



NEW YORK AIR BRAKE CORPORATION
A KNORR BRAKE COMPANY
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SLACK ADJUSTER INSTALLATION & MAINTENANCE GUIDE FOR MODEL KRD2A-500AR

IP - 178

Issue No. 7

5/11/06



1.0 SAFETY

To prevent physical injury or death, all personnel directly or indirectly involved with the maintenance or inspection of the equipment described in this Manual must conform to the following:

- 1.1 When performing any test work on devices or equipment while they are on the vehicle, special precautions must be taken to ensure that vehicle movement will not occur which could result in injury to personnel and/or damage to equipment. Make sure the hand brake is applied and that the wheels are chocked to prevent vehicle from moving. Verify that the vehicle and/or track where work is being conducted, is properly flagged to prevent injury from movement of other vehicles.
- 1.2 Release all air pressure from air system before loosening any connections or components. Before removing any component from its mountings, the train must be safely parked. To prevent personal injury, all reservoirs and the brake cylinder on the affected vehicle must be vented.

"Bottled" up air under pressure (even though air supply is cut off) may cause gaskets and/or particles of dirt to become airborne and create an increase in sound level when any component part is removed from the equipment arrangement. Personal eye and ear protection must be worn and care taken to avoid possible injury when performing any work on these component parts.
- 1.3 The use of an air jet, which must be less than 30 PSIG, to blow parts clean or to blow them dry after being cleaned with a solvent, will cause particles of dirt and/or droplets of the cleaning solvent to become airborne. These particles and droplets may cause skin and/or eye irritation. Personal eye protection must be worn to protect the eyes from possible injury. When using an air jet, do not direct it towards another person. Improper use of air jet could result in bodily injury.
- 1.4 If degreasing fluids are used for cleaning purposes, the current local safety regulations, plus the safety precautionary statements of the manufacturer of the cleaning agent, must be adhered to. Otherwise, physical harm could result from the inhalation of toxic fumes. Make sure the area is well ventilated when working with materials that produce harmful fumes.
- 1.5 Personal eye protection must be worn when doing any work to protect eyes from possible injury.
- 1.6 When performing maintenance procedures on system components, assemblies may be under a spring load. Exercise caution during disassembly so that no parts "Fly Out" and cause bodily injury.
- 1.7 When pins and/or fasteners removed from the equipment are not satisfactory for reuse, care must be taken to select replacements that match the originals. Mismatched or incorrect pins and/or fasteners can result in equipment damage, equipment malfunction, and/or possible personal injury.
- 1.8 Follow all WARNING, CAUTIONS, and NOTES found throughout this Manual. If you must use a work procedure, or tool, which is not recommended, you must first satisfy yourself that neither your safety, nor your fellow workers safety or that of the equipment, will be jeopardized by the method selected.
- 1.9 Appropriate tool selection is required when performing all maintenance operations to avoid personal injury.



2.0 INSTALLATION:

NOTE

Slack adjusters are most commonly located in the center rod (IP-178) or top rod position (IP-178-1) of conventional foundation brake rigging. In any case, they must be installed with reference to the applicable installation drawing (NYAB P/N 779155) and the appropriate AAR standards for Group E Slack Adjusters. (S-400, S-420, S-421, S-422)

2.1 Installing the Slack Adjuster. (See dwg. IP-178 & IP-178-1)

NOTE

NYAB recommends installing NEW brake shoes when a Slack Adjuster is installed.

- 2.1.1 Attach Suspension Clevis (21) to Cylinder Lever of brake rigging using an AAR Type "A" Pin - 1-7/32" dia. X 3-1/2" long.

CAUTION

IF MACHINE LINE BECOMES VISIBLE ON THE SLACK ADJUSTER SPINDLE (18), DURING THE FOLLOWING MANUAL ADJUSTMENT, THE SLACK ADJUSTER SPINDLE (18) MUST BE TURNED UNTIL THE MACHINE LINE IS FLUSH WITH THE SLACK ADJUSTER SPINDLE SLEEVE (1) PLUS ONE HALF TURN IN. OTHERWISE THE SLACK ADJUSTER WILL BE OVER EXTENDED AND MAY NOT FUNCTION PROPERLY. THE APPROXIMATE LENGTH, PIN HOLE TO PIN HOLE, WILL BE 81-3/4" +/-1/4".

- 2.1.2 Adjust length of Slack Adjuster as required by turning Adjuster Spindle (18) using the Spindle Clevis (23), so that the hole in Spindle Clevis (23) lines up with the hole in the fulcrum lever of the brake rigging.
- 2.1.3 Once a proper length is acquired, attach Spindle Clevis (23) to Fulcrum Lever of brake rigging using an AAR Type "A" Pin 1-7/32" dia. X 3-1/2" long pin.

NOTE

Control lever must conform to the requirements of AAR Standard S-420, S-421, and S-422.

- 2.1.4 Install clevis of Control Shaft (22) onto Control Lever of the brake rigging using an AAR Type "B" Pin - 1-3/32" dia. X 2-1/2" long.
- 2.1.5 Adjust sliding Control Rod Head (20) on Control Shaft (22), securing with Locking Bolts (20.1). Note: If possible, a minimum 1/8" distance from Control Rod Head (20) to barrel face is recommended at set-up.
- 2.1.6 Using 50 psi brake cylinder pressure, check piston stroke. A minimum of (2) applications is required to verify piston stroke. (See Section 2.2)



- 2.1.7 Install safety hanger, per AAR Standard S-400, approximately 44"-52" from center pin on Cylinder Lever of the brake rigging.
 - 2.1.8 Maintain 1" clearance around Slack Adjuster under ALL conditions per AAR standard S-400.
 - 2.1.9 If this is a first car in a series, measure the length of the Control Shaft to allow "pre-setting" of the Control Shaft on subsequent cars. Piston stroke must still be measured on ALL cars prior to welding of Control Rod Head (20) to Control Shaft (22).
- 2.2 Setting proper piston stroke. (See dwg. IP-178 & IP-178-1)
- 2.2.1 Proper piston stroke for an 8-1/2" or 10" cylinder is 7-8" and for a 12" cylinder is 5-6".
 - 2.2.2 Apply and release the brakes using 50 psi brake cylinder pressure, then apply the brakes again. While brakes are applied, measure the piston stroke on the brake cylinder. Release the brakes.
 - 2.2.3 Adjust the piston stroke by adjusting the length of the Control Shaft (22) via the Control Head (20). Shorten the Control Shaft to increase piston stroke, and lengthen the Control Shaft to decrease piston stroke. The adjustment necessary is a multiple of the car's lever ratio.

EXAMPLE: A car with a 2:1 Lever Ratio will need a 1/2" adjustment on the Control Shaft to create a 1" difference on the piston stroke.
 - 2.2.4 Once proper piston stroke is achieved, weld Control Head (20) to Control Shaft (22) with 3/16" Fillet welds, minimum (2) sides for a minimum total weld length of 2".

3.0 REMOVAL (See dwg. IP-178 & IP-178-1)

NOTE: Release the brakes and insure that all tension is out of the brake rigging before attempting to remove a Slack Adjuster. Follow all safety guidelines for working on or around railroad equipment.

- 3.1 Remove the pin attaching the Control Shaft (22) to the Control Lever on the brake rigging.
- 3.2 Remove pin connecting the Spindle Clevis (23) from the Fulcrum Lever on the brake rigging.
- 3.3 Support the loose end of the Slack Adjuster, and remove the pin connecting the Suspension Clevis (21) to the Cylinder Lever on the brake rigging.
- 3.4 Remove the Slack Adjuster unit from the car.

4.0 MAINTENANCE

NYAB Slack Adjusters do not require any special maintenance or servicing. Maintenance consists of checking for proper piston stroke per 2.2, and visual inspections for damage or malfunctions during normal car servicing. If any of the visual inspection conditions are found, remove the unit from the car and return to New York Air Brake for replacement.



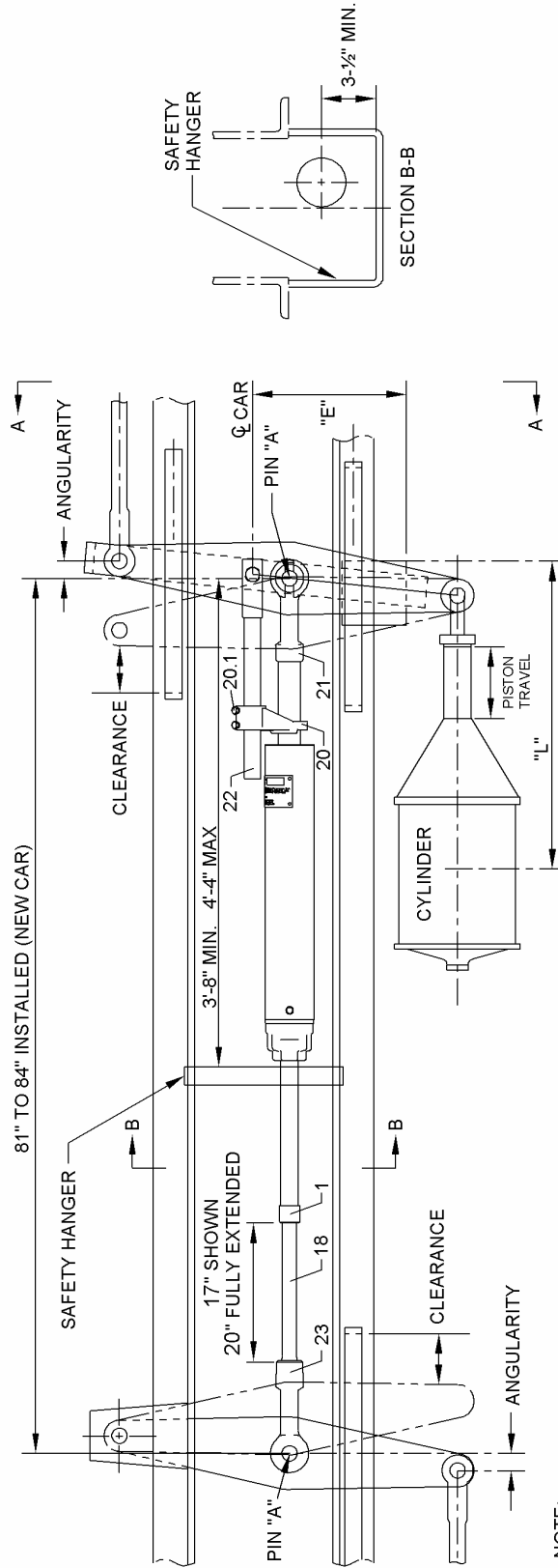
5.0 TESTING

WARNING

SECURE, AND PROPERLY FLAG, ANY CAR WHERE PERSONNEL WILL BE UNDER AND/OR NEAR. FOLLOW ALL SAFETY PROCEDURES FOR WORKING ON OR AROUND RAILROAD EQUIPMENT. FAILURE TO FOLLOW THESE PROCEDURES COULD RESULT IN INJURY OR DEATH.

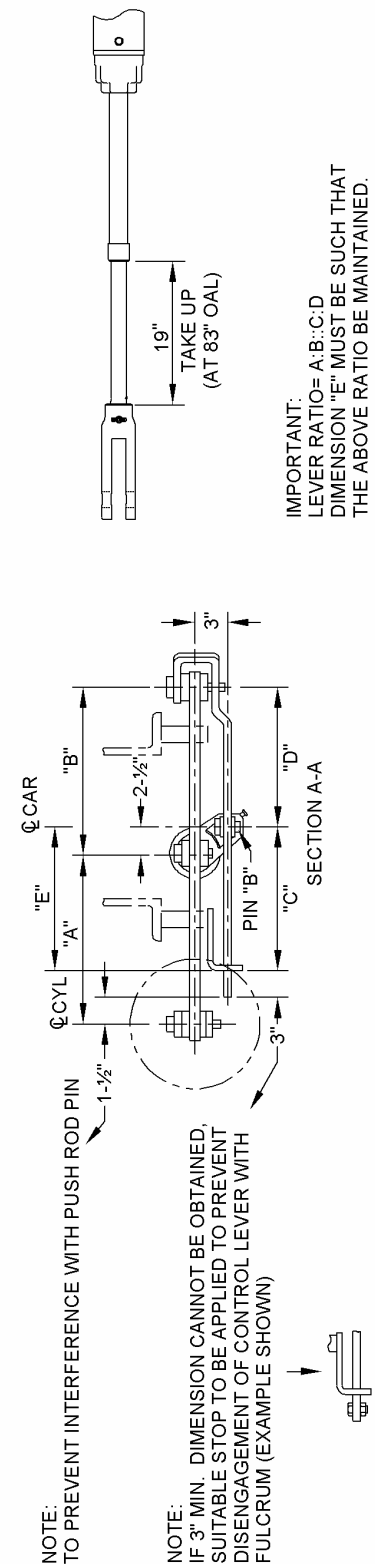
- 5.1 Insert a spacer block between the brake shoe and wheel surface.
- 5.2 Apply the vehicle brakes at maximum pressure and measure the brake cylinder piston stroke. The first application should result in a slightly short piston stroke. Apply vehicle brakes at maximum pressure a second time. After the second brake application, the system will have obtained the proper piston stroke.
- 5.3 Remove the spacer block and apply the vehicle brakes again. When the brakes are applied the first time, the brake cylinder piston stroke will be long. On the second application, the system will have obtained the proper piston stroke.

TYPICAL CENTER ROD INSTALLATION
(SEE AAR STANDARD S-421 FOR FURTHER INFORMATION)



NOTE:
PIN "A" TO BE 1-7/32" Ø AND NOT TO EXCEED 3-1/2" LONG.
PIN "B" TO BE 1-3/32" Ø AND NOT TO EXCEED 2-1/2" LONG.

"L" MUST BE SUCH THAT Q OF CONTROL LEVER & CYLINDER LEVER ARE ON THE SAME VERTICAL PLANE WITH BRAKES. SET AT PROPER PISTON TRAVEL.



NOTE:
TO PREVENT INTERFERENCE WITH PUSH ROD PIN

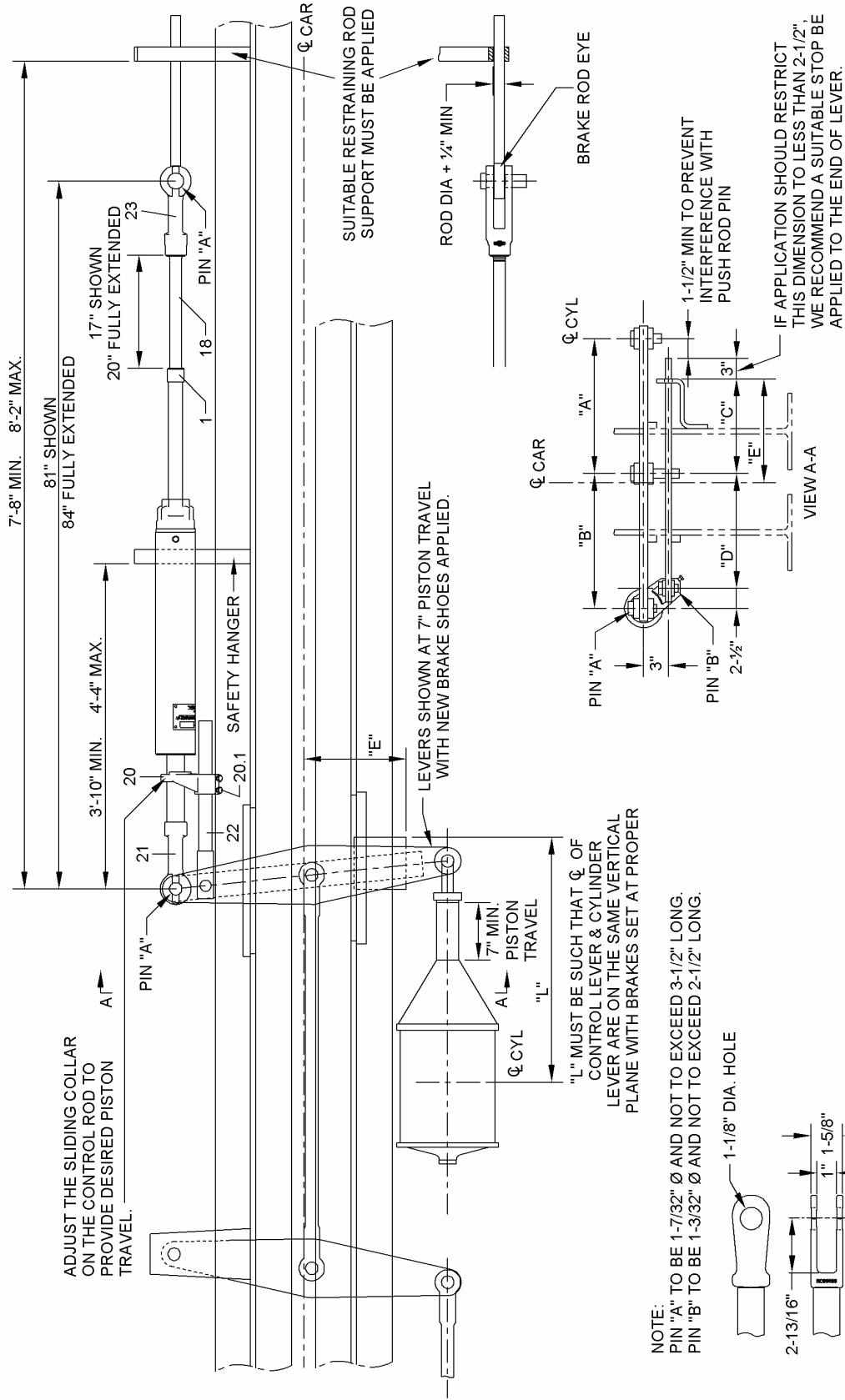
NOTE:
IF 3" MIN. DIMENSION CANNOT BE OBTAINED, SUITABLE STOP TO BE APPLIED TO PREVENT DISENGAGEMENT OF CONTROL LEVER WITH FULCRUM (EXAMPLE SHOWN)

IMPORTANT:
LEVER RATIO= A:B::C:D
DIMENSION "E" MUST BE SUCH THAT THE ABOVE RATIO BE MAINTAINED.

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TYPICAL TOP ROD INSTALLATION
(SEE AAR STANDARD S-422 FOR FURTHER INFORMATION)



IP-178-1

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REVISION PAGE:

IP-178

ISSUE NO. 1
JULY 12, 2001

Original Issue

ISSUE NO. 2
JULY 18, 2001

Revised Caution on page 3

ISSUE NO. 3
JULY 30, 2001

Revised Caution on page 3
Renumbered sketches
Revised Note in para. 2.1.5

ISSUE NO. 4
AUGUST 13, 2001

Revised illustrations on pages 6 and 7

ISSUE NO. 5
MARCH 30, 2004

Revised illustrations on pages 6 and 7

ISSUE NO. 6
OCTOBER 11, 2005

Revised illustrations on pages 6 and 7:
Changed "Shown" dimension from 16" to 16-3/4"
and "Fully Extended" dimension from 19" to 19-3/4"

ISSUE NO. 7
MAY 11, 2006

Revised illustrations on pages 6 and 7:
Changed "Shown" dimension from 16-3/4" to 17",
"Fully Extended" dimension from 19-3/4" to 20" and
"Take Up" dimensions from 19-3/4" to 19" and 84" to 83"