TELETYPE MODEL 19 SET

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Printed in U.S.A.
TELETYPE MODEL 19 SET
WITH
MODEL 14 NON-TYPING REPERFORATOR
TELETYPE MODEL 19 SET
(REAR VIEW)
CHANGES AND ADDITIONS TO BULLETINS

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THIS CORRECTION SHEET COVERS ORDERING INFORMATION AND INTERCHANGEABILITY OF PARTS FOR THE OLD STYLE 82283 SYNCHRONOUS MOTOR (G.E. MODEL 5SH25ABII) AND THE NEW STYLE 82283 SYNCHRONOUS MOTOR (G.E. MODEL 5SH25ABIIIB)

NEW STYLE

82283 SYNCHRONOUS MOTOR, 1/40 H.P., 110 V., 60 CYCLE A.C. (G.E. MODEL 5SH25ABIIIB)

SEE PAGE 2 FOR OLD STYLE

PRINTED IN U.S.A.
OLD STYLE 82850 END SHIELDS MAY BE WORKED OVER FOR USE WITH NEW STYLE MOTORS BY ADDING WIRE OUTLET HOLE AS ILLUSTRATED.

82850 END SHIELD - HAS BEEN REDESIGNED BUT RETAINS ITS ORIGINAL PART NUMBER. THE NEW STYLE END SHIELD (WITH WIRE OUTLET HOLE) CAN ALSO BE USED ON THE OLD STYLE MOTORS. THE OLD STYLE END SHIELD (WITHOUT WIRE OUTLET HOLE) CANNOT BE USED ON NEW STYLE MOTORS UNLESS IT IS WORKED OVER AS ILLUSTRATED ABOVE.

82850 END SHIELD - HAS BEEN REDESIGNED BUT RETAINS ITS ORIGINAL PART NUMBER. WHEN REPLACING AN OLD STYLE STATOR (WITH TAPPED HOLES FOR THE END SHIELD CLAMMING STUDS) WITH A NEW STYLE STATOR (WITH BODY HOLES FOR THE END SHIELD BOLTS) THE FOLLOWING NEW STYLE PARTS SHOULD BE ORDERED:

- 82850 END SHIELD
- 82850 WOUND STATOR (WITH BASE)
- G. E. MODEL 5SH25ABII

PARTS NOT LISTED SAME AS ON NEW STYLE MOTOR, SHOWN ON PAGE 1.

OLD STYLE

82283 SYNCHRONOUS MOTOR, 1/40 H.P., 110 V., 60 CYCLE A.C. (G.E. MODEL 5SH25ABII)

(PARTS NOT LISTED SAME AS ON NEW STYLE MOTOR, SHOWN ON PAGE 1)
Teletype Corporation
Chicago, Illinois, U.S.A.

LUBRICATION SUPPLIES AND DIRECTIONS FOR USE

The following lubricants have been standardized for use on all types of Teletype apparatus:

88970  1 Qt. of KS-7470 Oil
88971  1 Gal. of KS-7470 Oil
88973  1 Lb. of KS-7471 Grease
88975  KS-8319 Grease Gun
97116  4-oz. Tube of KS-7471 Grease

The above grease is recommended instead of oil for lubricating motors equipped with ball bearings. The 88975 grease gun should be used for injecting grease into the bearings of Teletype ball bearing motors. The gun may be used also for applying grease to other parts of the apparatus and no other grease container need be carried. If this grease gun is not available, the oil listed in the foregoing should be substituted for lubricating ball bearing motors.

Instructions for Filling the Grease Gun

1. Unscrew the lubricant tube from the cap casting of the grease gun.
2. Insert fresh lubricant through the open end of the tube with the fingers. Apply gradually to eliminate air pockets.
3. Tampering the lubricant down solidly in the tube by pounding the closed end solidly against the palm of the hand. Continue to add lubricant until the tube is completely filled and the metal follower rests against the perforated tube cover.
4. Fill the cap casting with lubricant flush to the bottom side of the tube threads.
5. Screw the lubricant tube into the cap casting part way only. Then insert a pencil or rod through the perforated tube cover and exert pressure against the metal follower so as to expel any entrapped air past the tube threads. When lubricant begins to ooze through the threads, tighten the lubricant tube securely in the cap casting.
6. Operate the handle back and forth for several strokes or until lubricant is pumped from the nozzle. The gun is then ready for use. If the lubricant does not flow from the nozzle in a solid stream, it is an indication that all air has not been expelled from the lubricant tube. Invert the gun and pound the cap casting end against the palm of the hand to jar the lubricant into the pump cylinder.

Instructions for Lubricating Motor Ball Bearings

The motor bearings are packed with grease before the motor leaves the factory and under ordinary operating conditions need no additional lubrication for approximately two months. At the regular lubricating intervals one or two strokes of the plunger of the gun should apply sufficient grease to each bearing. To lubricate, press the nozzle of the gun against the ball oiler and force the grease into the hole by pushing on the plunger of the gun. Care should be taken that the bearings are not overloaded. Overloading will result in the grease oozing out of the end castings and being forced into the motor or being thrown on other parts of the mechanism. After lubricating, the motor should be run for a few minutes and then any excess grease that has been forced out of the ends of the castings should be wiped off. Each time that the gun is used for lubricating a motor bearing, the plunger should first be depressed slightly to make sure that grease will be delivered.

Printed in U.S.A.
INSTRUCTIONS FOR MOUNTING MODEL 15 PRINTER
MOTOR, TYPING, AND KEYBOARD UNITS
TO THE BASE UNIT

NOTE: The motor unit, typing unit, and the keyboard unit should be mounted on
the base unit in the order named.

Motor Unit

The motor unit is to be mounted on the rear right hand corner of the base, by
means of three hexagon head screws. These screws are found in place on the base.

Mount the motor pinion to the motor shaft using the screw and lock washer found
in the shaft. The steel motor pinion is shipped with its associated main shaft
bakelite gear in a separate container.

Remove the three motor unit mounting screws from the base and slide the motor unit
in against the spring contacts. Holding it in this position, put the three mount­
i• screws in place. Tighten the two front screws arid then back them off about
$1/4$ of a turn. Do not tighten the rear mounting screw until the typing unit is in
place.

Typing Unit

Underneath the typing unit are two hexagonal studs for the purpose of protecting
the typing unit mechanism from injury when setting the unit on a bench, table, etc.
These two studs enter clearance holes in the base unit.

Assemble the bakelite gear to the main shaft as follows: First remove the oil re­
taining plug from the right end of the shaft. Then remove the clamping screw and
lock washer that hold the gear hub to the shaft and slide the gear hub off the
shaft. Remove the three screws and lock washers from the hub and assemble the
bakelite gear and hub, inserting the three screws and lock washers through the
counter-bored holes of the gear. The gear hub with gear should then be slipped on
the main shaft with the gear hub toward the outside of the typing unit until the
slot on the main shaft permits the gear hub clamping screw with lock washer to be
fastened in place.

The typing unit is held to the base unit by three thumb screws. Remove these
screws from the base. The exact location of the typing unit on the base unit is
determined by two dowel pins located in the two forward machined surfaces of the
base unit. The right hand dowel pin fits into a hole in the typing unit casting,
while the left hand dowel pin fits into a slot cut in the casting.

CAUTION: When setting the typing unit on the base unit, be very careful not to
jam the bakelite main shaft gear against the motor pinion.

In lifting the typing unit, face the front of the unit. With the right hand, take
hold of the flat projection on the right hand typing unit casting. With the left
hand, take hold of the extreme lower front corner of the left hand casting. Lift­
ing and moving should be done carefully so as not to put any part under undue
strain which might throw it out of adjustment.

When setting the typing unit on the base unit, lower the left side down first all
the way, holding the right side so that when the left side is resting on the base
unit, the main shaft gear is just ready to mesh with the motor pinion. Now with
the left hand, turn the motor fly wheel, while at the same time lower the right
end of the typing unit, taking care that the motor pinion properly meshes with the
main shaft gear.

Alignment of Motor Pinion and Main Shaft Gear

For printers equipped with motors having elongated mounting holes, use the follow­
ing method for aligning the motor pinion and main shaft gear:

Printed in U.S.A. (Over)
A. Facing the front of the base unit and with the keyboard removed from the base, visually check the lateral alignment of the motor pinion and the main shaft gear to determine if a center line of the gear coincides with a vertical line through the center of the hole in the motor pinion. If these lines do not coincide, remove the typing unit from the base unit and loosen the four motor mounting screws.

Replace the typing unit on the base unit, and shift the motor to obtain the foregoing condition as nearly as it is possible to determine by eye. See that the edges of the motor base are parallel to the edges of the motor plate. Then remove the typing unit and tighten the four motor mounting screws.

B. Loosen the rear motor plate mounting screw and the lock nut on the motor plate adjusting screw. Replace the typing unit and tighten the three typing unit mounting thumb screws. By means of the adjusting screw, adjust the vertical position of the motor pinion until there is a barely perceptible amount of backlash between the motor pinion and the main shaft gear, at the point where there is the least amount of backlash in one complete revolution of the main shaft.

Apply a film of grease to the motor pinion.

Start the motor. Carefully readjust the vertical position of the motor pinion, by means of the adjusting screw, until the gear noise is reduced to a minimum.

CAUTION: Care should be exercised in adjusting the vertical position of the motor pinion while the motor is running, in order to avoid damaging the main shaft gear or reducing the speed of the motor as the result of too close a mesh between the gear and the pinion.

Tighten the three motor plate mounting screws and the adjusting screw lock nut. Recheck the backlash between the motor pinion and the main shaft gear.

For printers equipped with motors not having elongated mounting holes:

Make adjustments "A" and "B" as described in the foregoing, except that in making adjustment "A", the motor mounting holes may not permit accurate gear alignment. In this case the motor should be adjusted to provide the best possible gear alignment.

Keyboard Unit

CAUTION: When mounting the keyboard unit to the base unit, be very careful not to jam the bakelite gear on the keyboard unit against the steel gear it meshes with on the main shaft of the typing unit.

The keyboard unit slides into the opening in front of the base unit upon two angle irons acting as rails. The two plates, fastened under the keyboard unit on the right and left hand sides, go under the rails. The keyboard unit is held in place by means of the two thumb screws located on the keyboard unit.

Slide the keyboard unit into place slowly and, at the same time, rotate the motor flywheel back and forth so that the keyboard unit gear will mesh properly with the gear on the typing unit. When the keyboard unit is in place, tighten the two thumb screws.

NOTE: All printers are thoroughly lubricated in the factory. However, if the printers are not installed shortly after they are received, or if any lack of lubrication is apparent, it is advisable to lubricate the machine immediately before installation according to the lubrication specification. It is suggested that an extra lubrication be given a new machine when it has been in service approximately half the time normally allowed between lubrications.
CARE AND ADJUSTMENT OF TELETYPE POLAR RELAYS

DESCRIPTION

<table>
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<tr>
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<th>RY-28 (215-H)</th>
<th>RY-30 (255-A)</th>
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<tr>
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The RY-30 (255-A) relay is equipped with knurled tension knobs for increased convenience in adjusting the pole-piece screws.

Efficient operation of the RY-20, the RY-28 or the RY-30 relay in printer circuits depends upon a periodical routine of inspection, cleaning, and adjustment. The adjustments are so interrelated that it is essential for each adjustment to be made in the given sequence. If any adjustment is changed, it will be necessary to check all subsequent adjustments.

NOTE: Before cleaning or making any adjustments, loosen both pole-piece screw lock nuts (knurled tension knob on RY-30 relays) and back off both pole-piece screws as far as possible. Back off both contact screws.

CLEANING

To Clean Relay and Cover

Remove the relay cover and blow out any accumulated dust. Wipe the relay and the cover with a clean soft cloth.

To Clean Contacts

Pits and build-ups on the contacts should be removed with a contact file. (Back out contact screws to permit entrance of contact file.) When cleaning the armature contacts, the armature should be supported at its midposition by the opposite contact screw, to avoid bending the armature or the contact springs. Care should be taken in filing the armature contacts to use light pressure. After using the file, blow out any loose particles and polish the contacts with a burnisher.

To Remove Magnetic Particles from the Armature and Pole-Piece Screws

Any particles adhering to the armature or pole-piece screws should be removed by pressing a fresh piece of friction tape, wrapped around a piece of thin stiff non-magnetic metal, against the particles. Do not rub the tape against the armature or pole-piece screws as this will leave a residue which will collect further particles.

Pole-Piece Screws and Relay Terminals

Make sure that pole-piece screws and relay terminals are clean.

*Indicates change.
RELAY ADJUSTMENTS

Armature Adjustment

The armature should not touch the inside of the spool and the contacts should align so that the centers of the contacts will not be out of alignment by more than 25% of the contact diameter.

To adjust, loosen the screws holding the spool heads to the relay frame and position the spool to meet the first requirement. Tighten the screws. Loosen the armature clamping screws (Figure 1) and position the armature both vertically and horizontally to meet the latter requirement. Tighten the screws.

NOTE: If necessary, position the contact screw brackets by means of the enlarged mounting holes in the relay frame to aid in meeting the latter requirement.

Contact Screw Adjustment

The clearance between the armature in its normal unoperated position and either contact screw should be approximately equal and, when the armature is held against one contact screw, there should be .003" to .005" clearance between the armature and the other contact screw.

To adjust, back off the pole-piece screws as far as possible and position the contact screws to meet this requirement.

NOTE: The contact screws should be sufficiently tight in their brackets to hold any adjusted position. If necessary, remove the contact screw from the bracket and force the two portions of the split end of the bracket closer together to meet this requirement.

Pole-Piece Screws Adjustment

Requirements:

1. When the armature is held against one pole-piece screw, the clearance between the armature and the other pole-piece screw should be .010" to .015".

2. The armature should be centered in the magnetic field between the pole-piece screws. That is, the armature should either "float" in the gap between the contact screws, or, it should stay against either contact, with approximately the same pressure, when moved there by hand.

Procedure:

1. Back off both pole-piece screws and check the contact screw adjustment. Readjust if necessary.

2. Advance the right pole-piece screw until, with its locknut tight (knurled tension knob on RY-30 relays), the right pole-piece screw pushes the armature far enough to just touch the left-hand contact point. Back off the right pole-piece screw 1/4 turn from this position and tighten the lock nut.

3. Advance the left pole-piece screw until requirement 2, above, is met. Tighten the lock nut. If this disturbs the adjustment, reposition the left pole-piece screw and retighten the lock nut to meet the requirement.

NOTE: When adjusting the pole-piece screws on RY-30 relays, the knurled tension nuts should be sufficiently tight to hold the pole-piece screws in the adjusted position.

WIRING DIAGRAM

Figure 1 shows the relay wiring.

*Indicates change.
RY-20 LINE RELAY (W.E.CO 215-A)
RY-28 LINE RELAY (W.E.CO 215-H)
DESCRIPTION, ADJUSTMENTS, AND ORDERING INFORMATION
TELETYPE REC-13 RECTIFIER

Description

The REC-13 rectifier is designed to deliver continuously 0.6 ampere at 120 volts D.C. from a 105 to 125 volt 60 cycle A.C. single phase power supply. It consists of an insulated type input transformer with primary taps, a full wave selenium rectifying element, a power factor correction condenser, a filter consisting of a choke and condenser, a bleeder resistor, and a regulator with taps. All parts are secured to a metal base which has rubber feet for shelf mounting. The rectifier is furnished complete with cover, cords, and plugs for making A.C. and D.C. connections.

The metal cover which is fastened to the base by means of screws is finished in black wrinkle enamel.

The approximate dimensions of the rectifier are 20-1/4" long, 8" wide, and 9" high.

Rating

Input: 105 to 125 volt, 60 cycle A.C. single phase.
Output: 0.6 ampere at 120 volts D.C.
A.C. component in D.C. output voltage: 1% r.m.s. at 0.6 ampere load.
No load voltage when new: Not over 135 volts.

Adjustments

CAUTION: The secondary voltage of the power transformer is 300 volts. All the control elements including the power factor correcting condenser are therefore 300 volts above ground potential.

This rectifier is provided with a door in the front of its cover to permit access to two regulating panels within the cover. The left-hand panel has terminals for the transformer primary taps which are marked for input voltages of 105, 115, and 125. A 6 ampere fuse for protecting the transformer is also mounted on this panel. A flexible lead is used for connecting A.C. to the proper primary tap. The selection of the primary tap will depend on the voltage of the A.C. power supply. In no case should the connection to these taps be changed for the purpose of regulating the D.C. output voltage.

To regulate the D.C. output and to compensate for aging of the rectifying element, three coarse regulator taps marked L, M, and H and five fine regulator taps marked 1, 2, 3, 4, and 5 terminate on the right-hand panel. The regulating taps are set at the factory on "L" and either 1, 2, or 3 to deliver a minimum of 120 volts D.C. at 0.6 ampere. Each fine tap will change the D.C. output voltage.
approximately two volts and each coarse tap, approximately 8 volts when the D.C. output current is 0.5 ampere. The method normally employed in checking the D.C. output of this rectifier is to disconnect all apparatus from the D.C. side and connect a 60 watt Mazda lamp in series with a suitable ammeter across the output. For correct adjustment of the output, the flexible leads should be connected to those taps which will cause the ammeter to register a current flow which is nearest to but not less than 0.5 ampere. This adjustment should be checked when the rectifier is installed and periodically thereafter. The amount of aging will be somewhat greater during the first few months of use. After this, the rectifier should operate for long periods without the necessity of readjusting.

If at any time it is necessary to use the maximum regulating tap to obtain the proper output current, the rectifier should be withdrawn from service and repaired.

A 1.25 ampere fusetron is located on the right-hand panel for overload protection in the output circuit.

Wiring diagram W.D. 1959, which forms a part of this specification, shows the actual and theoretical wiring of the rectifier. An assembly drawing giving the names and numbers of the component parts is shown on the last page.

Reason for reissue: To correct the part number of the rectifying stack on the assembly drawing.