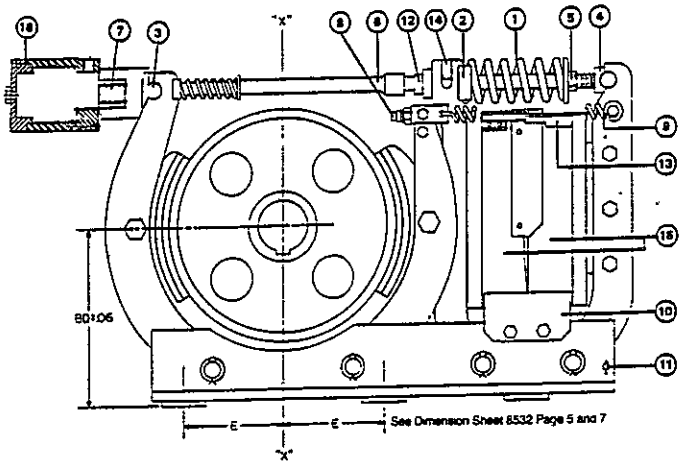
MagneTek Controls
Industrial Brake Products

TYPE TMH BRAKE INSTALLATION AND SERVICE INSTRUCTIONS



1. Main Spring
2. Main Spring Block
3. Shoe Arm
4. Magnet End Block
5. Torque Adjustment Nut
6. Main Tie Rod
7. Hydraulic Actuator Shaft
8. Inside Snoe Adjustment
9. Tension Spring
10. Magnet Travel Equalizer
11. Stop Pin
12. Manual Release Bushing
13. Travel Indicator
14. Lifting Lugs
15. Magnet
16. Hydraulic Actuator

DESCRIPTION

The Type TMH brakes have a direct-current clapper type magnet and are designed so that when the magnet is energized, the snoes will clear the wheel allowing for use as a hydraulic brake, and when de-energized, the shoes are pressed against the wheel by means of a compression spring. The force of the compression spring produces equal pressure of the snoes against the wheel and movement of the magnet results in equal movement of the shoes. The hydraulic actuator allows for infinite style of braking to be applied limited only by the size of brake and application pressure on the pedal. Simple, rugged construction allows full accessibility of all parts for visual inspection or maintenance.

OPERATION

Compression spring 1 is contained between block 2 and nut 5 on tie rod 6 which passes through a clearance hole in blocks 2 and 3 and is threaded and pinned to block 4. The amount of spring force is adjusted by position of nut 5.

When brake is de-energized, main spring 1 exerts force on nut 5 and block 2 which, in effect, pulls block 3 and the left shoe arm towards the wheel and pushes the block 2 and the inside armature which acts on bolt 8 and forces the inside shoe arms and shoes against the wheel. Geometry of the linkage is such that the shoe forces are exactly equal.

When brake is energized, magnet faces are pulled together by magnetic force moving blocks 2 and 4 towards each other by amount of magnet travel. Spring force is contained between block 2 and nut 5. Right magnet arm pushes outside snoe are away from wheel and tension spring 9 causes inside shoe arms to follow movement of inside armature away from wheel. Hydraulic actuator now becomes usable.

Two adjustments are required during service. Shaft 7 and bolt 8 are turned clockwise to compensate for lining wear on outside and inside shoes respectively. Spring compression is adjusted for nameplate torque rating at factory. Readjustment at points 7 and 8 for lining wear will automatically bring spring compression back to initial setting.

MOUNTING

Brake must be mounted on a flat surface parallel to shaft whose distance from center line to snaft agrees with BD dimension for the given frame within limits of +/- .06. Center line X-X should pass midway between mounting holes within .06 inch.

Frame.	BD	Frame.	BD	Frame.	BD
TMH 43	4.25	TMH 83	7.0	TMH 1355	9.88
TMH 63	5.0	TMH 1035	8.38	TMH 1665	12.13

To remove wheel from brake as received, Turn manual release bushing 12 out of block 2 to jack against collar on tie rod. Continue to turn bushing until wheel is free. If desired, the complete tie rod assembly may be lifted from brake by loosening adjustment shaft 7 until block 3 clears half bearing in outside arms. Push tie rod toward outside magnet arms until block 2 is free of its bearing and lift out complete tie rod assembly. The brake may be mounted without removing the tie rod assemoly depending on personal preference. Lift wheel from brake and mount on shaft. Loosen shoe bolts and make sure bolt heads will be on side away from motor to allow future shoe removal for relining. Lift brake into position on bedplate using hooks or sling under lifting lugs on inside armature. Insert hold down bolts hand tight and align brake square with wheel. If tie rod was previously remove, reinstall using reverse technique from that descriped for removal. With tie rod in place, turn manual release bushing 12 back into block 2 and jam tight to lock in place. Force of main spring is now holding shoes on wheel. Tighten hold down bolts. Tighten shoe bolts.

Remove conduit box on shunt brakes. Bring in two power leads and connect to two bare terminals in box and tape leads. For minimum current on shunt brakes jumper connection to place coils in series for cumulative magnetic flux is made at factory and leads are taped. Connection need not be disturbed except if coil is to be removed from brake. After making power connection, leave sufficient slack in coil leads outside of conduit box and replace conduit box cover.

For brakes with high current series coils, one set of coil leqds is brought out to each side of brake and clamped. Connect line to brake coil leads and tape to insulate. Series coils are connected at the factory so that one-half of the line current flows throught each coil.

ADJUSTMENTS

Frames 83 thru 1665 stop block 10 is intended to insure approximately equal movement of both snoes, snould the brake be mounted on a surface other than horizontal, or if undue friction should occur at one of the pivot points. Normally, when the brake is properly adjusted and linkage is free from binding, stop block 10 has no function. Brake linkage is simple to understand and adjustments are not critical. With some practice, the average maintenance man should be able to adjust brakes completely by eye without aid of measuring instruments.

To adjust the brake, only setting of shaft 7 and nut 8 need to be changed for the outside or inside snoe. When properly adjusted with the brake de-energized, the air gap between the tops of the magnets should agree with the nameplate reading(may be observed by lifting part of the rubber dust shield off magnet). Magnets snould be approximately centered with stop 10. This may be done visually or if doubt, with a feeler guage. Actual adjustment is accomplished as follows:

Lift one side of rubber dust shield off dowl pins exposing top of magnets.

Loosen shaft 7 and nut on bolt 8 and turn 7 and 8 to reduce air gap to approximatedly the amount given on the nameplate.

At this time magnets should be approximately centered about stop block 10.. Replace rubber dust snield on dowl pins and tighten lock nut on bolt 8. Compressed length of main spring has automatically been brought back to that given on the nameplate. When energized, brake shoes should have adequate movemnt to clear wheel at operating temperature without dragging allowing the hydraulic actuator to apply brake when required.

Frames 43 and 63. These smaller frame sizes have as single coil, as opposed to the larger frames which have two. The inside snoe adjustment for lining wear is the only difference between the smaller frames, and the larger frames, otherwise the adjustments are identical. When adjusthing the inside shoe, loosten the shoe bolt prior to making an adjustment at bolt 8. Retignten shoe bolts securely after making the adjustment.

READJUSTMENT FOR LINING WEAR

For optimum operation, brake of any manufacture should be readjusted to normal magnet travel as often as a reasonable maintenance schedule will allow. Minimum travel will result in fastest, quietest operation with least amount of shock and bearing wear. The TM brake will operate at a long travel and, if necessary allows considerable lining wear between adjustemnts. Maximum hydraulic actuator travel is .5". Brake should be readjusted when travel of actuator reaches .25". In of a maintenance schedule, travel indicator brackets 13 on top of t may be used as a visual guide for maximum wear allowable tetween adjustments. When magnet gap opening progresses to the point where ends of indicator brackets line up as in figure 2 it is time to readjust for lining wear, See adjustment procedure.

When installing new magnets, magnet faces may not make even contact due to standard machining tolerances. To avoid stresses and bearing wear resulting from such misalignment, energize brake to close magnet faces loosen bolts holding lever arms to outside armature. This will allow magnets to seat properly. Tighten bolts securely. This operation is required only when replacing either one or both coils.

LUBRICATION

Pivot points in base and lower arms are fitted with porous bronze "oilite" type bearings. A few drops of oil around these bearings occasionally will maintain their lubricated quality. All pivot pins are case hardened steel. Pivot pins at top of arms ride in half bearings and are easily accessible. These pins and wear pad connected by adjusting screw 8 should receive a few drops of oil occasionally.

FAILURE TO OPERATE

The brake may fail to release for any of the following reasons:

lead wire to operating coil may be disconnected

voltage may be below normal

brake may not be adjusted properly. Lining may have worn causing magnet air gap to open beyond point where magnet operates sluggishly or not at all. Readjust per adjustment paragraph

One or both coils may be defective. Check coil resistance against table 2. Compensate for temperature if coil is hot. If one coil is defective, short term operation is possible on one good coil

Coils may be improperly connected with resultant bucking instead of cumulative magnetic flux. Check wiring per Fig 3 or 4.

Hydraulic actuator may not function properly. Repair or replace actuator per actuator repair sheet.