RADIO BROADCAST TRANSMITTER ACCESSORIES

HARRIS INTERTYPE CORPORATION

GATES®
A DIVISION OF HARRIS-INTERTYPE

Remote Control System

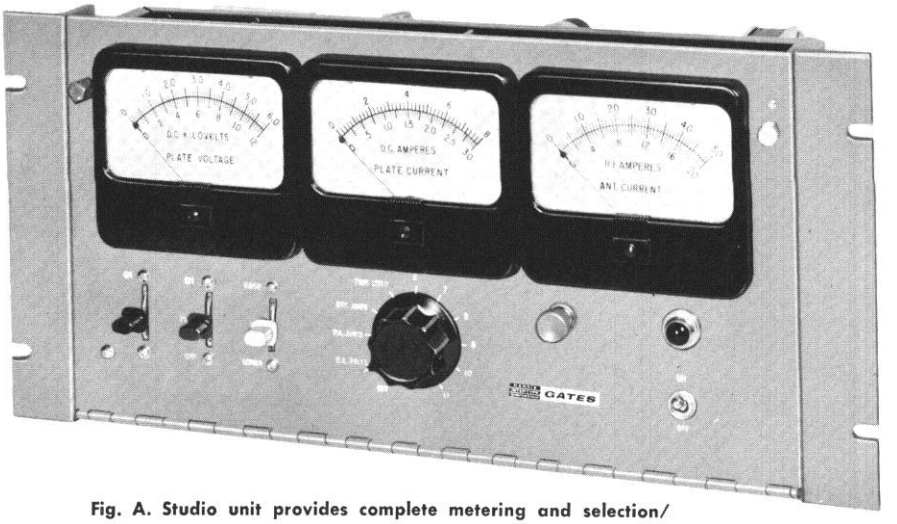


Fig. A. Studio unit provides complete metering and selection/ operation of up to 23 control functions. Power supply is self-contained.

MODEL RDC-10AC

This Gates remote control equipment is a direct current system without tubes or transistors and has only one major moving part—the rugged gold contact stepper. Facilities are provided for as many as ten metering positions and 23 control functions. Capacity of the RDC-10AC equipment ranges from the one transmitter, one tower installation to a multi-tower directional system, as well as combination AM-FM separate transmitters with only one RDC-10AC system.

Standard equipment includes: (a) the studio control unit, Fig. A, (b) the transmitter control unit, Fig. B, (c) plate current and (d) plate voltage metering kits, plus (e) the tower light indicator unit. Studio and transmitter units are also available separately. Items (c), (d) and (e) are described on Page 71.

The studio control unit (Fig. A) has three large, easy-to-read meters that indicate plate voltage, plate current and AM antenna current or FM output. The meters may be switched to several circuits on one or two transmitters, coupling units, etc. As an example, the tower light function can be indicated on the plate current meter. Many combinations are possible with the selection of the proper accessories as listed on Page 71. Relays are of highest quality to assure freedom from malfunction. A switch is provided on the transmitter control unit to transfer operation back to manual during transmitter maintenance or servicing.

Only two metallic telephone pairs are required. Usually the order phone between studio and transmitter is connected to one of the remote functions to eliminate the need for a third order phone line. The RDC-10AC system will operate on telephone lines up to 30 miles in length, or with 3000 ohms loop resistance, whichever is greater. Both studio and transmitter units are 19" wide, 8¾" high and 10" deep. Front panels drop down for easier servicing. Shipping weight: domestic, 50 lbs.; export, 85 lbs. Cubage: 4 cubic feet.

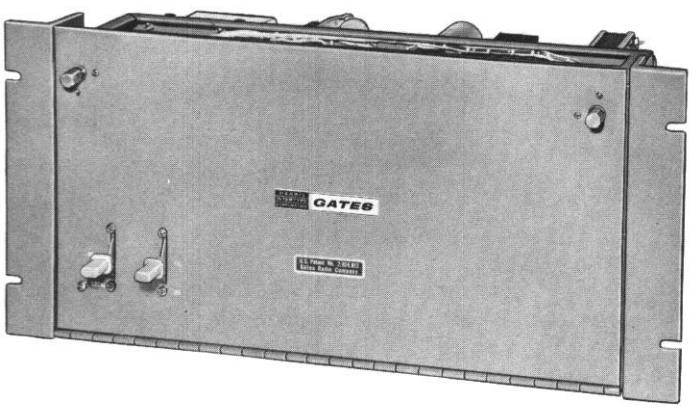


Fig. B. Transmitter unit may mount in a rack, or directly in most transmitters. Power supply is self-contained.

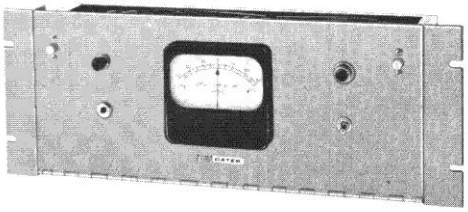
ORDERING INFORMATION

(A) Complete RDC-10AC system includes studio and transmitter units and items I, J and K below 994-5862-001
(B) Studio and transmitter units only 994-5862-002
(C) Antenna diode to remote control antenna meter 994-6112
(D) Motor driven rheostat for power control of 250 watt transmitter 994-4703-001
(E) Motor driven rheostat for power control of 500 watt transmitter 994-4703-002
(F) Motor driven rheostat for power control of 1000 watt transmitter 994-4703-003
(G) Motor assembly to drive variable coil for load power adjustment such as for 5 kW or 10 kW transmitters. (Relay below necessary) 994-5066
(H) Relay assembly to operate 994-5066 motor 994-4806
(I) Plate current unit to extend plate current readings 994-4720
(J) Plate voltage unit to extend plate voltage readings 994-4719
(K) Tower light indicator 994-5145

IMPORTANT: When ordering, give as much transmitter detail as possible: (a) make and type number, (b) plate rheostat in ohms and watts. If not a Gates transmitter, state method of power output control such as rheostat, variable loading, etc. If you are in doubt, please contact us. Gates will gladly assist.

Remote Control System Accessories

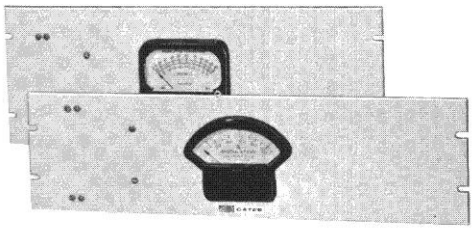
FREQUENCY MONITOR EXTENSION METER



For M-4990 AM Frequency Monitor. Meter is exact duplicate of the M-4990 monitor for extending frequency indication to studios.

Extension meter_____**994-5631**

MONITOR EXTENSION METERS

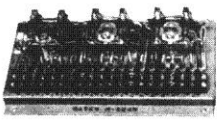


Several types available as listed below for extending modulation monitors. Mounted on standard 19" rack panel. 5¼" high.

Remote Meter for M-5774 modulation monitor_____**994-5836B**

Remote meter for extending Gates M-5693 modulation monitor_____**994-5837**

AUXILIARY RELAY ASSEMBLY



Auxiliary relay assembly to provide one on-off momentary switching facility. These relays provide two sets of double pole double throw contacts rated at 8 amperes, 115 volts AC.

Auxiliary Relay Assembly_____**994-5249**

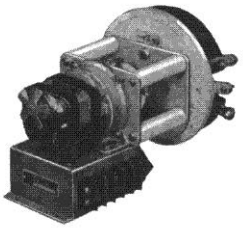
Same as above but latching (holding) type with 10 ampere contacts_____**994-5248**

OUTPUT LOADING CONTROL KIT

Complete kit to control output loading of Gates BC-5P-2 and BC-5H 5 kW transmitters. It includes M-5066 and M-4806 relay and all necessary mounting hardware.

Output Loading Control Kit_____**994-4848A**

MOTOR OPERATED RHEOSTAT



Recommended for regulating the plate voltage in transmitters of 1 kW and less. Available in three sizes for 250, 500 and 1000 watt transmitters. Motor is one rpm and operates from 115 volts, 60 Hz.

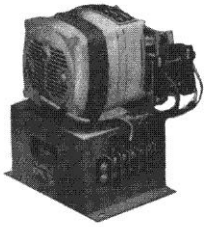
Motor Rheostat for 250 watts_____**994-4703A**

Motor Rheostat for 500 watts_____**994-4703B**

Motor Rheostat for 1 kW_____**994-4703C**

Motor Control for Rheostat in BC-500G and BC-1G_____**994-6326**

TUNING MOTOR



This unit for tuning variable inductor, capacitor or other controls, has built-in limit switches. Five wire reversible motor 1 rpm. Requires M-4806 relay assembly for control. 115 volt, 50/60 Hz.

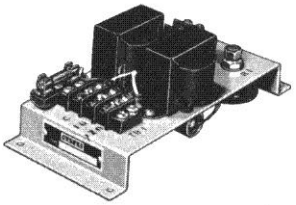
Tuning Motor_____**994-5066**

TUNING MOTOR ASSEMBLY

For operating rheostat, variable condenser, or any variable control. Three wire reversible motor 1 rpm. Torque 15 lb.-inches. 115 volts, 50/60 Hz.

Tuning Motor_____**994-4800**

AC RECTIFIER



Rectifies the AC voltage, either line or filament, at the transmitter, and feeds back DC to studio unit for measuring AC by remote control.

AC Voltage Unit_____**994-4825**

PLATE CURRENT UNIT

Included with the Gates remote control system. Furnishes a sample of plate current which is returned to the studio unit and measured on the directly calibrated plate current meter. The unit is provided with a high voltage protective fuse, and can be used for current ranges of 0-0.8 and 0-3 amperes. Units can be used in parallel if higher current range is required.

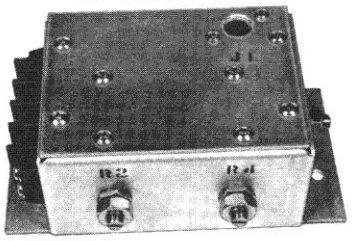
Plate Current Unit_____**994-4720A**

TOWER LIGHT UNIT

This unit is used to provide a DC voltage for indication of proper tower light operation. Includes current transformer.

Tower Light Metering Kit_____**994-5145**

RF DIODE UNIT



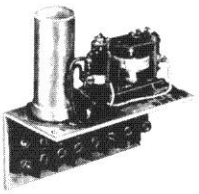
The M-6112 RF diode unit is designed for use as a remote RF indicating device in standard broadcast installations for sampling base currents or common point currents. It is not a directly calibrated RF ammeter, but is adjustable to indicate current linearity with the RF meter. It is not necessary to break the lead to the antenna to install the unit. The M-6112 RF diode consists of an inductive loop which is attached to a rectifier assembly, and is also clamped to the antenna lead. The M-6112 is a solid state device and requires no AC power.

POWER RANGE: 250 to 50,000 watts.

FREQUENCY RANGE: 540 to 1600 kHz.

RF Diode Unit_____**994-6112**

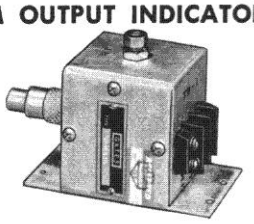
OVERLOAD RELAY



Replaces circuit breakers in current or older models, as circuit breakers are usually undependable for remote control. Tripping current adjustable. Inserted in cathode circuit of RF power amplifier. Some engineers prefer an additional unit in modulator circuit.

Overload Relay_____**994-5129**

FM OUTPUT INDICATOR



Designed to sample the 50 ohm transmission line of an FM transmitter for measuring transmitter output as required by FCC. Provides a DC voltage which is measured on the studio unit meter system. Solid state. Requires no AC power.

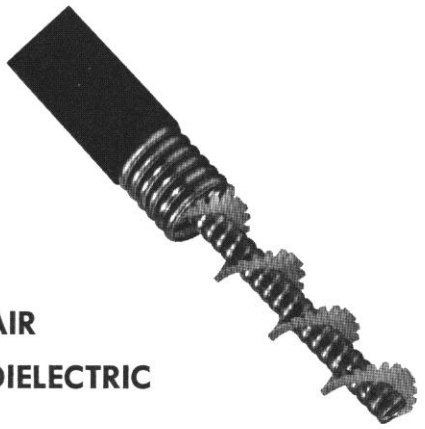
FM Output Indicator_____**994-4845**

PLATE VOLTAGE UNIT

Supplied with Gates remote control systems. One unit is used with voltages up to and including 6000 volts. For higher voltages, additional units may be connected in series. Also available as an accessory item for metering additional stages of transmitters.

Plate Voltage Unit_____**994-4719A**

HARRIS INTERTYPE CORPORATION **GATES**



FLEXIBLE COAXIAL CABLE

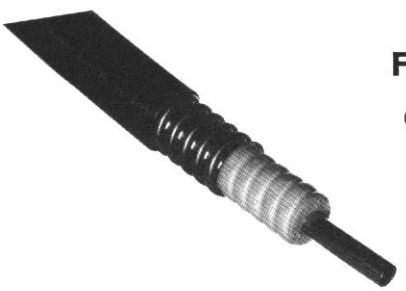
AIR DIELECTRIC

Produced in continuous splice-free lengths, Heliax® low loss cable is ideally suited for any application where use of coaxial transmission line is indicated. For medium wave VHF and UHF applications, long, continuous lengths provide ease of installation and maintenance-free service. Corrugated copper conductors provide a combination of flexibility and low loss. For direct burial, exposure to rough handling, or where the outer conductor must be insulated, Heliax jacketed with polyethylene is available. Although Heliax connectors and fittings are easily attached, it is recommended that all cable assemblies be ordered with fittings factory attached with specialized manufacturing equipment. Please order by type number.

® Registered trademark, Andrew Corporation.

SPECIFICATIONS

SIZE:	⅞"	1⅝"	3"	5"	8"
TYPE NUMBER, UNJACKETED:	H5-50	—	—	—	—
TYPE NUMBER, JACKETED:	HJ5-50	HJ7-50A	HJ8-50B	HJ9-50	HJ10-50
IMPEDANCE: OHMS	50	50	50	50	50
ATTENUATION @ 100 MHz, dB/100 FT.:	0.37	0.21	0.14	0.080	.052
VELOCITY: %:	91.6	92.1	93.3	93.0	94.0
AVERAGE POWER, @ 100 MHz-kW:	6.4	14.5	34.0	95.0	170.0
BEND RADIUS (MINIMUM)—INCHES:	10	20	30	50	72
NET WEIGHT—UNJACKETED: POUNDS/FT.:	.43	—	—	—	—
NET WEIGHT—JACKETED: POUNDS/FT.:	.51	.92	1.5	4.2	8.9



FOAM DIELECTRIC COAXIAL CABLE

Foam Heliax is used in those broadcast installations requiring low loss coaxial cable in which pressurizing is not desirable. A corrugated copper outer conductor and foam dielectric provide a combination of high strength, low loss and power handling not available in solid dielectric cables. The flexibility of foam Heliax provides maximum resistance to crushing, kinking or denting, and enables it to be pulled through conduits and around obstructions. Please order by type number.

SPECIFICATIONS

SIZE:	½"	⅞"
TYPE NUMBER:	FH4-50B	FH5-50A
TYPE NUMBER, JACKETED:	FHJ4-50B	FHJ5-50A
IMPEDANCE:	50 ohms	50 ohms
ATTENUATION @ 100 MHz, dB/100 FT.:	0.82	0.44
VELOCITY, %:	79	79
AVERAGE POWER, @ 100 MHz, kW	2.3	4.8
BENDING RADIUS (MINIMUM)—INCHES:	5	10
NET WEIGHT—POUNDS/FT.:	.125 lbs.	.32 lbs.
NET WEIGHT—JACKETED:	.185 lbs.	.42 lbs.

RIGID TRANSMISSION LINES

RIGID LINE

Teflon insulated rigid copper coaxial transmission lines for broadcast application. Line and connectors meet all EIA applicable standards. Mitered elbows are compensated to provide low VSWR. All rigid sections and components include inner connectors, "O" ring and hardware. Please order by type number, and specify frequency.

SPECIFICATIONS

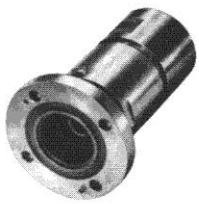
SIZE:	⅞"	1⅝"	3⅛"
TYPE NUMBER:	560	561	562A
IMPEDANCE:	50 ohms	50 ohms	50 ohms
ATTENUATION @ 100 MHz, dB/100 FT.:	0.40	0.20	0.11
VELOCITY, %:	99.8	99.8	99.8
AVERAGE POWER, @ 100 MHz:	4.3 kW	15.0 kW	48.0 kW
NET WEIGHT—POUNDS/FEET:	.65	1.25	2.75

HARRIS INTERTYPE CORPORATION GATES

Coaxial Transmission Line Accessories

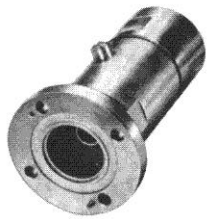
Fittings: Flanged items are EIA standard and include inner connector, "O" ring, silicon grease and hardware kit.

EIA FLANGE



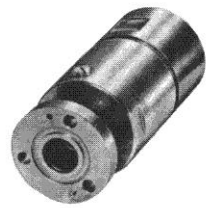
Use with copper Heliax cable.

EIA FLANGE



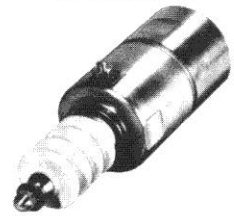
Includes gas barrier.

REDUCER CONNECTOR



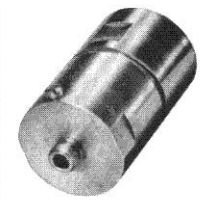
Reduce cable size to EIA flange sizes.

END TERMINAL



For strap connection to center conductor.

TYPE N JACK



Female, mates with (—).

SPLICE

Use with copper Heliax cable.

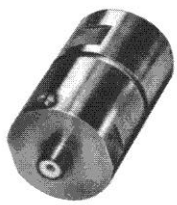
FOAM DIELECTRIC

½"	44AR	———	———	½"	44AT	(UG23)	44AN	44AZ
⅞"	45AR	———	———	⅞"	45AT	(UG21)	45AN	45AZ

AIR DIELECTRIC

⅞"	75AR	75AG	———	⅞"	75AT	(UG21)	75AN	75AZ
1⅝"	87R	87G	1⅝"-⅞" 87S	1⅝"	87T	(UG21)	87N	87Z
3"	78ARM	78AGM	3⅝"-1⅝" 78AS	3"	(79ARM + 2062A)	———		78AZ
5"	79R	79G	6⅛"-3⅛" (79R+1872)	5"	(79R + 2073)	———		79Z
8"	80R	80G	6⅛"-3⅛" (80R+1872)	8"	(80R + 2073)	———		80Z

TYPE UHF JACK

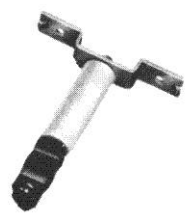


Female.

NON-INSULATED HANGER

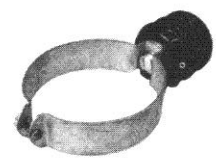
Kit of 10 hangers. Spacing 3' for 1⅝" cables, 5' for 3" and 5" cables.

INSULATED HANGERS



Use on insulated tower spacing 3 feet apart.

INSULATED HANGERS



Use on insulated tower spacing 3' apart for 1⅝", 5' for larger sizes.

FOAM DIELECTRIC

½"	44AU	WRAPLOCK	½"	11662-3	———
⅞"	45AU	12395-1	⅞"	11662-2	———

AIR DIELECTRIC

⅞"	75AU	WRAPLOCK	⅞"	11662-2	———
1⅝"	87U	33598-1	1⅝"	———	33948-3
3"	———	33598-3	3"	———	33948-2
5"	———	33598-5	5"	———	33948-1
8"	———	33598-9	8"	———	———

HANGER ADAPTERS

INSULATED

Adapters used to mount insulated hangers to tower without drilling.

Angle Members	13555A
Round Members up to 3"	13550

NON-INSULATED

Kit consists of 10 adapters to mount hangers to tower.

ANGLE MEMBER TOWERS

1⅝" hangers	31768
3" and 5" hangers	33981-1

ROUND MEMBER TOWERS

Use with 1⅝" hangers:

Member dia. 1"-2"	31670-1
2"-3"	31670-2
3"-4"	31670-3
4"-5"	31670-4
5"-6"	31670-5

Use with 3", 5" and 8" hangers:

Member dia. 1"-3"	33984

WRAPLOCK

One hundred feet of stainless steel wraplock, complete with fasteners. Use at three-foot intervals for all cables 1⅝" and smaller.

Type 12395-1

GROUNDING KITS

Cable Size	Unjacketed	Jacketed
½"	26892-1	26892-2
⅞"	24810-1	24810-2
1⅝"	———	24811-2
3"	———	28708-2
5"	———	30417-2
8"	———	30417-2

HOISTING

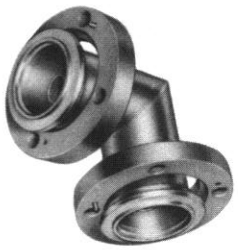
Unjacketed	Jacketed
———	———
29958	19256B
———	24312A
———	26985A
———	31031-1
———	31031-2

HARRIS INTERTYPE CORPORATION **GATES**

Coaxial Transmission Line Accessories

Fittings: All flanged items are EIA standard and include inner connector,* "O" ring, silicon grease and hardware kit. All hangers require round member or angle adapters for attachment to tower.

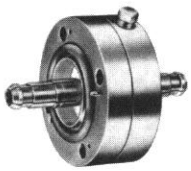
90° MITER ELBOW



Brass construction with swivel flanges on both ends. Includes one inner connector.

7/8"	1060
1 5/8"	1061
3 1/8"	1062

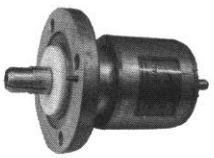
GAS BARRIER



With fixed male connector on both ends. May be used as gas inlet fitting.

7/8"	1260A
1 5/8"	1261B
3 1/8"	1262A

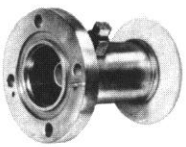
REDUCER



Reduces line size.

7/8"-1 5/8"	1860A
1 5/8"-3 1/8"	1861
3 1/8"-6 1/8"	1872

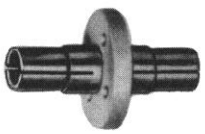
END TERMINAL



For strap connection. Gas tight with vent plug. Includes inner connector.

7/8"	—
1 5/8"	2061
3 1/8"	2062

INNER CONNECTOR



With Teflon anchor bead.

7/8"	34389A
1 5/8"	34660
3 1/8"	15093A

ROUND MEMBER CLAMP

Attaches hangers to tower members up to 3" diameter.

7/8"	13550
1 5/8"	13550
3 1/8"	13550

RIGID HANGER

Mounts to 9/16" diameter hole with 1 1/2" bolt or angle adapter. Use at 300' intervals.

7/8"	14328
1 5/8"	13924
3 1/8"	13927

SLIDING HANGER

7/8" size use at 6' intervals. 1 5/8" use at 10 foot intervals.

7/8"	14327
1 5/8"	14378
3 1/8"	—

SPRING HANGERS

7/8" size use at 100' intervals. 1 5/8" size use at 50' intervals. 3 1/8" size use at 10' intervals.

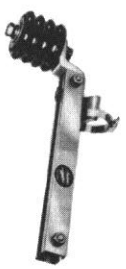
7/8"	13889
1 5/8"	14379
3 1/8"	13925

INSULATED SLIDING HANGERS

Same as Type 14378 except includes insulator, 14063.

7/8"	—
1 5/8"	14442
3 1/8"	—

INSULATED SPRING HANGER



Same as spring hangers except includes insulator, 14063.

7/8"	—
1 5/8"	14441
3 1/8"	13926

ANGLE ADAPTER

Galvanized clamp for attaching hangers to tower angle members up to 7/8" thick.

7/8"	13555A
1 5/8"	13555A
3 1/8"	13555A

INNER CONNECTOR ADAPTER, 50-51 ohms—7/8" size, Type 4850A; 1 5/8", Type 4851; 3 1/8", Type 4852.

HARDWARE KIT for use on one pair of flanges—7/8" size, Type 11381-5; 1 5/8" size, Type 11381-2, 3 1/8" size, Type 11381-3.

"O RING GASKET, 7/8" size, Type 10683-1; 1 5/8" size, Type 10683-2; 3 1/8" size, Type 10683-3.

HARRIS INTERTYPE CORPORATION **GATES**

PRESSURIZATION EQUIPMENT

Automatic Dehydrators—Types 1920A and 1930 are heatless, fully automatic dehydrators capable of delivering continuous supplies of dry air. No down time is necessary to activate the dry agent. Both units will operate over an ambient range of 0° to 120°F with an input humidity of 95%.

TYPE:	1920A	1930
OUTPUT:	1.2 CFM @ 4 psig	.2 CFM
POWER:	120V, 60 Hz	120V, 60 Hz
INTERNAL OPERATING PRESSURE:	60 psig	30 psig
OUTLET DEWPOINT:	Below −37°F	Below −20°F
DIMENSIONS, INCHES:	15⅜ x 24 x 14¼	13¼ x 7¼ x 14⅞

DRY AIR HAND PUMP

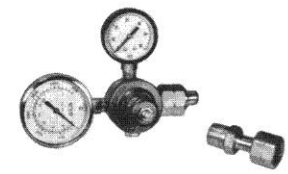
Type 878A, dry air hand pump, pressurizes up to 1000 feet of ⅞" cable or 250 feet of 1⅝" line. One pound of silica gel and seven feet of hose is supplied.

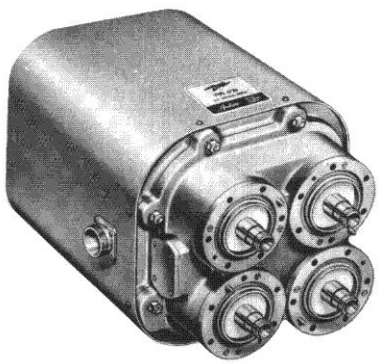
Please order by type number_____878A

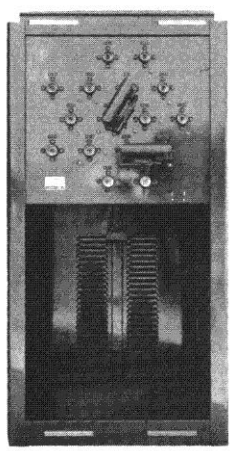
NITROGEN TANK FITTINGS

Type 858C, nitrogen tank fittings — includes pressure regulator, high and low pressure gauges and 10 feet of ⅜" O.D. poly tubing and fittings to fit ⅛" MPT.

Please order by type number_____858C







COAXIAL SWITCHING EQUIPMENT

These 1⅝", 3⅛" and 6⅛" coaxial transfer switches are used wherever RF power must be rerouted quickly. Should power fail, these motor driven switches may be cycled manually. Power source is 120V, 50/60 Hz.

LINE SIZE, INCHES:	1⅝	3⅛	6⅛
TYPE NUMBER:	6730D	6740A	6750
FREQUENCY BAND MHz:	0-1000	0-1000	0-750
CURRENT REQUIREMENT, AMPS:	0.3	2.0	3.0
POWER PEAK* kW:	100	400	1500
VSWR, MAXIMUM:	1.03-500 MHz	1.02-500 MHz	1.05 to 750 MHz
SWITCHING TIME, SECONDS:	1	2	2
DIMENSION, INCHES:	8 x 8 x 10	14 x 14 x 14	24 x 24 x 24
WEIGHT, POUNDS:	13	65	250

* At unity VSWR and 40°C (104°F) ambient temperature.

PATCH PANELS

A standard series of manual patch panels for 1⅝-inch and 3⅛-inch lines are offered in combinations up to 10 by 11. Typical specifications of the commonly used 1 by 2 and 2 by 2 are shown below.

TYPE NO.:	34600	34601	34602A	34603A
DESCRIPTION:	1 x 2	2 x 2	1 x 2	2 x 2
LINE SIZE:	1⅝"	1⅝"	3⅛"	3⅛"
VSWR:	—1.1 up to 1800 MHz		—1.05 up to 1000 MHz	
SIZE, INCHES:	14" high x 19" wide x 14" deep			

HARRIS INTERTYPE CORPORATION GATES

Transmission Line Pressurization Systems

All air dielectric cable and rigid line should be pressurized with dry air or dry gas. Changes in temperature can cause moisture condensation from outside air and seriously impair the electrical efficiency of the line. For this reason, cable or rigid line should be under pressure at all times.

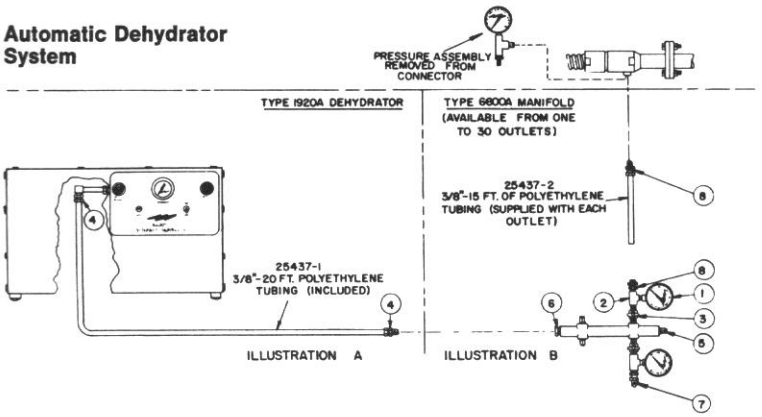
Pressurization can be accomplished by manual or automatic means, depending upon the amount of line in use at the station and whether or not the site is attended. Automatic electric dehydrators are recommended for unattended sites or those where larger amounts of cable or rigid line are employed. A dry air hand pump is usually satisfactory for attended sites using a relatively small amount of cable. A cylinder of dry nitrogen gas can also be used. All installations of air dielectric cable, line or microwave waveguide should be purged prior to putting the system in service and at any time moist air enters the line. To purge the system, pressurize at the equipment end of the line (5-10 psig) with the Type 1920A automatic dehydrator, nitrogen gas cylinder, or Type 878 hand pump. Bleed the line using the gas port plug located at the antenna end of the line and allow the pressure to drop to zero.

Repeat this procedure three times to ensure that the moist air is replaced by dry air or dry gas.

When it is too difficult or inconvenient to bleed the air at the antenna end of the line, let the air escape at the transmitter or dehydrator end after pressurizing the line three times, allowing an hour each time for the air to mix.

Type 1920A dehydrator will automatically maintain from 3 to 8 psi while gas cylinder output pressure should be set between 2 and 10 psig.

Automatic Dehydrator System

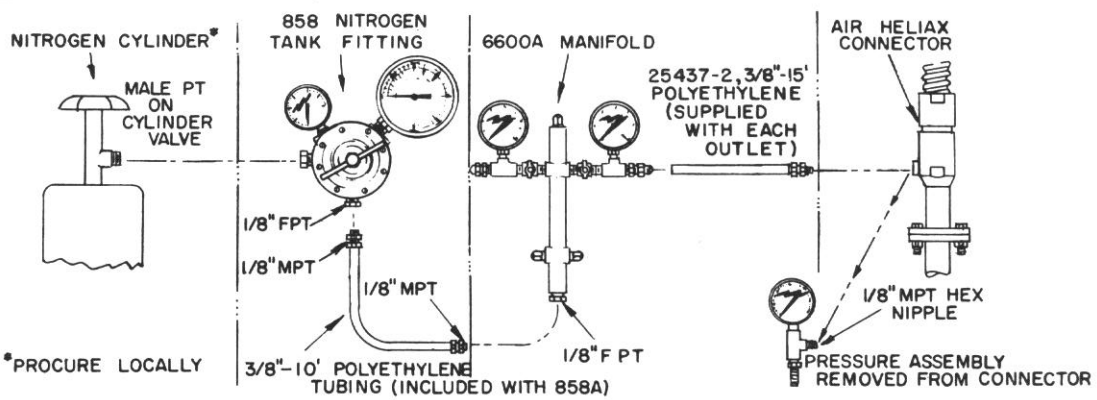


AUTOMATIC DEHYDRATOR SYSTEM

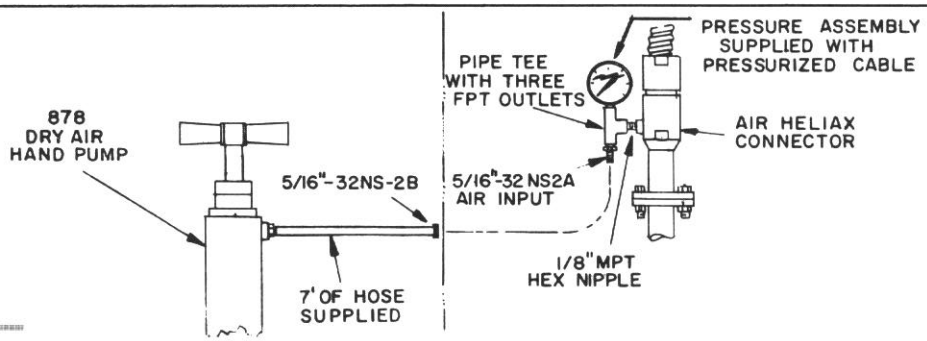
1) 3500 pressure gauge
2) 3028 tee (brass) 1/8 F.P.T. on all three
3) 4944 needle valve (40 P.S.I.) 1/8 male to 1/8 male
4) 25436-5 male fitting (brass) 3/8 tube to 1/8 M.P.T.
5) 9908-2 plug (brass) 1/4 M.P.T. Sq. Hd.
6) 4960 bushing (brass) 1/8 F.P.T. to 1/4 M.P.T.
7) 25436-1 cap (polyethylene) 3/8 O.D.
8) 25436-2 half union (brass) 3/8 tube to 1/8 M.P.T.

NOTE: For reference only. Parts listed are included with Types 1920A and 6600A.

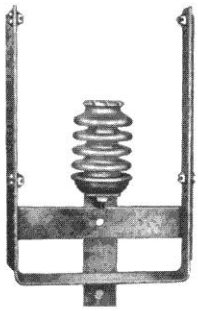
Compressed Gas System



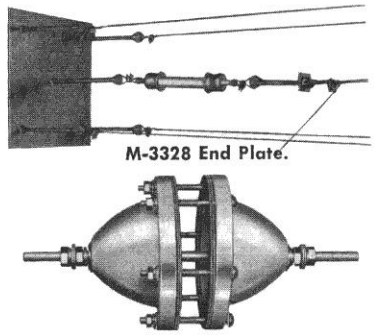
Manual System



Open Wire Transmission Line

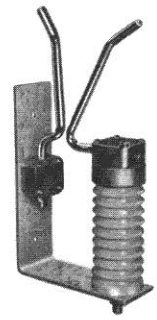


M-3327 Bracket.



M-3328 End Plate.

M-2870D Feed-thru Bowl.



M-3322 Horn Gap.

M-3864 Center Post.

TRANSMISSION LINE BRACKET

For 5 or 6 wire transmission line. Rating up to 150 kW modulated. Made of ¼" steel 3" wide with welded L section on each side to fully prevent twisting under ice or wind load. Supplied with 8¼" ribbed insulator, wire guides and all hardware. Galvanized throughout.

Line Bracket **994-3327**

LINE END PLATE

To terminate the open wire line at each end. Plate is ¼" thick, 20" square. Fully galvanized. Includes turnbuckles, 25½" strain insulator and all hardware. Rating up to 150 kW modulated.

End Plate **994-3328**

FEED-THRU BOWLS

A large feed-thru bowl with 50 kW modulated rating. Available in single and double units and with solid or hollow studs as listed below. Bowls are Alsimag. Hardware, heavy brass. Velutex seals are provided for weathertight installation.

Solid stud, 2 bowls, for walls to 10½" thick **994-2870**
Same as above but hollow stud **994-3254**
Solid stud, single bowl, for walls 1" thick **994-5280**
Same as above but hollow stud **994-5281**

HORN GAP

A very desirable item where higher power is employed. Connects to hot side of line and ground to drain off lightning and heavy static discharges. Usually one is employed for each 200 feet of line. Insulator for 150 kW. Arc gaps heavy chrome plate. Galvanized throughout.

Horn Gap **994-3322**

CENTER POST ASSEMBLY

Has variety of uses such as end or corner angling of transmission line, support insulator for two wire line or rhombic antennas, and a guide insulator such as end of building or coupling unit. Rating 150 kW. Galvanized throughout.

Center Post Insulator **994-3864**

HARD DRAWN WIRE

If desired, when ordering transmission line components, Gates will gladly supply No. 6, 8 or 10 hard drawn copper wire at current market prices. State length in feet desired, remembering to multiply the length of line by the number of wires in line, either 5 or 6.

SPECIAL OPEN WIRE LINES

Gates engineers have designed many special open wire lines for both short and long distances. Most celebrated was a 30-mile line supplied for use in the Arctic Circle. Upon receipt of a sketch or word description of the requirements, Gates engineers will gladly submit layout and quotation.

DESIGN AND IMPEDANCE CHART

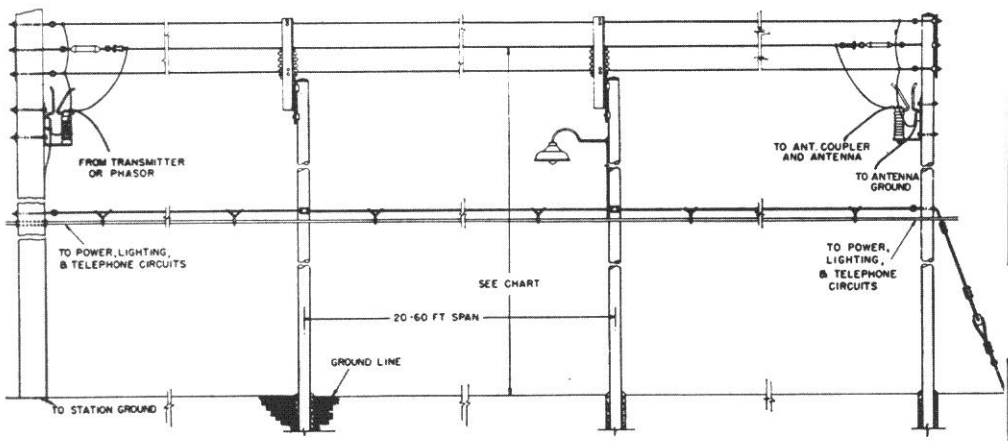


Chart above illustrates typical five or six wire open type transmission line. Table is provided to show impedances with various wire sizes at certain heights above ground. Transmission line brackets are M-3327, end plate M-3328. Horn gap is M-3322. The power, lighting and telephone circuits shown are optional, according to requirements of installation.

AVERAGE SURGE IMPEDANCE FOR 6 WIRE TRANSMISSION LINES

HEIGHT OF CENTER WIRE	WIRE SIZE		
	6	8	10
9′	232 Ω	246 Ω	250 Ω
10′	234 Ω	250 Ω	256 Ω
12′	240 Ω	252 Ω	260 Ω

AVERAGE SURGE IMPEDANCE FOR 5 WIRE TRANSMISSION LINES

HEIGHT OF CENTER WIRE	WIRE SIZE		
	6	8	10
9′	330 Ω	346 Ω	364 Ω
10′	333 Ω	350 Ω	365 Ω
12′	332 Ω	348 Ω	363 Ω

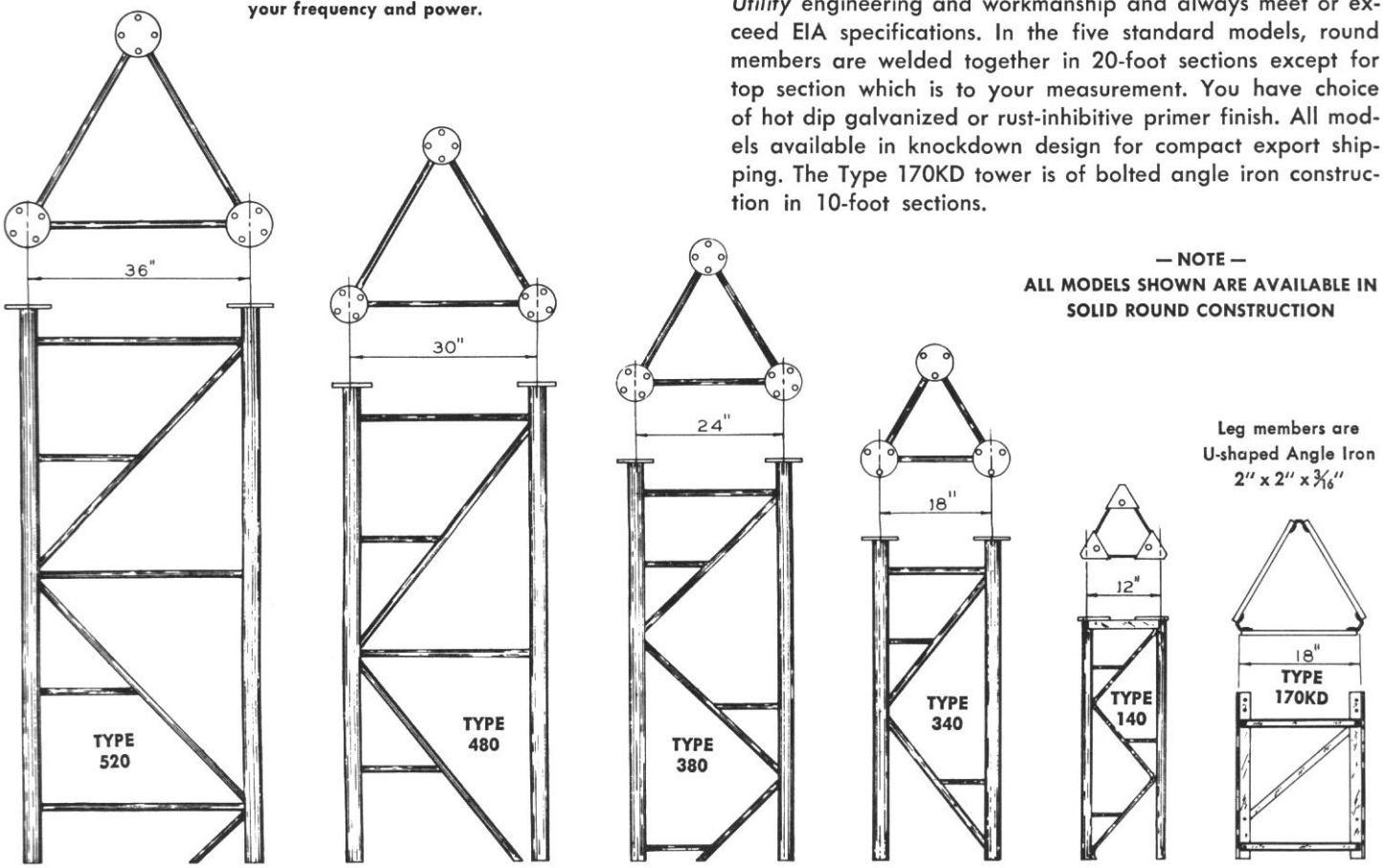
HARRIS INTERTYPE CORPORATION GATES

Antenna Towers

FOR AM, FM AND TV

AM, FM and TV towers are available in the six basic designs shown here, insulated or non-insulated. All have superior *Utility* engineering and workmanship and always meet or exceed EIA specifications. In the five standard models, round members are welded together in 20-foot sections except for top section which is to your measurement. You have choice of hot dip galvanized or rust-inhibitive primer finish. All models available in knockdown design for compact export shipping. The Type 170KD tower is of bolted angle iron construction in 10-foot sections.

Available in choice of design and exact height for your frequency and power.



— NOTE —
ALL MODELS SHOWN ARE AVAILABLE IN SOLID ROUND CONSTRUCTION

Leg members are U-shaped Angle Iron 2" x 2" x 3/16"

RIGID ANCHOR BEAMS: Anchors are individually designed to meet the requirements of each tower installation. *Utility* uses the I-beam with its proven structural rigidity. When installed by *Utility* tower crews, on normal soil, this beam is imbedded in concrete slab reinforced with steel rods and with earth fill on top.

SOLID BASE INSULATORS: Insulated vertical radiators are equipped with the latest *Utility* 3401 or *Utility* 2201 pivot base insulators for positive insulation between base and ground. *Utility* base insulators have much higher compression rating than hollow insulators of similar size. They are resilient and shatter-proof. Each insulator is proof tested for a load approximately eight times greater than ever carried in normal broadcast service.

GALVANIZED HARDWARE: All *Utility* tower hardware is hot dipped galvanized to prevent rust and corrosion.

EASY MAINTENANCE: Round members and welded construction provide smooth surfaces for easy painting and servicing. Steps are built into bracing to eliminate need for scaffolding and to make entire height of tower easy for maintenance men to reach.

SPECIFICATIONS

TOWER TYPE	MAXIMUM RECOMMENDED HEIGHT	TOWER WIDTH	WEIGHT PER FOOT*	TYPE OF BASE INSULATION
520	500 FT.	36 IN.	31 LBS.	LOCKE OR LAPP
480	480 FT.	30 IN.	28 LBS.	
380	400 FT.	24 IN.	19 LBS.	UTILITY 3401
340	350 FT.	18 IN.	17 LBS.	UTILITY 3401
140	200 FT.	12 IN.	12 LBS.	UTILITY 2201
170KD	320 FT.	18 IN.	17 LBS.	UTILITY 3401

***Tower steel only—Weight of guys, insulators, etc., not included.**

ORDERING INFORMATION

Specify: Type of tower; tower height; insulated or non-insulated; galvanized or non-galvanized. Self-supporting, tall TV towers, or towers over 520' will be quoted upon request. Installation services for towers, FM, TV antennas, transmission line, AC lighting and ground systems also available on request.

Tower Lights And Accessories

BEACON FLASHERS

NON-FUS.	FUSED	DESCRIPTION	NO. OF SWITCHES	MAX. RATING WATTS/SWITCH	HOUSING TYPE	TAPS or K.O.	WEIGHT SHIP	(LBS.) NET
BF 60A-1 BF 60A-2 BF 60A-3	BF 60F-1 BF 60F-2 BF 60F-3	Single Pole, Single Throw 117 Volt, 60 Hz	ONE	2800	OUTDOOR INDOOR PANEL	¾"	12 11 4½	11 10 3
BF 61A-1 BF 61A-2 BF 61A-3	BF 61F-1 BF 61F 2 BF 61F-3	Single Pole, Double Throw (for Load Balance Resistor) 117 Volt, 60 Hz	ONE	1500	OUTDOOR INDOOR PANEL	¾"	12 11 4½	11 10 3
BF 62A-1 BF 62A-2 BF 62A-3	BF 62F-1 BF-62F 2 BF 62F-3	Single Pole, Single Throw 240 Volt, 60 Hz	ONE	2800	OUTDOOR INDOOR PANEL	¾"	12 11 4½	11 10 3
BF 63A-1 BF 63A-2 BF 63A-3	BF 63F-1 BF 63F-2 BF 63F-3	Double Pole, Single Throw 117 Volt, 60 Hz, or 120/240 Volt, 60 Hz	TWO	2800	OUTDOOR INDOOR PANEL	1"	13 11 5	12 10 3½
BF 64A-1 BF 64A-2 BF 64A-3	BF 64F-1 BF 64F-2 BF 64F-3	Two Circuit 117 Volt, 60 Hz, or 120/240 Volt, 60 Hz	TWO	2800	OUTDOOR INDOOR PANEL	1"	13 11 5	12 10 3½
BF 65A-1 BF 65A-2 BF 65A-3	BF 65F-1 BF 65F-2 BF 65F-3	Single Pole, Single Throw 240 Volt, 50 Hz	ONE	2800	OUTDOOR INDOOR PANEL	¾"	13 11 5	12 10 3½
BF 66A-1 BF 66A-2 BF 66A-3	BF 66F-1 BF 66F-2 BF 66F-3	Single Pole, Single Throw 117 Volt, 60 Hz with BY-PASS	ONE	1500	OUTDOOR INDOOR PANEL	¾"	28 23 9	23 18 6
BF 67A-1 BF 67A-2 BF 67A-3	BF 67F-1 BF 67F-2 BF 67F-3	Single Pole, Double Throw 117 Volt, 60 Hz with BY-PASS (for Load Balance Resistor)	ONE	1500	OUTDOOR INDOOR PANEL	¾"	28 23 9	23 18 6
BF 68A-1 BF 68A-2 BF 68A-3	BF 68F-1 BF 68F-2 BF 68F-3	Two Circuit, Double Pole 120/240 Volt, 60 Hz	FOUR	2800	OUTDOOR INDOOR PANEL	1¼"	36 25 10	29 21 7
BF 69A-1 BF 69A-2 BF 69A-3	BF 69F-1 BF 69F-2 BF 69F-3	Three Circuit 120/240 Volt, 60 Hz or 120/208 Volt, 3 PH.	THREE	2800	OUTDOOR INDOOR PANEL	1¼"	35 24 10	28 20 7
BF 70A-1 BF 70A-2 BF-70A-3	BF 70F-1 BF 70F-2 BF 70F-3	Four Circuit 120/240 Volt, 60 Hz or 120/208 Volt, 3 PH.	FOUR	2800	OUTDOOR INDOOR PANEL	1¼"	36 25 10	29 21 7

ACCESSORIES

TOWER LIGHTS: Single obstruction light, bottom entrance conduit fitting furnished with lamp receptacle to accommodate either a 100 or 111 watt, 115 V medium screw base lamp, or lumen pre-focus series lamp.

Single obstruction light **710-0012**

Single obstruction light, same as above, but side entrance conduit fitting. Order **710-0013**

Double obstruction light, with two lamp receptacles, each accommodating either 100 or 111 watts, medium screw base. Bottom entrance fitting type for one-inch conduit.

Double obstruction light **710-0014**

Clear traffic signal lamp. 107 watt, 115 V.

Signal lamp 107A21/TS **396-0141**

Code Beacon 300 MM, standard fully approved FCC and CAA model supplied with two red filters.

For 1" conduit, 3-wire Grn Ground **710-0063**

For 1" conduit, 4-wire Grn Ground **710-0075**

Beacon lamp, 620 watt 620PS40 ..... **396-0129**

PHOTO-CELL UNIT: Single unit, indoor housing, lighting control unit with outdoor remote weather photo tube, includes complete code flasher for flashing of three towers and photo-electric cell control for automatic turning on and off. 115/230 V, 50/60 Hz.

Photo-cell unit **LC-2077**

Single unit, indoor housing, same as above, except for 4 towers **LC-2076**

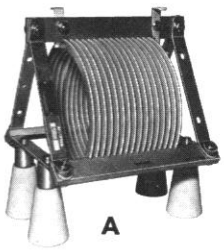
PHOTO-CELL AND BEACON FLASHER: A combination unit in weatherproof housing. Photo-cell may be rotated to north regardless of mounting position on tower. Turns on at 35 foot candles and off at 58 foot candles.

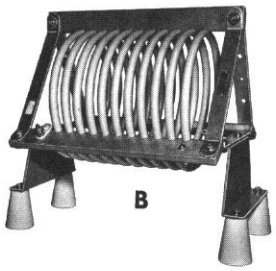
For 1 pole 30 amperes, flashes one circuit **710-0058**

FISHER-PIERCE PHOTO-CELL UNIT: A unit completely weatherproof, fully approved for turning on and off tower lights; has time delay of 5-7 seconds to prevent operation by chance.

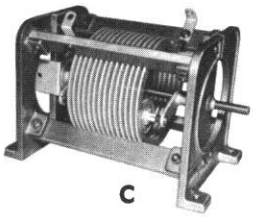
For 105/130 V, 3000 watt rating, SPST, double break **670-0007**

Heavy Duty Inductors and Capacitors


A


B

Gates manufactured inductors put the emphasis on solid mechanical construction. Variable coils have double gripping contact wheels. Other sizes and ratings available on special order.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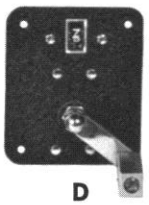
D

EXPLANATION OF TYPE NUMBER

87	F	A		46	3	4
Inductance in microhenries.	F—Fixed V—Variable	A—¼" B—⅜" C—½"	No letter here indicates ribbon. "T" indicates tubing.	Number of turns.	Pitch of winding in 1/16" for ribbon, ⅛" for tubing.	Inside diameter in inches.

SPECIFICATIONS AND ORDERING INFORMATION

ORDER NO.	TYPE NO.	FIG.	OVER-ALL LENGTH IN INCHES
931-6138-010	87FA4634	A	12
931-6138-039	6FC0854	A	6¼
931-6138-040	10FC0855	A	6¼
931-6138-041	13FC0856	A	6¼
931-6138-025	17FC1654	A	8¾
931-6138-026	24FC1655	A	8¾
931-6138-027	32FC1656	A	8¾
931-6138-036	42FC2266	A	12½
931-6138-030	67FC2856	A	13
931-6337-007	10FBT1066	B	12½
931-6337-002	20FBT1656	B	15
931-6337-003	32FBT1658	B	15
931-6337-004	45FBT2158	B	18½
931-6372-002	65FBT2559	B	24½
931-6337-001	17FCT1178	B	14
931-6372-001	35FCT1769	B	24½
931-6583-008	6VC0854	C	8
931-6583-001	15VC1444	C	9
931-6583-002	26VC2144	C	10¾
931-6583-003	42VC2145	C	10¾
931-6583-004	62VC2845	C	12½

Coil clip for FA coils---**402-0029**
Coil clip for FC coils---**402-0031**
Coil clip for FBT coils---**402-0033**
Coil clip for FCT coils---**402-0034**

Counter dial for variable coils reads 1/10 turns.
Size: 3" wide, 3½" high. Figure D.
With removable crank handle---**994-6233-001**
With non-removable crank handle---**926-5509-003**

MICA CAPACITORS FOR TRANSMITTERS AND PHASORS

Designed for continuous service with each sheet of mica carefully gauged for thickness and inspected for absence of impurities. Tolerance plus or minus 5%. Cast end bells and ceramic insulated. Sizes over-all: Model G1: 3¾" x 2½". Model G2: 4¼" x 3". Model G3: 6½" x 4". Model G4: 6½" x 5¾". Usually all sizes carried in stock. Please order by type number and capacity. Example: Model G2, capacity .0003 mfd. Other sizes and ratings available on special order.

CAPACITY	MODEL G1		MODEL G2		MODEL G3		MODEL G4	
mfd.	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Volts
.0002	3	6000	4.3	10,000	5.6	20,000	—	
.00025	—		5.1	10,000	—		8.2	30,000
.0003	—		5.6	10,000	6.8	20,000	9.1	30,000
.0004	4.7	6000	6.2	10,000	8.2	20,000	—	
.0005	5.1	6000	6.8	10,000	9	20,000	12	30,000
.0008	—		—		12	20,000	15	30,000
.001	7.5	6000	10	10,000	13	20,000	16	30,000
.0015	9.1	6000	12	10,000	16	15,000	20	25,000
.002	11	6000	13	10,000	20	15,000	22	20,000
.003	13	6000	16	8,000	24	12,000	27	20,000
.004	15	6000	18	8,000	27	12,000	30	20,000
.005	16	4000	20	6,000	30	10,000	33	15,000
.006	18	4000	22	5,000	33	10,000	36	15,000
.008	—		—		36	10,000	39	12,000
.01	20	4000	24	5,000	39	8,000	43	10,000
.02	—		—		47	5,000	—	