THE PENNSYLVANIA RAILROAD

MAINTENANCE INSTRUCTIONS GENERAL NO. 1-A

MECHANICAL INSPECTION & LUBRICATION ATTENTION

JOURNAL BOXES

FREIGHT AND PASSENGER EQUIPMENT CARS

LOCOMOTIVES

TRANSPORTATION YARDS SHOP TRACKS & LOCOMOTIVE TERMINALS

These Maintenance Instructions supersede and replace existing instructions on this subject

ISSUED BY
CHIEF MECHANICAL OFFICER
Philadelphia, Pa.
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Chief Mechanical Officer

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INTRODUCTION

One of the most important parts of successful railroad operation is proper inspection and lubrication of equipment, and it is the aim of the instructions as contained herein to promote this purpose to the fullest extent possible.

It is desirable that all employes, whose duties have to do with either maintenance or movement of equipment, have complete knowledge of this instruction as it applies to their work, and realize their own responsibility.

Supervisors in charge of work will be responsible for knowing that workmen performing the operations fully understand this instruction and contents of same are being followed. Whenever possible Supervisors are to be with workmen when work is being performed and available to pass on any questionable condition.

Supervisors to make a daily check of quality of workmanship. When any indication of laxity is apparent, necessary action must be taken promptly.

SECTION NO. 1

SYSTEM & FOREIGN FREIGHT CAR EQUIPMENT

JOURNAL BOXES

INSPECTION AND ATTENTION

TRANSPORTATION YARDS

ORIGINATING TERMINALS

Loaded cars received in Interchange; from local industries or branch lines; all journal boxes must receive complete attention at Originating Terminals.

Empty cars, every effort must be made to give complete attention, to all journal boxes at Originating Terminals as working forces and time will permit. Loaded or empty cars picked up on line, where inspectors are not available, must be given complete attention at first Terminal enroute.

All cars must be pool marked indicating attention received.

A—The inspection force to start inspecting journal boxes and contained parts as soon as possible upon arrival of train in yard.

B—Raise all box lids and visually inspect contents of box. Feel end of journal with bare fingers to determine whether running heat is above normal. Use feeler hook on both sides of journal and bearing, starting at journal collar working to rear of journal to detect cut or rough surface; raise hook to rear of bearing, then draw hook along oil grove to front end of bearing to detect Looped Pad Threads, run or broken lining.

When any abnormal condition is found, journal box to be jacked, bearing removed, cause determined and correction made before car is allowed to continue in service.

C—*Plain Bearing type Boxes:*

Boxes containing water, ice, dirt, grease, coolant compound; lubricating Device having defect that could cause failure within repack period, boxes flooded due to high water, car to be shopped for correction. If lubricating device has worked out of position, adjust under journal, making sure device contacts rear wall of Box. Care must be taken when using packing iron to avoid damage to Journal or Lubricating Device. If any free oil is visible in Journal Box, *NO OIL* to be added. When there is no visible oil in bottom of Box—oil to be added *not to exceed* ½ *inch* in bottom of Box.

Mechanical Type Lubricators—Oil level must be maintained at top of Oil Gage located on front of lubricator.

D—*Type of Journal Box Oil To Be Used:*

Summer Grade, Acct. 37, Ref. 293

Winter Grade, Acct. 37, Ref. 292.

Chief Mechanical Officer will issue instruction letter governing Months the above Oil will be used.

E—*Journal Bearing Renewal:*

Use only full diameter bearing, Size A-1 (Color Code "Red"), when renewing bearings in transportation Yards or Train Sidings.

F—All Journal Box Lids must be closed prior to Train departure.

G—*Roller and Cartridge Type Bearing Boxes:*

Inspect for leakage; loose or missing cap screws; loose or missing grease fitting, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs.

When defects are found, corrections must be made, using standard parts.

When cars equipped with Journal Roller Bearings or Cartridge type bearings has been derailed or operated through water, which may get into bearings, car must be shopped for examination of bearings.

H—*Responsibility For Hot Boxes:*

Responsibility will be placed on originating terminals dispatching the equipment. All cars must be safe for road movement to interchange point of foreign line or final destination on System lines.

SECTION NO. 2

SYSTEM & FOREIGN PASSENGER & FREIGHT CAR EQUIPMENT

CARS SET OUT ON LINE

ACCOUNT

HOT BOXES

A—When a car equipped with Plain Bearings is set out on line, account hot box or journal running above normal operating temperature, wedge, bearing and Lubricating device must be removed and inspected for defects.

Journal also must be thoroughly inspected for any defect that may have caused the failure.
If there is any discoloration due to overheating, car must be shopped and wheels renewed.

B—"Every journal which runs hot in service causing the lining metal to be melted from the bearing to the extent that any portion of the cylindrical bore of the brass back has been exposed, must have the axle removed from service for shop reclamation in standard manner. Except for movement into a repair track, no axle exposed to this degree of overheating in the journal shall have the bearing renewed and continue to run without being subjected to standard shop reclamation. This instruction is not to be construed as permitting journals which have been overheated to the extent there is a possibility of thermal cracks existing in the journal being continued in service if the lining metal has not been melted to the extent that any portion of the cylindrical bore of the brass has been exposed.

If there is a question that journals have been overheated sufficiently to cause thermal cracks, such axles must be removed from service for standard shop reclamation. There shall be no question that journals overheated sufficiently to melt the lining to the extent that any portion of the cylindrical bore of the brass back is exposed has been overheated sufficiently to cause thermal cracks."

C—Cars equipped with Cartridge or Roller Type bearings, only repairs that will permit safe movement of car to repair shop are to be made at set out location. Detailed inspection of Bearings to be made at shop to determine cause of failure.

SECTION NO. 3

SYSTEM & FOREIGN
FREIGHT CAR EQUIPMENT

JOURNAL BOXES — PLAIN BEARING

REPACK ATTENTION

SHOP TRACKS

A—Jack boxes, remove wedge and bearing using approved tools to avoid contact with bearing lining. Apply fiber protection spacer (Trac. E-461146) to top of journal to safeguard journal surface, lower box, carefully remove and return lubricating device to Oil House.

Journal box lids must be inspected, any that are defective must be repaired or renewed.

B—The interior of box, journal, inside of lid, wedge and bearing, must be thoroughly cleaned, using approved solvent, Acct. 47, Ref. 2486. Remove all solvent from box. Boxes must be inspected for cracks.

C—1—Bearings must be inspected for cracked backs; spread, broken and thin linings; end wear when worn ¼-inch or more lengthwise at either end, or when combined wear lengthwise is ⅜-inch or more. Hold bearing in hand, tap back several times with hammer, bearing should ring with bell-like tone, if it does not the lining is loose. Defective bearings must be removed from service.

2—Bearing found to be serviceable, must be protected against damage and re-applied to same journal from which removed.

3—When applying new or re-applying old bearing to

journal, clean cloths are to be used for cleaning bearing lining. Waste must not be used for this purpose. Lining and back of journal bearing must be thoroughly lubricated with *new* Journal Box Oil. New bearings must be applied when wheel sets are renewed.

4—Bearing reclamation at points having approved type broaching machine may reclaim bearings that meet requirements of hammer testing and gaging. Rebroached bearings must be applied *only* to System Freight Car Equipment. Controlled Journal Bearing program must be followed to end that bearing indentification A-1, A-3 or A-5 shall be maintained at all times.

D—Bearing Renewal—

"Controlled Clearance Journal Bearings"

Journal must be gaged to determine proper size bearing for journal sizes 5 x 9, 5½ x 10, 6 x 11, 6½ x 12. See Fig. 1. Page 7.

In renewing bearings on journals of 3¾ x 7 and 4¼ x 8 nominal diameter, full diameter bearings Size (A-1) must be applied under all conditions.

Journal Bearing Identification Table

Nominal Size Journal	A-1 Bearing Size (in.)	Stamped on top or lug end of Bearing	A-3 Bearing Size (in.)	Stamped on top or lug end of Bearing	A-5 Bearing Size (in.)	Stamped on top or lug end of Bearing
5 x 9	5.015	5.02	4.890	4.89	4.765	4.77
5½ x 10	5.515	5.52	5.390	5.39	5.265	5.27
6 x 11	6.015	6.02	5.890	5.89	5.765	5.77
6½ x 12	6.515	6.52	6.390	6.39	6.265	6.27

Apply full diameter bearing (A-1) to journals which

do not have diameter reduced to the extent of taking No. 3 gage.

Apply next lower diameter bearing (A-3) to journals which have diameter sufficiently reduced to take the No. 3 gage but not enough to take the No. 5 gage.

Apply smallest diameter bearing (A-5) to journals which have diameter sufficiently reduced to take the No. 5 gage.

FIG. 1

Procedure for use of "GO" Gage: Hold gage in hand with stenciled side up. Working from end of axle, pass gage down over journal at portion back of collar. The gaging point so passing over journal will indicate bearing bore size required. In event gaging point No. 3 passes over journal and gaging point No. 5 will not pass over journal, bearing bore size sten-

ciled opposite gaging point No. 3 will apply. In event gaging point No. 5 passes over journal, bearing bore size stenciled opposite gaging point No. 5 will apply. In case No. 3 gage does not pass over journal, size (A-1) bearing must be applied.

The "GO" Gage must be calibrated for accuracy, using pin gages, prior to each tour of duty. Supervisor in charge of shop will be required to know that "GO" gages have been calibrated.

During tour of duty if gage is bumped, dropped or wrenched, gage must be re-calibrated immediately. Gages must not be placed in any position that will result in damage.

If gage is defective in any manner, corrections are to be made *only* at Altoona Works, Juniata Tool Room, to which point "GO" gage must be transported in shipping case provided each shop for this purpose.

"GO" and "PIN" gages must be maintained and stored in warm room, when not in actual use.

For convenient identification of bearing sizes, the following Paint Color Code *must* be used, to be applied at origin of manufacture on lug end of bearings, not to exceed ½-inch wide and 1½-inch long:

A-1—Toluidine Red
A-3—White
A-5—Equipment Yellow

Color code or other markings, indicating bearing size, must not be applied on ends of axles.

Bearings in transit or storage must be stowed and piled separately in a manner to prevent damage to linings.

E—P.R.R. manufactured or purchased bearings are to conform to P.R.R. Specifications. These bearings are

thoroughly inspected prior to acceptance; to guard against placing bearings in service with damaged linings result from handling, etc., all bearings must be examined and hammer tested by workmen prior to application.

F—Journal bearing wedge—Wear must be determined by use of wedge condemning gages, tracings D-458788, E-461963. See Figures 4-4A, Page 31.

Wedges cracked, distorted or broken; or if worn flat on top lengthwise as per following table, or where overall length measured at contact surfaces is reduced more than 3/16-inch; or when bottom of bearing surface of wedge is uneven to the extent of 1/64-inch, as determined by gage; Wedge to be applied on Journal Bearing and checked to see that wedge seats properly on the crown, without pinching the sides or resting on the lugs; Wedges with any of the above defects *must* be removed from service.

Nominal Journal Size	Wear Limits Flat Lengthwise
4¼ x 8	3¼ inches
5 x 9	4 inches
5½ x 10	4½ inches
6 x 11	5 inches
6½ x 12	5½ inches

Wedge Application:

Journal Box Oil must be applied to both the inside and to the back to facilitate free movement.

New Wedges not to be applied until scale or rust is removed.

Defective wedges to be returned for reclamation to Altoona Works.

G—*Cleaning And Inspection Of Journal:*

Journal must be wiped with clean cloth, prior to inspection. *Waste must not be used* for this purpose. Inspection must be made to determine defects such as cracks, nicks, burrs, scars, rust and rough surface.

Under no circumstances should a file, sandpaper, emery cloth or other abrasive materials be used for removal or correction of irregularities on journal surface. Journal to be flushed with new car oil.

H—*Dust Guards And Plugs:*

When truck sides or separable boxes are removed, defective dust guards must be renewed.

Missing or defective dust guard plugs must be renewed. Plugs to be sealed with car cement.

I—*Lubricating Devices—Application:*

Devices to be applied to journal box—Using drain board, Tracing D-459386. Place device on drain board, work under journal, making sure device contacts rear wall of box. See Fig. 2, Page 30.

Care must be exercised in application to prevent damage to device.

Devices prepared as outlined in Section No. 9 should contain sufficient oil. ½-inch free oil should be visible in front of box; if less, add oil to a point not to exceed ½-inch from bottom of box.

Mechanical Type lubricators—Oil level to be at top of gage located on front of lubricator.

Type of oil to be applied to journal boxes, when cars are on Shop Tracks: Plain or cartridge type bearings, Only Oil, Acct. 37, Ref. 91 to be used.

J—When repacking journal boxes on cars equipped with

A.A.R. approved or A.A.R. conditionally approved journal lubricating devices, devices removed must be replaced with A.A.R. approved or A.A.R. conditionally approved devices, either new or renovated. Where available, device standard to car should be maintained.

When repacking journal boxes on cars equipped with journal lubricating devices authorized by the A.A.R. Lubrication Committee for limited test applications, the devices removed, if not defective, must be renovated and where facilities are available to permit, should preferably be replaced in the same car from which removed; however, the devices removed may be replaced with lubricating devices, A.A.R. Approved, A.A.R. Conditionally Approved, or devices having limited test approval, either new or renovated. Where available, the device standard to car should be maintained.

When repacking journal boxes of foreign cars, equipped with journal lubricating devices from which A.A.R. approval has been withdrawn, as listed in Rule 101, the devices removed must be scrapped. The devices removed must be replaced with lubricating devices, A.A.R. Approved or A.A.R. Conditionally Approved, either new or renovated.

K—Jack box, remove fiber protection spacer, apply bearing and wedge, lower box and visually inspect contents for proper position of parts.

L—*Cartridge Type Bearings:*

Cartridge Type Bearings must be inspected for loose or missing cap screws, leakage or defective filler plug. Only *smooth jaw* wrenches to be used in removing or applying filler plug.

Oil level must be checked in each box and oil added where necessary to restore to maximum level.

M—Inspection must be made, prior to car leaving Shop Track to see that correct amount of oil is in each box.

N—*Lubrication Stenciling:*

Cars are not to have "Repack" date stenciled until previous "Repack" stenciling is completely removed, all box work completed and final inspection made by supervision.

O—Cars equipped with lubricating devices are to be stenciled above or adjacent to "Repack" stenciling, with type of device, using same color paint as other stenciling on car.

P—Railroad, Shop, Month, Day and Year to be stenciled on car body near body bolster at diagonal corners of car with not less than 1-inch figures and letters.

P—*Freight Equipment:*

Periodical Time Limits—Plain or Cartridge Bearing Type Boxes:

Equipped With Lubricating Devices	*To be repacked* Every 30-Months. Must be repacked when date is in excess of 29-Months when car is in shop.
Test Lubricating Devices	Time period stenciled on car will apply.
Cabin) Cars M.W.) *Moving in Freight Service Only.*	Every 48-Months. Must be repacked when date is in excess of 47-Months when car is in shop.

Cartridge Type Bearing	Every 90-Days. Symbol "LUB" to be added to repack stenciling.

Q—*Wheel sets, with plain bearing type journals, on Shop Storage Tracks, received from or returning to Wheel Shop:*

Journals and all other finish machined surfaces of axles must be completely coated with approved type rust preventive at all times.

SECTION NO. 4

SYSTEM & FOREIGN FREIGHT CAR EQUIPMENT

JOURNAL BOX ATTENTION

INDATE CARS

SHOP TRACKS

Boxes must receive attention as outlined below:

Plain Bearing Boxes:

A—Make visual inspection of bearing, wedge, journal, lubricating device, to detect evidence of heating or other defective conditions.

B—Using feeler hook on both sides of journal and bearing, starting at journal collar working to rear of journal to detect cut or rough surface; raise hook to rear of bearing, then draw hook along oil grove to front end of bearing to detect looped pad threads, run or broken lining.

C—Boxes containing water, ice, dirt, grease, coolant compound; Lubricating device having defect that could cause failure within repack period; to receive complete repack attention as outlined in Section No. 3.

If lubricating device has worked out of position, adjust under journal, making sure device contacts rear wall of box. Care must be taken when using packing iron or hook to avoid damage to lubricating device.

D—Oil level in Journal Boxes equipped with lubricating devices (Pad Type) to be maintained but not to exceed ½-inch in bottom of box.

Mechanical Type Lubricators—Oil level must be maintained at top of oil gage located on front of lubricator.

E—*When Wheel Set Is Renewed:*

Journals must be carefully examined for defects and any that are questionable must not be used.

Journals with rough collars or fillets; scuffed, scarred or containing waves from machining, to be returned promptly to wheel shop from which received.

Imperfections on Journal surface *must not* be removed with file or other types of abrasive materials. Boxes associated with wheel set must be given same attention as outlined in Section No. 3 for repack work.

F—*Cartridge Type Journal Bearings:*

Inspect for loose or missing cap screws, leakage or defective fill plug, any indication of overheating.

G—*Roller Bearing Boxes:*

Boxes must be given external inspection for over-

heating; leakage; loose or missing cap screws; loose or missing grease fittings, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs.

When defects are found, corrections must be made, using standard parts.

H—*Roller Bearing Boxes—Oil Type:*

When wheel sets are applied, oil level must be checked and *each* box filled to maximum level.

Roller Bearing Boxes—Grease Type:

No Grease to be added to any Box.

Letter "G" applied at Wheel Shop to be removed.

I—When cars equipped with journal roller bearings or cartridge type bearings are shopped, account derailment or high water that may have entered into bearings, Wheels are to be removed and forwarded to Wheel Shop for examination.

SECTION NO. 5

FREIGHT CAR EQUIPMENT

PROCEDURE TO BE FOLLOWED FOR "POOL MARKING" CARS, MECHANICAL INSPECTION AND LUBRICATION ATTENTION.

TRANSPORTATION YARDS

AND

SHOP TRACKS

To insure uniform practice in "Pool Marking" cars, the following procedure will be used:

A—Where an employee performs both the mechanical inspection and lubrication attention, he will designate same by applying his pool mark on side of car near corner, opposite end from side ladder with letter (O) opposite his pool mark.

Example: P107
68-O
7-2

One pool mark on each side of car will suffice for both operations.

B—Where mechanical inspection is made and inspector does not perform lubrication attention, he will apply his pool mark on the side of car near corner, opposite end from side ladder, and omit the letter (O).

Example: P107
68
7-2

C—Where lubrication attention is performed on car by employee other than the inspector making the mechanical inspection, one pool mark at center location each side of car will suffice.

Example: P107
108
7-2

D—Pool markings are chalked in three lines:

1st line—Code number identifying Location where work performed.

2nd line—Man who made the inspection or oiling (workman's number as assigned locally).

3rd line—Date of inspection or oiling.

E—Only *white chalk* to be used for Pool Marking Cars.

SECTION NO. 6

SYSTEM & FOREIGN PASSENGER CAR EQUIPMENT

JOURNAL BOXES

INSPECTION AND ATTENTION

COACH YARDS AND INDATE CARS, SHOP TRACKS

Boxes must receive attention as outlined below:
Plain Bearing Boxes:

A—Make visual inspection of bearing, wedge, journal, lubricating device, to detect evidence of heating or other defective conditions.

B—Using feeler hook on both sides of journal and bearing, starting at journal collar working to rear of journal to detect cut or rough surface; raise hook to rear of bearing, draw hook along oil groove to front end of bearing to detect looped pad threads, run or broken lining.

C—1—Boxes containing water, ice, dirt, grease, coolant compound, lubricating device having defect that could cause failure within repack period, boxes flooded due to high water, car to be shopped for correction.

2—If lubricating device has worked out of position, adjust under journal making sure device contacts rear wall of box.

Care must be taken when using packing iron to avoid damage to journal or lubricating device.

3—Oil level in journal boxes equipped with lubricating devices (Pad Type) to be maintained but not to exceed ½-inch in bottom of box.

4—Mechanical Type Lubricators—Oil level must be maintained at top of oil gage located on front of lubricator.

When defective journal is found, wheels must be renewed.

D—When *Wheel Set* is renewed for any cause: The boxes associated with wheel set, equipped with lubricating devices must be given same attention as outlined in Section No. 8 for repack work.

E—*Journal Bearing Renewal:*

Use ~~*only*~~ full diameter bearing, Size A-1 (with color code "Red" applied on lug end), when renewing bearings on *Train Sidings*, other than assigned repair tracks.

F—*Indate Cars on Shop Tracks*—Journals are to be gaged and proper size "Controlled Clearance Bearing" must be applied. For journal size 5½ x 11 use *only* full diameter bearings.

G—*Roller Bearing Boxes:*

Boxes must be given external inspection for overheating; leakage; loose or missing cap screws; loose

or missing grease fitting, fill or drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs.

When defects are found, corrections must be made, using standard parts.

H—*Roller Bearing Boxes—Oil Type:*

When wheel sets are applied, *each* box must be filled to maximum level.

Roller Bearing Boxes—Grease Type:

When wheel sets are applied, *No Grease* to be added to any box. Letter "G" to be removed.

I—When cars equipped with journal roller bearings or cartridge type bearings are shopped, account derailment or high water that may have entered into bearings, wheels are to be removed and forwarded to Wheel Shop for examination.

J—*Responsibility For Hot Boxes:*

Responsibility will be placed on originating terminals dispatching the equipment. All cars must be safe for road movement to interchange point of foreign line or final destination on system lines.

SECTION NO. 7

INSPECTION AND ATTENTION

JOURNAL BOXES

SYSTEM & FOREIGN PASSENGER CAR EQUIPMENT

INTERMEDIATE STATIONS

Attention consisting of the following shall be given journal boxes:

A—Feel top of all boxes with bare fingers to detect excessive temperature.

B—*Plain Bearing Type Boxes:*

1—When box indicates a higher temperature than other boxes on same car, raise lid and visually inspect contents of box.

2—When any abnormal condition is found, journal box to be jacked, bearing removed, cause determined and corrections made before car is allowed to continue in service.

3—If defective journal is found, car to be shopped for correction.

4—Boxes containing water, ice, dirt, grease, coolant compound; Lubricating Device having defect that could cause failure, boxes flooded due to high water; car to be shopped for correction.

5—If free oil is not visible in front of box, add oil not to exceed ½-inch from bottom of box.

C—*Roller Bearing Type Boxes:*

1—When roller bearing box indicates abnormal temperature than other boxes on same car—Car *must* be shopped.

2—Inspect roller bearing boxes for leakage; loose or missing cap screws; loose or missing grease fitting, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs.

3—When defect is determined, either proper correction be made at location or car be shopped. Under no circumstances should car continue in service until defects are corrected.

D—Chalk markings, indicating inspection and lubrication attention, not to be applied on car body to Passenger Equipment.

SECTION NO. 8
SYSTEM & FOREIGN
PASSENGER CAR EQUIPMENT
JOURNAL BOXES — PLAIN BEARING
REPACK ATTENTION
SHOP TRACKS

Same procedure to be followed as outlined for System Freight Car Equipment, Section No. 3, except for the following:

A—*System Passenger Car Equipment:*
All bearings to be renewed at repack period.

B—*System and Pullman Passenger Car Equipment:*
Wedges cracked, distorted or broken; or if worn flat on top lengthwise for a distance exceeding ONE-HALF the original diameter of journal, or where overall length measured at contact surfaces is reduced more than 3/16 inch; or when bottom of bearing surface of wedge is uneven to the extent of 1/64-inch, as determined by gage; Wedge to be applied on Journal Bearing and checked to see that Wedge seats properly on the crown, without pinching the sides or resting on the lugs; Wedges with any of the above defects *must* be removed from service.

C—*System Passenger Car Equipment:*

Lubricating Devices	*Only New Devices* are to be applied at repack period or wheel change.

D—*System & Foreign Passenger Car Equipment:*

Periodical Time Limits:

Plain Bearing Type	Every 6-Months. May be repacked prior to expiration period by 15-days.
Cartridge Bearing Type	Every 90-Days.

1—*System Passenger Car Equipment:*
Assigned to Local Service Only

Plain Bearing Type M. U. Cars. Pittsburgh, Chicago, Valparaiso Commuter cars.	Every 24-months. May be repacked prior to expiration Period by 15-days.

2—Commuter Cars must not be dispatched in other than Local Service Train if repack date exceeds 12-months.

3—All Commuter Cars must be inspected during month of November for water in journal boxes. If any water is present, boxes must be repacked regardless of repack date.

E—Cars are not to have new "Repack" date stenciled until previous "Repack" stenciling is completely removed, all box work completed and final inspection made by supervision.

F—*Lubrication Stenciling*—Railroad, Shop, Month, Day

and Year to be stenciled on truck side at diagonal corners of car with not less than 1-inch figures and letters.

SECTION NO. 9
JOURNAL LUBRICATING DEVICES
SATURATION AND RENOVATION PROCESS

A—New and Renovated

Lubricating Pad Type Devices—Saturation:

1—Stationary Type Vats:

Devices to be placed on end in saturation vat, either on elevator screen or tote tray, and must be completely submerged.

Minimum saturation time *must not* be less than 8-hours.

2—Revolving Type Saturator:

Place devices in drum, not to exceed eight (8) devices each load. Revolve for a minimum period of 10-minutes.

3—To be saturated in new Journal Box Oil, Acct. 37, Ref. 91. Oil must be heated and maintained to temperature of 120 to 140 degrees F.

4—*Diesel Switching Locomotives Only:*

Devices must be saturated in Locomotive Journal Box Oil, Acct. 37, Ref. 357, when saturation is performed at Locomotive Maintenance Terminals. Procedure as outlined above will govern.

However, there is no objection to the use of Car

Journal Box Oil, Acct. 37, Ref. 91, when devices are saturated with facilities available at Car Shops.

5—Draining Period:

Devices must drain from five (5) minutes minimum, not to exceed two (2) hours maximum. If devices are not applied to boxes in two (2) hour time limit, devices *must* be returned to oil house and again saturated. Devices must be transported in clean covered container.

B—Renovation Pad Type Devices

Operation—Pad Washing Machine:

1—Temperature of washing oil, Acct. 37, Ref. 91, *must* be maintained 220 to 240 degrees F.

Machine *must* be equipped with device to indicate oil temperature is within the 220 to 240 degrees F. limit.

2—Place dirty devices in washing machine drum, in manner to balance load. Maximum load—eight (8) devices.

3—Transfer hot oil from heating section to washing section, by opening gravity feed line valve located on front of machine.

4—When sight gage shows full, revolve drum at 20 to 30 R.P.M. for five (5) minutes, close feed line valve, start pump to return washing oil to heating section. When oil is no longer visible in sight gage, increase drum speed to six-hundred (600) R.P.M. (minimum) for five (5) minutes to extract cleaning oil.

5—Remove devices from washing machine drum; using Permanent Set Gage shown on Tracing D-458654 proceed as follows:

(a)—Pass lubricating device lengthwise through gage.

(b)—To be re-usable, a device must contact for its entire length, both bottom of gage and center projection.

(c)—Device having permanent set to extent of not contacting center projection of gage, must not be re-used in such condition.

6—All lubricators shall be marked with non-ferrous metal tag stamped with the letter "R" not less than ¼ inch in height at the time the devices are renovated. This tag should be clipped to the lubricator pull-out strap or some other visible portion of the device so located that the tag shall not contact the journal. At time of each additional renovation, tag must be applied to device.

C—*Pad Washing Machine*

Care of Filters:

1—Filters must be completely cleaned when pressure gage reaches 30 pound. Oil must be removed and replaced after each one-hundred pads or sooner depending on condition of pads cleaned.

2—When solvent is used to clean machine, it must be completely removed before new Oil, Acct. 37, Ref. 91 is applied. Filter screens must not be damaged.

Machine must be stenciled to indicate maximum loaded speed and date last cleaned.

D—Lubricating Devices—Damaged:

Approved, Conditionally Approved, Approved for Test.

(a) Devices will be considered as requiring repairs when the following conditions exist:

1—Failure to pass A.A.R. condemning gage.

2—Cover damaged on journal contact surface.

3—Wicking loops extended beyond normal length.

4—Pull straps torn or missing.

5—Core material missing or damaged.

6—Sides or ends damaged or torn in excess of two (2) inches.

7—Contact surface worn or glazed to possibly restrict oil wicking.

8—Any other obvious defect that could cause failure of device within repack period.

E—All devices, approved, conditionally approved or approved for test, regardless of condition, must be taken to oil room where current record must be kept and forwarded monthly to the Regional Office, then to Chief Mechanical Officer. This record must show number of devices scrapped, renovated and sent to Hollidaysburg for repairs.

F—All damaged devices must be sent currently to Hollidaysburg for repairs. The only exception are those damaged by fire. Devices must be shipped in clean metal container having a tight lid. Each container must be tagged showing shop and date shipped.

SECTION NO. 10

DIESEL SWITCHING LOCOMOTIVES

JOURNAL BOXES — PLAIN BEARINGS

REPACK ATTENTION—LOCOMOTIVE TERMINALS

A—*Boxes equipped with pad type lubricating devices:*

Same procedure to be followed as outlined for System Freight Car Equipment, Section No. 3 with the following additions; Axle Thrust Blocks must be removed before applying or removing Lubricating Devices. Thrust Block oil well and oil hole leading to inside face of Thrust Block must be free of dirt. Wicks or Packing used to lubricate Thrust Block must be thoroughly saturated with Journal Box Oil.

B—*Journal Bearing Renewal—Plain Type:*

Use *only* full diameter bearings, Size A-1, when renewing bearings. Only defective bearings to be renewed.

C—*Journal Bearing Wedge Inspection:*

Wedges cracked, distorted or broken; or if worn flat on top lengthwise for a distance exceeding ONE-HALF the original diameter of journal, or where overall length measured at contact surfaces is reduced more than 3/16-inch; or when bottom of bearing surface of wedge is uneven to the extent of 1/64-inch, as determined by gage; Wedge to be applied on Journal Bearing and checked to see that wedge seats properly on crown, without pinching the sides or resting on the lugs; Wedges with any of the above defects *must* be removed from service. See Fig. 4, 4A, Page 31.

D—*Lubricating Devices—Saturation:*

For saturation and renovation of lubricating devices, procedure to be followed as outlined in Section No. 9.

E—*Trip Attention:*

Inspection and attention will consist of visual inspection of contents of Journal Box, making necessary corrections and addition of Oil when required.

F—*Monthly Attention:*

Inspection and attention to be given as outlined in Section No. 1, for Plain Bearing Type Boxes.

G—*Type of Journal Box Oil:*

Only Journal Box Oil, Acct. 37, Ref. 357 to be used. Free Oil *not to exceed* ½-*inch* in bottom of box.

H—*Periodical Time Limits:*

Plain Bearing Type Boxes

Equipped With *Lubricating Devices*	*To Be Repacked* Every 2-Years. Each Second Annual Inspection Period.
Test Lubricating Devices	Time Period Stenciled on Truck Frame Will Apply.

I—*Lubrication Stenciling:*

Place, Month, Day and Year to be stenciled using 1-inch numerals and letters on truck frame adjacent to No. 1 pedestal, with yellow paint.

SECTION NO. 11

TOOLS AND FACILITIES

FOR SERVICING JOURNAL BOXES

Tools and facilities must be maintained in proper condition, to be checked daily by supervision.

(1) Standard Packing Iron—Tracing D-456359.

(2) Feeler Hook—Tracing D-456359.

(3) Pulling Hook—Tracing D-456359.

(4) Fiber Journal Protection Spacer — Tracing E-461146.

(5) Bearing Length Condemning Gage—Tracing D-459169.

(6) Wedge Condemning Gages—Tracing D-458788 and E-461963.

(7) Controlled Journal Bearing Clearance "GO" Gage —Tracing D-455892 and D-456692.

(8) Lubricating Device Permanent Set Gage—Tracing D-458654.

(9) Lubricating Device Journal Box Drain Board—Tracing D-459386.

(10) Packing Bucket.

(11) Long Spout Oil Can—17 Pound Capacity.

(12) Journal Box Jack.

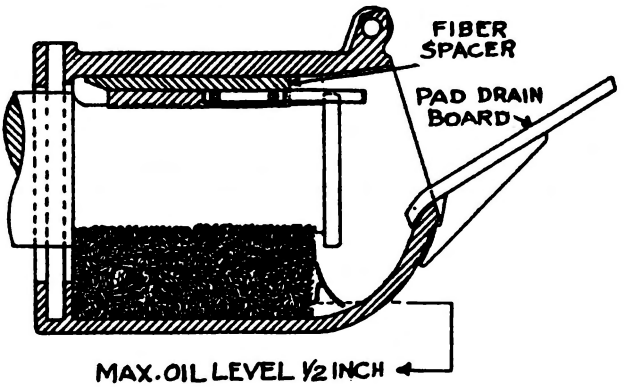
(13) Wheel Clamp.

(14) Tongs for Handling Wedge and Bearing—Tracing D-461923.

(15) Approved 6 or 12 Volt Electric Light.

(16) Insulated Tools for Third Rail Territory—Tracing D-456359.

FIG. 2



Lubricating device must not be removed from box for any reason without first jacking the box, removing wedge and bearing, insert fiber spacer, then lower box to permit maximum clearance between journal and box.

FIG. 3

METHOD OF USING BEARING CONDEMNING GAGE

FIG. 4

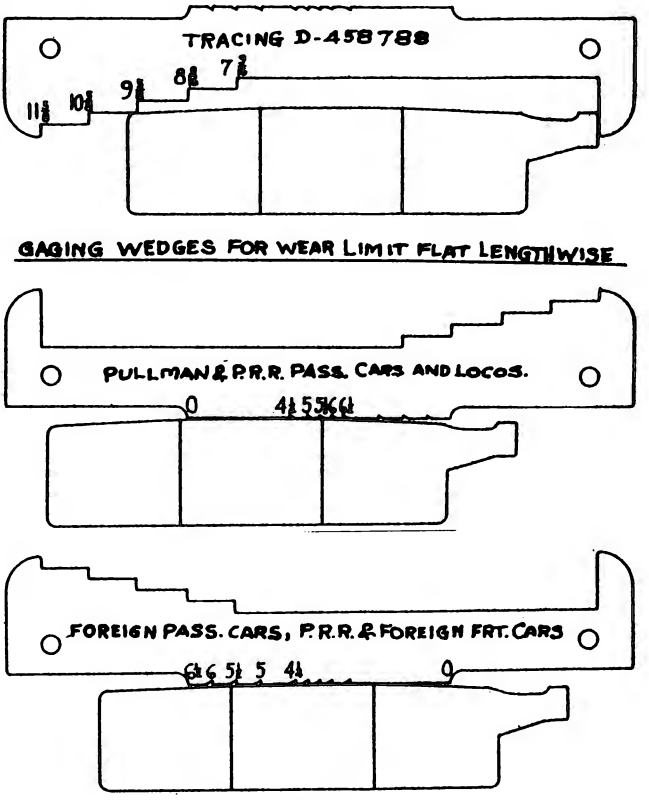


FIG. 4-A

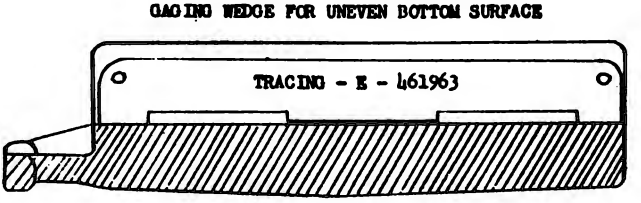
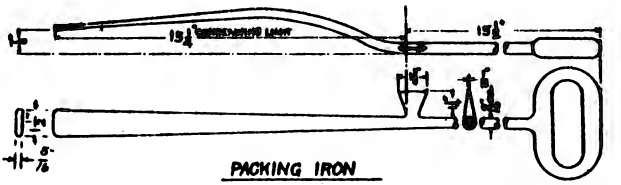
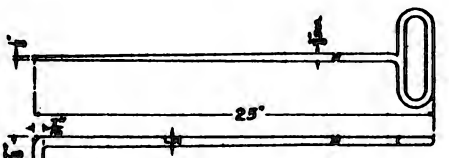
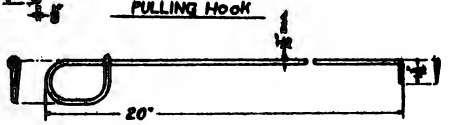


FIG. 5







SECTION NO. 12

JOURNAL BOXES — ROLLER BEARING

PERIODIC INSPECTION AND ATTENTION

SHOP TRACKS

SYSTEM AND FOREIGN EQUIPMENT

A—Freight and Passenger Car Journal Roller Bearings

Periodic Inspection and Lubrication:

1—Boxes must be given external inspection for overheating, cracks, leakage; loose or missing cap screws; missing or defective grease fitting, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs. When defects are found corrections must be made, using standard parts.

2—Locking wires must be applied as shown on P.R.R. tracing F-452636.

3—Grease fitting, or area surrounding fill plug, to be cleaned prior to application of grease or oil to box.

4—*Only grease,* Acct. 37, Ref. 211, to be applied to Roller Bearing Boxes, using approved type lubrication equipment.

5—Roller Bearing equipped wheel sets, as received from Wheel Shop, will contain proper amount of grease, and to indicate same a 1-inch letter "G" will be stenciled on journal box cover plate in yellow paint. After wheel set is applied to truck the letter "G" must be painted out.

6—Freight and Passenger Car Equipment—

Grease Lubricated Boxes:

The amount of grease to be added to each box shall be as follows:

Bearings equipped with housing end covers which rotate; Timken on freight cars—8 ounces. All others—4 ounces.

Inboard type roller bearings, "MU" Budd built cars—4-ounces.

All other bearings, except Test Weight cars *1-pound.*

7—When Test Weight cars are in shop for Periodic Lubrication Attention—A maximum of ½-pound of grease to be added each box regardless of type. Work to be performed in presence of and under supervision of Scale Inspector.

8—*Time Limits for Periodic Lubrication Attention*

Freight Cars—Grease type roller bearings:

Timken bearings with housing end covers which rotate—Every 36-months.

S.K.F., Hyatt and Brenco bearings with housing end covers which rotate—Every 24-months.

All others—Every 18-months.

Freight Cars, may be lubricated 30-days in advance of expiration date.

Passenger Cars, having all boxes with grease lubricated roller bearings: Bearings with housing end covers which rotate—Every 6-months. "MU" cars, grease—6-months.

All other grease lubricated bearings—Every 90-days.

Passenger Cars, may be taken 10-days in advance of expiration date.

B—Freight and Passenger Car Equipment—

Oil Lubricated Boxes:

1—The oil level in each box must be determined by removing fill plug.

2—When oil is found below level of oil fill hole located at the maximum oil level, boxes must be filled up to this level.

3—A careful check must be made before plugs are re-applied to insure height of oil is not a false reading due to accumulation of oil between front of bearing and box, on account of oil being thick. A sufficient length of time should elapse between filling and gaging to permit oil to flow through bearing.

4—When oil is found to be discolored, due to presence of water or other causes, all oil must be removed from box and refilled with new, clean oil.

5—Wheel sets received from Wheel Shop, equipped with roller bearings, will have *only* enough oil to lubricate bearing. When wheel sets are applied to truck, all boxes must be filled to maximum oil level.

6—*Only* oil, Acct. 37, Ref. 91, to be applied to roller bearing boxes, using approved type lubrication equipment.

7—*Time limits for Periodic Lubrication Attention*

Freight Cars, having any or all oil lubricated

roller bearing boxes—Must receive periodic attention as follows:

Every—12—Months, May be taken after expiration of 11-months.

8—Passenger Cars, having all boxes with oil lubricated roller bearings—Must receive periodic attention as follows:

System—15-Days.

System—30-Days—*Commuter Local Service Only:*

All boxes must be given daily inspection at originating terminal on arrival of train for overheating, leakage, loose or missing parts.

Commuter Cars must not be dispatched in other than Local Service Trains if repack date exceeds 15-days.

Foreign—30-days, may be taken 10-days in advance of expiration date.

Cars in Transcontinental service equipped with oil lubricated journal roller bearing boxes must receive lubrication attention before start of each trip.

9—When Foreign Passenger Cars have both grease and oil lubricated journal roller bearings, all boxes must be lubricated on following time basis: Every—30—Days.

10—It will not be necessary to remove cover plates except when special examination is required.

11—Freight and Passenger Equipment cars may be given Periodic Lubrication attention in transportation Yards where proper equipment and material is available.

12—*Lubrication Stenciling*—Railroad, Shop, Month, Day and Year to be stenciled using not less than 1-inch numerals and letters.

Freight Equipment, Grease or Oil—On car body near body bolster at diagonal corners of car, Symbol "LUB" to be added.

13—Passenger Equipment, Oil or Grease—On truck frame above No. 1 and No. 8 pedestals or No. 1 and No. 12 pedestals. Symbol "LUB" to be added.

Cars are not to have new lubrication stenciling applied until previous stenciling is completely removed, all boxes have been worked and final inspection is made by Supervisor.

C—Diesel-Electric Locomotives—

Passenger and Freight Equipment.

Journal Roller Bearings.

Periodic Inspection and Lubrication Attention

1—Boxes must be given external inspection at each Terminal for overheating, cracks, leakage; loose or missing cap screws; missing or defective grease fitting, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs. It will not be necessary to remove cover plates except when special examination is required. When defects are found corrections must be made, using standard parts.

2—Locking wires must be applied as shown on P.R.R. tracing F-452636.

3—Grease fitting or area surrounding fill plug, to be cleaned prior to application of grease or oil to box.

Grease Lubricated Type Boxes:

4—Roller bearing equipped wheel sets, as received from Wheel Shops, will contain proper amount of grease, and to indicate same a 1-inch letter "G" will be stenciled on journal box cover plate in yellow paint. After wheel set is applied the letter "G" must be painted out.

5—*Only* grease, Acct. 37, Ref. 211, to be applied to roller bearing boxes, using approved type lubrication equipment.

6—The amount of grease to be added to each box to be as follows:

Boxes designed for grease lubrication—

1-pound at wheel turning.

Boxes designed for oil and changed to grease—
2-pounds at wheel turning.

Oil Lubricated Type Boxes:

7—All roller bearing journal boxes lubricated with oil must have the oil checked at each home terminal trip inspection, and all boxes filled to maximum level. The oil level in each box must be determined by removing fill plug from the cover plate.

8—When oil is found below level of oil fill hole located at the maximum oil level, boxes must be filled to this level.

9—A careful check must be made before plugs are re-applied to insure height of oil is not a false reading due to accumulation of oil between front of bearing and box, on account of oil being thick.

A sufficient length of time should be allowed to

elapse between filling and gaging to permit oil to flow through the bearing.

10—When oil is found to be discolored, due to presence of water or other causes, all oil must be removed and box refilled with new oil.

11—Wheel sets received from Wheel Shops, equipped with roller bearings, will have only enough oil to lubricate bearing. When wheel sets are applied, all boxes must be filled to maximum oil level.

12—Type of oil to be applied to roller bearing boxes, using approved type lubrication equipment:

Diesel-Electric Loco.—Acct. 37, Ref. 357.

Time Limits for Periodic Lubrication Attention:

13—Oil Lubrication—Every 30-days (monthly inspection), oil to be added to maximum level, each box. Oil must be renewed when wheels are turned or dismounted.

Grease Lubrication—At wheel turning only, refer to C-6, Page 39.

Grease must be completely renewed each time wheels are dismounted.

D—Electric Locomotives—

Passenger and Freight Equipment.

Journal Roller Bearings.

Periodic Inspection and Lubrication Attention

1—Boxes must be given external inspection at each Terminal for overheating, cracks, leakage; loose or missing cap screws; missing or defective

grease fitting, fill and drain plugs; broken, improper type or incorrectly applied locking plates or locking wires for cap screws and plugs. It will not be necessary to remove cover plates except when special examination is required. When defects are found correction must be made, using standard parts.

2—Locking wires must be applied as shown on P.R.R. tracing F-452636.

3—Grease fitting or area surrounding fill plug, to be cleaned prior to application of grease or oil to box.

Oil Lubricated Type Boxes:

4—All roller bearing journal boxes lubricated with oil must have the oil checked at each home terminal trip inspection, and all boxes filled to maximum level. The oil level in each box must be determined by removing fill plug from the cover plate.

5—When oil is found below level of oil fill hole located at the maximum oil level, boxes must be filled to this level.

6—A careful check must be made before plugs are re-applied to insure height of oil is not a false reading due to accumulation of oil between front of bearing and box, on account of oil being thick. A sufficient length of time should be allowed to elapse between filling and gaging to permit oil to flow through the bearing.

7—When oil is found to be discolored, due to presence of water or other causes, all oil must be removed and box refilled with new oil.

8—Wheels sets received from Wheel Shops, equipped with roller bearings, will have only enough oil to lubricate bearing. When wheel sets are applied, all boxes must be filled to maximum oil level.

9—Type of oil to be applied to roller bearing boxes, using approved type lubrication equipment:

Electric Locos.—Acct. 37, Ref. 48.

10—*Time Limits for Periodic Lubrication Attention:* Electric Locos.—Every 30-days (monthly inspection) oil to be added, to maximum level, each box.

Oil must be renewed when wheels are turned or dismounted.

Grease Lubricated Type Boxes:

11—Roller bearing equipped wheel sets, as received from Wheel Shops, will contain proper amount of grease and to indicate same a 1-inch letter "G" will be stenciled on journal bearing cover plate in yellow paint. After wheel set is applied the letter "G" must be painted out.

12—*Only* grease, Acct. 37, Ref. 211, to be applied to roller bearing boxes, using approved type lubrication equipment.

13—The amount of grease to be added to each box to be as follows:

Bearings with housing end covers which rotate—12 ounces (¾ pound) at wheel turning.

E—When mounted wheels or equipment with journal roller bearing boxes are stored, each bearing assem-

bly must be rotated every 30-days to insure that bearing is kept lubricated.

F—Oil and grease for use in journal roller bearing boxes must be kept indoors and in clean, covered containers. Extreme care must be taken to keep lubricants free from dirt, water, etc.

G—When equipment with journal roller bearings applied has been derailed or operated through water and inspection indicates there is damage to the journal boxes, wheel flanges, treads, or evidence of a bent axle, the wheels are to be removed and forwarded to Wheel Shop for examination.

Engines and cars equipped with roller bearing journals must not be operated through water, except in emergency when authorized by the Superintendent Transportation and then, only as specified below:

Electric engines, classes DD2, GG1, P5, P5a, RDC equipment and cars other than MU cars and rail motor cars, may be run through water when its depth does not exceed 7 inches (measured from top of rail) at a speed not exceeding 2 miles per hour.

Electric engines, classes B1, E2b, E2c, E3b. E44, L6, L6a, MU cars, rail motor cars and diesel engines may be run through water when its depth does not exceed 2 inches (measured from top of rail) at a speed not exceeding 2 miles per hour.