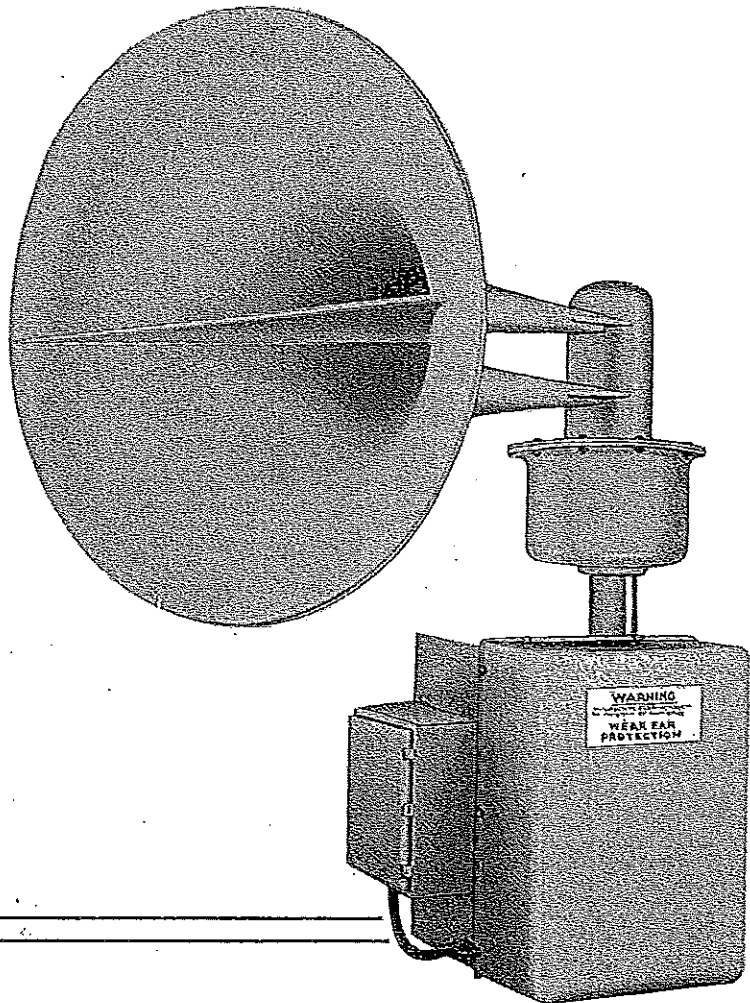


HURRICANE MK II

ROTATING DIRECTIONAL SIREN

**INSTALLATION
OPERATION
MAINTENANCE
and PARTS
MANUAL**



ACA

ALERTING COMMUNICATORS OF AMERICA

10255 North Enterprise Drive 66 West Mequon, Wisconsin 53092

Telephone — (414) 242-2800

TABLE OF CONTENTS

	<u>Page</u>
WARRANTY AND SERVICE.....	2
GENERAL INFORMATION.....	3
SPECIFICATIONS	3
INSTALLATION	4
General	4
Site Selection and Types of Mounting.....	4
Electrical Power Requirements	4
Provision for Servicing.....	4
Assembling Head and Horn Assembly to Compressor.....	4
Roof Mounting	4
SIREN MOUNTING DETAILS	5
INSTALLATION	6
Electrical	6
Rotation Check	6
Final Wiring and Testing	6
Explanation of Control Operation.....	6
ELECTRICAL ACTUATING CONTROLS, Land Line - Radio	7
PRE-OPERATION CHECKS	8
MAINTENANCE PROCEDURES	8
TROUBLE SHOOTING	8
PARTS LISTS AND DETAIL PHOTOS	9-11

WARRANTY AND SERVICE

ALERTING COMMUNICATORS OF AMERICA warrants that this siren equipment has been manufactured under rigid quality control, has been tested before shipment, and meets all required specifications as set up by O.C.D.

The MECHANICAL components of this equipment, if properly installed and maintained, are guaranteed for a period of 3 YEARS from date of purchase against defective workmanship or material provided such equipment is serviced and operated in accordance with any instructions and manuals supplied by ACA.

The ELECTRICAL components of this equipment, if properly installed and maintained, are guaranteed against defective workmanship or material for a period of 1 YEAR from date of purchase provided such equipment is serviced and operated in accordance with any instructions and manuals supplied by ACA.

Every component of the complete system has been engineered for dependability and minimum maintenance. Should any operating problems develop, use the Trouble-Shooting Check List as a guide in eliminating obvious troubles. Major overhaul or replacement of components should not be undertaken without first contacting the manufacturer.

Equipment developing defects within the warranty period will be repaired or replaced at the option of ACA without cost to the purchaser, provided that such equipment is returned prepaid to the factory at Mequon, Wisconsin.

ACA is not responsible for cost of repairs or service made or attempted by others, nor for cost of labor for dismantling, installing, testing, or other miscellaneous costs relating to the use of its equipment unless specifically authorized in writing before such work is undertaken.

The liability of ALERTING COMMUNICATORS OF AMERICA arising from sale or use of its equipment shall not in any case exceed the cost of correcting defects in the equipment, and upon the expiration of the one and three year periods specified above, all such liability shall terminate.

Specifications subject to change without notice.

Local codes may supersede A.C.A. recommendations.

GENERAL INFORMATION

The A.C.A. Hurricane 130 is the most powerful siren in production anywhere. The output of 130 decibels at 100 feet is radiated through the computer designed exponential horn to an effective 70 DB range of 6500 feet, thus giving a total circular coverage of 4.5 square miles per siren. (Federal CD Guide, March 1964.)

Model CD1-103 Size C is a two signal siren

Model CD1-107 Size 3C3 produces two or three signals

Four and five signal models are also available

The three standardized signals are as follows:

- 1 — ALERT, a double tone sustained signal for 3-5 minutes
- 2 — ATTACK - TAKE COVER, a double tone undulating up and down tone scale signal for 3-5 minutes
- 3 — FIRE, a rapidly alternating sharp high and low tone signal from 1-5 minutes (normally 90 seconds)

All signals may be precisely controlled by either the A.C.A. Command Console or A.C.A. Radio-Decoder-timer.

The electrical components and controls associated directly with the siren are contained inside a weather-proof enclosure. Only two types of electrical connections are required — one to the signal source, another to the power supply.

A variety of signal sources may be employed to initiate operation of a siren or siren system including —

- 1 — Direct mechanical switch
- 2 — Telephone relay system
- 3 — Radio relay system
- 4 — Program timer
- 5 — Any combination of the above

SPECIFICATIONS

Weight:

Head and horn assembly.....approx. 250 lbs.
Compressor assembly.....approx. 650 lbs.
Total approx. 900 lbs.

Dimensions:

Head and horn assembly.....82" long x
54" diameter
Compressor assembly.....38" wide, 40" deep

ACOUSTICAL DATA

Output level.....130 DB at 100 feet

Output frequencies:

Standard dual tone.....465/582 hertz
Special dual tone.....465/698 hertz
Special dual tone.....582/698 hertz
Special single tone.....465 hertz
Special single tone.....582 hertz
Special single tone.....698 hertz

Output cutoff (resonant) frequency.....80 hertz

Horn configuration.....Dual throat exponentially curved

Sound dispersal beam.....3° above horizontal
24° below horizontal
30° wide horizontally

ROTATION

Drive.....Chain drive off direct drive gear box, coupled through a disc type torque limiter.

Speed.....2½ RPM in clockwise direction as viewed from the bottom.

AIR COMPRESSOR

Belt driven, twin impeller, positive displacement, air cooled, ball bearing, rotary blower producing 450 cfm at 10 psi.

MOTOR TYPES

Head and horn assembly:

Chopper..... 1 hp, single phase, low slip, ball bearing, semi-enclosed, induction motor.

Rotator.....¼ hp, single phase, ball bearing, semi-enclosed, induction motor.

Compressor

assembly..... 30 hp, 3 phase, ball bearing, semi-enclosed, induction motor.

All motors are protected from the elements.

ELECTRICAL REQUIREMENTS

Head and horn assembly:

Chopper..... 1 hp, 230 volts, single phase. Running — 5.5 amps, surge — 40 amps.

Rotator.....¼ hp, 230 volts, single phase. Full load — 2.8 amps, running — 1 amp, surge — 15 amps.

Compressor

assembly..... 30 hp, 230/460 volts, 3 phase. Full load, running — 78/39 amps, surge — 480/240 amps.

208 volt, 3 phase, 4 wire model available.

INSTALLATION

GENERAL

To insure satisfactory operation, careful consideration must be given to each of these factors:

- 1 — Site selection for optimum signal coverage
- 2 — Type of mounting
- 3 — Power supply requirements
- 4 — Provision for servicing

SITE SELECTION AND TYPES OF MOUNTING

Careful consideration must be given in selecting a site or sites for installation. Locations should be plotted on local area maps to provide the desired coverage. The manufacturer's Engineering Department can aid in such a determination upon request. Generally, the highest possible site in the selected area is the best location. This might be a tall building, tower or a hill.

In lieu of a suitable existing structure for mounting, a cedar pole approximately 50 feet long and sunk 8 feet deep is a generally recommended mount. Refer to the illustrated mounting layouts for details. Any tall building, trees, hills or other obstructions will tend to create a barrier which will produce a deadened area behind the obstruction.

A general mounting recommendation that may be helpful is the following: Determine the height of any building or obstruction within 150 feet of the siren. Keep the siren horn at least 5 feet higher than the obstruction for best sound coverage.

ELECTRICAL POWER REQUIREMENTS

Adequate electrical power must be available at each siren site (see SPECIFICATIONS for requirements). The available voltage, single or three phase, transformer bank ampere rating, line frequency (hertz) and other loads on the same line must be known and specified upon placing an order for a system.

NOTE

Line voltage fluctuations must not exceed $\pm 10\%$ for specified performance (NEMA standard).

PROVISION FOR SERVICING

A convenient means of access to the siren for testing or servicing should be considered at time of installation. A work platform may be constructed on the siren support pole. If rungs or steps are provided for climbing up to a platform, it is advisable to locate the lowest step 10 to 15 feet above the ground to minimize the opportunity for vandalism.

INSTALLATION

IMPORTANT - Use caution in lifting the horn assembly and compressor assembly. When hoisting the head and horn assembly, find the balance point and pad the fiberglass to prevent damage. The top mounting hole in the compressor assembly (fiberglass cover removed) may be used as a lifting point. Use only 4" galvanized water pipe with tapered thread to insure weathertight, pressure sealed connections. In joining to compressor outlet, flexible pressure tubing or hose may be used.

ASSEMBLING HEAD AND HORN ASSEMBLY TO COMPRESSOR

Lay the head and horn assembly on its side with the mounting flanges in line with the 4 inch compressor pipe. Remove the four bolts holding the bottom mounting flange to the head and horn assembly and screw the mounting flange to the end of the 4 inch compressor pipe, using pipe dope. Move the head and horn assembly into position to be attached to the mounting flange on the compressor pipe. Adjust the position of the compressor pipe, lower mounting flange, and as yet unattached head and horn assembly so that the electrical conduit to be used will be in approximate alignment with the conduit elbow of the electrical enclosure of the compressor assembly. Insert the four bolts into the mounting flanges and securely tighten the lockwasher and nut. Attach the rigid conduit and fasten to the compressor pipe using conduit clamps at approximately 10 feet intervals. Pull the wires through the conduit and connect these wires to the magnetic starter and terminal strip on the electrical panel. Be sure to use the correct wire size to allow for secondary voltage drop. Follow the color coding of the head and horn assembly and compressor assembly. If the head and horn assembly is to be guyed in place, the guy wires should now be attached to the lower mounting flange (see Figure 4).

When using a wood pole mounting, the entire assembly may be completed flat on the ground and then lifted into position.

NOTE—Be sure to allow adequate space under rotation assembly so that rotation enclosure may be lowered for inspection and maintenance (Refer to Fig. 1 and 12).

ROOF MOUNTING

For a roof mount, the composition, spacing of the rafters or beams and the load carrying capacity must be known and considered before installation is started. If the roof is considered to be capable of supporting the siren, the roof mount base assembly can rest level on the roof without an elaborate sub base. To preclude water damage to any electrical components, the compressor assembly should be placed on two 4 x 4 x 48 inch wood beams. The head and horn assembly must be secured with guy wires.

If the roof composition and/or span loading present a problem, a sub base should be constructed to distribute the weight.

SIREN MOUNTING DETAILS

POLE MOUNT The compressor assembly is designed for easy mounting to a wood pole. This is the recommended mounting method.

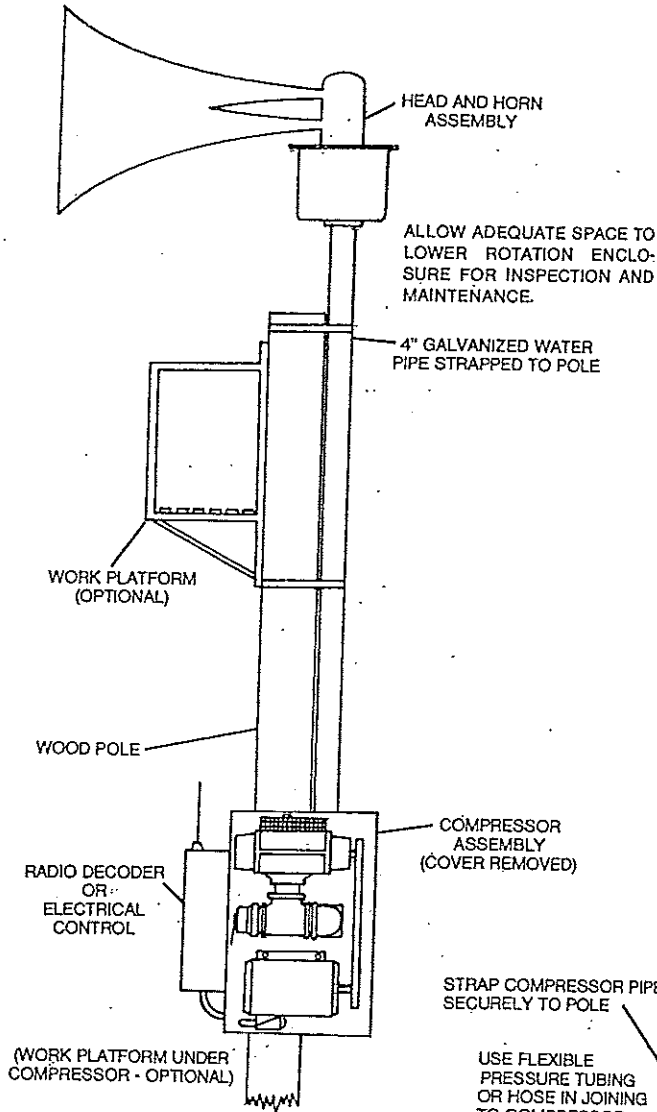


FIGURE 1. POLE MOUNT DETAILS

ROOF MOUNT Compressor and controls may be roof mounted on a support platform with the horn supported by guy wires. If desired, the compressor may be mounted below the roof for better weather protection - with only the compressor pipe and siren head exposed. The compressor pipe and siren head may also be supported by a chimney or the side of a building.

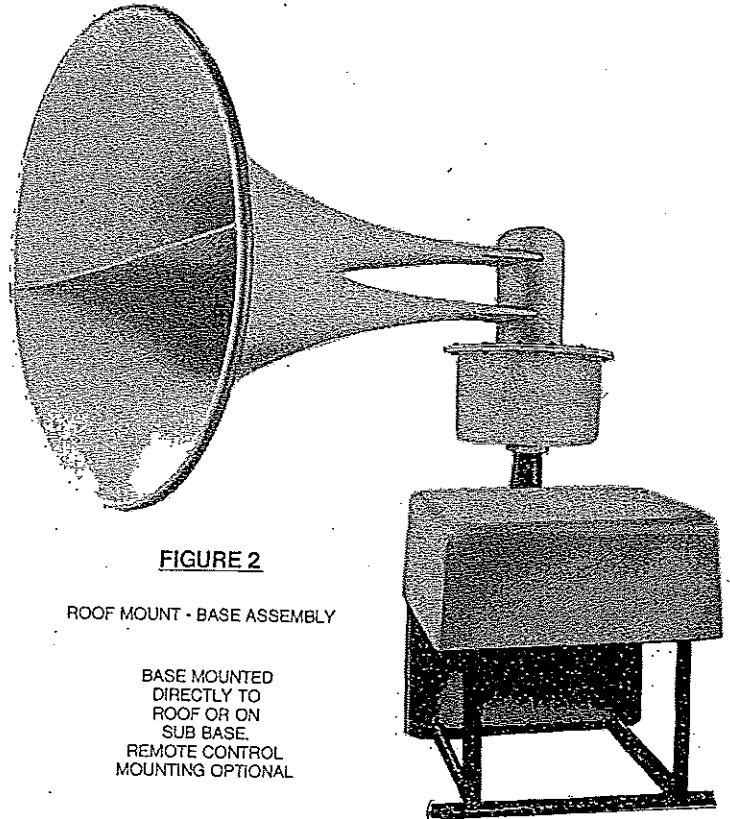


FIGURE 2

ROOF MOUNT - BASE ASSEMBLY

BASE MOUNTED DIRECTLY TO ROOF OR ON SUB BASE. REMOTE CONTROL MOUNTING OPTIONAL

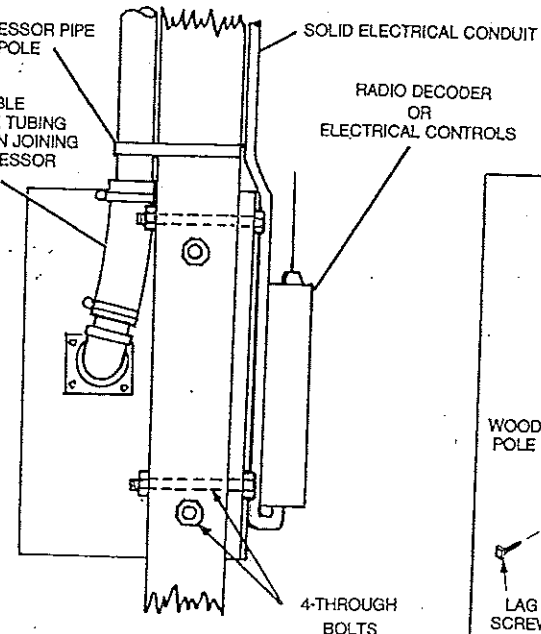


FIGURE 3. ATTACHING DETAILS

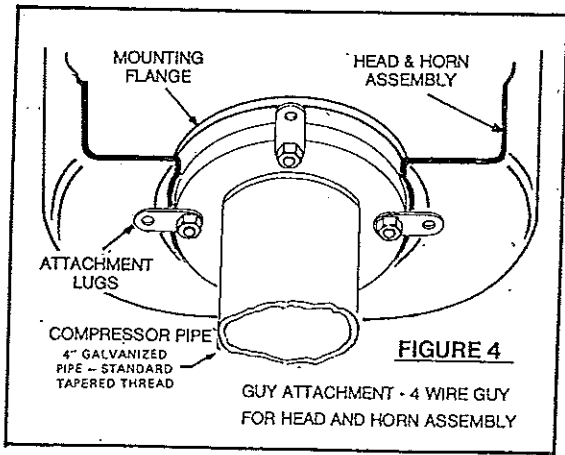


FIGURE 4

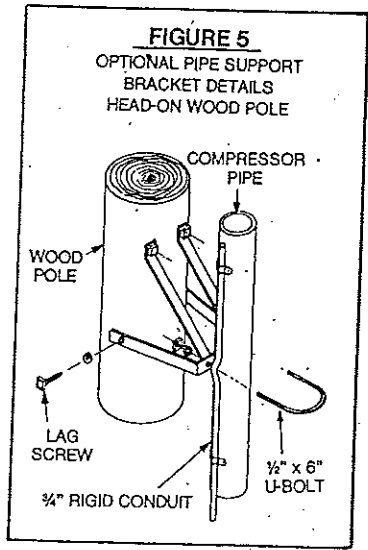


FIGURE 5
OPTIONAL PIPE SUPPORT BRACKET DETAILS HEAD-ON WOOD POLE

INSTALLATION

ELECTRICAL

For pole mounting the compressor magnetic starter and other controls are prewired. For roof mounting the control cabinet is furnished separate and requires making electrical connections.

WIRING

(Refer to wiring diagrams)

Proceed to run the wiring from an **ADEQUATELY FUSED DISCONNECT SWITCH CONNECTED TO THE POWER SOURCE**. Additional disconnect switches may be required by code. For electrical requirements, refer to **SPECIFICATIONS** on page 3.

ACTUATING CONTROLS

Actuation and control of the siren can be accomplished by either direct switch control, program timer at the installation, remote control, radio encoder transmitter to decoder receiver, or telephone lines from a remote location. See page 7 for further details.

ROTATION CHECK

Prior to final wiring connection of Radio Decoder, Timer or Telephone Relays and with power connected to the starter controls, a check for proper 30 hp motor/air compressor rotation must be made. Proceed as follows:

1. Remove fiberglass shield to view compressor and motor.
2. Push TEST button.
3. Check drive shaft rotation. If the rotation is backwards according to the arrow on the compressor, correct the main electrical connections by interchanging power line one and three..

CAUTION - Prolonged improper rotation will damage the equipment.

FINAL WIRING AND TESTING

Wire the Radio Decoder, Timer or Telephone Relays to the magnetic starter control cabinet. Proceed to test the entire operation of the system using the radio controls, timer or telephone system.

CAUTION

TO AVOID PERMANENT HEARING DAMAGE, WEAR EAR PROTECTION. Ear guards must be worn by personnel on the same level as the horn as a precaution at all times during testing or possible remote starting.

EXPLANATION OF CONTROL OPERATION

The incoming signal actuates the Instant and Time Delay Relay module. The module, in turn, actuates the magnetic starter and rotator motor through the delay-off section and the chopper motor through the instantaneous section. These components are all protected by circuit breakers and overload protectors that disconnect the load should overloading occur. A tripped circuit breaker will show a white band around the reset button. The red trigger is for manually tripping the circuit breaker to the OFF position. To reset, merely push the button in. The magnetic starter, which operates the compressor and protects it from overload, also contains a reset button.

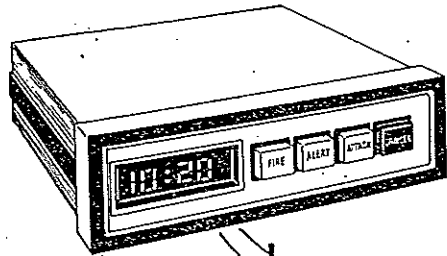
ELECTRICAL ACTUATING CONTROLS

A.C.A. LAND LINE SIREN CONTROL SYSTEM

LAND LINE CONTROL WITH COMMAND CONSOLE

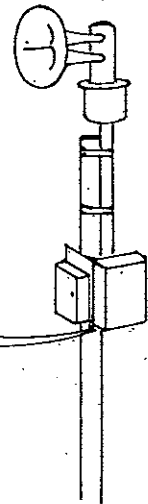
This system provides remote wired control through either direct line 115 or 230 volt systems or 90 volt leased telephone lines. It consists of a relay and magnetic starter housed in a weatherproof cabinet which mounts in close proximity to the siren. It is connected directly to the power source and the electric motors in the siren assembly. A pushbutton is provided for on-site manual testing.

Signal initiation and control for one or more sirens in a system is by means of remote wired control using the A.C.A. Command Console. This is a solid state desk top unit which provides simple push-button selection of ALERT, ATTACK AND FIRE SIGNALS pre-programmed into the device. The standardized signals are explained on page 3 of this manual.

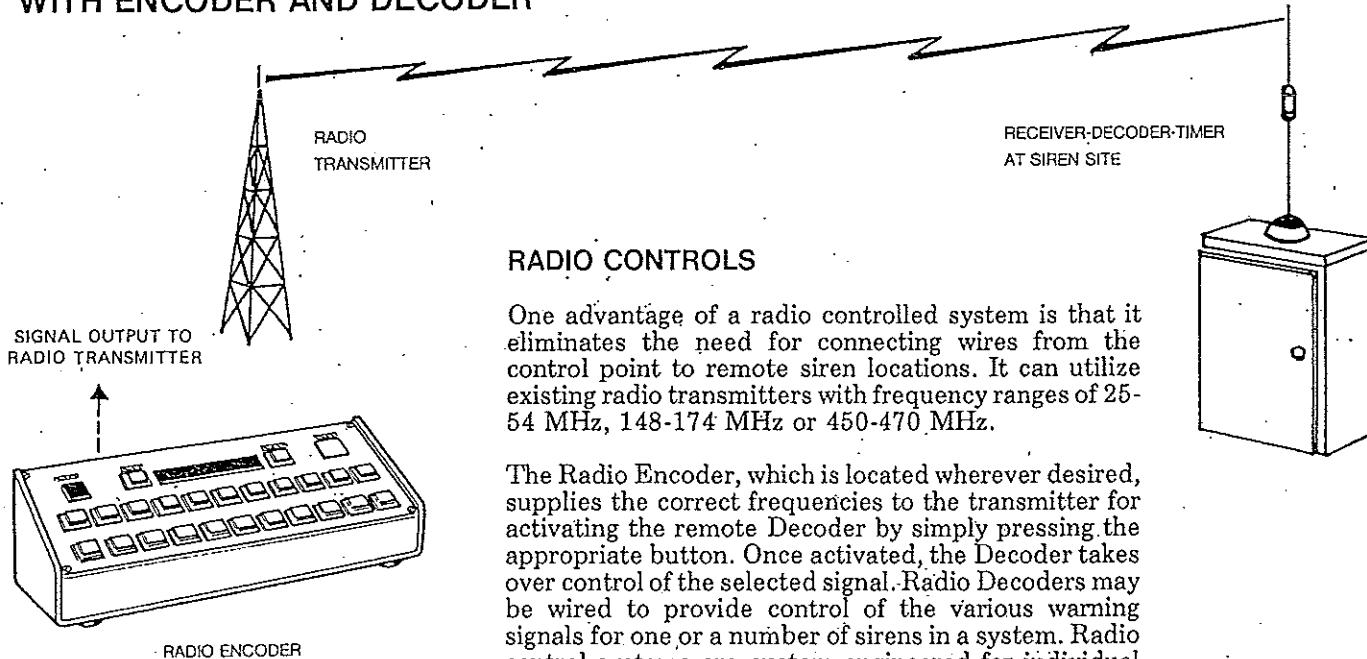


COMMAND CONSOLE

DIRECT WIRED
HOOK UP TO ONE
OR MORE SIRENS



RADIO CONTROL WITH ENCODER AND DECODER



RADIO CONTROLS

One advantage of a radio controlled system is that it eliminates the need for connecting wires from the control point to remote siren locations. It can utilize existing radio transmitters with frequency ranges of 25-54 MHz, 148-174 MHz or 450-470 MHz.

The Radio Encoder, which is located wherever desired, supplies the correct frequencies to the transmitter for activating the remote Decoder by simply pressing the appropriate button. Once activated, the Decoder takes over control of the selected signal. Radio Decoders may be wired to provide control of the various warning signals for one or a number of sirens in a system. Radio control systems are custom engineered for individual applications and instructions are supplied with each system.

PRE-OPERATION CHECKS — MAINTENANCE PROCEDURES — TROUBLE-SHOOTING

PRE-OPERATION CHECKS (Mechanical)

- 1 — Insert breather caps at each end of compressor.
- 2 — Check air compressor oil level.
- 3 — Remove compressor intake guard and install blower air screen.
- 4 — Check for lubricant on rotation drive chain.
- 5 — Finally check sprocket set screws and all bolted or assembled components.

PERIODIC MAINTENANCE

COMPRESSOR ASSEMBLY (See Figure 8)

Drain and refill oil in the air compressor assembly each year unless adverse conditions (dust, salt, etc.) warrant more frequent oil replacement. The unit has been factory filled with PENZOIL SAE 10W 30 oil but should be checked prior to operation. Fill only to "level" plug, allowing any excess to drain out before replacing plug. Drain plugs are provided to facilitate oil changing. Each end of compressor holds approximately 1½ pints. (NOTE: On roof mount assemblies the compressor is positioned differently, necessitating the use of alternate fill and drain locations.)

During maintenance check air screen, drive belts and sheave setscrews.

HEAD AND HORN ASSEMBLY (See Figure 12)

Lower the rotation enclosure, exposing the top rotating assembly. This assembly has two grease fittings which require lubrication at least once per year. The drive chain should be checked and lubricated at the same time. For lubrication use Molub Alloy No. 171 graphite grease manufactured by the Imperial Oil and Grease Co. (or equivalent).

CLEANING COLLECTOR RINGS

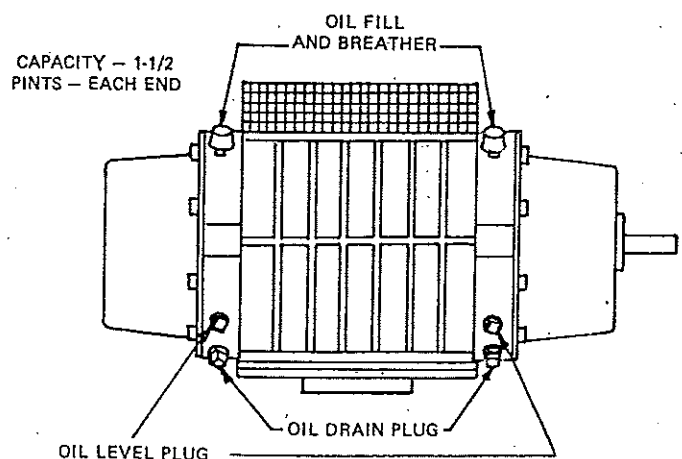
During regular maintenance procedures, inspect the collector ring assembly while the rotation enclosure is removed. (Make sure electrical power is off before servicing.)

If the siren operates improperly and the problem appears to be in the collector assembly, proceed as follows: Check the collector rings for discoloration, dirt or oil coating. Each ring may be polished with a fine grade crocus cloth. Clean the rings section by section while rotating the horn assembly by hand. Also check the brushes and brush triggers to make sure there is sufficient pressure on each brush to make electrical contact.

TROUBLE-SHOOTING CHECK LIST

The following check list may be useful in diagnosing operating difficulties before major overhaul procedures are undertaken.

- 1 — Verify that the various voltage requirements are being met and that all switches and circuit breakers are in ON position.
- 2 — Check out fuses, circuit breakers and magnetic starter overloads.
- 3 — Check collector rings in rotating assembly for proper condition and possible poor connections.
- 4 — Check for defective electric motors.
- 5 — On new installations check blower-compressor for proper rotation direction per arrow on blower (clock-wise when looking at blower shaft).
- 6 — Check weather seals on all enclosures.
- 7 — Check to see that drain holes in bottom of pipe fittings inside the compressor assembly are clear of foreign material.



AIR COMPRESSOR DETAILS (Figure 8)

SIREN DETAILS AND PARTS

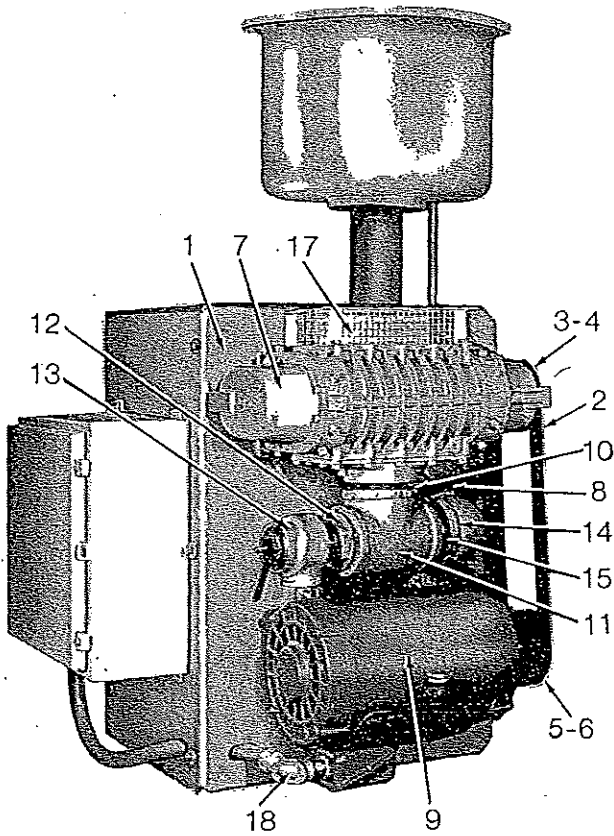


FIGURE 10

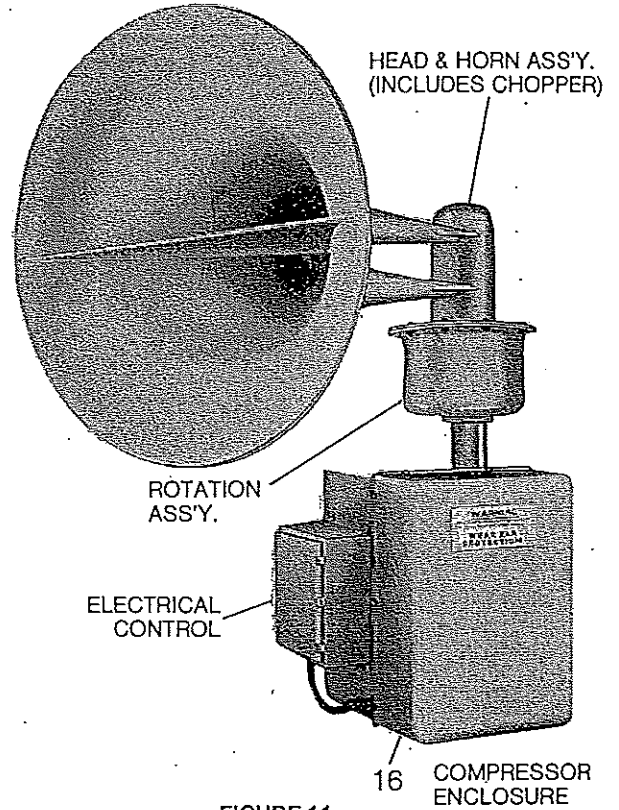


FIGURE 11

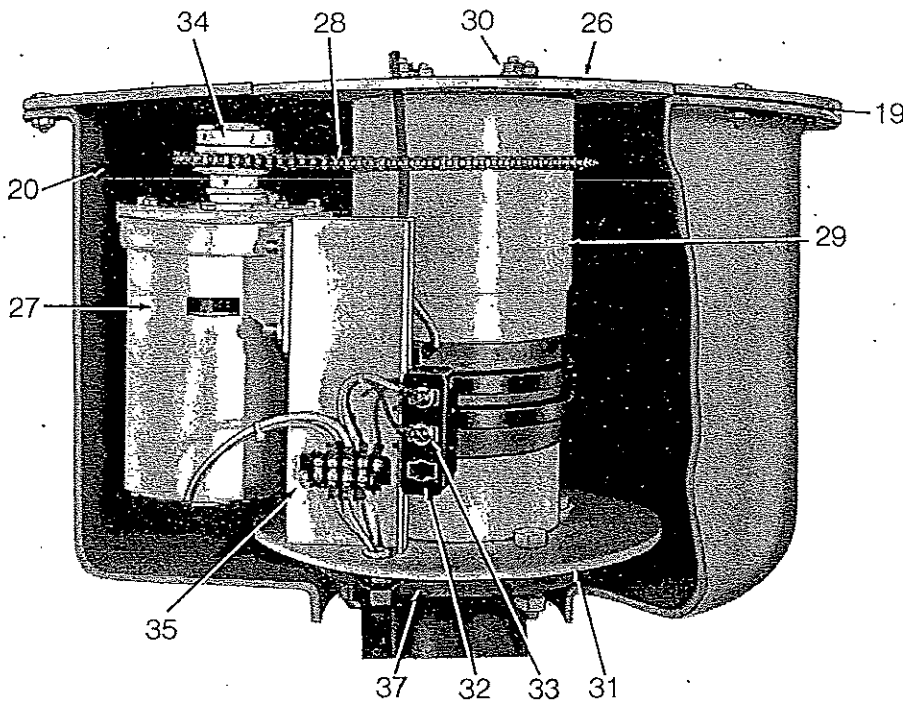


FIGURE 12 ROTATION ASS'Y.

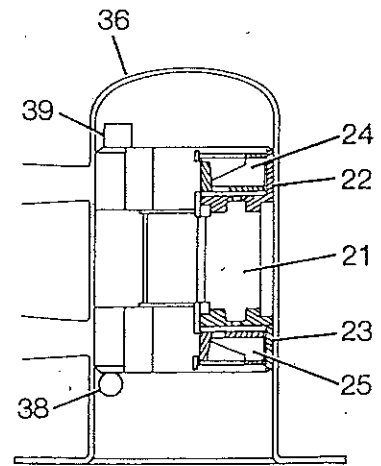


FIGURE 13 CHOPPER ENCLOSURE ASS'Y.

SIREN PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	130,000-001	BASE, Blower.....	1
2	130,000-002	BELT, Drive.....	1
3	130,000-003	BUSHING, Blower.....	1
4	130,000-004	SHEAVE, Blower.....	1
5	130,000-005	BUSHING, Motor.....	1
6	130,000-006	SHEAVE, Motor.....	1
7	130,000-007	BLOWER (Compressor).....	1
8	130,000-008	NIPPLE, Air Output.....	1
9	130,000-009	MOTOR, Blower Driver.....	1
10	130,000-010	NIPPLE, Spacer.....	1
11	130,000-011	PIPE "T".....	1
12	130,000-012	REDUCER, Pipe.....	1
13	130,000-013	VALVE, Pressure Relief.....	1
14	130,000-014	ELBOW, 90° Pipe.....	2
15	130,000-015	NIPPLE, Spacer.....	1
16	130,000-020	COVER, Blower.....	1
17	130,000-023	AIR SCREEN, Blower.....	1
18	130,000-025	FLEXIBLE CONDUIT ASS'Y.....	1
19	130,001-029	GASKET, Rotation Enclosure.....	1
20	130,001-031	ENCLOSURE, Rotation.....	1
21	130,000-032	MOTOR, Chopper.....	1
22	130,000-032A	STATOR, Upper.....	1
23	130,000-032B	STATOR, Lower.....	1
24	130,000-032C	ROTOR, Upper.....	1
25	130,000-032D	ROTOR, Lower.....	1
26	130,000-033	GASKET, Top Plate.....	1
27	130,000-034	MOTOR, Rotation.....	1
28	130,000-036	CHAIN, Drive.....	1
29	130,000-037	ROTATING ASS'Y., Top with Collector Rings.....	1
30	130,000-038	RING, Retainer.....	1
31	130,000-040	PLATE ASS'Y., Bottom.....	1
32	130,000-043	BRUSH HOLDER ASS'Y.....	1
33	130,000-044	BRUSH.....	2
34	130,000-049	TORQUE LIMITER ASS'Y.....	1
35	130,000-051	BLOCK, Terminal.....	1
36	130,000-053	ENCLOSURE, Chopper - with Horn.....	1
37	130,000-054	FLANGE, Pipe.....	1
38	130,000-055	CAPACITOR, Chopper Start.....	1
39	130,000-056	RELAY, Chopper Current Sensing.....	1