

! OFFICE

MAGNETIC SIGNAL CO.

Los Angeles, Cal.

Installation and Maintenance Instructions for All Types of Magnetic Flagmen

1. *Wiring.* See Wiring Diagrams in our Catalog C.
2. *Position of Flagman Mechanism.* Set machine on bracket so that movable finger contact diamond rests equally on either side of stationary diamond mounted on porcelain terminal board. If necessary use set screws in base to level machine if bracket is not horizontal. This adjustment to be made bearing in mind additional weight of workman on bracket. *DO NOT set by bending or changing position of movable finger contact.* Further test adjustment to see that at minimum voltage the armature will pull over and Flagman start on both sets of magnets.

Maintenance

1. No. 48014-B-3 MOVABLE FINGER CONTACT. This is interchangeable. Do not bend or otherwise adjust.
2. No. 48012-B. MOVABLE FINGER SPRING. The tension of each leg of this spring against movable finger contact should be equal.
3. No. 48065-A. STATIONARY CONTACTS. Maintain sufficient tension by adjustment screw on stationary contact bracket No. 48063 to provide for good electrical contact between movable and stationary contacts. Too much pressure will result in unnecessary friction and wear. On all Flagmen operating on less than 220-volt the openings between movable and stationary contacts should be $3/32''$. On above 220-volt the openings between movable and stationary contacts should be $3/16''$.
4. When renewing contacts after life of same has passed replace both stationary and movable contacts. Do not use old movable contact with new stationary contacts, as undue wear on the latter will result.
5. No. 48012-A MOVABLE FINGER CONTACT PIN. Movable finger contact should pivot freely. Its pin must be kept free of corrosion or accumulated dirt and oil. Cotter holding pin in movable finger should be spread to avoid pin falling out.
6. No. 48062 CONTACT DIAMOND GUIDE AND DIAMOND GUIDE at bottom of movable finger contact are case hardened, and must not be allowed to get chipped on their sharp edges. If properly maintained there should be no reason for any such trouble.
7. No. 48007-B-2 MOVABLE FINGER STOP. These stops must be kept parallel to path of diamond on movable finger contact No. 48014-B-3. Where "Out of Order" Mechanism is installed movable finger diamond should make contact with both stops.
8. No. 48010-R AND L. FLEXIBLE RIBBONS. Keep straight and free of kinks. After long wear check for frizzling and replace when any considerable breakage of strands occurs.
9. No. 48001-C PORCELAIN TERMINAL BOARD. Two supporting machine screws are slightly loosened when Flagman leaves plant to avoid possible breakage of porcelain in transit. These screws should be tightened (not rigidly) when Flagman is placed in operation. Should this porcelain or Porcelain Bracket Support No. 48001-C-1 become broken replace at once.
10. No. 488 MAGNETS. Pole pieces of magnets are milled to a radius to fit No. 482 Armature. The clearance between pole pieces and armature must be maintained to $.010''$. On all two position direct current Flagmen the distance between edge of armature, when flag is hanging vertical, to edge of pole pieces should be $5/16''$. The accuracy of these adjustments materially affects the reliability and efficiency of the Flagman.
11. No. 48057 $2\frac{1}{2}$ -WATT 8-VOLT EDISON SCREW BASE LAMP. No. 48057-A 5-WATT 8-VOLT EDISON SCREW BASE LAMP. For 8-volt D. C. Flagman. Where No. 48057 is used install with third wire to relay as shown in wiring diagram to avoid possibility of burning out filament of $2\frac{1}{2}$ -watt lamp. This is not necessary with 5-watt lamp.

No. 48057-600. We recommend 110-volt 25-watt mill type Mazda for 600-volt Flagman. Light to be in series with 2000-ohm resistance of 160-watt capacity.

No. 48057-110-VOLT. No. 48057-220-VOLT. For alternating current Flagman. Recommend 25-watt mill type lamp of suitable voltage. Inspection of lamps is highly important.

12. GONG MECHANISM. Bell cover should be removed at least every three months for inspection. Bell Strikers No. 48016 should strike with equal force to obtain maximum volume of sound. No. 48221 Striker Hub Pawls should be inspected as to wearing surface, which is case hardened. Pawls must pivot freely. Keep these parts free of gummed oil and dirt. When badly worn replace with new Pawls. No. 48222 Stationary Bell Tripper is a case hardened part; when worn replace with a new one. No. 4813 Cap Screw (Bell Gong and Cover); keep gong tight to cover to obtain a clear, audible warning. For further information see detailed drawing No. JH-540.

Lubrication

1. No. 48012-A MOVABLE FINGER CONTACT PIN. A small quantity of semaphore oil should be applied occasionally. On new type keep oil in well provided at top of Movable Finger Contact No. 48014-B-3.

2. No. 48014-B-3. MOVABLE FINGER CONTACT. Keep small amount of grease on diamond. Also see No. 1 under lubrication.

3. No. 48065-A STATIONARY CONTACTS. It is not customary to apply any oil. Some users, however, find it advantageous to wipe cold rolled steel contact with cloth having small amount of 3 in 1 oil, leaving a slight film of oil on contact.

4. No. 48062-A CONTACT GUIDE. Keep diamond greased or oiled.

5. No. 48221 STRIKER PAWL. Keep grease on wearing surface of pawl.

6. No. 48208-R and L STRIKER HUB. Apply few drops of semaphore oil to bell striker hub bearing every three months.

7. No. 4871 AND No. 4872 BALL BEARINGS. These are packed in grease, and should give two years service before other lubrication is required. After that period a few drops of oil every three months will be sufficient.

Additional Instruction

If Flagman is equipped with brake use no oil on Brake Assembly except a very slight amount on both studs of Brake Band KC-212. The parts which receive wear are these two studs and the edge of Brake Arms KC-230 R and L. These surfaces should be occasionally inspected and if rough should be smoothed with emery. These wearing surfaces are case hardened.

At no time should the Brake Arms KC-230 R and L be allowed to drag on smooth surface of Brake Band KC-212.

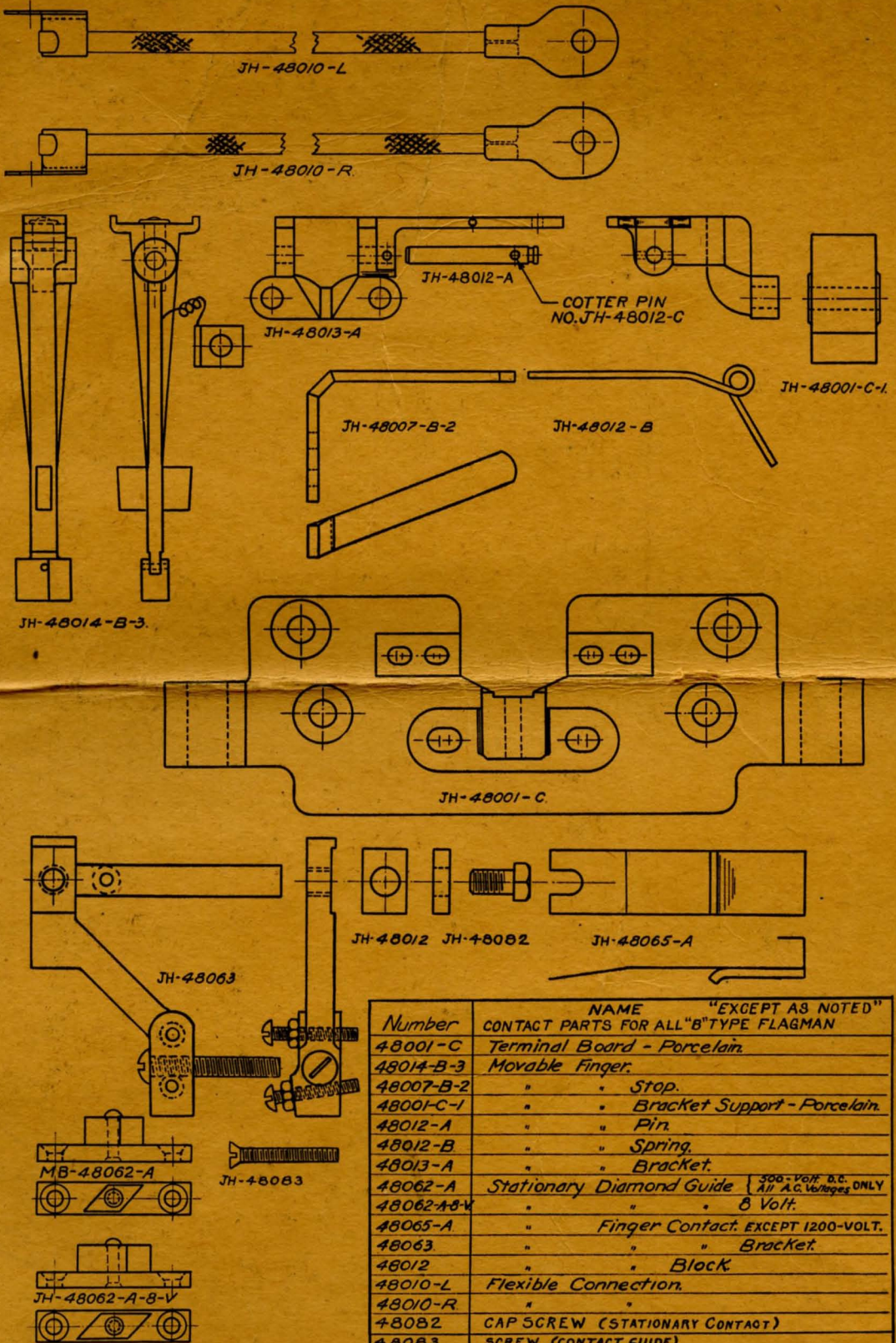
Alternating Current Flagman

Additional equipment consists of coil cut-out. On this do not use oil. Keep Armature Pin No. 48915 clean and clear of dirt, thus allowing Armature No. 48913 to pivot freely.

Check that when Flagman is not operating, good electrical contact exists between Contact Finger No. 48920 and Upper Contact Pole No. 48921 so that starting coils will receive current when relay contact is closed. Coil cut-out armature should be free to move so on opening of relay contact, armature will drop away from its pole piece. During operation current for coil cut-out flows through Lower Contact Pole No. 48922 to Contact Finger No. 48920.

The clearance between pole pieces and armature should be .010". The distances between edges of armature and pole pieces are 9/16" at starting coil poles and 7/16" at operating coil poles.

Drawing No. JH-26. Contact Parts for Magnetic Flagman.



Number	NAME "EXCEPT AS NOTED"
48001-C	Terminal Board - Porcelain.
48014-B-3	Movable Finger.
48007-B-2	" " Stop.
48001-C-1	" " Bracket Support - Porcelain.
48012-A	" " Pin.
48012-B	" " Spring.
48013-A	" " Bracket.
48062-A	Stationary Diamond Guide <small>500-Volt D.C. ONLY</small>
48062-A-8-V	" " <small>8 Volt.</small>
48065-A	" " Finger Contact. EXCEPT 1200-VOLT.
48063	" " " Bracket.
48012	" " " Block.
48010-L	Flexible Connection.
48010-R	" " "
48082	CAP SCREW (STATIONARY CONTACT)
48083	SCREW (CONTACT GUIDE)

Three Position Flagman

Due to the increased number of parts in the three position locking mechanism a more careful inspection of wearing surfaces, catches and springs should be given.

Use oil judiciously on wearing surfaces but do not allow oil to gum.

Tension on Lever Arm Spring No. 49117 should be just sufficient to allow Lever Arm No. 49112 to be locked by Intermediate Lever No. 49131.

Occasionally check condition of Hardy metal contacts No. 49245 and No. 49246. These should be smooth and in position to afford a good electrical contact when engaged by opening of armature, and should absolutely break circuit when armature is against pole pieces.

Keep Lever Arm Guide No. 49209 on which Lever Arm No. 49112 slides, clean and smooth and with a film of light oil.

"Out of Order" Mechanism

Indicating Electrical or Mechanical Failure of Flagman.

INSTALLATION. This mechanism is shipped mounted to its bracket. In a new installation the bracket should first be attached to pole, and then Flagman be later mounted. In old installations where Flagman is already in place and "OUT OF ORDER" is equipped with auxiliary bracket the latter may be slipped under Flagman by raising same $\frac{1}{4}$ " to $\frac{1}{2}$ ", thus avoiding necessity of lowering Flagman from pole or of replacing old bracket of our manufacture.

Follow wiring diagram, noting positive and negative leads as shown. Care should be taken that mechanism be level in two planes, and that auxiliary switch closes contact when "OUT OF ORDER" banner is in concealed position. This is important as this contact allows current to pass through holding coils as well as Flagman. Holding mechanism and armature should function freely without binding. Banner should freely rotate.

Mounted on Armature No. OA-120 is an Adjustable Counterweight No. OA-120-7. This has been set and locked at factory, but is furnished to provide means of adjusting greater holding power in case there is a tendency of the "OUT OF ORDER" banner to drop when Flagman starts on low voltage. The further the counterweight is from the armature the greater the holding power. If this adjustment is changed be certain to lock with Lock Nut No. OA-120-9.

MAINTENANCE. Keep Armature Pivot Pin No. OA-121 clean and polished, as well as Armature Trunnion No. OA-122. Lower armature core pins are .017" long and upper core pin length is .014". Armature should rest evenly on pole surfaces. Hardy metal contact on No. OA-268, OA-268-1, and OA-268-2 should be maintained smooth and with sufficient pressure to allow good electrical contact.

INSPECTION AND LUBRICATION. Regularly test "OUT OF ORDER" for mechanical and electrical failure of Flagman. Inspect armature by removing Cover Plate No. OA-105. Inspect and clean toggle mechanism by removing Cover Plate No. OA-104. Apply light semaphore oil to Armature Trunnion and Pin, Releasing Crank No. OA-140 (both bearings), to bearings of Contact Spacer Lever No. OA-156, to four banner support bearings at Nos. OA-185, OA-186, OA-187 and OA-188. Every six months apply few drops of semaphore oil to all toggle mechanism pivots and bearings, and to bearing of Banner Catch No. OA-203 at No. OA-204. Do not attempt to replace "OUT OF ORDER" banner to concealed position while relay contact is closed.

General

The degree of service obtained from the Magnetic Flagman is proportional to the care of inspection and upkeep. Therefore we recommend that the Flagman be kept free of dirt or accumulated dust and gummed oil, that the machine doors be kept locked except during inspection, which should unquestionably be regular and frequent. In ordering we suggest that repair parts be specified by name and part number, giving the type and serial number of the Flagman for which they are required.