be free of cracks, fractures, sections broken out and service notches.

² For references in Italics, see Section 2.

5.4 Surface upset

Surface upset must be ground and blended to the surrounding surfaces. This ground area must be free of cracks.

6. Reconditioning procedures

6.1 Coupler

6.1.1 Coupler body

Weld repair on machined cast surfaces is prohibited. Shank bushings must be replaced if the complete coupler body is heat treated.

6.1.1.1 Shank wear against carrier

Coupler shanks that are worn to a depth not exceeding 1/4 in. (.63 cm) into the bottom wall, due to contact with the carrier, may be restored by machine finishing the worn surface to a depth of 1/4 in. (.63 cm) as shown in Fig. 1. A steel wearplate, in accordance with AAR Standard S-137, shall then be welded in place, as shown in section A-A of Fig. 1 and in accordance with Section Couplers worn in excess of 1/4 in. (.63 cm) in this location must not be reconditioned. Coupler shank wearplates that are loose, missing, or worn in excess of 1/8 in. (.32 cm) must be replaced.

6.1.1.2 Bent shank

Couplers with shanks bent in any direction out of alignment with the front face of the coupler head, as typically illustrated in Fig. 4, may be reconditioned provided:

No cracks have developed as a result of bending.

Amount of bend, measured as shown in Fig. 4 using gage No. 34105 does not exceed one inch per foot of shank length, measured from front face to pivot point of shank.

Top wall is not buckled.

6.1.1.2.1 Straightening operation

To satisfactorily perform the straightening operation, except in cases where there is only a slight amount of bend, the shank shall be heated in the locality of the bend. The amount of heat necessary may vary according to the degree of bend, but in most cases temperatures varying from 1,500 to 1,600° F (816 to 871°C) will be required. The heat should be applied on the side toward the bend (concave) side. The straightening pressure should be applied through a heavy plate placed on the shank to distribute the load and prevent indentation.

After straightening, a careful examination should be made to make certain that no cracks have resulted from this operation. When shanks are bent near the horn, extreme care must be exercised to avoid distortion of the head during the straightening operation. In all cases where shanks have been heated to straighten, the coupler body shall be heat treated in accordance with 8. Couplers with shanks bent in excess of one inch per foot in any direction out of line with the front face of the head, or which have developed cracks as a result of bending or straightening,

shall not be reconditioned. After completion of the straightening operation, the alignment of the shank should be checked using gage No. 34105, Fig. 4.

6.1.1.3 Aligning wing pocket distorted

Couplers with distorted aligning wing pockets may be restored to normal by locally heating the distorted area and straightening under a press, or by other suitable means. The amount of heat necessary may vary according to the degree of distortion, but in most cases temperatures of 1,500 to 1,600° F (816 to 871°C) will be required. Care should be exercised to confine the heat as much as possible to the pocket proper in order to prevent distortion of the coupler head during the straightening operation. The coupler body is then to be heat treated in accordance with Section 8. Gage No. 34101-1, shown in Fig. 2 and gage No. 34101-2, shown in Fig. 3, should be used during the straightening operation. The completed work shall then be checked and must meet the requirements of gage No. 34102, shown in Fig. 12.

6.1.1.4 Aligning wing pocket cracked

Couplers with cracks in the aligning wing pocket may be reconditioned by welding, in accordance with Section 7, provided such crack or cracks do not extend into the coupler head proper. Couplers having cracks in the aligning wing pocket extending into the coupler head proper or with the aligning wing pocket broken off, shall not be reconditioned.

6.1.1.5 Guard arm distortion and cracks

Couplers with cracks in the guard arm may be reconditioned by welding, in accordance with Section 7, provided such crack or cracks do not extend into the coupler head proper. Couplers having cracks in the guard arm extending into the coupler head proper or with the guard arm broken off, shall not be reconditioned. Couplers having guard arm distorted may be restored to normal, either in a press or under light blows of a power hammer. A suggested set-up for performing this operation is illustrated in Fig. 13. In preparation for straightening, the outside of the guard arm in the zone approximating the center should first be heated to approximately 1,500 to 1,600° F (816 to 871°C). The straightening force should be applied to the forward portion of the guard arm through a heavy steel plate formed to the outer contour of the guard arm in this vicinity to distribute the load and avoid possible indentation. Extreme care must be exercised to avoid distortion of the coupler head during the straightening operation. Gage No. 34101-3A, Fig. 11, should be used during the straightening operation to determine when restoration is completed. In some cases, vertical distortion of the guard arm has occurred, presumably caused by severe impact on the outer end.

This results in increasing the distance between the top and bottom vertical interlocking faces on the guard arm and thus, prevents coupling with another Tightlock coupler. This condition can be corrected by pressing after heating to 1,500 to 1,600° F (816 to 871°C). Gage No. 34101-4, shown in Fig. 14, is provided for use to detect such distortion during the pressing operation. An examination shall be made after straightening to make certain that no cracks have developed as a result of this operation. The coupler body is then to be heat treated in accordance with Section 8. After heat treatment, a final check of the coupler should be made using gage No. 34102, Fig. 12.

6.1.1.6 Wear on aligning surfaces

Coupler aligning wing pockets and guard arms with worn aligning surface may be reconditioned by welding. Gage No. 40097, shown on Fig. 10 shall be used during build-up of weld and after being ground smooth, the completed work shall meet the gage requirements. Care shall be taken to blend the built-up area into the existing sloping surface of the guard arm nose, which shall be maintained. The vicinity of the welded area shall then be stress relieved by heating locally to a temperature between 750°F and 930° F (399°C and 499°C) and allowed to cool slowly in still air.

6.1.1.7 Lock seated

All reconditioned Tightlock couplers should have the locks seated not more than 1/8 in. (.32 cm) above the knuckle tail shelf, but preferably, on the shelf.

6.1.1.8 Identifying reconditioned couplers

All couplers reconditioned must be identified by stamped markings in accordance with Figure 5.

6.2 Yokes

Yokes must not be reconditioned except for replacement of bushings.

6.3 Coupler and yoke bushings

When bushings are loose or worn excessively, they will be replaced. Replace bushings that are loose or worn more than halfway through their wall sections. For Replacement Bushings, see *AAR Standard S-100*.³

7. Welding

See *AAR Specification M-212, Section 5.1*.

8. Heat treatment

See *AAR Specification M-212, Section 5.2*.

9. Reconditioned acceptance requirements

9.1 Evaluation

Part must be evaluated in accordance with procedure in Section 4 of this specification.

9.2 Painting

Part or assembly must not be painted after reconditioning.

³ For references in Italics, see Section 2.

9.3 Dry lubricant

Only dry lubricant shall be applied to the coupler head or the coupler head fittings. This lubricant may be applied using a water, alcohol, or other non-petroleum based carrier.

9.4 Service defects

Part or assembly must be free of cracks, fractures, sections broken out and service notches.

9.5 Surface upset

Surface upset must be ground and blended to the surrounding surfaces. This ground area must be free of cracks.

9.6 Process

Process procedure must be in accordance with Section 6, including the specified hardness requirements in Section 4.2 of *APTA PR-M-RP-003-98*⁴.

9.7 Identification

The part or assembly classified as reconditioned must have, by the required methods, identification of the remanufacturing facility and its location doing the reconditioning.

9.8 Inspection and maintenance

Reconditioned parts must meet all of inspection and maintenance requirements of *APTA PR-M-RP-002-98*.

10. Storage

See *Section 7.12 APTA Standard PR-M-RP-003-98*.

⁴ For references in Italics, see Section 2.

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A.A.R. TIGHTLOCK COUPLER RECONDITIONING PRACTICES

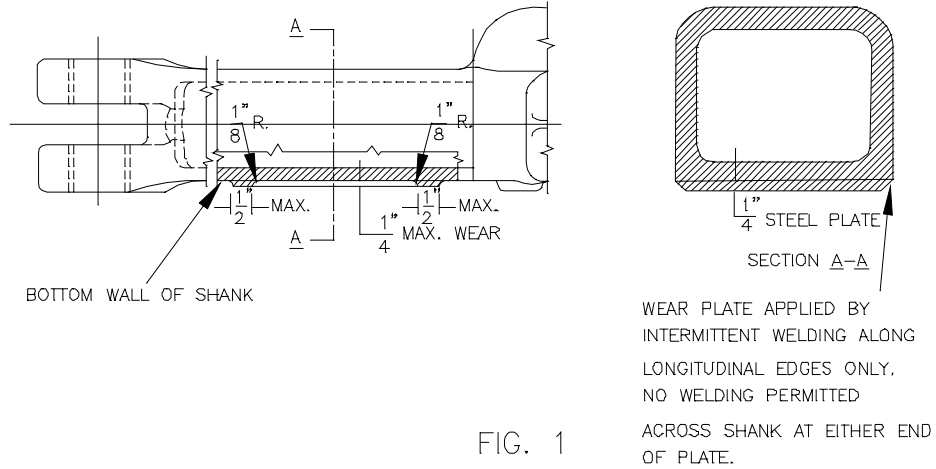
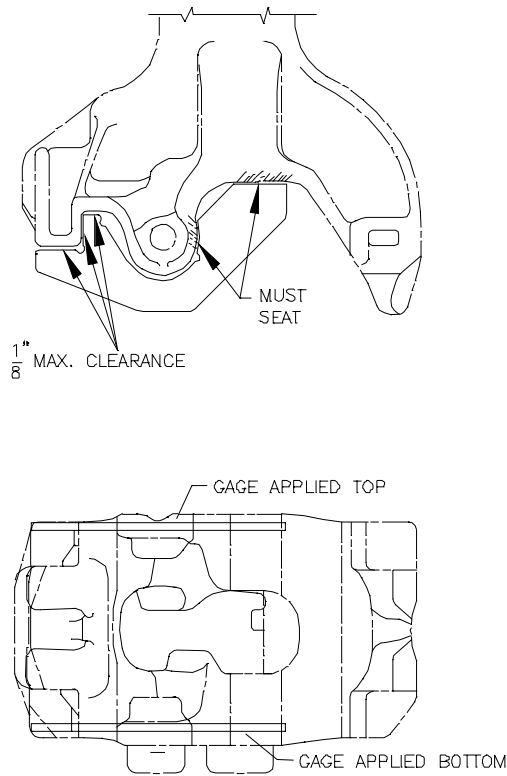
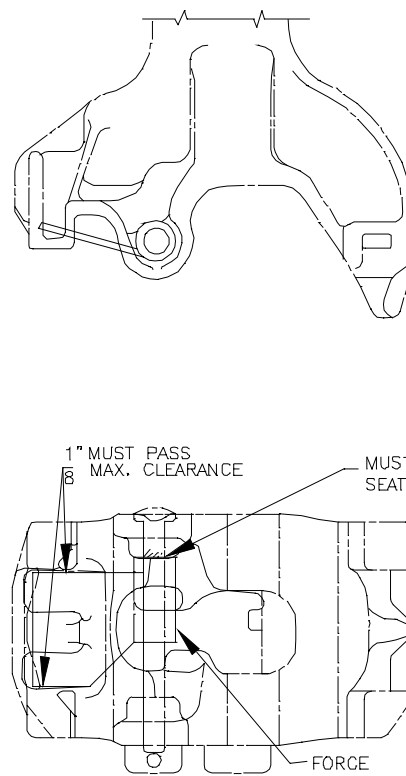


FIG. 1



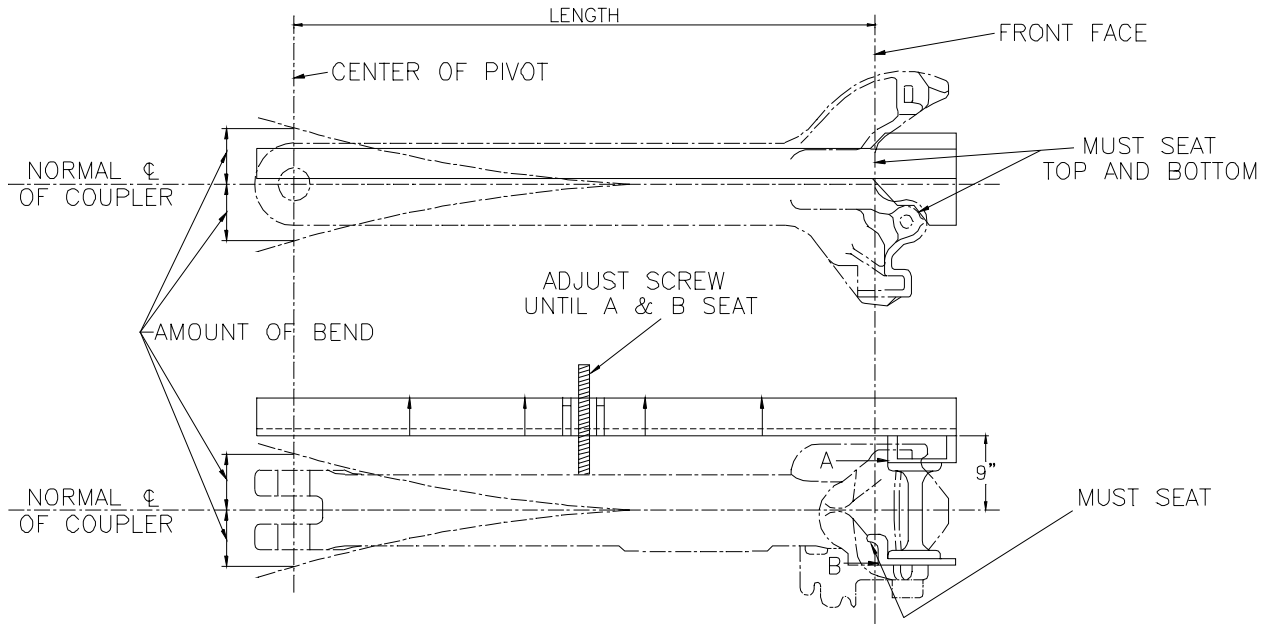
ALIGNING WING RECONDITIONING
GAGE
NO. 34101-1
FIG. 2



ALIGNING WING RECONDITIONING
GAGE
NO. 34101-2
FIG. 3

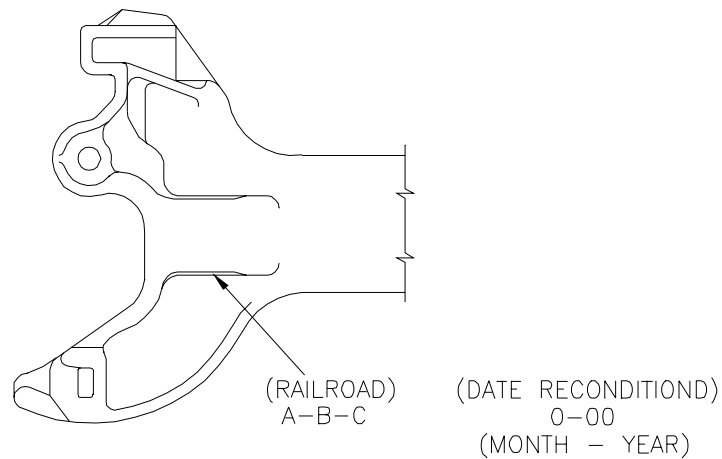
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A.P.T.A. TIGHTLOCK COUPLER RECONDITIONING PRACTICES



SHANK DISTORTION RECONDITIONING GAGE NO. 34105

FIG. 4

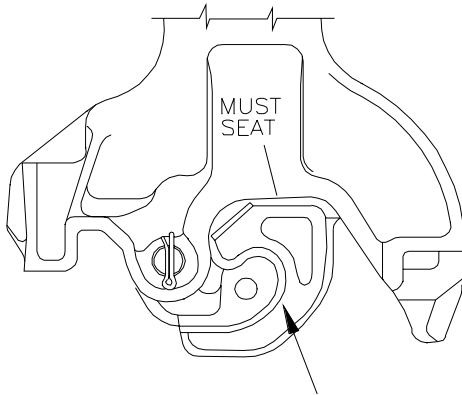


MARKING

FIG. 5

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A.P.T.A. TIGHTLOCK COUPLER MAINTENANCE GAGES

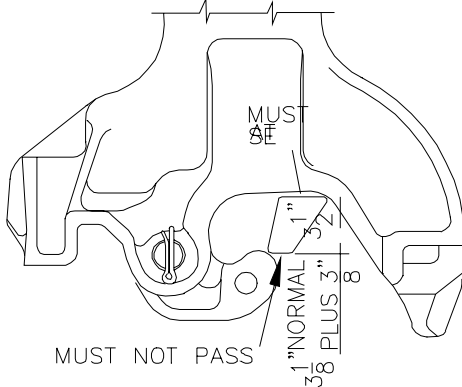


GAGE MUST PASS THROUGH CONTOUR WITH KNUCKLE FULLY CLOSED AND LOCKED

CONTOUR MAINTENANCE GAGE

№ 31000

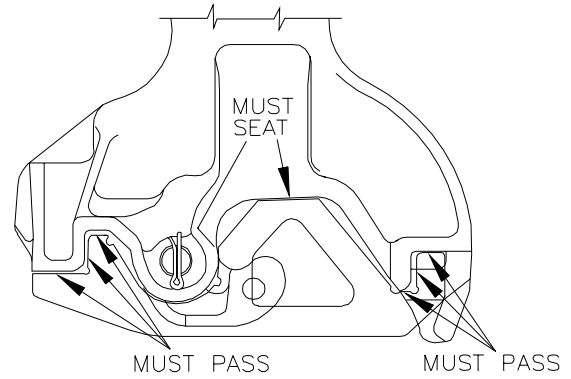
FIG. 6



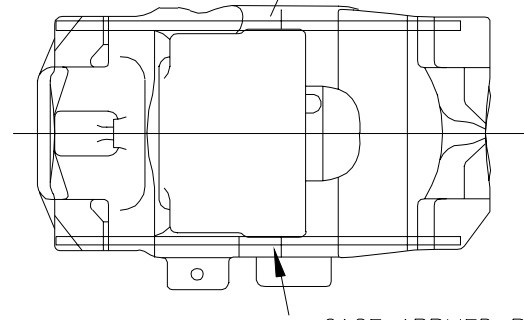
CONTOUR CONDEMNING LIMIT GAGE

№ 34100-1

FIG. 8



GAGE APPLIED TOP



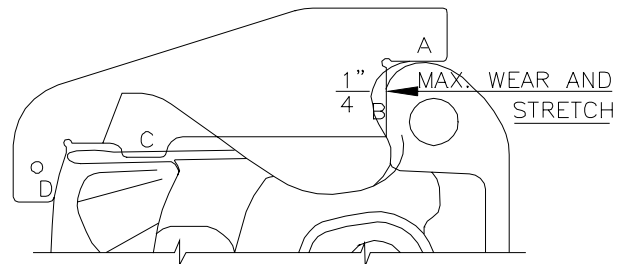
GAGE APPLIED BOTTOM

ALIGNING WING LIMIT GAGE

№ 32600

FIG. 7

POINT "D" MUST NOT TOUCH OR CLEAR MORE THAN 1/4" WITH A,B,&C SEATED.



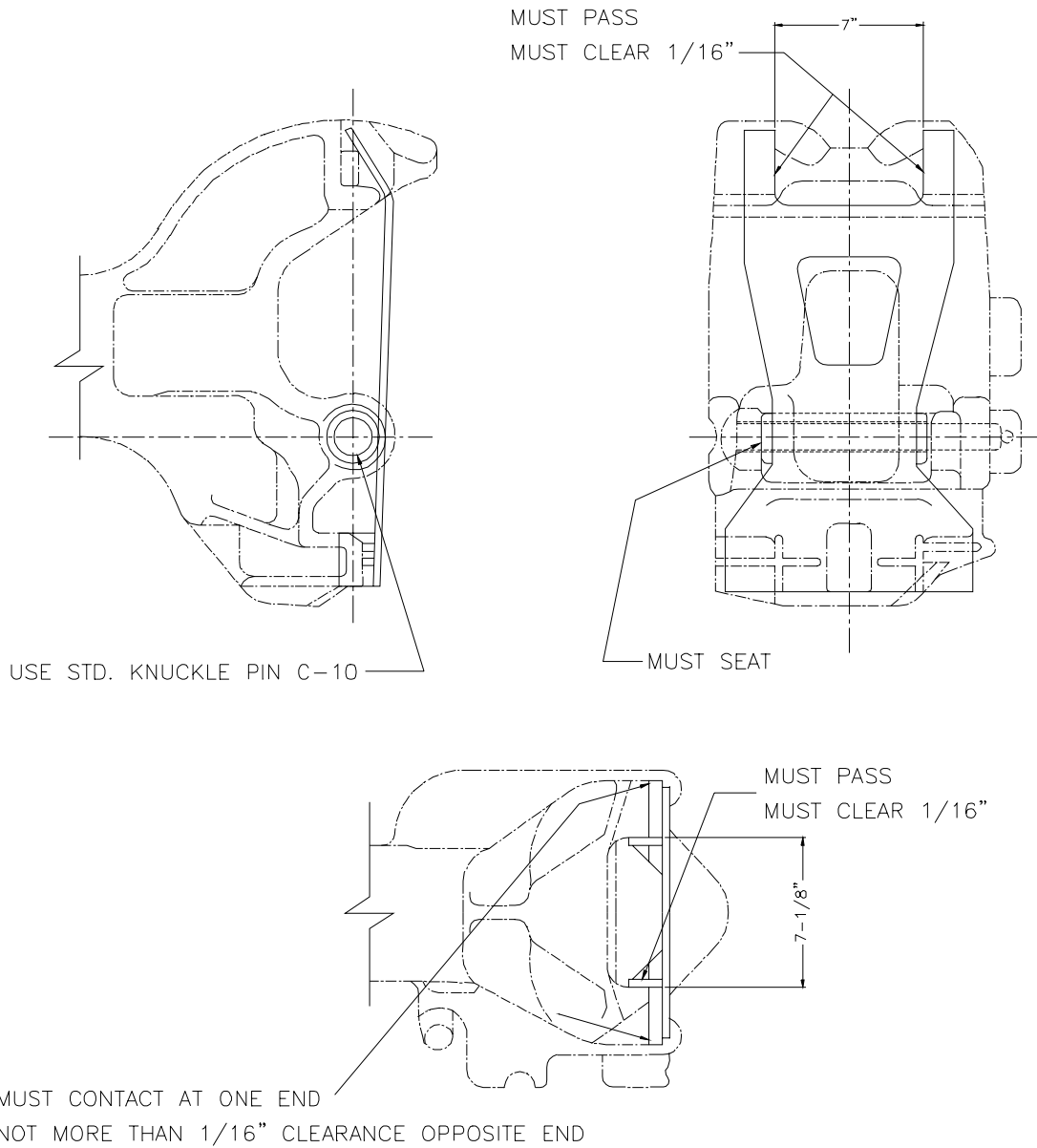
KNUCKLE NOSE WEAR AND STRETCH LIMIT GAGE № 34100-2A

FIG. 9

NOTE: FORMER DESIGN GAGE NO. 34100-2 MAY BE USED WITH CARE.

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A.P.T.A. TIGHTLOCK COUPLER RECONDITIONING GAGE

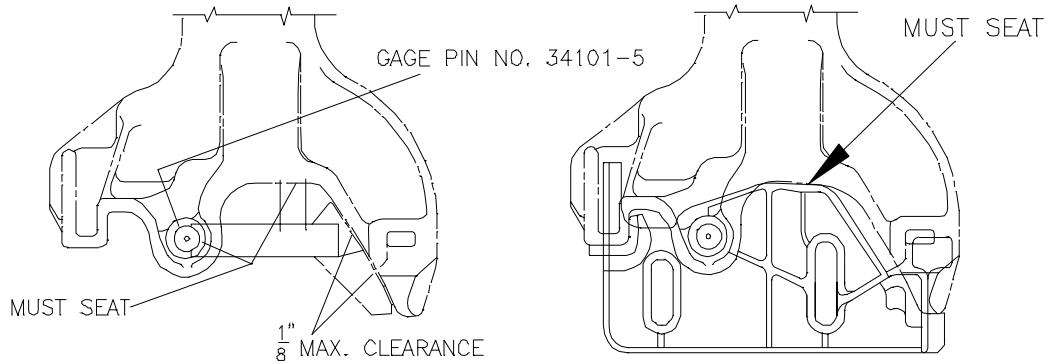


ALIGNING WING POCKET AND GURD ARM
ALIGNING SURFACES RECONDITIONING GAGE
NO. 40097

FIG. 10

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A.P.T.A. TIGHTLOCK COUPLER RECONDITIONING PRACTICES



GAURD ARM RECONDITIONING
GAGE NO. 34101-3A
FIG. 11

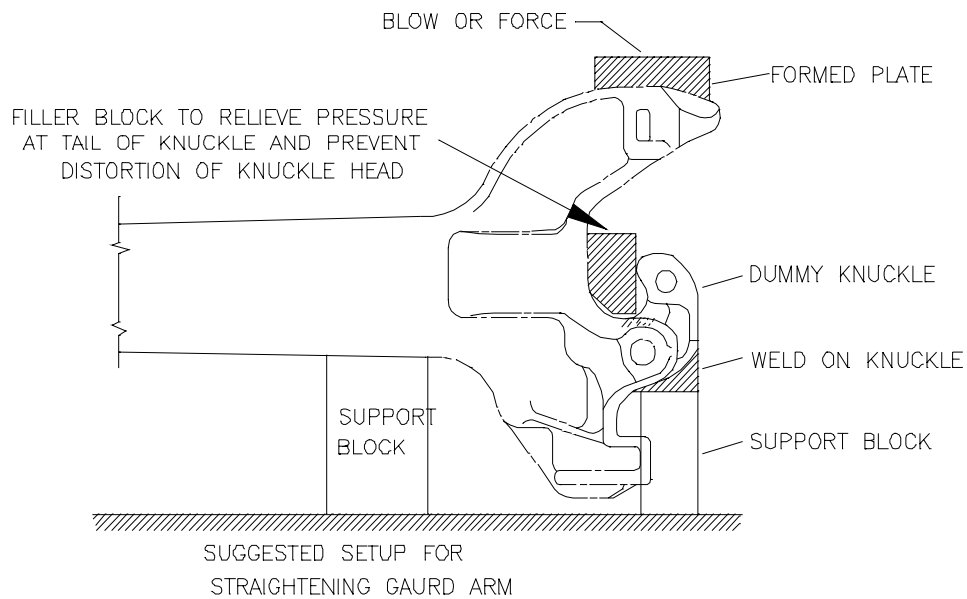
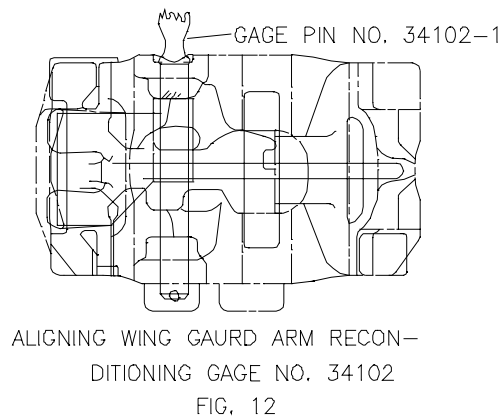
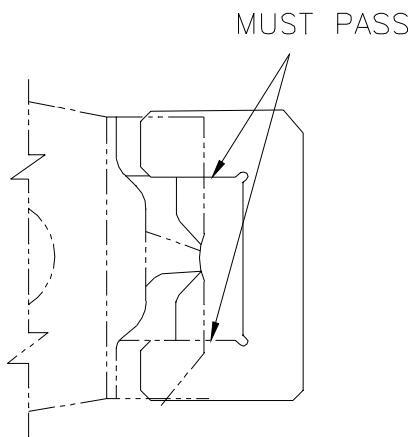


FIG. 13

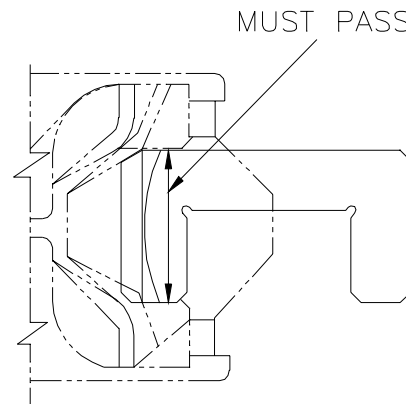
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A.P.T.A.. TIGHTLOCK COUPLER

RECONDITIONING PRACTICES



FRONT ELEVATION
GUARD ARM



ELEVATION-KNUCKLE SIDE

VERTICAL HEIGHT ALIGING WING POCKET GUARD
ARM GAGE
NO. 34101-4

FIG. 14