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Williamsburg Theatre

INSTALLATION and OPERATING INSTRUCTIONS

BRENKERT ENARC

MODEL "N"

AUTOMATIC PROJECTION LAMP

Distributed by RCA Theatre Supply Dealers

Theatre Equipment Department
RADIO CORPORATION of AMERICA
Engineering Products Division, Camden, N. J., U. S. A.

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INDEX

Replacement Parts

Brenkert products are manufactured by the Brenkert Light Projection Company, Detroit, Michigan, and are sold solely through the Radio Corporation of America and affiliated RCA Theatre Supply Dealers.

Prompt delivery is an important part of service. We cannot render such service, however, unless you use care and accuracy in placing orders. Order all parts direct from the affiliated RCA Theatre Supply Dealer in your territory, stating both the part number and the description exactly as listed in the parts diagrams and listing in this manual.

Instructions for Operating and Maintenance

1.—Unpacking.

The complete lamp is packed for shipment in one wood case. The lamp is held in place in the case by means of wood braces. The reflector and motor assembly are contained in two separate cartons held in place inside the case by wood braces. Remove the screws holding the cover of the case and those holding the wood braces. Remove the two cartons first and then lift the lamp from the top of the case.

2.—Mounting on Picture Machine Stand.

Set the lamp on the picture machine stand and fasten securely with two 5/16-18 threaded screws. Make certain screws are of correct length so as not to extend into the steel floor of the lamp base.

3.—Assembling the Units.

The motor and gear case is the only assembly not attached to the lamp in shipment. To attach the motor assembly remove back plate No. 1, slide negative assembly No. 2 backward about 2" and slip the lower two holes of motor assembly over the base shafts. The assembly is in proper place when the thrust washer No. 3 strikes the end of the right hand base shaft. Hold the assembly in place on the base shaft by tightening the ¼" screw No. 4 on the right hand side of the assembly.

4.—Making Electrical Connections.

Two current lead wires No. 5 extend from the left side of the mechanism chamber. Attach these to the switch on the picture machine stand in cases where the direct current supply is attached to this switch. In cases where the picture machine switch is used for controlling the A. C. supply to copper oxide rectifiers the general practice is to connect the current lead wires from the lamp directly to the direct current supply wires of the rectifier. Current to the arc feed motor is supplied from the arc feed wires therefore no additional connections are required for this unit. Two fuses No. 24 of 3 ampere capacity each are in the motor and magnet circuits.

The two connection wires for the pilot light No. 6 should be permanently connected to 110 volt supply line. Insert a 15 or 25 watt incandescent lamp in the pilot lamp socket inside the lamp-housing. The lamp is equipped with automatic door switch for controlling this circuit.

5.—Mounting the Reflector.

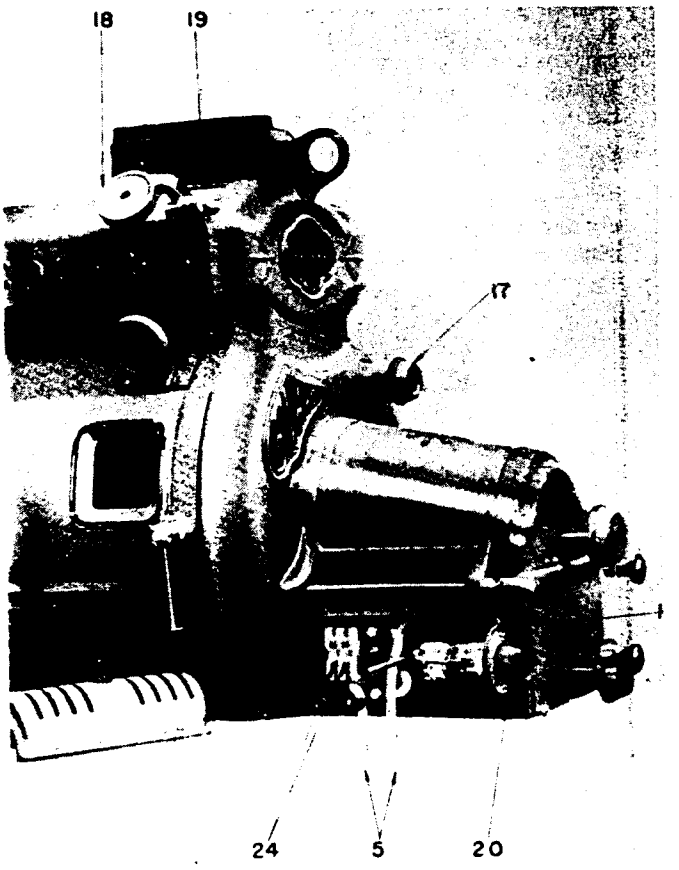
Slide the negative assembly No. 2 back as far as it will go. Move the reflector flame shields No. 7 into upward position. The reflector is then inserted in its holder and held in place by three clips on the reflector frame.

6.—Trimming the Lamp.

The burning ends of both positive and negative carbons are held in position by guides No. 8 and 9 of heat resisting metal. The carbon clamp holders are loosely mounted to allow the carbons to rest in these guides and maintain their relative positions regardless of carbon straightness.

To insert the positive carbon move the positive head assembly No. 10 as far forward in the lamp-house as it will go. By means of the carbon clamp knob swivel the head and insert the carbon with its end flush with the clamp shoe. Securely clamp the carbon and then rest the burning end in the positive guide.

To insert the negative carbon slide the negative assembly No. 2 to the rear as far as it will go. Rest the carbon in the guide No. 9 and clamp with its burning end flush with the negative arc setter pin. Clamp the carbon securely. Slide the negative assembly forward as far as it will go.



7.—The Positive Carbon Alignment.

The bracket No. 11 to which the positive carbon support is attached is factory aligned and this should not at any time be changed. The positive carbon is automatically in proper alignment when the guide rod No. 12 is inserted in the bracket as far as the stop pin permits.

8.—The Negative Carbon Alignment.

The negative carbon is aligned with the positive carbon by a vertical movement and a horizontal swivel movement of the entire negative head assembly. Two screws with driver slots are provided on this assembly for this adjustment. Turn the screws with a screw driver until the burning end of the negative carbon is in approximate central alignment with burning end of the positive carbon. Accurate and final adjustment is made when the arc is burning as explained under paragraph No. 11 "Proper burning of arc flame". No attempt should be made to align the negative carbon by moving the guide No. 9 only as the guide is aligned at the factory with the negative carbon clamp and must remain so for accurate negative alignment with either long or short carbon.

9.—Striking the Arc.

Carbons used in the ENARC have a soft cerium core which is readily blown from the shell under excessive current. The arc should, therefore, be struck rapidly and to accomplish this the ENARC is provided with a separate arc striking lever No. 13. Swivel this lever to the left to bring the carbon ends together then let go and the arc striker spring will quickly and automatically separate the carbons to burning position.

10.—Regulating the Arc Current.

It is essential that carbons be burned within the current range as given in paragraph 12 "Arc Current and Arc Gap". As the automatic feeds cannot be properly adjusted until the arc amperage is regulated it is necessary to maintain the proper arc gap by the hand feed handles No. 14 and 15 while adjusting the generator, rheostats or rectifier supplying the direct current.

11.—Proper Burning of the Arc Flame —

Action of the Magnet. — *See Chart "D".*

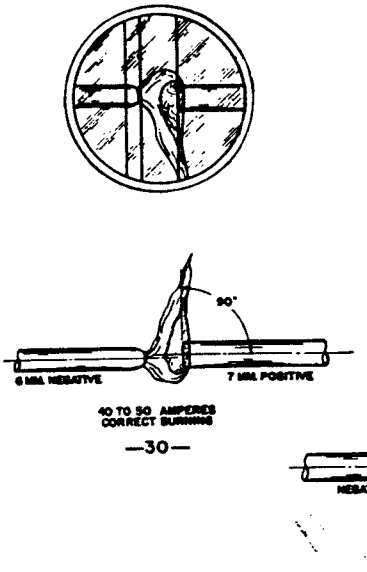
For steady burning the gases from the arc must be allowed to escape at the top of the positive carbon. To accomplish this an electro magnet is located directly behind the reflector, the action of which is to bend both the positive and negative flame upward. The positive carbon must burn as shown in illustrations 30 and 31 of chart "D".

When using the 8 m. m. positive carbon it is necessary to adjust the negative carbon assembly vertically so that the positive carbon will burn about 1/32" further back at top than at bottom. (See illustration 31). This assists the action of the magnet in allowing the gases to escape at top of positive carbon. If negative carbon is adjusted too low the positive carbon will burn back at bottom further at top, (See illustration 32) forming an overhanging lip at top which will not permit the gases to escape vertically. The result is the gases will escape along the periphery of the positive carbon producing considerable fluctuation in the arc current and varying light intensity on the screen. The arc control will not function properly with the arc burning in this manner.

When burning the 7 m. m. positive carbon the above precaution must be taken in that the positive carbon must not be burned back further at bottom than at top. (See illustration 30).

When the negative assembly is adjusted to proper height so correct burning conditions are obtained as above explained it is not necessary to change this adjustment at any time unless the arc amperage is materially increased or decreased.

CHART D.



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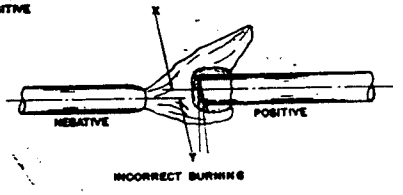

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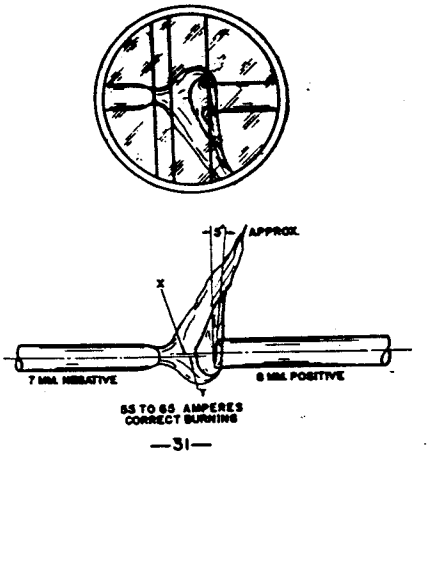


—31—

12.—Focussing the Light Beam — Reflector Working Distance.

For best results use reflectors with the name "Brenkert" etched on the glass. These reflectors are carefully tested by us and conform to close limits of focal length. As a result the forward adjustment of the reflector holder is set at the factory and it is not necessary to change this adjustment. Center the spot on the aperture plate by swivelling the reflector by means of knobs — 16 and 17.

The standard working distance, with all carbon combinations, between the back of the reflector and the plane of the film at the film gate, is 33½" plus or minus ½".

The lamp must be adjusted forward or backward on the picture machine base for this reflector distance. After this adjustment has been made the lamp should be securely fastened to the base. Adjust the positive carbon by means of hand feed handle No. 14 to or from the reflector until the light on the screen is white and clear to all corners.

13.—Lamphouse Front Cones.

The ENARC is equipped with a detachable light cone (see parts list diagram No. 8) on the front of the lamp for use with Simplex projector when operating with the reflector at standard working distance. When the ENARC is used with either Brenkert, Century, or Simplex projectors the Brenkert Light Cone N-7860 is used.

When using ENARC on Motiograph projector with rear shutter use the separable cone (see parts list diagram No. 8) on front plate of lamp which completely enclosed the light beam between lamp front and projector shutter.

Adjust the lamp forward or backward on the Motiograph picture machine base until there is approximately 1/32" between these separable cones. This will automatically bring the reflector to correct operating distance for this projector.

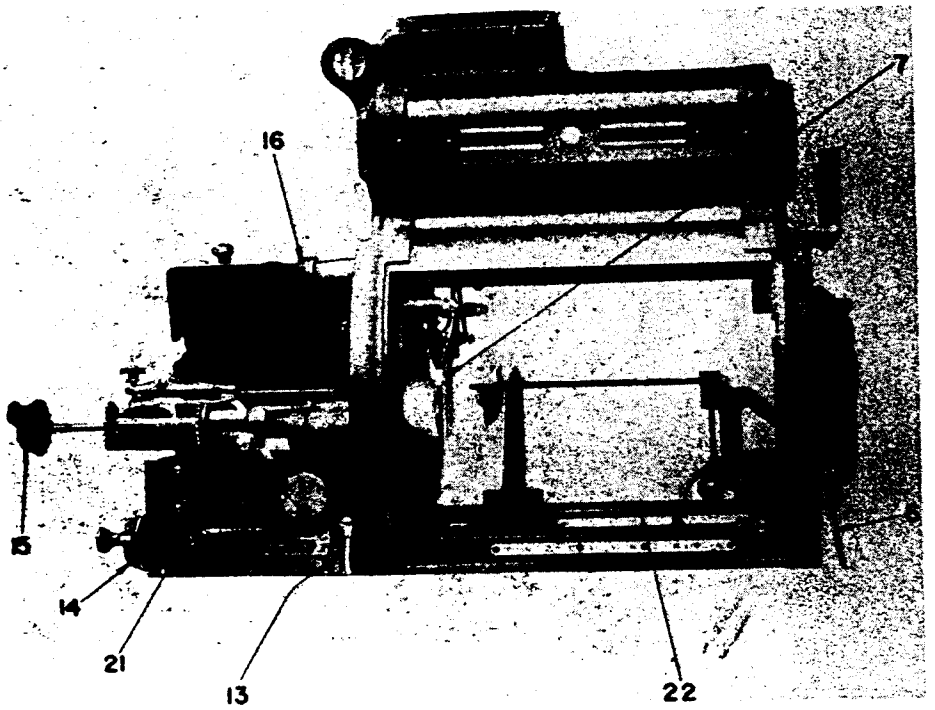
The cones attach to ENARC without any machining on either the lamp or the projector.

14.—Setting the Arc Indicator Mirror.

When the light beam is focussed as explained in paragraph 12 the arc indicator mirror No. 18 is adjusted to reflect the burning end of positive carbon on the front line on arc indicator screen No. 19. From 40 to 50 arc amperes the negative carbon should be adjusted to reflect its burning end on the center line and from 55 to 65 amperes on the rear line. Thereafter this screen is used for checking correct arc position.

15.—Adjusting the Carbon Feeds.

The positive carbon is fed forward continuously and the negative intermittently. The motor feeds both carbons and changing the motor speed changes the rate of feed of both carbons. The burning ratio of the positive and negative carbon is different for every change in arc current. (See paragraph 23). The negative feed mechanism is,



therefore, provided with a feed adjustment separate from the positive feed.

The lamp should be thoroughly warmed by burning the arc for ten minutes before attempting to regulate the automatic feeds.

First regulate the positive carbon feed by the motor speed potentiometer adjustment knob No. 20. While doing this keep the arc gap constant by hand adjustment of the negative feed. Allow the arc to burn for several minutes and do not attempt adjustment of negative feed until correct motor speed is obtained to hold the positive carbon end reflected to the positive line on the arc reflector screen. Next adjust the negative feed by turning knob No. 21 to right or left a few turns at a time until the feed mechanism maintains the burning end of the negative carbon reflected on the negative line of the arc reflector screen.

The hand feed handles No. 14 and 15 are used to accurately position both carbons while burning. They should be used while burning in a new carbon trim or when striking up a cold lamp rather than frequently adjusting the automatic feeds.

16.—Removing the Doors.

Both right and left doors are quickly removed by depressing the top hinge pin inside the door and allowing the door to tilt outward from the housing. They are as quickly replaced by reverse procedure. This feature permits cleaning operations on the lamp and projector mechanism by two operators at the same time.

17.—Care of the Reflector.

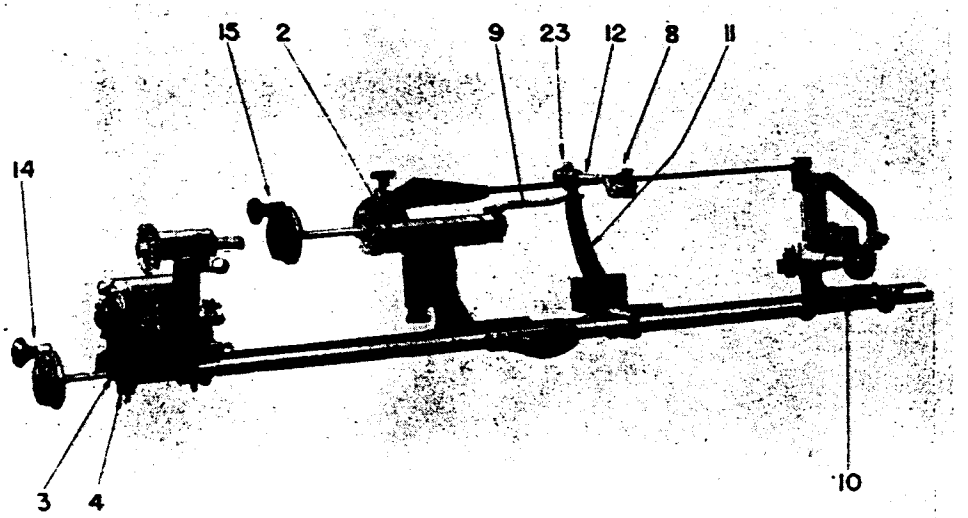
The entire face of the reflector is readily accessible for cleaning by opening the right side door and sliding the negative assembly No. 2 rearward. With this distinctive ENARC feature the operator conveniently reaches the entire surface of the reflector with no obstructions thru the center.

For greatest light efficiency the reflector should be removed from its holder every 100 hours burning and cleaned with soap and water. Care should be taken that it is wiped dry and all soap removed before being subjected to the arc heat.

The cerium core of the positive carbon emits small high temperature particles while the arc is burning, some of which strike the reflector causing pitting of the glass. This is an inherent characteristic of all arcs of this type and while every precaution has been taken to reduce this pitting in time it may be advisable to have these pit marks removed. Send the reflector to the nearest Brenkert distributor for shipment to the factory and these marks will be removed and the reflector resilvered at small cost.

18.—Cleaning the Housing.

As moving parts are not exposed to the carbon ash it is not difficult to keep the entire lamp clean. Copper drippings in the ash tray should be removed daily. Carbon ash should be removed from the inner dome of the housing with a dry cloth.



19.—Oiling the Mechanism.

Use only light grade machine oil thruout. The motor bearings should receive one drop to each bearing weekly. Do not overoil as the commutator can be fouled by excess oil from the bearings. Remove ash pan No. 22 monthly and oil the base bearing shafts. Two gear shaft bearings of the gear train should be oiled weekly. Do not use graphite in any form on any part of the lamp.

20.—Changing the Positive Carbon Guide and Head.

An exclusive feature of the ENARC is the factory precision alignment of this guide No. 8. No adjustments should be made at any time. The guide is quickly changed by loosening set screw No. 23. (See paragraph No. 7).

Should it be necessary to change the positive head make certain it is in line vertically and horizontally with the guide by means of the positive assembly adjustments. Use a carefully selected straight carbon clamped in place in the head and resting in the guide when making this adjustment.

21.—Changing the Negative Carbon Guide.

Clamp a 5/16 straight steel rod about 10" long in the negative jaw allowing the end to rest in the groove of the guide No. 9. Adjust the guide vertically and horizontally until the rod is parallel in both planes with the negative feed screw.

22.—Negative Carbide Tips.

A formation of carbide will at times appear on the negative carbon tip. This formation is an electrical insulator which if heavy will not allow the arc to be struck. It can be removed by a fine file or by wetting the carbon tip. Too close an arc gap is the most frequent cause for excessive carbide tips.

23.—Air Drafts Thru the Lamphouse.

The copper coated high intensity carbons operate at low voltage and for this reason the steady burning of the arc is disturbed by excessive air drafts. Regulate the chimney damper so that excessive air is not sucked thru this flue. Rear shutters in some cases have blades bent at an angle or are provided with cross braces which suck air thru the nose of the lamp housing. The remedy is to straighten the blades and remove the braces. If for any reason it is not desired to make this change in the shutter blade use the ENARC glass cone (as listed in this Catalog, diagram No. 8) which completely seals the housing against all air drafts thru the nose of the lamp.

24.—Arc Voltages and Currents

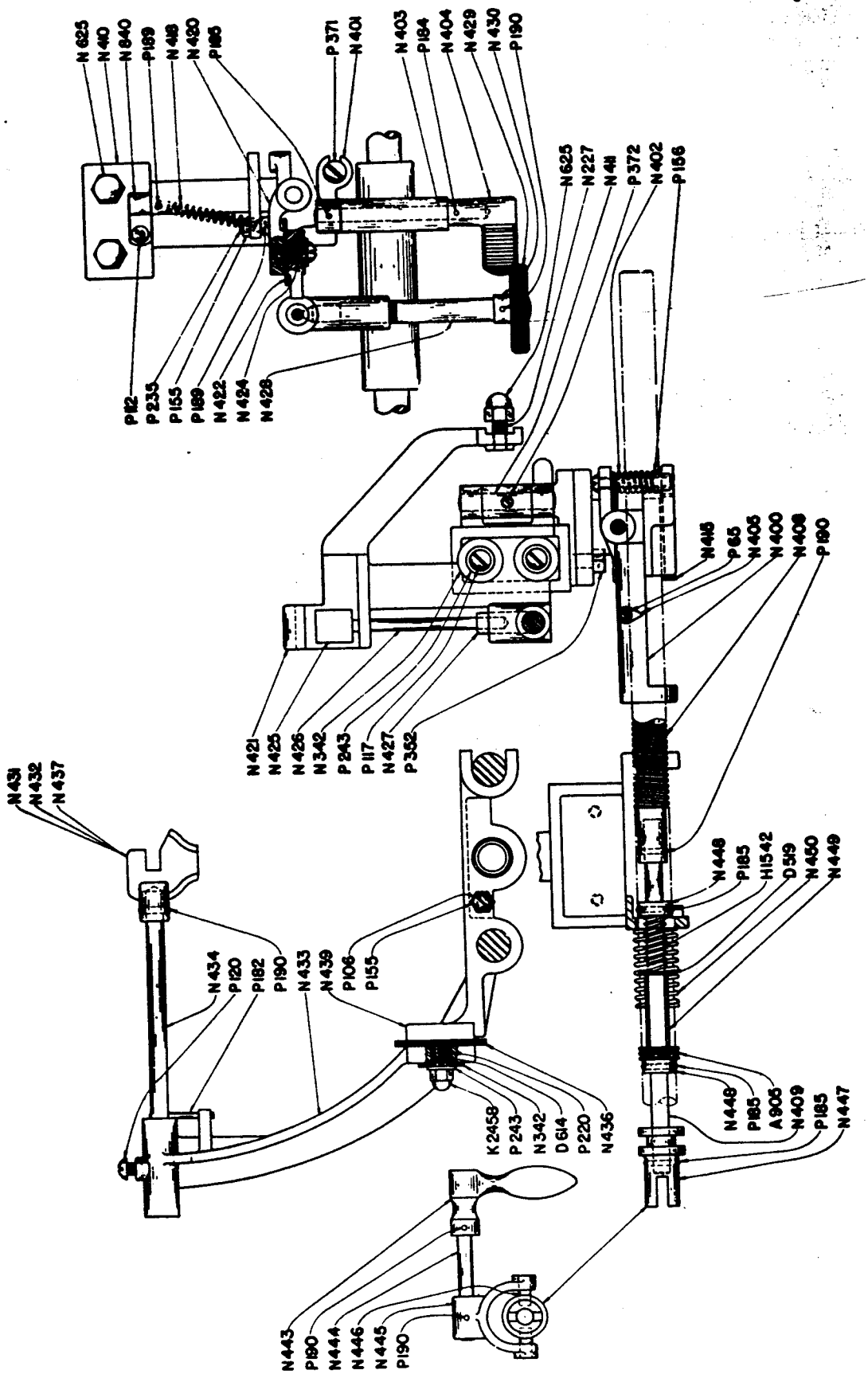
Carbon Combinations	Ampere Range	Arc Voltage
Positive — 7 m. m.		
Negative — 6 m. m.	40-50	29-35
Positive — 8 m. m.	55-65	30-36
Negative — 6½ or 7 m. m.		

The important considerations are the arc current and arc gap. Do not operate carbons either below or above their rated current. The 6½ m.m. negative carbon can be operated from 55 to 60 amperes. Above 60 amperes use the 7 m.m. negative carbon. Refer to the ENARC meter when regulating the current and see that arc gap is adjusted to register the carbon tips on the proper lines of the arc visor screen at rear of lamphouse top.

25.—Arc Power Supply.

For best results it is very important to use the proper arc power supply for the Enarc lamp. Either motor-generator sets or rectifiers may be used if the inherent characteristics provide for an open circuit or no-load voltage of from 42 to 45 D. C. Proper ballast resistors must be used with multiple arc type generators to obtain the correct arc voltage within the range of 30 to 36 volts. When double or individual arc type generators are used with the Enarc lamp no ballast resistors are required, since these generators are designed to operate without any external resistance in series with the arc.

DIAGRAM No. 1
POSITIVE UNIT



DETAIL PARTS

Part Number

N 227. Positive terminal stud (5/16-24).
N 342. Mica Washers. (per set for 2 screws).
N 400. Carbon Holder Base Casting.
N 401. Combination release lever and half nut.
N 402. Release lever spring.
N 403. Shaft for release lever.
N 404. Release Handle Casting.
N 405. Carbon indicator arrow.
N 408. Carbon feed screw.
N 409. Carbon feed screw extension shaft.
N 410. Carbon holder support casting.
N 411. Carbon holder swivel pin.
N 415. Feed screw bearing plate.
N 418. Swivel retracting spring.
N 420. Adaptor casting for Carbon Holder.
N 421. Carbon Holder Casting only.
N 422. Strip mica insulation for carbon holder.
N 424. Mica tubing for positive insulation.
N 425. Carbon clamping jaw.
N 426. Clamping rod extension. (¼ dia.).
N 427. Clamping wedge.
N 428. Carbon clamping locking screw.
N 429. Fibre hand knob. (See N 430).
N 430. Hub and Fibre Hand knob.
N 431. Positive carbon guide casting, 8 m/m. (See assembly N 493).
N 432. Positive carbon guide casting, 7 m/m. (See asembly N 494).
N 433. Support casting for carbon guide.
N 434.Carbon guide rod. (See assembly N 493-494-495).
N 436. Strip mica for guide insulation.
N 437. Positive carbon guide casting. 9 m/m. (See assembly N 495).
N 439. Carbon guide base casting.
N 443. Arc striker handle casting.
N 444. Arc striker operating shaft.
N 445. Arc striker fork casting. (See assembly N 496).
N 446. Arc striker clutch pin. (See assembly N 496).
N 447. Clutch for feed screw drive.
N 448. Thrust collar for Arc Striker. (2 req.), each.
N 449. Sleeve for sliding bearing.
N 450. Carbon Guide return spring.
N 625. Acorn Nut. (5/16-24).
N 840. Clip for positive lead wire.

WASHERS, PINS, SCREWS

Part Number

P 65. Attaching screw for carbon indicator
P 106. Stop Screw for carbon guide assembly
P 112. Attaching Screw for lead wire clip
P 117. Set Screw for carbon holder (¼-20) 2 req., each
P 120. Carbon guide set screw
P 155. Check nut for stop screw (10-24 St'd)
P 156. Lock Nut (¼-20 Hex)
P 182. Carbon guide aligning pin (⅛ dia. x 1¼ lg.)
D 519. Thrust washer for arc striker spring
D 614. Stud (¼-20 x 1¼ lg) (2 req.) each
A 905. Ball end thrust bearing
H 1542. Spring for returning arc striker
K 2458. Acorn nut (¼-20) (2 req.) each
P 184. Release handle pin (⅛ dia x ½ lg)
P 185. Set Pin (⅛ dia x ½ lg) each
P 189. Set Pin (⅛ dia x ½ lg) each
P 190. Set Pin (⅛ dia x ⅝ lg) each
P 220. Mica tubing for carbon guide insulation (2 req.) each
P 235. Swivel adjusting screw (10-24)
P 243. Washer for ¼ dia screw (2 req.) each
P 352. Hex head screw (5/16 dia x 1¼) (2 req.) each
P 371. Adjustment screw (¼-20 x 1½)
P 372. Swivel pin set screw (¼-20 x 3/16 lg)

MINOR ASSEMBLIES

Assembly No.

N 490. Carbon clamping screw and knob. Includes parts No. N 428-429 P 190 assembled
N 491. Positive carbon holder complete with insulation and clamp. Includes parts N 421-422-425-426-427-342-422-490-P 117 Assembled
N 492. Supporting base for positive carbon holder. Includes parts No. N 400-401-402-403-404-405-410-411-415-418-420-625-840-P 65-156-184-185-189-371-372 assembled
N 493. Positive carbon guide with rod attached for 8 m/m carbon. Includes parts N-431, 434, P-182, 190. Assembled
N 494. Positive carbon "Guide" with rod attached for 7 M. M. carbon. Includes parts N 432-434-P 182-190 assembled
N 495. Positive carbon guide with rod attached for 9 M.M. carbon. Includes parts N437-434-P182-190 assembled
N 496. Arc striker fork casting with clutch pins. Includes parts N445-446 Assembled
N 497. Positive carbon holder complete and supporting base complete Includes all parts shown in diagram No. 1 assembled

ORDER BY PART NUMBER

DIAGRAM No. 2
NEGATIVE UNIT

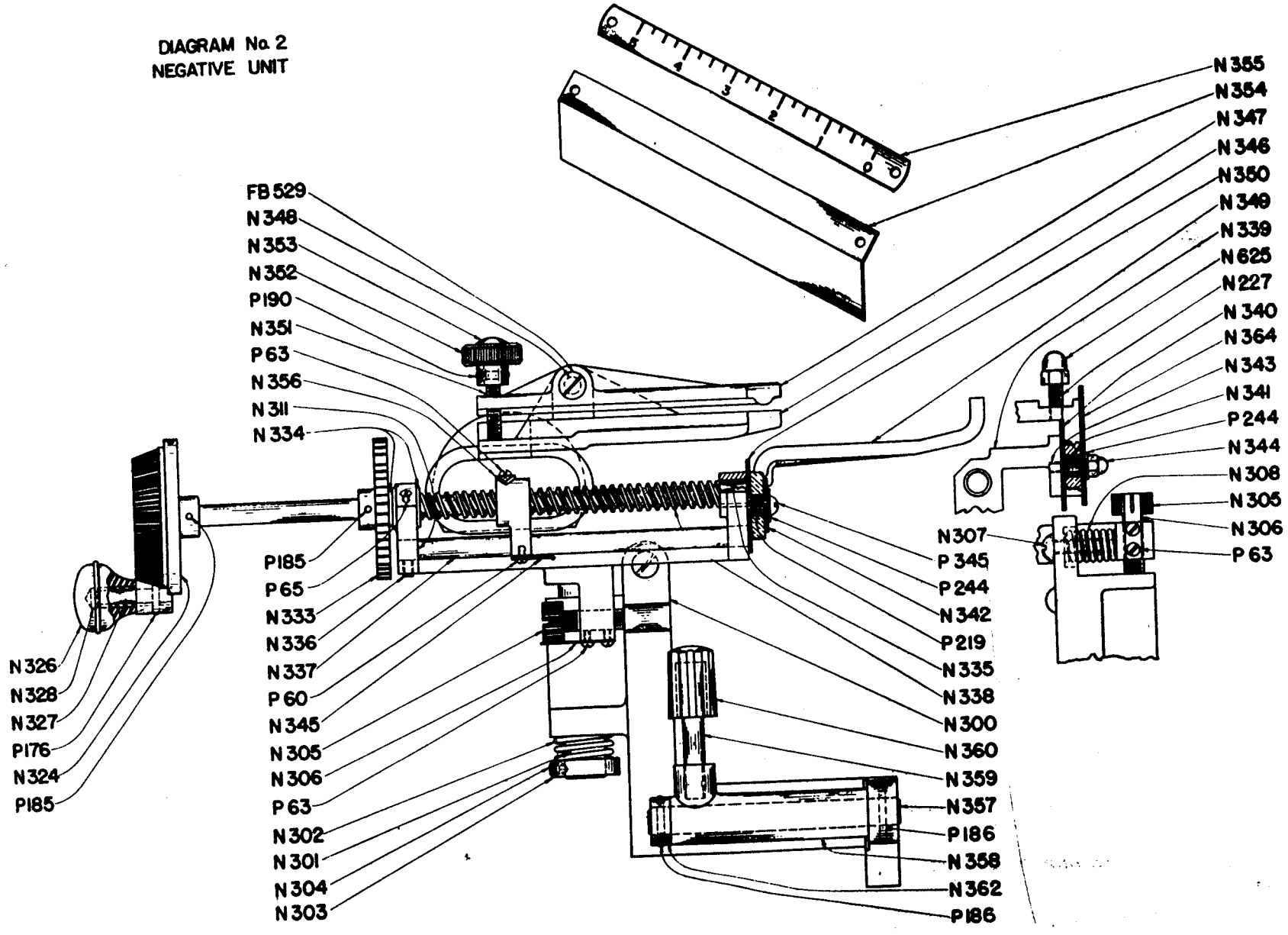


Diagram No. 2

NEGATIVE UNIT

DETAIL PARTS

Part Number

N 227. Negative Terminal Stud (5/16 x ¾)
N 300. Negative Carbon Holder base casting
N 301. Swivel Post for negative head
N 302. Vertical adjustment spring
N 303. Spring retaining collar
N 304. Headless set screw (10-32 x 5/16)
N 305. Horizontal & vertical adjustment screws — 2 req. each
N 306. Ratchet Set Spring — 2 req. each
N 307. Horizontal adjustment stop screw
N 308. Horizontal adjustment spring
N 311. Feed Screw frame — casting only
N 324. Feed screw hand wheel. — See also assembly N390
N 326. Knob for hand wheel. — See also assembly N391
N 327. Bushing for knob. — See assembly N391
N 328. Pin for knob. — See assembly N391
N 333. Driven Gear for feed screw
N 334. Thrust washer for feed screw
N 335. Bushing for end of feed screw
N 336. Set screw for swivel casting (10-32 x 5/16)
N 337. Negative feed guide rod (⅜ dia)
N 338. Nagative carbon feed screw
N 339. Combination feed nut & Sub base casting
N 340. Sheet mica insulator.
N 341. Mica insulating tubing. per set
N 342. Mica Washers. (1" OD - ¼ hole) per set
N 343. Screw Studs (10 - 24) 2 req. each
N 344. Acorn Nuts (10 - 24) 2 Reg. each
N 345. Negative carbon holder tension spring.
N 346. Lower half of carbon jaw — casting only.
N 347. Carbon jaw clamp. Casting only.
N 348. Carbon jaw fulcrum pin.
N 349. Negative carbon guide — Casting only.
N 350. Sheet mica guide insulator.
N 351. Clamp screw for negative carbon jaw. See assembly N 392.
N 352. Knob for clam pscrew. See assembly N 392.
N 353. Bushing for hand knob. See assembly N 392.
N 354. Feed Screw Cover.
N 355. Nagative carbon scale.
N 356. Indicating Arrow.
N 357. Shaft for locking swivel.
N 358. Casting for locking swivel

Part Number

N 359. Locking handle pin. See assembly N393.
N 360. Knob for locking arrangement. See assembly N-393.
N 362. Retaining collar.
N 364. Sheet mica for outside insulation of jaw.
N 625. Acorn nut. (5/16 - 24)
FB 529. Retaining screw for upper jaw.

WASHERS, PINS, SCREWS

P 60. Round head screw.
P 63. Round head screw.
P 65. Round head screw.
P 176. Groov-Pin. (3/32 dia x ⅝).
P 185. Groov-Pin. (⅛ dia x ¾).
P 186. Groov-Pin. (⅛ dia x ⅞).
P 190. Groov-Pin. (⅛ dia x ⅝).
P 219. Mica Tubing. Per set
P 244. Washers. Each
P 345. Round Head Screw.

MINOR ASSEMBLIES

Assembly No.

N 390. Feed screw hand wheel with swivel knob. Includes parts N324-326-327-328-P176-185. Assembled.
N 391. Feed screw knob with swivel stud. Includes parts N326-327-328-P176. Assembled.
N 392. Negative clamp screw with knob. Includes parts N351-352-353-P190. Assembled.
N 393. Knob and screw for negative assembly lock. Includes parts N359-360. Assembled.
N 394. Negative jaw complete with clamp, clamp screw and insulation. Includes parts N346-347-348-392-FB529 and mica insulation. Assembled.
N 395. Negative head complete with guide and swivel post. Includes all parts shown with exception of sliding base.
N 396. Sliding base complete. Includes parts N300-357-358-362-393. Assembled
N 397. Negative unit assembly complete. Includes all parts shown on diagram No. 2. Assembled.

ORDER BY PART NUMBER

DIAGRAM No. 3
MOTOR & GEAR UNIT

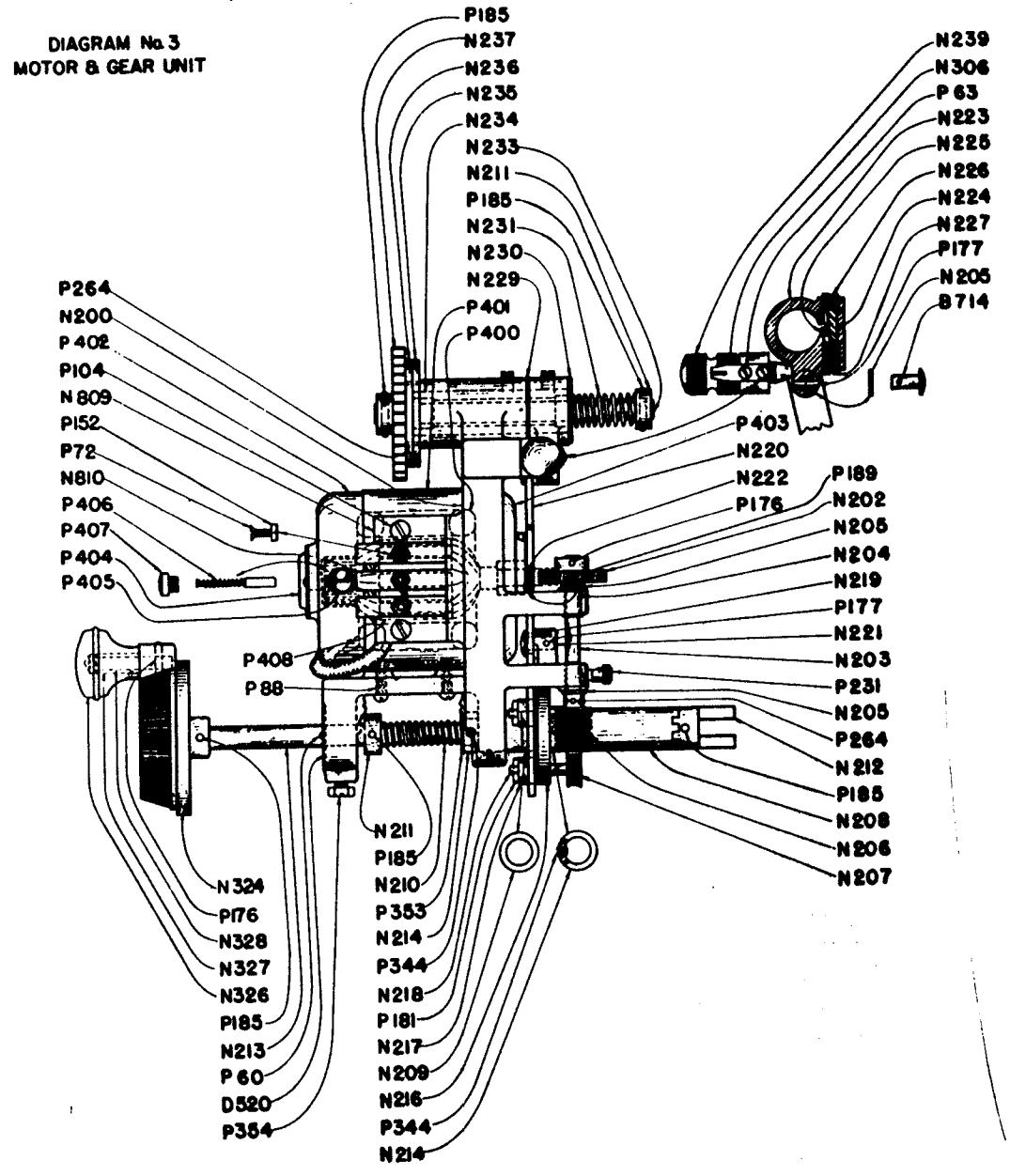


Diagram No. 3

MOTOR and GEAR UNIT

DETAIL PARTS

Part Number

N 200. Main Frame Casting.
N 202. Motor Worm Gear.
N 203. Main Drive Shaft.
N 204. Drive Shaft Bearing Bushing. (2 req.). Each
N 205. Thrust Washer.
N 206. Worm on Main Drive Shaft.
N 207. Worm Gear for Horizontal Drive Shaft.
N 208. Clutch Sleeve for Manual Operation.
N 209. Spacer Washer.
N 210. Manual Control Spring.
N 211. End Thrust Collar.
N 212. Positive Feed Screw Clutch.
N 213. Manual Control Shaft.
N 214. End Thrust Collar.
N 216. Feed Roller Carrier Disc. (See assembly N 290)
N 217. Negative Feed Roller. (See assembly N 290)
N 218. Feed Roller Shaft. (See assembly N 290)
N 219. Negative Feed Lever Bushing.
N 220. Negative Feed Oscillating Lever.
N 221. Feed Lever Fulcrum Pin.
N 222. Feed Lever Return Spring.
N 223. Negative Feed Oscillator Casting.
N 224. Negative Feed Oscillator Wedge.
N 225. Feed Lock Roller.
N 226. Oscillator Adjustment Screw (upper)
N 227. Oscillator Adjustment Screw (lower)
N 229. Separation Washer.
N 230. End Thrust Washer.
N 231. Negative Drive Shaft Spring.
N 233. Negative Drive Shaft.
N 234. Negative Drive Shaft Sleeve.
N 235. Friction Drive Disc — Steel.
N 236. Friction Clutch Facing.
N 237. Negative Transmission Gear.
N 239. Negative Feed Adjustment Screw.
N 306. Friction Spring.
N 324. Feed Screw Hand Wheel. (See also Assembly N-291)
N 326. Knob for Hand Wheel. (See also Assembly N-291.)
N 327. Bushing for Knob. (See also Assembly N-292)
N 328. Pin for Knob. (See also Assembly N-292)
N 809. Motor Terminal Block. (See Assembly N-293)
N 810. Motor Terminal Contactor. (See Assembly N-293)
B 714. Feed Lever Stud.
D 520. Motor Unit Stop Plate.

WASHERS, PINS, SCREWS

Part Number

P 60. Screw for Stop Plate. Each
P 63. Ratchet Spring Screws. Each
P 72. Contactor Screws. (6-32 x ⅛). Each
P 88. Motor Screws. (10-32 x ¾). Each
P 104. Terminal Block Screws. (10-24 x ⅞ flat head). Each
P 152. Hex Nuts. (6-32). Each
P 176. Groov-Pin. (3/32 dia x ⅝ lg).
P 177. Groov-Pin. (3/32 dia x ½ lg).
P 181. Groov-Pin. (3/32 dia x ⅛ lg).
P 185. Groov-Pin. (⅛ dia x ¾ lg).
P 189. Groov-Pin. (⅛ dia x ⅛ lg).
P 231. Main Shaft Oil Cup. (3/16 dia).
P 264. Groov-Pin. (3/32 dia x 7/16 lg).
P 344. Set Screw for Collar. Each
P 353. Thrust Washer.
P 354. Hex Head Screw. (¼ - 20 x ⅝).
P 400. Motor Field Coils with lead wires.
P 401. Motor Center Frame — Casting Only.
P 402. Motor Rear End Bell. (See Assembly N-294).
P 403. Motor Front End Bell with Bearing & Oil Cup.
P 404. Motor Rear Bearing Cover Plate with Screws.
P 406. Motor Brush holders. (2 req.). Each
P 406. Motor Brush & Spring.
P 407. Motor brush retaining cap.
P 408. Motor armature with worm shaft.

MINOR ASSEMBLIES

Assembly No.

N 290. Drive roller assembly for negative feed oscillator. Includes parts N-216, 217, 218, P-181. Assembled.
N 291. Feed screw hand wheel with swivel knob. Includes parts N-324, 326, 327, 328, P-176, 185. Assembled.
N 292. Feed screw knob with swivel stud. Includes parts N-326, 327, 328, P-176. Assembled.
N 293. Motor connection block and inserts. Includes parts N-809-810. Assembled.
N 294. Motor rear end bell with bearing, oil cup and brush holders. Assembled.
N 295. Motor complete with lead wires and connection block.
N 296. Gear unit complete. Includes all parts shown on diagram No. 3, less motor and connection block. Assembled.
N 297. Motor and gear unit complete. Includes all parts shown on diagram No. 3. Assembled.

ORDER BY PART NUMBER

DIAGRAM No. 4
ELECTRICAL UNIT

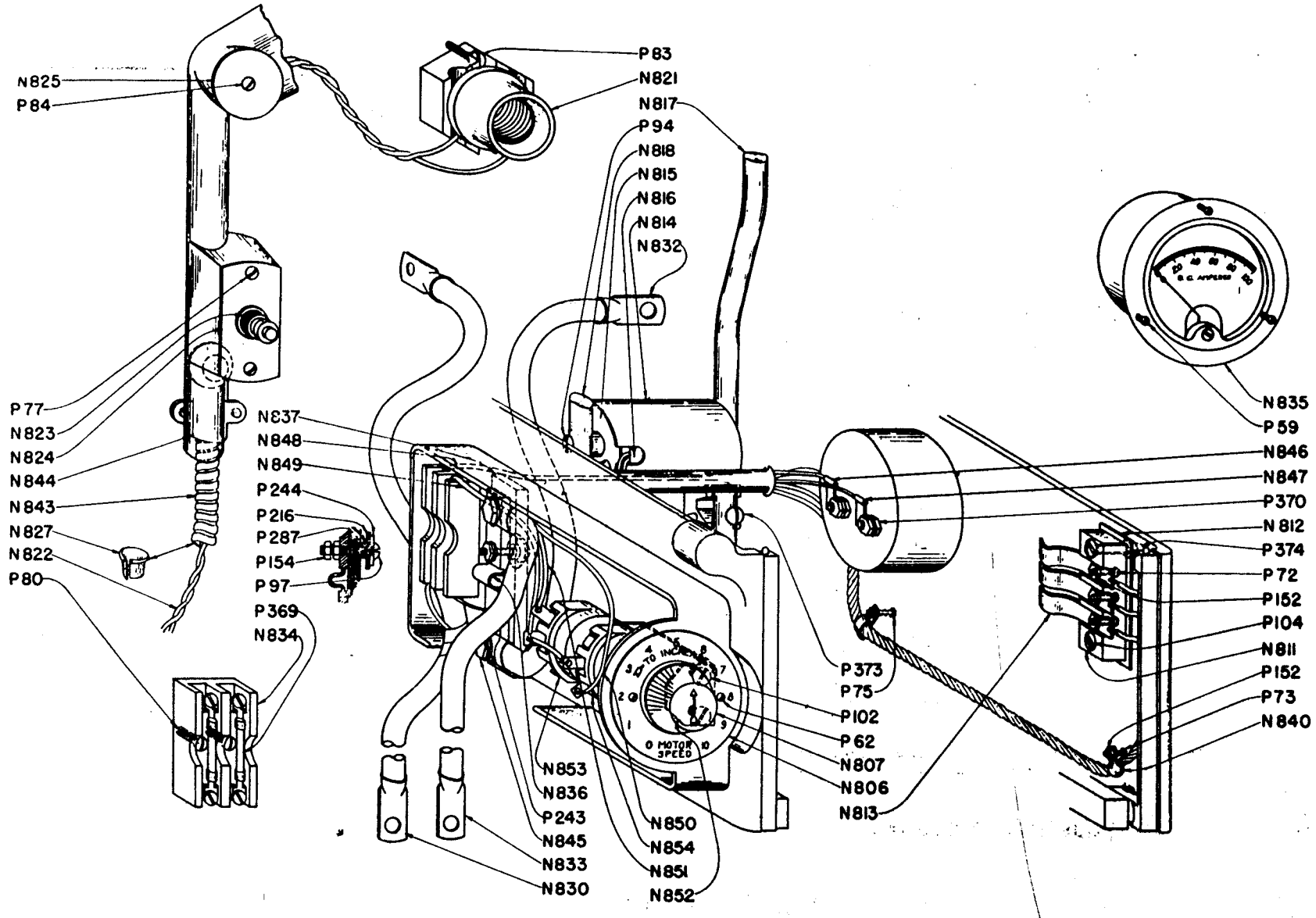


Diagram No. 4

ELECTRICAL UNIT

DETAIL PARTS

Part Number

N 806. Motor Speed Dial.
N 807. Potentiometer Hand Knob.
N 811. Terminal Mounting Block. See assembly N-890.
N 812. Sheet mica for Terminal Insulation. See assembly N-890.
N 813. Terminal Contractor. (3 req. each). See assembly N-890.
N 814. Magnet Housing. See assembly N-891.
N 815. Magnet End Plates. 2 req. each
N 816. Magnet Core only — with center pole. See assembly N-891.
N 817. Magnet Post (long).
N 818. Magnet Post (short).
N 821. Pilot Light Socket.
N 822. Pilot Light Connection wire.
N 823. Pilot Light Switch.
N 824. Switch Plate for Pilot Light.
N 825. Cover for Outlet on Front Plate.
N 827. Bushing for Pilot Cable.
N 830. Pos. Mainlead, including wire lugs.
N 832. Lead Wire to negative jaw.
N 833. Main Negative lead wire.
N 834. Fuse Block.
N 835. D. C. Ammeter — without shunt.
N 836. Ammeter Shunt only.
N 837. Shunt Insulator.
N 840. Wire Holding Clip. Each
N 843. Flexible Cable for Pilot Wires.
N 844. Cable Clamp.
N 845. Shunt Terminal Screw. (¼ x ½).
N 846. Wire (Black) 13" meter to shunt, incl. clip. See assembly N-892
N 847. Wire (White) 13" meter to shunt, incl. clip. See Assembly N-892
N 848. Wire (Red) 27" fuse block to motor contactor. See Assembly N-892
N 849. Wire (White) 10" fuse block to potentiometer. See Assembly N-892
N 850. Wire (White) 34" Rear Potentiometer to motor contact. See Assembly N-892
N 851. Wire (Black) 35" Front Potentiometer to motor contactor. See Assembly N-892
N 852. Bracket for Potentiometer.
N 853. Front Potentiometer for Field Circuit. See also Assembly N-893.
N 854. Rear Potentiometer for Armature Circuit. See also Assembly N-893.

WASHERS, PINS, SCREWS

Part Number

P 59. Ammeter Hold-Down Screws. (4-36 x ⅜)
P 62. Dial Fastening Screws. (4-36 x ⅛)
P 72. Terminal Contactor Screws. (6-32 x ½)
P 73. Wire Clip Screw. (6-32 x ⅜)
P 75. Wire Clip Screw. (6-32 x ⅝)
P 77. Switch Cover Screw. (8-32 x ¼)
P 80. Fuse Block. (8-32 x ⅜)
P 83. Pilot Socket Screws. (8-32 x ¾)
P 84. Wire Outlet Screw. (8-32 x ⅞)
P 94. Magnet Fastening Screw. (10-32 x ⅝)
P 97. Binding Post Screw. (10-32 x 1¼)
P 102. Potentiometer Binding Screw. (10-32 x 5/16)
P 104. Terminal Block Screws. (10-24 x ⅞)
P 152. Wire Clip Hex. Nut. (6-32)
P 154. Binding Post Nut. (10-32)
P 216. Mica Washer. (3/16 x ¾)
P 243. Washer (Steel). (¼)
P 244. Washer (Steel). (3/16)
P 287. Lava Bushing.
P 369. Fuse-Cartridge.
P 370. Ammeter Binding Nuts. (10-32 St'd).
P 373. Magnet Pole Fastening Scr. (10-24 x ⅞ Rd. Hd).
P 374. Terminal Block Acorn Nuts. (10-24 St'd).

MINOR ASSEMBLIES

Part No.

N 890. Electrical Connection Block for Motor Circuit. Includes parts N-811, 813, 812, P-72, 152. Assembled.
N 891. Magnet with Cover Tube and Poles. Includes parts N-814, 815, 816, 817, 818. Assembled.
N 892. Motor Connection Wires. Complete Set. Includes parts N-846 to 851.
N 893. Potentiometer assembly complete. Includes N-852, 853, 854, P-102. Assembled.

ORDER BY PART NUMBER

DIAGRAM No. 5
DOWSER UNIT

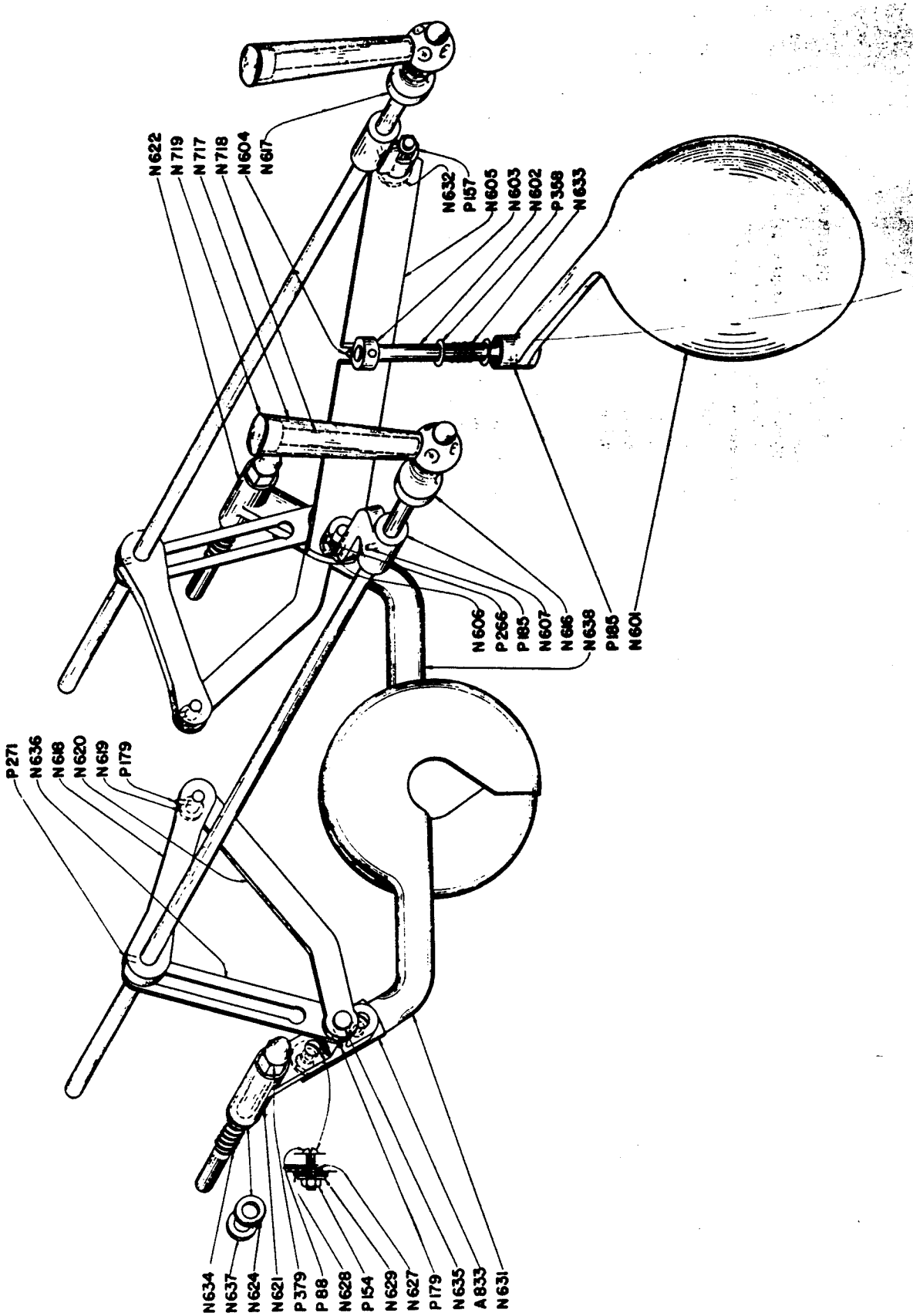


Diagram No. 5

DOWSER UNIT

DETAIL PARTS

Part Number

N 601. Front Dowser. Casting only.
N 602. Front dowser swivel shaft.
N 603. Dowser retaining collar.
N 604. Dowser lever operating pin.
N 605. Dowser operating lever.
N 606. Dowser link pin.
N 607. Dowser lever casting.
N 616. Dowser control rod, incl. Knob. R. H.
N 617. Dowser control rod, incl. Knob. L. H.
N 618. Flame Shield lifting lever.
N 619. Flame Shield link pin.
N 620. Flame Shield link.
N 621. Flame Shield arm casting R. H.
N 622. Flame Shield arm casting L. H.
N 624. Friction washer.
N 627. Insulating tube.
N 628. Mica Washer.
N 629. Steel Washer. (3/16 I.D. - ⅝ O.D. x 1/16)
N 631. Flame Shield. (right). See also assembly N-690.
N 632. Eccentric Stud for Dowser Lever.
N 633. Front dowser silencing spring.
N 634. Flame Shield silencing spring.
N 635. Flame Shield arm pin.
N 636. Dowser Stop Link

Part Number

N 637. End Thrust Washer. (11/16 x ⅝)
N 638. Flame Shield. (Left). See also assembly N-691.
N 717. Bakelite Handle.
N 718. Handle pin.
N 719. Handle retaining nut.
A 833. Sheet mica for flame shield insulation.

WASHERS, PINS, SCREWS

P 88. Flame Shield Screws. (10-32 x ¾)
P 154. Nuts for Fastening Flame Shield. (10-32)
P 157. Hexagon Nut for eccentric bolt. (¼ - 28)
P 179. Groov-Pin. (3/32 dia x ¾ lg)
P 185. Groov-Pin. (⅛ dia x ¾ lg)
P 266. Groov-Pin. (3/32 dia x ⅝ lg)
P 271. Groov-Pin. (⅛ dia x 1" lg)
P 358. Shim Washer. (⅝ x ⅝)
P 379. Acorn Nut. (5/16 - 24). Each

MINOR ASSEMBLIES

Assembly Number

N 690. Right side flame shield with swivel casting and insulation. Includes parts N-631, 621, 627, 628, 629, P-88, 154. Assembled.

N 691. Left side flame shield with swivel casting and insulation. Includes parts N-638, 622, 627, 628, 629, P-88, 154. Assembled.

ORDER BY PART NUMBER

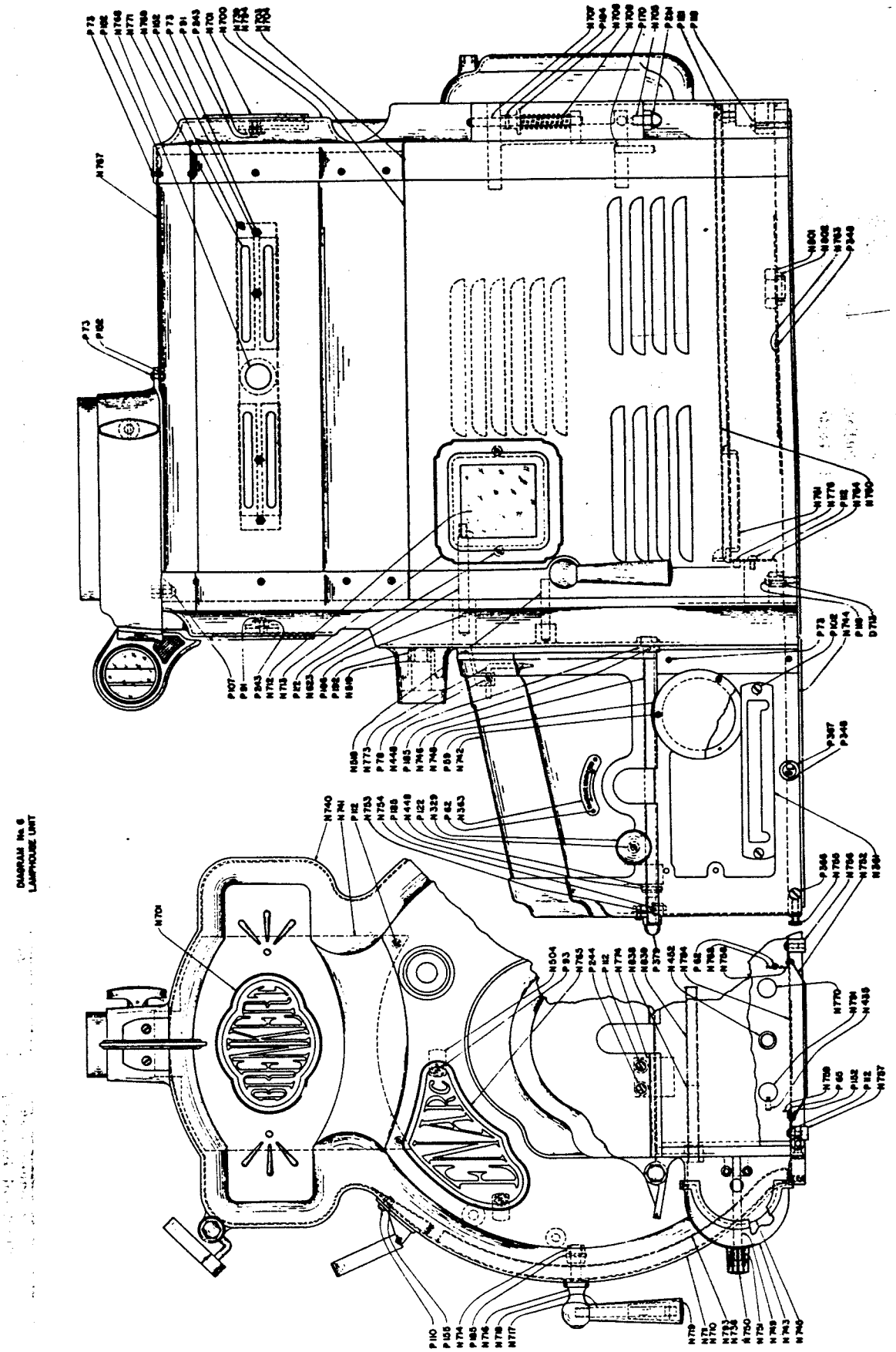


DIAGRAM No. 6
LAMPHOUSE UNIT

Diagram No. 6

LAMPHOUSE UNIT

DETAIL PARTS

Part Number

N 329. Cover Lifting Knob.
N 361. Negative Carbon Unit Locking Plate.
N 363. Negative Feed Adjustment Dial.
N 435. Stop Screw for Carbon Guide.
N 448. Thrust Collar.
N 452. Oilless Bushing.
N 504. Trade Mark Fastening Clip.
N 518. Mirror Frame Guide Pin.
N 519. Mirror Adjustment Nut.
N 623. Dowser Fulcrum Stud.
N 700. Front Plate for Housing.
N 701. "Brenkert" Signature Plate.
N 703. Door Hinge Casting. R. H. See assembly N-7900.
N 704. Door Hinge Casting. L. H. See assembly N-7910
N 705. Lower Hinge Pin with Ball End.
N 707. Upper Hinge Pin.
N 708. Hinge Release Knob.
N 709. Hinge Pin Spring.
N 710. Door End Casting. R. H. See Assembly N-7900.
N 711. Door End Casting. L. H. See Assembly N-7910
N 712. Vision Glass.
N 713. Vision Glass Frame.
N 714. Door Latch Die Casting.
N 716. Door Knob, including Shaft.
N 717. Bakelite Door Handle Sleeve.
N 718. Door Handle Pin.
N 719. Door Handle Nut.
N 738. Door Liner. R. H. See Assembly N-7900.
N 739. Outside Door Panel. R. H. See Assembly N-7900.
N 740. Back Plate for Housing with Reflector swivel nuts.
N 741. Ventilating Cover Plate.
N 742. Control Box Cover-Casting only.
N 743. Potentiometer Housing Cover.
N 744. Control Box Side Panel. R. H. Casting only.
N 745. Control Box Side Panel. L. H. Casting only.
N 746. Control Box Cover Hinge Shaft.
N 748. Ammeter Hole Cover Plate.
N 749. Potentiometer Housing Stud.
N 750. Bakelite Knob for Potentiometer Housing. See Assembly N-7940
N 751. Bushing for Knob. See Assembly N-7940.
N 752. Control Box Bottom.
N 753. Control Box Rear Plate.
N 754. Rear Plate Locating Pins. Each
N 755. Hold-Down Thumb Screw.
N 756. Base Rail. R. H.
N 757. Base Rail. L. H.
N 758. Lamphouse Floor Cover. R. H. See Assembly N-7950.
N 759. Lamphouse Floor Cover. L. H.
N 760. Base Rod Cover.
N 761. Ash Tray.
N 762. Positive Carbon Scale.
N 763. Name & Rating Plate.
N 764. Support Plate for Base Rod Cover.
N 765. "Enarc" Trade Mark Plate.
N 767. Roof of Lamphouse (Steel). See Assembly N-7960.
N 768. Ornamental Insert (Round).

Part Number

N 769. Ornamental Insert Backing Plate.
N 770. Burner Base Shaft. R. H.
N 771. Ornamental Inserts (Long). Each
N 773. Negative Carbon Locating Pin.
N 774. Bakelite Safety Stop Block.
N 776. Stud for Base Rod Cover.
N 784. Lamphouse Bottom Pan, including Screen.
N 791. Burner Base Shaft. L. H.
N 793. Door Liner. L. H. See Assembly N-7910.
N 794. Outside Door Panel. L. H. See Assembly N-7910.
N 801. Insulator Bushing.
N 802. Nut for Insulator Bushing.
N 838. Magnet Wire Conduit.
N 839. Motor Wire Conduit.
D 713. Cone point set screw. (¼" x 1").

WASHERS, PINS, SCREWS

P 59. Ammeter Cover Screw. (4-36 x ⅜)
P 62. Fastening Screws. (4-36 x ⅛)
P 65. Lamphouse Bottom Screws. (10-32 x ¼)
P 73. Fastening Screws. (6-32 x ⅜)
P 78. Negative Carbon Indicator Screw. (8-32 x ¼)
P 91. Signature Plate Screws. (10-32 x ⅛)
P 93. Fastening Screws. (10-32 x ¾)
P 102. Negative Lock Plate Screws. (10-24 x 5/16)
P 107. Chimney Hold-Down Screw. (10-24 x ¾)
P 110. Lens Holder Fastening Screw. (10-24 x ½)
P 112. Fastening Screws. (10-24 x ⅜)
P 118. Front & Back Plate Screws. (¼-20 x 1¼)
P 121. Base Rod Cover Screw. (¼-20 x ⅜)
P 122. Cover Knob Holding Screw. (¼-20 x ⅝)
P 152. Hex Nut. (6-32). Each
P 155. Lens Holder Fastening Nut. (10-24)
P 170. Groov-Pin. (¼ dia x 1⅛)
P 184. Groov-Pin. (⅛ dia x ⅛)
P 185. Groov-Pin. (⅛ dia x ¾)
P 186. Groov-Pin. (⅛ dia x ⅞)
P 192. Groov-Pin. (1/16 dia x ⅝)
P 243. Washer (Steel).
P 244. Insulator Screw Washer.
P 251. Acorn Nut. (⅜)
P 348. Groov-Pin with Rd. Hd. (10 x ⅛)
P 366. Control Box Side Panel Screw. (¼-20 x 1")
P 367. Underwriters Label.
P 379. Acorn Nut. (5/16)

MINOR ASSEMBLIES

Assembly No.

N 7900. Right Lamphouse Door with end braces & hinge.
Includes parts N-703, 739, 710. Assembled.
N 7910. Left Lamphouse Door with end braces & hinge.
Includes parts N-704, 711, 794. Assembled.
N 7940. Bakelite knob & bushing for potentiometer cover.
Includes parts N-750, 751. Assembled.
N 7950. Right Hand Floor Cover with Scale attached.
Includes parts N-758, 762. Assembled.
N 7960. Lamphouse top with side ornaments.
Includes parts N-767, 771, 768, 769. Assembled.

ORDER BY PART NUMBER

DIAGRAM No. 7
MIRROR UNIT

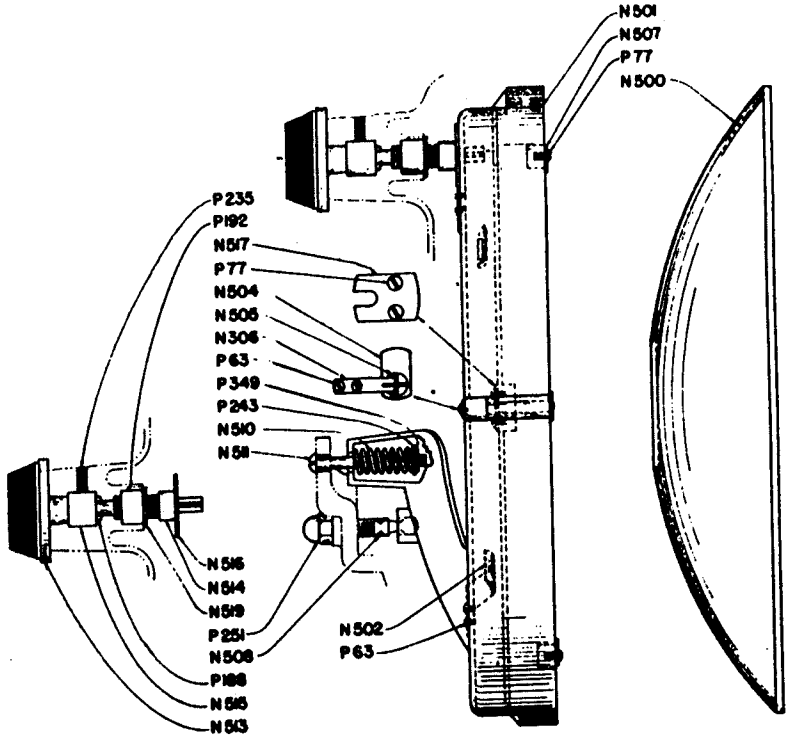
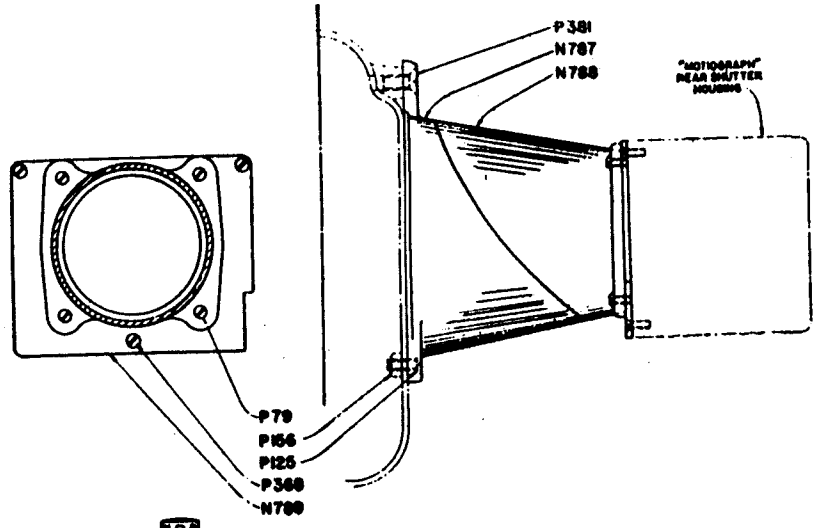
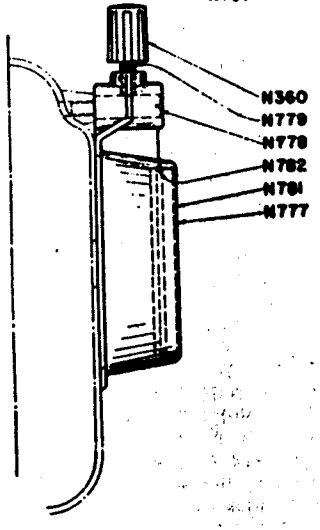


DIAGRAM No. 8
LAMPHOUSE FRONT CONES





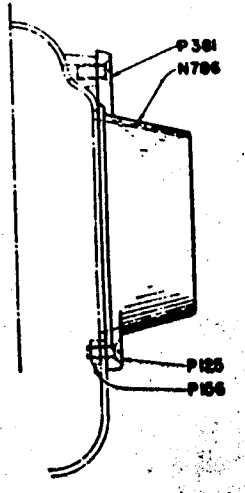


Diagram No. 7

MIRROR UNIT

DETAIL PARTS

Part Number

N 306. Ratchet spring.
N 500. 13-½" diameter mirror reflector
N 501. Mirror frame — casting only. (See also assembly N 590).
N 502. Pressure springs for mirror, each
N 504. Mirror release clip (movable).
N 505. Release clip shaft.
N 507. Mirror retaining clip (2 req.), each
N 508. Mirror focus swivel screw.
N 510. Mirror frame movement spring.
N 511. Tension Bolt (¼").
N 513. Mirror control handle and shaft (See assembly N 591).
N 514. Mirror adjustment screw.
N 515. Retainer bushing.
N 516. End thrust washer.
N 517. Mirror frame guide strip.
N 519. Nut for adjustment screw.

WASHERS, PINS, SCREWS.

P 63. Spring screw (6-32×3/16), each
P 77. Clip fastening screw (8-32×1/4), each
P 188. Groov-Pin (⅛ dia.×½ lg), each.
P 192. Groov-Pin (1/16 dia.×⅝ lg), each.
P 235. Headless set screw (10-24×⅝), each
P 243. Washer (for ¼ dia. screw), each.
P 251. Acorn Nut (3/8-24), each.
P 349. Cotter Pin 3/32 dia. × 1¼ lg), each

MINORS ASSEMBLIES.

Assembly No.

N 590. Mirror frame casting with pressure springs and holding clips. Includes parts N 501-502-504-505-507-517-306-P 63-P 77 assembled.
N 591. Mirror adjusting handle with shaft and retaining collar. Includes parts N 513-515-P 188 assembled.

Diagram No. 8

LAMPHOUSE FRONT CONES

DETAIL PARTS

Part Number

N 360. Red Bakelite knob. (See assembly N 7961.
N 777. Main holder — Casting Only. (See also assembly N 798)
N 778. Stud for attaching lens holder.
N 779. Locking screw. (See assembly N 7961).
N 781. Heat resisting optical glass disc only.
N 782. Glass retaining ring.
N 7860. Front cone for use with Brenkert, Century or Simplex projector. (See assembly N 797).
N 787. Rear half of cone for use with Motiograph Projector. (See also Assembly N 799.
N 788. Front half of cone for use with Motiograph Projector. (See also Assembly N 797).
N 789. Plate for attaching front cone to Motiograph rear shutter. (See also Assembly N 797).

WASHERS, PINS, SCREWS

P 79. Front cone screws (No. 8/32×⅜), each
P 125. Rear cone fastening screw (¼-20×¾), each
P 156. Fastening nuts (¼-20), each
P 368. Adaptor plate screws (No. 8/32×⅜), each
P 381. Rear cone screw (Upper) (5/16-18×⅝), each.

MINOR ASSEMBLIES

Assembly No.

N 7961. Attaching screw and knob. Includes Parts N 360-779, assembled.
N 797. Cone and attaching screws for use with Brenkert, Century or Simplex projector when using 7 m/m positive carbon in lamp. See Operating Instructions paragraph 13. Includes parts N-786, P-381, 125, 156 assembled.
N 798. Cone and attaching screws for use with Brenkert, Century or Simplex projector in cases where rear shutter air disturbance affects arc. (See operating instructions, paragraph No. 23). Includes parts N 777-778-779-360-781-782 assembled.
N 799. Double type cone with front attaching plate for use with Motiograph Projector with rear shutter. (See operating instructions, paragraph No. 13). Includes parts N 787-788-789-P 79-125-156-381 assembled.

ARC VISOR UNIT

DIAGRAM No. 9
IMPROVED TYPE
FURNISHED ON ALL LAMPS AFTER SERIAL No. 12320 INCL.

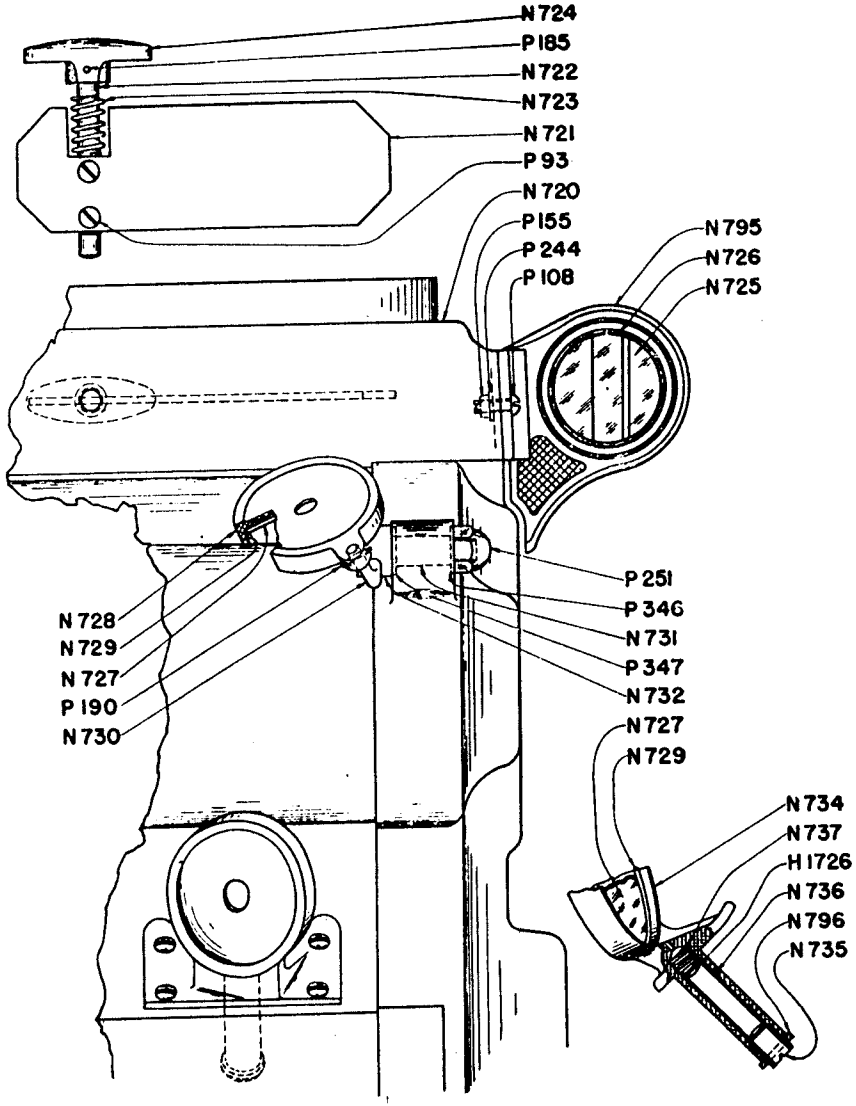


DIAGRAM No. 10
ORIGINAL TYPE
FURNISHED ON ALL LAMPS PRIOR TO SERIAL No. 12320

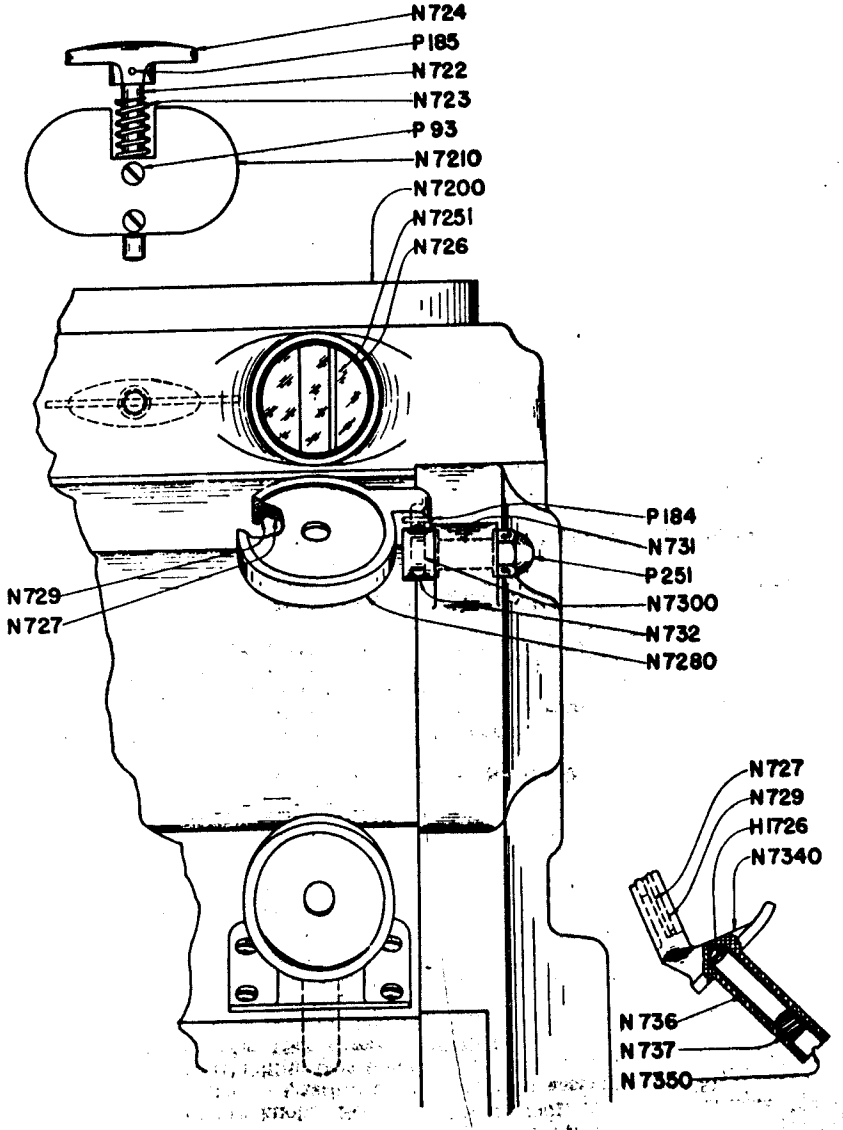


Diagram No. 9 and No. 10

ARC VISOR UNIT

DETAIL PARTS

Part Number

N 720. Chimney — Casting Only — (Improved Type).
N 721. Damper — (Improved Type).
N 722. Damper Control Shaft.
N 723. Damper Tension Spring.
N 724. Damper Knob.
N 725. Carbon Image Glass Screen. (Improved Type).
N 726. Image Glass Retaining Ring.
N 727. Mirror Glass.
N 728. Mirror Casting (upper). See assembly N 7971.
N 729. Mirror Retaining Ring.
N 730. Mirror Clamping Pin — (Improved Type).
N 731. Mirror Clamping Bolt.
N 732. Mirror Clamping Collar — (Improved Type).
N 734. Lens and Mirror Holding — Casting Only — (Improved Type) See assembly N 7981.
N 735. Lens Retaining Screw — (Improved Type).
N 736. Spacer for Visor Lenses.
N 737. Lens Retaining Spring.
N 795. Image Glass Retaining Casting — (Improved Type).
N 796. Lock Nut — (Improved Type).
N 7200. Chimney — Casting Only — (Original Type).
N 7210. Damper — (Original Type).
N 7251. Carbon Image Glass Screen (Original Type).
N 7280. Mirror Casting. (See Assembly — N 7970).
N 7300. Mirror Clamping Pin — (Original Type).
N 7340. Visor Lens and Mirror Holding — Casting Only — See Assembly N 7980.
N 7350. Lens Retaining Screw — (Original Type).
H 1726. Lenses for Arc Visor — 2 req. each

WASHERS, PINS, SCREWS

Part Number

P 93. Fastening Screw.
P 108. Fastening Screw.
P 155. Hex Nut (10-24).
P 184. Groov-Pin (⅛ × ⅛).
P 185. Groov-Pin (⅛ × ⅜).
P 190. Groov-Pin (⅛ × ⅝).
P 244. Fastening Screw Washer.
P 251. Acorn Nut.
P 346. End Thrust Washer.
P 347. End Thrust Washer.

MINOR ASSEMBLIES

Assembly Number

N 7971. Upper mirror holder with attaching pin. (Improved Type). Includes parts N 728-730. Assembled.
N 7970. Upper mirror holder with attaching pin. (Original Type). Includes parts N 7280-7300. Assembled.
N 7981. Lower mirror frame with mirror and lenses. (Improved Type). Includes parts N-727, 729, 734, 735, 736, 737, 796, H-1726. Assembled.
N 7980. Lower mirror frame with mirror and lenses. (Original Type). Includes parts N 727-729-7340-7350 736-737 H 1726. Assembled.

PARTS FOR CONVERTING ORIGINAL TYPE ARC VISOR SYSTEM TO IMPROVED TYPE

N 7990. Improved arc visor assembly complete. Includes improved chimney, image glass casting, upper and lower mirror holder castings. This complete unit is readily assembled on any ENARC lamp for converting original type arc visor system to the improved type. Includes parts N 720-721-728-730-734-735 795-796.

MOTIOGRAPH AND POWERS ATTACHING BRACKETS

Brenkert Enarc projection lamp fits Motiograph model K or Simplex picture machine base or Western Electric Universal base without use of attaching brackets. When lamp is used on any earlier model Motiograph picture machine base or any Powers picture machine base an attaching bracket is necessary. We manufacture and supply these brackets as follows:

Catalogue No.

N 7995. Bracket for attaching Brenkert Enarc lamp to Motiograph model HU and DeLuxe motion picture machine base or Western Electric Universal base.
N 7996. Bracket for attaching Brenkert Enarc lamp to Powers 6A or 6B motion picture machine base.