BATTLE LTG. PANEL FB127 - TROOP OFFICERS QUARTERS, "A" DECK, FR. 116, CENTER.

CIRCUIT NO.	
FB127-A1	Red lights - Passages P&S fr. 82-130.
A2	Bracket lights - troop officers rooms, Fr. 82-130, P&S.
A3	Drinking fountain - Fr. 118, center; & brakket fans in offices.
A4	White lights - Fan Room #2.
A5	White lights - troop officers toilet and showers.
A6	White lights - quartermasters & commanders & troops officers.
A7	Desk lights - troops office.
A8	Desk lights - quartermasters & commanders offices.
A9	Convenience receptacles - quartermaster's, Commander's, & troop Officers.
A10	White lights - I.C., Battery & elevator machinery rooms.
A11	Receptacles - I.C. and elevator machinery rooms.
A12	Supply to Elevator machinery control panel.
A13	
A14	

BATTLE LTG. PANEL FB128 - TROOP OFFICERS' & CREW'S QUARTERS "A" DECK, FR. 147, CENTER.

CIRCUIT NO.	
FB128-A1	Red lights - P&S passage, Fr. 130-173.
A2	Drinking fountain, "B" Deck, fr. 146, stbd.
A3	Drinking fountains - Port and starboard passages.
A4	White lights - fan room #3 and linen stores.
A5	White lights - N.C. Officers toilets and showers.
A6	White lights - Stewards toilets and showers.
A7	Bracket lights - N.C.Officers quarters, Fr. 130-189 P&S.
A8	

BATTLE LTG PANEL FB140 - HOSPITAL AREA, BOAT DECK, FR. 118, STBD.

CIRCUIT NO.	
BB140-A1	White lights and receptacles - stbd passage, fr. 110-127.
A2	White lights - Clerical and doctors offices, quiet room.
A3	White lights - Medical stores, bacteriological lab.,and dispensary.
A4	White lights - dental office, barber shop, & officers pantry.
A5	Desk and berth lights - offices and quiet room, Fr. 110-127.
A6	Red lights - Passages, P&S, fr. 106-127.
A7	Red lights - junior and senior officers messes port.
A8	Convenience receptacles - pantry,dispensary,medical stores, stbd offices.
A9	Convenience receptacles - bacteriological lab.,barber shop,dental office
A10	Drinking fountain - Fr. 127, port.
A11	Bracket fans - hospital area and pantry. Fr. 110-127.
A12	
A13	
A14	

BATTLE LTG. PANEL FB141 - OFFICERS QUARTERS, BOAT DECK, FR. 95, CENTERLINE.

CIRCUIT NO.	
F141-A1	Drinking Fountain - Fr. 88 - Centerline.
A2	Red lights - Passages, P&S, Fr. 86-102.
A3	White lights - Ship's office & engineers toilet & showers.
A4	Desk lights - ships office.
A5	Desk lights - staterooms, port, Fr. 82-110.
A6	Desk lights - Staterooms, stbd, fre 82-110.
A7	Bracket fans & convenience receptacle - Ships Office& Officers lounge.
A8	Bracket fans - staterooms, port, Fr. 82-110.
A9	Bracket fans - staterooms, stbd, fr. 82-110.
A10	
A11	
A12	

BATTLE LTG. PANEL FB142 - SHIP OFFICERS QUARTERS, BRIDGE DECK, FR. 130, PORT.

CIRCUIT NO.	
FB142-A1	White lights - Small Arms Amm. Magazine, Tunnel Flat, Hold #5.
A2	White & Red lights - Clippings room - hvy M.G. Con.Rm., Brdge deck aft.
A3	Battle lantern receptacles - Mach. Gun Stations, Br. Deck, Aft.
A4	Battle lantern receptacles - Mach. gun stations, Nav.Bridge deck Midships and aft.
A5	Receptacles - fan. rooms #1 and #2, Bridge deck.
A6	Bracket fans - officers staterooms, Bridge dk P&S, fr.111-130.
A7	Desk lights - Officers staterooms, bridge deck, P&S, fr. 111-130.
A8	Drinking fountain - Bridge deck, Fr. 128.
A9	H.268-9 Spare - H.270-71 White lights - Clippings rms,Bridge dek, Aft.
A10	
A11	
A12	
A13	
A14	

BATTLE LTG. PANEL FB143 - CAPTAIN'S QUARTERS, BRIDGE DECK, FR. 92, CENTERLINE.

CIRCUIT NO.	
FB143-A1	Red lights - passages, bridge deck, Fr. 86-102.
A2	Drinking fountain - Bridge deck, fr. 88 center.
A3	White lights - Plotting room & radio room, bridge deck.
A4	White lights - Electric Dist. Room and deck toilet, bridge deck.
A5	White lights - Chart, radar, fire control and clippings, rms,br.deck.
A6	Dark lights - Bridge & Nav Bridge decks, Fwd.
A7	Bracket fans - Bridge & Navg Bridge decks fwd.
A8	Convenience receptacles - Nav. Bridge deck forward.
A9	Convenience receptacles - Plotting,radio,elecDist.,rms,Bridge dk fwd.
A10	Battle lantern receptacles - Mach.Gun Stations, house top.
A11	Battle lantern receptacles - Battle control station, house top.
A12	White lights and receptacles - elect. control room, house top.
A13	
A14	

BATTLE LTG. PANEL FB144 - HOSPITAL AREA, PORT: BOAT DECK, FR. 138,PORT.

CIRCUIT NO.	
FB144-A1	White lights and receptacles - Port passage, fr. 132-146.
A2	White lights - Diet kitchen and elevator machinery room.
A3	Operating room lights - operating room.
A4	White lights - Isolation ward.
A5	White lights - Nurses workroom & ward toilets, port.
A6	White lights - sick bay ward, port.
A7	Berth light outlets - Port sick bay ward & Isolation ward.
A8	Exhaust fan #01-141 - Ward toilet.
A10	Convenience receptacles - Port rooms fr. 127-154.
A11	Supply to Elevator machinery control panel.
A12	Bracket fans - port rooms, fr. 127-154.

BATTLE LTG. PANEL FB146 - HOSPITAL AREA, STBD, BOAT DECK, FR. 138, STBD

CIRCUIT NO.	
FB146-A1	White lights and receptacles - stbd passage & stair well,Fr.127-146.
A2	White lights - examining room and prophylactic room.
A3	White lights - Dark room, insane ward, and linen locker.
A4	White lights - Stbd sick bay toilet and insane ward toilet.
A5	White lights - Sick bay ward, stbd.
A6	Berth light outlets - sick bay ward , stbd.
A7	White lights - operating room.
A8	Red lights - stbd sick bay ward and insane ward.
A9	Drinking fountain passage fr. [illegible] center.
A10	Convenience receptacles - stbd rooms, Fr. 127-154.
A11	Bracket fans - stbd rooms, fr. [illegible]-154.
A12	Exhaust fan #01-141 - Ward and insane room toilet.
A13	

EMERGENCY LTG. PANEL #E7 - CREW'S QUARTERS, "B" DECK, FR. 127 - CENTER LINE.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE100-A1	White lights - auxiliary engine room, port, "C" deck & below.
2	A2	White lights - auxiliary engine room, stbd, "C" deck & below.
3	A3	Red lights - stbd exits, "B" deck, fr. 118-130.
4	A4	Red lights - port exits, "B" deck, fr. 118-130.
5	A5	White lights & receptacle - Electric Dist. Room, "B" deck.
6	A6	

EMERGENCY LTG. PANEL #E-1 - TROOPS GALLEY, "B" DECK, FR. 85, STBD.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE101-A1	White and red lights - stair up, hold #4, "B" deck & below.
2	A2	White lights - Troops galley & passages, "B" deck.

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
3	XFE103-A1	White and red lights - stairs down, hold #4, "B" deck & below.
4.	A2	

EMERGENCY LTG. PANEL #E2 - TROOPS BERTHING, HOLD #3 - "A" DECK, FR. 66, STBD.

SW. NO.	CIRCUIT NO.	Temporary Emergency
1	XFE101-A3	Red lights - stairs up & exits, Hold #3, Prom. Deck & below.
2	A4	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY.
3	XFE103-A3	Red lights - stairs down & exits, hold #3, "A" deck & below.
4	A4	

EMERGENCY LTG. PANEL #E3 - TROOPS BERTHING, HOLD #2, "A" DECK, FR. 44, PORT.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE101-A5	Red lights - Stairs Up, Hold #2, "A" DECK, below.
2	A6	White and red lights - Stairs up & exits - hold #1, "A" Deck 7 below.
3	A7	White lights - amm. handling rooms, prom. deck, & magazine Hold #1.
4	A8	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
5	XFE102-A5	Red lights - stairs down, hold #2 - prom deck & below.
6	A6	White and red lights - stairs down, Hold #1, prom deck & below.
7	A7	
8	A8	White lights - Amm. handling room, prom deck & magazine, hold #1.

EMERGENCY LTG. PANEL #E13 - AFT ENGINE ROOM, BOILER FLAT, FR. 135, STARBOARD.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
XFE102-A1		Deck and bracket lights - back of boilers, boiler gauge board & ER floor.
2	A2	Deck and bulkhaad lights - front & back of main swbd, & engineroom floor.
3	A3	Deck and bulkhead lights - boiler casing, port, "C" deck & above.
4	A4	Deck and bulkhead lights - boiler casing, , stbd, "C" deck & above.
5	A5	Deck lights - Front of boiler, "C" deck and above.
6	A6	Deck lights - port & stbd. shaft tunnels.
7	A7	
8	A8	

EMERGENCY LTG. PANEL #E8 - HOSPITAL AREA, BOAT DECK, FR. 125, STBD.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE104-A1	Exit lights - Prom. and boat deck, midship house aft.
2.	A2	Red lights - hospital area, boat deck, aft.
3	A3	Red and white lights - prom deck, midship house, aft.
4	A4	White lights - clipping room, bridge deck aft, & magazine, hold #5.
5	A5	Deck lights - Front of boiler, "C" Deck and above.
6	A6	Deck lights - Port & stbd, shaft tunnels.
7	A7	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY.
8	XFE106-A1	Red lights - Bridge deck passages, aft.
9	A2	Red lights - Prom deck, midship house, aft.
10	A3	Red lights - hospital area passages, boat deck, aft.
11	A4	White lights - Amm. magazine & escape trunk, hold #5.
12	A5	White and red lights - clipping room, bridge deck, aft.
13	A6	
14	A7	

EMERGENCY LTG. PANEL #E5 - FWD. ENGINE ROOM, BOILER FLAT, FR. 108, PORT.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE105-A1	Deck and bracket lights - back of boilers, boiler gauge board, ER floor.
2	A2	Deck and bulkhead lights - Front & back of main swbd & engine rm floor.
3	A3	Deck and bulkhead lights - boiler casing, port, "C" deck & above.
4	A4	Deck and bulkhead lights - boiler casing, stbd, "C" deck & above.
5	A5	Deck lights - font of boilers, "C" deck & above.
6	A6	

EMERGENCY LTG. PANEL #E4 - TROOP OFFICERS' QUARTERS - "A" DECK, FR. 115, CENTERLINE.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY.
1	XFE107-A1	Red lights - stairs up and exits, "A" and "B" dks, fwd of fr. 118, port.
2.	A2	Red lights - stairs up and exits, "A" and "B" dks, fwd of fr. 130 P&S.
3	A3	
4	A4	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
5	XFE109-A1	Red lights - stairs down & exits, "A" and "B" dks, fr. 82-118 port.
6	A2	Red lights - stairs down & exits, "A" deck, fr. 82-130, stbd.
7	A3	Gangway light outlets, "A" deck, fr. 118 P&S.
8	A4	

EMERGENCY LTG. PANEL #E9 - TROOP OFFICERS' AND CREW'S QUARTERS, "A" DECK FR. 147, CENTER.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE108-A1	Red lights - stairs up and exits - "B" Deck, fr. 144-148, P&S.
2	A2	Red lights - stairs up and exits - "A" deck, fr. 143-173, P&S.
3	A3	

SW. NO	CIRCUIT NO.	FINAL EMERGENCY
4	XFE110-A1	Red lights - passages & exits, "B" deck , fr. 130-168, P&S
5	A2	Red lights - Stairs down & exits, "A" deck, fr. 130-169, P&S.
6	A3	

EMERGENCY LTG. PANEL #E6 - OFFICERS' QUARTERS, BOAT DECK, FR. 102, CENTER.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE111-A1	White & red lights - Prom deck, Fwd, resistor room & thwartships pass.
2	A2	Red lights - prom deck, exists, 1st class dining room & lounge
3	A3	Exit signs - prom, boat, & bridge decks, Fwd public spaces.
4	A4	red lights - boat deck, exits, fwdspaces.
5	A5	Red lights - bridge & Nav bridge decks, exits, fwd spaces.
6	A6	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY.
7	XFE113-A1	Red lights - prom deck, exits, passages, fwd spaces, port.
8	A2	Red lights - prom deck, exits, passages, fwd spaces, stbd.
9	A3	Red lights - boat deck, exits, passages, fwd spaces.
10	A4	Red lights - Bridge & Nav bridge decks, exits, fwd spaces.
11	A5	
12	A6	

EMERGENCY LTG. PANEL #E10- HOLD #5 - "A" DECK, FR. 159, CENTERLINE.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE112-A1	Red and white lights - stairs up, hold #5, "A" deck and below.
2	A2	

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
3	XFE114-A1	Red and white lights - stairs down and exits, hold #5, Prom deck & below
4	A2	

EMERGENCY LTG. PANEL #E11 - HOLD #6 - "A" DECK, FR. 182, CENTER.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE112-A3	
2	A4	Red and white lights - stairs up and escape trunk, hold #6, "A"Dek & below
3	A5	White lights - Prom deck, aft resistor room & house top.

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
4	XFE114-A3	Red lights - stairs down, hold #6, Prom & "A" decks; white lightsm escape trunk, "B" deck and below.
5	A4	Red lights - stairs down & exits, hold #6, "B" and "C" decks.
6	A5	

EMERGENCY LTG. PANEL #E12 - HOLD #7 - "A" DECK, FR. 202, CENTER.

SW. NO.	CIRCUIT NO.	TEMPORARY EMERGENCY
1	XFE112-A6	White lights - Amml handling room, prom deck, hold #7.
2	A7	Red lights - stairs up, hold #7, "A" deck & bdlow, White lights troops showers and washrooms.
3	A8	White lights - steering gear room, toilets & escape, stern spaces.

SW. NO.	CIRCUIT NO.	FINAL EMERGENCY
5	XFE114-A6	White lights - Amm. handling room, prom deck & magazine, Hold #7.
6	A7	Red lights - stairs down & exits, hold #7, prom & "A" decks.
7	A8	Red lights - stairs down & exits, hold #7, "B" and "C" decks.
8	A9	

RUNNING LIGHT PANEL (FEEDER #XFE115) - WHEELHOUSE, FR. 86, PORT.

CIRCUIT NO.	TEMPORARY EMERGENCY
RL1	Forward anchor light
RL2	Masthead light
RL3	Towing light, lower.
RL4	Towing light, upper.
RL5	Port side light.
RL6	Starboard side light.
RL7	Not under command light
RL8	Not under command light
RL9	Range light.
RL10	anchor light
RL11	Stern light, clear.
RL12	Stern light, blue.

NAVIGATING INSTRUMENT PANEL (#E14) - WHEELHOUSE, FR. 86, PORT.

CIRUIT NO.	FINAL EMERGENCY
XFE-117-A1	Card lights - master and steering compasses.
A2	White lights - wheelhouse & chart room.
A3	Window wipers - wheelhouse, port and starboard.
A4	Outlet for portable convoy lights - house top.
A5	
A6	12-inch searchlight - port side bridge wing.
A7	12-inch searchlight - starboard bridge wing.
A8	Outlets for gangway light - accomodation ladder, P&S.
A9	Boat Boom lights - Forward & after boat booms.
A10	
A11	
A12	

OUTSIDE LIGHTING PANEL (#E15) WHEELHOUSE, FR. 86, PORT.

CIRCUIT NO.	FINAL EMERGENCY.	
XFE-119-A1	Boat Launching floodlight - Port bridge wing, Aft rail.	
A2	Boat Launching floodlight - Stbd bridge wing, Aft rail.	
A3	Boat Launching floodlight - Port, Boat deck, frame 86.	
A4	Boat launching floodlight - Stbd, boat deck, frame 86.	
A5	Boat launching floodlight - Port, boat deck, fr. 101.	
A6	Boat launching floodlight - stbd, boat deck, fr. 101.	
A7	Boat launching floodlight - Port, boat deck, fr. 134.	
A8	Boat launching floodlight - Stbd, boat deck, fr. 134.	
A9	Boat launching floodlight - Port, boat deck, fr. 151.	
A10	Boat launching floodlight - Stbd, boat deck, fr. 151.	
A11	Boat launching floodlight - Port, prom deck, fr. 156.	
A12	Boat launching floodlight - stbd, prom deck, fr. 156.	
A13	Boat launching floodlight - Port, prom deck, fr. 192.	
A14	Boat launching floodlight - Stbd, prom deck, fr. 192.	
A15	Boat station lights - boat deck, port, fwd.	These
A16	Boat station lights - boat deck, stbd, fwd.	circuits
A17	Boat station lights - boat deck, port, aft.	installed
A18	Boat station lights - boat deck, stbd, aft.	on
A19	Promenade lights - Prom deck, port.	Hulls
A20	Promenade lights - prom deck, stbd.	268-271
A21	Boat station lights - prom deck, port, aft.	only.
A22	Boat station lights - prom deck, stbd, aft.	
A23		
A24		
A25		
A26		

GENERAL POWER PANEL #F-300 FIRST AND SECOND CLASS GALLEY * SECTION #1 - PROM DECK, FR. 134, STARBOARD.

SW.NO.	CIRCUIT NO.	
3	1-F-300	Refrigerator compressor - service & cold pantry - 1/4 HP.
4	2-F-300	Refrigerator compressor - service & cold pantry - 1/3 HP.
5	3-F-300	Meat slicer - service & cold pantry - 1/4 HP
6	4-F-300	Ice cream cabinet - service & cold pantry - 1/4 HP.
7	5-F-300	Juice extractor - service & cold pantry. - 1/4 HP.
8	6-F-300	Two 4-slice toasters - service and cold pantryl
13	7-F-300	Waffle baker - service and cold pantry.
1	8-F-300	Griddle - service and cold pantry.
9	9-F-300	
10	10-F-300	Dishwasher - scullery - 3/4 HP.
11	11-F-300	Vegetable peeler - galley - 3/4 HP.
12	12-F-300	60 quart mixer - galley - 1 HP.
19	13-F-300	Fryer No. 1 - galley.
20	14-F-300	Fryer No. 2 - galley.
21	15-F-300	Broiler - galley.
2	16-F-300	Broiler - oven - galley.
17	17-F-300	Garbage grinder - galley - 10 HP.
15	18-F-300	solenoids for vegetable steamers - galley.
14	19-F-300	Diet kitchen dumbwaiter - 3/4 HP.
18	20-F-300	
16	21-F-300	
22	22-F-300	

GENERAL POWER PANEL #F-301 - BUTCHER SHOP & ICE CREAM PREPARATION ROOM - HOLD #4, REFRIGERATED STORES FIAT, FR. 82, STBD.

SW.NO.	CIRCUIT NO.	
1	1-F-301	Meat & bone saw - butcher shop - 1 1/2 HP.
2	2-F-301	Meat slicer - butcher shop - 1/4 HP.
3	3-F-301	Meat chopper - butcher shop - 1 HP.
4	4-F-301	Milk emulsifier No. 1 - Ice cream preparation room - 3/4 HP.
5	5-F-301	Milk emulsifier No. 2 - Ice cream preparation room - 3/4 HP.
6	6-F-301	Ice cream freezer - Ice cream preparation room, 3 HP.
7	7-F-301	Hardening cabinet - Ice cream preparation room, 3 HP.
8	8-F-301	
9	9-F-301	
10	10-F-301	

GENERAL POWER PANEL #F-303 - LAUNDRY - "C" DECKM FR, 118, PORT.

SW.NO.	CIRCUIT NO.	
1	1-F-303	Laundry washer - 3 HP
2	2-F-303	Laundry extractor - 3 HP
3	3-F-303	Cylinder ironer.
4	4-F-303	Tumbler dryer. 1/2 HP.
9	5-F-303	Hand iron.
10	6-F-303	
5	7-F-303	
6	8-F-303	
7	9-F-303	
8	10-F-303	

GENERAL POWER PANEL #F-321 - FIRST & SECOND CLASS GALLEY * SECTION #2 * PROM DECK, FR. 134 - CENTER.

SW.NO.	CIRCUIT NO.	
17	1-F-321	Bake oven - bakery.
3	2-F-321	Refrigerator - Bakery - 1/4 HP.
4	3-F-321	Hot plate - bakery.
5	4-F-321	Proving box - bakery.
6	5-F-321	Bread slicer - bread room - 1/4 HP.
7	6-F-321	Refrigerator compressor - service pantry - 1/4 HP.
8	7-F-321	Refrigerator compressor - service pantry - 1/4 HP.
9	8-F-321	Ice cream compressor - serivce pantry - 1/4 HP.

GENERAL POWER PANEL #F-321 (cont'd)

SW.NO.	CIRCUIT NO.	
10	9-F-321	Two 4-slice toasters - service pantry.
11	10-F-321	Juice extractor - service pantry - 1/4 HP
15	11-F-321	Waffle baker - service pantry.
12	12-F-321	Griddle - service pantry.
14	13-F-321	
18	14-F-321	Range No. 1 - galley.
19	15-F-321	Range No. 2 - galley.
20	16-F-321	Range No. 3 - galley.
1	17-F-321	
13	18-F-321	Garbage grinder - scullery - 1/2 HP.
16	19-F-321	
2	20-F-321	
21	21-F-321	
22	22-F-321	

GENERAL POWER PANEL #F-435 - TROOPS' CAFETERIA AFT HOLD #5, "B" DECK, FR. 188, CENTER.

SW.NO.	CIRCUIT NO.	
1	1-F-435	Dishwasher - scullery, two 1-HP motors.
2	2-F-435	Ice cream cabinet compressor - cafeteria - 1/3 HP.
3	3-F-435	Ice cream cabinet compressor - cafeteria - 1/3 HP.
4	4-F-435	Pumps for coffee urns Nos. 3 and 4 - cafeteria, 1/4 H_p each.
5	5-F-435	garbage grinder - scullery - 1/2 HP.
6	6-F-435	

GENERAL LTG. PANEL #F-445 - DECONTAMINATION ROOM - BROW DECK, FR. 160 CENTER.

S.W.NO.	CIRCUIT NO.	
1	1-F-445	Steriliser vacuum pump.
2	2-F-445	Drying tumbler No. 1 - 1/2 HP.
3	3-F-445	Drying tumbler No. 2 - 1/2 HP.
4	4-F-445	

GENERAL POWER PANEL #F-482 - J. & SR. OFFICERS' PANTRY - BOAT DECK, FR. 114, PORT.

SW.NO.	CIRCUIT NO.	
1	1-F-482	Ice cream cabinet compressor.
2	2-F-482	Juice extractor - 1/4 HP.
3	3-F-482	Refrigerator compressor - 1/4 HP.
4	4-F-482	Dishwasher - 1/4 HP.
5	5-F-482	Two 4-slice toasters
6	6-F-482	Hot plate
7	7-F-482	Griddle
8	8-F-482	
9	9-F-482	Garbage grinder - 1/2 HP.
10	10-F-482	

GENERAL POWER PANEL #F-484 - DIET KITCHEN, BOAT DECK, DIET KITCHEN, FR. 132, PORT.

SW.NO.	CIRCUIT NO.	
3	1-F-484	Juice extractor - 1/4 HP.
4	2-F-484	Dishwasher - 1/4 HP.
5	3-F-484	Refrigerator compressor - 1/4 HP.
1	4-F-484	Range
6	5-F-484	4-slice toaster.
8	6-F-484	
7	7-F-484	Garbage grinder - 1/2 HP.
2	8-F-484	

BATTLE POWER PANEL #FB-302 - WORKSHOP PANEL AFT ENGINE ROOM, BOILER FLAT, FR. 134,STBD.

SW.NO.	CIRCUIT NO.	
1	1-FB-302	Lathe - 2 HP.
2	2-FB-302	Drill press - 1 1/2 HP.
3	3-FB-302	Ginder - 2 H.P.
4	4-FB-302	

BATTLE POWER PANEL #FB-304 - QUARTERS VENT. PANEL NO. 6, "A" DECK, FAN RM #2, FR.123,CENTER

SW.NO.	CIRCUITNO.	
1	1-FB-304	Quarters exhaust fan #2-123 - 4HP.
2	2-FB-304	Quarters supply fan #2-124-1; - 4HP
3	3-FB-304	Quarters supply fan #2-124-2; - 6 HP.
4	4-FB-304	Laundry supply fan #2-125; - 3/4 HP.
5	5-FB-304	Battery Room exhaust fan #2-126; - 1/3 HP.
6	6-FB-304	Passage exhaust fan #2-100-1; "A" deck - 5/8 HP.
7	7-FB-304	Passage exhaust fan #2-100-2; "A" deck - 5/8 HP.
8	8-FB-304	Passage exhaust fan #2-100-3; - 5/8 HP
9	9-FB-304	Passage exhaust fan #2-100-4; "A" deck - 5/8 HP.
10	10-FB-304	
11	11-FB-304	
12	12-FB-304	

BATTLE POWER PANEL #FB-306 - HOLD NO. 5 VENT PANEL, "A" DECK, FAN ROOM NO. 2, FR.145,PORT.

SW.NO.	CIRUIT NO.	
1	1-FB-306	Berthing supply fan #2-146-1; 2 3/4 HP.
2	2-FB-306	Berthing supply fan #2-146-2; 2 3/4 HP.
3	3-FB-306	Troop cafeteria supply fan #2-146-3; 2 3/4 HP.
4	4-FB-306	Cargo and Amm. magazine supply fan #2-144; 1 HP
5	5-FB-306	Berthing exhaust fan #01-162-3; 2 3/4 HP.
6	6-FB-306	Berthing exhaust fan #01-162-3; 2 3/4 HP.
7	7-FB-306	
8	8-FB-306	

BATTLE POWER PANEL #FB-320 - HOLD NO. 4 VENT PANEL RESISTOR ROOM NO. 1,
PROM DECK, FR. 62, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-320	Troops' galley exhaust fan #01-78-2; 3 3/4 HP.
2	2-FB-320	Troops galley exhaust fan #01-78-3; 3 3/4 HP.
3	3-FB-320	Berthing supply fan #1-89-3; 2 3/4 HP.
4	4-FB-320	Berthing supply fan #1-89-4; 2 3/4 HP.
5	5-FB-320	Berthing exhaust fan #01-78-1; 2 3/4 HP.
6	6-FB-320	Troops galley supply fan #1-89-1; 1 3/4 HP.
7	7-FB-320	Troops galley supply fan #1-89-2; 1 3/4 HP.
8	8-FB-320	

BATTLE POWER PANEL #FB-322 - QUARTERS VENT. PANEL NO. 5 - "A" DECK, FAN ROOM NO. 3,
FR. 142, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-322	Passage exhaust fan #2 - 129, "A" deck 5/8 HP.
2	2-FB-322	Passage exhaust fan #2 - 138-1, "A" deck - 5/8 HP.
3	3-FB-322	Passage exhaust fan #2 - 138-2, "A" deck, 5/8 HP.
4	4-FB-322	Toilet and shower exhaust fan #2-142,"A"&"B" Dks, 1 1/4 HP.
5	5-FB-322	Quarters supply fan #2-143-1, "A"&"B" Dks, 4 HP.
6	6-FB-322	Quarters supply fan #2-143-2, "A"&"B" dks, 4 HP.
7	7-FB-322	
8	8-FB-322	

BATTLE POWER PANEL # FB-325 - REFRIGERATOR DIFFUSER PANEL * REFRIGERATED STORES, UPPER FLAT, FR. 82, STBD.

SW.NO.	CIRCUIT NO.	
1	1-FB-325	Refrigerator circulating fan No. 1 - 5 HP.
2	2-FB-325	Refrigerator circulating fan No. 2 - 5 HP.
3	3-FB-325	Refrigerator circulating fan No. 3 - 3 HP.
4	4-FB-325	2 Refrigerator fans - 1/20 HP each.
5	5-FB-325	Refrigerator circulating fan - 1/20 HP.
6	6-FB-325	Refrigerator solenoids.
7	7-FB-325	
8	8-FB-325	

BATTLE POWER PANEL #FB-400 - QUARTERS VENT PANEL NO. 1 - PROM DECK, FAN ROOM NO. 5. FR. 91, STBD.

SW.NO.	CIRCUIT NO.	
1	1-FB-400	Officers toilet and showers exhaust fan #1-80, 1/3 HP.
2	2-FB-400	Quarters supply fan, #1-91-1, 3HP.
3	3-FB-400	Quarters supply fan #1-91-2 , 3 HP.
4	4-FB-400	First class lounge exhaust fan #1-102, 5/8 HP.
5	5-FB-400	First class dining room exhaust fan, #19105, 1/3 HP.
6	6-FB-400	First class dining room exhaust fan, #1-127; 1/2 HP.
7	7-FB-400	
8	8-FB-400	

BATTLE POWER PANEL #FB-402 - HOLD NO. 3 VENT PANEL - RESISTOR ROOM NO. 1, PROM DECK, FR. 59, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-402	Cargo space supply fan, #1-61-2; 1 1/4 HP.
2	2-FB-402	Berthing supply fan #1-62-1; 2 3/4 HP.
3	3-FB-402	Berthing supply fan #1-62-2; 2 3/4 HP.
4	4-FB-402	Berthing supply fan #1-64-1; 2 3.4 HP.
5	5-FB-420	Berthing supply fan #1-64-2; 2 3/4 HP.
6	6-FB-420	Berthing supply fan#01-78-5, 2 3/4 HP.
7	7-FB-402	Berthing exhaust fan #01-78-5, 2 3/4 HP.
8	8-FB-402	Windlass room exhaust fan #1-19; 1/4 HP.
9	9-FB-402	Resistor house exhaust fan #1-58-1; 1/2 HP.
10	10-FB-402	Resistor house exhaust fan #1-58-2; 1/2 HP.
11	11-FB-402	Scullery exhaust fan #3-81; 5/8 HP.
12	12-FB-402	
13	13-FB-402	
14	14-FB-402	

BATTLE POWER PANEL #FB-409 - HOLD NO. L, VENT PANEL, "A" DECK, FAN ROOM NO. 1, FR. #2, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-409	Hold #1 & amm stowage supply fan #2-31; 1/2 HP.
2	2-FB-409	Toilets & showers exhaust fan #1-36-1; 1 3/4 HP.
3	3-FB-409	Toilets & showers exhaust fan #1-36-2; 1 3/4 HP.
4	4-FB-409	Toilets & showers supply fan, #2-28-1; 2 1/2 HP.
5	5-FB-409	Toilets & showers supply fan, #2-28-2; 2 3/4 HP.
6	6-FB-409	
7	7-FB-409	
8	8-FB-409	

BATTLE POWER PANEL #FB-411 - HOLD NO. 2 - VENT PANEL, ELECTRIC CONTROL ROOM, PROM DECK, FR. 40½, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-411	Berthing exhaust fan #1-42-1; 1 3/4 HP.
2	2-FB-411	Berthing exhaust fan #1-42-2; 1 3/4 HP.
3	3-FB-411	Berthing supply fan #1-59-1; 1 3/4 HP.
4	4-FB-411	Berthing supply fan #1-59-2; 1 3/4 HP.
5	5-FB-411	Berthing supply fan #1-60-1; 1 3/4 HP.

BATTLE POWER PANEL #FB-411 (cont'd)

6	6-FB-411	Berthing supply fan #1-60-2; 1 3/4 HP.
7	7-FB-411	Cargo spaces supply fan #1-61-1; 3/4 HP.
8	8-FB-411	Fwd Amm. handling room supply fan #1-42-4; 1/4 HP.
9	9-FB-411	
10	10-FB-411	

BATTLE POWER PANEL #FB-432 - HOLD NO 7 VENT PANEL FROM DECK, FAN ROOM NO. 7, FR. 191 PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-432	Berthing supply fan #1-188-1; 2 3/4 HP.
2	2-FB-432	Berthing supply fan #1-186-2; 2 3/4 HP.
3	3-FB-432	Berthing supply fan #1-198; 2 3/4 HP.
4	4-FB-432	Berthing supply fan #1-188-2; 2 3/4 HP.
5	5-FB-432	Berthing exhaust fan #1-206-1; 2 3/4 HP.
6	6-FB-432	Berthing exhaust fan #1-206-2; 2 3/4 HP.
7	7-FB-432	Cargo space supply fan #1-186-3; 1/2 HP.
8	8-FB-432	Toilets & showers supply fan #2-216-1; 1 3/4 HP.
9	9-FB-432	Toilets & showers supply fan #2-216-2; 1 3/4 HP.
10	10-FB-432	Washroom exhaust fan #3-208; 5/8 HP.
11	11-FB-432	Amm. stowage supply fan #2-208; 1/3 HP.
12	12-FB-432	Toilets & showers exhaust fan #1-210; 2 3/4 HP.
13	13-FB-432	
14	14-FB-432.	

BATTLE POWER PANEL #FB-440 - HOLD NO. 6 VENT PANEL FROM DECK, FAN ROOM NO. 6., FR. 189, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB440	Berthing supply fan #1-183-1; 4 HP.
2	2-FB-440	Berthing supply fan #1-183-4; 4 HP.
3	3-FB-440	Berthing supply fan #1-186-1; 4 HP.
4	4-FB-440	Berthing supply fan #1-184; 4 HP.
5	5-FB-440	Berthing exhaust fan #01-162-1; 2 3/4 HP.
6	6-FB-440	Berthing exhaust fan #01-162-2; 2 3/4 HP.
7	7-FB-440	Cargo space supply fan #1-186-5; 1.2 HP.
8	8-FB-440	

BATTLE POWER PANEL #FB-442 - QUARTERS VENT. PANEL NO. 2 FROM DECK, FAN ROOM NO. 6. FR. L93, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-442	Resistor house exhaust fan #1-183-2; 1/2 HP.
2	2-FB-442	Resistor house exhaust fan #1-183-1; 1/2 HP.
3	3-FB-442	Decontamination room supply fan, #01-168; 1 1/4 HP.
4	4-FB-442	
5	5-FB-442	
6	6-FB-442	

BATTLE POWER PANEL #FB-461 - FORWARD ENGINE ROOM VENT PANEL - BRIDGE DECK, FAN ROOM NO. 1, FR. 107, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-461	Engine room supply fan #02-108-3; 19 HP.
2	2-FB-461	Engine room supply fan #02-108-4; 19 HP.

BATTLE POWER PANEL #FB-463 - QUARTERS VENT. PANEL NO. 4., BRIDGE DECK, FAN ROOM NO. 1 - FR. 106, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-463	Quarters supply fan #02-106-3; 1 3/4 HP.
2	2-FB-463	Quarters supply fan #02-106-4; 1 3/4 HP.
3	3-FB-463	Pantry Exhaust fan #02-106-2; 1/2 HP.
4	4-FB-463	Toilets exhaust fan #02-106-1; 1/2 HP.
5	5-FB-463	Quarters supply fan #02-106-1; 1 3/4 HP.
6	6-FB-463	Quarters supply fan #02-106-2; 1 3/4 HP.
7	7-FB-463	Passage exhaust fan #03-94; 1/2 HP.
8	8-FB-463	Passage exhaust fan #01-102; 5/8 HP.
9	9-FB-463	
10	10-FB-463	

BATTLE POWER PANEL #FB-470 - HOSPITAL PANEL * BOAT DECK, STBD PASSAGE, FR. 117.

SW.NO	CIRCUIT NO	
4	1-FB-470	Instrument sterilizer - combination sterilizer - operating Rm.
1	2-FB-470	10 gal. water sterilizer - combination sterlizer, Oper.Room.
2	3-FB-470	Dressing sterlizer - Combination sterilizer, Operating room.
5	4-FB-470	Water cooler - X-ray dark room, 1/2 HP.
12	5-FB-470	Electric Baker - examining room.
13	6-FB-470	Infra-red lamp - examining room.
6	7-FB-470	Sterilizer - examining room.
7	8-FB-470	Sterilizer - doctor's office.
3	9-FB-470	Still - dispensary.
8	10-FB-470	Sterilizer - dispensary.
9	11-FB-470	Sterilizer - laboratory.
16	12-FB-470	Still - laboratory.
14	13-FB-470	Incubator - laboratory.
15	14-FB-470	Sterilizer - Dentist's Officer
10	15-FB-470	Sterilizer - Nurses room.
11	16-FB-470	
17	17-FB-470	
18	18-FB-470	

BATTLE POWER PANEL #FB-472 - QUARTERS VENT. PANEL NO. 3 - BRIDGE DECK, FAN ROOM NO. 2 - FR. 137, PORT.

SW.NO.	CIRCUIT NO.	
1	1-FB-472	
2	2-FB-472	First class galley exhaust Fan #02-134-1; 2 3/4 HP.
3	3-FB-472	Isolation ward exhaust fan #02-134-2; 1/4 HP.
4	4-FB-472	Hospital space exhaust fan #02-135; 2 HP.
5	5-FB-472	Hospital space supply fan #02-137-1; 3 HP.
6	6-FB-472	Quarters supply fan #02-137-2; 3 HP.
7	7-FB-472	Passage exhaust fan #02-127; 1/6 HP.
8	8-FB-472	Diet Kitchen exhaust fan #01-128; 1/6 HP.
9	9-FB-472	
10	10-FB-472	
11	11-FB-472	
12	12-FB-472	

BATTLE POWER PANEL #FB-474 - AFT ENGINE ROOM VENT PANEL, BRIDGE DECK, FAN ROOM NO.2 FRAME 139, PORT.

SW.NO.	CIRCUIT NO	
1	1-FB-474	Engine room supply fan #02-140-1; 19 HP.
2	2-FB-474	Engine room supply fan #02-140-2; 19 HP.

EMERGENCY POWER PANEL (A.C.) #XFE-152 - HOSPITAL EQUIPMENT, DENTAL OFFICE, BOAT DECK, FR. 125, PORT.

SW.NO.	CIRCUIT NO.	
1	1-XFE-152	X-ray unit - Dentist Office.
2	2-XFE-152	Dental unit - dentist office.
3	3-XFE-152	X-ray outlet - operating room.
4	4-XFE-152	Hydratherapy tub - quiet room.
5	5-XFE-152	Recept. - radio room.
6	6-XFE-152	

TEMPORARY EMERGENCY BUS EXTENSION PANEL (BUS TIE #XFE-0240) LOCATED IN INT. COMM. ROOM ADJACENT TO EMERGENCY SWBD.

SW.NO.	CIRCUIT NO.	
1	4U	1.1" Machine gun cease fire system - 15 A.
2	XFE-122	Engineer's alarm panel supply #2 - 15 A.
3	5U-	20 mm. machine gun cease fire system - 15 A.
4	XFE-125	Engineer's alarm panel supply #1 - 15 A.
5	XFE-208	Sterilizer - Battle dressing station - 30 A.
6		
7		
8		

ELECTRIC POWER APPLICATION SECTION-563

D E G A U S S I N G

Degaussing as installed in all Naval ships is a means of protection against magnetic mines and torpedoes, either layed or fired by enemy vessels. It is not necessary for a vessel to actually touch one of these devices to explode them. These magnetic mines and torpedoes are so constructed, that a magnetic switch in the firing circuit will be actuated when they are in a magnetic field.

This magnetic field is furnished by a vessel passing over a mine. The larger the vessel, or the closer the vessel to the mine or torpedo, the more positive the action. This being due to the fact that any iron or steel vessel has a pronounced magnetic field of its own. This being caused by induced magnetism from the earth's magnetic force, and the currents set up in the hull from the beating of hammers and such while the vessel is still in the builders hands.

It can be readily seen, that any vessel passing over one or more of these mines, regardless of whether the vessel is positive or negative in its characteristics, will actuate the firing mechanism of the mine. The depth of the water and the strength of the field will determine whether the firing mechanism is actuated far enough to cause the mine to become dangerous.

As has been explained above, it is the vessels magnetic field that actuates the mine. For this reason, some means must be provided to either retard the action of the magnetic firing device, or to diminish or cancel the magnetic effect of the vessel. In the earlier types of Degaussing coils, an installation consisted of one coil, called the "M" or main coil. This coil was placed either on the outside of the hull, or on the top side close to the sides of the ship.

In these positions, protection of a sort was obtained, but it was found that objects rubbing against the coils, weather, docking, and several other features made this type of installation objectionable.

The next step was to increase the number of turns of wire in this system and to place the entire coil below decks. This coil from time to time was changed until the best position and the most advantageous number of turns was determined. The present system of the "M" coil series is to place it approximately half way between the keel and the top side. This half way position varies wherever large deck houses or bridge structures assert their own magnetic effect. The number of turns of wire composing this "M" coil in the AP type of vessel has been determined to be most effective when there are 30 conductors per circuit and three groups of circuits per installation. Approximately 100 amperes may be fed through this circuit in order to generate a magnetic field of sufficient proportions.

The "M" coil is used to compensate for vertical magnetism, induced by the earth's field. Inasmuch as the "M" coil lies in a horizontal position and encircles the entire vessel, a field generated by it will either assist or oppose the vessel's natural field. As the "M" coil is entirely controllable, provisions being made to reverse the polarity raise or lower the intensity, it is made to counteract the field set up by a vessel, thereby allowing the vessel to pass over a magnetic mine without actuating the firing mechanism.

In FIG. 1, is shown the schematic diagram of the "M" coil together with the necessary ammeters, ballast resistors (ccc), three circuits of coils, indicator lights, and the regulating rheostat. FIG. 2, shows the relative position of the "M" coil in the "AP" type vessel.

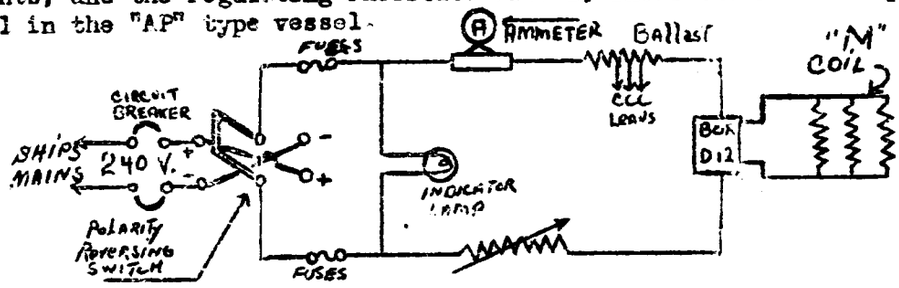
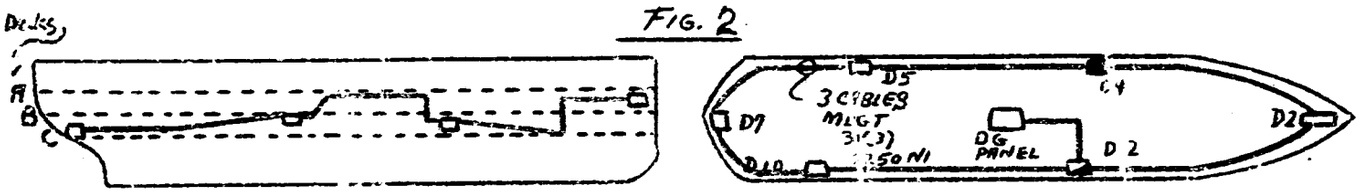


FIG. 1

FIG. 2



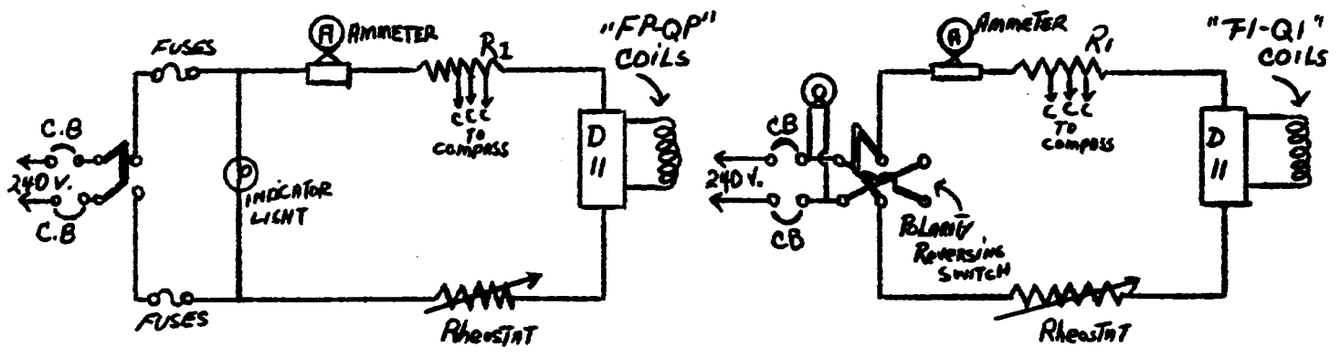


FIG. 3

As the science progressed, it was found that the vertical induced magnetism was not the only field to be neutralized, and that the "M" coil would not take care of this additional field, consisting of "Longitudinal" and "Permanent" magnetism.

This of course lead to a great deal of experimentation, out of which was developed the "F" (Forecastle) coil and the "Q" (Quarterdeck) coils. As the name implies, these coils are placed around the forecastle and aft around the quarterdeck. The usual procedure on the AP type of vessel is to install the "F" coil 1/4 to 2/5ths the length of the ship. Likewise, the "Q" coil around the quarterdeck is extended 1/4 to 2/5ths the length of the ship forward.

These "F" and "Q" coils are composed of a number of conductors formed into circuits in the same manner as the "M" coil. These coils are then further sub-divided into "FP" and "QP" coils. (This being done by inter connection at the junction box and is permanent). For example, the "F" and "Q" coils may consist of 50 turns each. By taking twenty turns of each coil and cross connecting them into a large series coil extending fore afid aft, a controllable magnetic field may be generated having its positive pole forward and negative aft or vice versa as the case may be. This magnetic field of the "QP-FP" coils thus counteract the ships permanent magnetic field. This field of the "QP-FP" coils is left at one setting once it has been determined. The only change necessary in the "FP-QP" coils being when the vessel passes from one magnetic zone to another. The permanent magnetism of the ship remains relatively constant regardless of the heading of the ship. Only changing when passing into another magnetic zone.

This leaves only the one remaining type of induced magnetism to be taken into account. That being, the Longitudinal magnetism induced in the ship. This induced field will be found to change rapidly as the ships headings are changed from time to time. Therefore a means must be provided whereby it is possible to compensate for this longitudinal magnetism.

The remaining turns of wire in the "F" and "Q" coils, those left unused when the "FP-QP" coils were series connected, are now connected in a like manner and a polarity reversing switch inserted in the circuit. In this fashion, the direction of the field and the intensity of the field may be regulated as required by the heading. This set of coils are known as the "QpPI" coils. These coils and the associated schematic diagrams are shown in FIG 3, and FIG. 4.

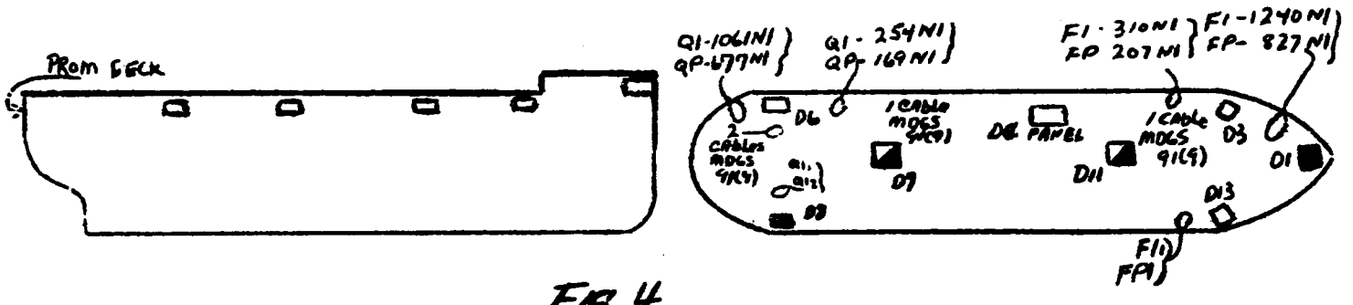
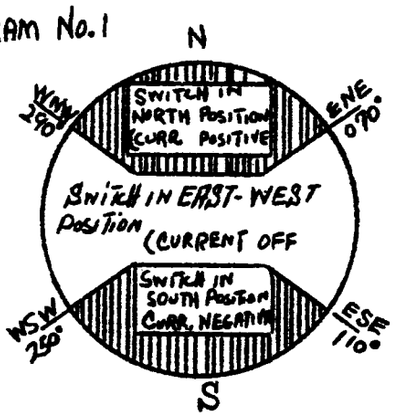


FIG 4

Controls for the Degaussing system are all conveniently located in the Chart house and on the Bridge. The polarity reversing switch as used with the "FI-QI" coils for the various ships headings is mounted on the after bulkhead just behind the helmsman and to the right. This switch should be changed to correspond with the ships heading. FIG. 5, shows a reproduction of the face and markings of this switch.

COURSE
CORRECTION SETTING DIAGRAM No.1

"FI-QI" COIL



HEADINGS ARE MAGNETIC

FIG. 5

In the chart house on the inboard bulkhead, in a protected area, is mounted the main Degaussing control baord. On this switch board are mounted the necessary switches for the "M", "FI-QI", and "FP-QP" coils. To the right, projecting through the bulkhead on extended shafts, are the current control rheostats for the three coils. The current may be raised or lowered as the calibration charts require, and is registered on the Ampere meter for that circuit.

Current for the entire degaussing system as used on this type of vessel is obtained from the main generators. The average total amperage used being in the neighborhood of 60 amperes throughout. Indicator lights are installed on the Degaussing board to indicate that the various coils are in operation. These lights are connected just behind the fuses (between the fuses and the load). This being a ready indication that fuses have blown. FIG. 6, shows the Degaussing board with the position of the various switches indicated. The three rheostats are mounted just behind and to the right.

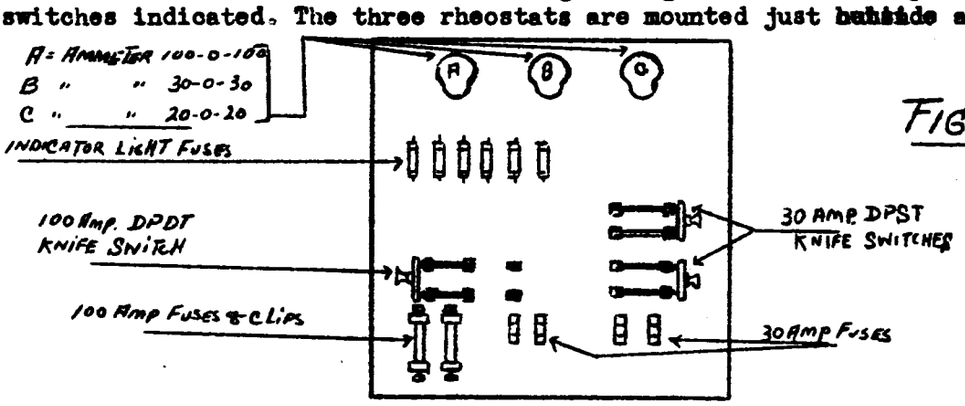


FIG. 6

The operation of this Degaussing system is quite simple and should give no trouble. The lengthy list of settins required a few years ago have been dispensed with and now only a few relatively simple settings are required. These settings are all contained in the "DEGAUSSING FOLDER" and the Degaussing charts. These charts should be kept on the bridge where they may be consulted from time to time.

In referring to these calibration charts, it will be found that they are laid out for the entire world, with their magnetic belts or areas clearly indicated. Chart one contains the Atlantic and Indian Oceans on one side and the Pacific Ocean on the other, the one sheet being for the "Z" zone. Chart two is for the same areas, but for the "H" zone.

The various areas are separated with lines designating the magnetic intensity of that area. The lines of "Area limits" are carried across the chart to the "coil setting" tables. By knowing in which area the vessel is operating and following the area line to the setting tables, the amounts of current and polarity to use on each coil may be found. FIG 7, shows a "Z" and "H" coil setting value together with the magnetic area lines.

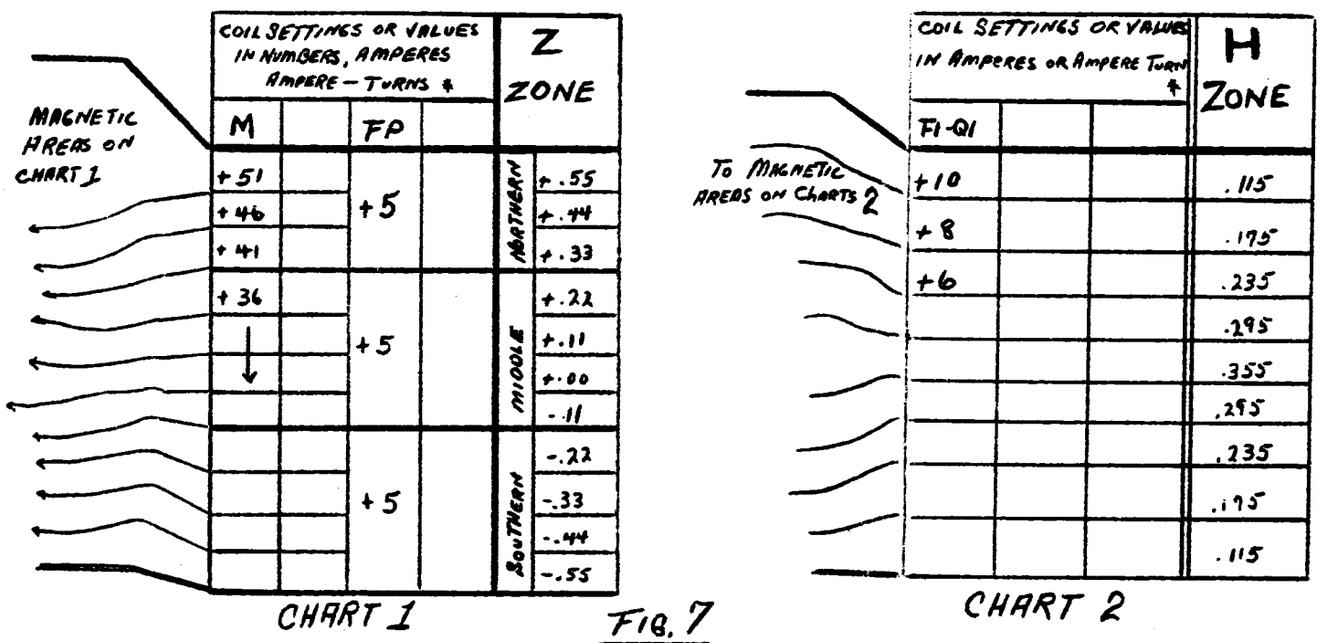


FIG. 7

The assumed values in the above tables are for explanation only and are not to be used for settings.

With all this talk of magnetic fields, and the cancellation fo said fields, most navigators immediately ask the question, "What effect will this all have on the compass?" To answer that question, we might say, "Tremendous." But along with the other experiments, a means was devised where by the effect on the compass would be automatically compensated.

It will be noted in the schematic drawings of FIG. 1 and 3, that a resistor is included in the circuit of each coil. This resistor is tapped and these taps are marked "ccc". These leads, in turn to to small coils located at the binnacle. The coil fof the "M" coil is near the heeling magnet in the base of the binnacle, and the other two coils for the "QP-FP" and "FI-QI" coils are attached mechanically to the correcting spheres. The principle of these correction coils being that as more or less

correction is applied to the magnetic compass. When the degaussing system is secured, all sources of deviation (as caused by the degaussing system) is removed and the compass is as it was originally.

In conclusion, a few warning notes might be mentioned. When the vessel was built and the Degaussing Calibration completed, a leather covered loose leaf book was issued to either the Commanding Officer, the Navigator, or the Electrical Officer. This book contains the complete history of all research that has been done on this particular ship. In order to replace this information, it would be necessary to re-run all tests., which would be next to impossible. Whenever a Degaussing Officer or Deperming Officer comes aboard he will request this book. The DEGUASSING FOLDER should be kept in a safe place and not left leying around.

On one AP type vessel, during the deperming, the polarity of one of the main generators was reversed. This generator was in a standstill condition when the field became reversed. Due to the principle upon which a generator operates, it was assumed that the permanent magnetism of the field was reversed due to the high momentary field set up by the deperming cables close to the generator. This is only a supposition, but in order to prevent the same from re-occurring in the future, it is suggested that all generators be maintained in a running condition during the period of deperming.

As an example, let us assume that we are operating in the New York area. Upon getting underway, and referring to the Degaussing charts for that area as shown in FIG. 7, it is seen that New York lies well inside the magnetic belt for both the "Z" and "H" charts. Therefore, by following the line on chart 1 for the "Z" zone we see that we must have a positive current of 51 amperes on the "M" coil. A positive 5 amperes on the "FP-QP" coil. Referring to chart in the same manner we see that for the "H" zone, we are required to have a positive current of 10 amperes on the "FI-QI" coils.

With this information we open the safety doors of the Degaussing board. Before closing any of the various switches, make sure that the rheostats to the right of the board are all in the "OFF" position. Close the three switches to the three sets of coils, placing the "M" coil polarity reversing switch in the proper position, to obtain polarity in that coil. The polarity reversing switch in the "M" coil should be in the proper position, to obtain a positive polarity in that coil. The polarity for the "FI-QI" coil may be changed by means of the "Ships Heading " switch on the bridge.

When all switches are "IN", the three indicator lights should light. Starting with the "M" coil, slowly turn the rheostat in the proper direction to cause the "M" coil ammeter to indicate a reading. Continue to increase this current slowly until the full 51 amperes have been reached.

Again referring to chart 1, "Z" zone, we find for our area that the "FP-QP" coils require a setting of positive 5 amperes. In the same manner as before, slowly increase the current in this circuit by means of the "FP-QP" rheostat until a setting of 51 amperes is shown.

Chart 2, for the "H" zone shows a current of positive 8 amperes for the "FI-QI" coils. As we have done before, increase the current slowly by means of the "FI-QI" rheostat.

When all currents have been set up in the prescribed manner, go back over the readings on the meters to make sure that they have not changed during the initial adjustment period. If everything is satisfactory on the board, have a quartermaster change the position of the "SHips heading" switch several times while you watch the "FI-QI" meter. If the polarity changes in accordance with the instruction sheet and returns to normal each time, the board is set up correctly.

The one precaustion from this point on, is the inspection of the board frequently to make sure that these values of current have not changed. This may happen due to increasing or decreasing "Load" on the main generators. It is just as injurious to have more current through the cables as it is dangerous to have too little.

I.C.
APPARATUS
SECTION-S65

SECTION - S65

INTERIOR COMMUNICATION APPARATUS

CONTENTS

REFERENCES.

Drawings- Fed. Shipbuilding & D.D. CO.

#16-801 Call Bell System- Circuits "1A" "2A" "3A" and "4A"

L6-801 Call Bell System- Circuits "1A", "2A" "3A", and "4A"
L6-802 Engine and Docking Order Telegraph- Circuits "MB" and "LD"
L6803 Flue Gas Temperature Indicator, Lub. Oil L.P. Alarm, Electric Whistle Control System- Circuits "FG", "EC" and "W".
L6-804 Gyro-Compass, Gyro-Pilot and Rudder Angle Indicator System- Circuits "LC", "LCS" and "N".
L6-805 Salinity Indicator System, Steam Temperature Indicator- Circuits "SB" and "ST".
L6-806 Fathometer, F.O. Hi-level Alarm, Refrigerator Space Alarm- Circuits "FA", "FP" and "RS"
L6-807 Battle Telephone System- Circuits "JA" thru "JZ".
L6-808 Lifeboat Station Announcing and Fire Alarm System- Circuits "IMC" and "F".
L6-809 Automatic Telephone System- Circuit "J".
L6-810 Ship Control Telephone System- Circuit "JX".
L6811 Shaft Revolution Indicator, Elevator Alarm, Smoke Detector and Voice Tube Systems- Circuits "K", "EV" and "SD".
L6-812 General Alarm System- Circuit "G".
L6-813 Battle Telephone Call Bell System- Circuit "E".

REFERENCES (CONT.)

L6-814 Call Bell, Flue Gas Temperature Ind., Lub. Oil L.P. Alarm, Electric Whistle Control System- Circuits "A", "FG", "EC" and "W".
L6-815 Gyro-Compass, Gyro-Pilot, Rudder Angle Indicator, F.O. High Level Alarm,- Circuits "LC", "LCS", "N" and "FP"
L6-816 Engine and Docking Order Telegraph, Salinity Ind. System and Lifeboat Station Announcing Ststem- Circuits "MB", "LD", "SB and "IMC".
L6-817 Fathometer, Steam Temp. Ind. and Ref. Space Alarm Systems-Circuits "FA", "ST" and "RS".
L6-818 General Alarm and Mechanical Whistle Pull- Circuit "G".
L6-819 Fire Alarm System; Battle Telephone Call Bell- Circuits "F" and "E".
L6-820 Battle Telephone System- Circuits "JA" to "JZ".
L6-821 Automatic Telephone System- Circuit "J".
L6-822 Shaft Revolution Indicator, Elevator Alarm and Voice Tube Systems- Circuits "K" and "EV".
L6-823 Ships Control Telephone and Smoke Detector System- Circuits "JX" and "SD".
L6-825 Fire Control System.

DRAWINGS- HENSCHEL CORP.
#60-201 Chemical & General Alarm Motor Oper. Contact Maker- Type K- Class I
#40-010-12 Non-Automatic Running Light Panel.
10-1057 Shaft Speed Indicator
10-1001-1 Shaft Speed Transmitter

DRAWINGS & INSTRUCTION BOOK-CONLAN ELECTRIC CORP.
Instruction Book CEC 1042A "Shipboard Announcing Equipment"
#CE-3030 Lifeboat Announcing System- Cir. "IMC".
CE-3031 Lifeboat Announcing System " "

DRAWINGS- DORAN CO.
#W-104-T-1 Three Interval Timer Type W-104 Form T
#W-101-N-AB Form "A" & "B" Locking Type Switches
#W-101-5 Push Button Restarting Relay Type 101 Form D
#W-104-T8 Wiring Diagram Single Whistle-Three Interval.

DRAWINGS- BENDIX AVIATION CORP.
#13-AL-1085 General Alarm Contact Maker.
#CAL-80 D.C. Vibrating Bell.
#CAL-4545S-IBX Standard Electric Indicator.
#CAL-4545S-IB " " "
CAL-1114S-6A Rudder Angle Transmitter, Syn. Generator Type "A"
Instruction Sheet for TS-41 Leslie- Tyfon Steam Whistles

DRAWINGS- AUTOMATIC ELECTRIC CO.
#L-792 Marine Telephone Assembly Type WTB-1 and WTP-1.
L-797 " " " " WTP-1
H-70862 " " " " SPB-1
L-791 " " " " SPB-1 & SPP-1

DRAWINGS- LLOYD E. ONEAL.
#1005 Engineers Alarm Panel.

DESCRIPTION OF AUTOMATIC SHIP'S SERVICE TELEPHONE SYSTEM

This system is a full automatic, two wire, central battery, machine ringing private telephone system. Each telephone is connected to the switchboard by two wires. In the case of party lines, a common ringing return lead is required in addition to the regular pair of line wires.

This system is designed to provide local inter-communication between stations connected to the automatic switchboard.

A ship's service automatic telephone system comprises an automatic switchboard, a telephone for each station, power equipment and testing equipmont. The entire system with the exception of some of the power equipment and a portion of the signalling equipment is operated from 24 volts direct current as supplied by the battery and motor generated associated with the telephone system.

The automatic swtichboard has an ultimate capacity of twenty individual lines. Sufficient switching equipment is contained in the switchboard to accomodate five simultaneous conversations, in other words, the switchboard has a 25% trunking capacity.

The automatic switchboard is supplied the customary dial tone, ring-back tone, and busy tone by a ringing machine. The dial tone is the tone which indicates to the calling party that dialing may commence; rigg-back tone indicates to the calling party that the called line is being rung; and the busy tone indiaates to the calling party that the called party's line is busy.

Whenever a non-standard condition exists in the system, relays operate and complete the necessary circuits to operate the proper audible and visible alarm signals.

Each time the hand-set of a telephone is removed from its cradle the ringing machine is caused to start operating. The ringing machine does not operate when there are no calls in progress.

The operation of the charging equipment in this system is manually controlled at the power panel.

The power equipment comprises a control panel, a storage battery, a motor gaaerator set, and a ringing machine.

The testing equipment comprises a line disconnect key for each line in the switchboard, a routine test equipment, and a hand test telephone. The line disconnect keys and the routine test set are includwd as integral parts of the switchboard. The hand test telephone is a portable unit and may be carried any place. The line disconnecting arrangement provides for disconnecting any line from the switchboard for testing purposes.

The automatic ship's service telephone system provides the following services:

(a) Local service (station to station calls).

(b) Executive Right of Way service (a service which allows the executive station to establish a connection with any other telephone regardless of whether the called telephone is being used.).

An outgoing call from an executive telepnone is made by dialing the regular directory number. Should the called line be in use, busy tone would not be returned to the calling person, but a connection would be established which would enable him to listen in on the conversation, talk with either person, or retire from the connection.

On incoming calls to an executive telephone, connection is established in the regular manner.

STATION NUMBERING

This system is arranged for either two or three digit station numbers--two digits for individual lines and three digits for two-stations lines. In order to simplify the telephone directory, it is suggested that all station numbers be of three digits in accordance with the following:

STATION NUMBER	LINE NUMBER	SIDE OF LINE RUNG ON
121 to 120	31 to 30	-
211 to 210	31 to 30	/
131 to 130	41 to 40	-
221 to 220	41 to 40	/

When a line has but one station connected to it, that station may be assigned a two digit number as follows:

STATION NUMBER	LINE NUMBER	SIDE OF LINE RUNG ON
31 to 30	31 to 30	/
41 to 40	41 to 40	/

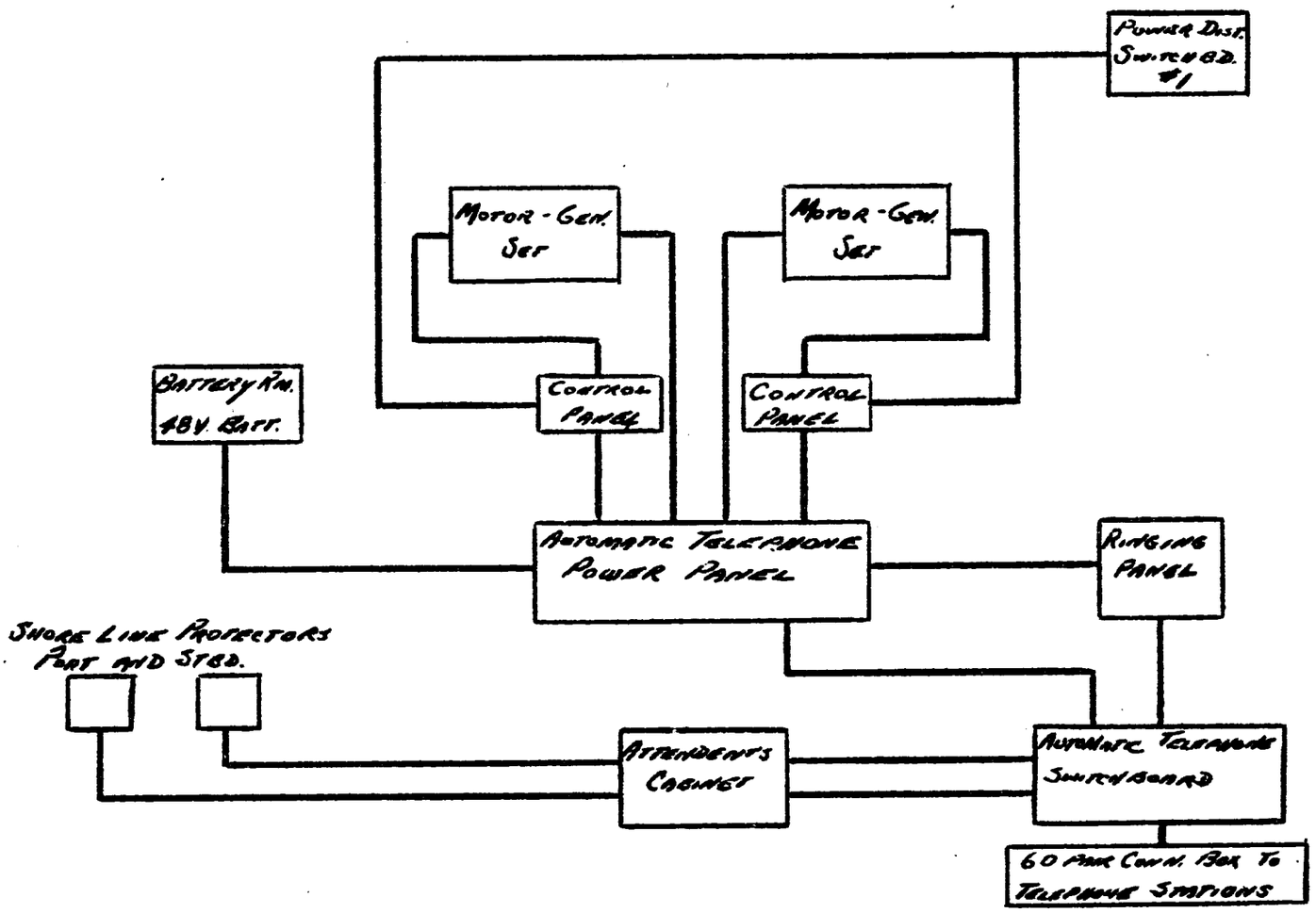
The station numbering can be mixed if desired, i.e., two digit numbers for single station lines and three digits for two station lines. Individual lines may be assigned either a two or three digit number, but two-station lines mustalways be assigned two three-digit numbers.

MAINTENANCE ROUTINES

In order to forestall interruptions in telephone service due to non-standard conditions which may develop, it is advisable to make periodical checks to determine whether the equipment is functioning properly. The necessary tests and inspections can be performed most effectively if a system of routines is followed. A general summary of routines suggested for use in maintaining the automatic ships service telephone system and the frequency with which they should be performed is as follows:

(a) Checking battery voltage.....Daily.
(b) Dial tone ringing current, and busy tone.....Daily.
(c) Testing supervisory signals.....Daily.
(d) Testing for line permanents.....Daily.
(e) Line finder-connector link operation test.....Daily.
(f) Link ring, talk and busy test.....Weekly.
(g) Line relay equipment test.....Monthly.
(h) Inspection of Ringing and charging equipment.....Monthly.
(i) Cleaning switchboard and equipment.....Monthly.
(j) Inspection of switch banks & wipers.....Semi-annually.
(k) Lubrication of switching equipment.....Semi-annually.
(l) Inspection of soldering & wiring.....Semi-annually.
(m) Inspection of telephones.....Semi-annually.
(n) General switch adjustments.....Yearly.

The operating voltage of the ship's service telephones should be maintained at all times between the limits of 22 and 28 volts. If voltage varies outside these limits, the charging rate is to be changed.



Automatic Telephone Circuit "J"

LIST OF TELEPHONE STATIONS CIRCUIT "J"

STATION	STA. NO.	DECK	FRAME	TYPE PHONE	RINGER
Wheel house top	J62	Flying Br.	87C/L	C	R
Pilot house A-0301-C	J61	Nav. Bridge	86C/L	B	-
Chart room A-0302-C	J60	do	86P	B	-
Fire Control Room A0305-C	J59	do	87S	B	-
Captain's Office A0202-L	J57	Superstr	83P	A	-
Captain's stateroom A0201-L	J56	do	83S	B	-
Officers stateroom A0204-L	J55	do	88P	B	-
Radio Room A0201-C	J54	do	94S	A	-
Plotting room	J53	do	94P	A	-
Officers stateroom A0203-L	J52	do	97S	B	-
Officers stateroom A0205-L	J72	do	112S	B	-
Officers stateroom B0207-L	J73	do	119S	B	-
Officers stateroom B0208-L	J74	do	119P	A	-
Officers stateroom A0101-L	J51	Upper dk	83S	B	-
Officers stateroom A0103-L	J50	do	84S	B	-
Officers stateroom A0101-2L	J49	do	82P	A	-
Officers stateroom A0102-2L	J48	do	83P	B	-
Officers stateroom A0105-L	J47	do	88S	B	-
Officers Lounge A-0101-4L	J46	do	96S	B	-
Ordnance Office A0101-6L	J45	do	99S	A	-
Officers stateroom A0110-L	J44	do	98P	B	-
Officers stateroom A0111-L	J43	do	99S	B	-
Doctors office B-0101-3L	J67	do	116S	A	-
Surgical Dr. Rm. B-0102-1L	J68	do	133S	A	-
Officers stateroom B-0116-5	J69	do	112P	B	-
Officers stateroom B-0120-L	J70	do	119P	B	-
Ship & Troop Officers Mess	J38	Main deck	106P	A	-
Gangway (port)	J37	do	105P	C	R

STATION	STA. NO.	DECK	FRAME	TYPE PHONE	RINGER
Ship & Troop Officers Mess	J36	Main deck	126C/L	B	-
Gangway, stbd.	J29	do	105S	C	-
Ship & Troop Off. Galley	J63	do	134S	B	-
Engineer Office	J64	do	142P	B	-
Radio Room C-112-C	J65	do	143S	A	-
Gangway, stbd	J66	do	148S	C	R
Gangway, port	J75	do	148P	C	R
Aft Steering Sta.	J40	do	193P	C	R
Crew & Troop Mess	J30	2nd deck	86P	A	-
	J31	do	91P	A	-
	J32	do	115S	A	-
Forward Engrm flat	J78	EngRm Flat	111P	B	-
Troop Galley A-308-L	J20	3rd deck	86S	B	-
Main Dist. Room B-302-4E	J41	do	122C/L	B	-
Battery Room B-302-B	J42	do	127P	B	-
After Engine Room	J77	EngRm Flat	138S	B	-
Steering Gear Room	J39	4th deck	210C/L	B	-

"A" - Hand set, desk type, self contained ringer.
"B" - Bulkhead hand set type, self contained ringer.
"C" - Water tight, bulkhead hand set type.
"R" - Watertight ringer.

SHIP CONTROL TELEPHONE SYSTEM

CIRCUIT "1JX"

Radio Room, superstructure deck, frame 91, starboard.
Pilot house, Navigating bridge deck, frame 86 port.
Pilot house top, flying bridge, frame 87 C/L/
Crow's nest, foremast, frame 62 C/L.
Forecastle deck, frame 0 starboard.

CIRCUIT "2JX"

Chief Engineer's Office, upper deck, frame 86, port.
Forward engine room, frame 111 Port.
Auxilliary Machinery space, frame 122 Port.
After engine room flat, frame 140, starboard.

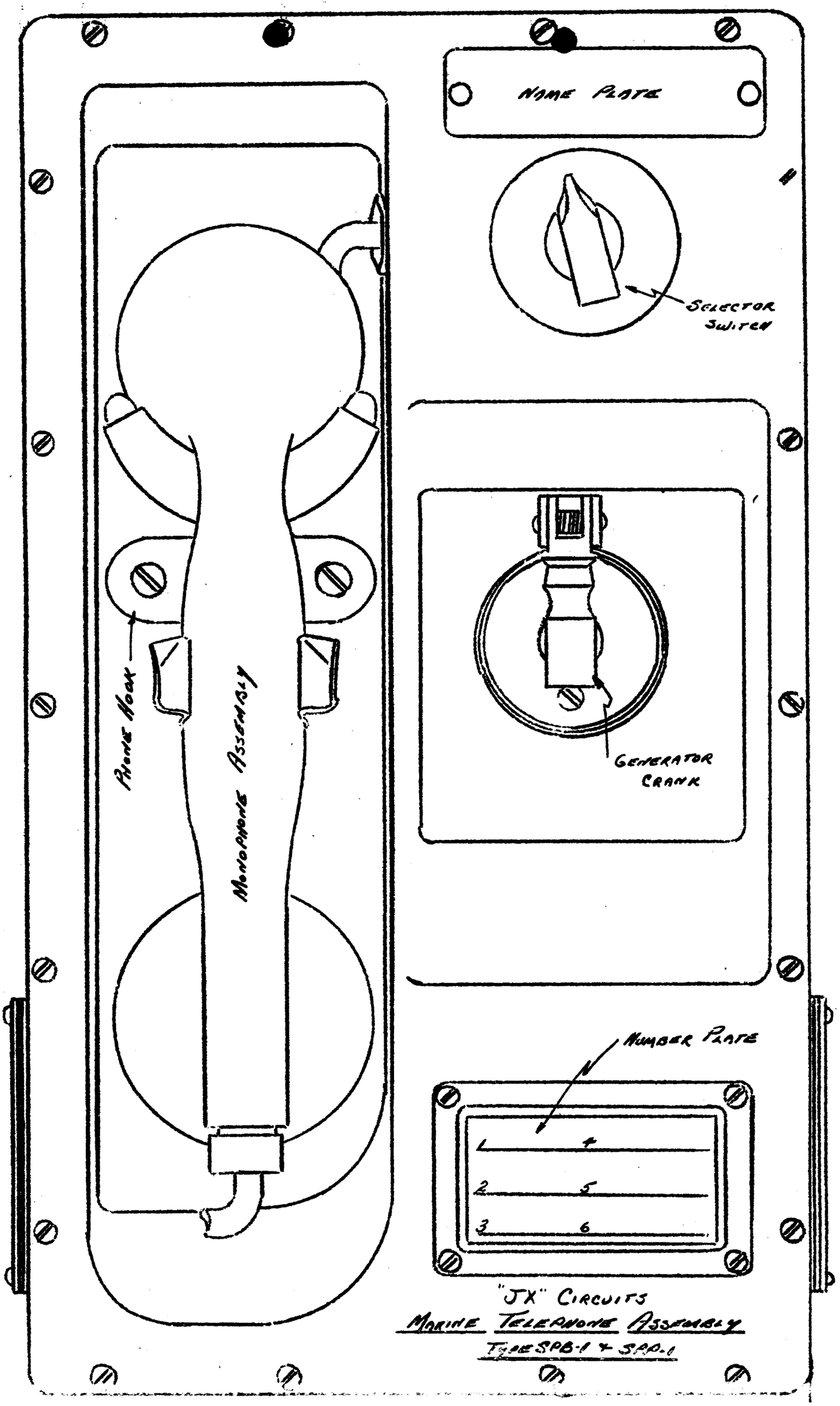
CIRCUIT "3JX"

Pilot house, navigating bridge deck, frame 86, port.
After steering station, upper deck level, frame 193, port.
Forward engine room, frame 111, port.
After engine room, frame 140, starboard.
Steering gear room, 4th deck, frame 210, starboard.

CALL BELL SYSTEM

CIRCUIT "IA"

Officers stateroom, A-0106L, Upper deck, frame 91.
Officers stateroom, A-0108L, Upper deck, frame 94.
Officers Stateroom, A-0107L, Upper deck, frame 92.
Officers stateroom, B-0206L, super str. deck, frame 113.
Officers stateroom, B-0207L, super str. deck, frame 118.
Officers stateroom, B-0205L, super str. deck, frame 113.
Officers stateroom, A-0203L, super str. deck, frame 98.
Radio Room , A0201-1C, super str. deck, frame 92.



"JX" CIRCUITS

MARINE TELEPHONE ASSEMBLY

TYPE SPB-1 & SPA-1

CIRCUIT "1A" (cont'd)

Officer stateroom, A0204L, super str. deck, frame 87.
Captain's bathroom, A0201L, superstr. deck, frame 86.
Captain's office, A-0202L, super str. deck, frame 86.
Captain's office, A-0202D, super str. deck, frame 84.
Captain's stateroom, A-0201L, super str. deck, frame 84.
Chart room, A-0302C, Nav. Bridge deck, frame 87.

NOTE:- The above push button stations connect to the 3" vibrating bell located in the officers' pantry.

CIRCUIT "2A"

Officers stateroom, B-0120L, upper deck, frame 121.
Officers stateroom, B-0116L, upper deck, frame 110.
Officers stateroom, B-0113L, upper deck, frame 106.
Officers stateroom, A-0112L, upper deck, frame 102.
Officers stateroom, A-0109L, upper deck, frame 96.
Officers stateroom, A-0105L, upper deck, frame 87.
Officers stateroom, A-0104L, upper deck, frame 87.
Officers stateroom, A0103L, upper deck, frame 86.
Officers stateroom, A-0102L, upper deck, frame 86.
Officers stateroom, A-0101L, upper deck, frame 86.
Officers stateroom, A-0101-2L, upper deck, frame 84.
Officers stateroom, A-0101-1L, upper deck, frame 86.
Officers stateroom, A-0101L, upper deck, frame 81.

NOTE:- The above push button stations connect to the 3" vibrating bell located in the officers' pantry.

CIRCUIT "3A"

Ship and Troop Officers' Mess, B-101-L, Main deck, frame 123P.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 119P.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 113P.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 109P.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 106P.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 106S.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 109S.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 112S.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 118S.
Ship and Troop Officers' Mess, B-101-L, Main deck, frame 122S.
Officers stateroom, B-0205-L, Main deck, frame 123P.
Officers stateroom, A-102-L, Main deck, frame 63.
Officers stateroom, A-104-L, Main deck, frame 70.
Officers stateroom, A-106-L, Main deck, frame 75.
Officers stateroom, A-108-L, Main deck, frame 81.
Officers stateroom, A-110-L, Main deck, frame 87.
Officers toilet , A118-L, Main deck, frame 84.
Officers shower , A-117-L, Main deck, frame 82.
Officers stateroom, A-101-L, Main deck, frame 63.
Officers stateroom, A-103-L, Main deck, frame 69.
Officers stateroom, A-105-L, Main deck, frame 73.
Officers stateroom, A-107-L, Main deck, frame 79.
Officers stateroom, A-109-L, Main deck, frame 85.

NOTE:- Above push button stations connect to the 3" vibrating bell located in the Officers' pantry.

CIRCUIT "4A"

Isolation ward, upper berth, C-01012L, frame 140P.
Isolation ward, upper berth, C-1012L, frame 140P.
Isolation ward, upper berth, C-01012L, frame 135P.
Isolation ward, upper berth, C-01012L, frame 132P.

Isolation ward, upper berth, C-01012L, frame 135P.
Isolation ward, lower berth, C-01012L, frame 140P.
Isolation ward, lower berth, C-01012L, frame 140P.
Isolation ward, lower berth, C-01012L, frame 135P.
Isolation ward, lower berth, C-01012L, frame 132P.
Isolation ward, lower berth, C-01012L, frame 132P.
Isolation ward, lower berth, C-01012L, frame 135P.

NOTE:- Above push button stations connec to the buzzer located in the Nurses workroom.

ENGINEERS ALARM PANEL

NAMEPLATE MARKING	FORWARD ENGINE ROOM			AFTER ENGINE ROOM		
	INDICATOR LIGHT	PUSH BUTT	TYPE ALARM	INDICATOR LIGHT	PUSH BUTT	TYPE ALARM
Engine order telegraph	amber	-	bell	amber	-	bell
Salinity indicator	red	-	howler	red	-	howler
Telephone Circuit "J"	amber	-	bell	amber	-	bell
Telephone Circuit "1JX"	amber	-	bell	amber	-	bell
Telephone circuit "2JX"	amber	-	bell	amber	-	bell
Port steering motor running	green	-	-	green	-	-
Stbd steering motor running	green	-	-	green	-	-
Lub. Oil low pressure	red	1	howler	red	1	howler
Freight elevator	red	1	howler	-	-	-
Passenger elevator	-	-	-	red	1	howler
F.O. settling tank #1, HiLevel	-	-	-	red	1	howler
F.O. settling tank #2, HiLevel		-	-	red	1	howler
F.O. settling tank #3,HiLevel	red	1	howler	-	-	-
F.O. settling tank #4,HiLevel	red	1	howler	-	-	-
Steer. Feeder FB200 Failure	-	-	-	red	1	howler
Steer Feeder FB201 failure	red	1	howler	-	-	-
Port Steer. Motor failure	red	1	howler	red	1	howler
Stbd Steer. Motor failure	red	1	howler	red	1	howler
Smoke detector	-	-	-	red	-	howler
Power supply	white	D.P. Swtch	-	white	D.P. swtch	-

BATTLE TELEPHONE SYSTEM

Refer to sections 71, 74, and 78 for lists of sound powered telephones, circuits, and stations.

LOUD SPEAKING SYSTEM

Excdrpts from Conlan Electric Corporation Instruction Book C.E.C. 1042-A:

SHIPBOARD ANNOUNCING EQUIPMENT

DESCRIPTION

The shipboard Announcing system is designed for the transmission of alarm or other signals, orders or anncouncements to specific locations, and if talk-back is included in thesystem, for two-way communication with individual shipboard locations fromthe bridge of a vessel.

The system consists of one rack containing two pre-amplifier-drivers, three power amplifiers, tone generator, nomitor panel, switch relay panel, a control cabinet with microphone and speaker group switches, to seldct reproducer locations. If talk back is included, a talk back amplifier.

The system provides for orders or announcements to any or all reproducer locations on a ship., and with talk back two way communication to any talk back reproducer location. The tone generator is used as a signal to precede any orders or announcements or to give alarms. All regular operational functions of the system are controlled from the bridge, or control cabinet.

The system is designed with more than sufficient power to drive all reproducers above a high noise level aboard ship.

INSTALLATION

Instructions for installation of equipment will be found in Section III of Conlan's Instruction Book. It is imperative that these instructions be followed.

CIRCUIT FUNCTIONS OF RACK EQUIPMENT

Two pre amplifiers are provided to amplify the signal from the microphone located on the bridge and feed it into the three power amplifiers. One pre-amplifier driver is used as a spare and should be inoperative until needed.

Three power amplifiers are provided and are used to drive the reproducers located throughout the ship. One power amplifier is used as a spare and should be inoperative until needed.

The DRIVER SELECTOR switch located on the switching panel is used to switch the output of either driver to the inputs of the three power amplifiers, which are permanently tied in parallel.

NOTE:- Pre-amplifier drivers 1 and 2 are the upper and lower drivers respectively.

Switches marked "POWER AMPLIFIER 1","POWER AMPLIFIER 2" and "POWER AMPLIFIER 3," located on the switching panel are used to switch the output of each of the three power amplifiers to the "Line", "OFF" or "Check" positions.

In the "LINE" position the output of the power amplifier is fed to the control cabinet where it is switched to the different reproducer locations. In the "OFF" position the output is switched to a dummy load resistor. In the "CHECK" positinn the output is switched to the MONITOR SPEAKER, a dummy load resistor and the Decibel Meter for checking purposes.

NOTE:- Power amplifiers 1, 2, and 3 are the top, middle, and bottom amplifiers, respectively.

The "POWER" switch when thrown to the "ON" position supplies 115 volts 60 cycles to the entire system from the ship's power. This operation places the system in an OPERATE condition with only the filaments of the tubes receiving power.

NOTE:- In the OPERATE conditions the system is ready for immediate use.

Individual power switches on pre-amplifier dirver and power amplifier panels: This switch is used to turn the amplifier, mounted behind the panel, completely off and disconnects the power from thtat particular amplifier only.

NOTE:- One preamplifier driver and one power amplifier should always be turned off and used only as a spare.

"MONITOR" volume: This control located on the switching panel, is used to adjust the volume of the Monitor speaker only.

Each pre-amplifier driver is equipped with a gain control located at the rear of each pre-amplifier driver chassis. The shaft of each control is slotted for screw driver adjustment, and controls the gain of that driver only.

NOTE:- The pre-amplifier driver gain controls are set at the time of installing and it should not be necessary to readjust.

The tone generator is located behind the switching panel and consists of an oscillating tube and power supply, the operation of which is controlled by relays, which in turn are operated by switches on the control cabinet at the bridge.

Each pre-amplifier driver and power amplifier has a relay mounted on its chassis. These relays are controlled by the switch on the microphone or the "SIGNAL" switches and turn on the plate (B/) supply and Red (operate) pilot lights of the individual amplifiers.

Tone generator relays located in the switching panel are operated by the "SIGNAL" keys on the control cabinet. They turn on the plate supply (B+) of the tone generator, select the tone and energize the individual amplifier relays to turn on their respective plate supply (B+).

The "MONITOR" speaker is used for checking purposes only and is switched into the power amplifier output circuit when the "POWER AMPLIFIER" switch is in the "CHECK" position.

The Decibel Meter mounted on the top panel is a visual indication of the output from the power amplifiers and is used in conjunction with the monitor speaker. The decibel Meter is only in the power amplifier output circuit when that amplifiers "POWER AMPLIFIER" switch is in the "CHECK POSITION".

NOTE:- The pointer should average "0" on scale for correct power output.

The Dummy Load Resistors are located behind the top panel. Two are used and are connected to the"OFF" and "CHECK" buses of the "POWER AMPLIFIER" switches to provide a dummy load equivalent to twice the combined load of all the reporducers. This is the correct load impedance required for full undistorted output from any one of the three power amplifiers.

The relay supply transformer located behind the relay panel is used to supply the 24 volt AC source for the operation of all relays.

Eleven pilot light indicators are mounted on the rack. One located on the switching panel, is used to indicate that power is being supplied to the system; the green indicator on the left side of each amplifier panel indicates that power is being supplied to that praticular amplifier. The red indidator on the right side of each amplifier panel indicates that plate voltage (B+) is being supplied to that particular amplifier.

Two separate sets of connection strips located at the rear of the switching panel are used to connect the rack to the Control Cabinet on the bridge. One set is numbered 1,2,3, is ued for the microphone input only. The other set is used for connection of output, siggal control, etc., from the rack to control cabinet.

CIRCUIT FUNCTIONS OF CONTROL STATION

SWITCHES: -"CALL" - (TALK BACK) SWITCHES: - This group of swithces, or keys, are individually engraved corresponding to the reproducer locations on shipboard. Reproducer keys have three positions "CALL", "OFF" and "TALK BACK". In the "CALL" position the output of the power amplifiers in the rack connected to the "LINE" is switched to the reporducer group corresponding to that switch designation. This position is used to announce. In "OFF" position that reproducer group is connected to a bus that terminates at the "ALL SPEAKER" switch on the control cabinet. In the "TALK BACK" position one reproducer in that switch group (designated as talk back speaker) is connected to a bus running through contacts on the "ALL SPEAKER" switch to the "TALK LISTEN" switch, and then to the input of the talk back amplifier. This position is used for two way communication.

The "ALL SPEAKER" switch has two positions, "OFF" and "ALL SPEAKERS". In the "OFF" position the off bus of the reproducer group switches is shorted, and the talk back bus is connected to the "TALK LISTEN" switch. In the "ALL SPEAKERS" position, the off bus and talk back bus are connected to the output of the power amplifier in the rack so that all the reporducers throughout the ship are energized even though their individual switches my be in the "OFF" or "TALK BACK" position. This switch is used to call all peproducers simultaneously.

The "SIGNAL" switches when in the "ON" position complete the 24 volt AC supply circuit to close the signal relays, the operation of which is explained in this section. These switches are used to send a tone signal throughout the reproducers selected by the "CALL-TALK BACK" swithces to precede all announcements and orders, or to give alarms.

The "TALK LISTEN" switch when in the "LISTEN" position connects any talk back reproducer (selected by the CALL-TALK BACK switches) to the input of the talk backamplifier located in the control cabinet, and the talk back reproducer (generally located above the control cabinet) to the output of the talk back amplifier. Any communication from the reproducer group talk back speaker may be heard on the talk back reproducer located on the bridge. Similarly when this switch is rotated to the "TALK" position and held there, the bridge talk back

reproducer is connected to the input of the talk back amplifier and the reproducer group talk back speaker can receive a communication from the bridge. At the conclusion of any two way communication the "TALK LISTEN" switch should be rotated to the "SILENT" position. This position shorts and disconnects both bridge and remote talk back speaker buses from the output and input of the talk back amplifier.

The "TALK BACK" amplifier connects 115 volts AC power to the talk back amplifier when in the "ON" position.

The pilot indicator located just above the "TALK BACK" amplifier switch indicates that power is being supplied to the Talk Back amplifier.

The pilot indicators arranged in a horizontal row above the "CALL TALK BACK" switches indicate that a remote talk back reproducer station wishes to communicate with the bridge. (Each remote talk back reproducer is supplied with a call push button that completes the circuit of the pilot indicator located above the "CALL-TALK BACK SWITCH" corresponding to that reproducer.

NOTE:- a buzzer is located inside the control cabinet and is in series with the pilot indicators. This buzzersounds when any one of the reporducer talk back stations press their call push buttons.

An external microphone is supplied with 50 foet of cable. This microphone may be inserted into this receptacle so that orders or announcements may be made from any part of the bridge. The contacts parallel those of the stationary microphone located on the top center of the Control Cabinet.

The microphone located on the top of the control cabinet is used to make announcements and give vocal orders. This microphone is connected to the inputs of both pre amplifier drivers in the rack. A standby switch is located in the handle just below the microphone head and is used to throw the plate supply (B/) relays of the amplifiers in the rack by completing the 24 volt AC circuit to the ralys.

NOTE:- Before announcements or orders can be given this switch must be operated on either the stationary or portable microphones.

The "TALK BACK" speaker on the bridge is used for two way communication between the vridge and any reproducer.

The connection strips are used to inter connect theequipment rack and control cabinet, and for tying in the ships reproducer groups, talk back reproducers, and "CALL" push buttons.

OPERATION

TO ANNOUNCE, USING PERMANENT MICROPHONE:-

(a) Lift "Power" switch at rack to "ON".

(b) Turn pre-amplifier driver 1 and power amplifiers 1 and 2 on.

(c) Rotate "DRIVER SELECTOR" switch to 1.

(d) Rotate "POWER AMPLIFIER 1" and "POWER AMPLIFIER 2" switches to "LINE"

(e) Throw appropriate keys for reproducer groups to be called to "CALL" or throw "ALL SPEAKER" switch to "ALL SPEAKERS" if all groups are to be called simultaneously.

(f) Press "SIGNAL" key to "ON" and hold.

NOTE:- The number and legnth of the signals is left to the discretion of the operator.

(g) Grip microphone base pressing "operate" switch with the thumb and talk into the microphone at a distance of approximately one inch in a normal tone of voice. (See "USE OF MICROPHONE" UNDER INSTODUCTION")

(h) At completion of announcement, relaase microphone switch and return all swithces to their "OFF" positions.

(i) Power switch at rack may then be turned off if desired.

TO ANNOUNCE USING PORTABLE MICROPHONE:

Follow instructions above but first insert microphone plug into the receptacle on control cabinet labeled "Microphone".

TO COMMUNICATE WITH ANY REPRODUCER GROUP TALK BACK SPEAKER:-

NOTE:- The following procedure is also followed when a remote reproducer group talk back speaker indicates that he wishes to communicate with the bridge by pressing his "CALL" push button. This is indicated by the buzzer sounding and the pilot indicating above the key corresponding to that group. "CALL" push button is operative only when "Power" switch at rack is "ON".

(a) Throw power switch at rack to "ON".

(b) Throw Talk back amplifier switch to "ON".

(c) Throw appropriate "CALL-TALK BACK" key to "TALK BACK".

(d) Press "TALK LISTEN" switch to "TALK" and hold.

(f) Speak into the bridge talk back speaker.

(g) Release "TALK LISTEN" switch to "LISTEN" to receive a reply.

(h) At completion of communication return all switches to their "OFF" position.

NOTE:- "TALK LISTEN" switch should always be left in the "SILENT" or up position.

ADJUSTMENTS AND TESTS

TO TEST PRE AMPLIFIER DRIVERS AND POWER AMPLIFIERS:-

(a) Turn system and all amplifiers "ON".

(b) Rotate the DRIVER SELECTOR switch to 1.

(c) Rotate the POWER AMPLIFIER 2 and 3 switches to "OFF".

(d) Rotate "Power amplifier 1" switch to "CHECK".

(e) Turn up "MONITOR VOLUME".

(f) Press signal switch to "ON" and hold. Decibel meter should read approximately "0" on scale and the tone signal should be heard on the Monitor speaker. This checks pre amplifier driver 1 and power amplifier 1.

(g) Rotate DRIVER SELECTOR switch to "2" signal switch should still be in the "ON" position, the decibel meter should read approximately the same as before. This checks power amplifier driver 2.

(h) Rotate POWER AMPLIFIER 1 switch to "OFF" and POWER AMPLIFIER 2 switch to CHECK. If the same readings are obtained on all amplifiers and the tone generators are operating correctly.

(i) To check the microphone it is only necessary to talk into it as if an announcement were being made. If the decibel meter averages "0" on scale and the speech is heard plainly on the Monitor speaker the microphone is operating correctly.

NOTE:- If the Monitor speaker and microphone are in close proximity, a howl or whistle will be heard from the Monitor speaker. This is caused by feed back between speaker and microphone. The microphone should be moved away from the Monitor speaker or the Monitor Volume should be turned down until the howl is eliminated.

To check all other components, instructions as given under "Operation" in this section should be carried out and each reproducer and switch should operate as designated. Should any components fail to operate satisfactorily, instructions found in section IV of the Conlan instruction book will cover the repairing of same.

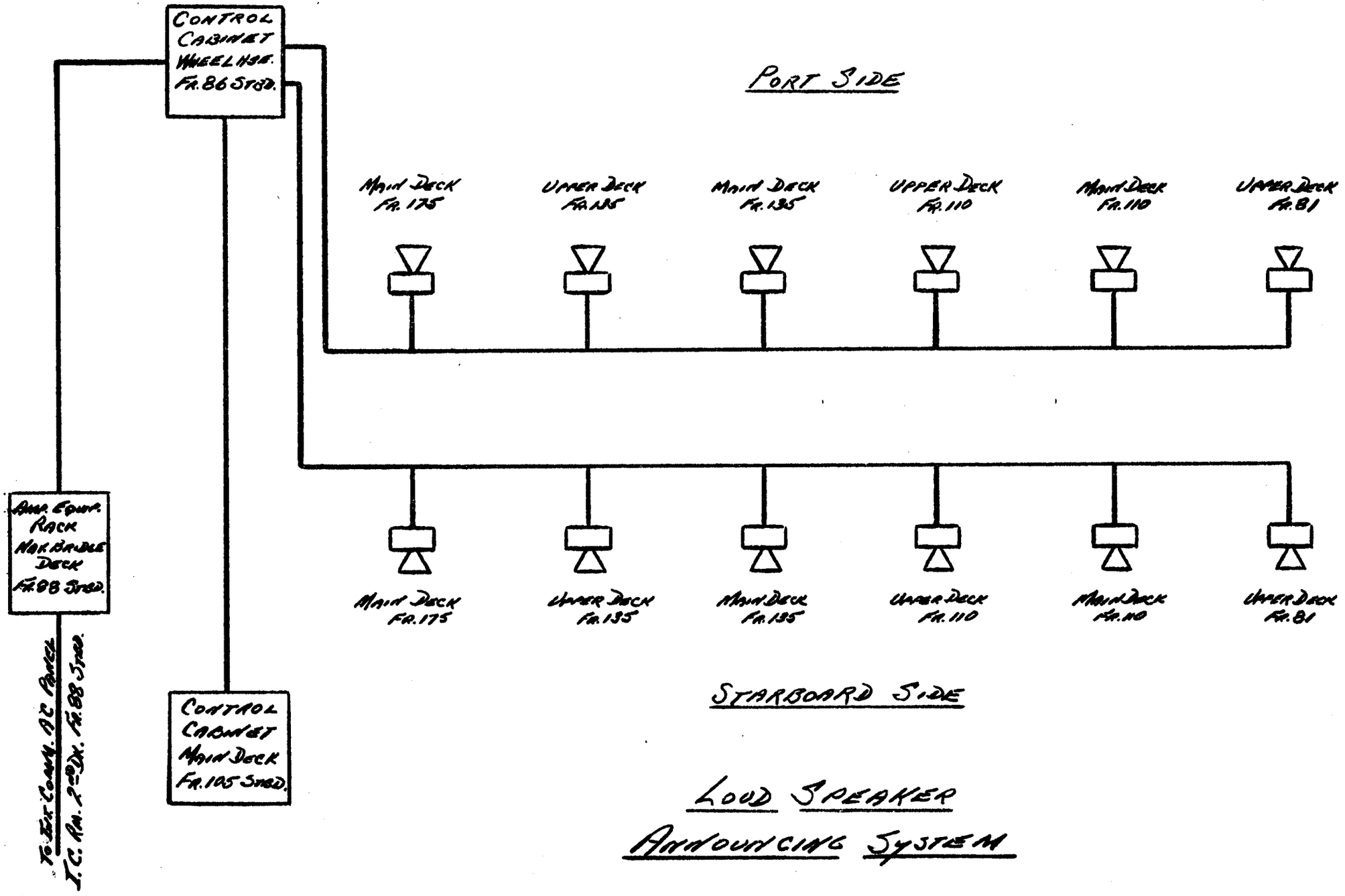
VOICE TUBES

System #1 - Pilot house and pilot house top (standard compass).
System #2 - Pilot house to pilot house top (rangefinder).
System #3 - Pilot house to captain's berth.
System #4 - Chart room to pilot house top (standard compass).
System #5 - After steering station to steering gear room.
System #6 - Pilot house to radio room.
System #8 - Officers pantry to Officers galley.
System #9 - Pilot house to port bearing repeater.
Pilot house to stbd bearing repeater.
Pilot house to chart room.

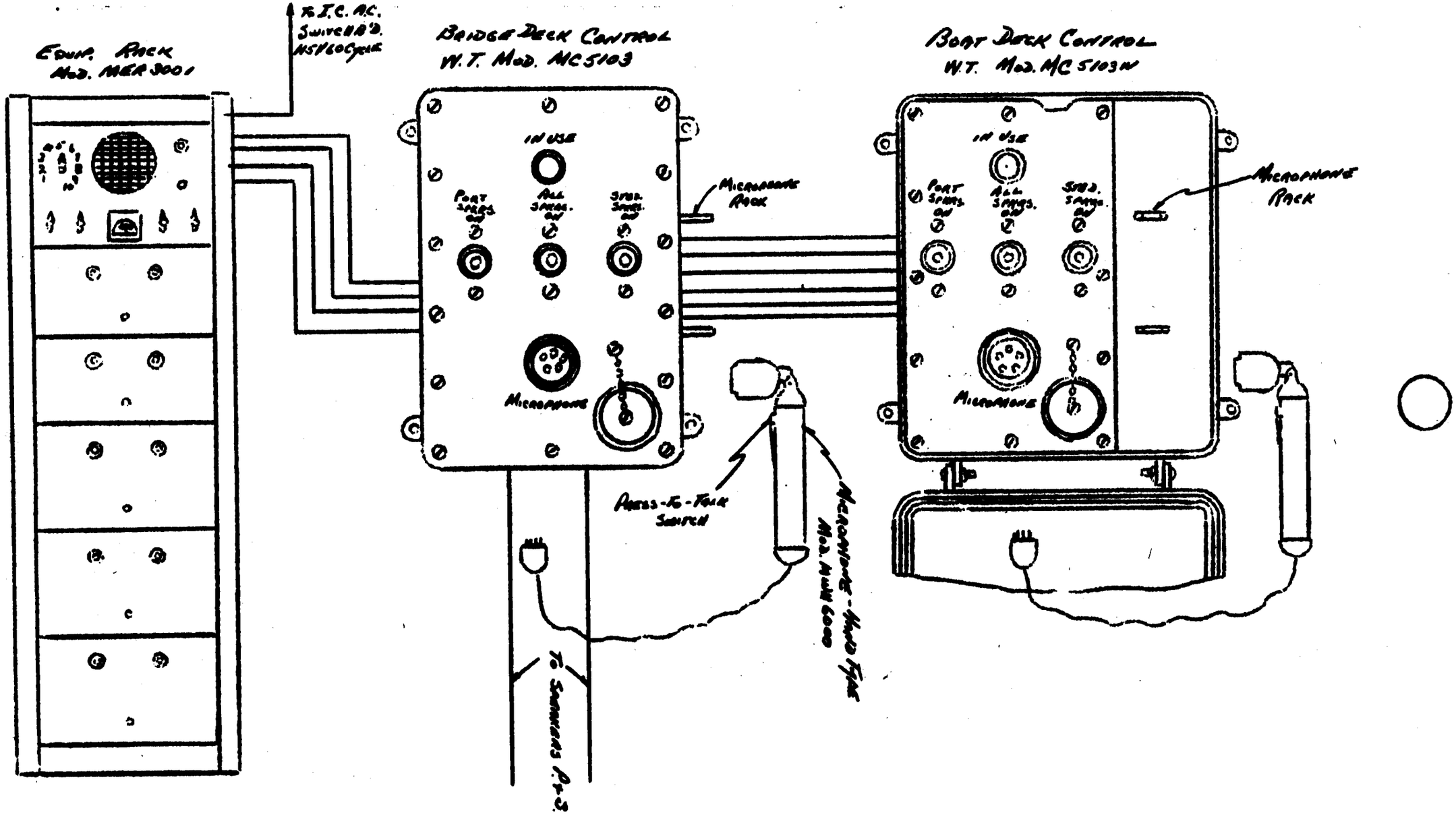
GENERAL ALARM SYSTEM

Location of Bells:

Navigation Bridge Deck -	Frame 88 stbd.
Superstructure Deck -	passage, frame 92, stbd.
	passage, frame 119, stbd.
	passage, frame 146, C/L
Upper deck -	passage, frame 94 port.
	passage, frame 94, stbd.
	passage, frame 115, port.
	passage, frame 115, stbd.
	passage, frame 137, port.
	passage, frame 137, stbd.
	Sick bay, frame 147, port.
	Sick bay, frame 147, stbd.
MAIN DECK	Crew & troop officers mess frame 127 C/L
	Officers Pantry, frame 142 C/L
	Office spaces, frame 149 C/L
	Passage, frame 39 C/L
	passage, frame 71, port.
	passage, frame 71, stbd.
	Officers lounge, frame 87 C/L
	Passage, frame 15 C/L/
SECOND DECK	Troop head, frame 24 C/L
	Troop showers, frame 39 C/L
	Troop quarters, frame 50 port.
	Troop quarters, frame 50 stbd.
	Troop quarters, frame 72 port.
	Troop quarters, frame 72, stbd.
	Passage, frame 91 port.
	passage, frame 91 stbd.
	passage, frame 106, stbd.
	passage, frame 126, stbd.
	passage, frame 106 port,
	passage, frame 126, port.
	passage, frame 140, port.
	passage, frame 140, stbd.
	passage, frame 155, port.
	passage, frame 155, stbd.
	passage, frame 166, port.
	passage, frame 166, stbd.
	Troop quarters, frame 178, port.
	Troop quarters, frame 178, stbd.
	Troop quarters, frame 198, port.
	Troop quarters, frame 198, stbd.
	Troop Head, frame 225 C/L.



LOUD SPEAKER ANNOUNCING SYSTEM



Loud Speaking System

Circuit "1MC"

THIRD DECK	Troop head, frame 27 C/L
	Troop washroom, frame 36 C/L
	Troop quarters, frame 50 port.
	Troop quarters, frame 50, stbd.
	Troop quarters, frame 72, port.
	Troop quarters, frame 72, stbd.
	Crew & Troop galley, C/L
	Passage, frame 113, std.
	Elec. Dist. Room, frame 124 C/L
	Passage, frame 135, stbd.
	Passage, frame 113, port.
	passage, frame 137, port.
	passage, frame 155, port.
	passage, frame 155, stbd.
	Troop quarters, frame 174, port.
	Troop quarters, frame 174, stbd.
	Troop quarters, frame 194, port.
	Troop quarters, frame 194, stbd.
	Troop quarters, frame 216, port.
	Troop quarters, frame 209, port.
FOURTH DECK	Troop quarters, frame 39 C/L
	Troop quarters, frame 50 port.
	Troop quarters, frame 50 stbd.
	Troop quarters, frame 72, port.
	Troop quarters, frame 72, stbd.
	Troop quarters, frame 90, port.
	Troop quarters, frame 90, stbd.
	Troop quarters, frame 154, port.
	Troop quarters, frame 154, stbd.
	Troop quarters, frame 174, port.
	Troop quarters, frame 174, stbd.
	Troop quarters, frame 198 port.
	Troop quarters, frame 198, stbd.
	Steering gear room, frame 210 C/L
MACHINERY SPACES	Passage, frame 84, C/L
	Boiler flat fwd, frame 112 C/L
	Aux. Engine room flat, frame 126 C/L
	Aux. Engine room floor, frame 126 C/L
	Boiler flat aft, frame 140 C/L

WHISTLE CONTROL SYSTEM

A mechanical whistle pull is provided with a single lever located overhead in the pilot house. The lead runs directly aft through a 3/4" steel pipe to the forward stack where it runs up the inside of the casing to the whistle.

OPERATION OF THE WHISTLE

Before testing or operating whistle at any time, steam should be turned on with all drains open and traps in operation for at least thirty minutes before blowing, to insure proper heating of the Leslie-Tyfon and its diaphragm.

To adjust diaphragm, be sure the actual operating pressure is available and then screw back cover up, with spanner wrench furnished, while Leslie-Tyfon is blowing. If furing balst of Leslie Tyfon, water comes out through the horn or around the stem of operating valve, or if sound is not clear frmm begi ning of first blast, a checkup should immediately be made of respective traps, and is same are not functioning properly, they should be by-passed until they are put into working order. Make back cover adjustments as tight as possible while still obtaining a clear well-defined blast.

MAINTENANCE

Examine and clean diaphragm every three months. If any leaf is found damaged, it should be replaced by a new one. The new leaf should be installed next to the [illegible]

After diaphragm leaves have been cleaned, they should be put in position and tested as explained under paragraph 2 under operation.

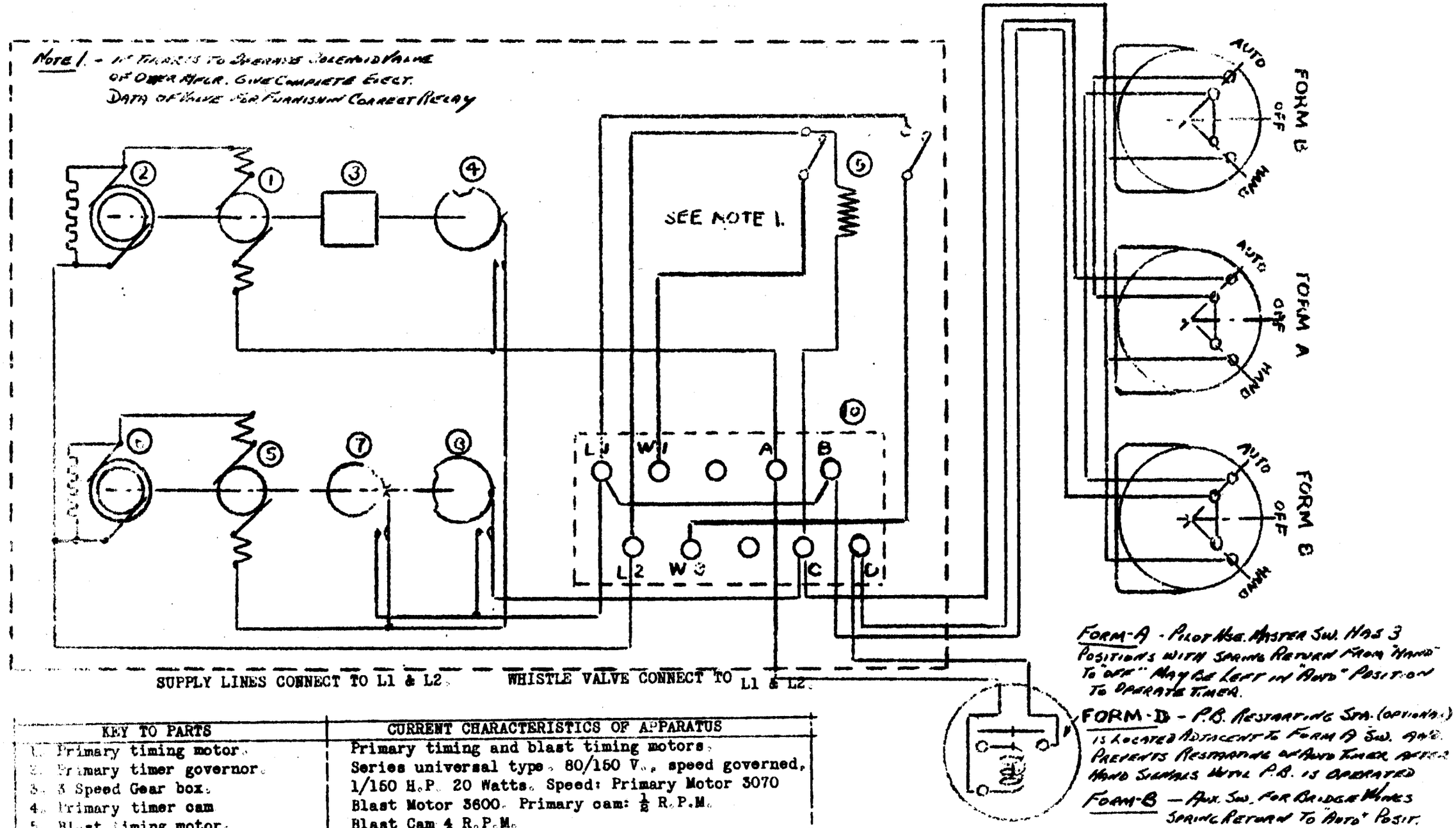
Check up on operating valve every three months. If the main valve is leaking, remove same, following proper drawings for guidance, and grind in to obtain a good clean seat. The seat ring is locked in place with a set screw and can only be removed with proper wrench after set screw has been loosened. See drawing for location of set screw before trying to remove seat.

ELECTRIC CONTROL

The enclosed sketch best illustrates the electric control system for the whistle.

ENGINE ORDER TELEGRAPH

Three inter-connected stations are provided for conning the ship, i.e., one in the wheelhouse and one on each wing of the bridge. (Note: Bridge wing stations removed on AP 112-119). These stations transmit to each engine room where the engine telegraph is located just forward of the throttles and main gauge boards. When the bridge telegraph handles are moved, a buzzer si started which rings at all stations until properly answered by the engine room telegraph. This buzzer will ring continuously on the bridge and in the engine rooms as long as the telegraph handles of all stations are not in corresponding positions.



SUPPLY LINES CONNECT TO L1 & L2. WHISTLE VALVE CONNECT TO L1 & L2.

KEY TO PARTS	CURRENT CHARACTERISTICS OF APPARATUS
1. Primary timing motor.	Primary timing and blast timing motors.
2. Primary timer governor.	Series universal type. 80/150 V., speed governed,
3. 3 Speed Gear box.	1/150 H.P. 20 Watts. Speed: Primary Motor 3070
4. Primary timer cam	Blast Motor 3600. Primary cam: $\frac{1}{2}$ R.P.M.
5. Blast timing motor.	Blast Cam 4 R.P.M.
6. Blast timer governor.	Whistle Solenoid, Doran No. 209C.
7. Cycle Sealing cam.	Current 60 Cy. Momentary 4.56A; Sustaining 0.52A
8. Blast Cam.	Current D.C.; Momentary 3.40A; Sustaining 0.075A
9. Relay.	At nominal 110 volts other voltages in proportion
10. Terminal Block.	Max. momentary current, terminals L1-L2* 5.16A

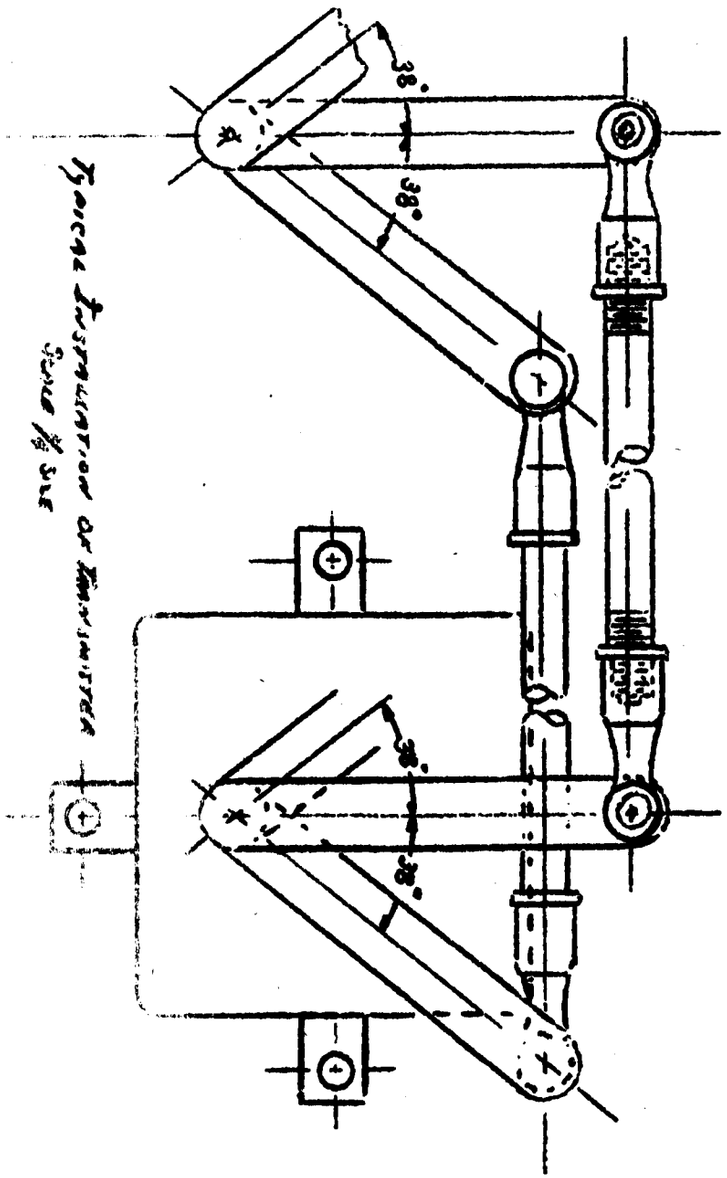
FORM-A - PILOT REG. MASTER SW. HAS 3 POSITIONS WITH SPRING RETURN FROM "HAND" TO "OFF" MAY BE LEFT IN "AUTO" POSITION TO OPERATE TIMER.

FORM-D - P.B. RESTARTING SW. (OPTIONAL) IS LOCATED ADJACENT TO FORM A SW. AND PREVENTS RESTARTING OF AUTO TIMER AFTER HAND SIGNALS UNTIL P.B. IS OPERATED

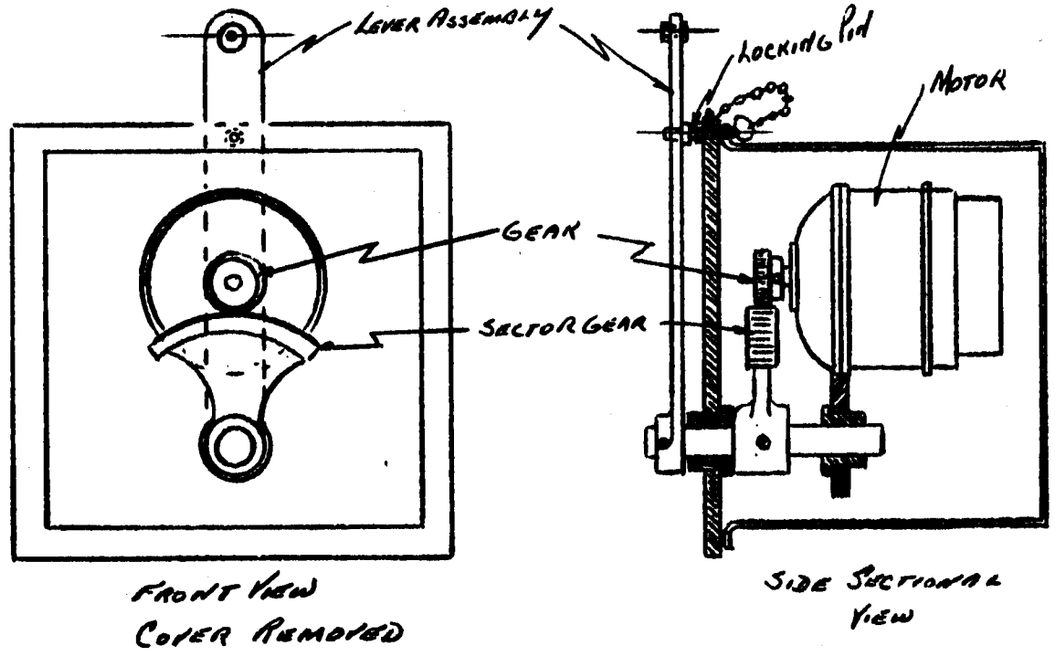
FORM-B — AUX. SW. FOR BRIDGE WORKS SPRING RETURN TO "AUTO" POSIT.

WHISTLE WIRING DIAGRAM

THREE INTERVAL TIMER



TYPICAL INSTALLATION OF TRANSMITTER
SCALE 1/2 SIZE



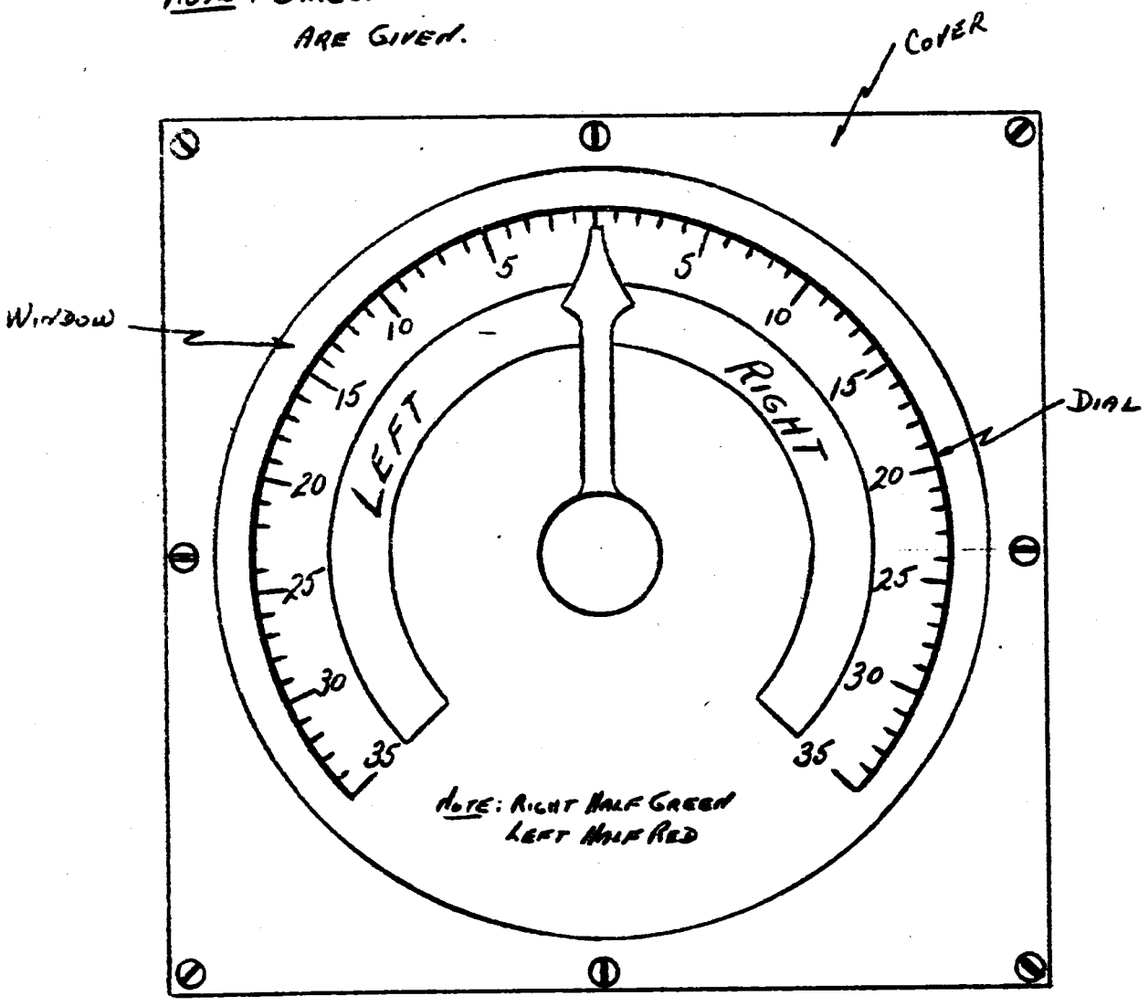
FRONT VIEW
COVER REMOVED

SIDE SECTIONAL VIEW

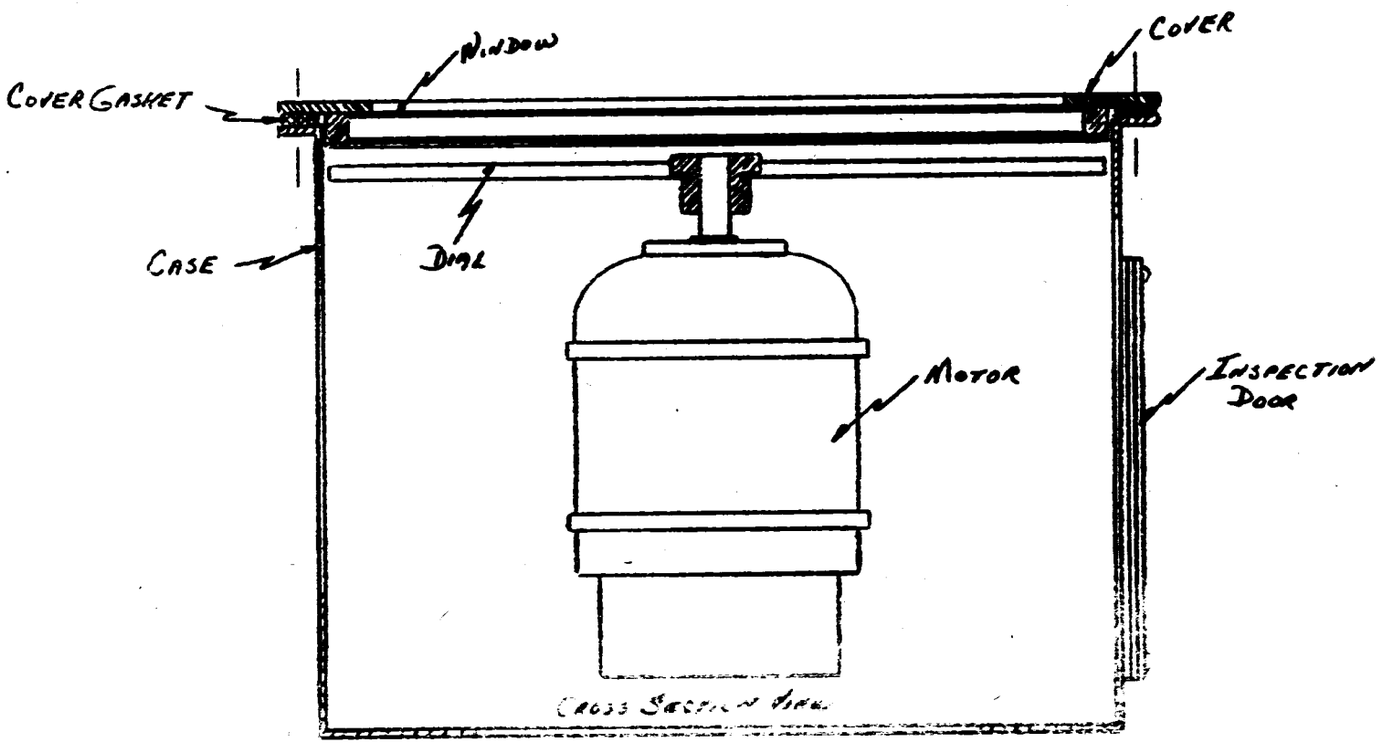
RUDDER ANGLE TRANSMITTER

SYNCHRONOUS GENERATOR TYPE A
115 VOLTS AC 60 CYCLE SINGLE PH

NOTE: DIRECT RUDDER ORDERS ARE GIVEN.



FRONT VIEW

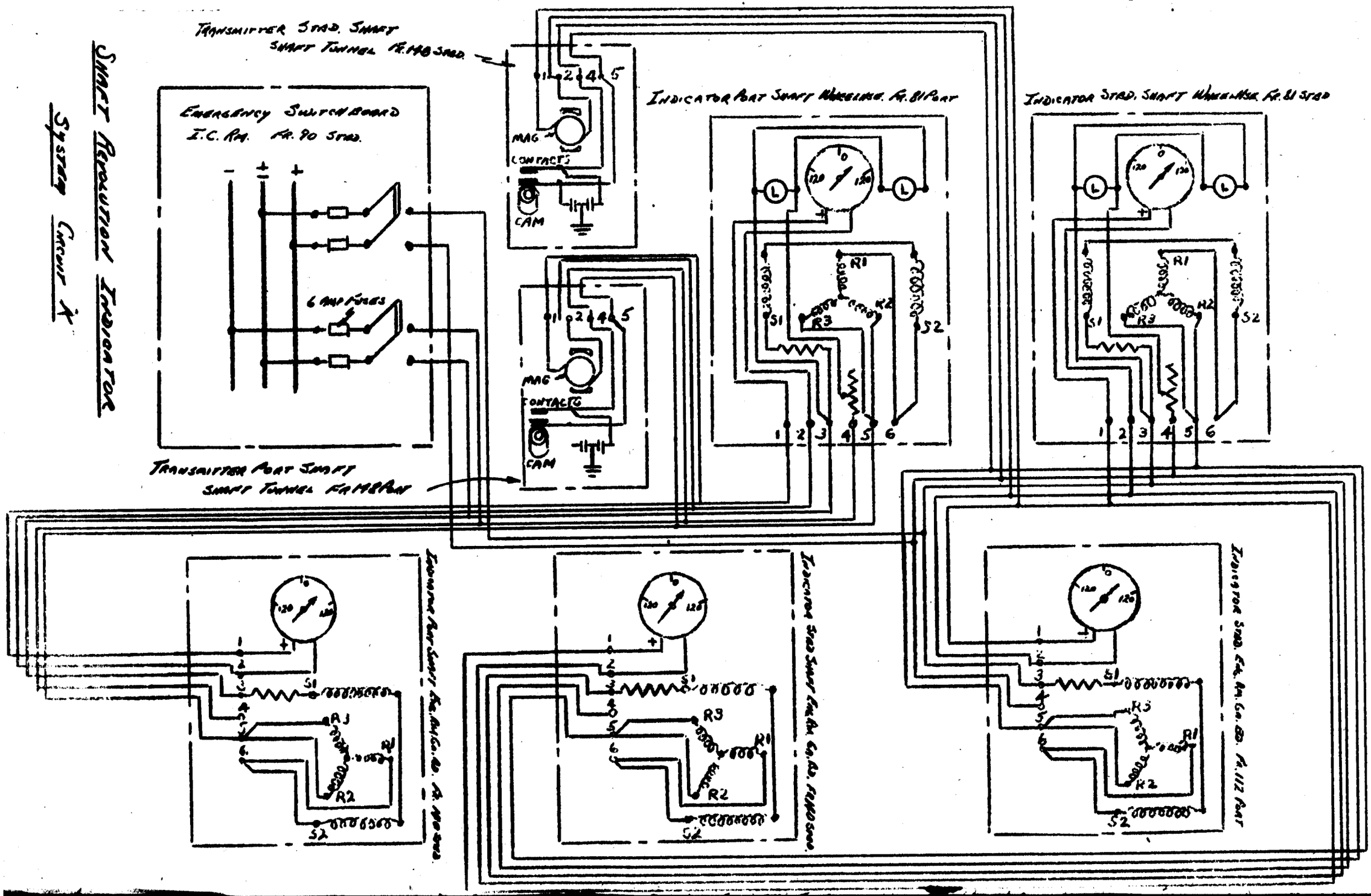


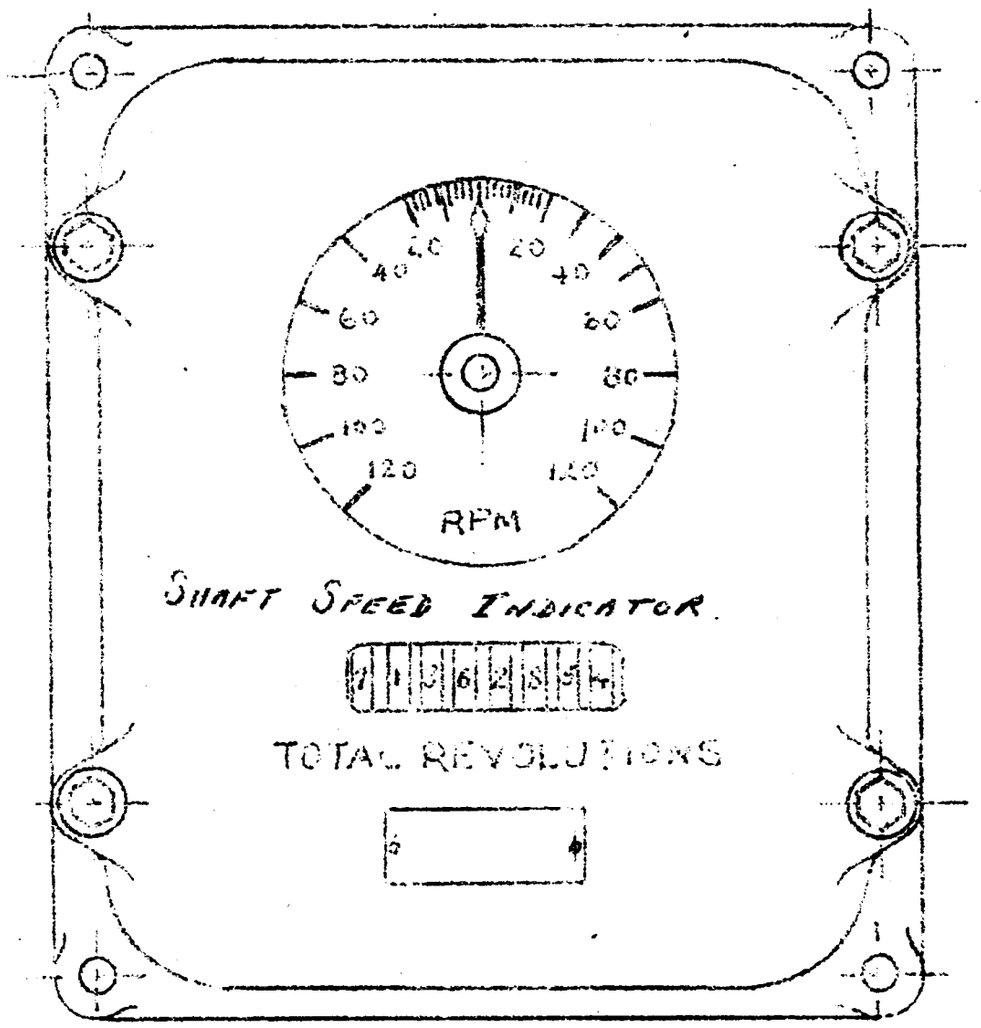
RUDDER ANGLE INDICATOR

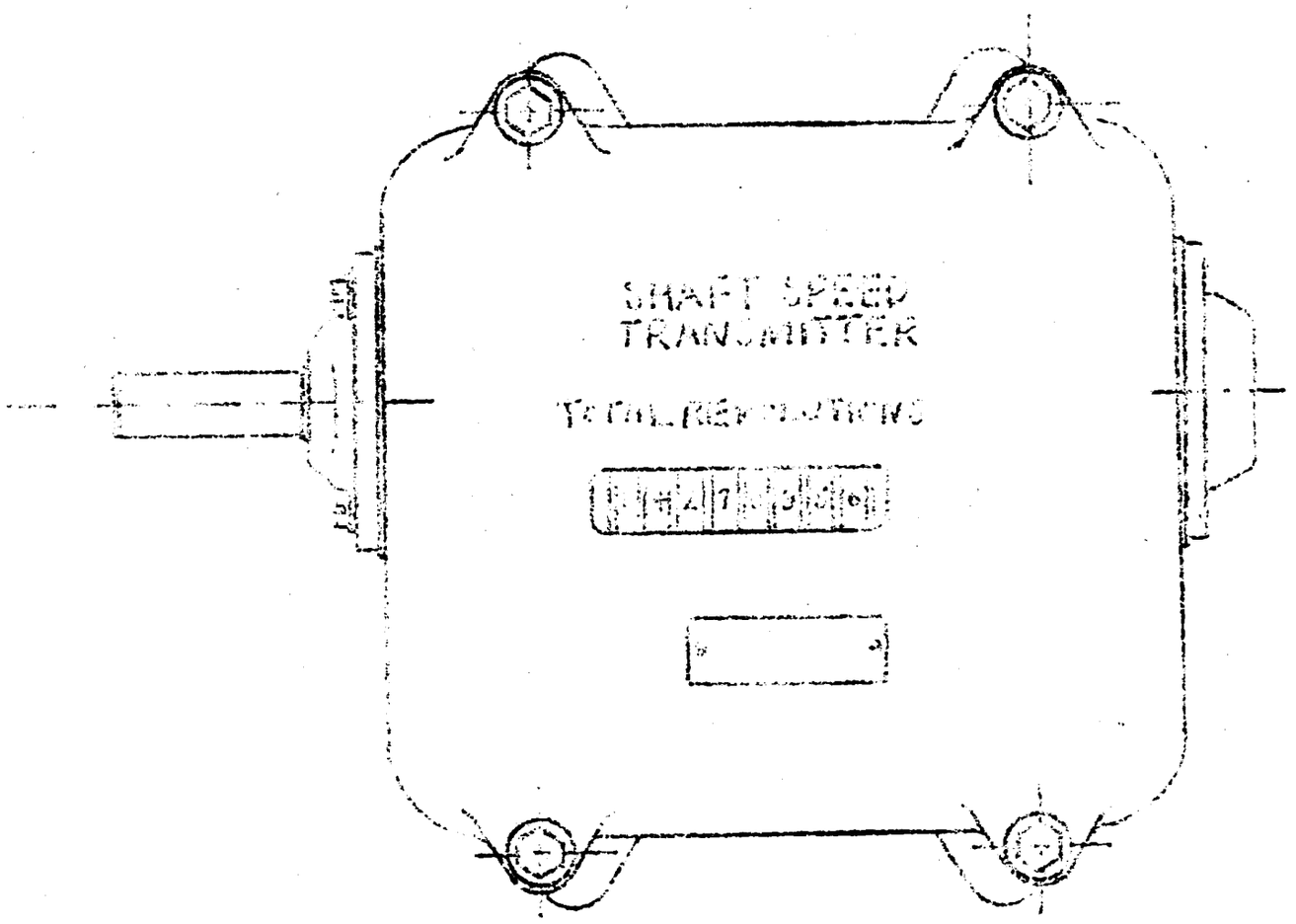
115 VOLTS AC 60 CYCLE

Shaft Revolution Indicator System

Circuit




40
20
40
60
60
80
80
100
100
120
120
RPM
SHAFT SPEED INDICATOR.
TOTAL REVOLUTIONS


SHAFT SPEED
TRANSMITTER

RADIO APPARATUS SECTION-S67

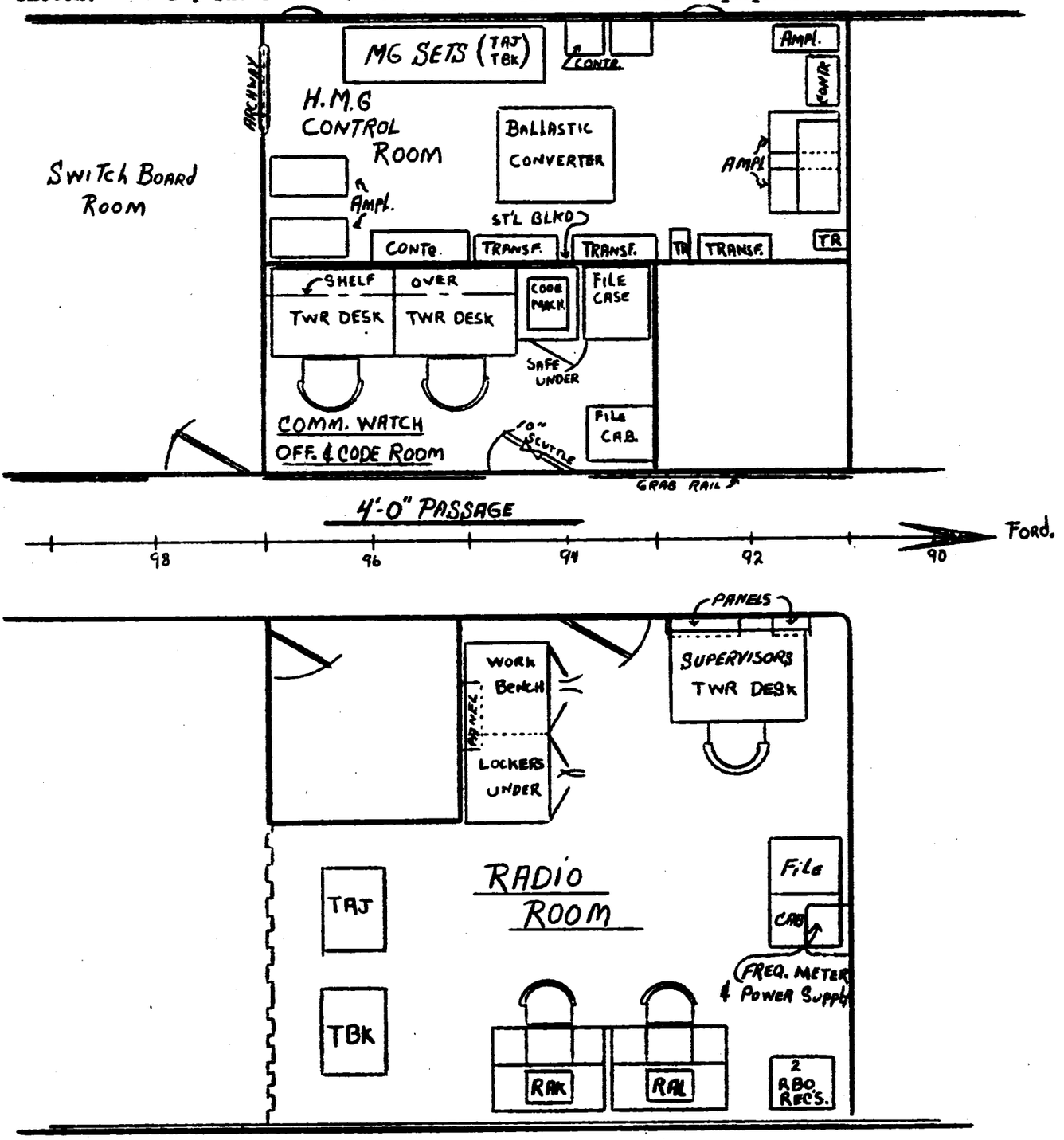
R A D I O

The radio equipment in this type of vessel is comparable with that installed in the destroyer class. The transmitters and receivers have sufficient range and flexibility to meet all demands placed on the communication system. The equipment is distributed throughout the ship in such a manner that a Radio Central, an emergency radio room, three radar rooms a radio direction finder station and a bridge operating position are all adequately equipped.

In the Radio Central, together with filing cabinets, desks and such, are located a "TAJ" and a "TBK" radio transmitter. Two broadcast receivers for the crews entertainment, The main bank of communication receivers consisting of an "RAK RAL" combination. The frequency measuring equipment with its power supply is in this space together with the necessary audio and power transfer panels. A small work bench is mounted on an after bulkhead for minor repair work.

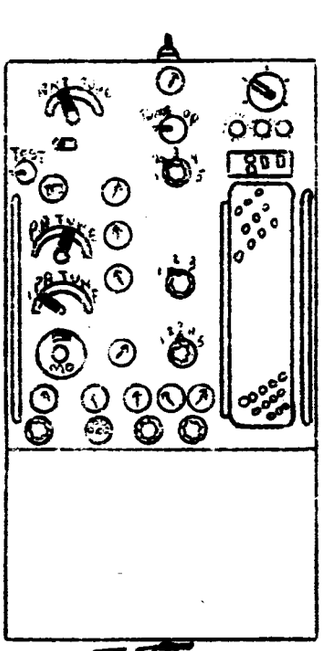
The motor generators for the two transmitters and the 500 watt converters for the receiving equipment are located across the passageway in the Heavy Machine Gun Control room. The necessary transfer panels and magnetic starters are located along the bulkhead.

The Communication Watch Officer and Coding Officer has a room just across from the Radio Central door. Filing cabinets, desks and stowage space are shown in the sketch. FIG. 1 , shows the location of the above mentioned equipment.

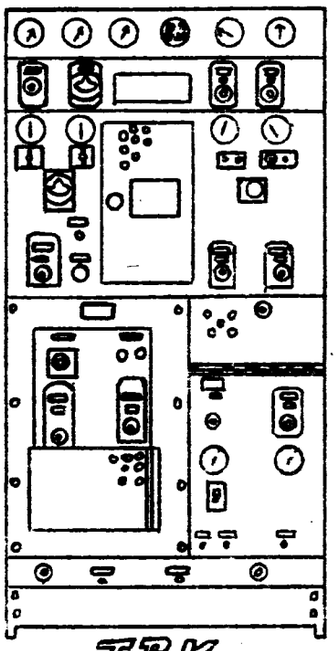


The "TAJ" transmitter is manufactured by the General Electric Comapny and has an output of 500 watts. This transmitter is of the low and medium frequency type. The oscillatory circuit is of the electron coupled type, giving a continuous frequency coverage of 175 to 600 KCS.

The oscillator makesuse of a type 38160 tube of the screen grid type. This being so connected that the plate and screen give the electron coupled feature. This stage in turn is followed by another type 38160 tube in an intermediate power amplifier. The final amplifier consists of two 38160 type tubes which are of the screen grid class and rated at 500 watts each. Being of the screen grid type, they require no neutralizing over the entire frequency range of the transmitter. One stage of the 38160 type tube is so arranged in a circuit that it furnishes an audio voltage for modulating the output of the transmitter in a variable range of audio frequencies. The front panel is shown in Figure 2, together with the various controls.



TAJ



TBK

FIG. 2

The manner of tuning this transmitter is covered fully in the instruction book and calibration sheets which accompany this installation.

The "TBK" is of the high frequency type having an output of 500 watts derived from the final amplifier which uses a type 38160 tube. This transmitter is manufactured by the Radio Corporation of America. The oscillatory circuit makes use of the electron coupled feature and has a frequency range of 1000 to 2000 KCS. Thus, by making use of the various stages following, for singling and doubling, an output frequency range of 2000 to 18,100 KCS is obtained in a continuous coverage.

The transmitter makes use of four type 38160 tubes, arranged as follows: one type 38160 in the electron coupled oscillator, one in the first intermediate amplifier, and two connected in parallel in the second intermediate amplifier. The final amplifier uses a type 38161 tube. The various stages are conventional in their construction and design and should present no difficulties to the personnel. The final stage, using a screen grid type 38161 tube required no neutralizing throughout the entire range of the transmitter. The instruction books and calibration sheets should be consulted whenever a change of frequency is made on this transmitter due to the possiblility of singling when it is required to double, or vice versa. Figure 2, shows the panel arrangement of this transmitted, together with the various controls.

The frequency measuring equipment consists of the "LM 11" frequency meter. This meter has a frequency range of 125 KCS to 20,000 KCS. The accuracy of the LM is maintained by means of a 100 KC crystal calibrator. This type of meter is noted for its accuracy and the rapidity with which it is possible to set up a frequency. The LM frequency meter output is wired to the transmitter and receivers, thus eliminating the necessity of running jumpers or pick up leads around the radio room.

The "RAK RAL" receivers are installed, together with their AC source of power in a comfortable operating position against the ~~after~~ bulkhead. This unit, in reality, is composed of two individual receivers. Together, they are capable of a frequency coverage from 15 to 23,000 KCS. This coverage is broken up, the RAK covering the 15 to 600 kcs portion of the spectrum and the RAL covering the 300 to 23,000 KCS portion. The outputs of these two receivers may be cascaded into one line (audio) or they may be separated. The receivers are of the Tuned Radio

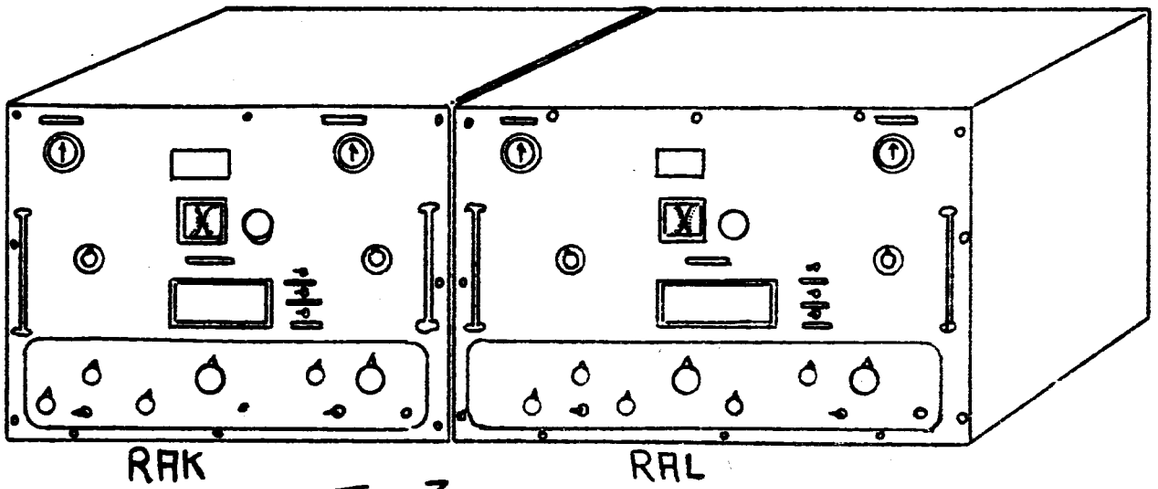


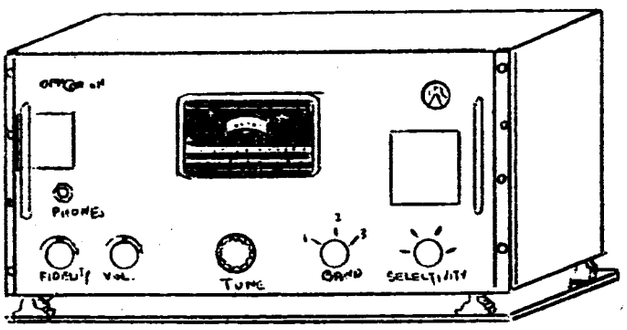
FIG. 3

frequency type, having two such stages ahead of the detector. This is followed by two stages of audio amplification. AVC is incorporated in the circuit for maintaining the signal at a fixed level. The sensitivity of this type receiving equipment is very high and the noise level quite low. Figure 3, shows the panel arrangement of the two receivers.

The "RBO" receivers, two being installed, are for Broadcast reception for the entertainment of the crew or passengers. These receivers are so designed, that "Re-Radioation" is held down to an absolute minimum. These units are of the super hetrodyne type with one stage of radio frequency amplification between the antenna and the first detector.

The "RBO" has a frequency range of 540 to 1600 KCS and 5550 to 15,600 KCS. This frequency range covers the standard broadcast and high frequency broadcast bands. The output of these two receivers is fed through the ship and at various points the circuit is tapped and fed into small amplifiers.

These amplifiers have a program selecting switch wired into their circuits, whereby they may select the output of either of the RBO receivers. In Radio Central some means of monitoring the output of both receivers should be provided. These receivers, due to the pecularities of wave propagation have a tendency to become detuned over a period of operation. Particularly in the high frequencies. It is suggested that a routine check be made on the quality of reception at regular intervals. It has been found through experience, that unless this routine is maintained, a constant phoning of Radio Central will result. Figure 4, shows the outline of the RBO receiver.

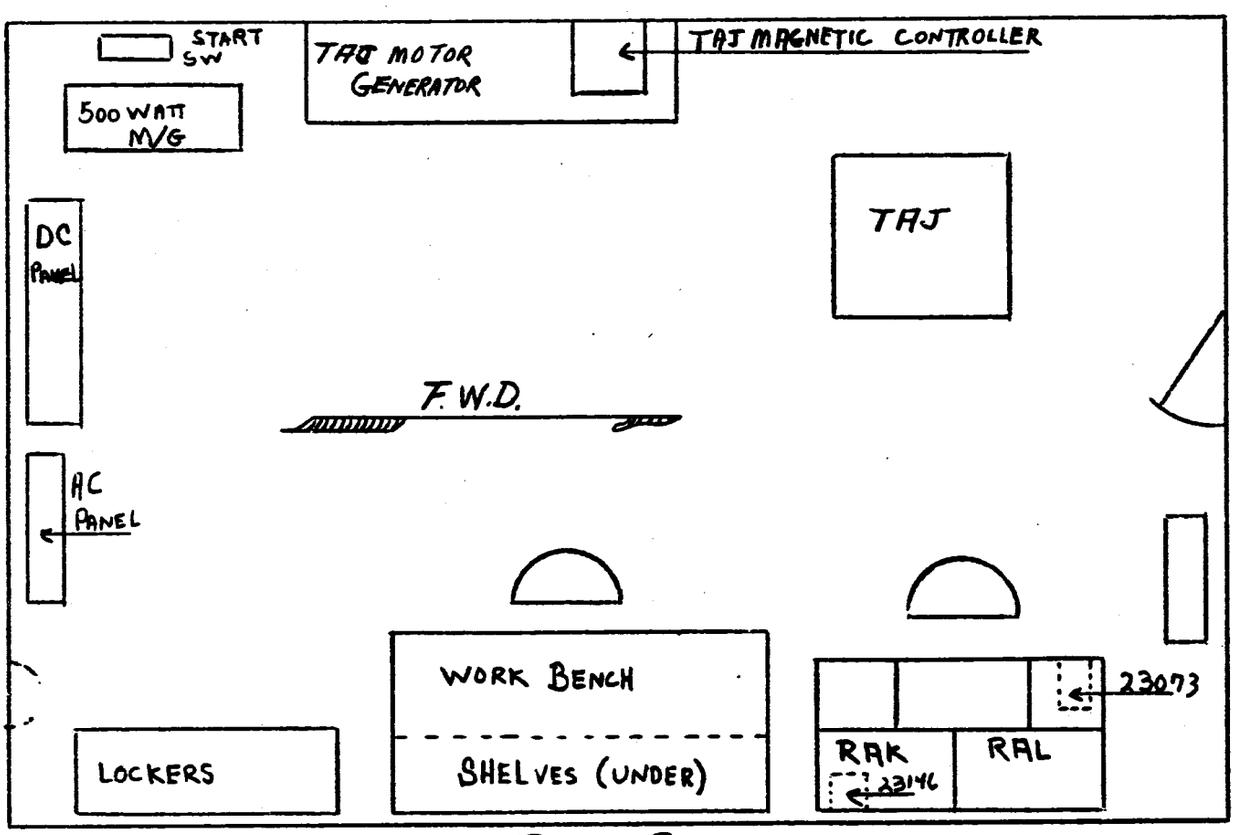


RBO

FIG. 4

"THE RBO" SHOULD BE THE ONLY BROADCAST RECEIVER ON THE SHIP"

The emergency radio room, located on the promenade deck, has a TAJ transmitter, one RAK-RAL receiver unit, transfer panel, generators, and supply panels, located as shown in Figure 5.

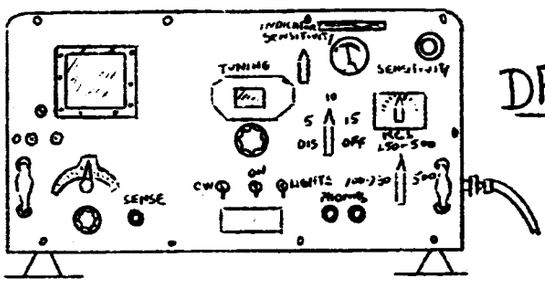


EMERGENCY RADIO ROOM
PROMENADE DECK

FIG. 5

The various units of equipment have already been discussed. See Figure 2 and Figure 3.

The chart house has the "DP-12" radio direction finder installed where it will beclose to the chart desk and the Navigator. This receiver is of the Super hetrodyne type circuit, capable of receiving modulated ar unmodulated signals. The frequency coverage for this type of receiver is more than ample, it being 100 KCS to 1500 KCS This type of equipment, when properly calibrated, is by far the best type of radio direction finding equipment available. Together withthe sence feature and the sence balancing, a bearing may be obtained which leaves no doubt as to where it is. Figure 6, shows an outline of the "DP-12" radio direction finder as installed together with the location in the charthouse.



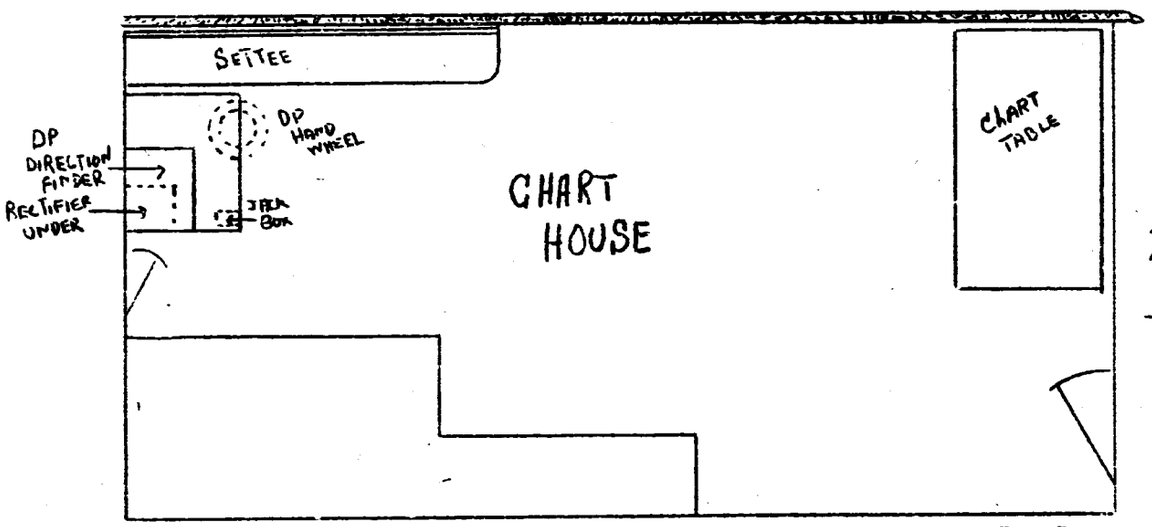


FIG. 6

On the port side of the Pilot House is installed a type "RBH" receiver and a "TBY" transmitter-receiver, together with a keying position and audio phannels. This gives a ready operating position on the bridge whenever it should be required.

The "RBH" is manufactured by the National Co. and is of the superhetrodyne type. A loud speaker is furnished with this equipment for ease of operation. This receiver has a frequency range of 300 to 1200 KCS and 1700 to 16,000 KCS. Figure 7, shows an outline of this receiver.

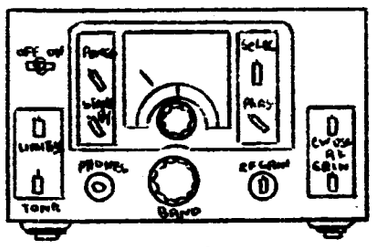


FIG. 7

The "TBY" transmitter-receiving equipment, located beside the RBH in the Pilot House is of the Ultra-high frequency type, having a reliable range of communication from horizon to horizon. The TBY is for voice communication only and of low power. The installation aboard this type of vessel is considered as being permanent. The coaxal line to the antenna is in a fixed position. This, it has been found, gives a much more reliable signal. The location of the TBY and RBH are shown in figure 8.

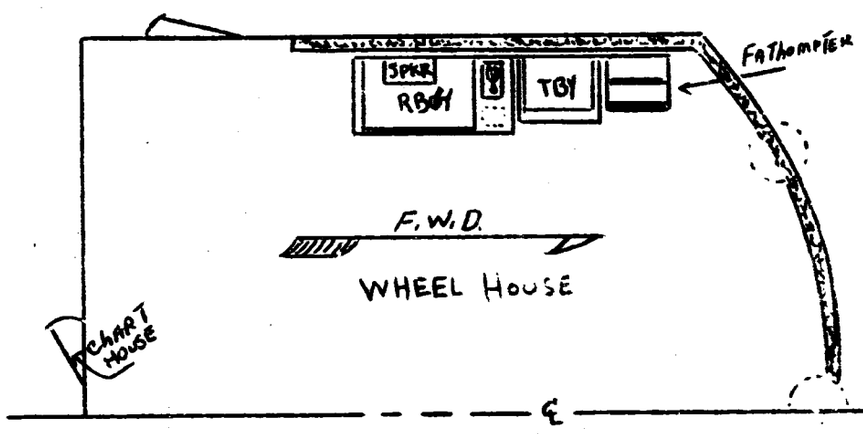


FIG. 8

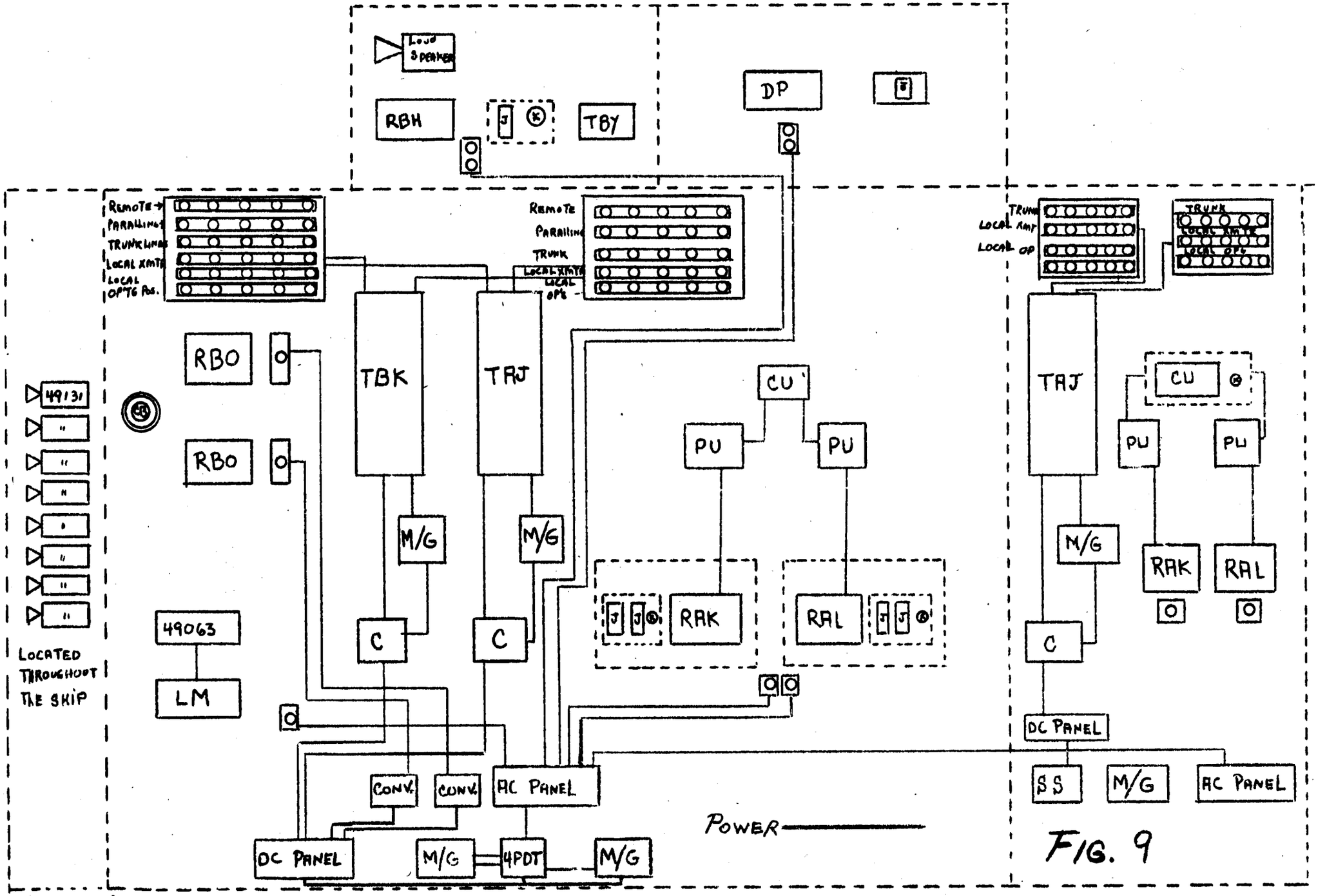


FIG. 9

FIG. 9, shows a complete inter-wiring diagram of the entire communication system as is installed.