INSTALLATION • ADJUSTMENT • MAINTENANCE

INSTRUCTIONS

TYPE RKM
MOTOR DRIVEN OPERATING MECHANISM
For D.C. Field Rheostats

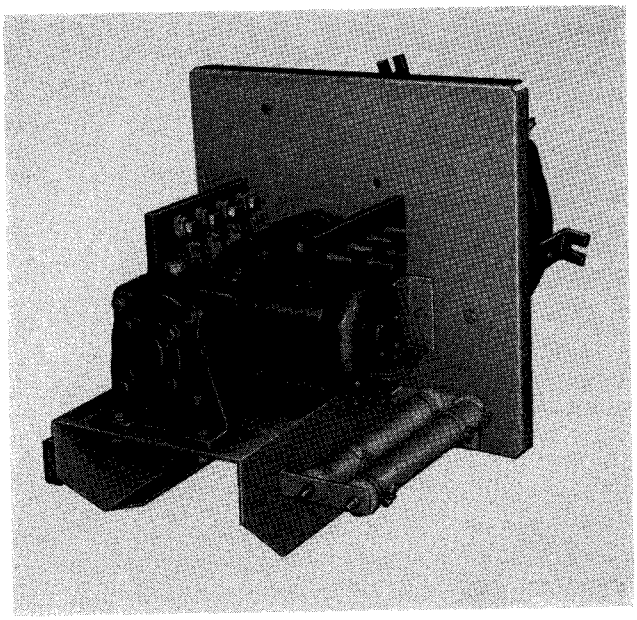

FIG. 1 Operating Mechanism

TYPE RKM MOTOR DRIVEN OPERATING MECHANISM Fig. 1 is used for remote control or automatic operation of Westinghouse types LK and LR Field Rheostats of the 8 or 13 inch sizes. It will drive from one to five 8 inch or 13 inch plates in tandem. Hand operation can be obtained by mounting a handle on the rear of the rheostat assembly.

The mechanism (Fig. 2) consists of a direct current speed reducer motor, jaw coupling, spring clutch, from four to eight limit switches, cam driver assembly, speed adjusting resistors and necessary terminal blocks. With the exception of the cam drive assembly, these parts are integrally mounted on a suitable steel panel against the back of which the rheostats are intended to be supported.

INSTALLATION

Assembly. Before mounting the field rheostats, remove their operating handle and fasten the Cam Drum Assembly in its place. Two 1/4 – 20 x 3/4 inch filister head machine screws are furnished for this purpose. Insert the screws through holes in the drum. Turn the drum until the screws line up with tapped holes in the rheostat pointer piece and the pointer piece itself lies in a slot cut through a projecting rim on the rear of the drum. Place the centering tip in the hole drilled in the end of the rheostat shaft.

The drum is now centered and registered with the rheostat so that after its subsequent removal and replacement, the limit switch cams are in their correct position. Tighten the two screws evenly and tightly in order not to disturb the alignment of the drum with the rheostat shaft. This can be done by driving both screws until they are very lightly seated, then driving each alternately not more than one eighth turn at a time until both are solidly seated.

Place the Micarta® spacing washer on the minor diameter of the jaw coupling. Insert set screws loosely. Assemble coupling on the speed reducer shaft with its face even with the end of shaft, drive in steel Key and then tighten the two set screws

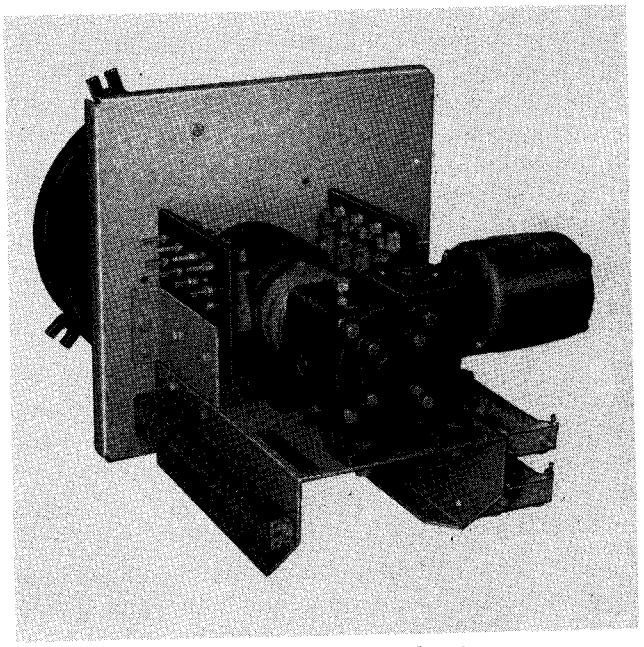

FIG. 2 Operating Mechanism

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NEW INFORMATION

firmly against the shaft. Make sure that the spring clutch is correctly assembled inside of the cam drum. This clutch consists of two hardened steel balls and a spring, all encased in a tubular steel housing. The balls should ride in the annular groove on the inside of the drum and both balls should engage holes in the wall of the drum.

Mounting Rheostats. Hold the rheostats with their terminals in a conveniently accessible position and turn the cam drive until the tubular clutch housing lines up with the slot in the jaw coupling on the output shaft of the speed reducer. Mount the rheostats against the rear of the steel panel, lifting the limit switch operating rollers to clear cams if necessary, and adjusted so that the cam drum centers accurately around the Micarta centering washer on the coupling without drooping or wobbling when the rheostat is subsequently turned by the motor.

When Ohmite plate type rheostats are used, either alone or as an adjunct to Westinghouse rheostats, they are mounted against triangular shaped steel plates. These in turn should be mounted behind either the operating mechanism panel or the assembly of Westinghouse rheostats as required. A special hub is supplied. This should be fastened to the Ohmite rheostat shaft and used to support the cam drum or part of the flexible coupling as the case may be. Before fastening the hub, turn the Ohmite rheostat until the position of its contacts corresponds with the position of the Westinghouse rheostat pointer.

Inspection. Check the nameplate reading of the speed reducer motor to be sure that its voltage rating agrees with that of the control circuit. Check actual wiring connections for agreement with connection diagram. Make sure that both overtravel limit switches are in circuit. These are furnished on all type RKM mechanisms and are those operated by the two short (15°) cams assembled nearest to the steel panel.

ADJUSTMENT

Cams. Adjusting the cams which operate the overtravel limit switches can be done only if suitable control circuit power is available to operate the motor. It is not necessary to have the speed controlling resistors connected while making adjustments. If they are connected, it is best to set them for highest motor speed or fastest rheostat travel.

Loosen three set screws in each cam ring so that these rings can turn freely around the cam drum. Tighten screws holding cams to cam rings. Move both cams so that they do not strike the switch rollers. Apply power to the motor, noting the position of the rheostat pointer, the direction of rheostat travel, and by lifting the switch rollers with an insulated tool determine which overtravel limit switch will stop the rheostat travel in that direction.

Inch the motor a little at a time until the rheostat pointer almost hits its stop, indicating the limit of travel in that direction. Turn the corresponding cam ring in the direction of rheostat travel until the cam lifts its roller enough to open the switch. Tighten set screws with cam in this position.

These screws should register with the groove in the cam drum beneath the ring. When they do, they will not project above the surface of the ring. Reverse the motor and follow a similar procedure while adjusting the overtravel cam for the opposite direction of travel.

Important: Do not make either of these adjustments unless the spring clutch balls are engaged with the holes through the wall of the cam drum. If disengaged, they may be engaged either by turning the drum by hand or by rotating the motor.

Check adjustments by operating the motor for full travel in each direction. Note the position of rheostat pointer at extreme travel and make closer adjustment of cams if necessary. Overtravel of the motor after the limit of rheostat travel is reached will disengage the clutch before injurious stresses are set up. Extremely close overtravel switch adjustment is not necessary.

If additional switches are used, their cams should be adjusted in a similar manner to obtain circuit behavior called for on the connection diagram.

Speed Adjustment. The driving motors for the type RKM mechanism are shunt wound for 230 volt DC control circuit voltage. Two gear ratios are available. These are chosen to produce complete travel of the rheostat in approximately 3 seconds or approximately 15 seconds when no speed controlling resistors are used. Shunt field windings should be operated at full voltage. Speed control resistors in the armature circuit will regulate the rheostat travel time over a range of approximately four to one. With the smaller gear ratio, the travel time can be varied from 3 to 12 seconds. With the larger ratio, travel time can be varied from 15 to 60 seconds.

MAINTENANCE

Speed Reducer Motor. The motor ball bearings are grease lubricated with a quantity sufficient for several years operation. Before repacking ball

bearings, wash in gasoline, then repack and replace so that the built in grease seal is facing toward the motor interior.

The reducer gears and bearings are oil lubricated and are shipped without oil. Sufficient oil is provided in an accompanying can for first lubrication. Before starting, remove oil fill plug and fill reducer with oil, to at least minimum level indicated on the glass gauge. Always maintain this gauge level. For continuous service, drain and flush the reducer at least once a year. Use only lubricants recommended for relubricating.

Inspect brushes regularly for wear and replace before their length is reduced to less than 1/4 inch.

Do not attempt to turn the drive shaft of the speed reducer.

Lubricants

AMBIENT TEMP. RANGE	LUBRICANT	MANUFACTURER
−50°F to +40°F	Mobil Gear Oil Medium (No Substitute)	Socony Vacuum Co. (Chicago)
32°F to 90°F	Metalicoil A-185 or Stano Gear Leaded Lubricant 3X	Hodson Corp. (Chicago) Std. Oil of Indiana (Chicago)
90°F to 125°F	※220 Gear Oil (No Substitute)	Hodson Corp. (Chicago)

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BUFFALO PLANT • MOTOR DIVISION • BUFFALO 5, N.Y.
Printed in U.S.A.


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