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Naval Air Engineering Center ltr dtd 17 Aug 1972

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U. S. NAVAL AIR ENGINEERING CENTER

PHILADELPHIA, PENNSYLVANIA

AD864089

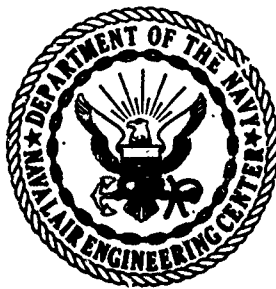
ENGINEERING DEPARTMENT (SI)

NAEC-ENG-7585

CODE IDENT. NO. 80020

11 Dec 1969

FLIGHT DECK ARRESTING GEAR
AND BARRICADE CONFIGURATION
CRITERIA FOR MARK 7 MOD 3
ARRESTING ENGINE



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NAVAL AIR ENGINEERING CENTER
PHILADELPHIA, PENNSYLVANIA 19112

ENGINEERING DEPARTMENT (SI)

NAEC-ENG-7593

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CRITERIA FOR MARK 7 MOD 3
ARRESTING ENGINE

PREPARED BY

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RECEIVED
NAVAL AIR SYSTEMS CMD
(AIR-604) Wash DC 20360

APPROVED BY

Kaufman

12/11/69 ul

ABSTRACT

This report presents information regarding flight deck arresting gear & barricade configuration criteria for the Mk. 7 Mod. 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of Mk. 7 Mod. 3 arresting gear.

I INTRODUCTION

The purpose of this report is to provide information for use in the preparation of Mark 7 Mod 3 arresting gear installation plans for new carriers or existing carriers which are to be reconfigured to utilize new gear.

II SUMMARY

The installation criteria for the arresting engine and associated equipment, i. e. , deck pendant, barricade, flight deck and arresting gear control station were determined based upon past operational experiences and reflect the optimum design configuration features for future recovery systems.

III CONCLUSION

Criteria contained herein has been compiled and developed based on past experience in order to obtain the best operational features in future recovery system reconstruction and new carrier design. Deviations from criteria established within this report should initially be approved by the Naval Air Engineering Center. In addition, Preliminary guidance arrangements and all pertinent recovery system drawings should be forwarded to the Naval Air Engineering Center for review and approval.

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VI REPORT TEXT

A. GENERAL CRITERIA:

1. Estimated weight and space requirements for the arresting engines and associated equipment are shown on Figures 1 through 5. Arresting engines should be placed athwartship so that lengths of port and starboard purchase cable from the deck sheave to the engine movable crosshead are as nearly equal as possible. In addition, Figure 6 shows an example of the desired positioning of the engines; the crosshead shall be on the starboard side of the ship when the engine is reeved, as shown in Figure 1.
2. Pendant engine deck runout is 349 feet to airplane tailhook. Barricade engine deck runout is 409 feet 6 inches to airplane nosewheel, which includes barricade slack takeup.
3. The drive system uses 28 inch pitch diameter sheaves throughout, as shown in Figure 7 with the exception of the 24 inch anchor damper turn-around sheave, as noted.
4. The choice number of sheaves (minimum) in the drive system for one engine is 10; 5 per each side of the engine extending to the flight deck. Description of these sheaves directly from one side of engine to the flight deck, is as follows:
 - a. On deck fairlead sheave
 - b. Bottom stationary sheave of sheave damper assembly
 - c. Crosshead sheave of sheave damper assembly
 - d. Thru-Deck sheave
 - e. Flight-Deck sheave
5. The minimum allowable cable wrap in the arresting gear fairlead system which includes the sheave dampers, is 15 degrees. There is one exception: the "Y" type sheave damper installation may use a minimum of 10 degrees of cable wrap around the bottom stationary sheave with the sheave damper in battery position.

6. Use "Y" type sheave dampers wherever possible, in preference to the "X" type. This arrangement is shown in Figure 2.
7. Direct access is required to sheave damper compartments from each arresting engine compartment to enable arresting gear personnel to move quickly from one compartment to another should emergency repairs be necessary during air operations. Access openings should be at least 24 inches by 36 inches with a 24 inch sill to permit passage of 28 inch pitch diameter sheaves which have an outside diameter of 29-1/8 inches. Access openings of 18 inches by 24 inches will not permit passage of the sheave and are not suitable.
8. Where two sheave dampers are housed in one compartment, a minimum clearance of 4 feet is required between components for inspection, lubrication and maintenance.
9. The Arresting Gear Shop and the Arresting Gear Storeroom should be centrally located as close as possible to the arresting engine compartments. The inclusion of two separate pouring compartments, approximately 12 feet x 16 feet is required. These should be on each side of the vessel, centrally located between and adjacent to all engine spaces. These compartments are to be used solely for pouring arresting gear cable terminals.
10. The arresting engine fluid drain and fill system should be centrally located as close as possible to the arresting engine compartments, as shown in Figure 8.
11. The sheave damper fluid drain and fill system should be centrally located among the sheave damper installations, as shown in Figure 9.
12. Provide longitudinal tracks for use with an overhead trolley in all arresting engine compartments. Tracks should be located over the center of each engine and over the engine compartment opening in the gallery deck. The tracks must extend the full length of the engine compartment. The overhead trolley must be capable of lifting 5 tons and must have a built-in automatic brake.

13. Retractable deck sheaves are to be installed in accordance with Figure 10. However, this installation should be restricted to pendant and barricade deck sheave locations where above deck obstructions interfere with airplane movement and cannot be tolerated. If no interference problem exists, the fixed horizontal deck sheave should be used. If a retractable deck sheave installation is desired, the following is necessary in order to maintain a minimum fleet angle between the retractable deck sheave and the through deck sheave. When the installation of the through deck sheave is not 90 degrees to the deck pendant line, the following principles apply:
 - a. If the location of the through deck sheave must be positioned inboard, or less than 90 degrees to the deck pendant line, it is required that the distance between the retractable sheave and through deck sheave be made greater than the normal requirement as shown in Figure 10.
 - b. If the location of the through deck sheave must be positioned outboard, or greater than 90 degrees to the deck pendant line, it is required that the distance between the retractable sheave and through deck sheave be made less than the normal requirement as shown in Figure 10.
14. Since the time required to rig a barricade is critical, it is recommended that the barricade webbing stowage compartment be located as close to the barricade stanchion as possible. The preferred location for this compartment is outboard of the starboard barricade stanchion. The compartment should be positioned so that the hatch rollers are perpendicular to the line of pull on the barricade webbing when it is being pulled onto the deck. If the barricade hatch is in the deck, the hatch cover must be "quick" opening, to reduce barricade rigging time to a minimum.
15. The material specification for the auxiliary air flask, which is to be furnished by the installing activity, should be QQ-S-682, FS 302, Finish 1, Grade B. (This material should justifiably be of a better grade than that used for the air flask on the arresting engine since the auxiliary flask is used at 3000 PSI as opposed to 400 to 800 PSI in the engine air flask.)

16. Terminal impact pads will be required for all deck pendant installations in accordance with Figure 11.
17. A sound powered phone (6 j g) jack box, tied into the arresting gear telephone circuit, should be provided at the following locations:
 - a. Each arresting engine control panel
 - b. Each sheave damper charging panel
 - c. Each terminal pouring room
 - d. Each arresting gear work shop
 - e. Barricade hydraulic control station
 - f. Arresting Gear deck edge control station
 - g. LSO platform
 - h. Pri-Fly
 - i. Arresting Gear Flight Deck Officer
18. The face of all fluid gages, for sheave dampers, barricade power package, engine stowage tank and sheave damper stowage tank, should be suitably illuminated. Gage lights can be mounted on the back for the shine-thru type and for the metal encased gage, a light should be mounted to shine on, or reflect light onto the face of the gage. Also, battle lanterns should be installed in all engine compartments directed at the engine dial and engine control panel. In addition, installation of battle lanterns should be made in all sheave damper spaces - one directed at the sliding sheave and one at the sheave damper control panel.
19. Individual air stations must be provided in each of the various systems requiring an air supply (wire supports and controls, automatic lubrication system and anchor damper battery positioner) to ensure that these systems are furnished an adequate air supply. In addition, an air pressure gage must also be included near each station to render operating personnel assurance of adequate pressure in each system.

B. DECK PENDANT CRITERIA:

1. The deck pendant sheave span for use with a Mark 7 Mod 3 arresting engine may be between 120 and 130 feet. A 120 foot span is recommended. A span up to 130 feet provides no advantage but may be used, if required.
2. Deck sheave spans for each pendant should be as close to being equal as possible. If this is not achieved, the difference in length between deck pendants will provide severe logistic problems with possible installation errors. Variations must be avoided if at all possible.
3. All deck pendants must be in the "wrap-on" sheave arrangement, as shown in Figure 7.
4. All deck sheave span centers should be on the angled deck centerline if at all possible. If off-center positioning cannot be avoided, the centerline of the deck sheave span should not be more than two feet from either side of the angled deck centerline.
5. Deck pendant spacing for a deck sheave span between 120 feet and 130 feet should be as follows:

Note: These figures are based on an airplane touchdown point between wires 2 and 3.

- a. No. 3 pendant should be 254 feet (+0 feet -4 feet) forward of the aft ramp.
- b. No. 2 pendant should be 40 feet (+4 feet -0 feet) aft of No. 3 pendant.
- c. No. 1 pendant should be 40 feet (+4 feet -0 feet) aft of No. 2 pendant.
- d. No. 4 pendant should be 40 feet (+4 feet -0 feet) forward of No. 3 pendant.

Note: The distances given provide a proper landing area aft of the first wire based on the latest lens setting and hook to ramp clearance.

C. BARRICADE CRITERIA:

1. Figure 4 provides the required information for the installation of the barricade stanchion hydraulic control.
2. The barricade stanchion span should be 130 feet (± 5 feet). The sheave span should be 120 feet (+ 5 feet - 2 feet). Both the stanchion and the deck sheave should be on the same centerline. (It should be noted that if a minimum stanchion span is used "125 feet" and a maximum sheave span "125 feet" is used, they will overlap; they must then be separated and still stay within the spans listed above).
3. The off-center distance for the stanchion (and sheave) spans should not exceed two feet either to port or starboard of the landing area centerline.
4. The barricade should preferably be located 235 to 245 feet forward of the aft ramp; in no case should a barricade be placed less than 210 feet from the aft ramp. This is to assure that all of the aircraft's wheels are on the deck prior to engagement into the barricade webbing.
5. A "wrap-on" cable sheave arrangement is required for the barricade installation, as shown on Figure 12.
6. The barricade winch air motor, which is used to tension the barricade webbing system, must operate from a 90 psi minimum air supply (150 psi maximum) in order to provide proper tensioning of the webbing.

D. FLIGHT DECK CRITERIA:

1. The utilization of two basic landing area criteria are to be employed to evaluate the arresting gear arrangement. A typical arrangement is shown on Figure 13. All airplane wheels are to be safely on the deck, at full gear runout, to accommodate the following airplane landing patterns:
 - a. Landings parallel to the angled deck centerline, twenty feet off-center to the port for all pendants and the barricade.

- b. Landings on-center, angled to the port. This angle, the yaw angle, is presently set at a minimum of 7 degrees for all pendants and the barricade. This will accommodate airplanes landing at an angle to the landing area.
2. The requirement for airplane turn-around is 110 feet when measured from the airplane hook point on the angled deck centerline from the end of full runout of the No. 4 deck pendant.
3. The installation of wire supports is shown in Figure 14. Locations for wire supports are to be in accordance with data as shown in Figure 15.

E. ARRESTING GEAR CONTROL STATION:

1. To provide an unobstructed view of the landing area the optimum location for the "deck edge controls" are inside the carrier island just below Pri-Fly level. The island location also ensures personnel maximum protection from the environment, including noise. The second best location for the "deck edge controls" is on the starboard side of the vessel, away from the carrier island to permit an unobstructed view of incoming air craft and all pendants and the barricade from battery position to full runout.

NOTE: Port side deck edge controls are hazardous with regard to "wave-off" airplanes, or during a possible cable failure.

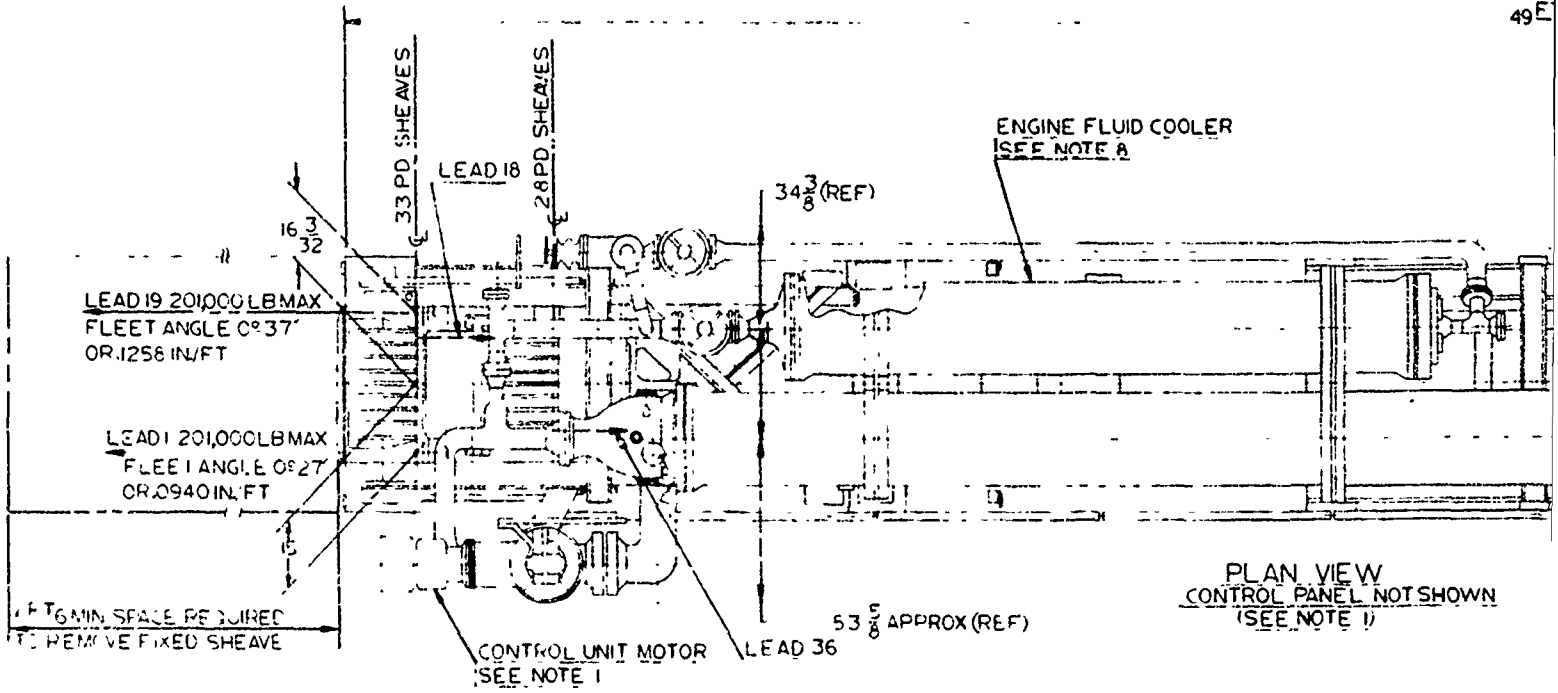
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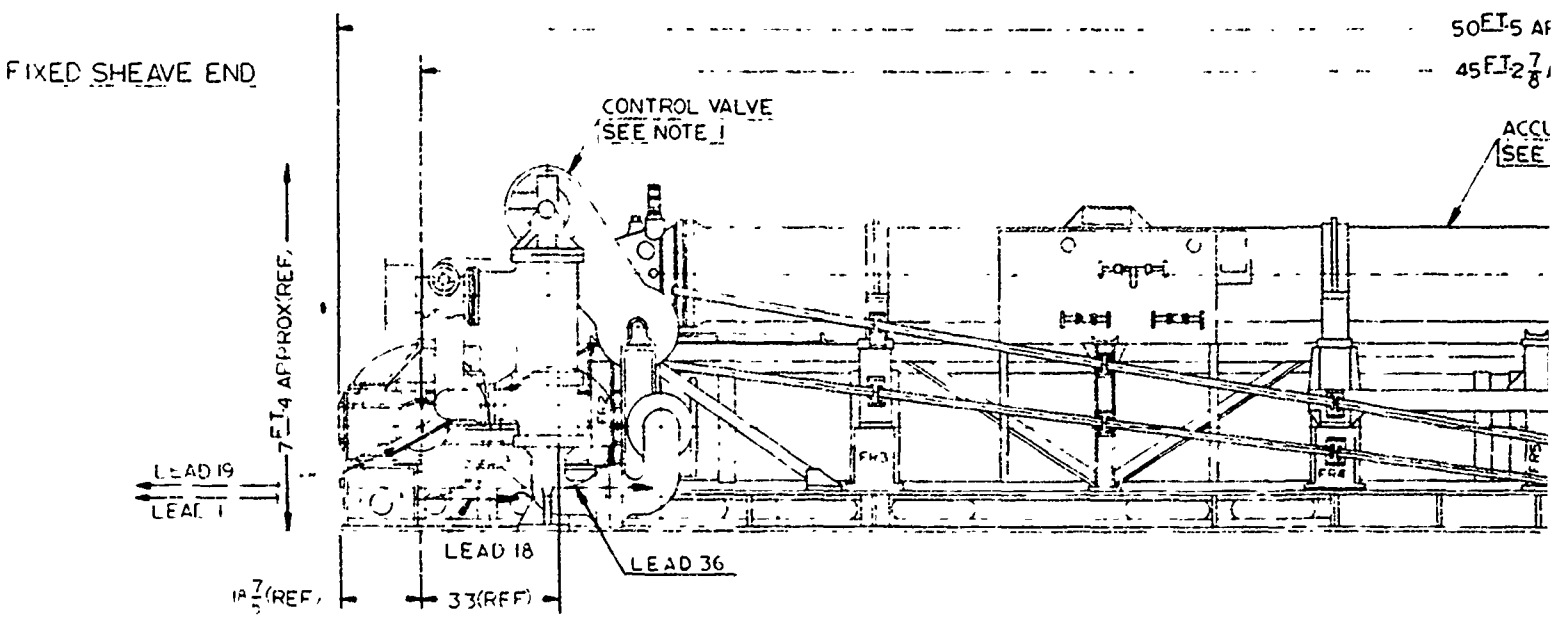
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D

C



B

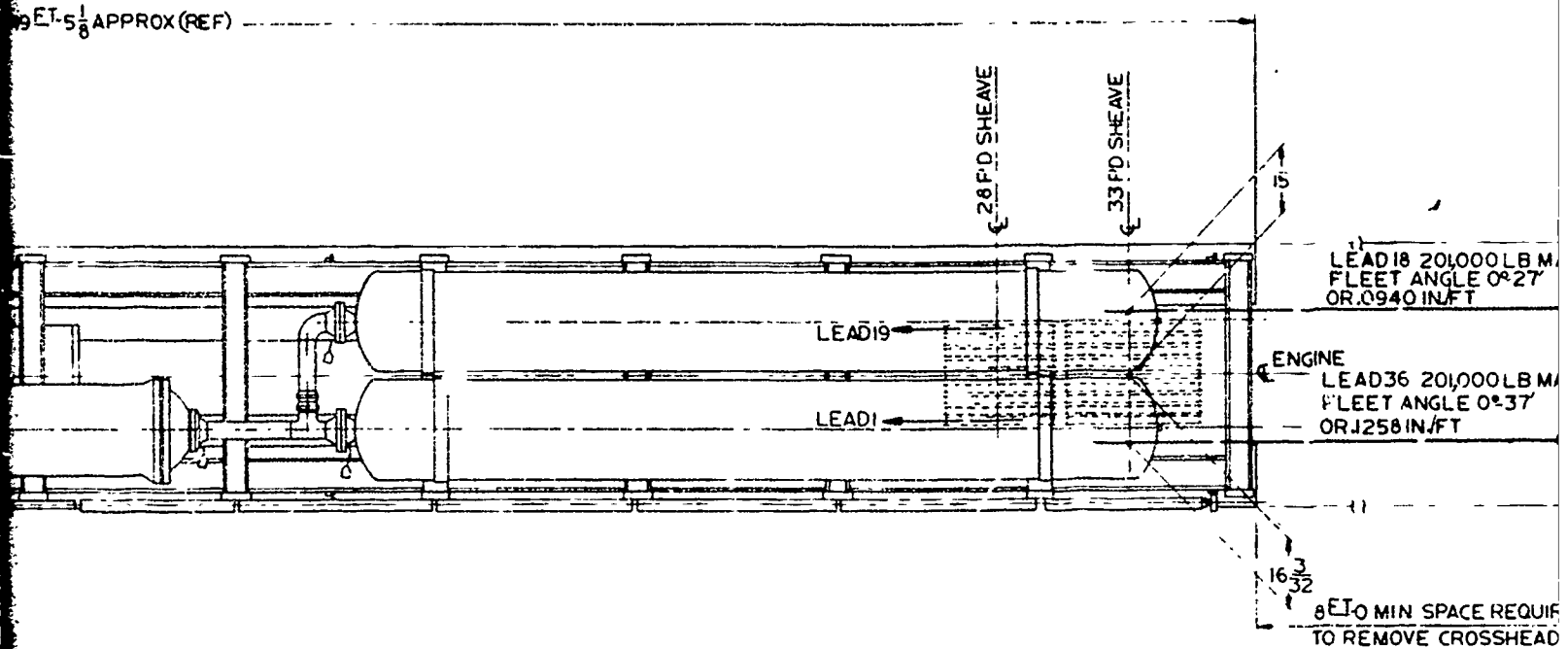


ELEVAT

10

9

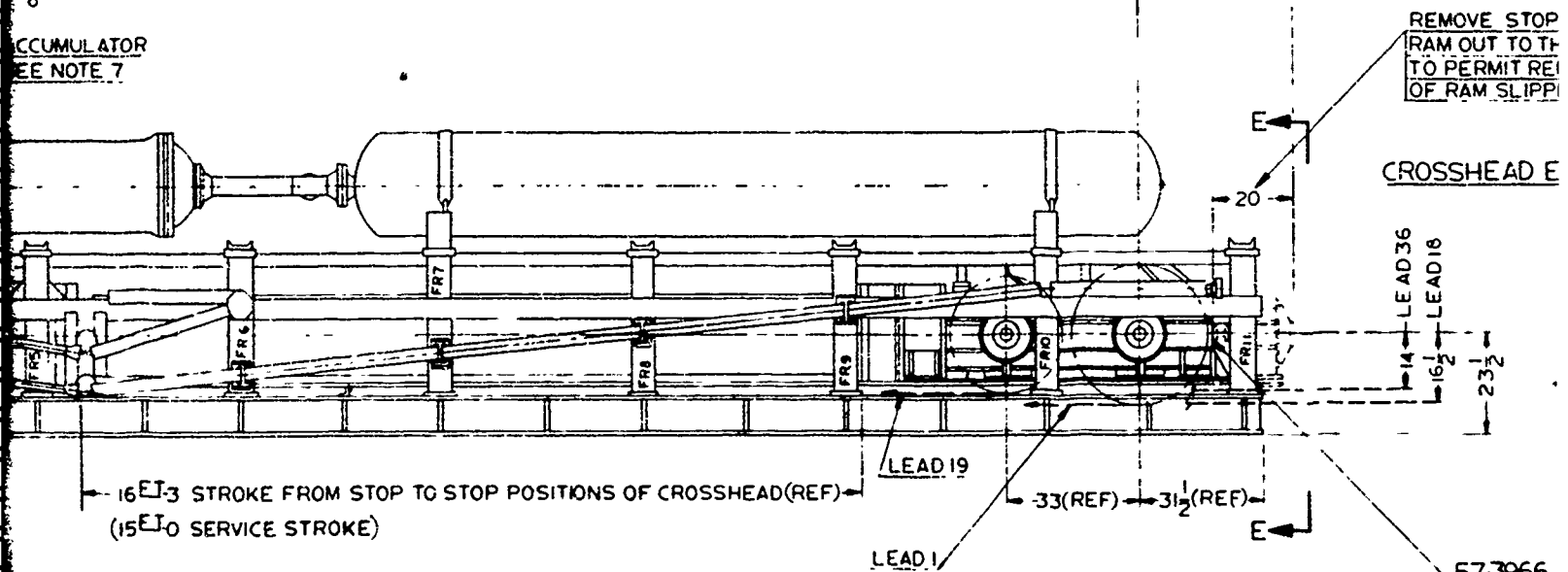
9 ET-5 $\frac{1}{8}$ APPROX (REF)



5 APPROX (REF)

2 $\frac{7}{8}$ APPROX (REF)

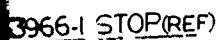
ACCUMULATOR
SEE NOTE 7



ELEVATION VIEW

02-61946

5



REEVING DIAGRAM (SEE N:
18:1 RATIO; SINGLE PENDANT A
CABLE ANCHOR DAMPER
18:1 RATIO; ENDLESS REEVING
SINGLE PENDANT
SCALE: NONE

NOTES:

1. DATA SHOWN ON THIS ARRESTING ENGINE CONVENIENT, ENGINE MOUNTED OPPOSITE PANEL MAY BE ASSE LOCATION, MODIFYING
2. THE CHOICE OF LE DETERMINED BY TH OF THE ENGINE AN APPROVAL OF THE ENGINEERING FAC
3. ON ENGINES WHICH CYLINDER SADDLE THOROUGHLY CLEAR
4. THE DECK SUPPORT LOADS AND MOMENT THESE LOADS ARE BREAKING STRENGT DYNAMIC CONDITION AND/OR ON OPPOSIT SEE PLAN VIEW SH
5. AFTER INSTALLATI HYDROSTATICALLY REPORT NAEL-EN
7. THE INSTALLING A COGNIZANCE THE F
 - (a) A 3000 PSI AI ACCUMULATOR
 - (b) A 440 VOLT, OPERATION OF CAPACITY OF
 - (c) A 110 VOLT, 60 OPERATION OF MUST BE NON
 - (d) ALL NECESSA MIL-5-5000 L
 - (e) ALL NECESSA CANDLE POWER ACCUMULATOR
 - (f) AUXILIARY FI ARRESTING E
8. SEA WATER OR FRE SUPPLIED BY SHIP WATER PRESSURE 200 PSI.
9. GENERAL DATA:
 - (a) CABLE; 1 3/8 DIA (6X CABLE 171,00
 - (b) LENGTH OF C/ AGAINST STO 831 FEET.
 - (c) WEIGHT OF E SUPPLEMENTARY SHEAVE END, 57 ARRESTING ASSE ASSEMBLY (WIT
- (e) 11. BOLTING REQUIREME INSTRUCTION 9110

29E10 (REF) X HEAD BASE 57-61219-1)

25E12 1/2

20E10

16E18

12E16

8E14

50

2 1/2 TYP

4 TYP

2 1/2 TYP

2 1/2 (REF)

PT AS SHOWN, SEE NOTE 1)

FOR 7/8 DIA BOLTS

190 REQUIRED

NOTE:

BOLT PATTERN IS FOR GENERAL INFORMATION ONLY; ACTUAL BOLT LOCATION SHOULD BE TEMPLATED FROM ENGINE BASE.

DECK BOLT PATTERN

SCALE: 3/8 = 1 E70

610100 (REF)

OR DAMPER INSTALLATION

CROSSHEAD

FOR ENDLESS REEVING
LEADS 18 AND 19 TO PENDANT

610203 (REF)
SHEAVE DAMPER
INSTALLATION

TERMINAL SWAGED ON DECK PENDANT

400791-1 (REF)

404815-1 (REF)

02-61946

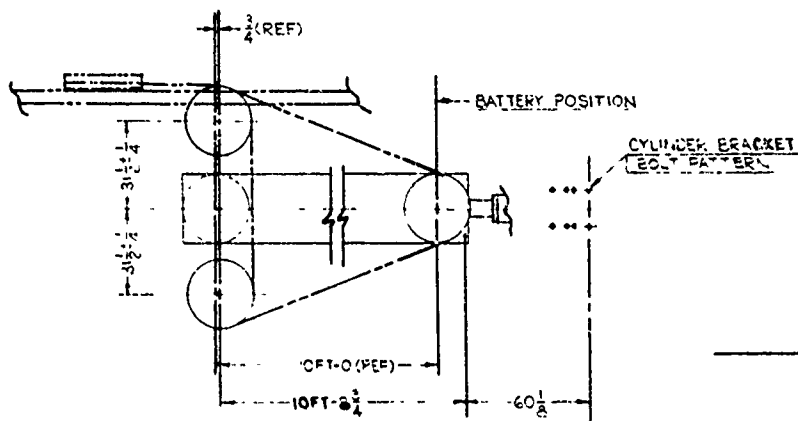
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MAJOR M
MINOR - ALL OT

NOTES:

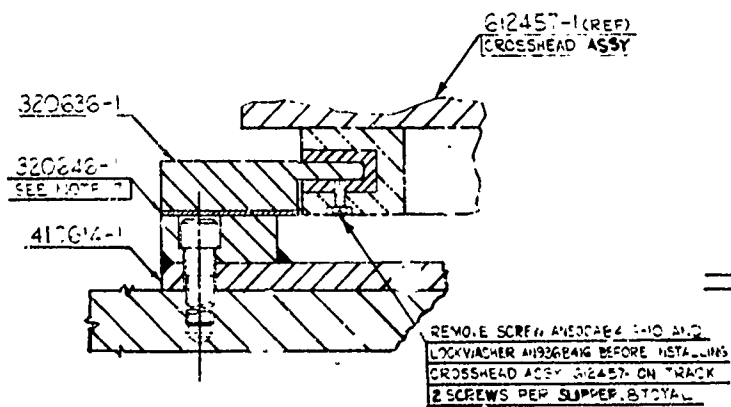
1. DATA SHOWN ON THIS DRAWING IS FOR THE INSTALLATION OF A MK7 MOD3 ARRESTING ENGINE ON ALL TYPES OF VESSELS. WHEN NECESSARY, OR MORE CONVENIENT, ENGINE ASSEMBLY WITH CONTROL VALVE INSTALLATION MOUNTED OPPOSITE HAND FROM THAT SHOWN SHALL BE INSTALLED. CONTROL PANEL MAY BE ASSEMBLED IN POSITION SHOWN OR ANY OTHER CONVENIENT LOCATION, MODIFYING PIPING AS NECESSARY.
2. THE CHOICE OF LEAD CABLES, SHOWN IN REEVEING DIAGRAM, TO BE DETERMINED BY THE INSTALLING AGENCY, DEPENDING ON THE FUNCTION OF THE ENGINE AND LOCAL INSTALLATION CONDITIONS, SUBJECT TO THE APPROVAL OF THE ENGINEERING DEPARTMENT OF THE NAVAL AIRCRAFT ENGINEERING FACILITY.
3. ON ENGINES WHICH ARE TO BE USED FOR ENDLESS REEVEING, THE CYLINDER SADDLES MUST BE MODIFIED AS SHOWN ON DRAWING 57-50874.
4. THOROUGHLY CLEAN AND PRESERVE MANIFOLD PIPING PER MPR-1015.
5. THE DECK SUPPORTING THE ENGINE MUST BE REINFORCED TO CARRY ALL LOADS AND MOMENTS SHOWN IN LOAD DIAGRAM AND IN OTHER VIEWS. THESE LOADS ARE BASED ON 100% EFFECTIVENESS OF THE MAXIMUM BREAKING STRENGTH OF THE CABLE UNDER THE MOST SEVERE EMERGENCY DYNAMIC CONDITIONS. ALL LOADS CAN OCCUR IN OPPOSITE DIRECTIONS AND/OR ON OPPOSITE SIDES FROM THE ONES SHOWN. FOR DECK BOLT PATTERN SEE PLAN VIEW SHOWN ON THIS DRAWING.
6. AFTER INSTALLATION OF ARRESTING ENGINE AND REEVEING CABLE, TEST HYDROSTATICALLY IN ACCORDANCE WITH SHIPBOARD TEST PROCEDURES REPORT NAEL-ENG-7005.
7. THE INSTALLING AGENCY SHALL FURNISH AND INSTALL UNDER ITS OWN COGNIZANCE THE FOLLOWING ITEMS:
 - (a) A 3000 PSI AIR SUPPLY LINE WITH A STRAINER FOR CHARGING THE ACCUMULATOR AND AUXILIARY AIR FLASKS.
 - (b) A 440 VOLT, 60 CYCLE, 3 PHASE POWER SUPPLY LINE FOR THE OPERATION OF THE CONTROL UNIT MOTOR WITH A MAXIMUM RATED CAPACITY OF ONE (1) HORSEPOWER.
 - (c) A 110 VOLT, 60 CYCLE, SINGLE PHASE POWER SUPPLY LINE FOR THE OPERATION OF THE WEIGHT SELECTION REMOTE INDICATORS. VOLTAGE MUST BE NON-FLUCTUATING.
 - (d) ALL NECESSARY 7/8 DIA BOLTS (MATERIAL SPEC MIL-S-6758 OR MIL-S-5000 LENGTHS TO SUIT) TO FASTEN THE ENGINE TO THE DECK.
 - (e) ALL NECESSARY LIGHTS TO GIVE A MINIMUM INTENSITY OF 30 FOOT CANDLE POWER IN THE VICINITY OF THE CONTROL PANEL AND THE ACCUMULATOR PISTON POSITION INDICATOR.
 - (f) AUXILIARY FLASKS FOR 25 CUBIC FT OF AIR AT 3000 PSI IN EACH ARRESTING ENGINE COMPARTMENT.
8. SEA WATER OR FRESH WATER FOR ENGINE LIQUID COOLER TO BE SUPPLIED BY SHIP SERVICE. WATER DELIVERY TO BE 100 GPM. MINIMUM WATER PRESSURE 100 PSI. MAXIMUM WATER PRESSURE NOT TO EXCEED 200 PSI.
9. GENERAL DATA:
 - (a) CABLE;
 - 1 3/8 DIA (6X25) FILLER WIRE LANG LAY. BREAKING STRENGTH OF CABLE 171,000 POUND MINIMUM.
 - (b) LENGTH OF CABLES REEVED WITHIN STRUCTURE WITH CROSSHEAD AGAINST STOP: ON OUTER SHEAVES-942 FEET, ON INNER SHEAVES-831 FEET.
 - (c) WEIGHT OF ENGINE EXCLUSIVE OF LIQUID AND CABLES-82,813 LB.
 - (b) SUPPLEMENTARY ARRESTING ENGINE DRAWINGS: 610541 BASE-FIXED SHEAVE END, 57-61219 BASE CROSSHEAD END, 50-61937 ENGINE-ARRESTING ASSEMBLY (WITH COOLER), 50-61938 ENGINE-ARRESTING ASSEMBLY (WITHOUT COOLER).
 - (c) BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 9110.54.

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE
D		CL "R" CHG. NRN. (1) REPLACES REV (C) WITHOUT CHG. KIDDER	1/1/70
E		NRN CL R CHG ADDED NOTE 11, LEFT-OUT WHEN REDRAWN FROM REV C. J. BARRELLA	1/1/70

TEST ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT
LIST OF MATERIALS							
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .010 ± .005 ± 1/2°			MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B96				
CLASSIFICATION OF CHARACTERISTICS CRITICAL - C TO C MAJOR M TO M MINOR ALL OTHER CHARACTERISTICS			DRAWN: KODDER HAPRL7 CHECKED: POOLE HAPRL7 MATERIAL: ANALYZED: SUPERVISOR: DATE: DESIGNED FOR: MK7 MOD3 REF:				
THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING MPR 1015			TITLE: ENGINE, ARRESTING MK 7 MOD 3 INSTALLATION DATA DRAWING NO: CODE IDENT: NO. 00020 02-61946 SCALE: 3/4"=1'0" AND NOTED SHEET:				

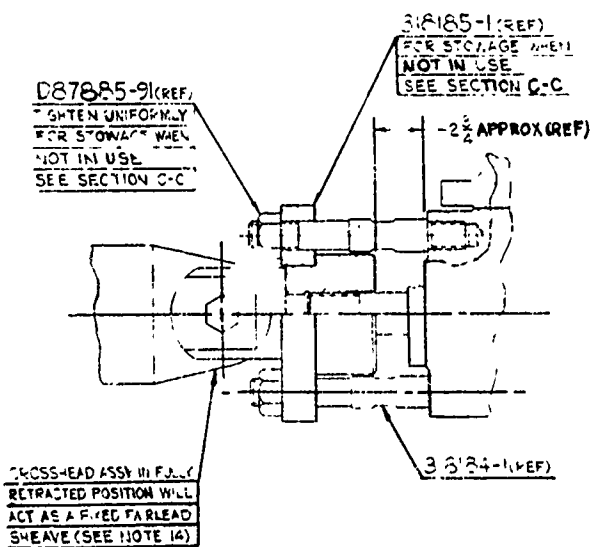


-2 ASSEMBLY
SHOWING V SHEAVE ARRANGEMENT (SEE NOTE 10)
SCALE 3/4" = 1'

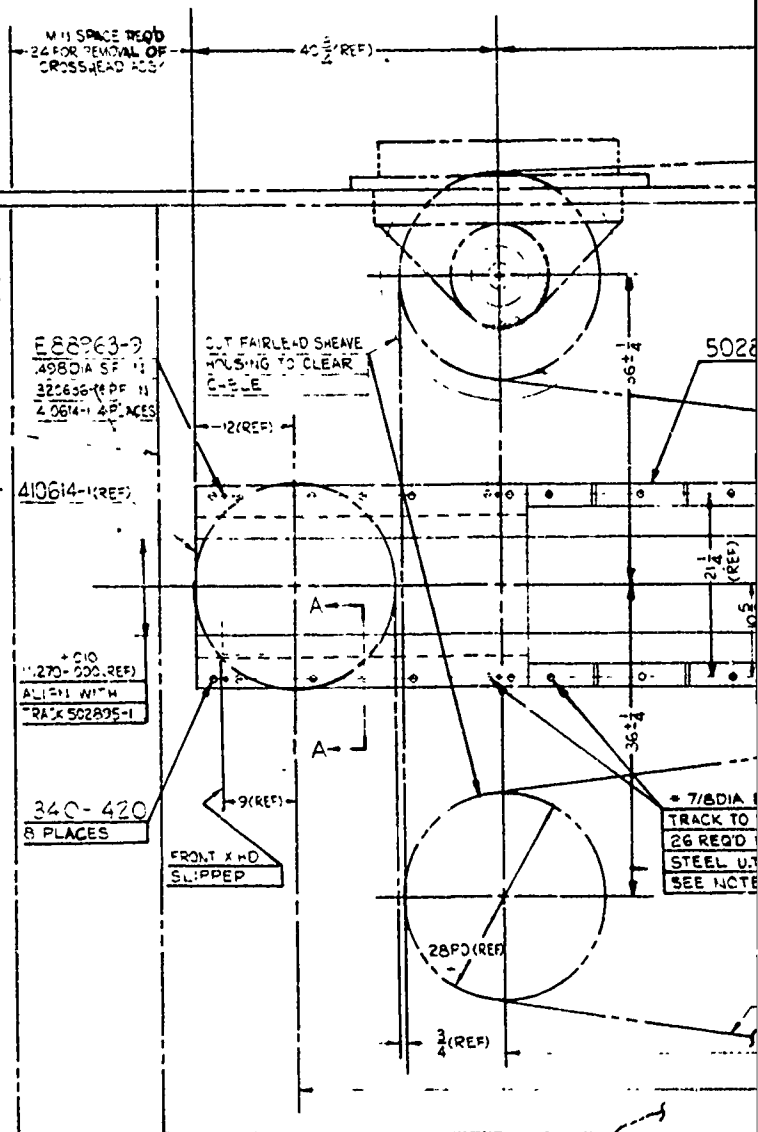


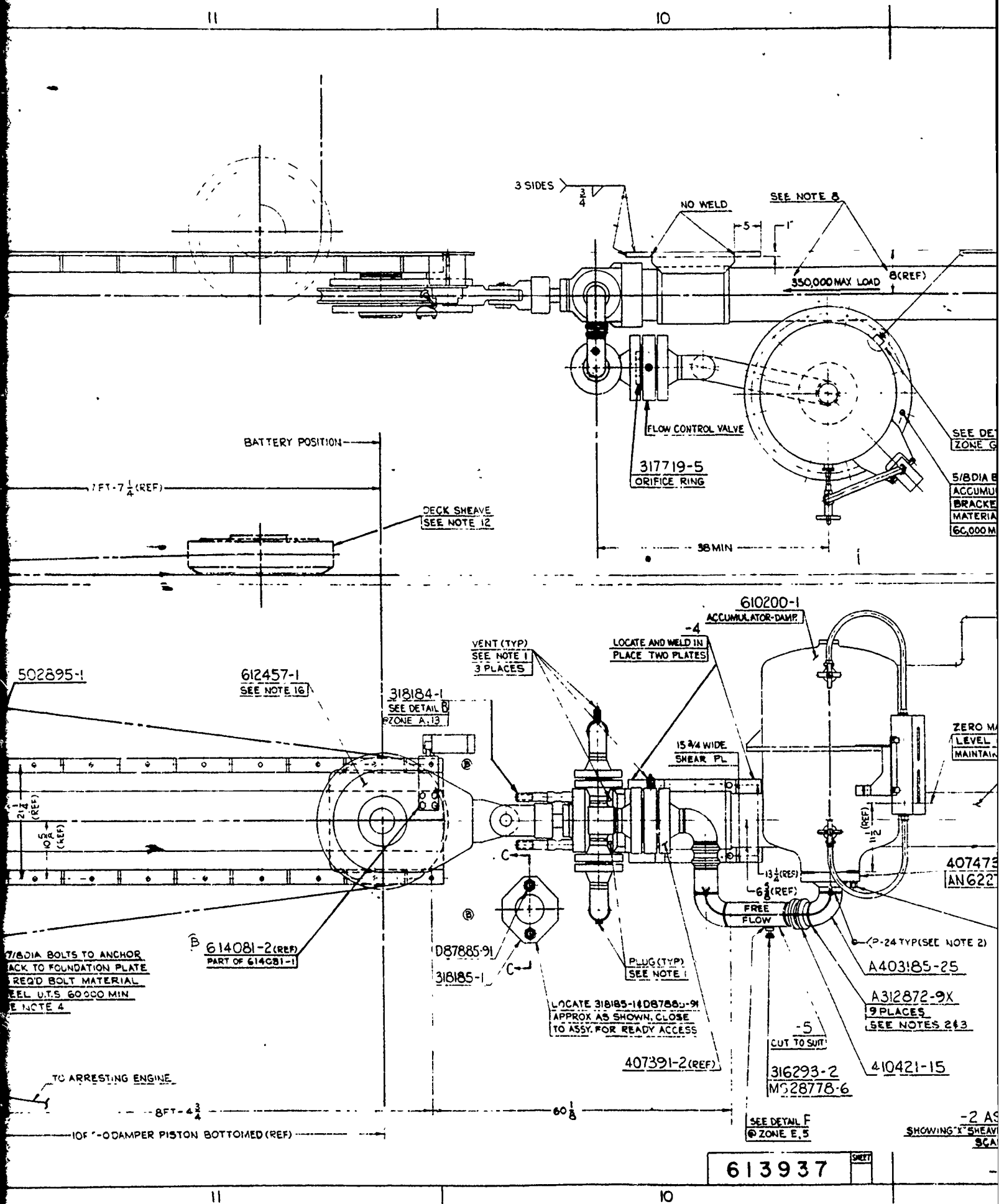
SECTION A-A
SCALE - HALF SIZE

* CABLE GUARD ENCLOSURE
SEE NOTE 10

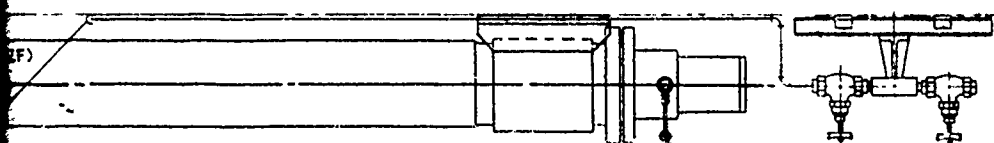


DETAIL B
INSTALLATION FOR BLOCKING SHEAVE
SEE NOTE 14
SCALE 3/4" = 1'





2



(A) SEE NOTE 25

SEE DETAIL E
ZONE G, S

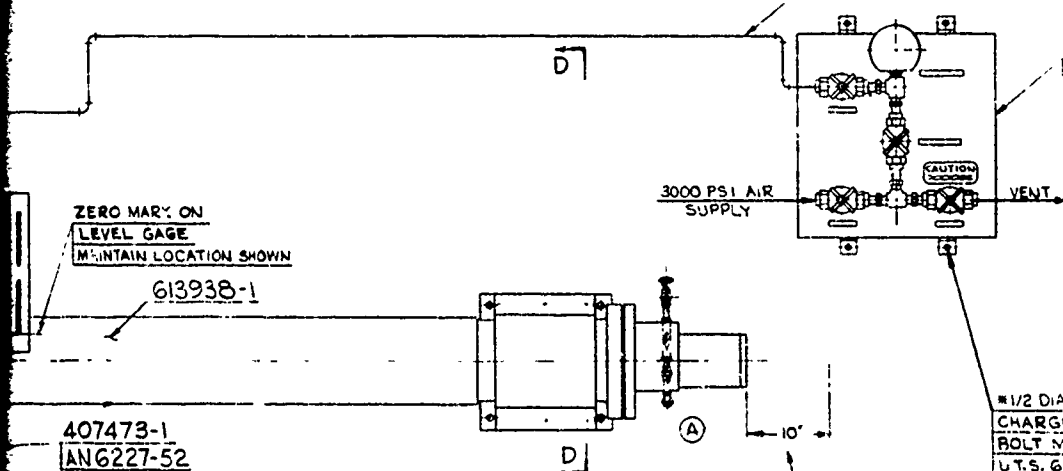
5/8 DIA BOLTS TO ANCHOR
ACCUMULATOR TO SUPPORT
BRACKET-12 REQD. BOLT
MATERIAL STEEL U.T.S.
60,000 MIN (SEE NOTE 4)

*TUBING (CU NI ALLOY)
.840 OD x .109 WALL 4500 P.S.I.
IN ACCORDANCE WITH SPEC
MIL-T-16420 TYPE COMP 75-30
SEE NOTE 4

FLIGHT DECK

3 1/2 (REF)

FOR MOUNTING
TO DAMPER
SHEAVE, SEE
DETAIL B
ZONE A, 13



ZERO MARK ON
LEVEL GAGE
MAINTAIN LOCATION SHOWN

613938-1

407473-1
AN6227-52

V87882-3
B89816-6
TORQUE FROM
300 TO 550 FT-LB

MINIMUM CLEARANCE
REQUIRED TO SERVICE
DAMPER SHEAVE PISTON

1/2 DIA BOLTS TO ANCHOR
CHARGING PLATE 4 REQD
BOLT MATERIAL STEEL
U.T.S. 60,000 MINIMUM
SEE NOTE 4

610200-1 (REF)

13 (MIN)

MOUNT ACCUMUL
CLOSE AS POSSIBLE
DAMPER CYLIN

(SEE NOTE 2)

35-25

72-9X

8
TES 243

1-15

-2 ASSEMBLY

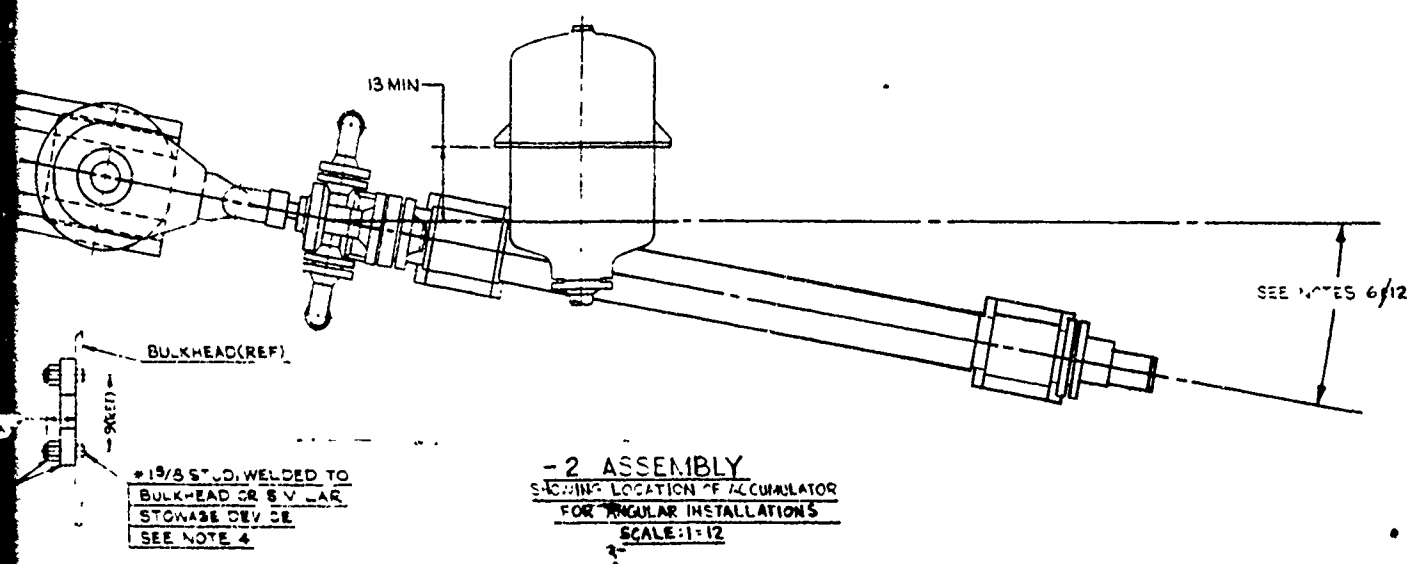
SHOWING SHEAVE ARRANGEMENT (SEE NOTE 13)
SCALE: 1 1/2" = 12"

A41056

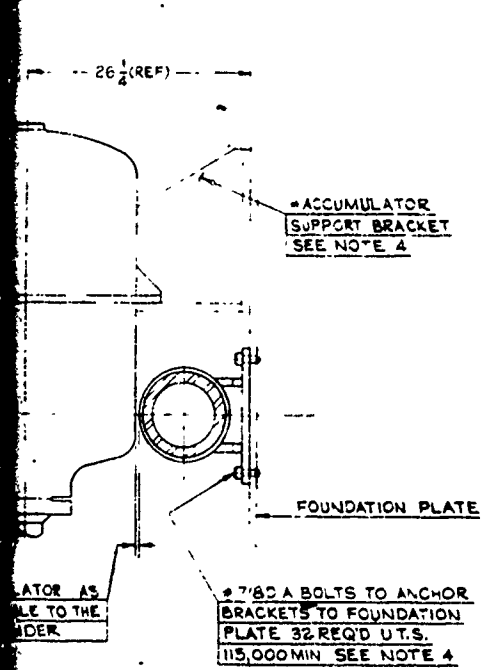
610200-1(REF)
ACCUMULATOR

AN6227-19

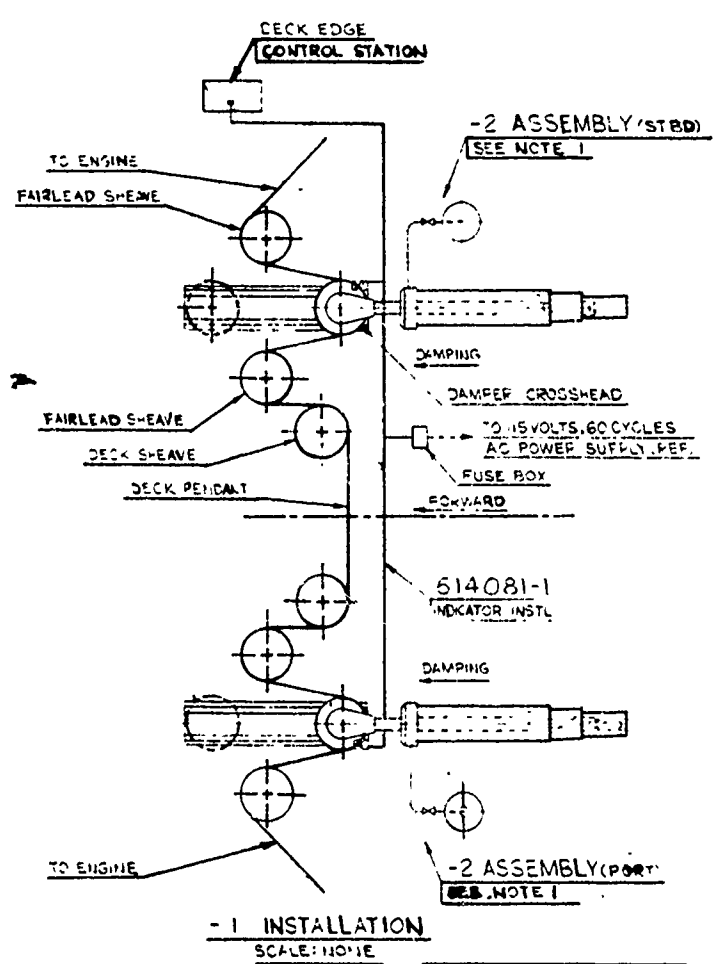
AN6227



SECTION C-C

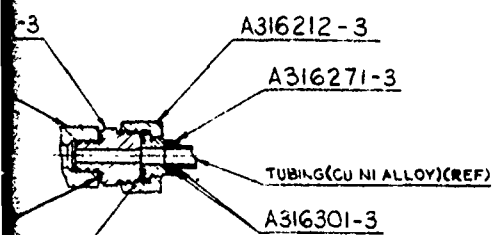


SECTION D-D

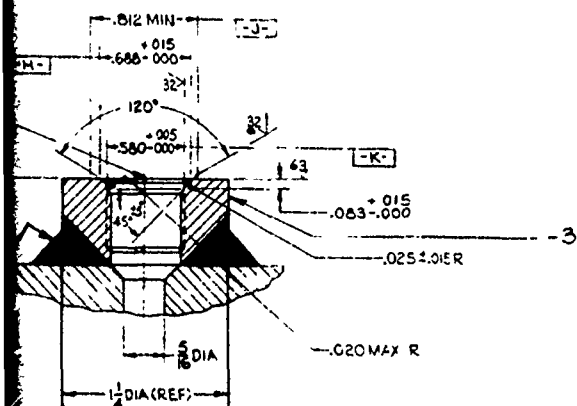


DAMPING ACC

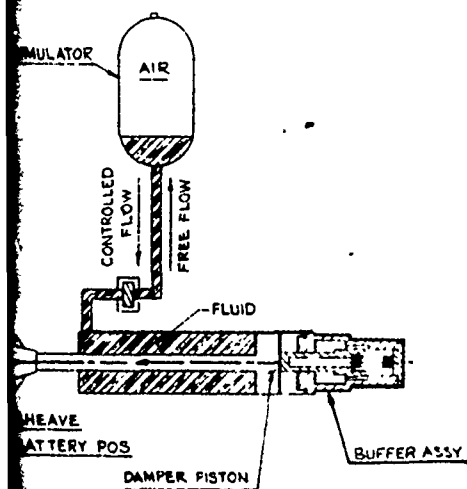
613937



DETAIL E
FITTING ASSEMBLY
SCALE: NONE



DETAIL F
BOSS & THREAD DATA
SCALE: TWICE SIZE



FLOW DIAGRAM
SCALE: NONE

17. ADD OR REMOVE SHIMS 320646-1 AS NECESSARY TO MAINTAIN ALIGNMENT OF SHEAVE TRACK RAILS. (REF 320636-1 & 502895-1)
18. MATERIAL IS NOMINAL SIZE WITHOUT MANUFACTURING ALLOWANCE. FOR NAEL (SI) USE ONLY.
19. MATERIAL FOR PARTS -3 & 4 SHALL BE IN ACCORDANCE WITH QQ-S-741 GR B.
20. MATERIAL FOR PART-5 SHALL BE IN ACCORDANCE WITH WW-P-404 CLASS 15.
21. DIMENSIONING AND TOLERANCING IS IN ACCORDANCE WITH MIL-STD-8.
22. ALL PIPE RUNS SHALL BE SUPPORTED EVERY 6FT (APPROX) TO REDUCE PIPING VIBRATION.
23. INSTALLING ACTIVITY SHALL FURNISH THE FOLLOWING:
 - (a) JACK BOXES FOR PHONE CONNECTIONS SHALL BE INSTALLED IN SHEAVE DAMPER AREA.
 - (b) INSTALL GAUGE LIGHTS FOR ACCUMULATOR FLUID LEVEL GAUGES.
 - (c) INSTALL SUITABLE LIGHT AT CONTROL PANEL 511223-1.
 - (d) FLUID STORAGE SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NAEL (SI) DWG 511168.
24. NUMBER OF SCALE FREE COUPLINGS (410421-15) & WELDING RING (312872-9X) PROVIDED FOR -2 ASSEMBLY INCLUDES AN ADDITIONAL 100% FOR INSTALLATION SPARES.
- (A) 25. BUFFER PIPING ARRANGEMENT MUST BE INSTALLED OPPOSITE BULKHEAD AS SHOWN. IT MAY BE REQUIRED TO DISASSEMBLE THE EXISTING BUFFER PIPING ON THE SHEAVE DAMPER ASSEMBLY TO CONFORM TO ARRANGEMENT SHOWN.

NOTES:

- 1 THIS DRAWING SHOWS A TYPICAL SHIPBOARD INSTALLATION FOR THE MK7 MOD 3 DAMPER SHEAVES, PART NO. 613937-1. ALL DETAIL COMPONENTS ARE ALIKE FOR PORT AND STARBOARD DAMPERS. FOR ASSEMBLY OPPOSITE TO THAT SHOWN, VENT VALVES AND DRAIN PLUGS SHALL BE ROTATED 180° SO THAT VENT VALVES ARE ON TOP AND DRAIN PLUGS ARE ON BOTTOM. FLOW CONTROL VALVES SHOULD BE ROTATED, IF NECESSARY SO THAT VENT VALVES ARE ON TOP.
- MIO1 2. WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH MIL-STD-278; CLASS M MACHINERY, P-1 OR P-3 PIPING. FOR P-1 PIPING WELDING RING A312872-9X SHALL BE MACHINED OUT.
- MIO2 3. CYLINDERS, PIPE LINES, AND ACCUMULATORS SHALL BE THOROUGHLY CLEANED AS NECESSARY BEFORE AND AFTER ASSEMBLY TO INSURE REMOVAL OF ALL METALLIC WASTE AND FOREIGN MATTER PRIOR TO FILLING WITH FLUID, IN ACCORDANCE WITH ARRESTING GEAR SERVICE BULLETIN 108.
4. ALL BOLTS, NUTS, SUPPORT BRACKETS, TUBING, ETC. MARKED THUS * SHALL BE SUPPLIED BY THE INSTALLING ACTIVITY.
- MIO3 5. ALL COMPONENTS ARE TO BE PROPERLY ALIGNED TO INSURE SMOOTH FUNCTIONING WITHOUT BINDING OR CHATTERING.
6. CYLINDER ASSEMBLY TRACK MAY BE INSTALLED ON A SLOPING ANGLE (UP TO 10°) WITH BUFFING END OF CYLINDER ON THE LOW END OF THE SLOPE. LOCATION OF ACCUMULATOR MAY BE VARIED, BUT IN ALL INSTALLATIONS IT MUST BE IN A VERTICAL POSITION. ANY VARIATION OF THE INSTALLATIONS AS SHOWN MUST BE APPROVED BY THE NAEL(SI) ENGINEERING DEPARTMENT.
7. PAINT ALL EXPOSED NON-WORKING / NON-FAYING SURFACES IN ACCORDANCE WITH MPR 1201-12.
8. FOUNDATION STRUCTURE FOR CYLINDER ASSEMBLY 613938-1 MUST WITHSTAND LOAD SHOWN IN PLAN VIEW.
- MIO4 9. BOTH 613937-2 ASSEMBLIES SHALL WITHSTAND WITHOUT LEAKAGE OR PERMANENT DEFORMATION THE FOLLOWING HYDROSTATIC TEST: (EQUIPMENT REQUIRED FOR TEST SHALL BE PROVIDED BY MANUFACTURER) WITH PURCHASE CABLE REEVED AND CROSSHEAD ASSY 612457-1 LOCATED IN BATTERY POSITION. FILL DAMPER ACCUMULATOR WITH FLUID. CONDUCT STANDARD TEST PROCEDURE USED TO PROOF LOAD ARRESTING GEAR DRIVE SYSTEM. CAUTION: PRESSURE IN DAMPER ACCUMULATOR 610200-1 MUST NOT EXCEED 5000 PSI. DURING TEST, FILL BUFFER WITH OIL 91782-5 TO 1/2 OF LIQUID SIGHT IND.
10. CABLE GUARD ENCLOSURE SHALL BE DESIGNED AND SUPPLIED BY THE INSTALLING ACTIVITY IN ACCORDANCE WITH NAEL(SI) DWG 612991.
11. FOR ACTUAL INSTALLATIONS ON DIFFERENT VESSELS SEE APPLICABLE BUREAU SHIP DRAWING.
12. ANGULAR DAMPER SHEAVE INSTALLATION MAY BE NECESSARY WHEN "X" TYPE SHEAVE ARRANGEMENT IS USED ON VESSELS OUTFITTED WITH RETRACTABLE DECK SHEAVES.
13. "X" AND "Y" ARRANGEMENTS CAN BE USED INTERCHANGEABLY.
14. TO BLOCK DAMPER SHEAVE ASSEMBLY IN A FIXED POSITION INSTALL MATERIAL AS SHOWN IN DETAIL "B" TO BLOCK DAMPER CROSSHEAD IN THE FULLY RETRACTED POSITION; CHARGE AND FILL DAMPER ACCUMULATOR TO NORMAL OPERATING PRESSURE & LEVEL.
15. THREAD DIMENSIONS / DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H-26 AND MIL-STD-2, RESPECTIVELY.
- MIO5 16. BEFORE FLUID IS INTRODUCED INTO SYSTEM, CROSSHEAD ASSY 612457-1 ATTACHED TO CYLINDER ASSY 613938-1, SHALL MOVE WITHOUT BINDING OR CHATTERING UNDER A FORCE OF APPROX 200 LB.

613937-2	1	ANG227-52	PACKING O'RING
	-2	ANG227-19	PACKING O'RING
	-2	ANG227-17	PACKING O'RING
	-2	MS2878-6	GASKET O'RING
	-2	91782-5	ETHYLENE GLYCOL
	-2	889816-2	WASHER, FLAT
	-2	889816-9	PIN
	-2	D67885-9	NUT, HEX
	-2	V67882-3	BOLT
	-2	612457-1	CROSSHEAD ASSY
	-2	610200-1	ACCUM ASSY
	-2	613938-1	CYLINDER ASSY
	-2	511223-1	PANEL CHARGING ASSY
	-1	614081-1	INDICATOR INSTL
	-2	502895-1	TRACK-SHEAVE
	-2	410616-1	TRACK-SHEAVE
	-2	A40864-3	ADAPTER
	-2	410421-18	COUPLING
	-2	407473-1	FLANGE
	-2	A40865-25	WELBOLN SHORT RAD
	-2	820846-1	SHIM
	-2	820694-1	RAIL
	-2	818188-1	PLATE
	-2	818184-1	STUD
	-2	317719-5	ORIFICE RING
	-2	A316301-3	RING SIL-BRAZE
	-2	516298-2	VALVE, BLEED ASSY
	-2	A316271-3	TAILPIECE
	-2	A38212-3	UNION NUT
	-2	A32872-9X	WELDING RING
	-2	1340-H20	SCREW
	-2	613937-5	PIPE (CUT TO SUIT)
	-2		4 SHEAR PLATE
	-2		3 BOSS
613937-1	2		2 ASSEMBLY
		613937-1	DAMPER SHEAVE INSTL
NEXT	QTY	PART NUMBER	DESCRIPTION
ASSEMBLY	REQD		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS DECIMALS ANGLES ± .010 ± .005 ± 1/2°		MECHANICAL SURFACE FINISHES IN MICROINCHES ✓ THIS SYMBOL, EMBRACING THE SURFACE FINISHES ON MICRO- FINISH REPRESENTS THE SHARPEST ACCEPTABLE FINISHES, AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS. REF SPEC MIL-STD-10		DRAWN D. SCHUBERT CHECKED P. F. HARRIS DATE 1-2-67	
THESE DOCUMENTS ALSO ARE A PART OF THE DRAWING		ANALYZED		SUPERVISOR'S AUTHORITY 1-3-67	
CLASSIFICATION OF CHARACTERISTICS CRITICAL - C TO C MAJOR - MIO1 TO MIO6 MINOR - ALL OTHER CHARACTERISTICS		DERIVED FROM 7 MOD 3 FOR		DATE 4/1/67	
MPR 1201-12 MPR 1400		REF			

613937

SHEET

IS A TYPICAL SHIPBOARD INSTALLATION FOR THE
OR SHEAVES, PART NO. 613937-1. ALL DETAIL
ALIKE FOR PORT AND STARBOARD DAMPERS.
POSITE TO THAT SHOWN, VENT VALVES AND
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RAIN PLUGS ARE ON BOTTOM. FLOW CONTROL
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URE SHALL BE IN ACCORDANCE WITH MIL-STD-278;
RY, P-1 OR P-2 PIPING. FOR P-1 PIPING WELDING
SHALL BE MACHINED OUT.

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SSARY BEFORE AND AFTER ASSEMBLY TO
OF ALL METALLIC WASTE AND FOREIGN
FILLING WITH FLUID, IN ACCORDANCE WITH
SERVICE BULLETIN 108.

SUPPORT BRACKETS, TUBING, ETC. MARKED
UPPLIED BY THE INSTALLING ACTIVITY.
ARE TO BE PROPERLY ALIGNED TO INSURE SMOOTH
OUT BINDING OR CHATTERING.

LY (TRACK MAY BE INSTALLED ON A SLOPING
WITH BUFFING END OF CYLINDER ON THE LOW
LOCATION OF ACCUMULATOR MAY BE VARIED,
LLATIONS IT MUST BE IN A VERTICAL
RIATION OF THE INSTALLATIONS AS SHOWN MUST
THE NAEL(SI) ENGINEERING DEPARTMENT.
ED NON-WORKING & NON-PAYING SURFACES
TH MPR 1201-12

CTURE FOR CYLINDER ASSEMBLY 613938-1 MUST
SHOWN IN PLAN VIEW.

MBLES SHALL WITHSTAND WITHOUT LEAKAGE OR
MATION THE FOLLOWING HYDROSTATIC TEST
(FOR TEST SHALL BE PROVIDED BY MANUFACTURER)

ABLE REEVED AND CROSSHEAD ASSY 612487-1
RY POSITION. FILL DAMPER ACCUMULATOR
UCT STANDARD TEST PROCEDURE USED TO PROOF

GEAR DRIVE SYSTEM. CAUTION: PRESSURE IN
ATOR 610200-1 MUST NOT EXCEED 5000 PSI.
BUFFER WITH OIL 91782-5 TO & OF LIQUID SIGHT IND.

OSURE SHALL BE DESIGNED AND SUPPLIED BY
VITY IN ACCORDANCE WITH NAEL(SI) DWG 612991.
LLATIONS ON DIFFERENT VESSELS SEE APPLICABLE
WING.

SHEAVE INSTALLATION MAY BE NECESSARY
AVE ARRANGEMENT IS USED ON VESSELS
RETRACTABLE DECK SHEAVES.

EMENTS CAN BE USED INTERCHANGEABLY.
A SHEAVE ASSEMBLY IN A FIXED POSITION
L AS SHOWN IN DETAIL "B" TO BLOCK DAMPER

FULLY RETRACTED POSITION; CHARGE AND FILL
ATOR TO NORMAL OPERATING PRESSURE &

ONS & DESIGNATIONS SHALL BE INTERPRETED
WITH HANDBOOK H-26 AND MIL-STD-9, RESPECTIVELY
PRODUCED INTO SYSTEM. CROSSHEAD ASSY
O TO CYLINDER ASSY 613938-1. SHALL MOVE WITHOUT
ERING UNDER A FORCE OF APPROX. 200 LB.

REV	DESCRIPTION	DATE	BY
1	CL'R REV. NRM. ON DWS. 1; RELOCATED PIPING ON BUFFER ASSY. IN NOTE 1. ADDED NOTE 25.	7/2/67	H
2	MASON NRM. CL'R CHG: ON DWS. RELOCATED BATTERY POSITION LIMIT SWITCH (614081-2) FROM BELOW TO ABOVE CROSSHEAD. IN TITLE BLOCK: ADD "NON PRESSURIZED BUFFER" CED	7/2/67	H

QTY	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT
1	613937-2	PACKING O-RING				
-2	1	AME227-19 PACKING O-RING				
-2	1	AME227-17 PACKING O-RING				
-2	1	MS28778-6 GASKET O-RING				
-2	9	91782-5 ETHYLENE GLYCOL (SEE NOTE 5)				
-2	8	BB29816-6 WASHER, FLAT				
-2	4	EB2963-9 PIN				
-2	2	D87885-9 NUT, HEX				
-2	8	N87882-3 BOLT				
-2	1	612457-1 CROSSHEAD ASSY				
-2	1	610207-1 ACCUM ASSY				
-2	1	613938-1 CYLINDER ASSY				
-2	1	511223-1 PANEL CHARGING ASSY				
-1	1	614081-1 INDICATOR INSTL				
-2	1	502895-1 TRACK-SHEAVE				
-2	1	410614-1 TRACK-SHEAVE				
-2	1	410664-3 ADAPTER				
-2	4	410421-15 COUPLING (SEE NOTE 20)				
-2	1	407473-1 FLANGE				
-2	5	440385-25 90° ELBOW, SHORT RAD				
-2	2	320646-1 SHIM				
-2	2	320636-1 RAIL				
-2	1	318185-1 PLATE				
-2	2	318184-1 STUD				
-2	1	317719-5 ORIFICE RING				
-2	1	AS16301-3 RING SIL-BRAZE				
-2	1	316229-2 VALVE, BLEED ASSY				
-2	1	AS16271-3 TAILPIECE				
-2	1	AS16212-3 UNION NUT				
-2	16	AS16272-9X WELDING RING (SEE NOTE 24)				
-2	8	1340-1420 SCREW				
-2	1	613937-5 PIPE (CUT TO SUIT)	4'x3/8"	STEEL	(SEE NOTE 20)	
-2	2	4 SHEAR PLATE	125x15x1/8"	STEEL	(SEE NOTE 19)	
-2	1	3 BOSS	1/2"x1/2"x1/4"	STEEL	(SEE NOTE 19)	
-2	1	613937-1 DAMPER SHEAVE INSTL			(SEE NOTE 4)	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± 0.00 ± 1/2°

THESE DOCUMENTS ALSO ARE A
PART OF THE DRAWING

MPR 1201-12
MPR 1400

CLASSIFICATION OF CHARACTERISTICS

CRITICAL - C TO C

MAJOR - M101 TO M108

MINOR - ALL OTHER CHARACTERISTICS

MECHANICAL FINISH SURFACE

ROUGHNESS IN MICROINCHES

✓ THIS SYMBOL EMPHASIZES THE

SURFACE REQUIREMENTS ON UNFINISHED

ACCEPTABLE REQUIREMENTS, AND MAY

BE PROHIBITED BY ANY MECHANICAL

PROCESS.

REF SPEC MIL-STD-10

DESIGNED MK 7 MOD 3

FOR

REF

LIST OF MATERIALS

DRAWN D. SCHUBERT 12-3-66

CHECKED P. FRANKS 1-2-67

MATERIAL

ANALYZED

SUPERVISOR R. K. WILCH 1-3-67

APPROVED

DATE 4/1/67

BY

DATE

SCALE 1:1

ENGINEERING DEPARTMENT 00
NAVAL AIR ENGINEERING CENTER, PHILA., PA., 19112

TITLE

DAMPER, SHEAVE

SHIPBOARD TYPICAL INSTALLATION

NON-PRESSURIZED BUFFER

DRAWING NO.

613937

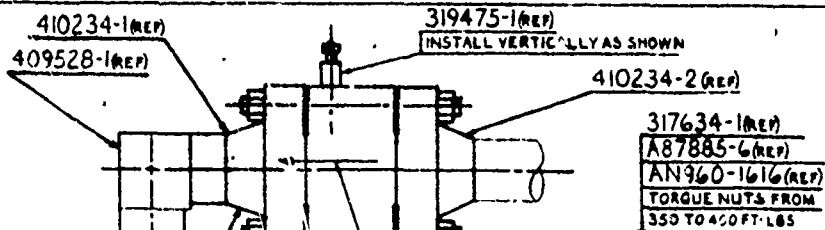
CURR IDENT

NO 00000

DATE

613937

880318



506393-1(REF)
506393-2(REF)
HOUSING ASSY

DETAIL L
SHOWING INFL OF FLOW
CONTROL VALVE
SCALE: 1/2

FREE FLOW TO DAMPER CYLINDER

90444-729
AN960 1416
TORQUE BOLTS FROM
350 TO 400 FT-LBS

A312872-9XXM
SEE NOTE 7

410951-1

A315373-10

P24(TYP)

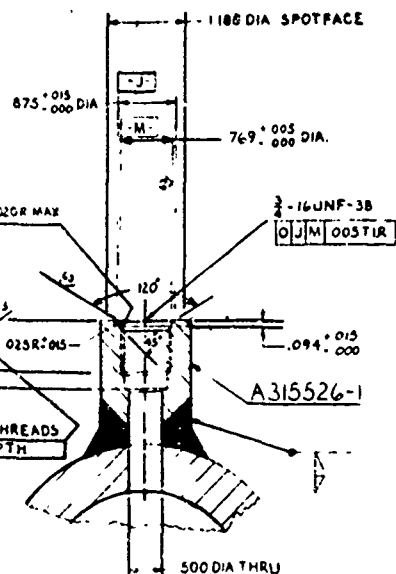
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SECTION G-G
SCALE 1/2

610537(REF)
RETRACTING VALVE ASSY

AN6227-46

407561-1



DETAIL H
SCALE 1/4

P24

A

MS20995C47

INSTRUCTION PLATE



DETAIL J
TYPICAL SAFETY WIRING
SEE NOTE 6 3113

410421-13

A312872-7X
SEE NOTE 7

90444-631
A87885-12
AN960 1216
TORQUE BOLTS FROM
90 TO 100 FT LBS

A91504-4

503802-1(REF)

H87769-19

SECTION E-E
SCALE 1/4

P24(TYP)

-5

MS20002C14
MS35303-217
TORQUE BOLTS
FROM 350 TO 400
FT-LBS

P24(TYP)

409528-1

A312872-7XXM
SEE NOTE 7

-6(HHP)

AN6227-46

410413-1

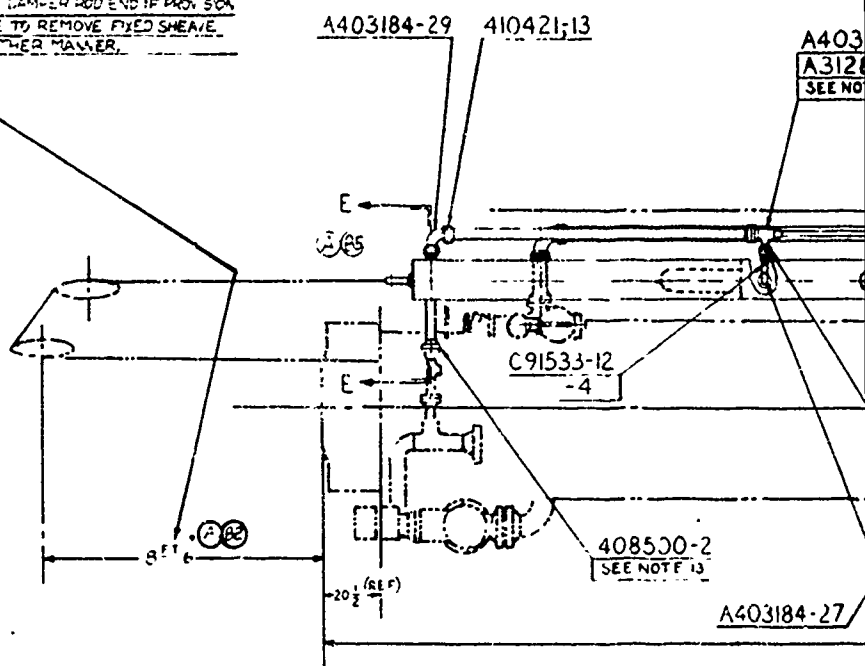
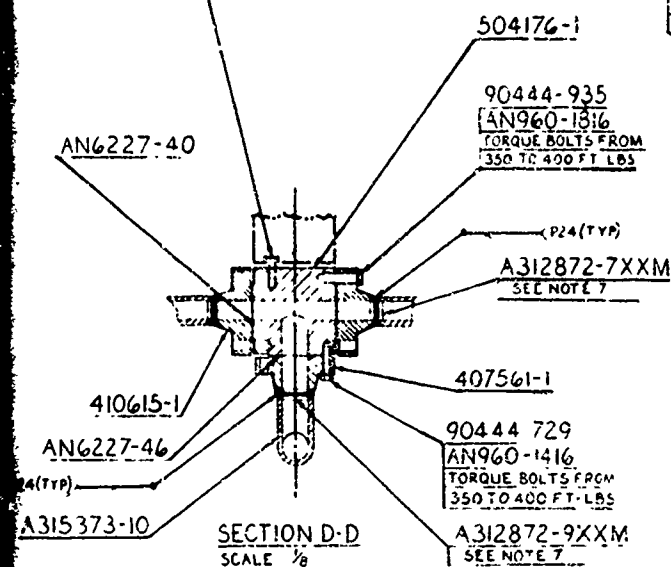
610097-1(REF)

320532-1

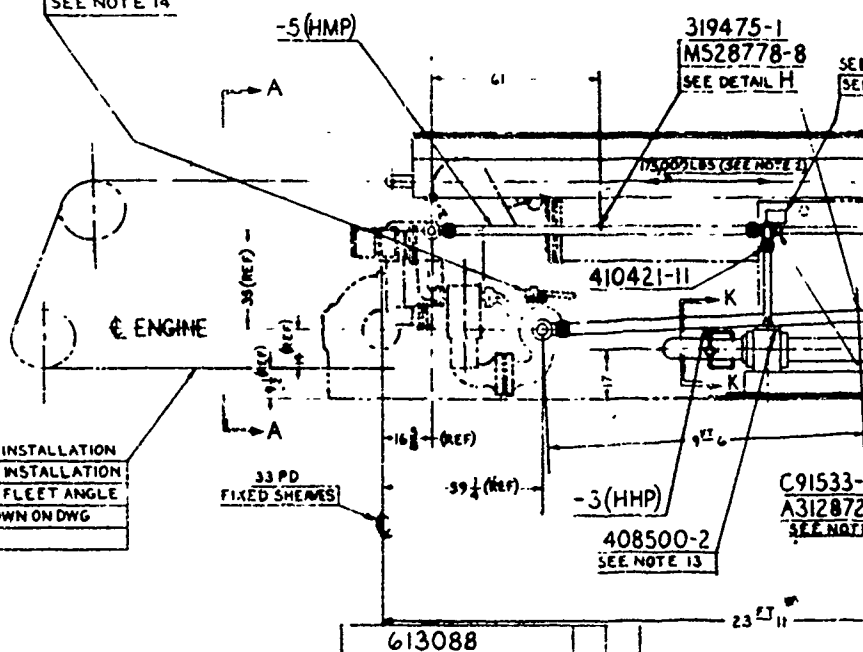
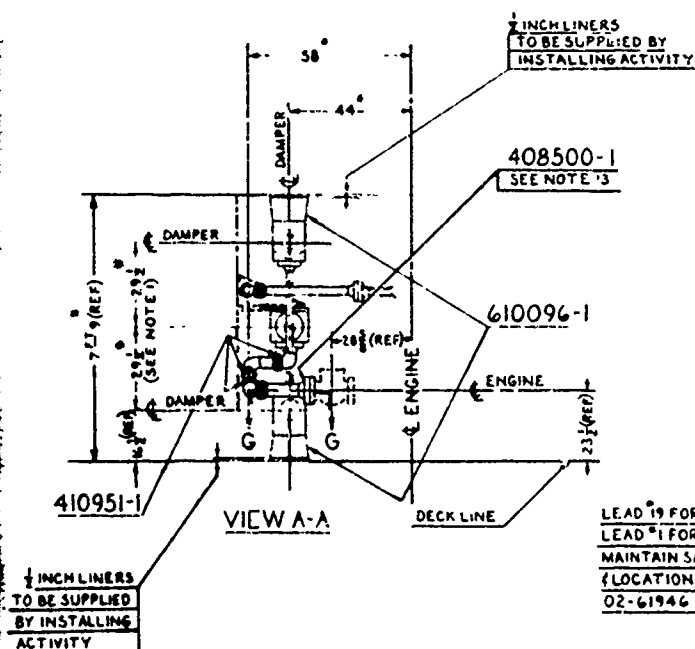
SECTION C-C
SCALE 1/4

T
1
1

②③A) DIMENSION ② IS REQUIRED
TO PERMIT REMOVAL OF ENGINE
FIXED SHEAVE FROM END OF
ENGINE. LOCATION OF THESE SHEAVES
MAY BE ADJUSTED TO A MINIMUM
DISTANCE OF 36 INCHES FROM
ANCHOR DAMPER ROD END IF PRO. 50A
IS MADE TO REMOVE FIXED SHEAVE
IN ANOTHER MANNER.



61015 IR SHOWN!
61015 IL (OPPOSITE)
FOR THIS INSTALLATION, ROUTE
ALL PIPING TO SUIT AND INSTALL
LIQUID SIGHT INDICATORS AS SHOWN
IN SECTION K-K.
SEE NOTE 14



A SINGLE FAIRLEAD SHEAVE MAY BE OF TWO SHEAVES PROVIDED THAT MOUNTED ANCHOR DAMPER IS INSTALLED AT SUCH AN ANGLE THAT THE LONGITUDINAL Q OF THE ANCHOR DAMPER IS TANGENT TO PITCH DIA OF THE SINGLE FAIRLEAD SHEAVE IS UTILIZED. DIMENSION MUST BE HELD. (A)

LONGITUDINAL Q OF CABLE ANCHOR DAMPERS MUST BE TANGENT TO PITCH DIA OF FAIRLEAD SHEAVES

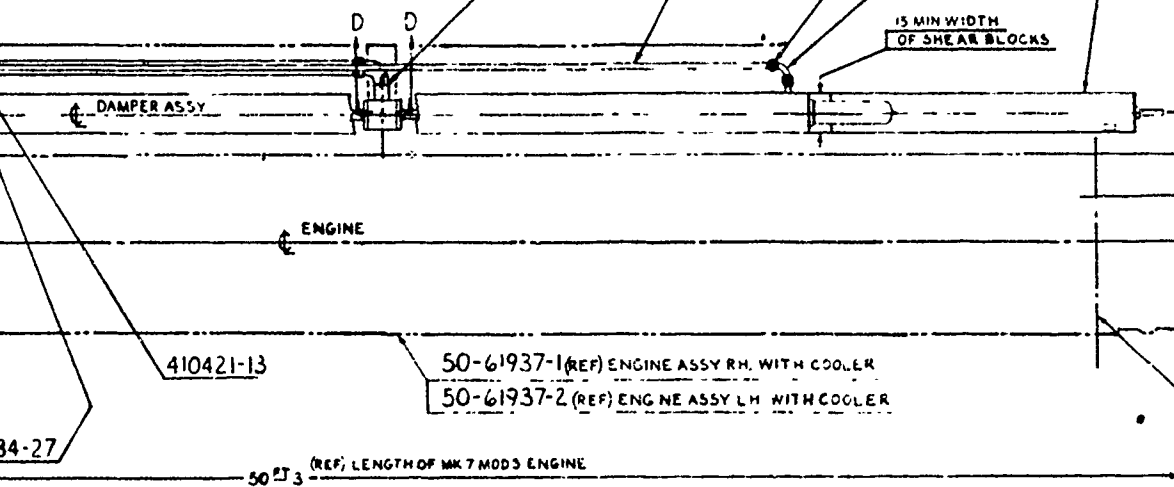
A403181-28
A312872-7X
SEE NOTE 7

A312872-9XXM
SEE NOTE 7

410421-11
A403184-27

-4 (HMP)

15 MIN WIDTH OF SHEAR BLOCKS



MIN THICKNESS OF ALL SHEAR BLOCKS IN BEARING AGAINST BASE PAD (610096-1) TO BE SUPPLIED BY INSTALLING ACTIVITY Y SEE NOTE 2

1 INCH DIA BOLTS TO HOLD ANCHOR DAMPER ASSY TO FOUNDATION PLATE TO BE SUPPLIED BY INSTALLING ACTIVITY Y, 40 REQ'D FOR ONE DAMPER ASSY, BOLT MAT'L - STEEL 60,000 UTS

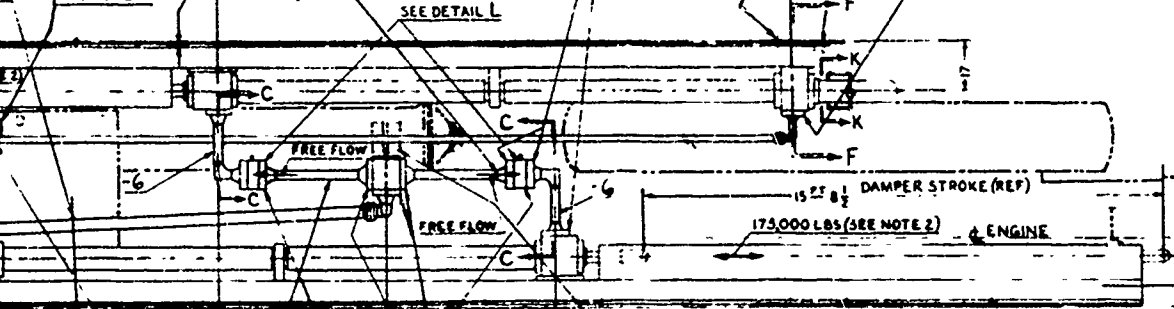
(B) DIMENSION 10' 0" IS PERMIT REMOVAL OF CROSSHEAD FROM END OF SECTION IF THIS IS MAY BE SHORTENED TO 36 INCHES FROM MAIN ROD END IF PROVIDED REMOVE CROSS-HEAD IN MANNER.

A312872-7XXM
SEE NOTE 7

408500-1
SEE NOTE 13

408500-2
SEE NOTE 13

SEE DETAIL B
SEE NOTE 14



(C) 612460-1, 25 PD FAIRLEAD SHEAVES BOTH ENDS TO BE SUPPLIED BY INSTALLING ACTIVITY

C91533-12
A312872-5X
SEE NOTE 7

-2 (HMP)
SEE NOTE 1

408500-1
SEE NOTE 13
SEE DETAIL J

506393-1

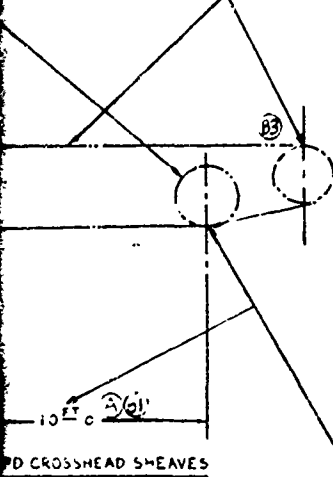
SUPPORT FOR MANIFOLD TEE 504176-1 TO BE SUPPLIED BY INSTALLING ACTIVITY

-1R INSTALLATION (SHOWN)
-1L INSTALLATION (OPPOSITE)

LEAD 18 FOR -1R INSTL
LEAD 36 FOR -1L INSTL
MAINTAIN SAME FLEET ANGLE & LOCATION SHOWN ON DWG 02-61946

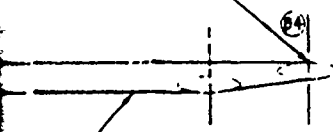
ANGLE FAIRLEAD SHEAVE MAY BE USED IN LIEU OF TWO SHEAVES PROVIDED THAT THE DECK MOUNTED ANCHOR DAMPER IS INSTALLED AT AN ANGLE THAT THE LONGITUDINAL Q. OF THE ANCHOR DAMPER IS TANGENT TO THE PITCH DIAMETER OF THE SINGLE SHEAVE. IF A SINGLE FAIRLEAD SHEAVE IS UTILIZED, THE 20FT. DIMENSION MUST BE HELD. (A)

LONGITUDINAL Q. OF CABLE ANCHOR DAMPERS MUST BE TANGENT TO PITCH DIA. OF FAIRLEAD SHEAVES

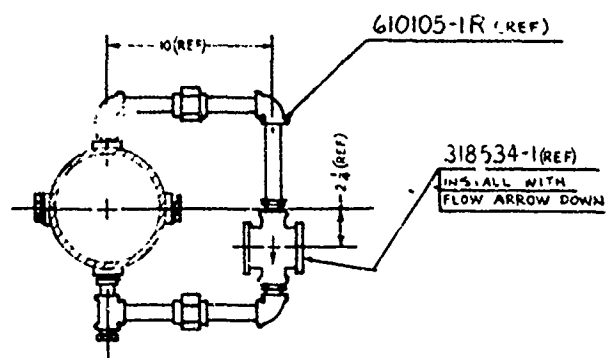


(63) DIMENSION 10FT. IS REQUIRED TO PERMIT REMOVAL OF ENGINE CROSSHEAD FROM END OF TRACK. LOCATION OF THIS FAIRLEAD SHEAVE MAY BE SHORTENED TO A MINIMUM OF 36 INCHES FROM ANCHOR DAMPER ROD END IF PROVISION IS MADE TO REMOVE CROSSHEAD IN ANOTHER MANNER.

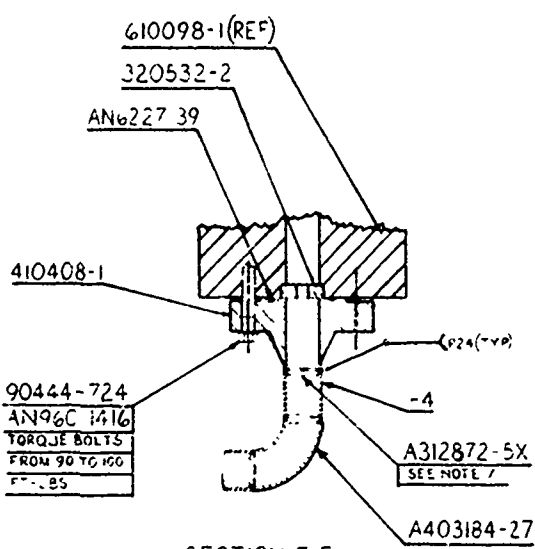
612460-1, 25 PD FAIRLEAD SHEAVES BOTH ENDS TO BE SUPPLIED BY INSTALLING ACTIVITY



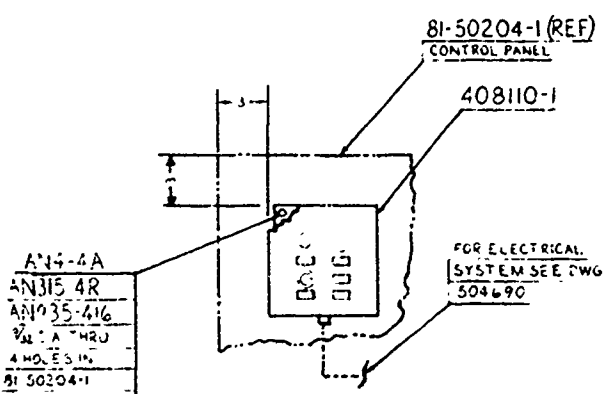
STL
STL
ET
61946



SECTION K-K
SHOWING INSTL OF LIQUID SIGHT INDICATOR 318534-1
2 PLACES
SCALE NONE



SECTION F-F
SCALE 1/2



DETAIL B
SCALE 1/2

- NOTES-**
- THIS DWG SHOWS A TYPICAL DECK AND OVER FOR THE CABLE ANCHOR DAMPER (610098) ENGINE CYLINDER PRESSURE AS AN OPER DAMPER ASSEMBLY MAY VARY FROM THE MARKED THUS (#) BUT ON ALL INSTALL MANIFOLD TEE (504176-1) TO DAMPER AS BE EQUAL LENGTH. ANY VARIATION OF THIS MUST BE APPROVED BY THE NAVAL AIR ENGINEER.
 - THE MAXIMUM LOAD TRANSFERRED FROM THE SHIP'S STRUCTURE THRU THE SHIP IN EITHER DIRECTION.
 - BOLTS AND NUTS SHALL BE DRILLED FOR WITH DWG NO 320662.
 - ALL PIPE SHALL BE CLEANED, FLUSHED IN ACCORDANCE WITH MK 7 AG SERVICE B.
 - ALL LINES SHALL BE MARKED "HHP" (HYDRAULIC MEDIUM PRESSURE) WITH IDENTIFICATION TO BE PLACED NEAR VALVE WHERE POSSIBLE. OTHER LINES WHERE SHALL BE BLACK IN ACCORDANCE WITH SIZE SHALL BE 1 1/2 INCH.
 - PAINT ALL EXPOSED NON-WORKING AREA WITH MPR 1201-12.
 - WELDING PROCESS SHALL BE IN ACCORDANCE WITH PIPING EXCEPT:
 - WELDING ROD SHALL BE IN ACCORDANCE WITH 100% RADIOGRAPH INSPECTION FOR PIPING JOINTS (SPL-4) WELDED IN ACCORDANCE WITH SP-24-A-W-P-404.
 - ALL DIMENSIONS AND TOLERANCES ARE IN ACCORDANCE WITH THE DRAWING IDENTIFICATION AND ASSEMBLY TO BE AGREED TO BY THE MATERIAL FOR THE 3 SHALL BE IN ACCORDANCE WITH SP-24-A-W-P-404.
 - ALL DIMENSIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE DRAWING IDENTIFICATION AND ASSEMBLY TO BE AGREED TO BY THE MATERIAL FOR THE 3 SHALL BE IN ACCORDANCE WITH SP-24-A-W-P-404.
 - DISCONNECT MANIFOLD FROM SET POINT END OF THE CABLE ANCHOR DAMPER AND SUBJECT THESE MANIFOLD TEST PRESSURE OF 400 PSI FOR DISCONNECT PIPING BETWEEN OPERATING HEADS OF DAMPERS TO A HYDROSTATIC TEST PRESSURE PERIOD OF 15 MINUTES FLOW STOP MUST BE IN USED FOR THE TEST.
 - REINSTALL MANIFOLD TO TESTED JUNCTION HYDROSTATICALLY TO CUSHION THE ARRESTING ENGINE ACCUMULATOR WITH NORMAL ARRESTING ENGINE.
 - ALL TORQUE JOINTS MUST BE SAFETY WIRING SHALL BE IN ACCORDANCE WITH NO 504690.
 - TUBE SPECIFICATIONS ARE AS FOLLOWS:
 - MATERIAL TO BE IN ACCORDANCE WITH STOCK SIZE 400-2 300ID-18LG.
 - HEAT TREAT TO BRINELL 180-220.
 - MIL-H-6875 DESIGN UTS 90,000.

AL TO BE IN ACCORDANCE WITH MPR #1, CL 4130 GR MP
SIZE 402=2 3001018.6
HEAT TO BRINELL 180-220 IN ACCORDANCE WITH
S875 DISCINUTS 90.000181

613088

FIGURE 3

NOTES

1. THIS DRAWING SHOWS THE ARRANGEMENT OF A HYDRAULIC CONTROL SYSTEM FOR RAISING AND LOWERING THE MK7 BARRICADE STANCHIONS.
2. ALL PIPING COMPONENTS SHALL BE SUITABLE FOR USE WITH WATER BASE HYDRAULIC FLUID, SPECIFICATION MIL-H-22072. ALL PIPING MARKED HMP (HYDRAULIC MEDIUM PRESSURE) SHALL BE SUITABLE FOR A WORKING PRESSURE OF 1500 PSI AND SUBJECTED TO A HYDROSTATIC TEST OF 2250 PSI.
3. CYLINDERS, PIPE LINES, AND ACCUMULATORS SHALL BE THOROUGHLY CLEANED AS NECESSARY TO INSURE REMOVAL OF ALL METALLIC WASTE AND FOREIGN MATTER PRIOR TO FILLING WITH FLUID.
4. PAINT ALL EXPOSED NON WORKING AND NON PAYING SURFACES IN ACCORDANCE WITH MPR 1201-12.
5. ALL PIPING BETWEEN FLEXIBLE HOSE AND CONTROL VALVE TO BE RUN TO BEST ADVANTAGE OF SHIP, BUT LENGTH OF PIPE RUNS "U" AND "V" SHALL BE OF APPROXIMATE EQUAL LENGTH AND RUNS "X" AND "Y" SHALL BE OF APPROXIMATE EQUAL LENGTH AS SHOWN.
6. THE INSTALLING ACTIVITY SHALL FURNISH AND INSTALL UNDER ITS OWN COGNIZANCE THE FOLLOWING ITEMS.
 - (a) A 1500 PSI AIR SUPPLY LINE WITH A STRAINER FOR CHARGING THE ACCUMULATOR
 - (b) A 440 VOLT, 60 CYCLE, THREE PHASE POWER SUPPLY LINE FOR THE OPERATION OF A 5 HP ELECTRIC MOTOR; WITH FLOW SWITCH (AND CIRCUIT PROTECTION AS REQUIRED) MOUNTED WITHIN READY ACCESS OF POWER PACKAGE.
 - (c) FOUNDATION STRUCTURE FOR SUPPORT TRUNNION TO WITHSTAND LOADS INDICATED IN VIEW A-A
 - (d) ALL ITEMS MARKED THUS * INCLUDING BOLTS, SUPPORT BRACKETS, PIPE, PIPE FITTINGS, PIPE SUPPORTS
 - (e) SUITABLE DISCHARGE LINE FOR SAFETY HEAD AIR EXHAUST LINE
7. POWER PACKAGE 504868-1 SHALL BE LOCATED TO BEST ADVANTAGE OF SHIPS, HOWEVER, LOCATION SHALL BE MADE TO PROVIDE FOR THE SHORTEST POSSIBLE PIPE RUNS.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
(A)	N.A.N CLASS 'X' ADDED CLASS OF CHGR. VPC	6/6/70	SC 100/1

STEEL TUBING
V.N. IS EQUIV TO F.P.S. SCH 80
SEE NOTE #2

N. PORT 1
STANCHION

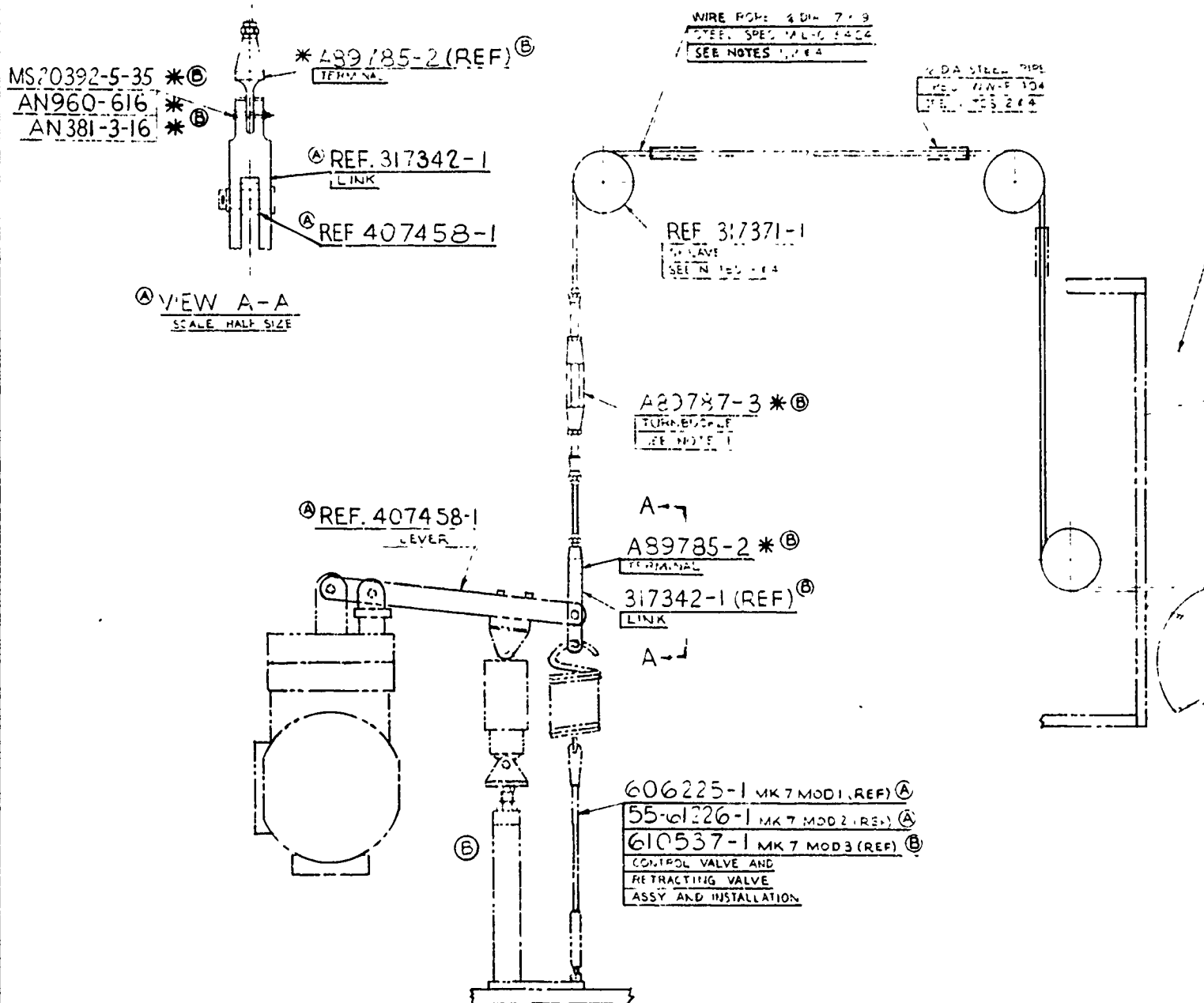
POWER PACKAGE ELECTRICAL INSTALLATION ---- DWG 504867
POWER PACKAGE PIPING ASSEMBLY ---- DWG 608957

1500 PSI AIR
AIR SUPPLY
SEE NOTE #6

3. A 10" TENSILE STRENGTH
S.E. 12

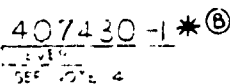
504866-1	4	W24 x 220 HOSE ASSY							
504866-1	2	608822-1	TRUNNION ASSY						502
	2	608821-1	CYLINDER ASSY						502
	1	504877-1	VALVE INSTALLATION						
	1	504868-1	POWER PACKAGE						
504866-1	2	7.8.2	HYDRAULIC FLUID						
504866-1	1	504866-1	BARRICADE STANCHION INSTALLATION						SEE NOTE 4
			BARRICADE STANCHION HYDRAULIC CONTROL INSTALLATION	NAVAL AIR ENGINEERING FACILITY 110000 NAVAL AIR TERMINAL CENTER P.O. BOX 100000 Ft. Belvoir, MO 63600					
			MK7 BARRICADE	504866					

504866



- 1 NO TURNBUCKLES OR SPLICES IN CABLE TO BE LOCATED WITHIN 6" OF SHEAVES BEFORE RETRACTING AND AFTER RETRACTING.
- 2 CONTROL CABLES ARE TO BE ENCASED IN 1/2" STD PIPE GUARDS, WITH SUITABLE PIPE SUPPORTS AS REQ'D.
- 3 QUANTITY OF SHEAVES & METHOD OF MOUNTING TO BE DETERMINED BY INSTALLING ACTIVITY.
- 4 SHEAVES, CABLES, FAREALS, FAIRLEAD SUPPORTS, MOUNTING BRACKETS FOR SHEAVE ASSEMBLIES 317371-1, STOP AND MOUNTING BRACKETS FOR DECK EDGE CONTROL LEVER 417430 1, REQUIRED FASTENERS AND ALL PARTS MARKED WITH * ARE TO BE SUPPLIED BY INSTALLING ACTIVITY.
- 5 WIRE ROPE TO BE SECURED IN SOCKET 317313- AT INSTALLATION FOR POURING INSTRUCTIONS. SEE MK 7 AC SERVICE BULLETIN # 97
- 6 TOP TO BE INSTALLED WITH CABLE IN VERTICAL POSITION.
- 7 MOUNT ACCORDING TO MK 7 AC 20-A ALL OVERLAP EXCEPT WHERE SHOWN

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE CHANGE SLIP.	1/12/69	J.C.
B	ON DWG: CORRECTED PICTURE BY ADDING SHOCK ABSORBER FOR INFORMATION ON MISCELLANEOUS CHANGES, SEE REVISION SLIP. J.C.	1/12/69	SS

417372-1 *^(B)

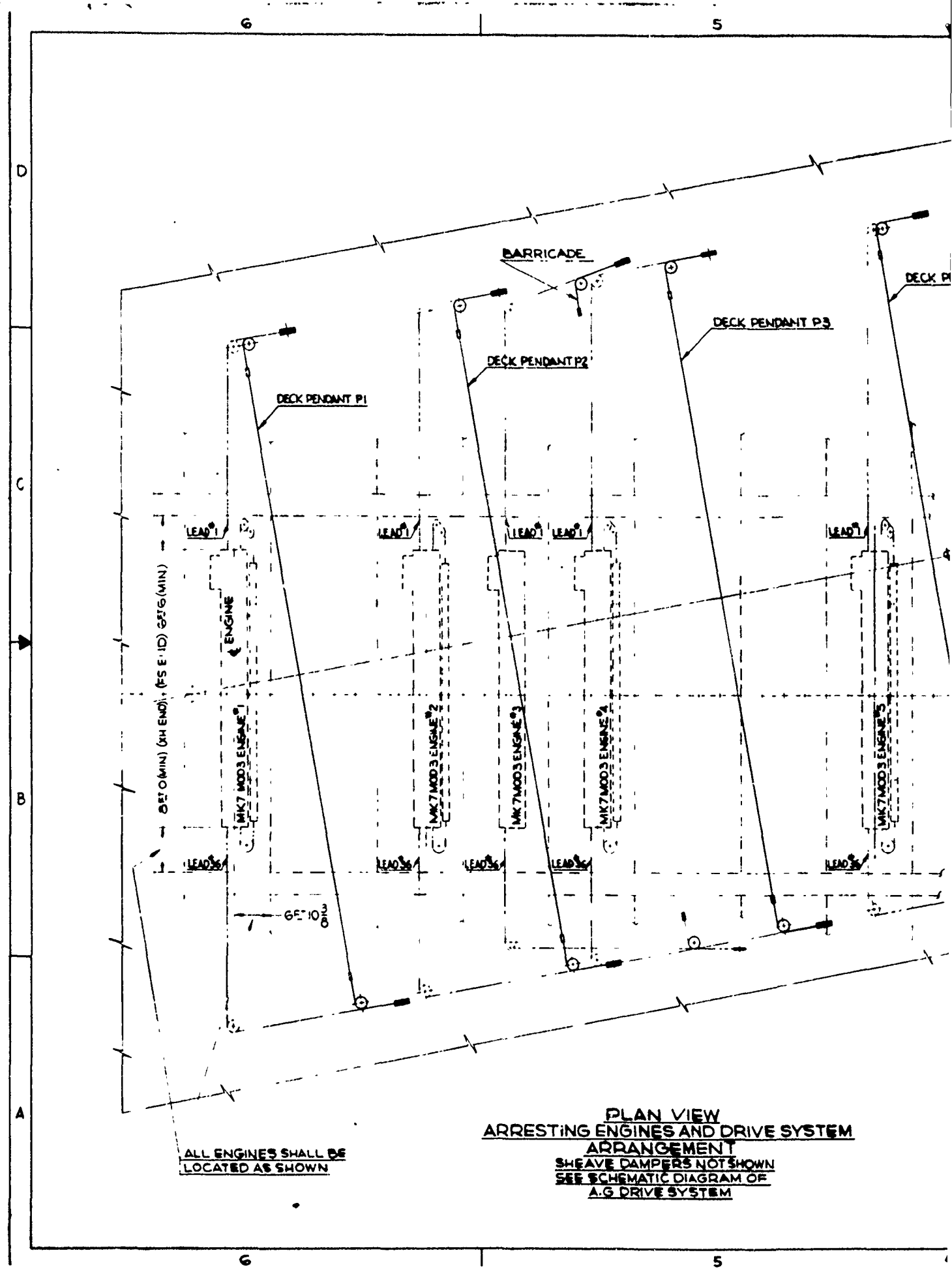
MOUNTING BRACKET
SEE NOTE 4

[illegible]

504206

2

010303
252



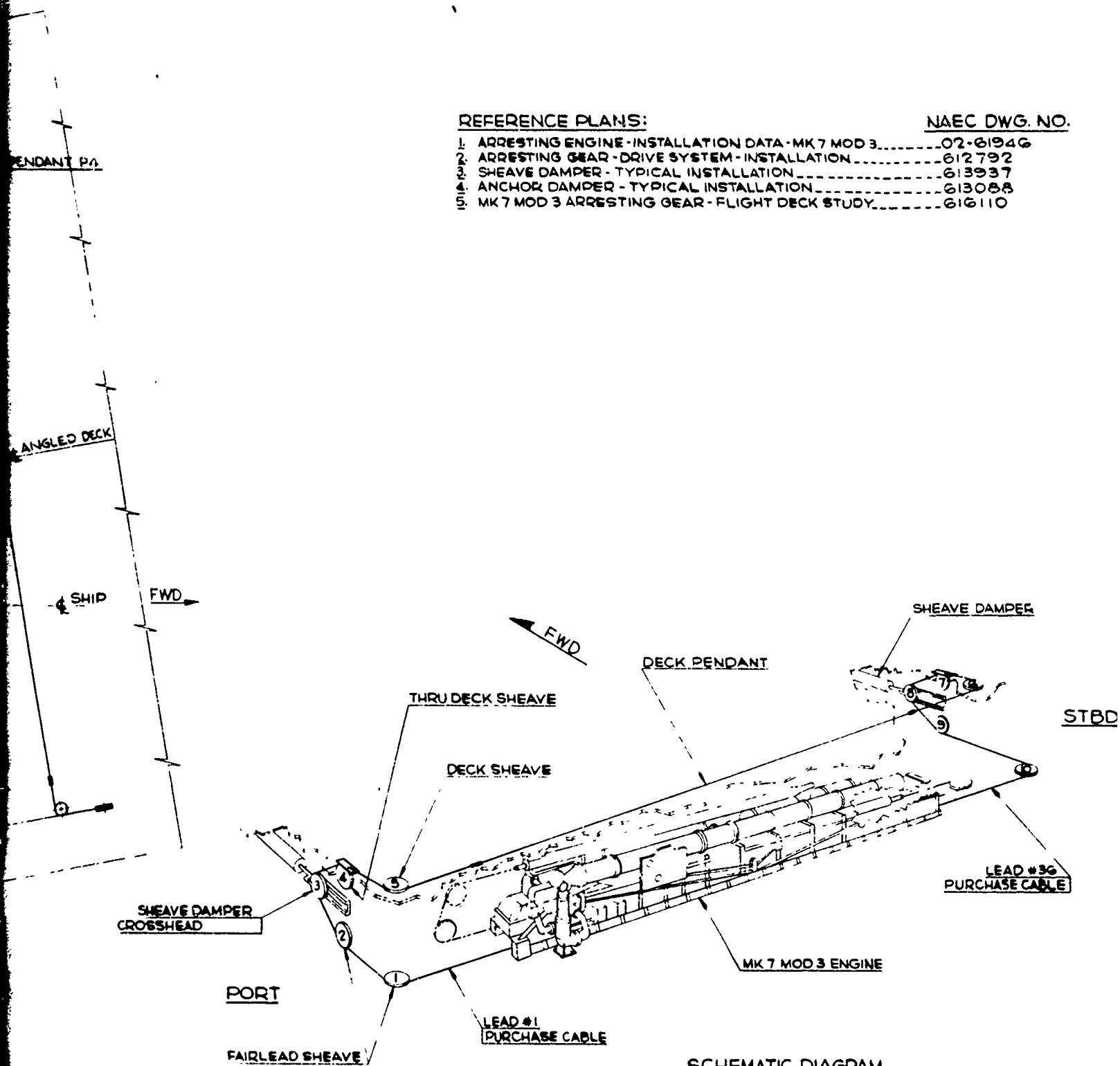
ALL ENGINES SHALL BE
LOCATED AS SHOWN

PLAN VIEW
ARRESTING ENGINES AND DRIVE SYSTEM
ARRANGEMENT
SHEAVE DAMPERS NOT SHOWN
SEE SCHEMATIC DIAGRAM OF
A.G DRIVE SYSTEM

REFERENCE PLANS:

NAEC DWG. NO.

- | | |
|---|----------|
| 1. ARRESTING ENGINE - INSTALLATION DATA - MK 7 MOD 3..... | 02-61946 |
| 2. ARRESTING GEAR - DRIVE SYSTEM - INSTALLATION..... | 612792 |
| 3. SHEAVE DAMPER - TYPICAL INSTALLATION..... | 613937 |
| 4. ANCHOR DAMPER - TYPICAL INSTALLATION..... | 613088 |
| 5. MK 7 MOD 3 ARRESTING GEAR - FLIGHT DECK STUDY..... | 616110 |



SCHEMATIC DIAGRAM
ARRESTING GEAR DRIVE SYSTEM
SEE NOTE #3A

616363

NOTES:

1. THIS DRAWING SHOWS THE OPTIMUM MARK 7 MOD 3 ARRESTING ENGINE AND DRIVE SYSTEM ARRANGEMENT AS PLANNED FOR FUTURE AIRCRAFT CARRIERS.
2. AN ARRESTING ENGINE COMPARTMENT SHALL BE A MINIMUM OF FOUR (4) FRAMES (16 FT 0) FOR THE SUITABLE INSTALLATION OF ONE (1) ENGINE.
3. THIS DRAWING DEPICTS A PROPOSED ARRANGEMENT OF DESIRED ARRESTING ENGINE LOCATIONS. THE PREMISE FOR LOCATION WAS BASED ON THE FOLLOWING.
 - A. TO PROVIDE AN OPTIMUM DRIVE SYSTEM ARRANGEMENT WITH UTILIZATION OF A MINIMUM OF TEN (10) SHEAVES FOR EACH INDIVIDUAL SYSTEM.
 - B. AS A PRECAUTIONARY MEASURE, CONSIDERING AS PARAMOUNT THE SAFETY OF FLIGHT DECK PERSONNEL, PREVIOUS OCCURRENCES OF CABLE BREAKAGE HAVE INDICATED BREAKAGE AT THE 28 INCH P.D. ENGINE SHEAVES WITH CONSEQUENT CABLE WHIPLASH RESULTING ON THE FLIGHT DECK AT THE OPPOSITE SIDE OF THE ARRESTING ENGINE'S 28 INCH P.D. SHEAVES. CABLE BREAKAGE FROM THE 28 INCH P.D. SHEAVES (LEAD NO. 36) WILL RESULT IN CABLE WHIPLASH TO THE PORT SIDE OF THE FLIGHT DECK, AWAY FROM THE CARRIER ISLAND, IN AN AREA UNLIKELY TO CAUSE INJURY TO PERSONNEL.

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE

D

C

B

616363

A

REV	QTY	PART	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT	QTY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES B — .010 .015 .1		MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES ✓ 10 SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46		DRAWN: <i>R. B. B. / 11/6/63</i> CHECKED: <i>TCYATTS / 11/6/63</i> MATERIAL: — ANALYZE: — SUPERVISOR: <i>Int. / 11/6/63</i> APPROVED: <i>[Signature]</i> DATE: <i>11/6/63</i>		ENGINEERING DEPARTMENT (81) NAVAL AIR ENGINEERING CENTER PHILA PA 19112 TITLE: ARRESTING ENGINE LOCATIONS AND DRIVE SYSTEM ARRANGEMENT MK 7 MOD 3 ARRESTING GEAR PROPOSED 616363	
--	--	---	--	---	--	--	--

CLASSIFICATION OF CHARACTERISTICS		DESIGNED FOR	SCALE
CRITICAL — C TO C		MK 7 MOD 3	1/8" = 1'-0"
MAJOR — M TO M			
MINOR — ALL OTHER CHARACTERISTICS			

NO.

STBD.

D #36
CABLE



(A) SEE NOTE 8 & 17

612796 WRAPPING TYPE
RETRACTABLE SHEAVE INSTL

(A) LINE (SEE NOTE 15)
TACK WELD
LINE IN PLACE

1/2 MIN

(A) 1.015 ± 0.10 DIA
HOLE THRU
LINER AND
FOUNDATION AT
ASSY. TEMPLATE
FROM SHEAVE
BASE

(A) DETAIL K

TYPICAL THRU BOLT TYPE
ANCHORAGE FOR SHEAVE ASSYS
SCALE 1/2

FLIGHT DECK

CABLE TRU
SEE NOTE

VIEW B-B

2 OF CABLE

509071-1R/L
FAIRLEAD ASSY TO BE USED ON
ALL HORIZONTAL DECK SHEAVES
SEE NOTE 10

DRILL 2 DIA HOLE IN ALL
HORIZONTAL DECK SHEAVE HOUSINGS
LOCATE TO SUIT INSTALLATION
WITHIN 20° AS SHOWN

MS 20074-06-11 BOLT
MS 20995C47 WIRE LOCK (SEE NOTE 3)
3/16 UNC-3B 3/4 DEEP
2 HOLES (SEE NOTE 9)
TEMPLATE FROM 509071-1R/L

2 SHEAVE

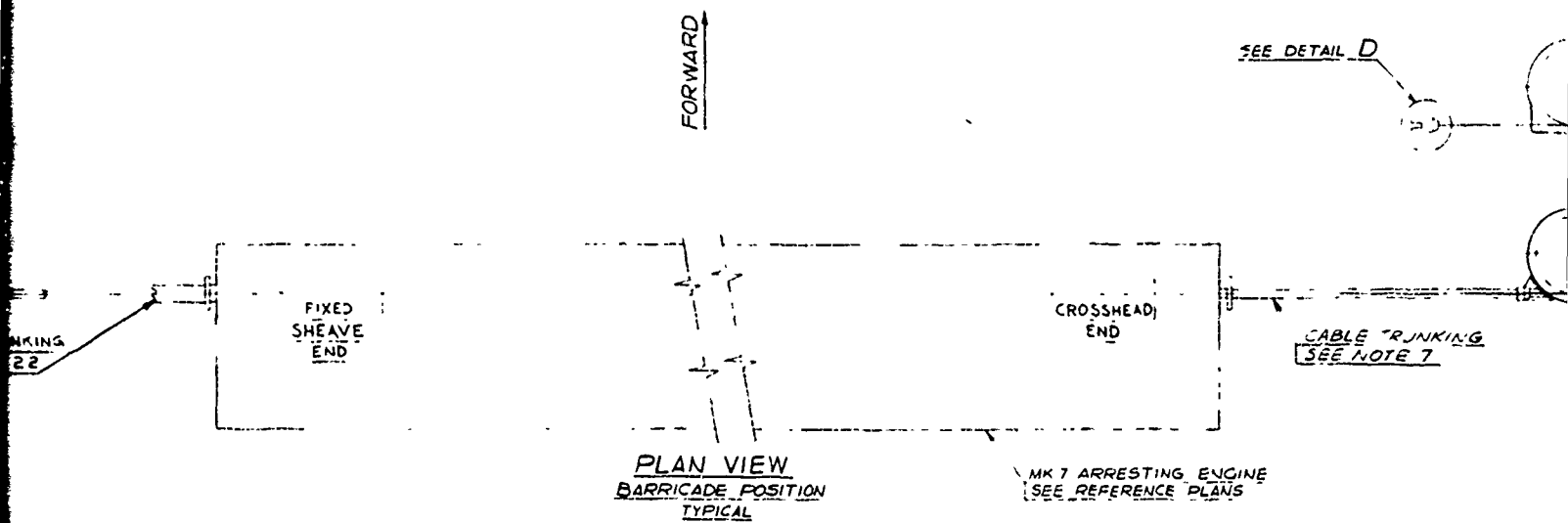
DETAIL G
SCALE 1/8

612460-1

509067-1R/L
FAIRLEAD ASSY
SEE DETAIL E

612792

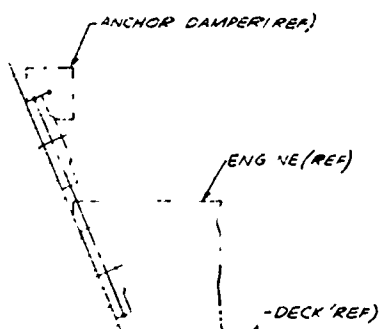
2



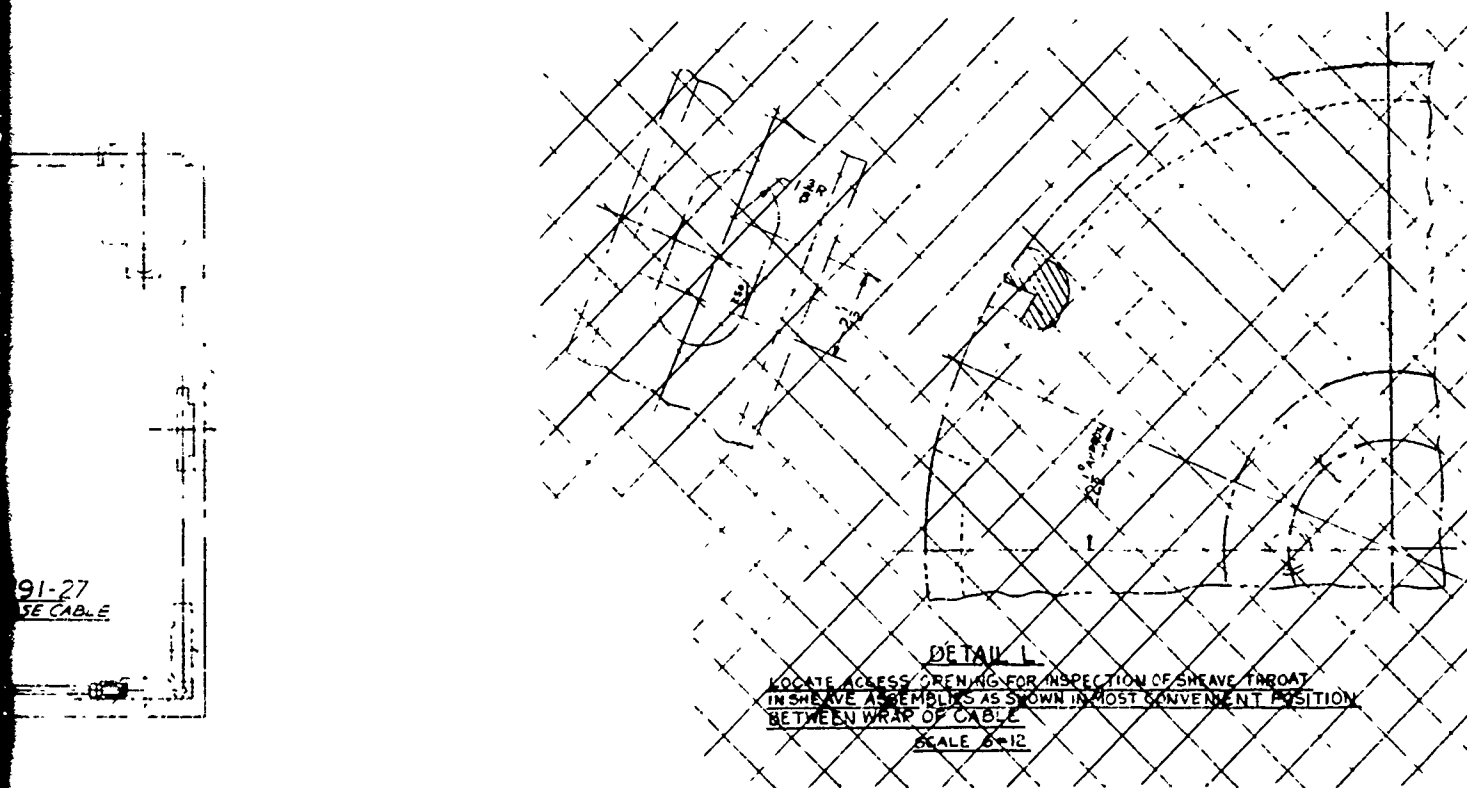
FLIGHT DECK

492791-27
PURCHASE CABLE

FRONT ELEVATION



VIEW J-J



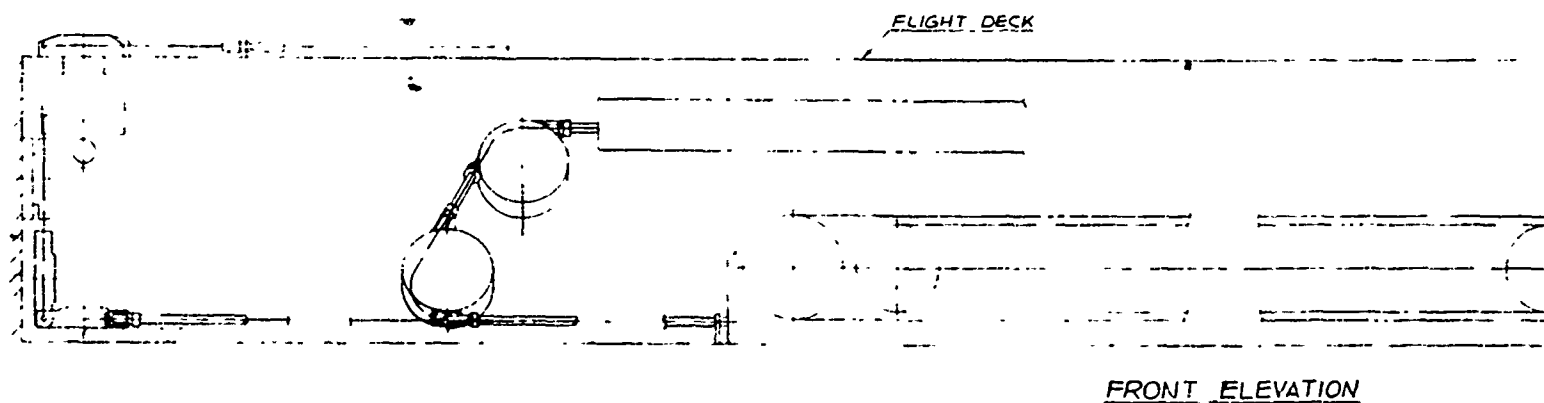
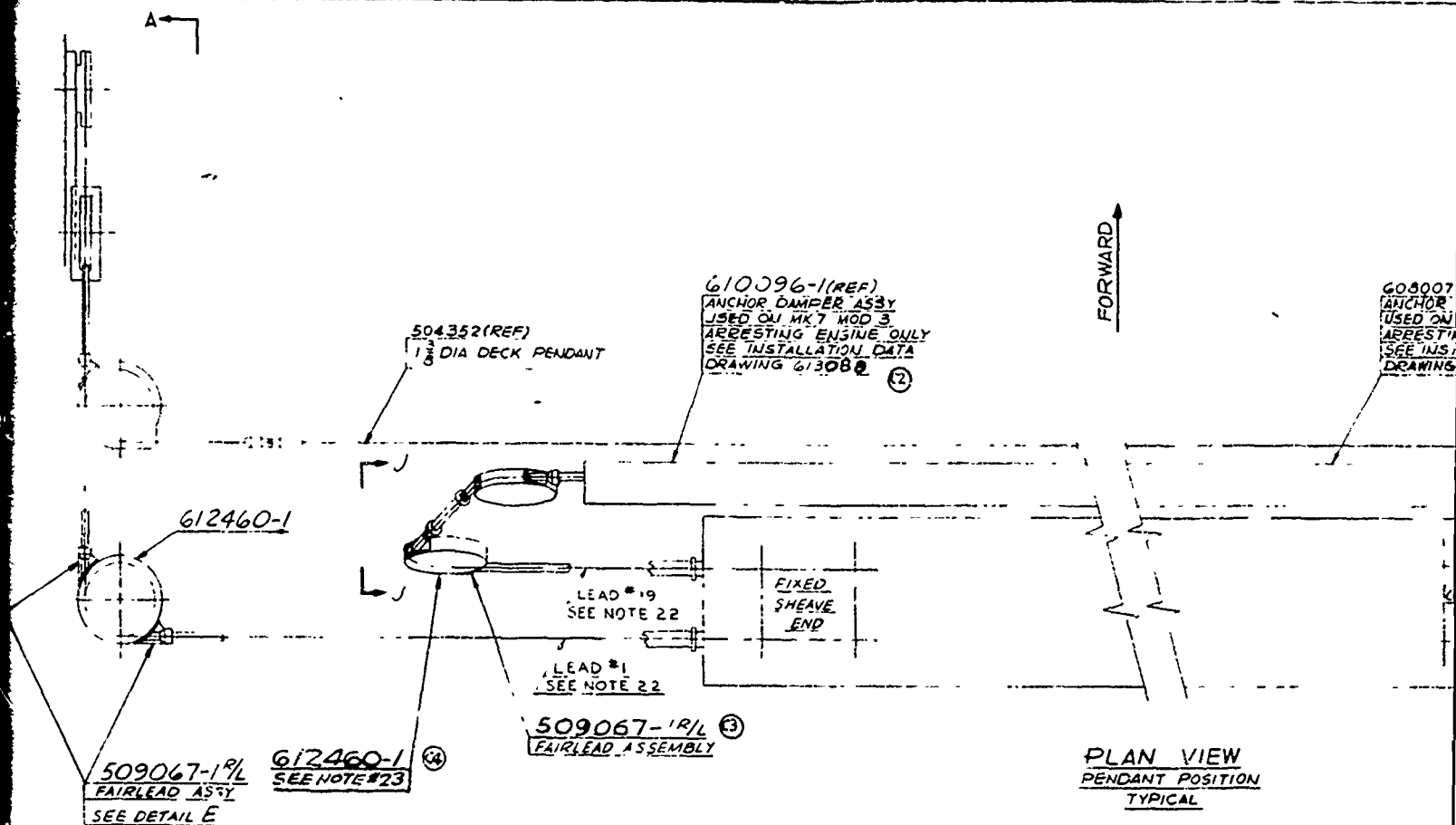
DETAILS

~~LOCATE ACCESS OPENING FOR INSPECTION OF SHEAVE THROAT
IN SHEAVE ASSEMBLY AS SHOWN IN MOST CONVENIENT POSITION
BETWEEN WRAP OF CABLE~~

~~SCALE 6-12~~

13

612792



5007-1 (REF)
 AIR DAMPER ASSY
 ON MK 7 MOD 2
 ARRESTING ENGINE ONLY
 INSTALLATION DATA
 DRAWING 608075

CABLE TRUNKING
 SEE NOTE 14

CROSSHEAD
 END

LEAD #18

LEAD #36

CABLE TRUNKING
 SEE NOTE 7

MK 7 ARRESTING ENGINE
 SEE REFERENCE PLANS

SEE DETAIL D

A92791-27
 PURCHASE CABLE

612792

A

A

509007-1 F/L (REF)
 SEE NOTE 6

DETAIL E
 TYPICAL FAIRLEAD INSTALL
 FROM BELOW DECK SHEAVES

5 7306 (REF)
 DECK PENDANT ASSY ON BARRICADE
 EXTENSION PENDANT

407962-1
 SOCKET - CLEVIS ASSY

DETAIL D
 SOCKET AND TERMINAL ARRANGEMENT
 SCALE 1/4

SEE DETAIL G

612460-1

59953
 612991/M
 CABLE GU
 TYPICAL

VIE

MS20074-06-11 BOLT

MS20995C47 WIRE LOCK (SEE NOTE 3)

3/8 UNC-3B, 3/4 DEEP

6 HOLES SEE NOTE 13)

TEMPLATE FROM 509067-1 R/L

612460-1 REF)

ADE

317894-1
RINS-OCK400791-1
TERMINAL-POURED TYPEA92791-27
ROPE WIRE PURCHASE CABLE)

EMENT

TACK WELD APPROX FLUSH
3/4 INCHS OPPOSITE TONGUESOF JACK RING ALONG JUNCTION
BETWEEN POURED TERMINAL
AND LOCK RING
USE MIL-E-18338, TYPE MIL-7015
3/4 MIL-7016 WELDING ROD
USE CAUTION TO PREVENT
EXCESSIVE HEAT & SOCKET LOSS612796 WRAPPING TYPE
RETRACTABLE SHEAVE INSTALLATION
SEE DETAIL H FOR TYPICAL
HORIZONTAL DECK SHEAVE INSTALLATION

FLIGHT DECK

VIEW A-A

NOTES

1. THIS DRAWING SHOWS A TYPICAL INSTALLATION OF THE PENDANT AND BARRICADE DRIVE SYSTEM FOR THE MARK 7 MOD 1, MARK 7 MOD 2 AND MARK 7 MOD 3 ARRESTING ENGINES. FOR DETAIL INFORMATION SEE REFERENCE DRAWINGS LISTED BELOW.
2. ARRANGEMENT, SELECTION, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT LOCAL CONDITIONS SUBJECT TO APPROVAL OF NAEL (SI).
3. SAFETY WIRING TO BE IN ACCORDANCE WITH MS 33540.
4. SHEAVE ASSEMBLIES INSTALLED IN LOCATIONS INACCESSIBLE FOR LUBRICATION SHALL BE EQUIPPED WITH 1/8 GREASE FITTINGS PIPED TO A READILY ACCESSIBLE LOCATION.
5. ARRANGE ALL DECK EDGE TYPE FAIRLEAD SHEAVE INSTALLATIONS SO THAT DRAIN HOLE IS LOCATED IN LOWEST POSITION, SO THAT DRAINING OF SHEAVE ASSEMBLY MAY BE PIPED OVERBOARD.
6. ALL THRU DECK TYPE SHEAVE ASSEMBLIES NC 30T OF SHEAVE DAMPER INSTALLATION MUST BE PIPED TO DRAIN OVERBOARD SEE VIEW F-F.
7. CABLE TRUNKS OF 2 1/2 DIAMETER PIPE WITH SUPPORTS WHERE REQUIRED, SHALL BE INSTALLED BETWEEN ALL FAIRLEAD SHEAVES MATERIAL SHALL BE FURNISHED BY INSTALLING ACTIVITY.
8. SHEAVE ASSEMBLIES SHALL BE MOUNTED WITH 1 INCH DIAMETER HIGH TENSILE STEEL BOLTS HAVING A MINIMUM STRENGTH OF 120,000 UTS AND A MAXIMUM STRENGTH OF 142,000 UTS, (HEAT TREATED TO ROCKWELL HARDNESS C24-C32) FASTENINGS TO BE FURNISHED BY INSTALLING ACTIVITY AND SHALL BE EQUIVALENT TO NAEL (SI) (SOCKET HEAD SCREWS) STANDARD DRAWING 1340, EXCEPT AS NOTED ABOVE.
9. THE DESIGN OF ALL STRUCTURES SUPPORTING THE PARTS SHOWN ON THIS INSTALLATION MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 1/8 DIAMETER, 6 X 25 WIRE ROPE, SPEC MIL-W-81178, WRAPPED 180° AROUND SHEAVE.
10. MOUNT FAIRLEAD ASSEMBLIES TO SUIT DRIVE SYSTEM CABLE LEAD AND SHEAVE ARRANGEMENT WELD FAIRLEAD ASSEMBLIES TO DECK SHEAVES, THRU DECK SHEAVES AND FAIRLEAD SHEAVES IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS.
11. ON DECK EDGE FAIRLEAD SHEAVE ASSEMBLIES 612460-1 ONLY WELDED TYPE FAIRLEADS 414733-1 MAY BE INSTALLED AS AN ALTERNATE TO 509067-1 R/L WELD LOWER HALF OF 414733-1 ONLY, TO BASE OF FAIRLEAD SHEAVE HOUSING WITH 3/4 FILLET WELD.
12. FOR REEVEING AND TERMINAL POURING INSTRUCTIONS OF PURCHASE CABLE, SEE NAVPERS 51-5BAA-1 (MK7 MOD 1 AG), NAVPERS 51-5BBA-1 (MK7 MOD 2 AG) OR NAVPERS 51-5BCA-1 (MK7 MOD 3 AG).
13. ALL PAINTING SURFACES SHALL HAVE AN APPLICATION OF ONE (1) COAT OF ZINC CHROMATE PRIMER (WET) IN ACCORDANCE WITH MPE 1201-2.
14. TO FACILITATE ARRESTING ENGINE MAINTENANCE, CABLE TRUNKING INSTALLED BETWEEN ANCHOR DAMPER AND ARRESTING ENGINE MUST BE SPLIT. ANY BULKHEAD THAT SPLIT TRUNKING PASSES THROUGH MUST HAVE AN ACCESS HOLE LARGE ENOUGH TO PERMIT PASSAGE OF PURCHASE CABLE SOCKET AND POURED TERMINAL.
15. LINERS INSTALLED FOR ALIGNMENT OF SHEAVE ASSEMBLIES MUST NOT EXCEED A MINIMUM THICKNESS OF 1/8 INCH OR A MAXIMUM THICKNESS OF 3/4 INCH. THESE DIMENSIONS ALSO APPLY TO TAPERED LINERS.
16. FOUNDATION SURFACE AND LINER SURFACE FOR INSTALLATION OF SHEAVE ASSEMBLY MUST BE FLAT WITHIN .005 INCH TOTAL 75% OF OUTER PERIPHERY AND 75% OF INNER PERIPHERY MUST BE IN CONTACT WITH FOUNDATION WITH A MAXIMUM OPENING OF .010 PERMITTED ON THE REMAINING 25%.
17. ALL FASTENINGS FOR ANCHORAGE OF SHEAVE ASSEMBLIES MUST BE THRU BOLTS AS SHOWN IN DETAIL K, EXCEPT ANCHORAGE OF FLUSH TYPE THRU DECK SHEAVE ASSEMBLIES, WHICH MUST BE INSTALLED IN ACCORDANCE WITH NAEL (SI) DRAWING 612796 ALSO, BLIND BOLT HOLES ARE NOT PERMISSIBLE ANY DEVIATION FROM THESE REQUIREMENTS MUST BE APPROVED BY THE NAVAL AIR ENGINEERING LABORATORY (SI).
18. 101A BOLTS SECURING SHEAVE ASSEMBLIES MUST BE TORQUED 350 TO 400 FT-LBS.
19. THREAD DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H28 AND MIL-STD-9, RESPECTIVELY.
20. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 910 5A.
21. THE SHEAVE ARRANGEMENTS FOR THE BARRICADE AND PENDANT POSITIONS SHOW THE MINIMUM NUMBER OF SHEAVES POSSIBLE AND IS THE OPTIMUM SHEAVE ARRANGEMENT FOR THE RESPECTIVE DRIVE SYSTEMS.
22. CABLE LEADS #1 AND #19 ONLY, MUST HAVE ELONGATED TRUNKING AT ENGINE TO PERMIT LATERAL TRAVEL OF PURCHASE CABLE AS CROSSHEAD MOVES FROM BATTERY POSITION TO FULL IN POSITION.
23. ALL SHIPS INSTALLING 28 INCH PITCH DIAMETER SHEAVES IN ACCORDANCE WITH MARK 7 ARRESTING GEAR SERVICE CHANGE NO. 230 SHALL NOT REPLACE EXISTING 24 INCH PITCH DIAMETER SHEAVES BETWEEN ARRESTING ENGINE AND ANCHOR DAMPER ASSEMBLIES.

REF

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C

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
FRACTIONS ON DECIMALS
- 010
THIS DOCUMENT IS A PART OF THIS DRAWING
MPE 1201

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	C O C
MAJOR	M TO M
MINOR	ALL OTHER CHARACTERISTICS

7

ING SHOWS A TYPICAL INSTALLATION OF THE PENDANT AND BARRICADE SYSTEM FOR THE MARK 7 MOD 1, MARK 7 MOD 2 AND MARK 7 MOD 3 ENGINES. FOR DETAIL INFORMATION SEE REFERENCE DRAWINGS BELOW.

MENT, SELECTION, QUANTITY AND TYPE OF ALL ITEMS SHALL BE UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT CONDITIONS SUBJECT TO APPROVAL OF NAEL (SI)

WIRING TO BE IN ACCORDANCE WITH MS 33540.

ASSEMBLIES INSTALLED IN LOCATIONS INACCESSIBLE FOR OPERATION SHALL BE EQUIPPED WITH V8 GREASE FITTINGS PIPED TO ACCESSIBLE LOCATION.

ALL DECK EDGE TYPE FAIRLEAD SHEAVE INSTALLATIONS SO THAT DRAIN LOCATED IN LOWEST POSITION, SO THAT DRAINING OF SHEAVE MAY BE PIPED OVERBOARD

DECK TYPE SHEAVE ASSEMBLIES NOT PART OF SHEAVE DAMPER

ION MUST BE PIPED TO DRAIN OVERBOARD SEE VIEW F-F.

UNKS OF 2 1/2 DIAMETER PIPE WITH SUPPORTS WHERE REQUIRED, BE INSTALLED BETWEEN ALL FAIRLEAD SHEAVES. MATERIAL SHALL BE

BY INSTALLING ACTIVITY

ASSEMBLIES SHALL BE MOUNTED WITH 1 INCH DIAMETER HIGH

STEEL BOLTS HAVING A MINIMUM STRENGTH OF 120,000 UTS

MINIMUM STRENGTH OF 142,000 UTS (HEAT TREATED TO ROCKWELL

C24-C32) FASTENINGS TO BE FURNISHED BY INSTALLING

AND SHALL BE EQUIVALENT TO NAEL (SI) (SOCKET HEAD SCREWS)

DRAWING 1340, EXCEPT AS NOTED ABOVE

AN OF ALL STRUCTURES SUPPORTING THE PARTS SHOWN ON THIS

ION MUST BE BASED ON THE 175,000 POUNDS NOMINAL

STRENGTH OF 1 3/8 DIAMETER, 6x25 WIRE ROPE, SPEC

18, WR-220 180° AROUND SHEAVE

FAIRLEAD ASSEMBLIES TO SUIT DRIVE SYSTEM CABLE LEAD AND SHEAVE

MENT. WELD FAIRLEAD ASSEMBLIES TO DECK SHEAVES, THRU DECK

AND FAIRLEAD SHEAVES IF MOUNTING BOLTS OF FAIRLEAD

ES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS

EDGE FAIRLEAD SHEAVE ASSEMBLIES G12460-1 ONLY, WELDED TYPE FAIRLEADS

MAY BE INSTALLED AS AN ALTERNATE TO 509067-1 R/L, WELD LOWER HALF

-1 ONLY, TO BASE OF FAIRLEAD SHEAVE HOUSING WITH 3/16 FILLET WELD.

INGS AND TERMINAL POURING INSTRUCTIONS OF PURCHASE CABLE,

WEPS 51-5BAA-1 (MK7 MOD1 AG), NAVWEPS 51-5BBA-1 (MK7 MOD 2 AG)

PS 51-5BCA-1 (MK7 MOD 3 AG).

S SURFACES SHALL HAVE AN APPLICATION OF ONE (1) COAT OF ZINC

PRIMER (WET) IN ACCORDANCE WITH MPE 1201-2

ATE ARRESTING ENGINE MAINTENANCE, CABLE TRUNKING INSTALLED

ANCHOR DAMPER AND ARRESTING ENGINE MUST BE SPLIT ANY

THAT SPLIT TRUNKING PASSES THROUGH MUST HAVE AN

OLE LARGE ENOUGH TO PERMIT PASSAGE OF PURCHASE CABLE

AND POURED TERMINAL

INSTALLED FOR ALIGNMENT OF SHEAVE ASSEMBLIES MUST NOT

MINIMUM THICKNESS OF 1/8 INCH OR A MAXIMUM THICKNESS OF 3/16

SE DIMENSIONS ALSO APPLY TO TAPERED LINERS.

IN SURFACE AND LINER SURFACES FOR INSTALLATION OF SHEAVE

Y MUST BE FLAT WITHIN 0.003 INCH TOTAL 75% OF OUTER

Y AND 75% OF INNER PERIPHERY MUST BE IN CONTACT WITH

U WITH A MAXIMUM OPENING OF 0.10 PERMITTED ON THE

G 25%

INGS FOR ANCHORAGE OF SHEAVE ASSEMBLIES MUST BE

TS AS SHOWN IN DETAIL K, EXCEPT ANCHORAGE OF FLUSH TYPE

CK SHEAVE ASSEMBLIES, WHICH MUST BE INSTALLED IN

ANCE WITH NAEL (SI) DRAWING G12796 ALSO, BLIND BOLT

RE NOT PERMISSIBLE ANY DEVIATION FROM THESE REQUIREMENTS

APPROVED BY THE NAVAL AIR ENGINEERING LABORATORY (SI).

SECURING SHEAVE ASSEMBLIES MUST BE TORQUED 350 TO 400 FT-LBS

DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN

ANCE WITH HANDBOOK H28 AND MIL-STD-9, RESPECTIVELY

REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS

ION 9110 54

VE ARRANGEMENTS FOR THE BARRICADE AND PENDANT

NS SHOW THE MINIMUM NUMBER OF SHEAVES POSSIBLE

THE OPTIMUM SHEAVE ARRANGEMENT FOR THE

VE DRIVE SYSTEMS

LEADS *1 AND *19 ONLY, MUST HAVE ELONGATED TRUNKING

NE TO PERMIT LATERAL TRAVEL OF PURCHASE CABLE AS

AD MOVES FROM BATTERY POSITION TO FULL IN POSITION.

IPS INSTALLING 28 INCH PITCH DIAMETER SHEAVES IN

ANCE WITH MARK7 ARRESTING GEAR SERVICE CHANGE

SHALL NOT REPLACE EXISTING 24 INCH PITCH

TER SHEAVES BETWEEN ARRESTING ENGINE

ANCHOR DAMPER ASSEMBLIES.

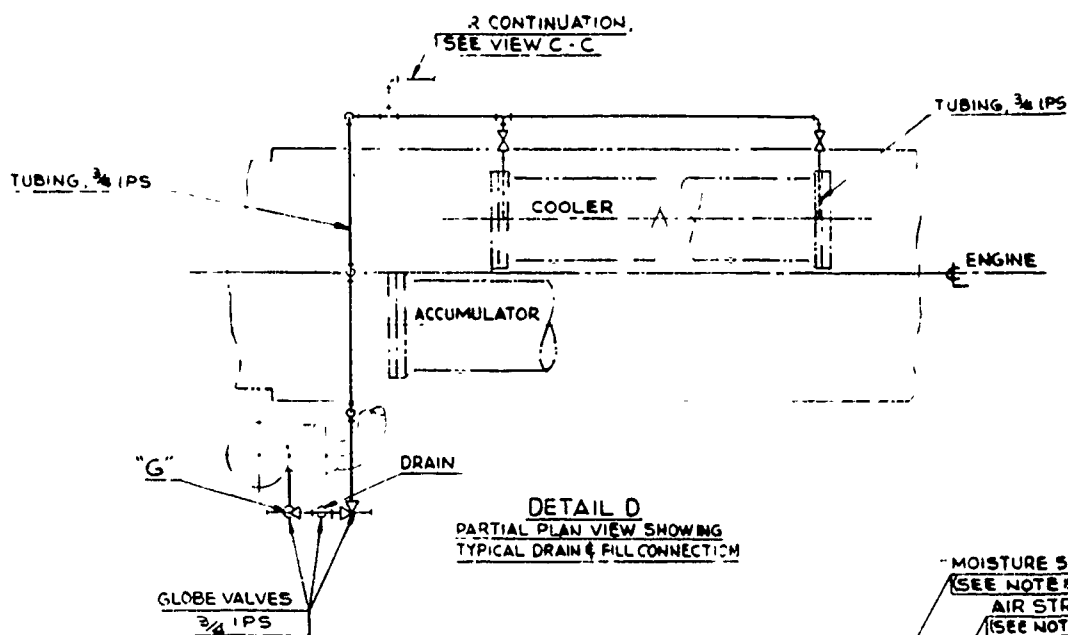
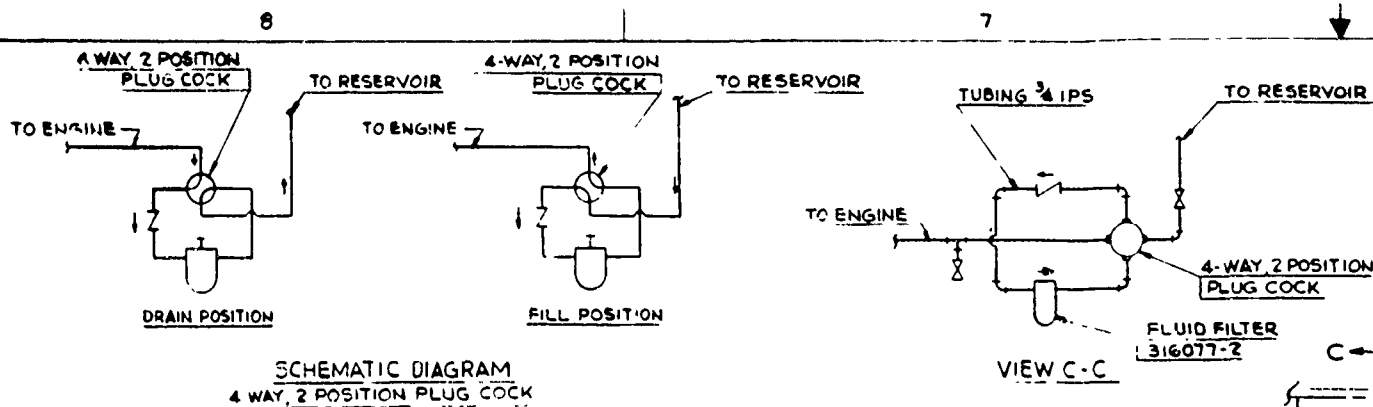
REVISIONS			
SYM	ZONE	DESCRIPTION	DATE
(A)		SEE REVISION NOTICE CLASS 'R' CHANGE BARBELLA	1/1/81
(B)		NRN CL 'R' CHG. ON DWG. DELETED DETAIL 'L'. REASON: TO INSURE DISASSEMBLY FOR PROPER INSPECTION OF COMPLETE SHEAVE ASSY. IN VIEW F-F ADDED 'OR BE LESS THAN 30 INCHES' TO DIMENSION NOTE BETWEEN FAIRLEAD DECK SHEAVE CENTERS REASON: TO INSURE AT LEAST 3 LAYS OF CABLE BETWEEN SHEAVE CENTERS.	5/1/81
(C)		CL 'R' CHG. (1) ADDED (2) (3) (4) REVISED SEE REV. NOTICE 46 51001	1/1/81

REFERENCE PLANS

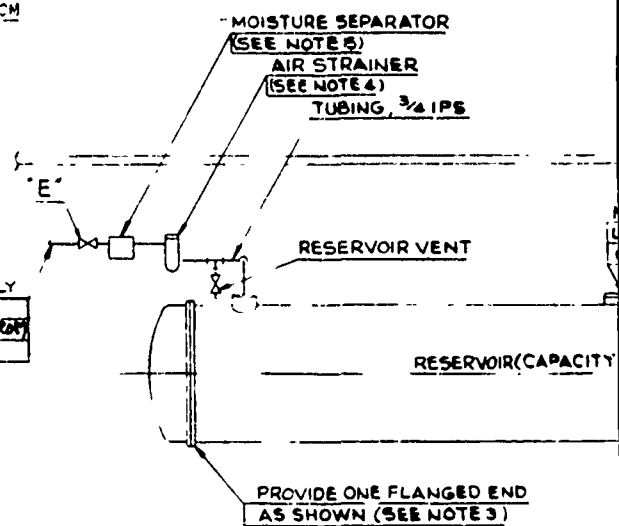
NAEL (SI) DRAWING NUMBER

1	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 1	02-61299
2	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 2	02-61276
3	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 3	02-61946
4	ARRESTING ENGINE-ASSEMBLY-MK7 MOD1 (WITHOUT COOLER)	51-61204
5	ARRESTING ENGINE-ASSEMBLY-MK7 MOD1 (WITH COOLER)	51-61509
6	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 2 (WITHOUT COOLER)	51-61629
7	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 2 (WITH COOLER)	51-61224
8	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 3 (WITHOUT COOLER)	50-61938
9	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 3 (WITH COOLER)	50-61937
10	RETRACTABLE SHEAVE INSTALLATION-WRAPPING AND UNWRAPPING	612796
11	HORIZONTAL DECK SHEAVE-ASSEMBLY	612578
12	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY	613522
13	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY (WOOD DECK)	612455
14	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY (STEEL DECK)	612467
15	DECK EDGE FAIRLEAD SHEAVE-ASSEMBLY	612460
16	SHEAVE DAMPER-TYPICAL INSTALLATION-MK7 MOD1 AND MK7 MOD2	613008
17	SHEAVE DAMPER-TYPICAL INSTALLATION-MK1 MOD3	610203
18	SHEAVE DAMPER CABLE GUARD ENCLOSURE-TYPICAL INSTL MK7 MOD1 & 2	609153
19	SHEAVE DAMPER CABLE GUARD ENCLOSURE-TYPICAL INSTL MK7 MOD 3	612991
20	ANCHOR DAMPER-INSTALLATION DATA-MK7 MOD 2	608075
21	ANCHOR DAMPER-ASSEMBLY-MK7 MOD 2	608007
22	ANCHOR DAMPER-INSTALLATION DATA-MK7 MOD 3	615038
23	ANCHOR DAMPER-ASSEMBLY-MK7 MOD 3	610096
24	FAIRLEAD ASSEMBLY-WELDED TYPE	414733
25	FAIRLEAD ASSEMBLY-CAST TYPE	509067
26	FAIRLEAD ASSEMBLY-CAST TYPE	501071
27	CLEVIS SOCKET ASSEMBLY	407962
28	POURED TYPE TERMINAL	400791
29	LOCK RING	317894
30	1/8 RE ROPE (PURCHASE CABLE)	19275-27
31	DECK PENDANT/BARRICADE EXTENSION PENDANT	507306
32	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY (FOR C.A-31 AND CVA 38 ONLY)	612581

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES + .010 + .015		MECHANICAL FINISH SURFACE ROUGHNESS IN MICRONS V THIS SYMBOL INDICATES THE SURFACE ROUGHNESS (IN MICRO- INCHES) REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS, AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS REF SPEC. MIL-STD-10		DRAWN BY: J. J. JAMES CHECKED BY: J. J. JAMES MATERIAL ANALYZED SUPERVISOR: J. J. JAMES		NAVAL AIR ENGINEERING LABORATORY (SI) NAVAL AIR ENGINEERING CENTER PHILA., PA. 19112 TITLE DRIVE SYSTEM ARRESTING GEAR TYPICAL INSTALLATION 1 3/8 DIA CABLE 28 PD SHEAVES	
CLASSIFICATION OF CHARACTERISTICS CRITICAL C TO C MAJOR M TO M MINOR - ALL OTHER CHARACTERISTICS		DESIGNED BY: J. J. JAMES FOR: MK7 MOD 1, MK7 MOD 2 & MK7 MOD 3 REF		APPROVED BY: J. J. JAMES DATE: 1/1/81		COPE IDENT NO: 10020 H 612792 SCALE: 1/8" = 1" UNLESS NOTED SHEET	

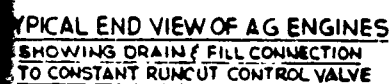


LOW PRESSURE AIR SUPPLY
100 PSI, $\frac{3}{4}$ IPS / FOR
TRANSFERING FLUID FROM
RESERVOIR TO ENGINES



TYPICAL EN
SHOWING
TO CONSTA

VIE



616111

PORTABLE FUNNEL FOR FILLING
AT FLIGHT DECK LOCATION

FLIGHT DECK (REF)

RESERVOIR

LOW PRESSURE AIR SUPPLY
100 PSI

VESSEL

FILTER STATION
SEE VIEW C-C

PLAN VIEW - GALLERY DECK
SHOWING ARRESTING ENGINE INSTALLATION
DRAIN AND FILL ARRANGEMENT
(SEE NOTE 6)

NOTES: (CONT'D)

- (M101) 13. PIPES, FITTINGS AND VALVES TO BE THOROUGHLY
CLEANED AND FREE FROM SCALE PRIOR TO INSTALLATION.
14. ALL PIPES TO BE SECURED IN SUCH A MANNER AS TO
REDUCE VIBRATION TO A MINIMUM.
15. MOISTURE SEPARATOR SHALL BE SIMILAR OR EQUIVALENT
TO MOISTURE SEPARATOR F5N9C4730-277-8901

NOTES:

1. THIS DRAWING SHALL BE PROVIDED TO THE TRA ENGINEER TO DR RESE THE F (1) CHE (2) WIT ACC VAL (3) OPE (4) OPE PLU (5) OPE (6) AFT FRO TO FILL FOLLOV (1) CLOS (2) CHAI RET (3) OPEN OPE (4) OPEN AND (5) VENT APP (6) CLOS VEN (7) REM TO 2. A SCHEMA SHALL BE 3. THE MANY INTERIOR ACCESS A 4. AIR STRA SHOWN O CONTROL. FILTER EL SIZE PAR (M102) 5. ALL LOW SHALL W 6. THE FLU AS CLOS 7. THE INSTA GAUGE W LOCATIO OPERATI OPERATI (M103) 8. AIR LINES DIRECTION VALVE ON BLACK IN (M104) 9. CONSTRUCT A CORROSI WELD W 10. CORROSI OR F534 MIL-E 7 (OUTS: 10. EXCEPT FO AND FITTI 11. PROVIDE A OPENING Y THE ARRE 12. THE INSTA SHALL FL THIS DRAV STRAPS

LEGEND:

- ⊗ GLOBE VALVE
⌞ CHECK VALVE
⊕ RELIEF VALVE
⊗ 4 WAY, 2 POSITION PLUG COCK
⊕ FILTER

CLASSIFICATION
CRITICAL - C TO
MAJOR - M101
MINOR - ALL OT

NOTES:

1. THIS DRAWING SHOWS A TYPICAL PIPING ARRANGEMENT WHICH PROVIDES A FLUID FILL SYSTEM FROM THE FLIGHT DECK AND THE TRANSFER DRAIN AND FILL SYSTEM FOR ARRESTING ENGINE FLUID
 - A TO DRAIN OR TRANSFER THE FLUID FROM THE ENGINE TO THE RESERVOIR AS SHOWN FOR A TYPICAL OPERATION, THE FOLLOWING STEPS ARE TO BE TAKEN:
 - (1) CHECK FLUID LEVEL IN RESERVOIR
 - (2) WITH ENGINE FULLY RETRACTED, BLOW DOWN ENGINE ACCUMULATOR PRESSURE TO 150 PSI AND BLOCK RETRACTING VALVE IN OPEN POSITION.
 - (3) OPEN RESERVOIR VENT AND ASSURE THAT VALVE E IS CLOSED
 - (4) OPEN VALVES "F" AND "G" THEN, OPEN 4-WAY, 2 POSITION PLUG COCK TO DRAINING POSITION
 - (5) OPEN VALVE "H" FLUID WILL NOW FLOW THRU FILTER TO RESERVOIR
 - (6) AFTER DESIRED LEVEL OF FLUID IS DRAINED INTO RESERVOIR FROM ENGINE, CLOSE VALVES "G" AND "H"
 - B TO FILL OR RETURN FLUID TO THE ARRESTING ENGINE, THE FOLLOWING STEPS ARE TO BE TAKEN:
 - (1) CLOSE RESERVOIR VENT AND ASSURE THAT VALVE "F" IS CLOSED
 - (2) CHARGE ENGINE ACCUMULATOR TO 150 PSI AND BLOCK OPEN RETRACTING VALVE OPEN VALVE "H"
 - (3) OPEN 4 WAY 2 POSITION PLUG COCK TO FILLING POSITION OPEN VALVE "G" AT THE ENGINE
 - (4) OPEN LOW PRESSURE AIR SUPPLY VALVE E AT RESERVOIR AND FILL ENGINE TO DESIRED LEVEL
 - (5) VENT AIR FROM SYSTEM CLOSE VENT VALVES WHEN FLUID APPEARS AT VENTS
 - (6) CLOSE TRANSFER VALVE "G" WHEN SYSTEM IS COMPLETELY VENTED OF AIR
 - (7) REMOVE BLOCK FROM RETRACTING VALVE ALLOWING VALVE TO CLOSE
2. A SCHEMATIC DIAGRAM WITH GENERAL OPERATING INSTRUCTIONS SHALL BE PROVIDED IN EACH ARRESTING ENGINE COMPARTMENT
3. THE MANHOLE COVER IS PROVIDED TO ENABLE INSPECTION OF INTERIOR OF RESERVOIR FLANGED END OF TANK IS PROVIDED FOR ACCESS AND TO FACILITATE CLEANING
4. AIR STRAINER SHALL BE SIMILAR OR EQUIVALENT TO STRAINER SHOWN ON NAVSHIPS DWG NO. 5132 54823-2706, SHIPS PARTS CONTROL CENTER PART NO. 44730-369-5053 EXCEPT THAT THE FILTER ELEMENT SHALL BE CAPABLE OF REMOVING MINIMUM SIZE PARTICLES OF 125 MICRONS
- (M102) 5. ALL LOW PRESSURE HARDWARE PIPING, VALVES, RESERVOIR ETC SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST OF 200 PSI
6. THE FLUID STOWAGE SYSTEM SHOULD BE CENTRALLY LOCATED AS CLOSE AS POSSIBLE TO ARRESTING ENGINE COMPARTMENTS
7. THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH A RANGE OF 0 TO 200 PSI AT AN APPROPRIATE LOCATION, CLOSE TO THE STOWAGE TANK WHERE OPERATING PERSONNEL CAN ASCERTAIN PROPER OPERATING PRESSURE.
- (M103) 8. AIR LINES SHALL BE MARKED "ALP" (AIR LOW PRESSURE) AND WITH DIRECTIONAL FLOW ARROWS IDENTIFICATION TO BE PLACED NEAR VALVE ON PRESSURE SIDE WHERE POSSIBLE. PAINT SHALL BE BLACK IN ACCORDANCE WITH MIL-P-15149
- (M104) 9. CONSTRUCTION AND MATERIAL OF TANK TO BE AS FOLLOWS
 - A COPROSION RESISTING STEEL PLATE PER QQ-S-766, CLASS 347 WELD WITH ELECTRODE MIL-E-22200/2A, TYPE MIL-347-15 OR -16
 - B CORROSION RESISTING CLAD STEEL PLATE PER QQ-S-682, CLASS F532 OR F5347 CLAD ON INSIDE ONLY WELD CLAD SIDE WITH ELECTRODE MIL-E-22200/2A, TYPE MIL-347-5 OR -16 WELD UNCLAD SIDE (OUTSIDE) WITH ELECTRODE MIL-E-22200/1, TYPE MIL-701B
 - 10 EXCEPT FOR HIGH PRESSURE ITEMS CALLED OUT, ALL AIR SUPPLY PIPING AND FITTINGS TO BE CORROSION RESISTANT (COPPER, STN STEEL OR BRASS)
 - 11 PROVIDE A WATERTIGHT COVER ON THE FLIGHT DECK FOR THE FUNNEL OPENING WHEN NOT IN USE, THE PORTABLE FUNNEL CAN BE STORED IN THE ARRESTING GEAR STORE ROOM
 12. THE INSTALLING ACTIVITY, UNDER THE COGNIZANCE OF NAVSHIPS, SHALL FURNISH ALL EQUIPMENT OR MATERIAL FOR THIS INSTALLATION THIS DRAWING DOES NOT DESIGNATE ALL POSSIBLE PIPE, ELBOWS, STRAPS OR HANGERS THAT MAY BE REQUIRED

GLOBE VALVE

CHECK VALVE

4-WAY, 2 POSITION PLUG COCK

4-WAY, 2 POSITION PLUG COCK

FILTER

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL - C TO C	
MAJOR - M101 TO M104	
MINOR - ALL OTHER CHARACTERISTICS	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
B 0.010 0.1"

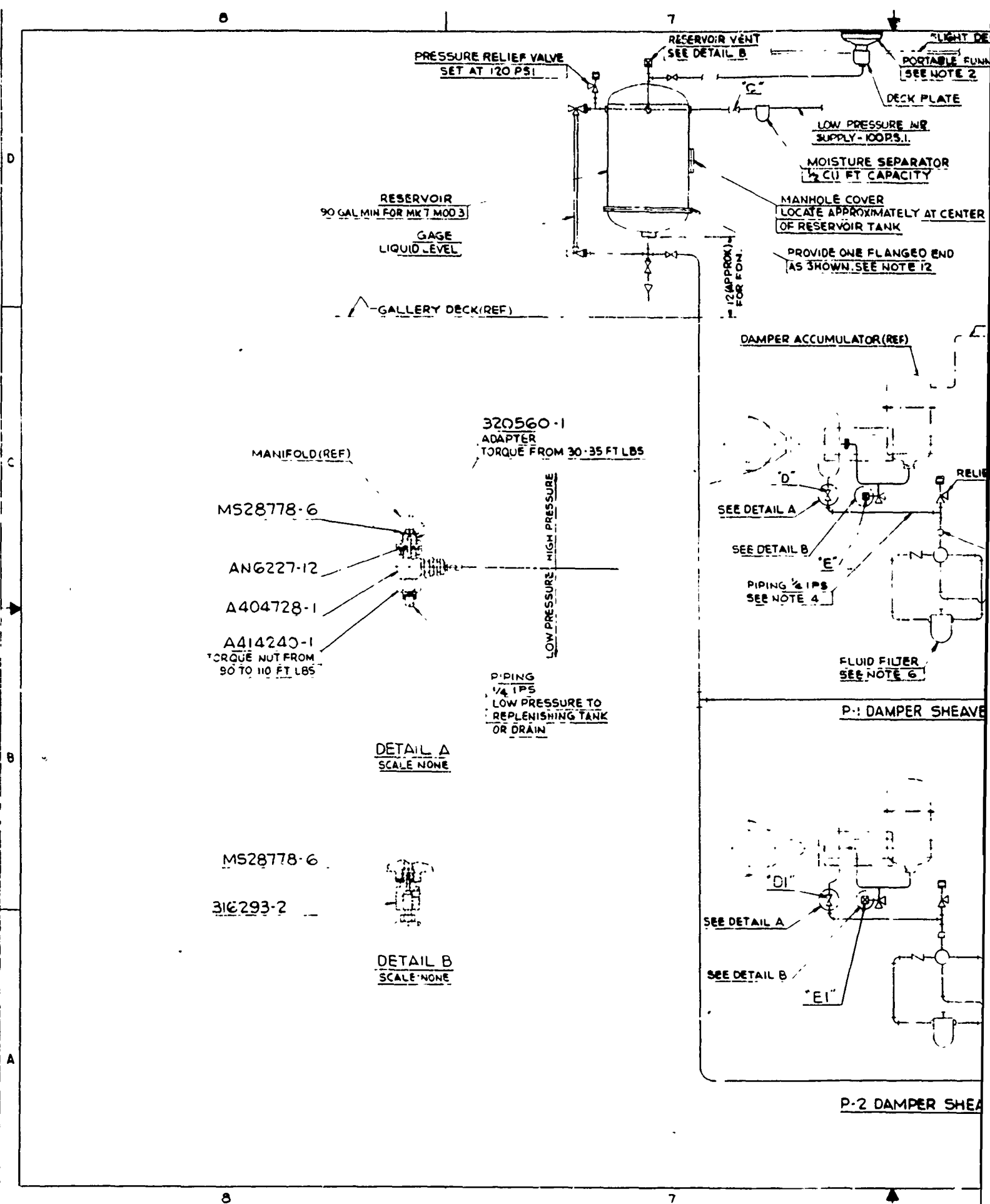
THESE DOCUMENTS ALSO ARE A
PART OF THIS DRAWING

REV	DESCRIPTION	DATE	APPROVED
1	ISSUED FOR MK 7 MOD 3	14/1/65	

DESIGN	DATE	BY	CHKD	DATE	BY
14/1/65	14/1/65				

ENGINEERING DEPARTMENT (B1)	NAVAL AIR ENGINEERING CENTER PHILA PA 19112
TITLE	
DRAIN & FILL ARRANGEMENT	
MK 7 MOD 3 ARRESTING ENGINE	
DRWG NO	616111
CODE IDENT	NO 80020
SCALE	NONE
SHEET	

FIGURE A



6

FLIGHT DECK (REF)

5

PORTABLE FUNNEL
SEE NOTE 2

CK PLATE

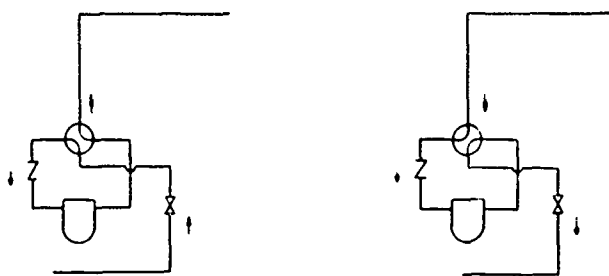
NR

1.

ARATOR
CITY

LY AT CENTER

SEO END
E 12



FILL POSITION

DRAIN POSITION

SCHEMATIC DIAGRAM
4WAY, 2 POSITION PLUG COCK

CHARGING LINE (REF)

RELIEF VALVE SET AT 120 PSI

REDUCER, $\frac{1}{4} = \frac{1}{2}$ IPS

"F"

ER SHEAVE (PORT)

"FI"

PIPING TO OTHER
SHEAVE DAMPERS

PER SHEAVE (PORT)

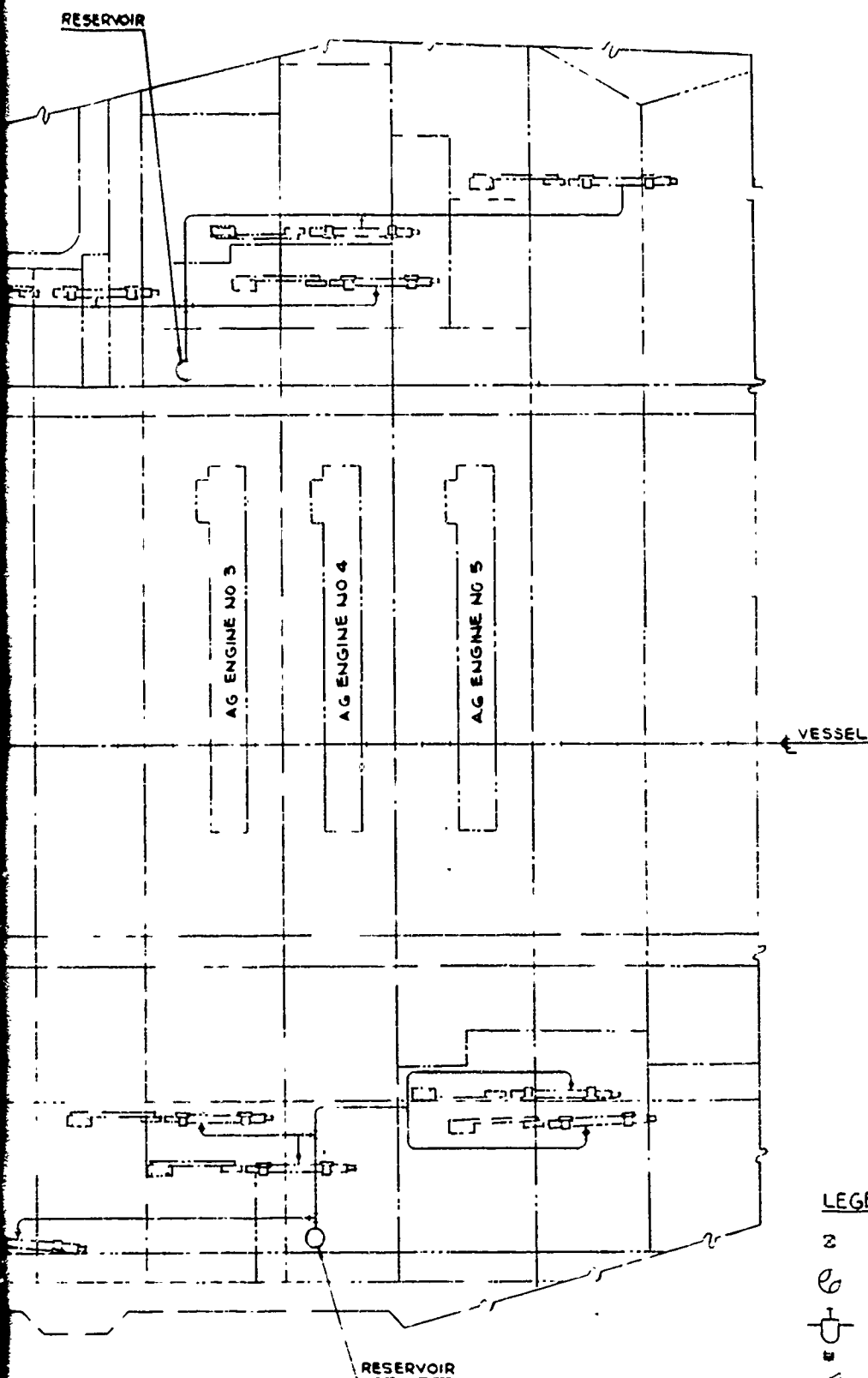
AG ENGINE NO. 1

AG ENGINE NO. 2

616109

6

5



PLAN VIEW - GALLERY DECK
SHOWING SHEAVE DAMPER INSTALLATION DRAIN & FILL ARRANGEMENT
SEE NOTE B

LEGEND:

- 2 BLEED VALVE
- 4 WAY, 2 POSITION PLUG COCK
- FILTER
- RELIEF VALVE
- CHECK VALVE
- GLOBE VALVE

- NOTES
1. THIS DRAWING SHOWS THE FLIGHT DECK AND DAMPER SHEAVE TO A COMMON RESERVOIR.
 - A. TO DRAIN FLUID AS SHOWN FOR ARE TO BE TAKEN TO THE RESERVOIR.
 - (1) CHECK FLUID
 - (2) BLOW DOWN
 - (3) OPEN RESERVOIR
 - (4) OPEN 4 WAY AND VALVE TRAPPED
 - (5) TRAPPED CONTAINED
 - (6) AFTER DEVALVES "C"
 - B. TO FILL OR RE-STEP ARE TO:
 - (1) CLOSE RESERVOIR
 - (2) VENT ACCORDING TO DESIRED LI
 - (3) CLOSE VALVE BEFORE AC
 2. PROVIDE A WATER OPENING WHEN IN THE ARRESTING
 3. VALVE A404721 MANIFOLD SHALL PRESSURE OF PERMANENT DE
 4. PIPING SYSTEM RESISTANT (CO COMPLY WITH M PIPING SHALL
 5. ALL MATERIAL SHALL BE FIDON
 6. ALL FILTERS SHALL WITH FLUID MI PRESSURE OF DISC TYPE, FU AND CAPABLE MIN SIZE OF
 7. A SCHEMATIC SHALL BE PROVIDED
 8. THE FLUID DRAIN LOCATED AMONG
 - (MIO1) 9. CONSTRUCTION A CORROSION E WELD WITH E CORROSION C PS 347 CLAD MIL-E-2220X (OUTSIDE) WITH
 10. THE INSTALLING WITH A RANGE OF TO THE STOWAGE PROPER OPERA
 - (MIO2) 11. ALL LOW PRESS WITHSTAND A MA
 12. THE MANHOLE TANK FLANGED CLEANING
 - (MIO3) 13. PIPES, FITTINGS FROM SCALE F
 - (MIO4) 14. AIR LINES SHALL DIRECTIONAL VALVE ON PRE IN ACCORDANCE

CLASSIFICATION	
CRITICAL - C TO C	
MAJOR - MIO1	
MINOR - MIO2	

31

NOTES

THIS DRAWING SHOWS THE FLIGHT DECK AND A FLUID DRAIN AND FILL SYSTEM. DAMPER SHEAVE INSTALLATION, ALL ACCUMULATORS ARE CONNECTED TO A COMMON RESERVOIR PORT. STBD SIDES HAVE INDIVIDUAL RESERVOIR. A TO DR. IN FLUID FROM THE DAMPER SHEAVE ASSEMBLY. PORT AS SHOWN FOR A TYPICAL OPERATION, THE FOLLOWING STEPS ARE TO BE TAKEN:

- (1) CHECK FLUID LEVEL IN RESERVOIR.
- (2) BLOW DOWN PRESSURE IN ACCUMULATOR TO 100 PSI APPROX
- (3) OPEN RESERVOIR VENT AND ASSURE THAT VALVE 'C' IS CLOSED
- (4) OPEN WAY, 2 POSITION PLUG COCK TO DRAINING POSITION AND VALVE 'E'; FLUID WILL NOW FLOW THRU FILTER TO RESERVOIR EXCEPT FLUID TRAPPED IN MANIFOLDS.
- (5) TRAPPED MANIFOLD FLUID CAN BE DRAINED INTO A CONTAINER FROM VALVE 'E' IF NECESSARY.
- (6) AFTER DESIRED LEVEL OF FLUID IS DRAINED INTO THE RESERVOIR VALVES 'C' AND 'F' CAN BE CLOSED.

B TO FILL OR RETURN FLUID TO THE ACCUMULATORS, THE FOLLOWING STEPS ARE TO BE TAKEN.

- (1) CLOSE RESERVOIR VENT
- (2) VENT ACCUMULATOR, OPEN VALVES 'C' AND 'F' AND 4 WAY 2 POSITION PLUG COCK TO FILLING POSITION UNTIL THE FLUID REACHES DESIRED LEVEL IN ACCUMULATORS
- (3) CLOSE VALVES 'C' AND 'F' CAUTION: VALVE 'D' MUST BE CLOSED BEFORE ACCUMULATORS ARE CHARGED TO OPERATING PRESSURE

2 PROVIDE A WATER-TIGHT COVER ON THE FLIGHT DECK FOR THE FUNNEL OPENING. WHEN NOT IN USE, THE PORTABLE FUNNEL CAN BE STORED IN THE ARRESTING GEAR STORE ROOM.

3. VALVE 4004728-IN AND COMPONENTS CONNECTING IT TO MANIFOLD SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST PRESSURE OF 5000 PSI FOR 15 MINUTES WITH OUT LEAKAGE OR PERMANENT DEFORMATION.

4. PIPING SYSTEM MATERIALS AND RESERVOIR TO BE CORROSION RESISTANT (COPPER, CU-NI, ST STEEL OR BRONZE) AND SHALL COMPLY WITH MIL-STD-777 UNLESS OTHERWISE SPECIFIED, PIPING SHALL BE 1/2 IPS OR EQUIVALENT.

5 ALL MATERIALS NEEDED TO INSTALL STOWAGE SYSTEM SHALL BE FURNISHED BY THE INSTALLING ACTIVITY

6 ALL FILTERS SHALL BE SUITABLE IN ALL RESPECTS FOR USE WITH FLUID MIL-H-5559, ETHYLENE GLYCOL, AT A WORKING PRESSURE OF 125 PSI. FILTER ELEMENT SHALL BE METAL DISC TYPE, FUNCTIONING BY EDGE FILTRATION PRINCIPLE AND CAPABLE OF REMOVING FOREIGN PARTICLES OF A MIN. SIZE OF 125 MICRONS

7 A SCHEMATIC DIAGRAM WITH GENERAL OPERATING INSTRUCTIONS, SHALL BE PROVIDED IN EACH DAMPER SHEAVE COMPARTMENT

8 THE FLUID DRAIN AND FILL RESERVOIR SHOULD BE CENTRALLY LOCATED AMONG ALL SHEAVE DAMPER INSTALLATIONS

(M101) 2 CONSTRUCTION AND MATERIAL OF TANK TO BE AS FOLLOWS:

- A CORROSION RESISTING STEEL PLATE PER SPEC QQ-S-750 CL 347 WELD WITH ELECTRODE MIL-E-22200/2A TYPE MIL-347-15 OR -1G.
- B CORROSION RESISTING CLAD STEEL PLATE QQ-S-382 CL FS32 OR FS 347 CLAD ON INSIDE ONLY, WELD CLAD SIDE WITH ELECTRODE MIL-E-22200/2A TYPE MIL-347-15 OR -1G WELD UNCLAD SIDE (OUTSIDE) WITH ELECTRODE MIL-E-22200/1, TYPE MIL-7018

10 THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH A RANGE OF 0 TO 200 PSI AT AN APPROPRIATE LOCATION CLOSE TO THE STOWAGE TANK WHERE OPERATING PERSONNEL CAN ASCERTAIN PROPER OPERATING PRESSURE.

(M102) 1 ALL LOW PRESSURE HARDWARE, PIPING, VALVES, RESERVOIR ETC SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST PRESSURE OF 200 PSI

12 THE MANHOLE COVER IS PROVIDED TO ENABLE INSPECTION OF INTERIOR OF TANK FLANGED END OF TANK IS PROVIDED FOR ACCESS AND TO FACILITATE CLEANING

(M103) 12 PIPES, FITTINGS AND VALVES TO BE THOROUGHLY CLEANED AND FREE FROM SCALE PRIOR TO INSTALLATION

M104) 14 AIR LINES SHALL BE MARKED ALP (AIR LOW PRESSURE) AND WITH DIRECT ONAL FLOW ARROW. IDENTIFICATION TO BE PLACED NEAR VALVE OR PRESSURE SOURCE WHERE POSSIBLE PAINT SHALL BE BLACK IN ACCORDANCE WITH MIL-STD-1549

PLUG COCK

CLASSIFICATION & CHARACTERISTICS		REVISIONS		APPROVALS		ENGINEERING DEPARTMENT (S1)	
CRITICAL	C TO L	DATE	BY	DATE	BY	NO	NO
MAJOR	M101 TO M104						
MINOR	ALL OTHER CHARACTERISTICS						
TITLE		DRAWN		CHECKED		ENGINEERING DEPARTMENT (S1)	
DRAIN AND FILL ARRANGEMENT		M101		M102		NAVAL AIR ENGINEERING CENTER PHMA PA 19112	
DAMPER SHEAVE FLUID		M103		M104		DATE	
M101 M102 M103 M104		M105		M106		NO 60020	
616109		616109		616109		616109	

FIGURE 2

11

10

7 E16 ±12 (REF)

FORWARD

CUT DECK TO SUIT
THRU DECK SHEAVE
ASSEMBLIES 612467-1
OR 612455-1

THRU DECK SHEAVE

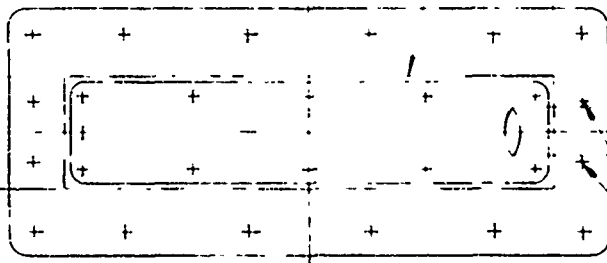
31 1/2 (REF) FOR 612467-

29 1/2 (REF) FOR 612455-1

HINGED TROUGH COVER IS LIFTED BY CABLE
TRUNK LINE WHEN RETRACTABLE SHEAVE
IS IN RAISED (OPERATING) POSITION
SEE NOTE 2

DO NOT PURCHASE CABLE

2 1/2 IPS CABLE
SEE NOTE



3 1/2 (REF) WOOD DECK
1 3/4 (REF) STEEL DECK

3/64 BORE, 1/2 DEEP
IN STEEL PLATE
BOLT SHANK TO EXTEND
1/4 MIN IN CORE

90444-926
REQUIRED THIS END
ONLY FOR 612467-1

OF CABLE IN
OPERATING POSITION

616 REF FOR
612455-1 AND
616 REF FOR
612467-1

HINGE

GRIND FLANGE LOCALLY
IF 2 1/2 IPS CABLE
TRUNK INTERFERES

90444-926
A91850-3

1 1/2-7UNC-3B 2 DEEP, 16 HOLES
TEMP FROM 612455-1
OR 612467-1
SEE NOTE 3

612455-1 (REF)
FOR 3 1/2 X 1/2

612467-1 (REF)
FOR 1 3/4 DECK

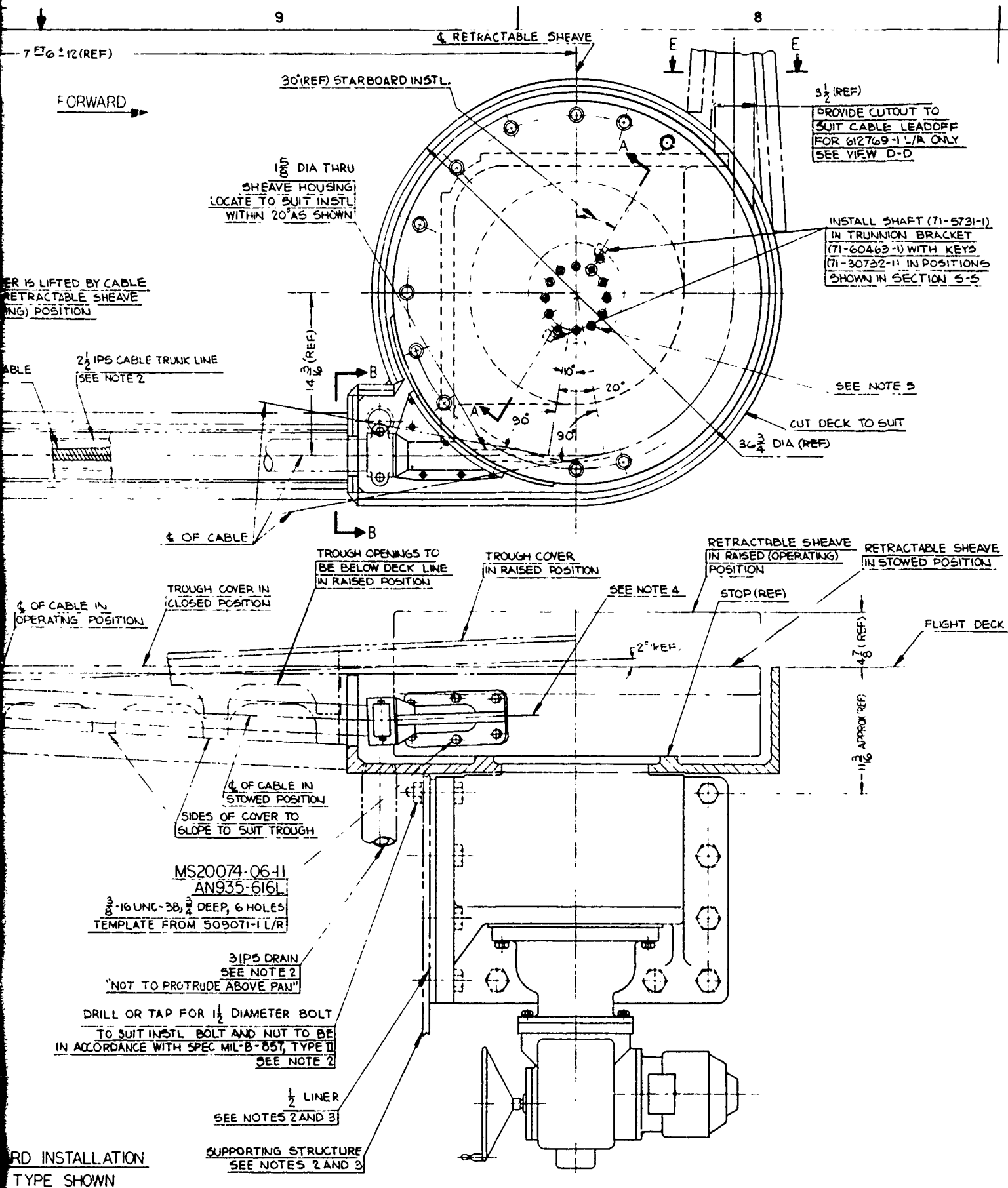
3-16
TEMPLA

NOT
DRILL OR
TO SUIT
IN ACCORDANCE

TYPICAL STARBOARD INSTALLATION
UNWRAPPING TYPE SHOWN

11

10

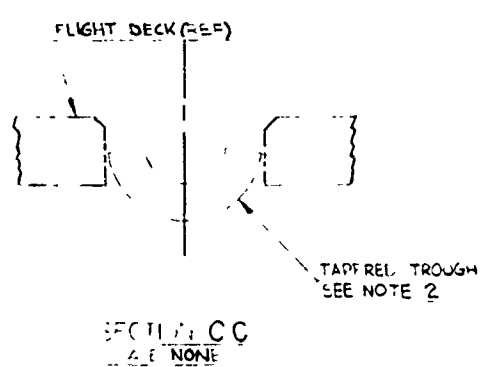
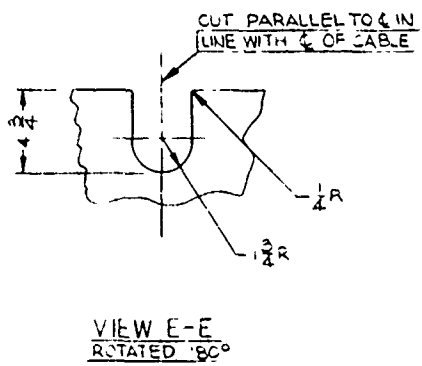


RD INSTALLATION
TYPE SHOWN

612796

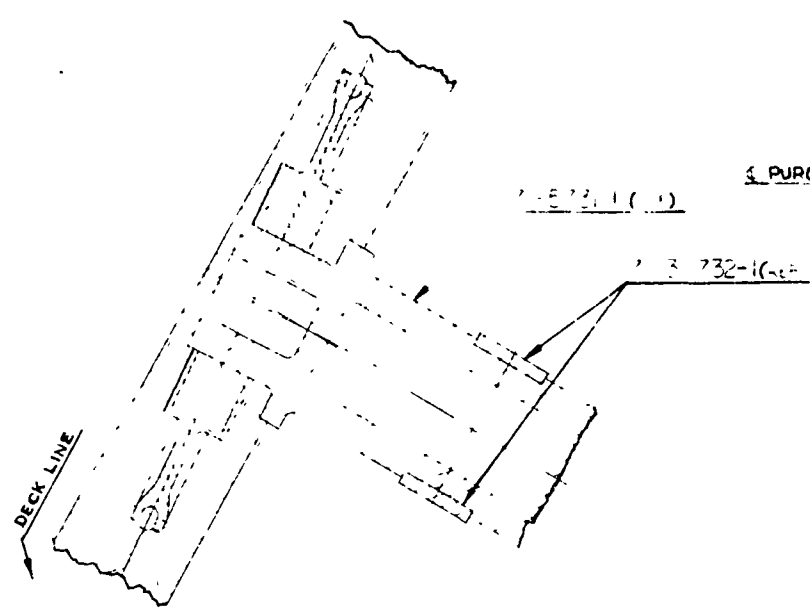
②

2



TROUGH C
SEE NO

THAT THE
TROUGH
SEE NOTE 1



4 PURCHASE CABLE REF

5 APPROX

1/2 DIA PURCHASE CABLE

SECTION A-A
SYNOPSIS
FOR DETAILS OF SIGNAL
ELECTRONIC SYSTEMS
(WARRANTY SHEET ADDY)
OR 21-5938 (UNWRAPPING
SHEET ADDY)

SECTION
SCALE



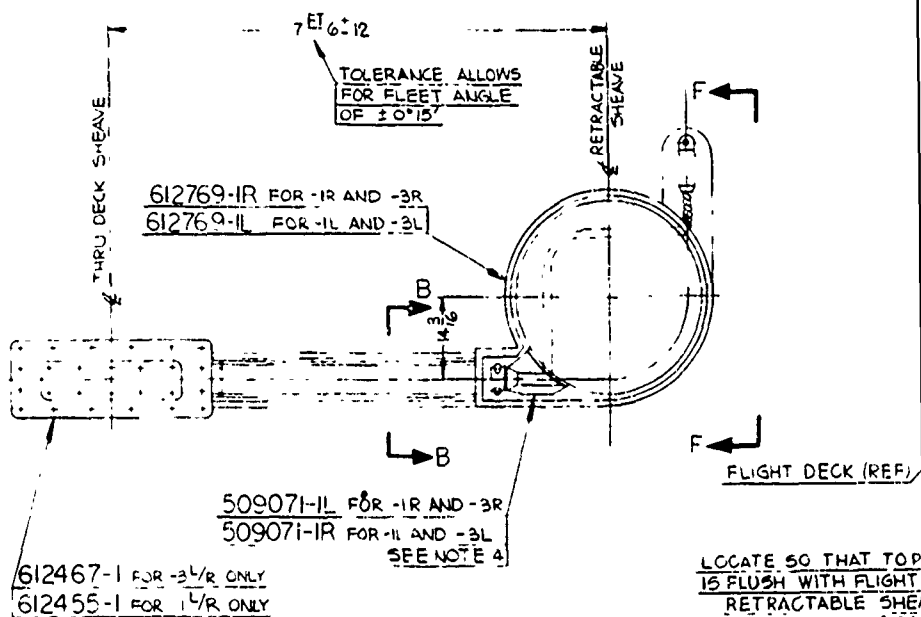
21-5938-
ELECTRICAL
LOCATE TO

FORWARD

TROUGH COVER
SEE NOTE 2

FLIGHT DECK (REF)

SECTION B-B



UNWRAPPING TYPE

-1R AND -3R STARBOARD INSTALLATION (SHOWN)

-1L AND -3L PORT INSTALLATION (OPPOSITE)

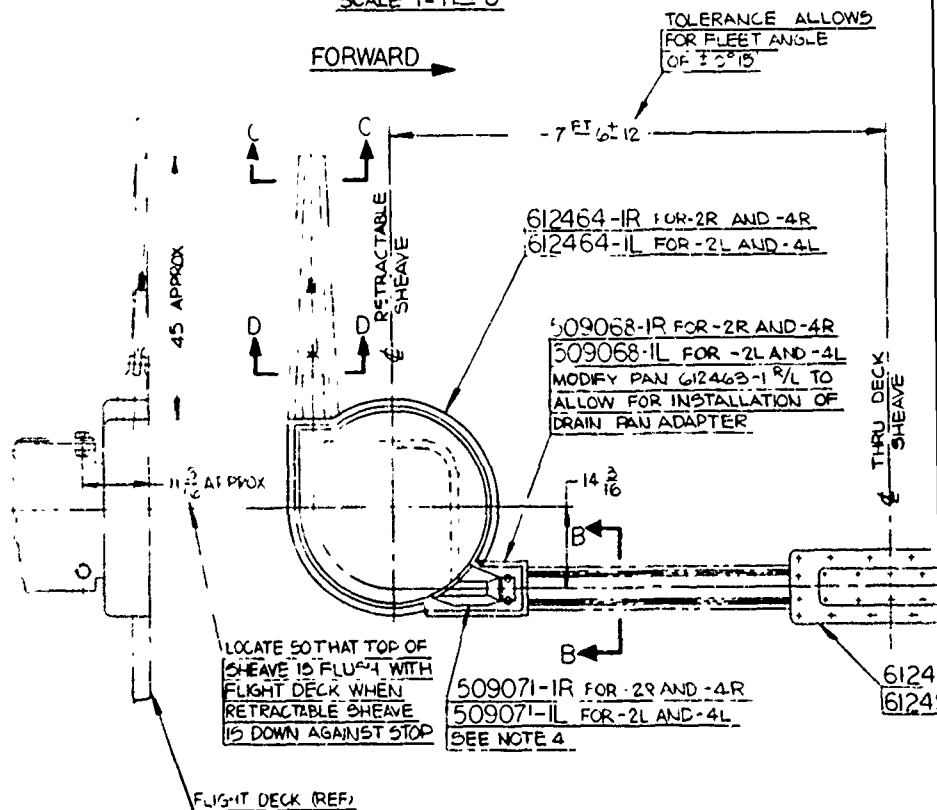
FOR DETAILS NOT SHOWN SEE TYPICAL INSTALLATION

SCALE: 1" = 1 FT 0"

VIR

TOLERANCE ALLOWS
FOR FLEET ANGLE
OF ± 0° 15'

FORWARD

SECTION D-D
SCALE: NONEMETAL TROUGH
SEE NOTE 2

WRAPPING TYPE

-2R AND -4R STARBOARD INSTALLATION (SHOWN)

-2L AND -4L PORT INSTALLATION (OPPOSITE)

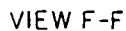
FOR DETAILS NOT SHOWN SEE TYPICAL INSTALLATION

SCALE: 1" = 1 FT 0"

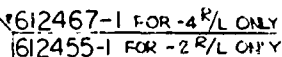
612796

21-5938-1
ELECTRICAL WIRING
LOCATE TO SUIT

1. THIS DRAWING SHOWS DATA NECESSARY FOR THE PORT AND STARBOARD INSTALLATION OF RETRACTABLE SHEAVE ASSEMBLIES G12769-1/L/R AND G12464-1/L/R.
2. TROUGH COVER PLATE, METAL TROUGHS, 2 1/2 PIPE SIZE CABLE TRUNK LINE, 3 PIPE SIZE DRAIN LINE, LINERS, SUPPORTING STRUCTURES AND BOLTS TO BE FURNISHED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY.
3. THE DESIGN OF SUPPORTING STRUCTURES MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 3/8 DIAMETER, 6x19 WIRE ROPE, SPEC MIL-W-6015, WRAPPED 180° AROUND SHEAVE.
4. FAIRLEAD ASSEMBLY 50907-1/L/R MUST BE COCKED ON RETRACTABLE SHEAVE HOUSING SO THAT CENTERLINE COINCIDES WITH 2° ANGLE BETWEEN DECK SHEAVE AND FAIRLEAD SHEAVE WHEN RETRACTABLE SHEAVE IS IN RAISED (OPERATING) POSITION, SHM OPEN CORNERS WHERE NECESSARY. WELD FAIRLEAD ASSEMBLY 50907-1/L/R IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS. 2 3/16 DIAMETER COUNTERBORE IN FAIRLEAD ASSEMBLY 50907-1/L/R MUST BE MADE LARGER TO PERMIT 2 1/2 PIPE SIZE CABLE TRUNK TO SWING BETWEEN EXTREME LIMITS SHOWN.
5. FOR INSTALLING AND REMOVAL OF RETRACTABLE SHEAVE ASSEMBLIES G12464-1 AND G12769-1 SEE NAEL DRAWING NUMBER 407768-1.
6. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHING INSTRUCTION 9110.54.
7. DIMENSIONS AND DESIGNATIONS SHALL BE AS SHOWN IN ACCORDANCE WITH HANDBOOK 1-28 1-10-9, RESPECTIVELY.
8. FINISH IN ACCORDANCE WITH MPR 1201-12 FOR 1-L/R AND -2-L/R.



ANGLE ALLOWS



ION (SHOWN)
ION (OPPOSITE)
TYPICAL INSTALLATION:

[illegible]

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± 1/64 ± .00 ± 1/2°
THESE DOCUMENTS ALSO ARE A
PART OF THIS DRAWING
MPB 1201

MECHANICAL FINISH SURFACE
ROUGHNESS IN MICRONS

✓ THIS SYMBOL EMBRACING THE SURFACE ROUGHNESS IN MICRO INCHES REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS

ORIGIN	C
CHECKED	M
MATERIAL	
ANALYZED	
SUPERVISOR	F

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL C TO C	
MAJOR - M	TO M
MINOR - ALL OTHER CHARACTERISTICS	

DESIGNED MKT MOD1.
FOR MKT MOD2, MKT MOD3

APPROVED
[Signature]
APPROVED

NOTES:

1. THIS DRAWING SHOWS DATA NECESSARY FOR THE PORT AND STARBOARD INSTALLATION OF RETRACTABLE SHEAVE ASSEMBLIES G12769-1/L/R AND G12464-1/L/R.
2. TROUGH COVER PLATE, METAL TROUGHS, 2 1/2 PIPE SIZE CABLE TRUNK LINE, 3 PIPE SIZE DRAIN LINE, LINERS, SUPPORTING STRUCTURES AND BOLTS TO BE FURNISHED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY.
3. THE DESIGN OF SUPPORTING STRUCTURES MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 3/8 DIAMETER, 6x19 WIRE ROPE, SPEC MIL-W-6015, WRAPPED 180° AROUND SHEAVE.
4. FAIRLEAD ASSEMBLY 509071-1/L/R MUST BE COCKED ON RETRACTABLE SHEAVE HOUSING SO THAT CENTERLINE COINCIDES WITH 2° ANGLE BETWEEN DECK SHEAVE AND FAIRLEAD SHEAVE WHEN RETRACTABLE SHEAVE IS IN RAISED (OPERATING) POSITION, SHOWN CORNERS WHERE NECESSARY. WELD FAIRLEAD ASSEMBLY 509071-1/L/R IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS. 2 5/16 DIAMETER COUNTERBORE IN FAIRLEAD ASSEMBLY 509071-1/L/R MUST BE MADE LARGER TO PERMIT 2 1/2 PIPE SIZE CABLE TRUNK TO SWING BETWEEN EXTREME LIMITS SHOWN.
5. FOR INSTALLING AND REMOVAL OF RETRACTABLE SHEAVE ASSEMBLIES G12464-1 AND G12769-1 SEE NAEL DRAWING NUMBER 407768-1.
6. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 910.54.
7. THREAD DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H2B AND MIL-STD-9, RESPECTIVELY.
8. FINISH IN ACCORDANCE WITH MPR 1201-12 FOR 1-L/R AND -2 L/R.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVE
	A	CLASS R*CHG NO REV NOTICE. REPLACES DWG 612796 NO REV WITHOUT CHG	7/1/01	7F

[illegible]

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	C TO C
MAJOR	- M TO M
MINOR	ALL OTHER CHARACTERISTICS

CLASSIFICATION OF CHARACTERISTICS

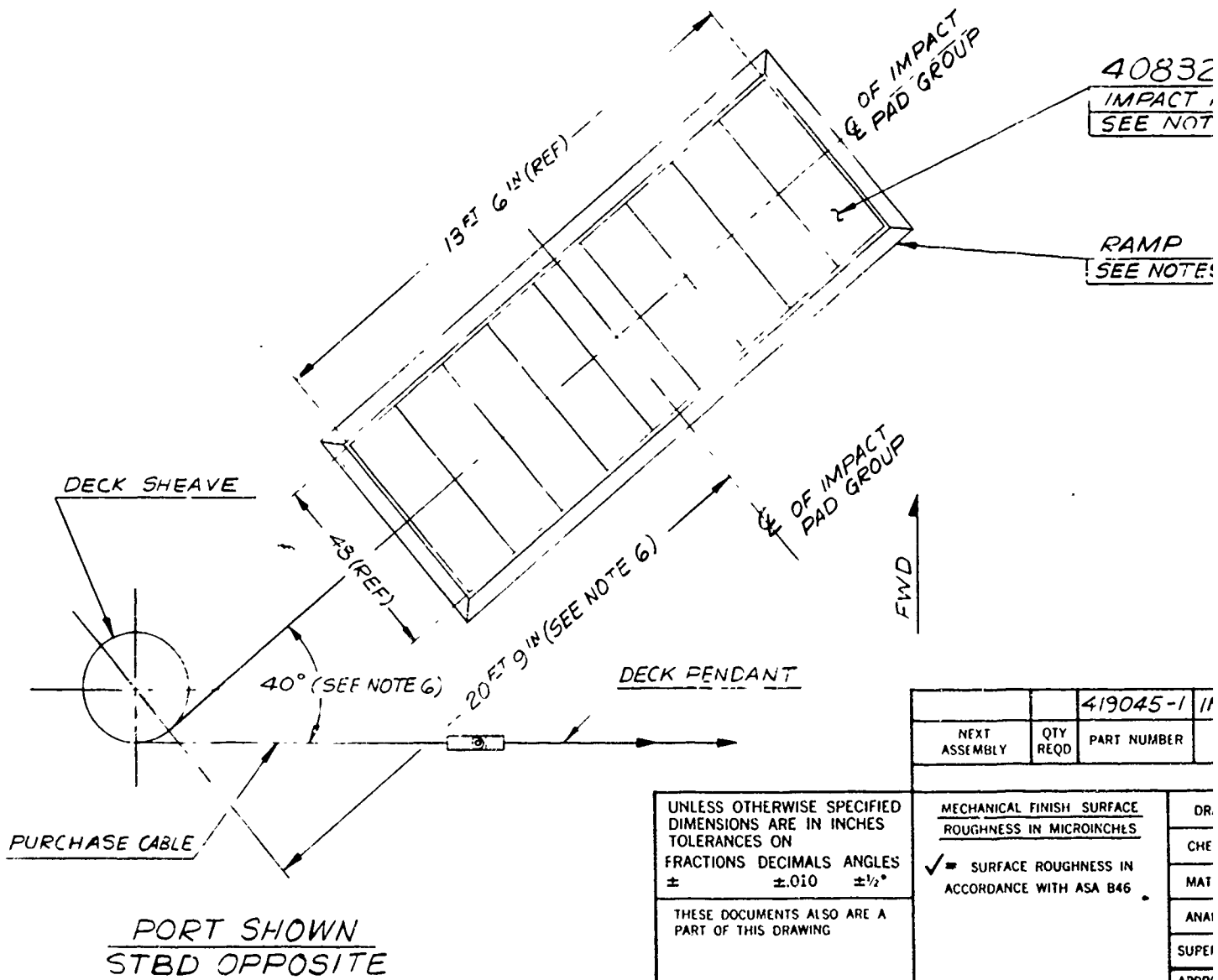
CRITICAL — C TO C

MAJOR — M TO M

MINOR — ALL OTHER CHARACTERISTICS

NOTES:

1. EACH IMPACT PAD GROUP SHALL CONSIST OF NINE (9) INDIVIDUAL POLYURETHANE IMPACT PAD ASSEMBLIES, 408320-1.
2. THE PAD GROUP SHALL BE INSTALLED IN A MANNER WHICH WILL FACILITATE READY REPLACEMENT OF INDIVIDUAL PADS.
3. A RAMP SHALL BE PROVIDED AROUND EACH PAD GROUP TO FACILITATE MOVEMENT OF AIRCRAFT. THE RAMP SHALL BE FAIRED IN WITH THE FLIGHT DECK COMPOUND.
4. PROVIDE SUITABLE SLOTS IN RAMP TO PERMIT DRAINAGE.
5. IMPACT PADS TO BE INSTALLED AT DECK PENDANT POSITIONS.
6. FOR VESSELS IN SERVICE, THE LOCATING DIMENSIONS SHOWN FOR GENERAL GUIDANCE AND MAY BE MODIFIED TO MATCH CABLE TERMINAL MARKINGS IN DECK IF NECESSARY. THE MEAN IMPACT AREA OF ACTUAL CABLE TERMINAL MARKS IN DECK BE USED FOR LOCATING THE INTERSECTING CENTERLINES OF THE IMPACT PAD ARRANGEMENT.



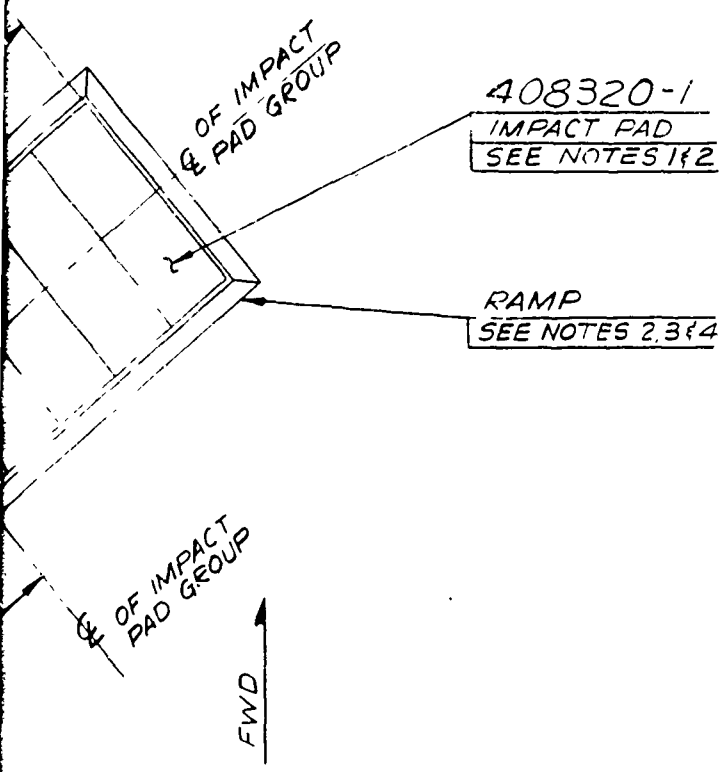
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ±.010 ±1/2°

THESE DOCUMENTS ALSO ARE A
PART OF THIS DRAWING

419045-1		11
NEXT ASSEMBLY	QTY REQD	PART NUMBER
MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES		
✓ = SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46		
DESIGNED FOR MK 7 MOD 3		DR.
REF		CHE
		MAT
		ANAL
		SUPER
		APPRO
		APPRO

UP SHALL CONSIST OF NINE (9) INDIVIDUAL
T PAD ASSEMBLIES, 408320-1.
BE INSTALLED IN A MANNER WHICH WILL
PLACEMENT OF INDIVIDUAL PADS
DIVIDED AROUND EACH PAD GROUP TO FACILITATE
T, THE RAMP SHALL BE FAIRED IN W TH NON-SKID
UND.
SLOTS IN RAMP TO PERMIT DRAINAGE.
TALLED AT DECK PENDANT POSITIONS ONLY.
CE, THE LOCATING DIMENSIONS SHOWN ARE
NCE AND MAY BE MODIFIED TO MATCH ACTUAL
RKINGS IN DECK IF NECESSARY. THE MEAN
UAL CABLE TERMINAL MARKS IN DECK SHALL
TING THE INTERSECTING CENTERLINES OF
RANGEMENT.

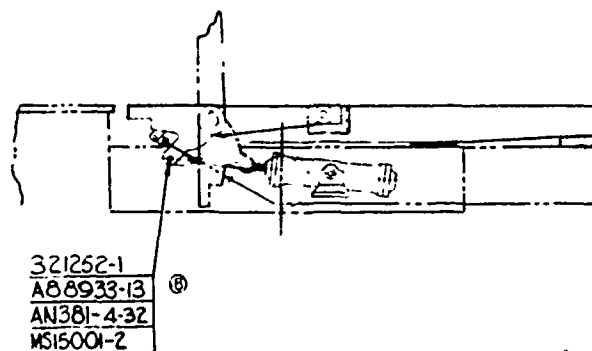
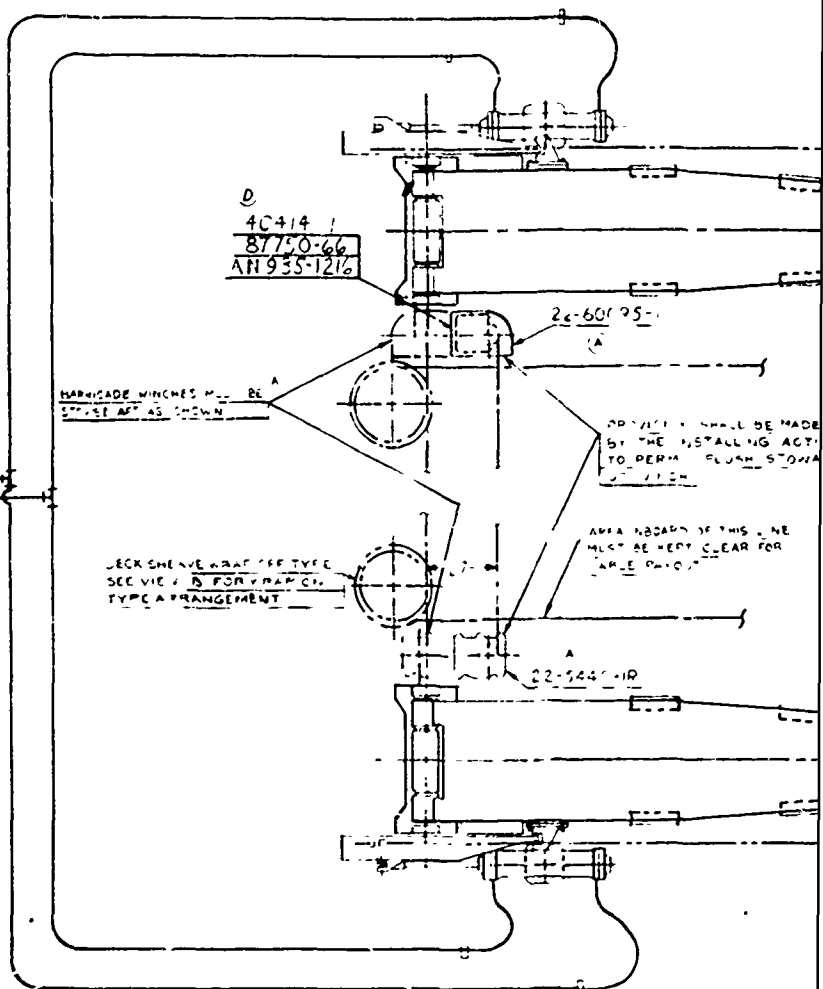
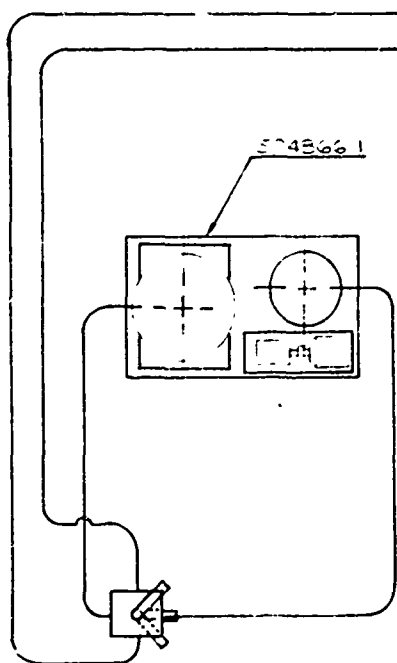
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

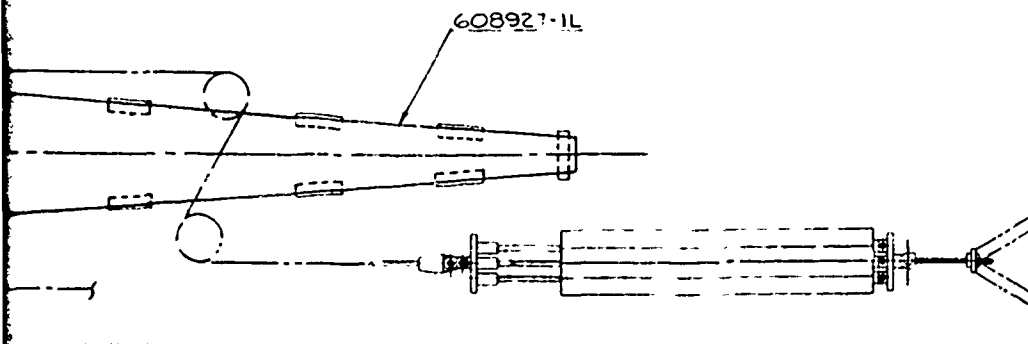


419045

		419045-1		INSTALLATION DATA							
NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION		STOCK	MATERIAL	SPECIFICATION		UNIT WT		
LIST OF MATERIALS											
LESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DIMENSIONS DECIMALS ANGLES ±.010 ±.12° SEE DOCUMENTS ALSO ARE A PART OF THIS DRAWING		MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES		DRAWN	JBARBELLA	2-19-69	ENGINEERING DEPARTMENT (S1) NAVAL AIR ENGINEERING CENTER, PHILA., PA. 19112 TITLE INSTALLATION DATA MARK 7 MOD 3 ARRESTING GEAR TERMINAL IMPACT PAD METAL DECK DRAWING NO. 419045				
		✓ = SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46		CHECKED	<i>[Signature]</i>	2-17-69					
				MATERIAL	—	—					
				ANALYZED	—	—					
				SUPERVISOR	<i>[Signature]</i>	2/21/69					
DESIGNED FOR MK 7 MOD 3		APPROVED <i>[Signature]</i>		DATE 2/21/69	SIZE C	CODE IDENT NO. 80020					
REF		APPROVED		DATE	SCALE	NONE	SHEET				

LIST 252

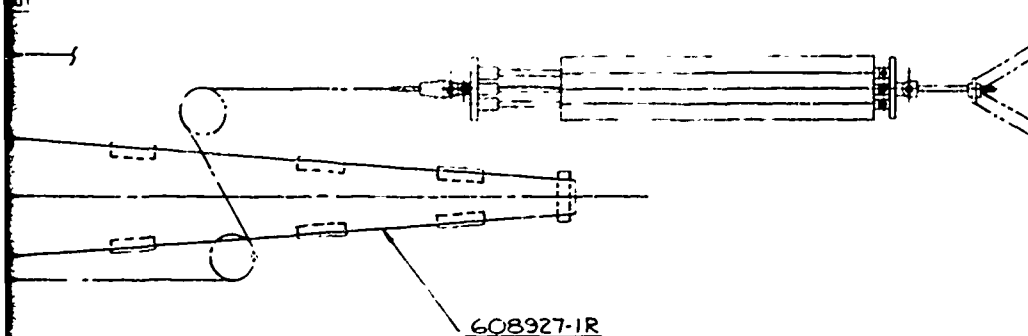




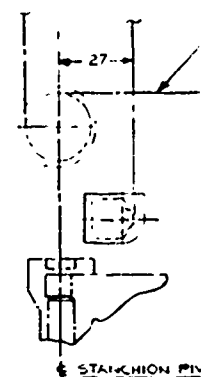
NO WORK TO BE MADE.
INSTALLING ACTIVITY
AT "LUSH STOWAGE"

FWD. →

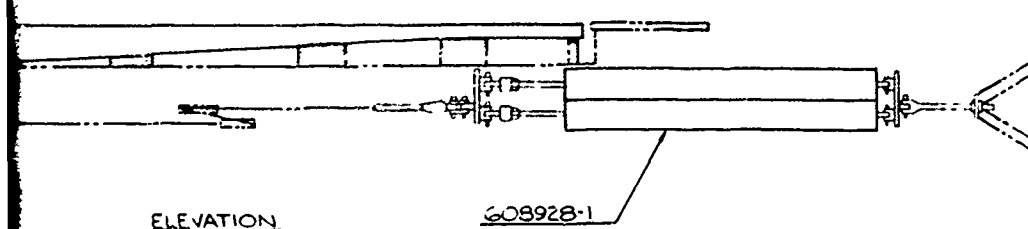
OF THIS LINE
TO CLEAR FOR
OUT



PLAN



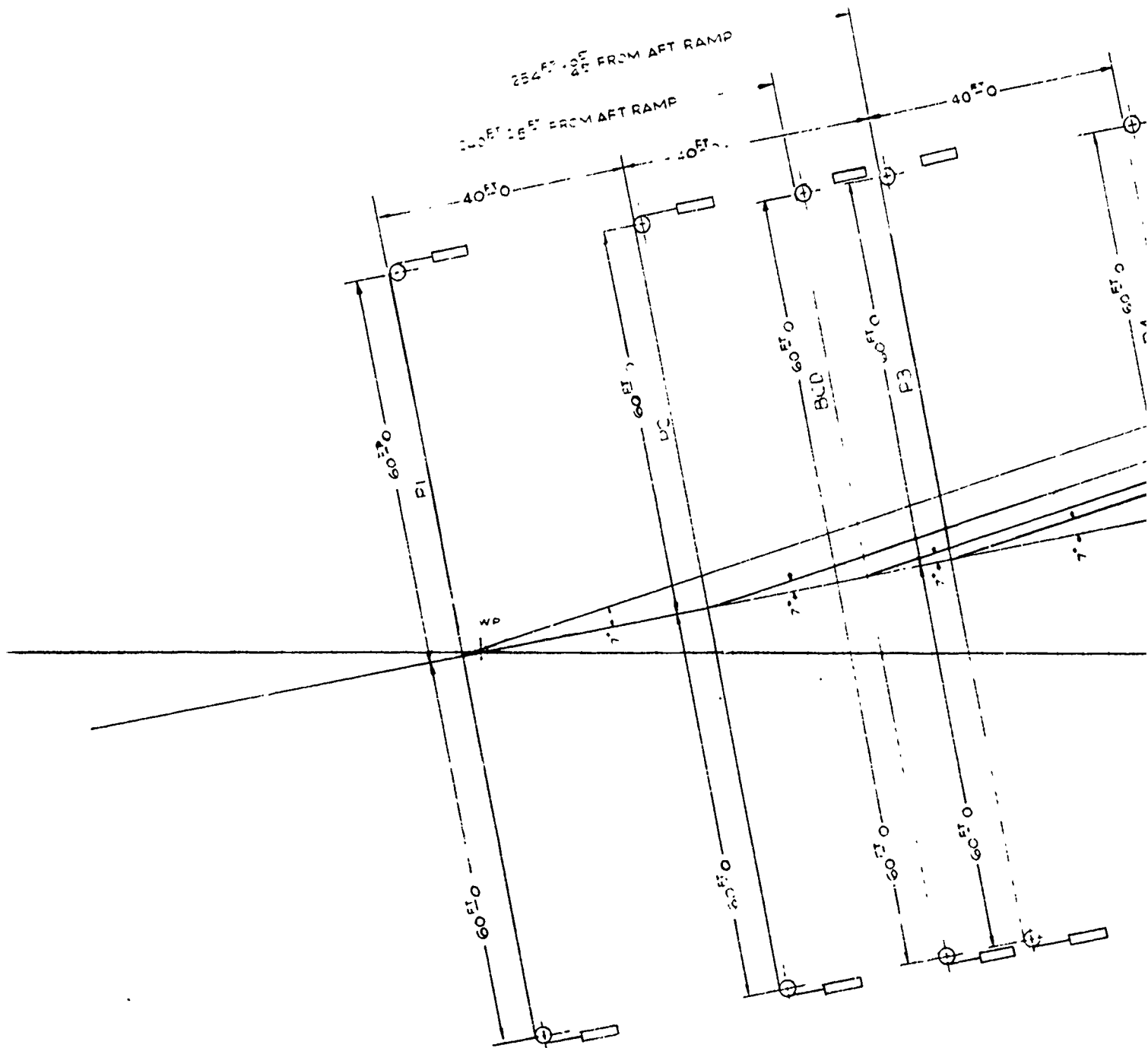
VIEW B
SCALE 1/12



ELEVATION

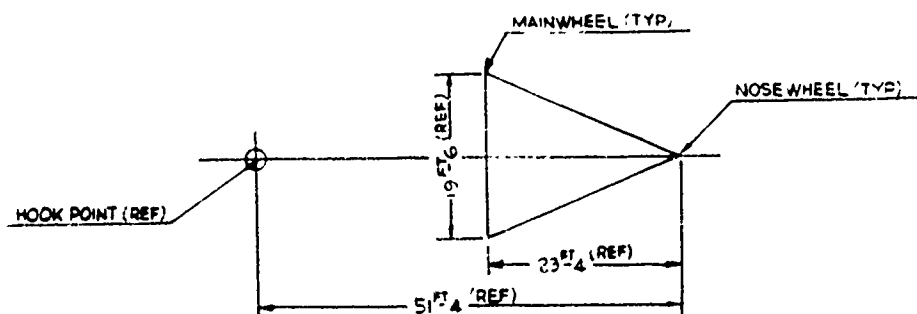
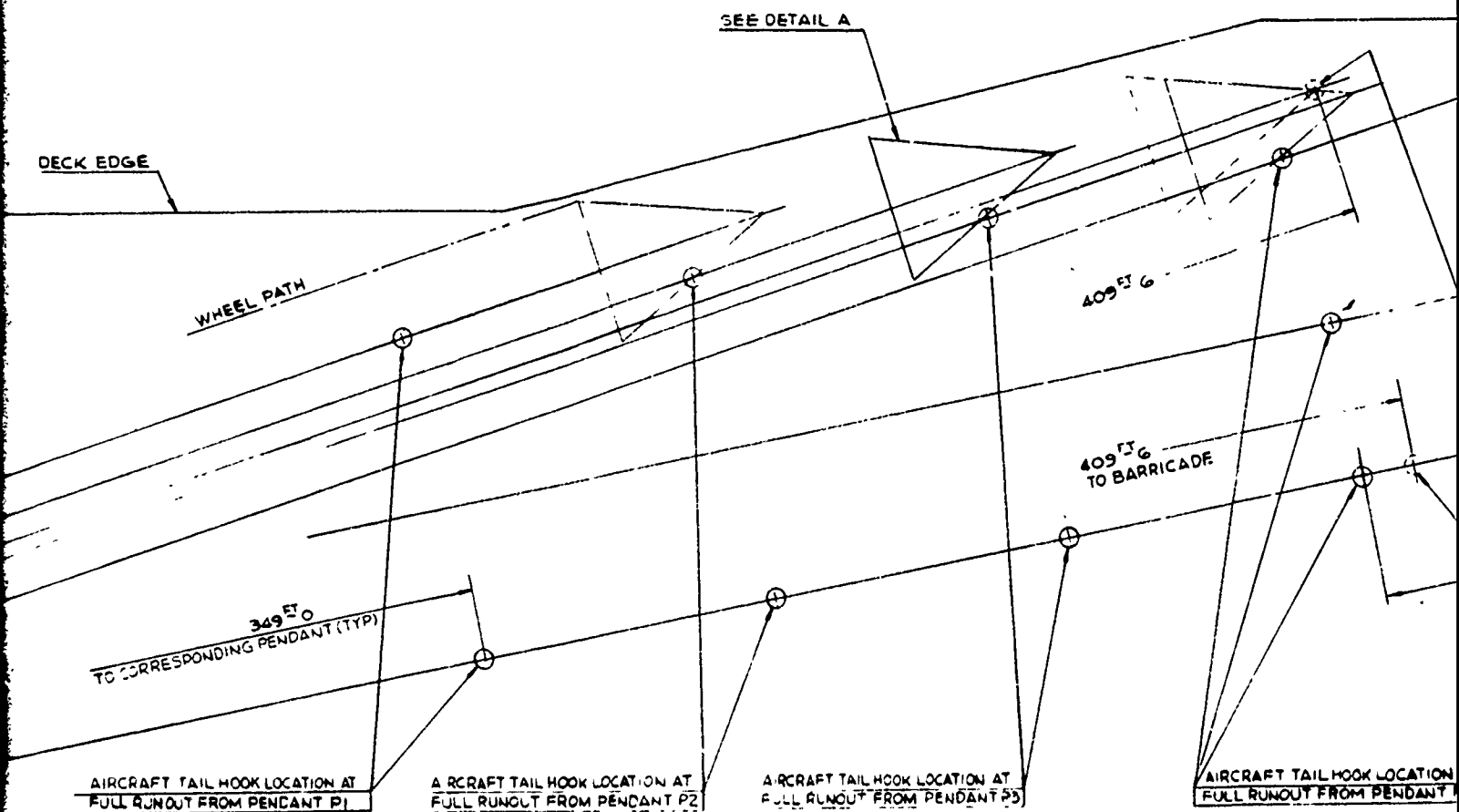
608926

2



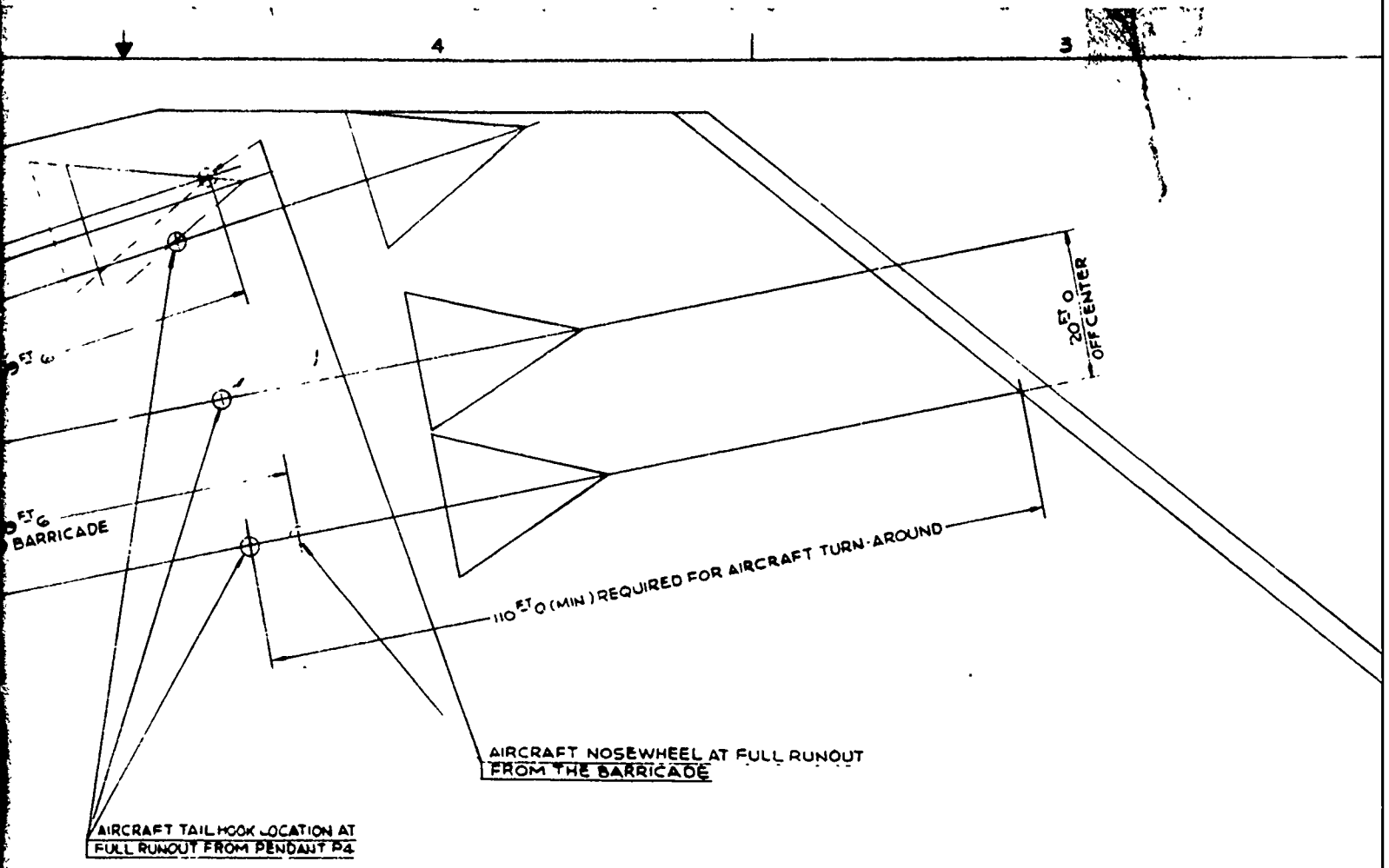
6

5



6

5



616110

2

NOTES:

1. THIS DRAWING SHOWS THE RESULTS OF THE ARRESTING GEAR ARRANGEMENT EVALUATION FOR FUTURE AIRCRAFT CARRIERS. THIS STUDY WAS MADE UTILIZING TWO BASIC AIRCRAFT LANDING CRITERIA:
 - A. SHOWING LANDINGS APPLIED PARALLEL TO THE ANGLED DECK CENTERLINE, TWENTY FEET OFF-CENTER TO THE PORT
 - B. SHOWING LANDING APPLIED ON-CENTER-ANGLED TO THE PORT. THE YAW ANGLE WHICH SAFELY ACCOMMODATES ARRESTMENTS FOR ALL PENDANTS, AND THE BARRICADE, IS THE ANGLE OF 7°, AS SHOWN.
2. PENDANT AND BARRICADE ENGINES ARE MARK 7 MOD 3 PENDANT ENGINE RAM TRAVEL IS 183 INCHES (LONG STROKE CAM). THE BARRICADE ENGINE RAM TRAVEL IS 160 INCHES (SHORT STROKE CAM)
3. THE E-2A AIRCRAFT WHEEL PATTERN SHOWN IN DETAIL 'A' REPRESENTS THE CRITICAL LIMITS OF AIRCRAFT PLACEMENTS AT THE COMPLETION OF RUNOUT. THE E-2A IS THE MOST CRITICAL EXPECTED FOR PRESENT OR NEAR FUTURE CARRIER SUITABILITY

ZONE		REV	DESCRIPTION	DATE	APPROVED

D

C

B

011910

A

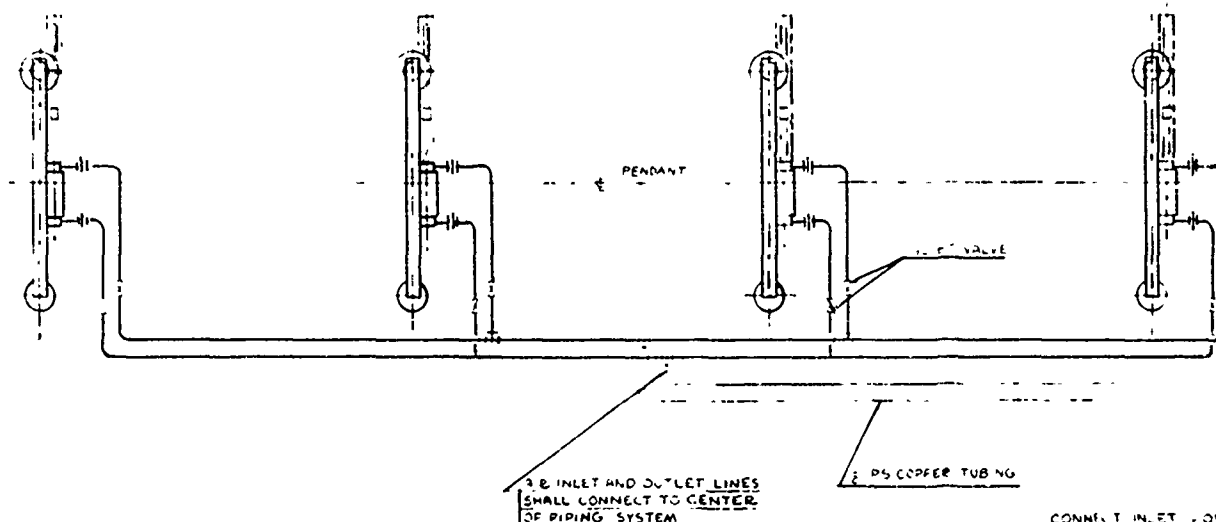
CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	- C TO C
MAJOR	- M TO M
MINOR	- ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
FRACTIONS DECIMALS ANGLES
16 0.000 31.1°
THESE DOCUMENTS ALSO ARE A
PART OF THIS DRAWING

ITEM	QTY	PART NUMBER	DESCRIPTION	STORE	MATERIAL	SPECIFICATION	UNIT	QTY
LIST OF MATERIALS								
MECHANICAL FINISH SURFACE ROUNDEDNESS IN MICROINCHES			ENGINEERING DEPARTMENT (881) NAVAL AIR ENGINEERING CENTER PMAA PA 19112 TITLE: FLIGHT DECK STUDY MK 7 MOD 3 ARRESTING GEAR					
✓ SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46			CHECKED: <i>[Signature]</i> DESIGNED: <i>[Signature]</i> DRAWN: <i>[Signature]</i> APPROVED: <i>[Signature]</i>					
DESIGNED FOR: MK 7 MOD 3			CODE: H NO: 80020			DRAWING NO: 616110		
REF			SCALE: 1/8"			SHEET		

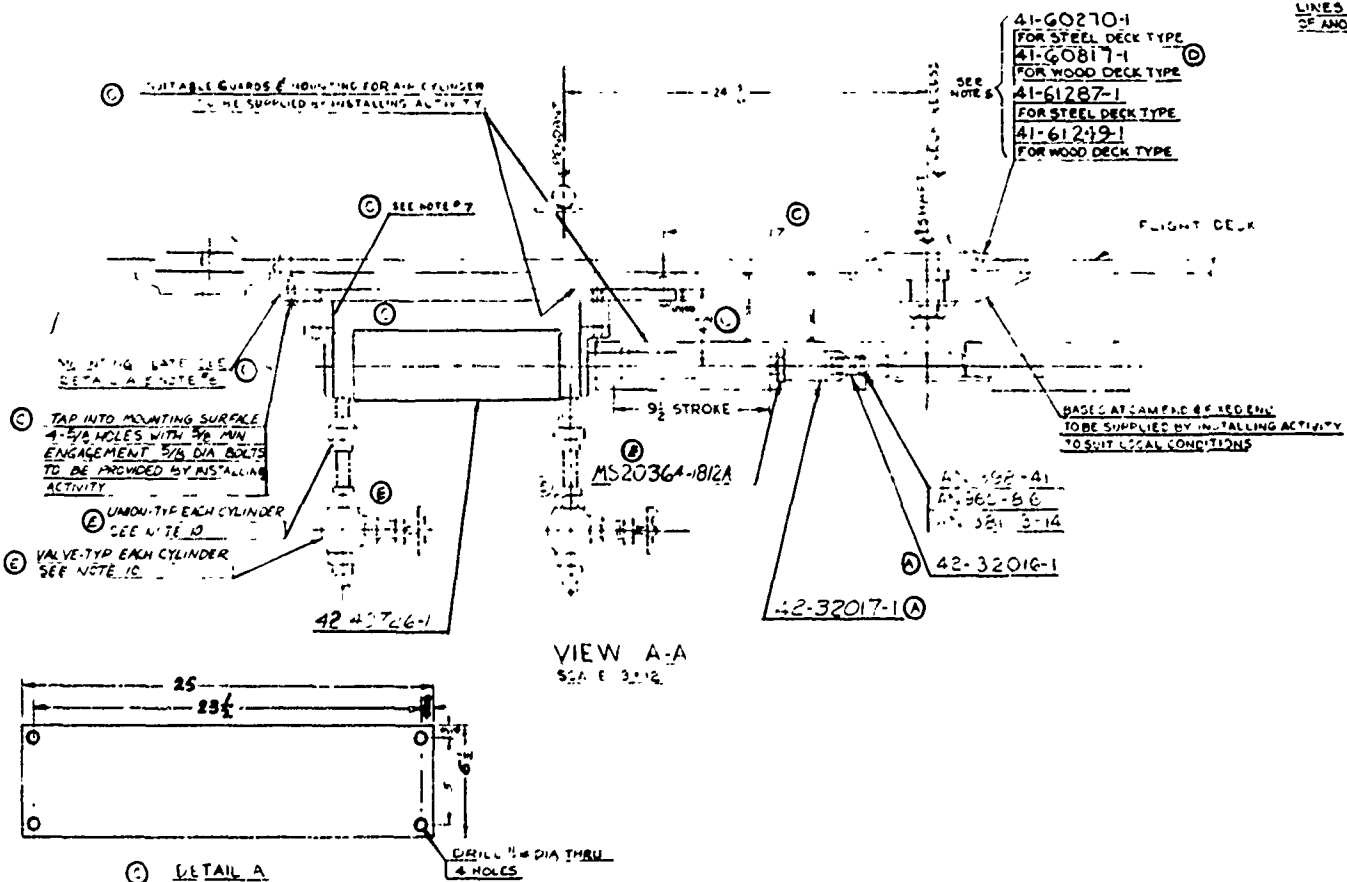
2

FIGURE



2. CONNECT INLET OF SHIPS MEDIUM PRESSURE SUPPLY LINE (LCO) PIPE EXHAUST LINE SEE NOTES 4 & 5

LINES TO AIR CYLINDERS OF ANOTHER WIRE



41-60270-1

41-60817-1

41-61287-1

41-61249-1

42-32016-1

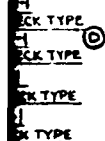
42-32017-1

MS20364-1812A

VIEW A-A

DETAIL A

- 1 THIS DRAWING SHOWS A TYPICAL INSTALLATION OF ARRESTING GEAR WIRE SUPPORT AND DOUBLE CONTROL 5 WITH AIR CYLINDER TO OPERATE LAM FOR EACH WIRE SUPPORT. NUMBERS OF ALL ITEMS REFERRED TO ARE NAVAL AIRCRAFT FACTORY DRAWINGS.
- 2 ARRANGEMENT, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDER COORDINATION OF THE INSTALLATION ACTIVITY TO SUIT LOCAL CONDITIONS.
- 3 NAME PLATES SHOWING WIRE UP, NEUTRAL AND WIRE DOWN, AND STOPS FOR LIMITING POSITION OF LEVER, ALSO NAME PLATES DESIGNATING NUMBER OF WIRE CONTROLLED BY EACH LEVER SHALL BE FURNISHED BY THE INSTALLING ACTIVITY.
- 4 INLET LINES SHALL BE PROVIDED BY THE INSTALLING ACTIVITY WITH SHUT OFF VALVE AND SUITABLE TERMINAL TO PREVENT FOREIGN MATTER OR EXCESSIVE MOISTURE FROM ENTERING PUMPING SYSTEM.
- 5 FOR NEW INSTALLATIONS USE WIRE SUPPORT DWS 4, WIRE ANCHOR AND WIRE FROM EXISTING INSTALLATION SEE DWS 4, SUPPORT DWS 4, WIRE ANCHOR AND WIRE.
- 6 MOUNTING PLATE IS INTENDED TO PERMIT INTERCHANGEABLE MOUNTING OF AIR CYLINDERS FROM VARIOUS MANUFACTURERS WHOSE DIMENSIONS FALL WITHIN THE LIMITS SPECIFIED IN NAFC DWS NO 42-4 7261. THE PLATE MAY HAVE TO HAVE ADDITIONAL HOLES TAPEDED IN IT TO ACCOMMODATE SOME REPLACEMENT CYLINDERS.
- 7 PROVIDE SPACERS AS REQUIRED BETWEEN AIR CYLINDER AND MOUNTING PLATE. DRILL THRU SPACERS AND TAP INTO MOUNTING PLATE TO MATCH LOCATION AND SIZE OF MOUNTING HOLES IN AIR CYLINDER. MOUNT AIR CYLINDER ON PLATE CENTERLINE, INSTALLING ACTIVITY SHALL SUPPLY SPACERS.
- 8 THE 20 PSI AIR SUPPLY PROVIDED BY INSTALLING ACTIVITY MUST NOT DROP BELOW 15 PSI. MAXIMUM REQUIREMENT IS 225 PSI. THIS AIR REQUIREMENT MUST BE PIPED FROM A MEDIUM PRESSURE AIR LINE WITH AN AIR REGULATOR INSTALLED TO PROVIDE THE ABOVE AIR REQUIREMENTS.
- 9 THE INSTALLATION ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH A RANGE OF 0 TO 300 PSI, CONNECTED TO THE WIRE SUPPORT AIR SUPPLY MANIFOLD, LOCATED AT THE APPROXIMATE LEVER CONTROL PANEL.
- 10 VALVES AND RELATED HARDWARE TO BE FURNISHED BY THE INSTALLING ACTIVITY.
- 1 THIS DRAWING IS TO BE USED IN CONJUNCTION WITH MARK 7 ARRESTING GEAR SERVICE CHANGE NO 224 AND NO 423.



CONNECT INLET PORT TO
SHIP'S MEDIUM PRESSURE AIR
SUPPLY LINE (200 PSI).
PIPE EXHAUST LINE OVERBOARD
SEE NOTES 4/3

LINES TO AIR CYLINDERS
OF ANOTHER WIRE

CURTAIN PLATE

FLIGHT DECK

④ SEE NOTE 9

41-60347-1
DECK EDGE MOUNTING

SECTION 1. ONTARIO 1111
NRE 5.11 275 20

ALL REPORTS LOCATED IN
CD OR LOAN DO NOT

POSITION & CONTROL & IF
WE SUPPORT'S DOWN

VIEW B-B
SCALE 1/8" = 1'

- 1 WIRE SUPPORT-ASSY-(STEEL
- 2 WIRE SUPPORT-ASSY-(WOOD
- 3 CONTROLS-DECK EDGE-AS
- 4 AIR CYLINDER-ASSY.
- 5 WIRE SUPPORT-ASSY(STEEL
- 6 WIRE SUPPORT-ASSY(WOOD

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	C TO C
MAJOR	M TO M
MINOR	ALL OTHER CHARACTERISTICS

The image shows a document with several sections and handwritten entries. The top section has a date field with "1964" and "10/10". Below this, there are several rows of data, including numbers and text. A prominent section on the right side contains the word "GRAY" in large, bold letters, followed by "NEW" and "NEW" in smaller letters. There are also some handwritten notes and signatures at the bottom of the document.

4.57-250.2

2

NOTES

- 1 THIS DRAWING SHOWS A TYPICAL INSTALLATION OF ARRESTING GEAR WIRE SUPPORT AND DOUBLE CONTROLS WITH INDIVIDUAL CYLINDER TO OPERATE GEAR FOR EACH WIRE SUPPORT. ARRANGEMENT, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDER COORDINATION OF THE INSTALLING ACTIVITY TO SUIT LOCAL CONDITIONS.
- 2 NAME PLATES SHOWING WIRE UP, NEUTRAL AND WIRE DOWN, AND STOPS FOR LIMITING POSITION OF LEVER, ALSO NAME PLATES DESIGNATING NUMBER OF WIRE CONTROLLED BY EACH LEVER SHALL BE FURNISHED BY THE INSTALLING ACTIVITY.
- 3 INLET LINES SHALL BE PROVIDED BY THE INSTALLING ACTIVITY WITH SHUT OFF VALVE AND MOUNTING STUBS TO PREVENT FOREIGN MATTER OR EXCESSIVE MOISTURE FROM ENTERING PUMP SYSTEM.
- 4 FOR NEW INSTALLATION OF WIRE SUPPORT DRILL 4 HOLES AND 4 HOLES FOR EXISTING INSTALLATION. SEE WIRE SUPPORT DRAWING 40-61298.
- 5 MOUNTING PLATE IS INTENDED TO PERMIT INTERCHANGEABLE MOUNTING OF AIR CYLINDERS FROM VARIOUS MANUFACTURERS WHOSE DIMENSIONS FALL WITHIN THE LIMITS SHOWN ON NAEP DWG. NO 42-6726. THE PLATE MAY HAVE TO HAVE ADDITIONAL HOLES TAPEDED IN IT TO ACCOMMODATE SOME REPLACEMENT CYLINDERS.
- 6 PROVIDE SPACERS AS REQUIRED BETWEEN AIR CYLINDER AND MOUNTING PLATE. DRILL THRU SPACERS AND TAP INTO MOUNTING PLATE TO MATCH LOCATION AND SIZE OF MOUNTING HOLES IN AIR CYLINDER. MOUNT AIR CYLINDER ON PLATE CENTERLINE. INSTALLING ACTIVITY SHALL SUPPLY SPACERS.
- 7 THE 200 PSI AIR SUPPLY PROVIDED BY INSTALLING ACTIVITY MUST NOT DROP BELOW 175 PSI. MAXIMUM REQUIREMENT IS 225 PSI. THIS AIR REQUIREMENT MUST BE PIPED FROM A MEDIUM PRESSURE AIR LINE WITH AN AIR STATION INSTALLED TO PROVIDE THE ABOVE AIR REQUIREMENTS.
- 8 THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH RANGE OF 0 TO 300 PSI, CONNECTED TO THE WIRE SUPPORT AIR SUPPLY MANIFOLD, LOCATED AT THE APPROPRIATE SEA-CONTROL PANEL.
- 9 VALVES AND RELATED HARDWARE TO BE FURNISHED BY THE INSTALLING ACTIVITY.
- 10 THIS DRAWING IS TO BE USED IN CONJUNCTION WITH MARK 7 ARRESTING GEAR SERVICE CHANGE NO 264 AND NO 265.

REV	DESCRIPTION	DATE	BY	CHKD
1	ORIGINAL	1/1/53	ES	
2	ON DRAWING	1/1/53	ES	
3	ON DRAWING	1/1/53	ES	
4	ON DRAWING	1/1/53	ES	
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CURTAIN PLATE

POSITION OF WIRE SUPPORTS
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POSITION OF CONTROL LEVER
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POSITION OF CONTROL LEVER
WIRE SUPPORTS DOWN

REFERENCE PLANS

- 1 WIRE SUPPORT-ASSY. (STEEL DECK TYPE) 41-61247 (NEW)
- 2 WIRE SUPPORT-ASSY. (WOOD DECK TYPE) 41-61249 (NEW)
- 3 CONTROLS-DECK EDGE-ASSY 41-60347
- 4 AIR CYLINDER-ASSY 42-40726
- 5 WIRE SUPPORT-ASSY (STEEL DECK TYPE) 41-60370 (NEW)
- 6 WIRE SUPPORT-ASSY (WOOD DECK TYPE) 41-60371 (NEW)

CLASSIFICATION OF CHARACTERISTICS
CRITICAL C TO C
MAJOR M TO M
MINOR ALL OTHER CHARACTERISTICS

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Flight Deck Arresting Gear And Barricade Configuration Criteria For Mark 7 Mod 3 Arresting Engine This report presents information regarding flight deck arresting gear & barricade configuration criteria for the Mk. 7 Mod. 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of Mk. 7 Mod. 3 arresting gear.	NAEC-ENG-7593 AIRTASK 00480 9126 - 2293
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UNCLASSIFIED

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DOCUMENT CONTROL DATA - R & D

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		2b. GROUP	
		None	
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4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
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5. AUTHOR(S) (First name, middle initial, last name)			
Charles Glessner / Salvatore T. Cane			
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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
None		Naval Air Systems Command	
13. ABSTRACT			
This report presents information regarding flight deck arresting gear and barricade configuration criteria for the Mark 7 Mod 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of the Mark 7 Mod 3.			

DD FORM 1 NOV 65 1473 (PAGE 1)

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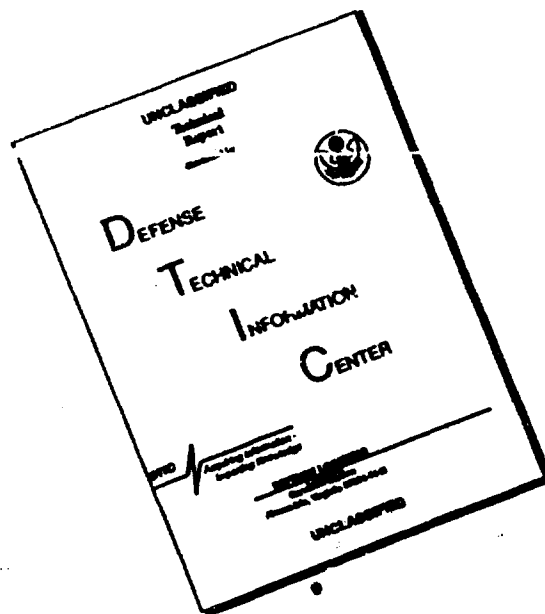
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