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For OMM-051-00-005)

ROCKWELL INTERNATIONAL

OPERATION AND MAINTENANCE MANUAL ADDENDUM TO WESTINGHOUSE OMM-051-00-005

FOR

INTERMEDIATE-SIZE INDUCER PUMP (ISIP) MODEL 266

Manufactured by

Rockwell International
Energy Systems Group
Atomics International Division
Canoga Park, California

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ADDENDUM A
TO
OMM-051-00-005

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SECTION A1
INTRODUCTION

A1.1 Scope

This Addendum A to the Westinghouse Operation and Maintenance Manual OMM-051-00-005 contains additions, changes and deletions that modify data for the Liquid Metal Coolant Pump, Model LMP-1 to data applicable to the Rockwell International Intermediate-Size Inducer Pump (ISIP), Model 266.

The major modifications on the ISIP are the new impeller/inducer assembly, diffuser vanes and new securing hardware. The paragraphs affected by Addendum A use the numbering system used in OMM-051-00-005 except each paragraph number is prefixed with an "A" preceding the paragraph number signifying that the paragraph is changed to conform with the ISIP configuration.

Paragraphs within OMM-051-00-005 not identified in Addendum A remain unchanged with the data still valid and useable.

The modifications appearing in Addendum A are as follows:

Paragraph No.	Title	Modification
A1.2	General Data	Changes
A1.2	Table 1-1	Changes
A2.2	Description of Pump Components	Changes
A2.2.5	Impeller	Changes
A2.2.17	Inducer	Addition
A2.2.18	Diffuser	Addition
A3.2.3	Pump Internal Circulation Flow	Changes
A3.3	Transient Conditions	Changes
A5.2.4.2	Initial Upending of Shafts	Changes
A5.2.4.3	Installation of Bearing Support Assembly and Impeller/Inducer	Changes
A5.2.4.4	Overturning of Shaft	Changes
A5.2.4.6	Installation of Seals and Bearing and Coupling Hub	Changes

Paragraph No.	Title	Modification
A5.2.4.17	Installation of Diffuser Vane Assembly to Bearing Support Assembly	Addition
A5.2.4.18	Assembly of Inducer/Impeller Assembly Before Shaft Installation	Addition
A5.2.4.19	Installing Inducer/Impeller Assembly	Addition
A7.2.2.4	Pump Shield Plug/Support Cylinder (SP/SC) Disassembly	Changes
A10.D-3	Appendix 10D-3, Volume II MP-746 Shaft Alignment Check	Addition

A1.2 General Data

Electrical and mechanical design characteristics of the Intermediate-size Inducer Pump Model 266 are listed in Table A1-1-1.

TABLE A1-1-1
SUMMARY OF GENERAL DATA

A.	General	
	1. Pump Type	Centrifugal, free surface, inducer type single sunction, single stage, vertical shaft with shaft seal, variable speed
	2. Shaft Seals	Oil lubricated, rubbing face, controlled leakage
	3. Sodium Bearing	12 inches x 12 inches hydrostatic
	4. Design Temperature	1050°F
	5. Design Pressure:	
	Suction	120 psig
	Discharge	225 psig
B.	Hydraulics at Design Point	
	1. Flow	14,500 gpm
	2. Head	500 feet
	3. Speed	1110 rpm
	4. NPSH Required*	12.8 feet
	5. Hydraulic Efficiency	80%
C.	Size and Weight Data	
	1. Overall Pump Length	56 feet
	2. Pump Tank Length	35 feet
	3. Pump Tank O.D.	80 inches
	4. Total Weight (Operating)	165 tons
	5. Weight of Removable Internals	82 tons
D.	Driver Data	
	1. Type	Wound rotor induction, air cooled, with pony motor
	2. Rating	2500 hp
	3. Speed Control	Liquid Rheostat
	4. Speed Range	492 to 1132 rpm

*Requirement based on 3% reduction in total head, referenced to inducer inlet elevation.

SECTION A2
DETAILED DESCRIPTION
PUMP OPERATION AND COMPONENTS

A2.2 Description of Pump Components

The pump consists of 18 general areas: the tank, shaft, shield plug/support cylinder assembly (SP/SC), static hydraulics, impeller, bearing support and hydrostatic bearing, disconnect bellows, bolting ring, motor support stand, seals, oil bearings (radial and thrust), oil circulation system, coupling, motor, liquid rheostat, instrumentation, inducer and diffuser. Refer to Rockwell International (RI) Drawing No.N266000032, Figure A1-2-1, for the listed items.

A2.2.5 Impeller

The impeller (RI Drawing No. R0019601, Figure A1-2-2) is a Type CF8 stainless steel machined casting with an outside diameter of approximately 35 inches. It is shrunk onto the shaft and fastened by an impeller key. The impeller/inducer assembly is fastened to the shaft by a tie-bolt and nut arrangement, and rotates counterclockwise as viewed from the top of the pump.

A2.2.17 Inducer

The inducer (RI Drawing No. R0019603, Figure A1-2-3) is a Type 304 stainless steel machined forging with an outside diameter of approximately 18.5 inches. It has four blades that rotate counterclockwise as viewed from top of pump. It is shrunk onto the impeller, aligned and fastened by an impeller key. The impeller and inducer combination becomes impeller/inducer assembly. A tie-bolt and nut hold the assembly together and onto the shaft.

A2.2.18 Diffuser

The diffuser (RI Drawing No. R0019602, Figure A1-2-4) is a Type 304 stainless steel machined forging with an outside diameter of approximately 41.5 inches. It has eleven equally spaced vanes and is attached to the bearing support housing on the upper section. A diffuser shroud machined forging of 304 stainless steel is attached to the lower section of the diffuser.

SECTION A3
PUMP FUNCTIONAL DESCRIPTION

A3.2 Flow Path

A3.2.3 Pump Internal Circulation Flow

Condition	Flow at 14500 gpm Design Flow
1. Lower Impeller Seal Ring Leakage	633 gpm
2. Upper Impeller Seal Ring Leakage	569 gpm
3. Diffuser-to-Radial Bearing Housing Leakage	131 gpm
4. Bellows Seal Leakage	10 gpm
5. Circulation Flow Through Hollow Impeller Shaft	50 gpm
6. Piston Ring Seal Leakage	85 gpm

A summary of these leakages in addition to the bearing flow and rotor hub recirculation flows is shown on Figure A1-2-35.

A3.3 Transient Conditions

Thermal transient conditions to be used for testing the Intermediate-Size Inducer Pump shall be those previously used for Phase B testing of the FFTF Prototype Pump, with restrictions, if any, to be specified by the Rockwell International Energy Systems Group prior to test.

SECTION A5
INSTALLATION

A5.2 Assembly and Installation – Pump Internals

A5.2.4 Assembly

A5.2.4.2 Initial Upending of Shafts

3. a. Position the shaft turnover fixture (RI Part No. SK12085-201, Figure A1-2-5) so that there is 31 feet of clear area in front of the fixture (area in front of Item 2 of Figure 5.2.3) and there is 31 feet of clear area above the fixture.

A5.2.4.3 Installation of Bearing Support Assembly and Impeller/Inducer

2. g. 1) Install thermocouples and proximity probes on the bearing support assembly per RI Drawing No. N266000036, Figure A1-2-13. Then temporarily tag the leads with the instrument numbers. Coil the leads around bearing support flange outside diameter and temporarily secure the leads to facilitate handling. Place the instrumented bearing support assembly inverted on a stand.

h. Remove shings and cranes and reposition turnover eyes so that they are 120^{o} apart. Cover unit with polyethylene until ready to install diffuser.

A5.2.4.17 Installation of Diffuser Vane Assembly to Bearing Support Assembly

WARNING

Weight of diffuser vanes is 660 pounds. Use care when handling and lifting to prevent injury to personnel and damage to equipment.

1. Lift diffuser vane assembly, RI part No. R0019602 (Figure A1-2-4), from its shipping container; attach three eyebolts, 1/2 - 13 inch 120° apart in three of the 24 eyebolt holes for lifting purposes.
2. Attach a 3-legged sling minimum capacity 800 lb to eyebolts and facility bridge crane hook.
3. Verify correct hook-up and indate proof load test of lifting tackle and equipment.
4. Clean all mating surfaces of diffuser vane assembly and bearing support assembly with acetone moistened lint-free cloth, if necessary.
5. Verify proper level of cleanness and acceptable condition of diffuser vane assembly.
6. Install diffuser orientation pin, RI part No. N266000021 (Figure A1-2-11).
7. Pack dry ice around diffuser vane assembly hub and flange (Figure A1-2-4, Sheet 2), to chill until it is at 100°F below ambient for two hours.
8. Remove dry ice from around diffuser vane assembly hub and flange and wipe moisture from these parts.
9. Using lifting crane, raise diffuser vane assembly, positioning it over bearing support assembly.
10. Rotate diffuser vane assembly to be sure orientation pin is aligned with one-inch diameter orientation hole, as shown on View J of RI Drawing No. N266000017, (Figure A1-2-12) in bearing support assembly.

11. Verify proper match of diffuser vanes with bearing support flange.

12. Remove all lifting tackle and equipment.

13. Fasten diffuser vane assembly to bearing support assembly as follows:

    a. Lubricate threads of sixteen 3/4 - 10 x 1.5 inch hex head cap screws, ND112-0022-0509, with pure nickel "Never Seez".

    b. Install sixteen 3/4-10 x 1.5 hex head cap screws into the sixteen 3/4-10 tapped holes of the bearing support assembly through the sixteen holes in diffuser vane assembly as shown in View C, RI Drawing No. N266000017 (Figure A1-2-12). Torque cap screws 50 to 60 ft-lb using torque sequence on Westinghouse EMD Drawing No. 4993A60.

    c. Verify diffuser locator dowel has been installed in diffuser vanes in Zone 17H per RI Drawing No. R0019602, (Figure A1-2-4).

    d. Verify correct torque and correct installation of diffuser vane assembly.

    e. Pack dry ice around diffuser shroud (see Figure A1-2-4, Sheet 2), to chill until it has reached 100^{o}F below ambient, for two hours.

    f. Attach three eyebolts, 1/2 - 13 inch 120^{o} apart in three of the 24 holes for lifting and handling of the diffuser shroud.

    g. Remove dry ice and dry off diffuser shroud after diffuser vanes are warmed to ambient temperature, RI Drawing No. R0019602.

    h. Lower the diffuser shroud onto the diffuser vanes aligning the locator pin (RI Drawing No. N266000025, Figure A1-2-14) with the 17/32-inch diameter locator hole in the shroud. Place the diffuser shroud onto the diffuser vanes using care to keep it level.

i. Install 24 1/2-13 by 1-inch long hex head cap screws into the diffuser vanes/diffuser shroud mounting holes with tab lock washers (RI Drawing No. R0019605, Figure A1-2-15) using a torque wrench to tighten the cap screws to 25 to 30 ft-lb, with sequence as shown on W EMD Drawing 4933A60.

j. Do not bend tab locks of washers RI part No. R0019605 during this procedure.

k. Pack the pump shroud insert, shown on RI Drawing No. N266000012 (Figure 1A-2-16) in dry ice (see Figure A1-2-4, Sheet 2), until chilled to 100^{o}F below ambient temperature for two hours.

l. Verify drain holes adjacent to the pump shroud insert, as shown on View C and Zone 11D of RI Drawing No. N266000015 (Figure A1-2-9), have been drilled.

WARNING

Keep hands clear when installing the pump shroud insert into the static hydraulics because of the close tolerances. The weight of the shroud insert is 200 lbs.

m. Remove the dry ice on the pump shroud insert and dry off pump shroud insert.

n. Install the pump shroud insert into the static hydraulics.

o. Install six 3/8-inch x 16 inch bolts and tab lockwashers (RI Drawing No. N266000024, Figure A1-2-17).

p. Using torque wrench tighten bolts from 10 to 12 ft-lb using the sequence shown on W EMD Drawing No. 4933A60.

q. Lock on tab lockwashers by crimping the outer short tabs into the bolt slats and inner tabs over the edge of the pump shroud insert.

r. Secure and lock weld locking tabs as shown in view A-A of RI Drawing No. N266R000015, (Figure A1-2-8).

s. Visually inspect locking tab welds (5 x magnification) and verify welds are acceptable.

t. Install the piston ring assembly spring, shown on RI Drawing No. N26000023 (Figure A1-2-18), into the slot in diffuser shroud, RI Drawing No. R0019602-009 (Figure A1-2-4).

u. Install the piston ring assembly ring, as shown on RI Drawing No. N266000023, into the slot in diffuser shroud.

v. Install the 2 inch-8N studs (item No. 49 per RI Drawing No. N266000032, Figure A1-2-1), in the static hydraulics and put protective cap over the studs.

w. Install four (4) turnover eyebolt pairs, (Tool No. 06MT0009) into four of the 2.1875 inch threaded holes in the bearing support flange, these hole pairs being equally spaced around the outside diameter.

x. Turn over the bearing support flange/diffuser assembly to bring the dome shape side of bearing support to the up position.

CAUTION

No parts or lifting tackle shall touch the diffuser assembly; the diffuser assembly is fragile.

NOTE

Support the bearing support flange/diffuser assembly a minimum of thirty (30) inches above the floor to clear the lower end of the diffuser shroud.

y. Remove the four (4) turnover eyes (W EMD Drawing No. 06MT009) and install two (2) 2 inch - 4.5 eyebolts into the tapped holes in the bearing support flange.

14. Perform the preassembly fitup check by lowering the bearing support flange/diffuser assembly into the static hydraulics without the metallic O-ring (W EMD part No. 4934A87H01).

a. Lubricate the 21.5-inch diameter and 20.1-inch diameter bores of the shroud insert (RI Drawing No. N266000012-001, Figure A1-2-16) with a thin coat of pure nickel "Never Seez".

WARNING

The bearing support flange/diffuser assembly weighs approximately 12000 lbs. When lowering into the static hydraulics by a Hydra-set, keep body and fingers clear.

CAUTION

Damage to the lower end of the pump shroud insert is possible when lowering it into the static hydraulics.

b. The bearing support/diffuser assembly 12,000 lb weight is supported by the Hydra-set and should be lowered very slowly and gently into the static hydraulics bore.

c. Station an observer inside the static hydraulics suction nozzle to motitor the installation from the inside.

d. Use a Hydra-set to lower and handle the bearing support/diffuser assembly.

e. Measure and record the clearance between the 18.930 inch outer diameter outer radius on the lower edge of the diffuser shroud and the 19.025 inch bore of the inner static hydraulics in four places.

f. Support the weight of the support/diffuser assembly with a Hydra-set, but do not lift the assembly. Push the bearing support/diffuser assembly to an extreme position in four directions and repeat the measurements for each of the four directions.

g. Raise the bearing support flange/diffuser assembly and replace it on the 30-inch high supports.

h. Remove the eyebolts and install the four (4) turnover eyes (W EMD Part No. 06MT009).

i. Turn the bearing support flange/diffuser assembly over with the dome side down. Remove the twenty-four 1/2 x 13 x 1.00 inch bolts and tab lockwashers from diffuser assembly and install six 1/2 x 13 jacking screws in the tapped holes of the diffuser shroud. Using jacking bolts remove the shroud from the diffuser vanes.

NOTE

If necessary use dry ice to chill the diffuser shroud only. Use a cardboard dam around the shroud OD to hold the dry ice.

j. Install the 16 lock tabs, as shown in RI Drawing No. N266000022 (Figure 1A-2-19), onto the heads of the 3/4-inch diffuser mounting bolts and lock weld the bolts.

15. Raise the bearing support flange with the diffuser vanes to be installed onto the shaft.

a. The three (3) turnover eyes (W EMD Part No. 06MT0009) are installed in the bearing support flange (W EMD Drawing No. 114E939) bolt holes 120^{o} apart from each other.

b. Connect the bearing support assembly to the facility bridge crane by using a 3 point sling or 3 nylon slings capable of supporting a 12,000 pound minimum load.

c. Verify correct hook-up and load rating of slings with in-date proof test of tackle and equipment.

d. Raise the bearing support assembly so that it is supported by the overhead crane.

e. Use a level on the bearing support assembly to adjust the lifting fixture to assure the assembly is level.

f. Raise the bearing support assembly and position it so it is centered over the pump shaft.

CAUTION

There is only 0.015-inches radial clearance between the bearing probes and the shaft journal. Use extreme care to prevent damage to either assembly.

16. Bolt bearing support to support brackets on turnover yoke as follows:

    a. Carefully lower the bearing support assembly, if necessary rotate it to align support bracket holes, until it is approximately 1/2 inch above support brackets.

    b. Lubricate six 2.00 inch-4.5 x 14 inch studs (Item 12 of Figure 5.2.2) using pure nickel "Never Seez".

    c. Install six 2.00 inch - 4.5 hex nuts (Item 11) on the end of studs (nut should be fully installed on stud).

    d. Add six 2.00 inch washers (Item 13 of Figure 5.2.2) under nut.

    e. Align holes in bearing support with holes in support bracket and insert stud.

    f. Install six washers (Item 13 of Figure 5.2.2) and six nuts (Item 11 of Figure 5.2.2) on other end of stud. Screw nuts on until stud protrudes through nut at least one thread.

    g. Tighten nuts on lower end of bracket until hand tight.

    h. Using torque wrench tighten nuts to 100 ft-lb (site-supplied tools).

17. Remove turnover eyes (Figure 5.2.7) and store for future use.

A5.2.4.18 Assembly of Inducer/Impeller Assembly Before Shaft Installation

WARNING

When handling impeller wear heavy gloves and use care as the tips of the labyrinth are very sharp.

Labyrinth blades are flexible and fragile, they are easily bent or broken.

Use care when handling the leading edge of the inducer which is sharp and fragile.

1. Clean impeller (R0019601) and inducer key (R0019604) with lint-free cloths moistened with acetone; inspect cleaning.
2. Prepare clean, flat, horizontal surface (suitable for supporting a 1200-pound load) and cover with a polyethylene sheet for laydown.
3. Place impeller on polyethylene sheet, facing up, as shown in Figure A1-2-20 on horizontal surface.
4. Install inducer key into keyway, as shown in Figure A1-2-20 in impeller hub where inducer will be mounted. Verify key fits snugly and seats on bottom of keyway. If necessary, tap the key with a clean plastic or clean fiber mallet for a firm fit.
5. Place a polyethylene cover over impeller for temporary protection.
6. Clean inducer and inducer handling tool, end plate, threaded rods, eye bolts and nuts, RI Tool No. T-6002450 (Figure A1-2-21).
7. Inspect inducer and inducer handling tool. Verify proof test in date.
8. Screw four (4) 5/16 x 11 inch threaded rods (Part No. T-6002450-108) into tapped holes in internal flange of inducer, as shown in Figure A1-2-22.
9. Install two (2) lifting eyes, Tool No. T-6002450-111, into end plate.
10. Install end plate (T-6002450), with lifting eyes, on end of inducer and 5/16 x 11 inch threaded rods extending up through clearance holes in the end plate.
11. Install four (4) 5/16 - 18 hex jam nuts, one on each 5/16 x 11 inch threaded rod; tighten evenly to 4 to 5 ft-lb.

12. Using crane hoist and slings lift inducer with lifting eyes and adjust tackle for load to hand level.

WARNING

Lifting weight is approximately 200 pounds. Use care when handling/lifting to prevent injury to personnel and damage to equipment

13. Submerge inducer in hot water (180°F min) for two hours. Keep lifting tackle attached during heating.

WARNING

Use heavy gloves when handling hot/cold items to prevent injury to personnel.

14. Pack dry ice around top hub section of the impeller near impeller key for two hours.

15. Remove dry ice from hub section of impeller, wipe moisture off impeller.

16. While still hot, hoist inducer from water, wipe water off inducer and position it over impeller. Remove polyethylene cover from impeller.

17. Position inducer to align keyway with key on impeller, then quickly lower inducer onto impeller, as shown in Figure A1-2-23, until inducer sits solidly on impeller shoulder, and allow inducer to cool before removing lifting tackle.

18. Install four (4) 5/16 - 18 x 1-1/2 inch hex sockethead cap screws from the weight-matched set into inducer clearance holes, as shown in Figure A1-2-24, only (not inducer tapped holes). If inducer/impeller assembly is to be moved horizontally or if it is to be inverted, proceed to Paragraph 5.2.4.19, Step 2.

19. Using torque wrench and a 5/16 inch socket tighten the four (4) 5/16 cap screws evenly to 25-30 in.-lb.

A5.2.4.3.9 Installing Inducer/Impeller Assembly onto the Shaft

CAUTION

Open the roof doors to use the derrick or crane only if weather conditions are favorable. If rain, snow, hail, dust, high winds or fog is predicted, roof door will remain closed.

a. Remove four (4) 5/16 inch hex sockethead cap screws used to hold inducer to impeller.

b. Thread four (4) 5/16 - 18 x 11 inch threaded rods (Tool No. T-6002450-108) into inducer tapped holes and four (4) 5/16 - 18 x 11 inch threaded rods through inducer clearance holes into impeller tapped holes, as shown in Figure A1-2-25.

c. Install end plate (Tool No. T-6002450-104) with lifting eyes (Tool No. T-6002450-111) over the eight (8) rods.

d. Install eight (8) 5/16 inch nuts (Tool No. T-6002450-107) onto the eight rods and with torque wrench tighten them evenly to 25-30 in.-lb torque.

e. Assure ISIP tie-bolt, locking keys, RI Part No. N266000037 (Figure A1-2-27), fit snugly into the keyways of the tie-bolt, RI Part No. N266000014 (Figure A1-2-26).

f. Remove the locking keys.

g. Screw ISIP tie-bolt, RI Part No. N266000014, (Figure A1-2-25) onto pump shaft hand tight.

h. Screw guide nut, RI Tool No. T-6002449-104, (Figure A1-2-28) onto tie-bolt finger-tight.

i. Insert torque shaft, RI Tool No. T-6002449-102 and -103, down through guide nut to engage hex shape opening at lower end of tie-bolt, as shown in Figure A1-2-29.

j. Using torque wrench and a 1-3/4 inch socket, tighten tie bolt and shaft to 400 to 450 ft-lb torque.

k. Remove torque wrench, socket, torque shaft and guide nut.

l. Screw plug, RI Tool No. T-6002448-101, (Figure A1-2-30) into tie-bolt until shoulder is firmly seated as shown in Figure A1-2-31.

m. Place 0.025 inch shim, RI Tool No. T-6002448-103, on plug, install button, RI Tool No. T-6002448-102, with shank down through shim into plug.

n. Using lift arrangement of Paragraph 5.2.4.18 Step 12, lower inducer/impeller assembly onto shaft taper.

o. Measure and record distance from top of end plate, RI Tool No. T-6002450, (Figure A1-2-31) to top of plug in three places, through holes provided in end plate, RI Tool No. T-6002450 (Figure A1-2-21).

p. Install center bolt, RI Tool No. T-6002450-110, 5/8 - 11 x 5, hand tight against button and lock with jam nut, RI Tool No. T-6002450-109, now recheck to verify measurement has not changed.

q. Lift inducer/impeller assembly, using end plate assembly, and heat to 180^{o}F in hot water for two hours, with center bolt and jam nut locked in place.

r. Lift button and remove 0.025 inch shim from top of plug, replace button.

s. After heating, raise inducer/impeller assembly, lower assembly onto shaft taper until center bolt rests on button. Allow to cool.

t. After cooling, remove center bolt, measure and record distances from top of end plate to top of plug in three places, through holes provided in end plate.

u. The average of the three readings in Step 20, above, should be 0.025 inch $\pm$ 0.005 inch less than those taken in Step 13, above. If this measurement is not obtained remove the inducer/impeller assembly with the special puller tool, RI Tool No. T-6002490 (Figure A1-2-32) and repeat the procedure.

v. Remove the end plate lifting assembly including the eight (8) 5/16 inch threaded rods.

w. Install two locking keys, RI Drawing No. Part No. N266000037 (Figure A1-2-26) into the tie-bolt end keyways. Verify locking keys are securely seated in the keyways.

x. Install shaft nut adapter, RI Part No. N266000013 (Figure A1-2-33) on tie-bolt had tight, then tighten the shaft nut adapater to 100 ft-lb torque. Shaft nut adapter thread should fit over installed locking keys.

y. Pack dry ice around diffuser shroud (see Figure A1-2-4, Sheet 2), to chill until it has reached 100^{o}F below ambient, for two hours.

z. Attach three eyebolts, 1/2 - 13 inch 120^{o} apart in three of the 24 holes for lifting and handling of the diffuser shroud.

aa. Remove dry ice and dry off diffuser shroud after diffuser vanes are warmed to ambient temperature, RI Drawing No. R0019602.

ab. Lower the diffuser shroud onto the diffuser vanes aligning the locator pin (RI Drawing No. N266000025, Figure A1-2-14) with the 17/32-inch diameter locator hole in the shroud. Place the diffuser shroud onto the diffuser vanes using care to keep it level.

ac. Install 24 1/2-13 by 1-inch long hex head cap screws into the diffuser vanes/diffuser shroud mounting holes with tab lock washers (RI Drawing No. R0019605, Figure A1-2-15) using a torque wrench to tighten the cap screws to 25 to 30 ft-lb, with sequence as shown on W EMD Drawing 4933A60.

ad. Bend tab locks of washers RI part No. R0019605 during this procedure.

A5.2.4.4 Overturning of Shaft

26. Use modified shaft support stand fixture (Figure A1-2-6, and Guide Plate RI Drawing No. SK12084 Figure A1-2-7) underneath the main assembly stand. Lower the main assembly stand fixture and align it so the 2-3/4-inch-8N by 9-1/8 inch long round rod stud, tool No. SK12084-102, is aligned with the center hole of guide plate, modified tool No. SK12084, and be sure clamp ring clears the bearing support assembly.

    a. Mount bearing support flange clamp ring to the guide plate using the four (4) 31 x 1-1/4 inch rods, tool No. SK12084-104, and sixteen (16) 1-1/4 inch nuts as shown in Figure A1-2-6. Adjust nuts supporting guide plate so guide plate is supported on inducer hub. Tighten nuts on top and bottom of guide plate with a torque wrench to 40 to 50 in.-lb torque.

    b. Attach 2-3/4 - 8 hex jam nut, Tool No. SK12084-103, to threaded end of stud and using a torque wrench tighten to 100 ft-lb torque.

    c. Adjust bearing support flange clamp ring so it fits securely on bearing support flange as shown in Figure A1-2-6.

d. Back off four inner nuts (Item 5, Figure 5.2.11(a), W EMD Drawing No. 5052D43) at clamp ring support lugs.

e. Tighten the two hex head bolts and hex nuts (Items 7 and 5, W EMD Drawing No. 5052D43) on side lugs of clamp ring halves so ring halves are securely fastened to each other.

f. Tighten the 12 swivel pad socket set screws (Item 8, W EMD Drawing No. 5052D43) against bearing support assembly so bearing support is firmly set in the clamp ring.

g. The eight (8) inner and outer nuts on clamp ring support lugs are tightened to finger tightness.

h. Remove the six studs (Item 12, W EMD Drawing No. 934D147) securing bearing support assembly to turnover yoke spacers (Items 7 and 8, W EMD Drawing No. 934D147). Store bolts, nuts, spacers, and washers for future use.

i. Remove lifting tackle and eyebolts.

j. Verify proper installation of impeller holding and setting fixture.

k. Adjust the bearing support assembly position in relationship to impeller by adjusting the four (4) outer nuts and four (4) inner nuts at clamp ring support clamps. The distance between bearing support housing bottom surface and the top surface of guide plate shall be 30.017 ± 0.020 inches, as shown in Figure A1-2-8, ISIP Impeller Adjustment Tool. Measure at three (3) points.

l. Verify the alignment of the impeller (RI part No. R0019601) discharge centerline to the diffuser vane (RI part No. R0019602) centerline as shown on RI Drawing No. N266R000015, Figure A1-2-9.

m. Lock impeller holding and setting fixture in place by tightening all inner set of nuts in position first; then, tighten all outer set of nuts in position to 50 ft-lb ± 5 ft-lb torque for each pair of nuts.

n. Verify fixture is locked in place, then measure and record the actual dimension.

A5.2.4.4 (Continued)

30. Lift the shaft assembly to a height sufficient to clear the lower half of the main assembly stand. Lower onto the stand, resting the centering groove in the guide plate of the impeller setting and holding fixture on the centering ring of the riser support stand (see Figure A1-2-6).

NOTE

Make sure shaft is centered with respect to assembly stand pads.

A5.2.4.6 Installation of Seals and Bearings and Coupling Hub

11. Adjust the seal plate to shaft support nut clearance and drill a new set screw hole in the shaft, as follows:

    a. Verify the measurement from the bearing support housing bottom surface and the guide plate top surface is 30.017 ± 0.020.

    b. Verify the impeller discharge centerline is still aligned with the diffuser vanes centerline.

    c. Measurement from the shaft support nut to the seal plate should be 0.250 ± 0.010 clearance, adjust the shaft support nut to obtain this clearance.

    d. After adjusting shaft support nut to obtain a 0.250 ± 0.010 clearance with the seal plate, drill a new set-screw hole in the shaft for the ISIP modification of this pump, as shown in Figure A1-2-10, Sheet 1, seal plate to shaft nut clearance.

CAUTION

Attach a protective cup device and a cardboard collar around the shaft to prevent metal chips from falling into the pump.

Identify the new set-screw hole angular position by marking ISIP and the old hole angular position by marking FFTF just below the coupling taper at the top end of the shaft. Use an electromechanical etching tool for the marking.

    e. Clean accelerometer mounting block, part No. N266000034-01, Figure A1-2-34, and secure the mounting block to the bearing support housing flange at 195 degrees counterclockwise from suction and then weld mounting block to the flange, after first removing the Impeller Adjustment Tool, Figure A1-2-8, before assembling accelerometers to the mounting blocks as shown on RI Drawing No. N266000036 (Figure A1-2-13, Sheet 1).

62. Refer to MP751, Appendix 10D of OMM (Volume II), for detailed shimming procedures.

NOTE

Since some components have been replaced, the overall axial tolerance buildup will be altered and additional shimming may be required.

A5.2.4.6 (Continued)

77. Perform shaft alignment per MP 746 in Appendix 10D, as modified by A10-D3 on page A1-10-1 of this Addendum. After satisfactory completion of the alignment, lock weld the locking keys, Part No. N266000037-01 (Figure A1-2-1) in place.

138. Uncoil the bearing thermocouple and upper proximity probe leads from the bearing support and route and install the leads on the SP/SC as shown in N266000035 (see Figure A1-2-13, Sheet 2).

139. Route the thermocouple and proximity probe leads up through the SP/SC top flange and secure as shown on N266000035 (Figure A1-2-13, Sheet 2) and N266000032 (Figure A-1-2-1). Routing should be basically depected on the drawing with all instrument lead terminals tagged for identification and penetration locations recorded. Exact routing per the drawing is not required.

A5.2.4.6

174. Pre-position the internals storage fixture (Figure 5.2.23, W EMD Drawing 934299, Tool No. 99MT047) and add additional blocking to permit supporting the SP/SC with clearance between the lower end of the inducer hub and the floor.

A5.2.4.7

14. a. Install the thermocouples inside the static hydraulics and the bumpers on the outer diameter of the hydraulics flange as shown on W EMD Drawing 8373D27.

A5.2.4.8

14. Lower the upper internals into the main assembly stand and into the hydraulics assembly. While lowering, thread the lower proximity probe leads through the torque keys as shown in N266000035 (Figure A1-2-13, Sheet 2). Align the pin in the bottom of the bearing support assembly (Item 4) with the 2.000-inch hole (on a 70.25-inch diameter bolt circle). Finish lowering the internals into the static hydraulics using a Hydraset. MAINTAIN THE WEIGHT OF THE UPPER INTERNALS ON THE CRANE!

A5.2.4.8

17.

a. Install the wire guides and retainers in the torque keys then complete routing and securing of instrument leads as shown in N266000035 (Figure A1-2-13, Sheet 2). Complete installation of packing glands and terminal box on upper flange of SP/SC as shown on N266000035, (Figure A1-2-13, Sheet 2) and N266000032 (Figure A1-2-1a).

SECTION A7
MAINTENANCE

A7.2 Major Maintenance

A7.2.2 Pump Disassembly

Addendum for Paragraph
A7.2.2.4 Pump Shield Plug/Support Cylinder (SP/SC) Disassembly)

5. Assemble bearing support housing holding fixture as follows: (refer to Figure A1-2-6 and Figure A1-2-7, RI Drawing No. SK 12084).

   a. Assemble and install the impeller/inducer guide plate fixture RI Drawing No. SK 12084, Tool No. SK 12084, modified for ISI pump.

   b. Clean all fixture components with acetone moistened lint-free cloth.

   c. Verify cleanness of fixture components.

   d. Loosely bolt together the two halves of the bearing support clamp (5052D42) using the 1.250-in. - 7 by 5.50-in. long cap screws, the 1.250 flat washers, and the 1.250-in.-7 hex nuts (Items 7, 6, and 5 of W EMD Drawing No. 5052D43). The four lugs shall be on the upper surface.

   e. Assemble four 1.250-in.-7 by 31-in. long studs (Item 104, SK 12084) to the four lugs on the support clamp with eight nuts and washers (Items 5 and 6, W EMD Drawing No. 5052D43) as shown on Figure A1-2-6).

   f. Install four 1.250-in.-7 nuts (Item 5, W EMD Drawing No. 5052D43) on the upper end of the four studs (-104 of SK 12084). Run the nuts down so that approximately 3-1/2-in. of thread are exposed above them.

   g. Install 12 swivel pad set screws (Item 8, W EMD Drawing No. 5052D43) into the clamp ring halves. Pads will face bearing support assembly.

   h. Install the guide plate (Item 101 of SK 12084) onto the four studs (Item 104, SK 12084) so that it is supported by the four nuts.

i. Fasten the guide plate with four hex nuts (Item 5, W EMD Drawing No. 5052D43) on the four studs (Item 104, SK 12084).

j. Install three 1.250-in.-7 eyebolts in the tapped holes on the 39.75-in. dia. bolt circle of the guide plate.

k. Install the 2-3/4-in.-8N stud into the shaft nut adapter. (Lubricate threads with pure nickel "Never Seez.")

l. Connect a 3 point sling, minimum capacity 2,000 lb, to the 3 eyebolts, facility bridge crane, the impeller/inducer holding fixture (SK 12084).

m. Verify correct hook up and in-date proof test of lifting tackle and equipment.

n. Raise the impeller setting and holding fixture and position it over the impeller.

o. Separate the two clamp halves so that they will engage the bearing support flange as shown on Figure A1-2-6 when the fixture is lowered.

p. Lower the fixture and align it so that the 2-3/4-in.-8N rod is aligned with the center hole of the guide plate and the clamp ring clears the bearing support assembly.

q. Adjust the nuts that are supporting the guide plate so that the guide plate is supported on the impeller eye.

r. Tighten nuts on top and bottom of guide plate with a torque wrench to 40 or 50 ft-lb torque.

s. Install the 2-3/4-in.-8N nut on the 2-3/4-in.-8N stud and use torque wrench to tighten to 100 ft-lb torque.

t. Adjust the clamp ring so that it fits securely on the bearing support assembly as shown on Figure A1-2-9.

u. Back off the four inner nuts (Item 5, W EMD Drawing No. 5052D43) at clamp ring support lugs.

v. Tighten the two hex head bolts and hex nuts (Items 7 and 5, W EMD Drawing No. 5052D43) on the side lugs of the clamp ring halves so that the ring halves are securely fastened to each other.

w. Tighten the 12 swivel pad socket set screws (Item 8, W EMD Drawing No. 5052D43) against the bearing support assembly so that the bearing support is firmly set in the clamp ring.

x. Make finger tight the 8 inner and outer nuts on the clamp ring support lugs.

y. Remove the six studs (Item 12, W EMD Drawing No. 934D147) securing the bearing support assembly to the turnover yoke spacers (Items 7 and 8, W EMD Drawing No. 934D147). Store bolts, nuts, and washers for future use.

z. Remove the lifting tackle and eyebolts.

aa. Verify proper installation of the impeller holding and setting fixture.

ab. Adjust the impeller position with regard to the bearing support assembly as follows:

(1) The distance between the bearing support and the guide plate is 30.017 $\pm$ 0.020-in. Figure A1-2-9. Measure at 3 points.

(2) Lock the setting fixture in place by using torque wrench and tightening all nuts in position with 50 ft-lb torque $\pm$ 5 ft-lb (lock inner nuts first).

(3) Measure, verify, and record the actual dimension. Actual dimension = ____ in.

(4) Verify fixture is locked in place.

A10-D3 ISIP Shaft Alignment Check, Section MP 746.

Add the instructions listed here, pertaining to the Rockwell International Intermediate-Size Inducer Pump (ISIP), to the existing data of Westinghouse OMM-051-005 Volume II, Appendix 10 D-3, Section MP 746.

1.1 ISIP Shaft Alignment Check

The purpose of this section is to establish the correct shaft alignment procedure for the Intermediate-Size Inducer Pump (ISIP) during installation of the inducer, impeller and diffuser assembly.

2.1 ISIP Procedure

A. Shield Plug and Support Cylinder (SP/SC) has been assembled to shaft/bearing support subassembly as shown in Figure A1-2-36.

B. Oil bearings and shaft seals have been assembled.

C. SP/SC is in an assembly/disassembly (A/D) stand supported from the top flange.

3.4 ISIP Tools

A. Dial indicators with wide buttons (4 required) - 1 mil max subdivision.

B. Shaft Safety Hoist Ring (W EMD Drawing No. 99MT069) (1 required).

C. Hydra-Set, min. 12000 lb rating (1 required).

D. Feeler Gauge Set, 0.001 in. to 0.100-in. range (1 set required).

E. Special Push-Rod Tools (4 required) - previously used by RI ETEC for calibration of MTI probes during assembly of FFTF Prototype pump for Phase A tests.

4.11 ISIP Shaft Alignment Procedure

A. Initial Setup

1. Measure, or determine from previous records, angular position of the four 4-inch diameter holes near the lower end of the SP/SC with respect to pump cardinal directions. (Locater pin in bottom of bearing support flange is EAST.) Record on data sheet.

2. Install special push-rod tools on SP/SC lower flange with push-rods withdrawn approximately 1/2 inch from shaft. (Mounting studs and nuts to be provided by RI ETEC.)

3. Using Hydra-Set and CHCF bridge crane, lift shaft 10-20 mil so thrust collar is suspended in thrust bearing clearance space.

4. Slowly rotate shaft assembly manually so the four inducer blade tip leading edges are positioned at the four cardinal directions as determined in Step A.1 above and as shown in Figure A1-2-37.

5. Check clearance of inducer vane tips in lower end of diffuser shroud (inducer tunnel) by moving the lower end of the shaft from side-to-side in two directions (N-S and E-W). If inducer tip hangs up against one side of inducer, notify Rockwell International ESG site representative.

6. Install four dial indicators 1.5-inch above the lower end of the inducer with wide contact buttons to measure radial motion at lower end of inducer hub. (RI ETEC to provide support structure for dial indicators.)

CAUTION

Inducer tunnel is fragile. Do not clamp to it.

B. Measurement Sequence (Table A1-2-1)

1. Record dial indicator readings and upper keyway position as noted in Table A1-2-1. N___ E___ S___ W___.

2. With push-rod tool, jack shaft hard up against North side of bearing clearance using East-West dial indicators to verify that shaft travels to North side of clearance, and hold in that position.

3. Record four dial indicator readings Table A1-2-1.

4. Using feeler gauge strips, measure and record inducer leading edge tip-to-inducer tunnel clearance for each of the four blades.

5. With push-rod tool, jack shaft hard up against South side of bearing clearance so East and West dial indicators register zero (or equal) deflection change and hold in that position.

6. Repeat measurement from steps B.4 and B.5 above.

7. With push-rod tool, jack shaft hard up against East side of bearing clearance using North-South dial indicators to verify that shaft travels to East side of clearance, and hold in that position.

8. Repeat measurement from steps B.4 and B.5 above.

9. With push-rod tool, jack shaft hard up against West side of bearing clearance so North and South dial indicators register zero (or equal) deflection change and hold in that position.

10. Repeat measurement record from steps B.4 and B.5 above.

11. Turn shaft 90 degrees and repeat steps B.1 thru B.10.

12. Turn shaft 90 degrees and repeat steps B.1 thru B.10.

13. Turn shaft 90 degrees and repeat steps B.1 thru B.10.

14. Turn shaft 90 degrees and repeat steps B.1 thru B.10.

NOTE

1. The final shaft keyway position is the same as the initial shaft keyway position. This is a check run.
2. Do not move or reset dial indicators until readings for one keyway position have been completed.

15. Notify test requester if feeler gage measurements are less than 0.0255-inch.

7.0 ISIP Calculations (Refer to Table A1-2-2)

A. For Upper Keyway Position I on Table A1-2-2 Calculate:

1. The change in North dial indicator readings between North and South contact positions (A.1.a minus A.1.b of Table A1-2-1). Record under I.C.1.e.

2. The change in South dial indicator readings between North and South contact positions (A.3.a minus A.3.b of Table A1-2-1). Record under I.C.3.e.

3. The change in East dial indicator readings between North and South contact positions (A.2.a minus A.2.b of Table A1-2-1). Record under I.C.2.e.

4. The change in West dial indicator readings between North and South contact positions (A.4.a minus A.4.b of Table A1-2-1). Record under I.C.4.e.

B. Repeat Steps in A.1 thru A.4 for East-West contact positions (Data Rows I.c and I.d) and record data in row I.f.

C. Repeat Steps in A and B for shaft position II (Data Rows II.a, II.b, II.c and II.d) and record data in rows II.3 and II.f.

D. Repeat Steps in A and B for shaft position III (Data Rows III.a, III.b, III.c and III.d) and record data in rows III.e and III.f.

E. Repeat Steps in A and B for shaft position IV (Data Rows IV.a, IV.b, IV.c, and IV.d) and record data in rows IV.e and IV.f.

F. Repeat Steps in A and B for shaft position V (Data Rows V.a, V.b, V.c, and V.d) and record data in rows V.e and V.f.

G. Notify test requestor for data evaluation if any of the following conditions exist:

1. Data from shaft position V does not agree with data from shaft position I within 0.002-inch, in the direction of shaft motion (e.g., compare V.C.1.e to I.C.1.e and V.C.2.f to I.C.2.f).

2. Data from opposing dial indicators does not agree within 0.001-in., in the direction of shaft motion.

H. Average and record under column D, the changes in opposing dial indicator readings parallel to the direction of shaft motion (average of I.C.1.e with I.C.3.e and record under I.D.5.e).

I. Notify the test requestor if any of the averaged values are less than 0.018-inch (75% of bearing average diametral clearance multiplied by: distance from thrust collar to lower end of sodium bearing/distance from thrust collar to dial indicator level).

J. Record averaged value of the ten readings recorded under columns D.5 and D.6 _____ ÷ 1.1023 = _____

NOTE

This value is to be maintained and used to establish the minimum permissible bearing clearance for start of operation.

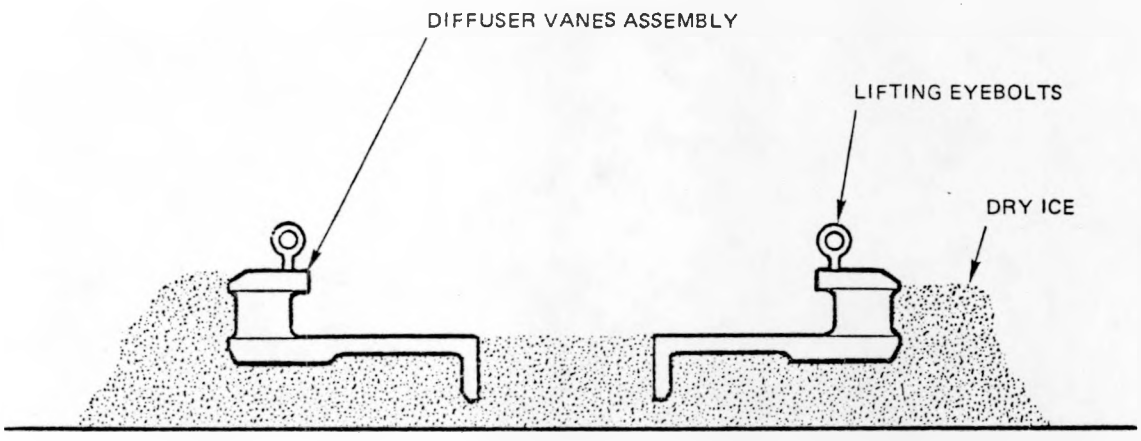


FIGURE A1-2-4b DIFFUSER VANES ASSEMBLY PACKED IN DRY ICE

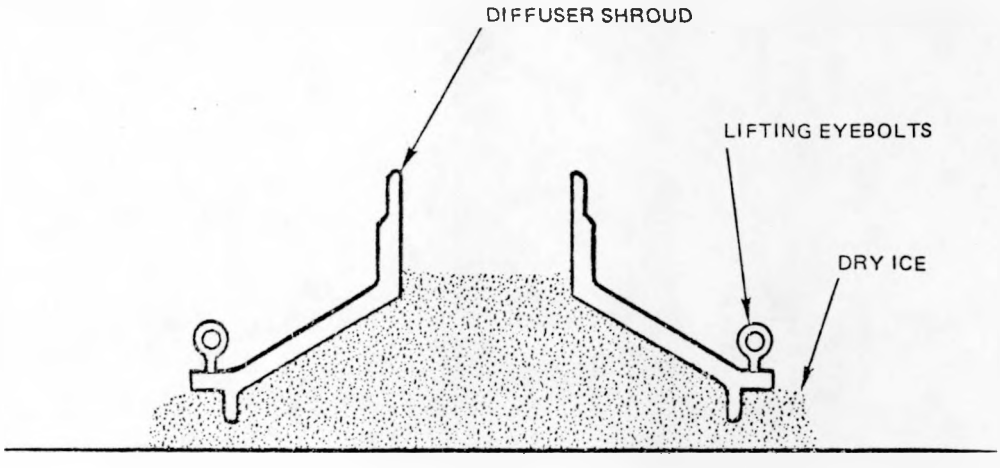
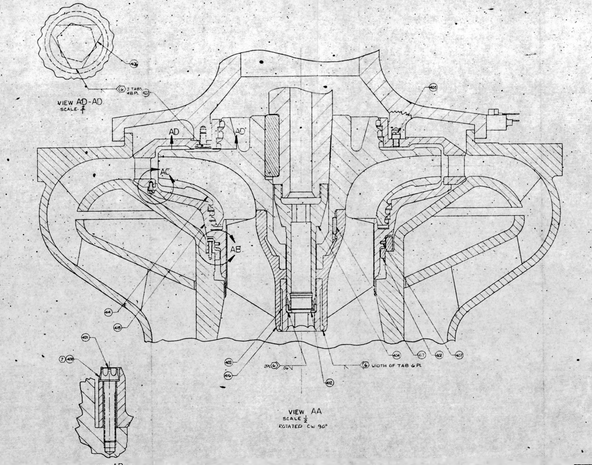
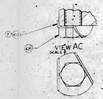


FIGURE A1-2-4c DIFFUSER SHROUD PACKED IN DRY ICE

FIGURE A1-2-4 SHEET 2





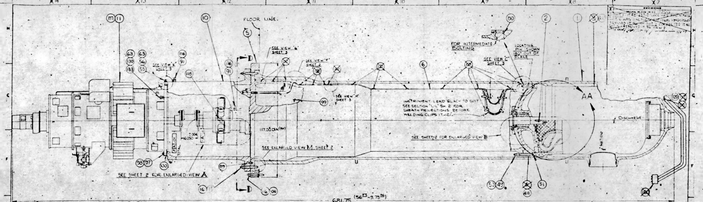


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Figure A1-2-1
Page A1-0-1

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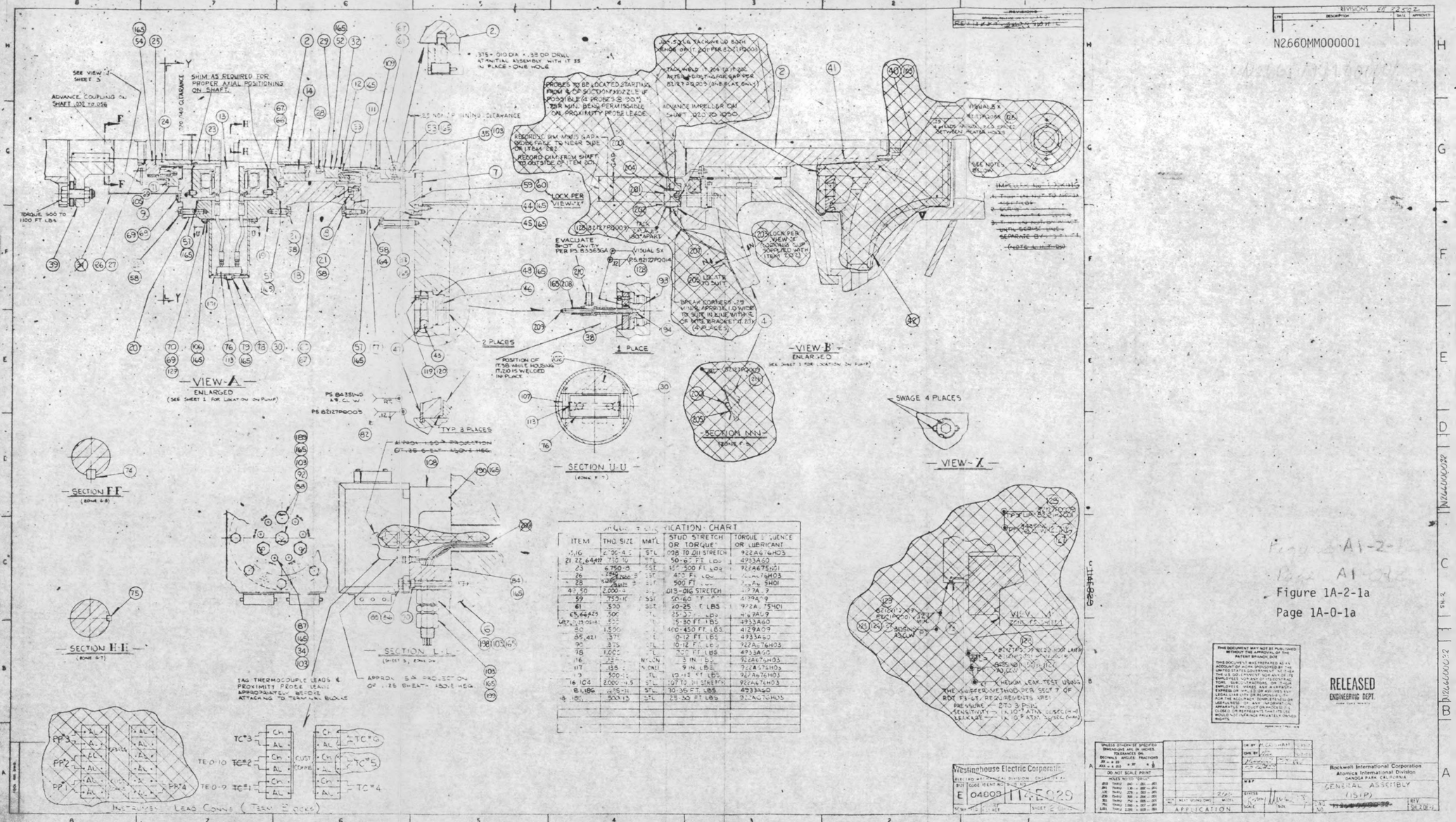
VIEW A
ENLARGED
(SEE SHEET 1 FOR LOCATION ON PUMP)
VIEW B
ENLARGED
(SEE SHEET 3 FOR LOCATION ON PUMP)
SECTION FF
SECTION HH
SECTION U-U
SECTION NN
VIEW Z
SWAGE 4 PLACES
SHIM AS REQUIRED FOR PROPER AXIAL POSITIONING ON SHAFT.
ADVANCE COUPLING ON SHAFT .012 TO .056
.270 - .140 CLEARANCE
TORQUE 900 TO 1100 FT LBS
.375 - .010 DIA x .38 DP DRILL AT INITIAL ASSEMBLY WITH IT 35 IN PLACE - ONE HOLE
.22 NOMINAL IMPELLER CLEARANCE
PROBES TO BE LOCATED STARTING FROM 6 O'CLOCK OF SUCTION NOZZLE IF POSSIBLE (4 PROBES @ 90°) FOR NPSH BENEFIT POSSIBLE ON PROXIMITY PROBE LEADS
RECORD DIM MINUS GAP A FROM BACK FACE TO NEAR SIDE OF ITEM 282
RECORD GAP FROM SHAFT TO OUTSIDE OF ITEM 201
ADVANCE IMPELLER ON SHAFT .020 TO .1050
EVACUATE SHOT CAVITY PER PS.B3536GA
LOCK PER VIEW "X"
LOCK PER VIEW "Y" DOWEL CUP SUPPLIED WITH ITEM 207
LOCATE TO SHIFT
BREAK CORNER .25 V DIA APPROX. 1/2 WIDE TO SIDE IN LINE WITH C OF MTG BRACKET FT. 23x (4 PLACES)
2 PLACES
1 PLACE
POSITION OF ITEM 44 VANE HOUSING (T.I.R. .015 W. ELDED IN PLACE
TYP. 3 PLACES
TAG THERMOCOUPLE LEADS & PROXIMITY PROBE LEADS APPROPRIATELY BEFORE ATTACHING TO TERMINAL BLOCKS
APPROX. 5 in. RADIUS ON OF .25 BREATH ABOVE HUB
INSTRUMENT LEAD CONNS (TERM BLOCKS)
PP*3
PP*2
PP*1
PP*4
TE-0-10
TE-0-9
TC*3
TC*2
TC*1
TC*6
TC*5
TC*4
CUST COMP
Ch
AL
VISUAL 5 X PS.B2127P0014
VISUAL 5 X PS.B2127P0009
PS.B2127P0009
PS.B3536GA
PS.B2127P0014
PS.B3536GA & CL W
PS.B2127P0005
.12 R
.25 R
.38 R
.50 R
.75 R
1.00 R
1.25 R
1.50 R
1.75 R
2.00 R
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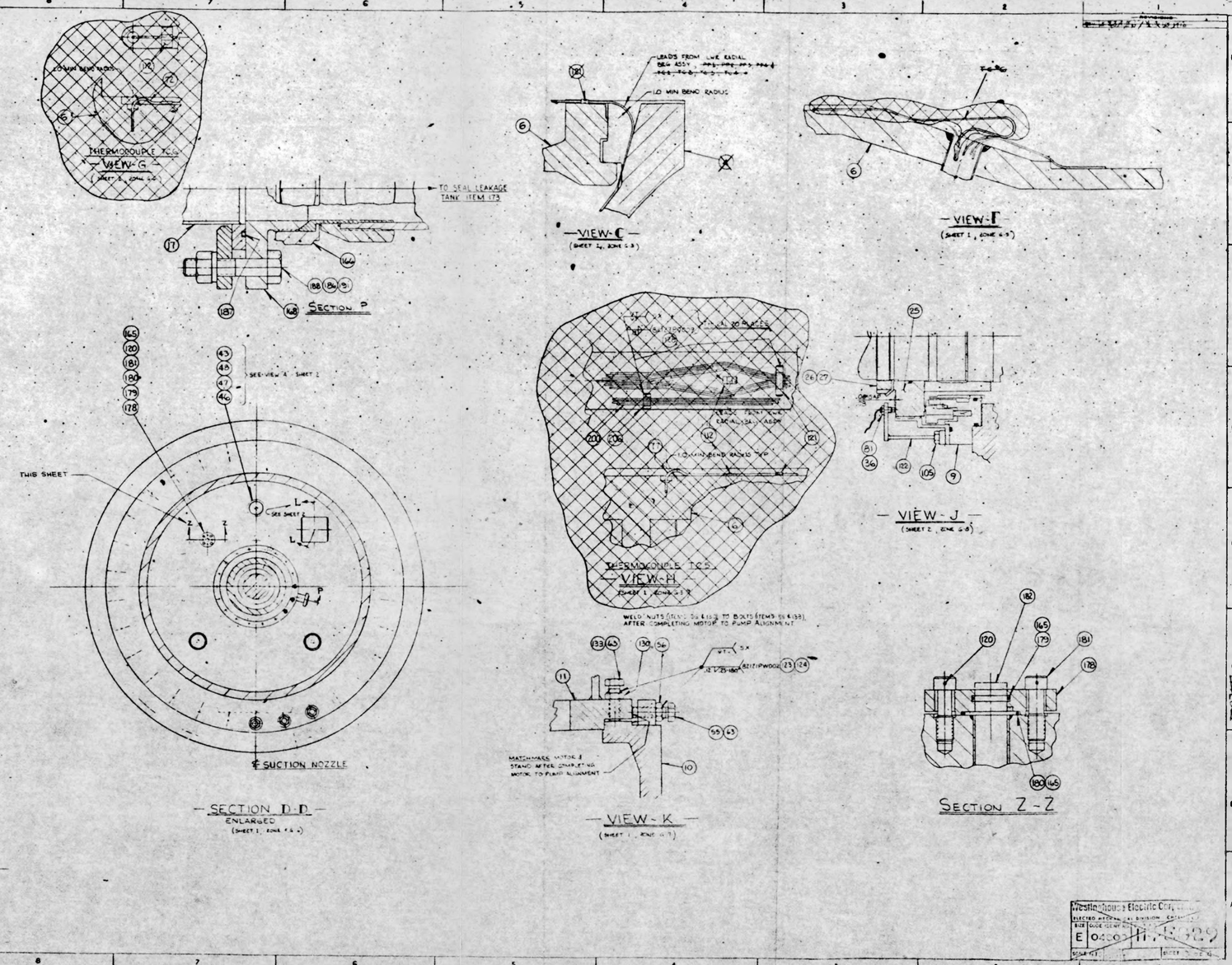

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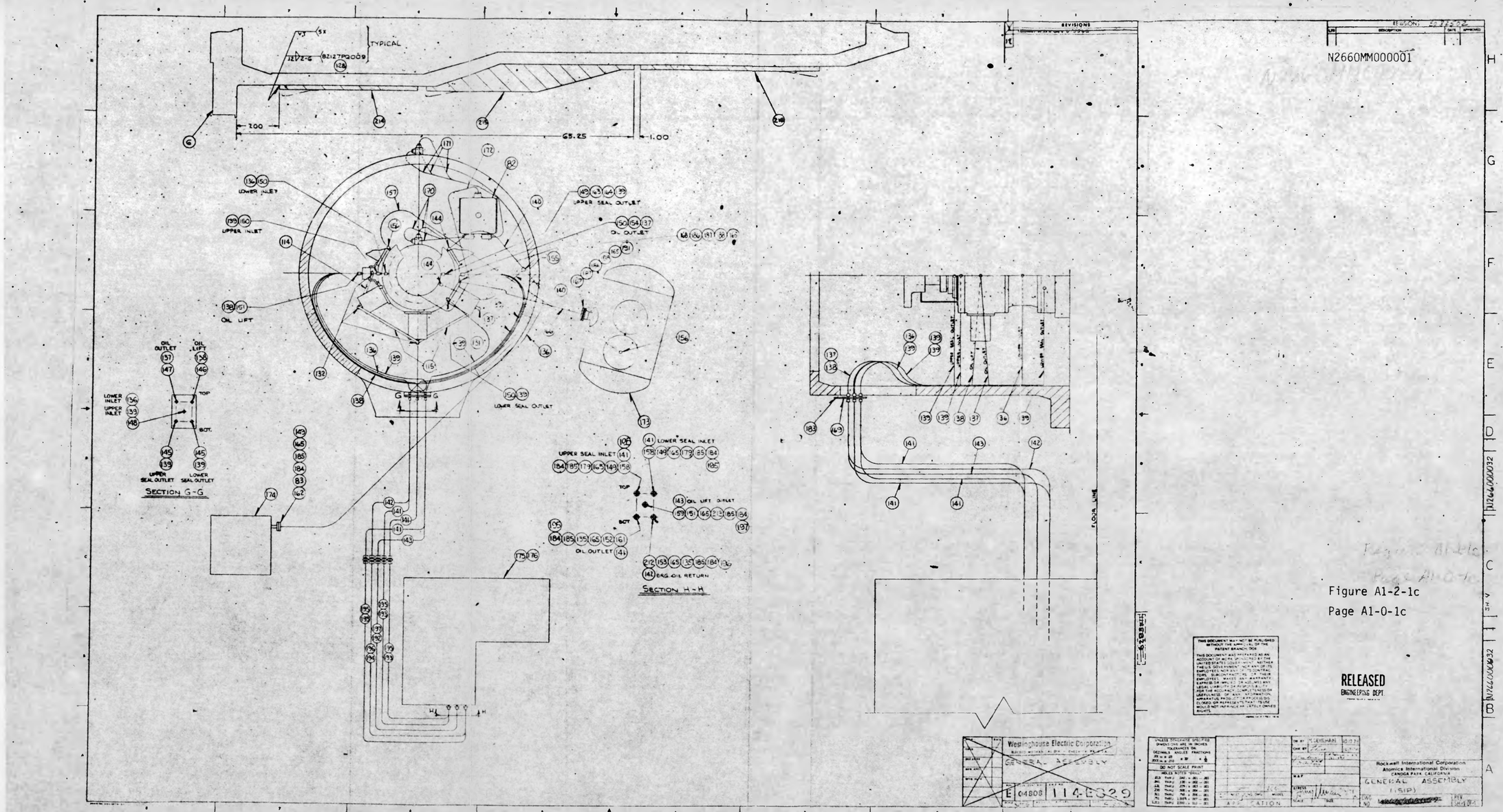
Figure A1-2-1b
Page A1-0-1b

Rockwell International Corporation
Atomics International Division
CANOGA PARK, CALIFORNIA
GENERAL ASSEMBLY
(1S1P)

N2660MM000032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65.25
1.00
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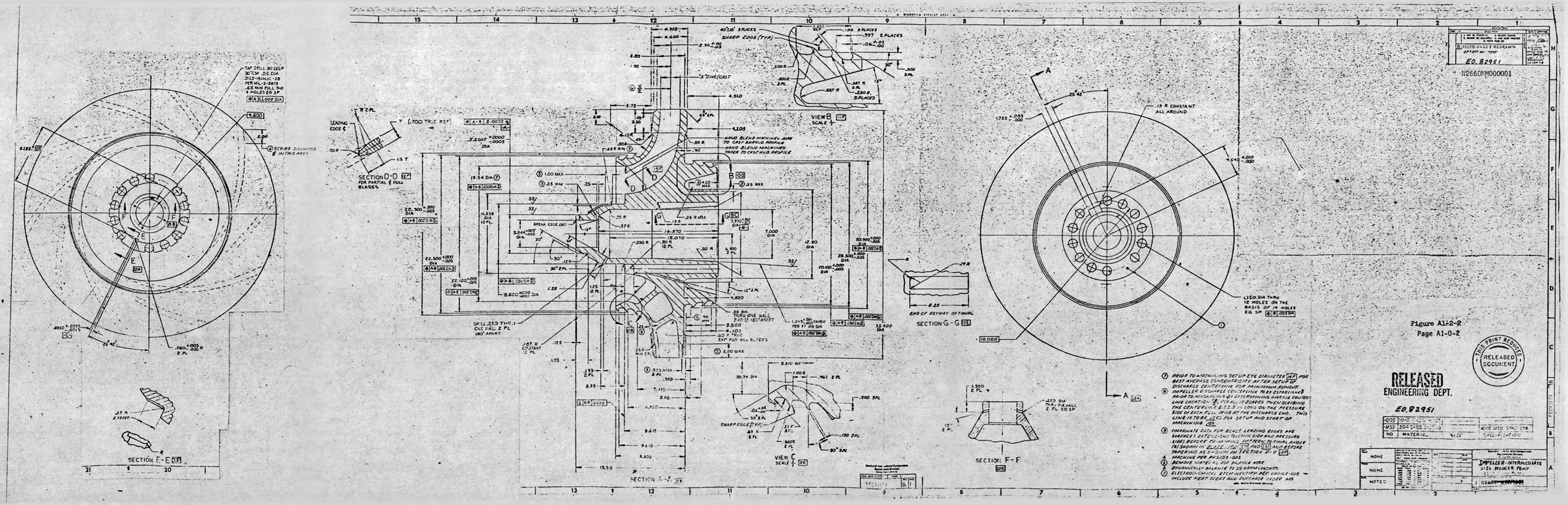
UPPER INLET
OIL LIFT
UPPER SEAL OUTLET
OIL OUTLET
LOWER SEAL OUTLET
SECTION G-G
UPPER SEAL INLET
LOWER SEAL INLET
OIL LIFT OUTLET
BAG OIL RETURN
SECTION H-H
FLOW LINE
N2660MM000001
Figure A1-2-1c
Page A1-0-1c
RELEASED
ENGINEERING DEPT.
Westinghouse Electric Corporation
GENERAL ASSEMBLY
E 04808 114-E329
Rockwell International Corporation
Atomics International Division
CANOGA PARK, CALIFORNIA
GENERAL ASSEMBLY
(SIP)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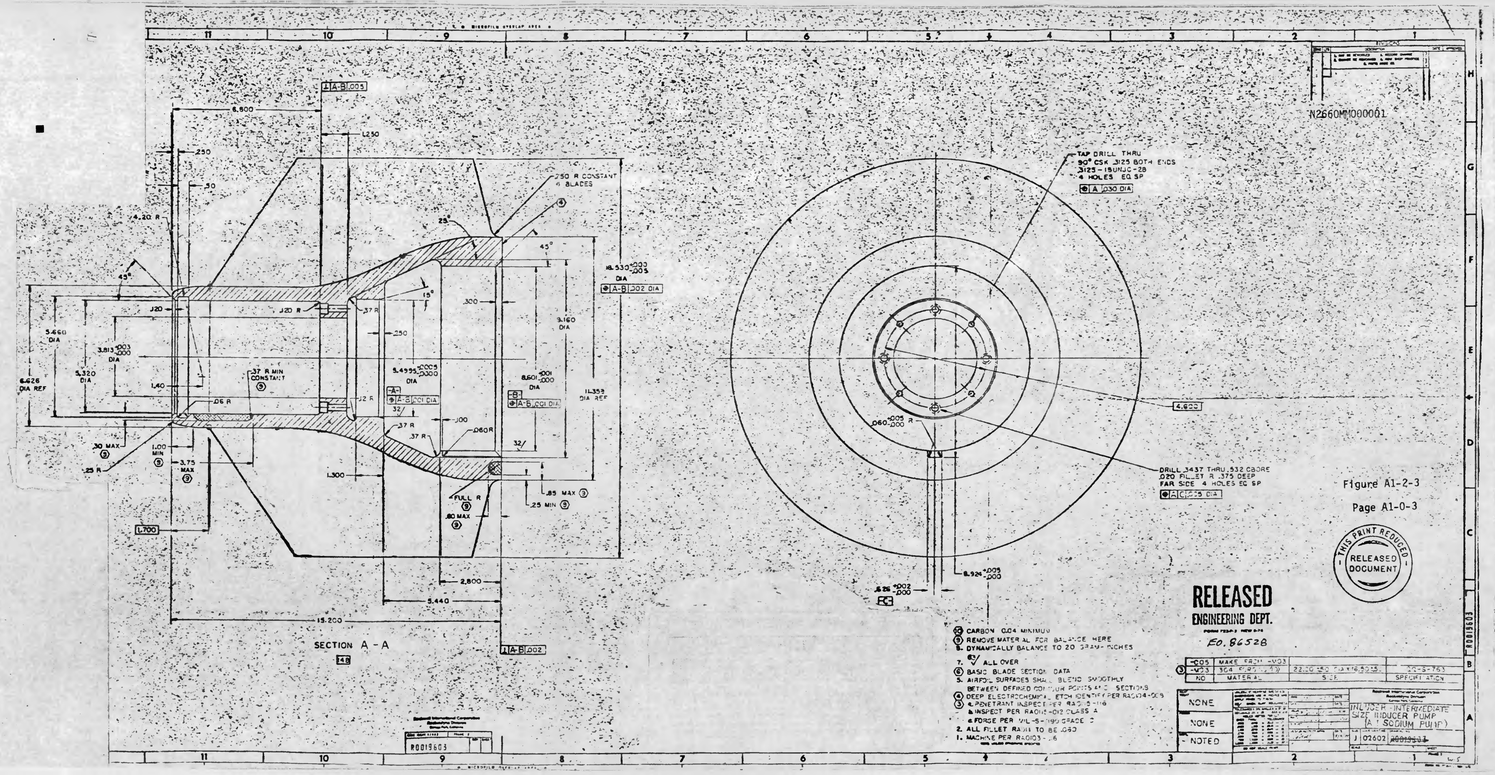
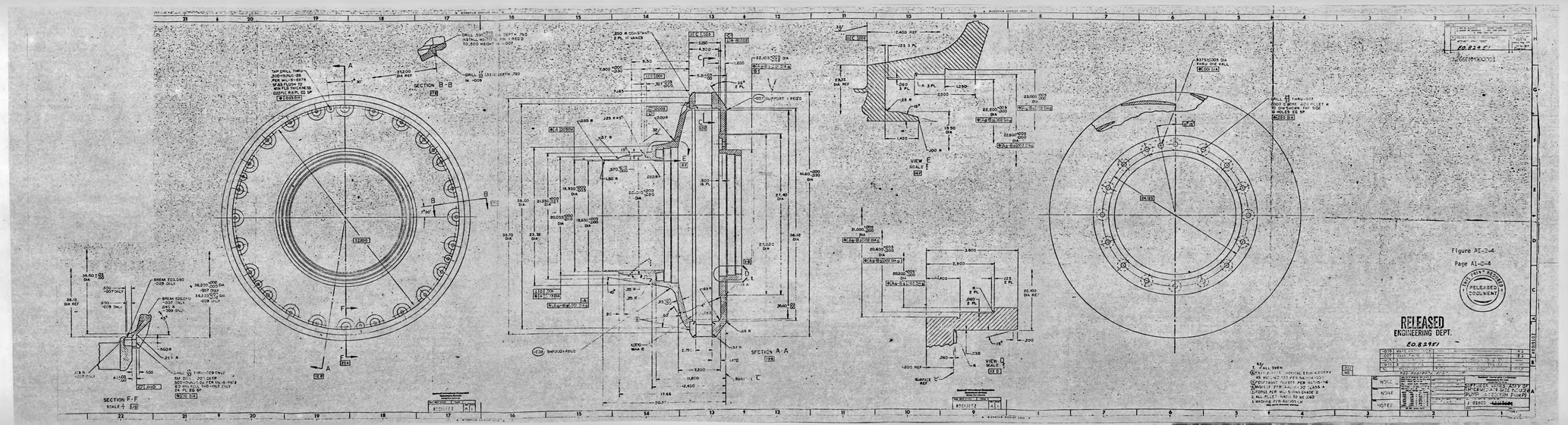
SECTION A-A
SECTION E-E
SECTION F-F
SECTION G-G
VIEW B
VIEW C
E0.82951
N2660NM000001
Figure A1-2-2
Page A1-0-2
RELEASED
ENGINEERING DEPT.
E0.82951
RELEASED DOCUMENT
THIS PRINT REQUIRED
IMPELLER-INTERMEDIATE
3126 INDUCER PUMP


N2660MM000001
SECTION A - A
TAP DRILL THRU
90° CSK .3125 BOTH ENDS
.3125 - 18UNJC-2B
4 HOLES EQ SP
DRILL .3437 THRU .532 CBORE
.090 FILLET R .375 DEEP
FAR SIDE 4 HOLES EQ SP
RELEASED
ENGINEERING DEPT.
E.O. 86528
Figure A1-2-3
Page A1-0-3
ALL PRINT REDUCED
RELEASED DOCUMENT
1. MACHINE PER RADIO - A
2. ALL FILLET RADII TO BE .060
4. FORGE PER MIL-S-6198 GRADE C
5. INSPECT PER RADIO CLASS A
6. PENETRANT INSPECT PER RADIO - A
7. ALL OVER
8. BASIC BLADE SECTION DATA
9. AIRFOIL SURFACES SHALL BLEND SMOOTHLY
10. DEEP ELECTROCHEMICAL ETCH IDENTIFIER RADIO-A
11. DYNAMICALLY BALANCE TO 20 GRAM-INCHES
12. REMOVE MATERIAL FOR BALANCE HERE
13. CARBON CONTENT .024 MINIMUM
NONE
NONE
AS NOTED
INTERMEDIATE SIZE IMPELLER PUMP (LIQUID PUMP)


SECTION B-B
SECTION A-A
SECTION F-F
VIEW E
VIEW Q
RELEASED
ENGINEERING DEPT.
E0.8291
Figure A1-2-4
Page A1-2-8
RELEASED DOCUMENT

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
	RELEASED 7-27-78 PER ECN Rev No. 2-5-18	7-28-78	
A	SEE SHT. 2	9/5/80	
	[illegible] cir		

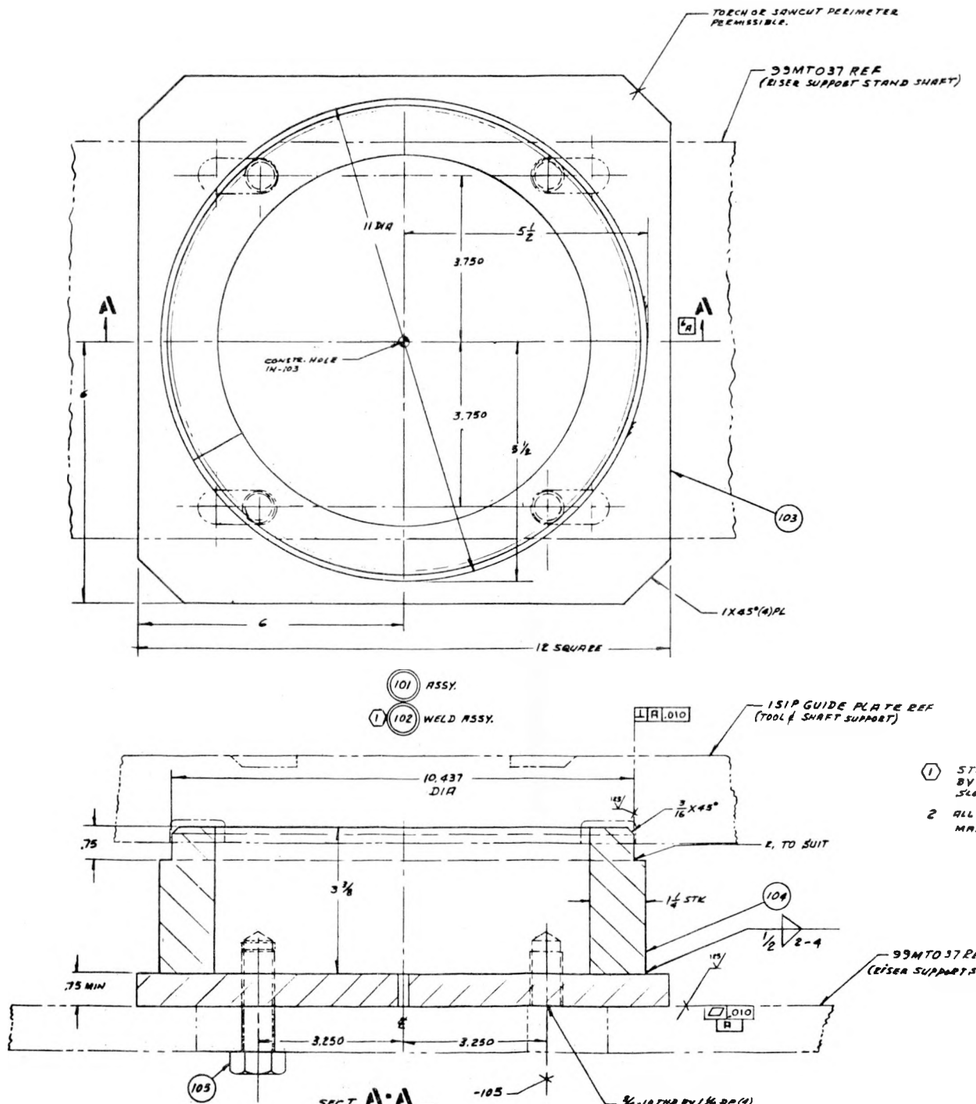
TOOL FUNCTION

TO POSITION & ADAPT GUIDE PLATE (99MT042)
TO RISER SUPPORT STAND SHAFT (99MT037)

IDENTIFY

TOOL NO.
PART NO.
DATE
PROPERTY OF D.O.E.

N2660MMO00001



NOTES

1. STRESS RELIEVE BEFORE FINAL MACHINING. BY HEATING TO 1150°F FOR 1 HOUR & 15 MIN. SLOW AIR COOL & CLEAN.
2. ALL SURFACES AS ROLLED EXCEPT THOSE MARKED 125.

Figure A1-2-5
Sheet 1
Page A1-0-5

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ZONE	MATERIAL	DATA SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						010
						009
						008
						007
						006
4	C-105	HEXHD CAP SCREW	7 10	ASTM A193 GR B7 STEEL	3/4-10 NC X 2	005
1	C-104	EXT BAR	5 B	LOW CARB M.S.	1 1/4 X 3 1/8 X 47	004
1	C-103	PLATE	5 D	LOW CARB M.S.	1 X 12 X 12	003
1	C-102	WELD ASSY	4 C		C/O -103 -104	002
1	C-101	ASSY.	6 E		C/O -102 -105	001

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON DECIMALS: ANGLES: FRACTIONS .XX = ± .01, ± 30', ± 1/32. DO NOT SCALE PRINT

DR BY FRIAS 7/27/78
CHK BY R. FREDERICK 7-28-78
ENGINEER 8-22-78

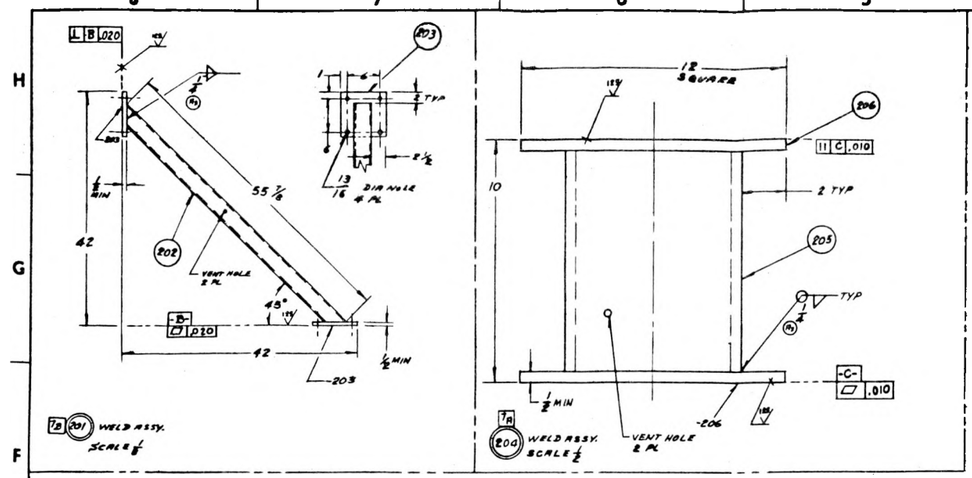
Rockwell International Corporation
Atomics International Division

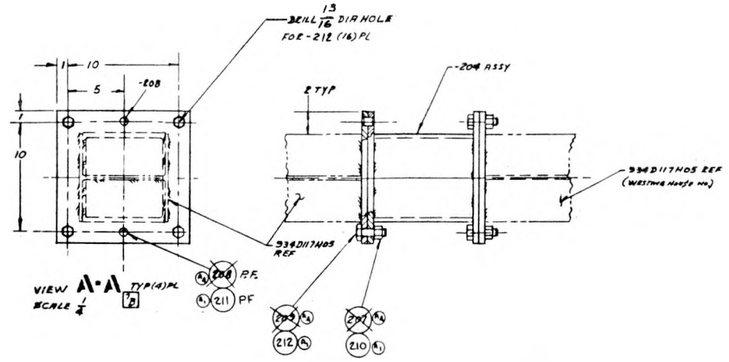
TURNOVER & SUPPORT STAND

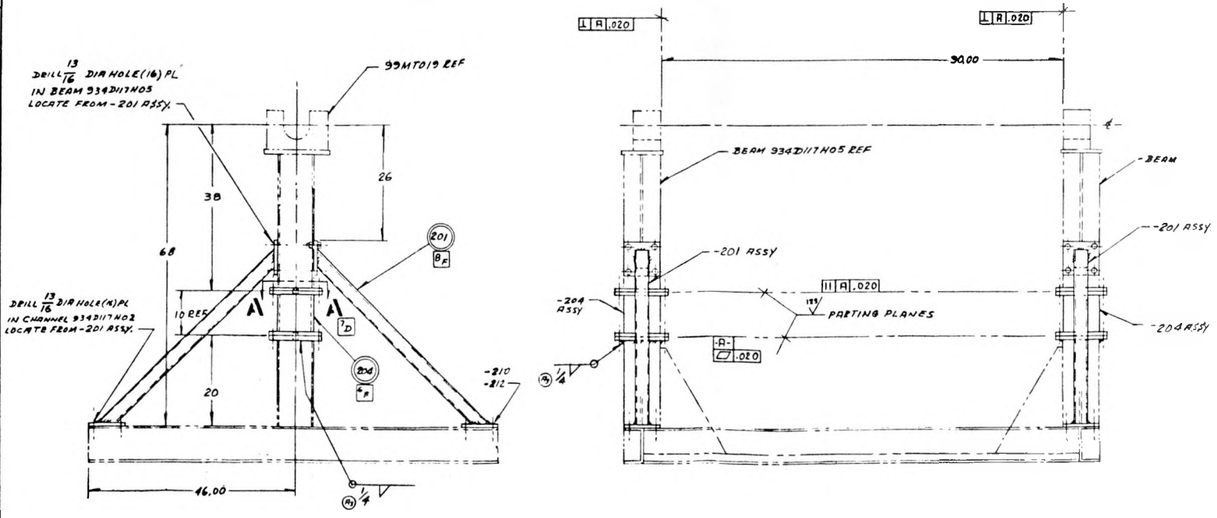
SIZE E | CODE IDENT NO. 09974 | SCALE 1/1 | SHEET 1 OF 2

SK-12085

APPLICATION







TOOL FUNCTION

TO SUPPORT INTERMEDIATE-SIZE PUMP (ISIP) DURING ASSEMBLY & TEST PROCEDURES.

IDENTIFY

TOOL NO.
PART NO.
DATE
PROPERTY OF EG&M

NOTES

1. OBTAIN TOOL WESTINGHOUSE NO. 99MT019 AND MODIFY BY BOLTING & DOWELING WELD ASSY-206 TO BEAM 934D117H05 TO HEIGHT SHOWN. REMOVE PART NO. 934D117N07 (16) PL AND 3067-201 ASSY. AS SHOWN.
2. ALL WELDING TO BE PERFORMED BY WELDERS QUALIFIED TO AWS D1.1 OR ASME SECTION IX AS APPLICABLE. ALL WELDS TO BE VISUALLY INSPECTED.

CLASS I TOOL

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ZONE	MATERIAL	DATA SPECIFICATIONS SIZES, NOTES VENDORS	LINE NO
48	Z12	FEMALE CAP SCR	7D	STL	3/4-10 X 1 3/4	
8	Z11	DOWEL PIN	7D	STL	3/4 DIA X	
42		HEX NUT	5F	STL	3/4-10	010
48	-209	HEX HD CAP SCR	7D	STL	1/2 -1 NC X 1 3/4	009
8	-208	DOWEL PIN	7D	STL	1/2 DIA X 1	008
48	-207	HEX NUT	5F	STL	1/2-13NC THD	007
8	-206	PLATE	5H	M.S.	5/8 X 12 X 12	006
2	-205	RECTANGULAR SQ TUBE	5G	STRUCT STL	8 X 8 X 1/2 X 9	005
2	-204	WELD ASSY.			3/8-205-206	004
8	-203	RECT BAR	7H	M.S.	5/16 X 1 X 8	003
4	-202	STR. RECT TUBE	2G	STRUCT STL	3 X 3 X 1/4 X 55 7/8	002
4	-201	WELD ASSY.	7B		3/8-202-203	001

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS ANGLES FRACTIONS .XX ± .03 X ± 1° .XXX ± .010 DO NOT SCALE PRINT

DRN BY ERIAS 7/21/78
CHK BY [illegible] 8/22/78
ENGR [illegible] 12-78
M&P [illegible]
[illegible] 11/3/78

Rockwell International Corporation
Atomics International Division

TURNOVER & SUPPORT STAND

SIZE E | CODE IDENT NO. 09974 | DRAWING NO. SK-[illegible]-2005 | SHEET 2 OF 2

APPLICATION | DRAW NO. | NEXT USING DWG | MODEL

LTR	DESCRIPTION	DATE	APPROVED
B	ON F/B & P/L 1. DET -210, -211, & -212 ADDED 2. WELD SIZE FILLET WAS 3/8. 3. ADDED NOTE 2 & CLASS I TOOL 4. CALC. -207, -208 & -209		
	DRWN ERIAS CH	[illegible]	[illegible]

N2660MM000001

Figure A1-2-5
Sheet 2

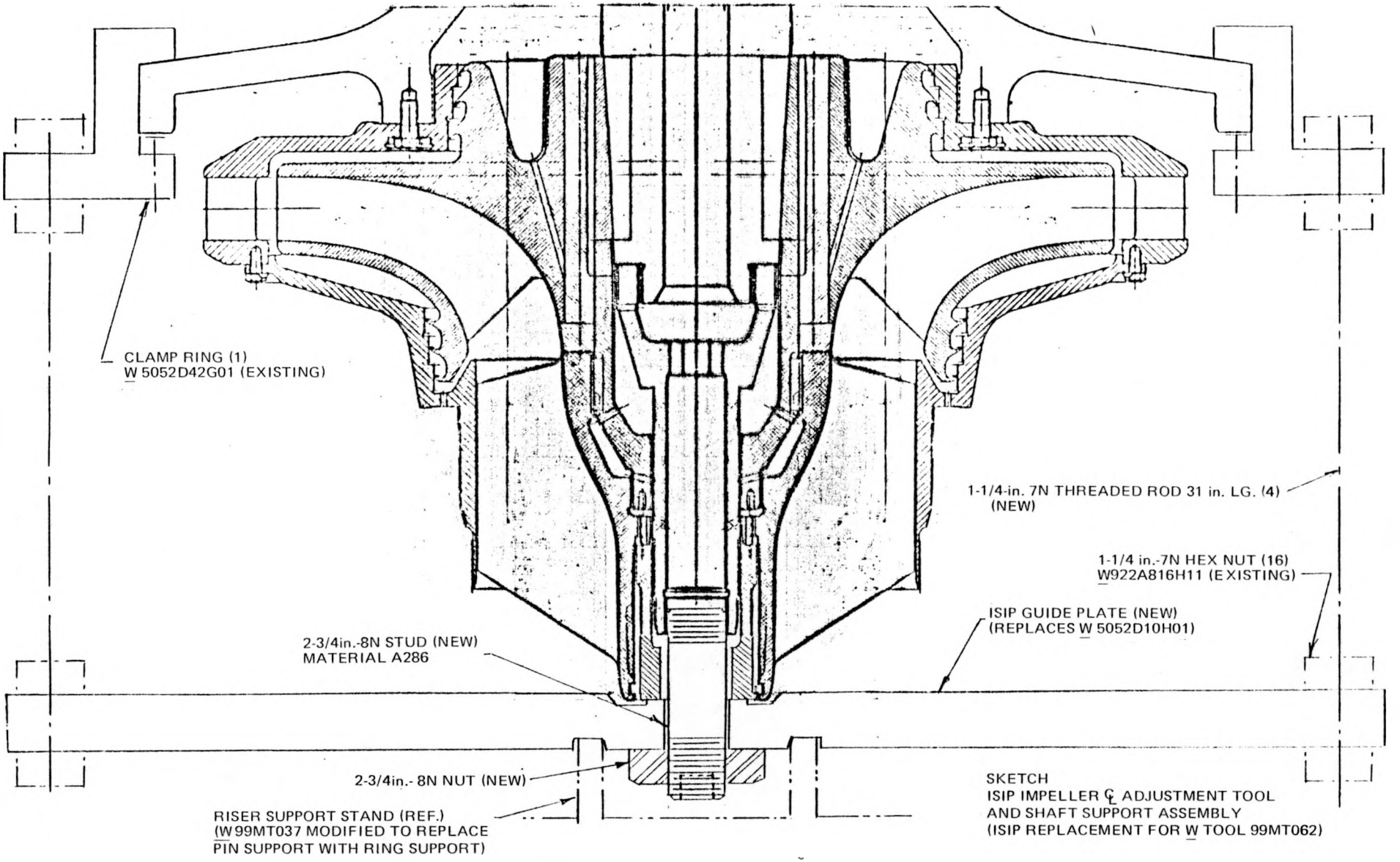
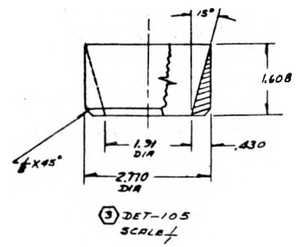


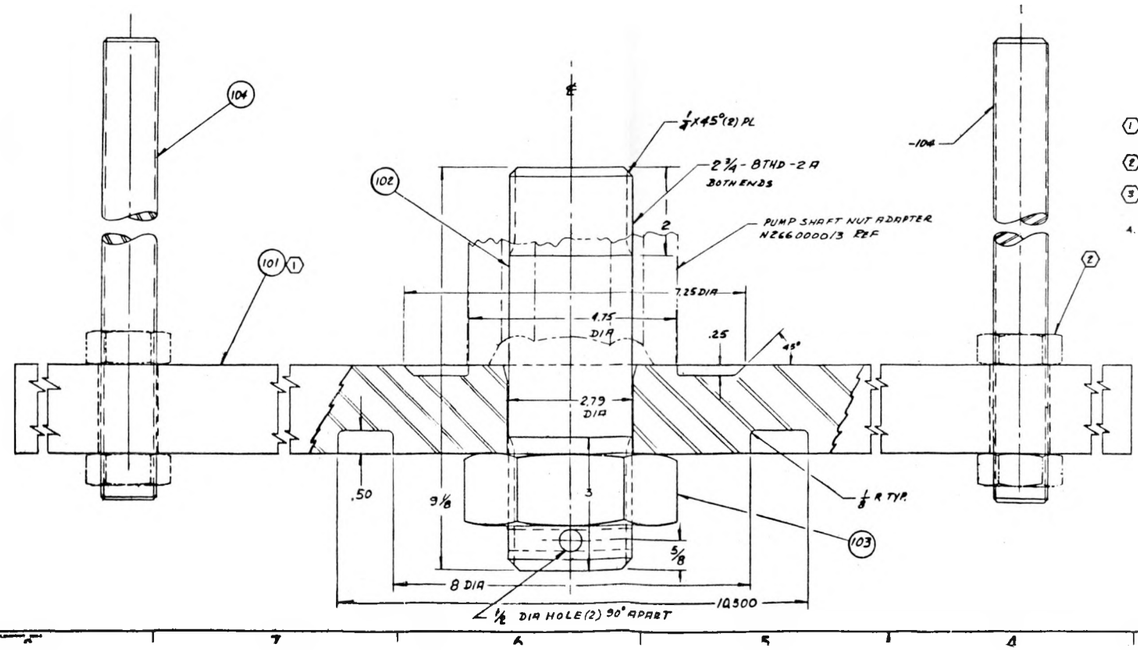
Figure A1-2-6. ISIP Impeller Adjustment Tool and Shaft Support Assembly.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
	PRE RELEASED 7-27-78 FINAL REL 8-11-8		

N2660MM000001



③ DET-105
SCALE 1/1



NOTES

① MODIFY 99MT062 PLATE BY MACHINING GROOVES WHERE SHN. & 2.79 DIA HOLE.
② UTILIZE EXISTING NUTS.
③ DET-105 MUST BE INSERTED INTO 2.79 DIA HOLE & ATTACHED BY WELDING TO RESTORE PLATE TO ORIGINAL FUNCTION.
4. WIRE -102 TO -101 FOR STORAGE

Figure A1-2-7

Page A1-0-8

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ZONE	MATERIAL	DATA SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO
						010
						009
						008
						007
						006
1	-105	ROUND BAR	B/3	CRES TYPE 304	2 7/8 DIA X 2	005
4	-104	THREADED R.D.	7/D	LOW CARB W.R.	1 1/4 - 7 NTHD X 31	004
1	-103	HEX JAM NUT	5/A	LOW CARB W.R.	2 1/4 - 8 THD	003
1	-102	ROUND ROD	7/C	DLY A-276 STL	2 3/4 DIA X 9 1/8	002
1	-101	99MT062 PLATE	7/C	CRES T/PE 304	SEE DRWG NO. 83-5E2D10	001

PARTS LIST

DR BY	FRIAS	7/27/78	Rockwell International Corporation Atomics International Division
CHK BY	R FREBERG	8-28-78	GUIDE PLATE
ENGR			
STRESS			SIZE E · CODE IDENT NO 09974 · DRAWING NO [redacted]
APPLICATION	NEXT USING DWG	MODEL	SCALE 1/1 · SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON DECIMALS: ANGLES: FRACTIONS .XX = ± .03, .XXX = ± .010, ± 1/8. DO NOT SCALE PRINT.

SE-2084

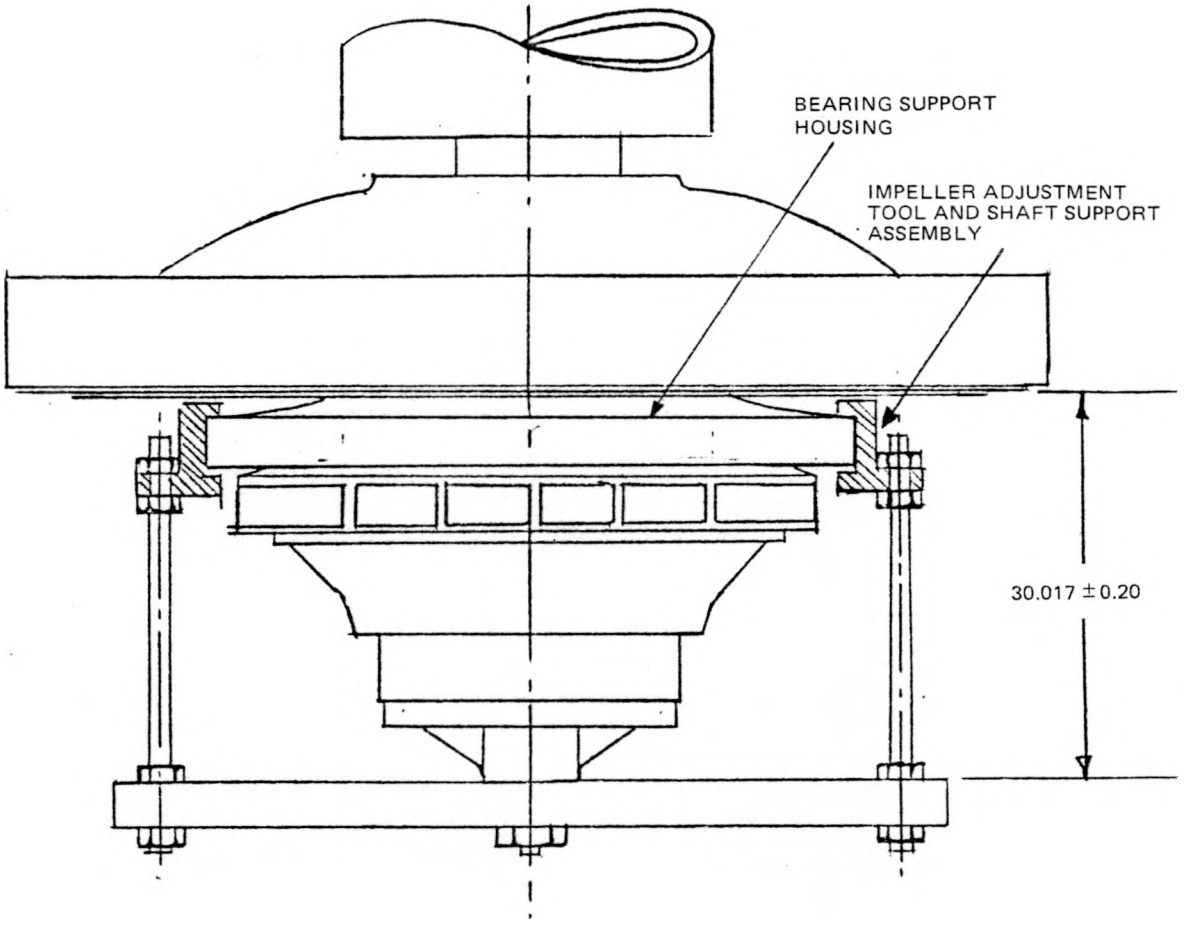


Figure A1-2-8. ISIP Impeller Adjustment Tool and Shaft Support Assembly with Bearing Support Housing

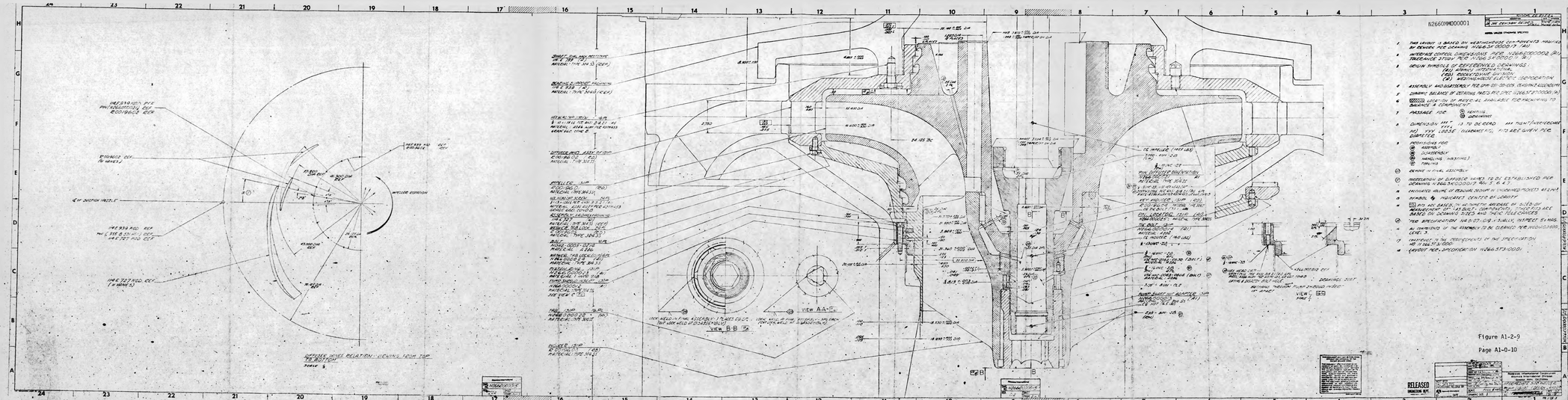


Figure A1-2-9

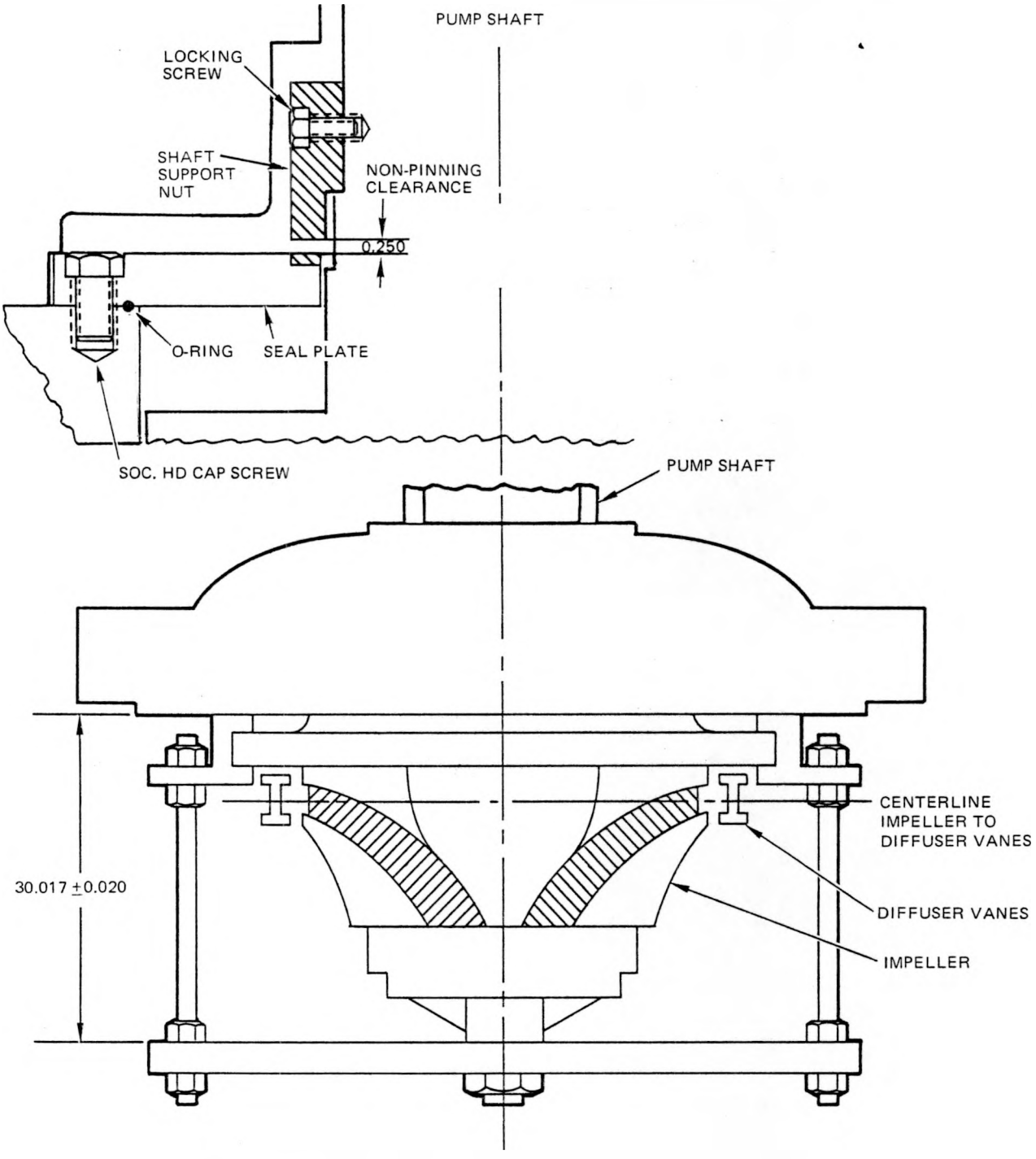
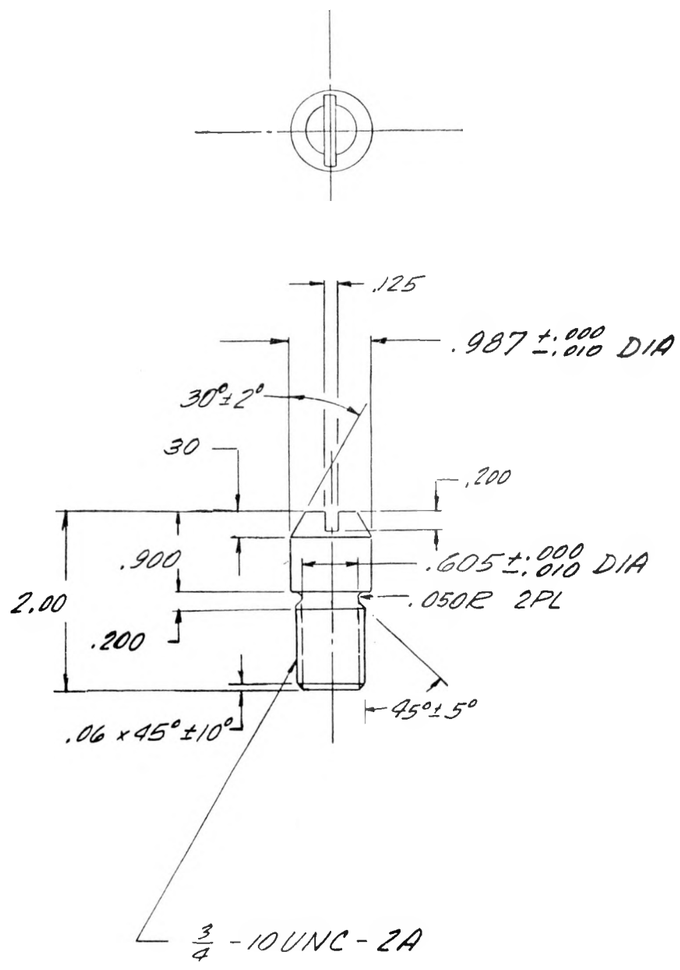


Figure A1-2-10. Seal Plate to Shaft Nut Clearance
(Sheet 1)

N2660MM000001

REVISIONS E.O. 86310			
LTR	DESCRIPTION	DATE	APPROVED



NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1 DRAWING INTERPRETATION PER STO115 NA0019

2 IDENTIFY BY PART NO. AND PURCHASE ORDER NO. PER N001A0104001, TAG AND BAG.

3 CLEAN PER N001A0110001 LEVEL 3.

4 PACKAGE PER N001A0116001 LEVEL B

Figure A1-2-11

QTY REQD	FIND NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						005
						004
						003
						002
	1	N2660000021-01	PIN	SST 304	ASME SA 105	001

PARTS LIST

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

DASH NO.	NEXT USING DWG.	MODEL
-01	N266R000015	N 266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
XX = ± .03 ± 30' ± 1/32
XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040 : + .001 — .001
.041	THRU	.130 : + .002 — .001
.131	THRU	.229 : + .003 — .001
.230	THRU	.500 : + .004 — .001
.501	THRU	.750 : + .005 — .001
.751	THRU	1.000 : + .007 — .001
1.001	THRU	2.000 : + .010 — .001

DR BY	P.JENCEK	3-17-78
CHK BY	R. Foster	4/27/78
MFG ENGR	5/23/78	
PROJ ENGR	731-3390	6/14/78
	6/27/78	
M & PP	6/29/78	
STRESS	6-26-78	

Rockwell International Corporation
Atomics International Division

PIN - DIFFUSER ORIENTATION (ISIP)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE FULL | REV D-1 | SHEET 1

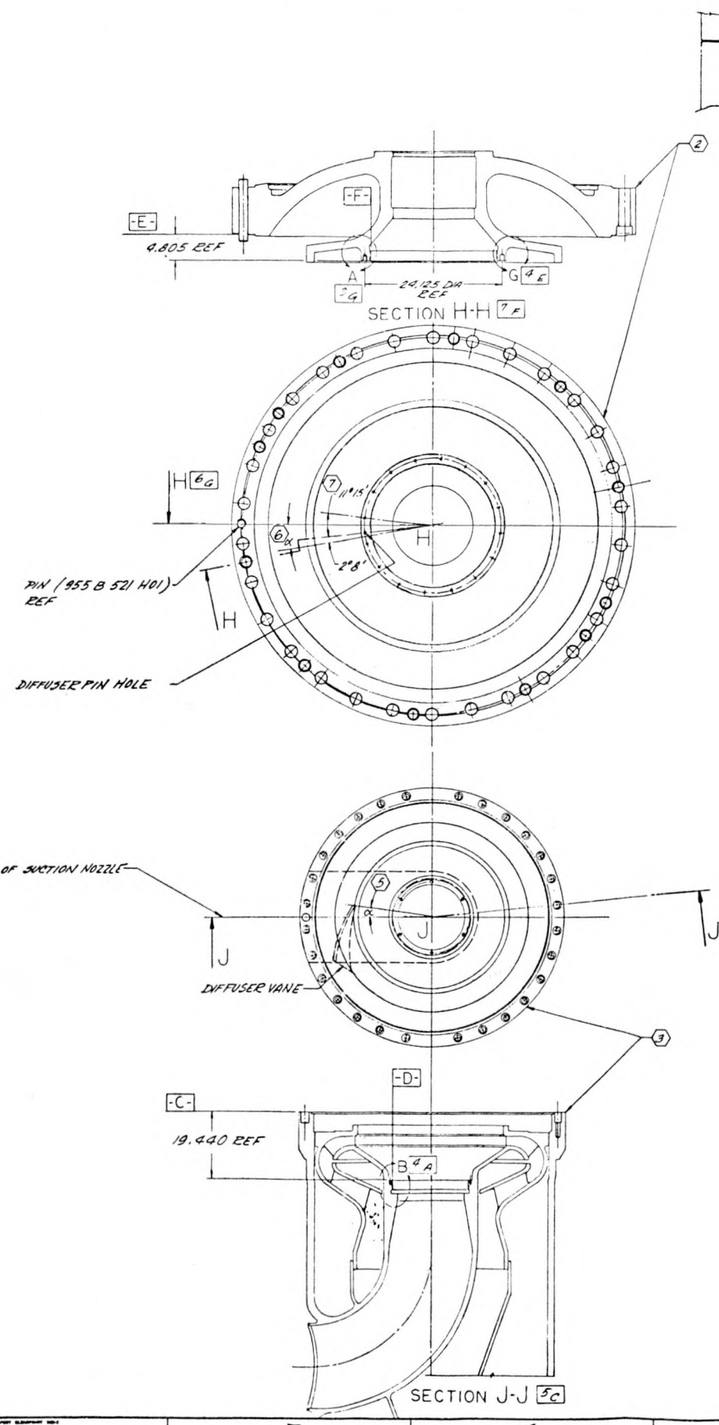
FORM N110-R-2 REV. 3-73

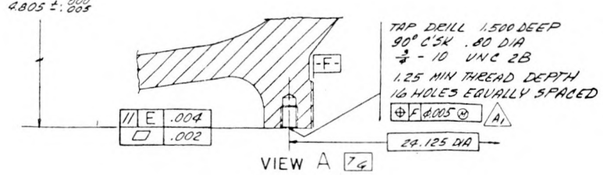
8/74 DIETERICH-POST CLEARPRINT 3889-6

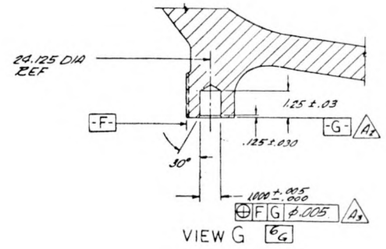
N2660000021

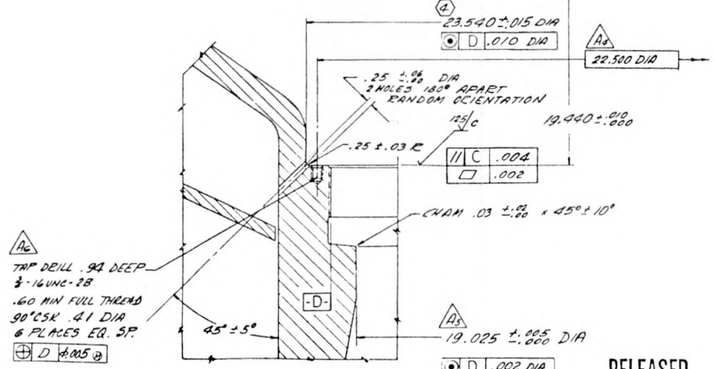
N2660MM000001

REVISIONS = 0.2&.7.14			
LTR	DESCRIPTION	DATE	APPROVED
A	SEE REVISION RECORD ECR 79914	1-23-79	R.F.KEEP









NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER ST01SNA0018.
2. WESTINGHOUSE DWG NO 114E939
3. WESTINGHOUSE DWG NO 114E727
4. MACHINING TO THIS DIMENSION FOR BELLOWS SEAL ONLY; UNIT FOR PISTON RING CONCEPT.
5. ANGLE (α) TO BE DETERMINED BY MEASURING ANGLE BETWEEN SUCTION NOZZLE CENTERLINE AND FIRST DIFFUSER VANE LEADING EDGE CLOCKWISE FROM CENTERLINE WHEN LOOKING DOWN ON STATIC HYDRAULICS.
6. LOCATION OF DIFFUSER PIN HOLE TO BE DETERMINED BY LAYING OUT ANGLE, α MINUS 28°, COUNTERCLOCKWISE FROM DOWEL PIN (955 B 521 H01) CENTERLINE, WHEN LOOKING AT BOTTOM OF BEARING SUPPORT FLANGE. (DOWEL PIN & IS SAME AS SUCTION NOZZLE ℄.)
7. TAPPED HOLES (16 EQUALLY SPACED) TO BE LOCATED WITH DIFFUSER PIN MIDWAY BETWEEN TWO HOLES.
8. CLEAN PER N001A0110001, LEVEL 3.
9. PACKAGE PER N001AW16001 LEVEL B

RELEASED
ENGINEERING DEPT.

DRAWN NO.	NEXT USING DWG	MODEL
-02 N2660MM000001	N.266	
-01 N2660MM000002	N.266	

APPLICATION

-02 ASSEMBLY MADE FROM 114E707G01
-01 MACHINING MADE FROM 114E939G01
NEXT ASSY USED ON SPECIFICATIONS

Rockwell International Corporation
Atomics International Division

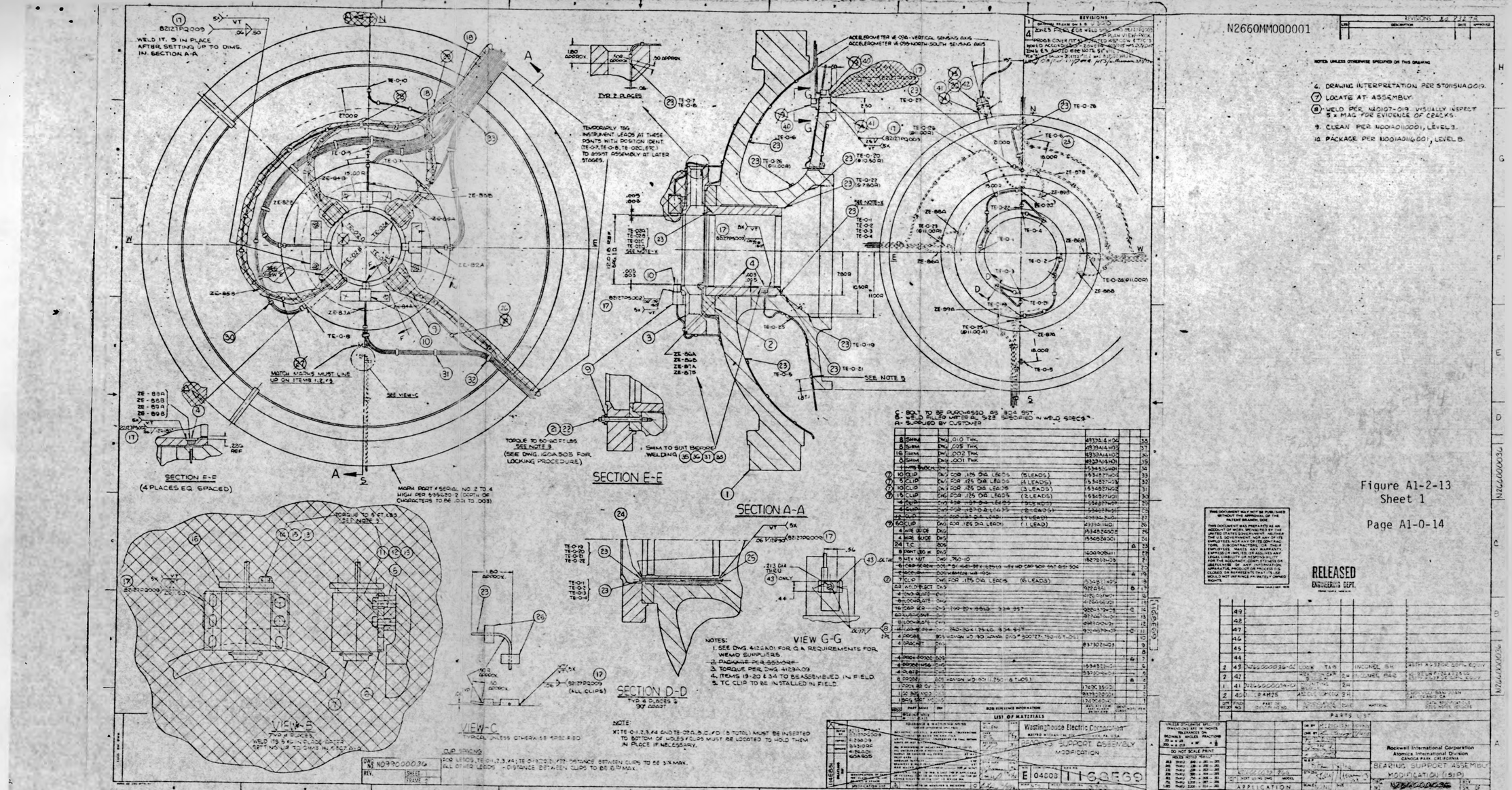
DR BY
CHK BY
M&P
ENGR

INTERMEDIATE SIZE INDUCER PUMP (REWORK) (ISIP)
WESTINGHOUSE COMPONENTS

SIZE E | CODE IDENT NO. 09974 | DRAWING NO.
SCALE NONE | REV H | SHEET 1

Figure A1-2-12

Page A1-0-13


N2660MM000001
Figure A1-2-13
Sheet 1
Page A1-0-14
RELEASED
ENGINEERING DEPT.
Westinghouse Electric Corporation
BEARING SUPPORT ASSEMBLY
MODIFICATION
Rockwell International Corporation
Atomics International Division
CANOGA PARK, CALIFORNIA
BEARING SUPPORT ASSEMBLY
MODIFICATION (ISIP)
SECTION E-E
SECTION A-A
SECTION D-D
VIEW G-G
VIEW-C
VIEW-E
SECTION E-F
(4 PLACES EQ. SPACED)
NOTES:
1. SEE DWG. 4123A01 FOR Q.A. REQUIREMENTS FOR W/MD SUPPLIERS
2. PACKAGE PER 9553D98.
3. TORQUE PER DWG. 4123A09.
4. ITEMS 19-20 & 34 TO BE ASSEMBLED IN FIELD.
5. TC CLIP TO BE INSTALLED IN FIELD.
NOTE:
X: TE-01,2,3,4 AND TE-02,B,C,D (5 TOTAL) MUST BE INSERTED TO BOTTOM OF HOLES. CLIPS MUST BE LOCATED TO HOLD THEM IN PLACE IF NECESSARY.
CLIP SPACING
FOR LEADS, TE-01,2,3,4 & TE-02,B,C,D (5 TOTAL) THE DISTANCE BETWEEN CLIPS TO BE 3" MAX.
ALL OTHER LEADS - DISTANCE BETWEEN CLIPS TO BE 6" MAX.
LIST OF MATERIALS
PARTS LIST
E 04009
T1G0E69
N2660000000
N2660000000A
N2660000000B
N2660000000C
N2660000000D
N2660000000E
N2660000000F
N2660000000G
N2660000000H
N2660000000J
N2660000000K
N2660000000L
N2660000000M
N2660000000N
N2660000000P
N2660000000R
N2660000000S
N2660000000T
N2660000000U
N2660000000V
N2660000000W
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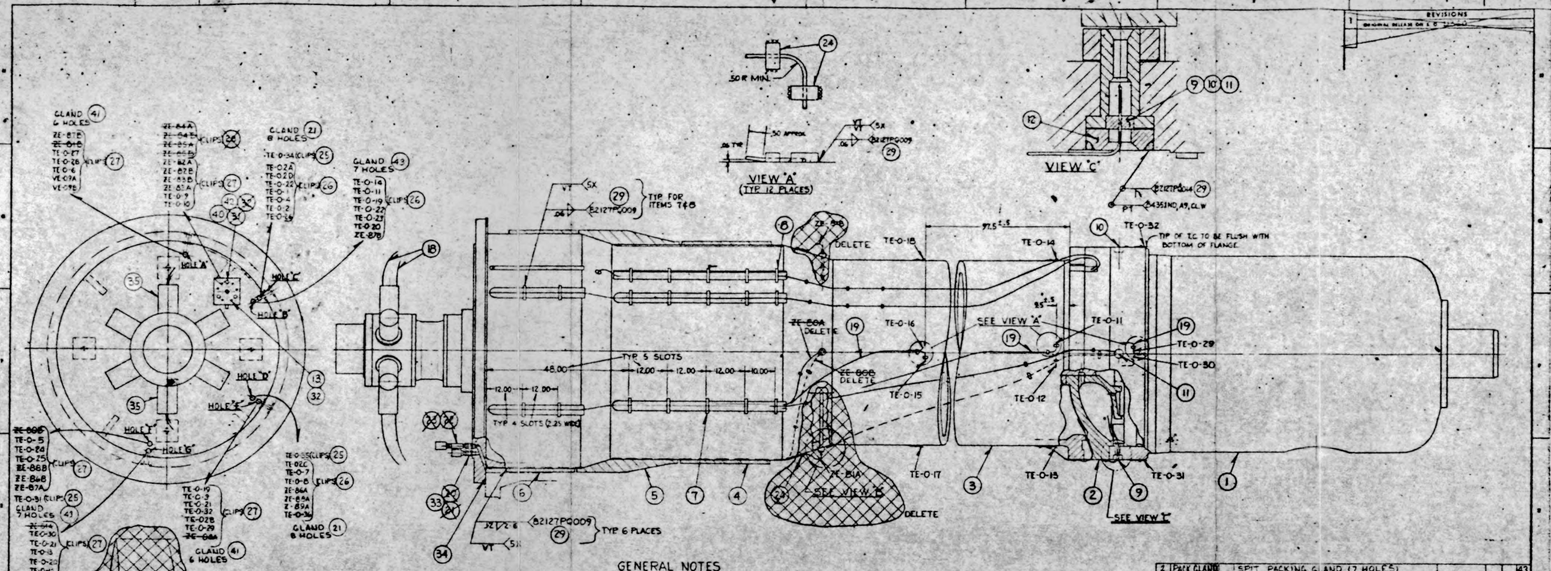

GENERAL NOTES

PUMP ASSEMBLY TO BE COMPLETED USING THIS DWG IN CONJUNCTION WITH DWG. 1H162890G02. THE FOLLOWING CLARIFICATIONS 1H162829 ARE AS FOLLOWS:

1-ITEMS 72, 77, 96, NO. 112, 177, 121, 160 & 200 THRU .207 INCLUSIVE WILL NOT BE INSTALLED.

2-ITEMS 2,3,4,6,214, 215 & 216 WILL BE REPLACED WITH ITEMS 1,2,3,4,5,6 & 80 OF DWG 1H162E68.

3-TWO OF ITEM 302(HI LIFT COVER) WILL BE REPLACE WITH ITEM 35 OF DWG 1H162E68.

4-FOUR OF ITEM 01(25 PACKING GLAND) WILL BE REPLACED WITH ITEM 13 OF DWG 1H162E68.

5-THERMOCOUPLE LEADS 4 CLIPS PER DWG 1H162E68.

6-SEAL WELDING OF TANK & SHIELD PLUG PER VIEW 'A' DWG 1H162829 WILL NOT BE DONE IN LIEU OF WELD ITEM 34 OF DWG 1H162E68.

7-WELDING PER VIEW 'A' DWG 1H162829 NOT TO BE DONE.

8-REARRANGEMENT OF INSTRUMENT LEADS WHICH ARE .12 IN DIA .19 PERMISSIBLE IN THE FIELD TO FACILITATE IMPROVED ROUTING CONFIGURATION AT ASSEMBLY.

INSTRUMENTATION DESIGNATION

LMEC	DESCRIPTION	LOCATION
TE-0-17	THERMOCOUPLE	IN LINE WITH SUCTION
TE-0-18		90° CCW FROM SUCTION
TE-0-16		180° CCW FROM SUCTION
TE-0-15		270° CCW FROM SUCTION
TE-0-13	THERMOCOUPLE	30° CCW FROM SUCTION
TE-0-11		150° CCW FROM SUCTION
TE-0-14		210° CCW FROM SUCTION
TE-0-12		330° CCW FROM SUCTION
TE-0-07	THERMOCOUPLE	180° CCW FROM SUCTION
TE-0-1		IN LINE WITH SUCTION
TE-0-2	THERMOCOUPLE	45° CW FROM SUCTION
TE-0-3		135° CCW FROM SUCTION
TE-0-4		225° CCW FROM SUCTION
TE-0-5		315° CCW FROM SUCTION
TE-0-6	THERMOCOUPLE	180° CCW FROM SUCTION AT 15.0 R
TE-0-19		180° CCW FROM SUCTION AT 21.0 R
TE-0-8	THERMOCOUPLE	IN LINE WITH SUCTION
TE-0-9		180° CCW FROM SUCTION
TE-0-10	THERMOCOUPLE	IN LINE WITH SUCTION
TE-0-1		90° CCW FROM SUCTION
TE-0-20		180° CCW FROM SUCTION
TE-0-21		270° CCW FROM SUCTION
TE-0-22	THERMOCOUPLE	IN LINE WITH SUCTION AT 15.0 R
TE-0-23		IN LINE WITH SUCTION AT 21.0 R
TE-0-24	THERMOCOUPLE	IN LINE WITH SUCTION
TE-0-25		90° CCW FROM SUCTION
TE-0-26		180° CCW FROM SUCTION
TE-0-27		270° CCW FROM SUCTION
TE-0-28	THERMOCOUPLE	180° CCW FROM SUCTION AT 15.0 R
TE-0-29		180° CCW FROM SUCTION AT 21.0 R
TE-0-30	THERMOCOUPLE	IN LINE WITH SUCTION
TE-0-31		90° CCW FROM SUCTION
TE-0-32		180° CCW FROM SUCTION
TE-0-33		270° CCW FROM SUCTION

LMEC	DESCRIPTION	LOCATION
TE-0-33	THERMOCOUPLE	337.5° CCW FROM SUCTION
TE-0-34		157.5° CCW FROM SUCTION
TE-0-35	THERMOCOUPLE	37.5° CCW FROM SUCTION
TE-0-36	THERMOCOUPLE	90° CCW FROM SUCTION
ZE-806		
ZE-807		
ZE-808		
ZE-809		
ZE-810		
ZE-811		
ZE-812		
ZE-813	PROBE (REMAIN)	63° CCW FROM SUCTION
ZE-814		135° CCW FROM SUCTION
ZE-815		225° CCW FROM SUCTION
ZE-816		315° CCW FROM SUCTION
ZE-817	PROBE (REMAIN)	IN LINE WITH SUCTION
ZE-818		90° CCW FROM SUCTION
ZE-819		180° CCW FROM SUCTION
ZE-820		270° CCW FROM SUCTION
ZE-821		18° CCW FROM SUCTION
ZE-822		198° CCW FROM SUCTION
ZE-823		18° CCW FROM SUCTION
ZE-824		198° CCW FROM SUCTION
VE-01A	ACCELEROMETER	90° CCW FROM SUCTION (TOP)
VE-01B		90° CCW FROM SUCTION (SIDE)
ZE-01A	PROBE (REMAIN)	IN LINE WITH SUCTION
ZE-01B		90° CCW FROM SUCTION
ZE-01C		180° CCW FROM SUCTION
ZE-01D		270° CCW FROM SUCTION
ZE-02A		15° CCW FROM SUCTION
ZE-02B		195° CCW FROM SUCTION
ZE-02C		15° CCW FROM SUCTION
ZE-02D		195° CCW FROM SUCTION
ZE-03A	PROBE (REMAIN)	IN LINE WITH SUCTION
ZE-03B		90° CCW FROM SUCTION
ZE-03C		180° CCW FROM SUCTION
ZE-03D		270° CCW FROM SUCTION
ZE-04A	PROBE (REMAIN)	IN LINE WITH SUCTION
ZE-04B		90° CCW FROM SUCTION
ZE-04C		180° CCW FROM SUCTION
ZE-04D		270° CCW FROM SUCTION
ZE-05A	PROBE (REMAIN)	IN LINE WITH SUCTION
ZE-05B		90° CCW FROM SUCTION
ZE-05C		180° CCW FROM SUCTION
ZE-05D		270° CCW FROM SUCTION
TE-0-37	THERMOCOUPLE	IN LINE WITH SUCTION (TOP)
TE-0-38		IN LINE WITH SUCTION (BOTTOM)
TE-0-41		180° CCW FROM SUCTION (TOP)
TE-0-42		180° CCW FROM SUCTION (BOTTOM)

2	PACK GLAND	SPLIT PACKING GLAND (7 HOLES)		43
4	O-RING	FOR .5625 THDS		42
3	NUT GLAND	SPLIT PACKING GLAND (6 HOLES)		41
4	O-RING	.5625 - ISOLVE THDS		40

E-WELD FILLER MAT'L, SIZE SPECIFIED IN WELD SPEC.
B-CLIPS TO BE SPACED APPROX. 12.00 IN. APART
C-THREADED BOTH ENDS.
D-CONNECTION OF THERMOCOUPLES TO TERMINAL BOARDS TO BE DONE AT SITE.
A-SUPPLIED BY CUSTOMER.

2	LIFT COVER	DWG	9330B92603	35
1	O-RING	SOS		A 34
7	O-RING	DWG FOR 1.0625-12 THDS	1604B27H06	33
4	O-RING	SYTON 4375 ID THDS	1604B27H05	32
4	PACK GLAND	SPLIT PACKING GLAND (6 HOLES)	1604B27H03	31
1	SHAFT	DWG	1H6E799G01	30
AR	WELD ROD	DWG	9224B61	E 29
4	C'BORE	DWG	1554B27H08	D 28
4	SC CLIP	DWG	1554B27H05	D 27
4	SC CLIP	DWG	1554B27H09	D 26
2	SOCLIP	DWG	4992PA13H01	D 25
26	SSCLIP	DWG	4923A11 H01	D 24
1	EXTENSION	SOS 2.0-14FF-7L 6CH-46 SIPE 304 SST		C 23
1	COUPLING	SOS .25 NPT THREADED COUPLING 304 SST		C 22
23	PACK GLAND	SOS SPLIT PACKING GLAND (6 HOLES)	1604B27H02	B 21
1	PACK GLAND	SOS SPLIT PACKING GLAND (7 HOLES)	1604B27H01	B 20
1	THERMOWELL	SOS		A 19
4	THERMOCPLE	SOS		A 18
4	C'BORE	DWG	1554B27H04	C 17
1	NOT USED	SOS .750-16 SST	1624B13H01	C 16
1	ADAPTER	SOS	1623B28H01	C 15
1	ADAPTER	SOS		A 14
4	C'BORE	DWG	1554B27H07	C 13
4	CLIP CLAMP	SOS .4375-12 UNF THDS	1604B27H04	B 12
4	SPACER	DWG	1429A42H02	B 11
2	WIRE GUIDE	DWG	1749A42G01	B 10
1	WIRE GUIDE	DWG	1749A42G02	B 9
1	WIRE GUIDE	DWG	1749A42G03	B 8
1	STRAP	SOS (.43-1-1/2 OF .125 x .375 SST BAR	4933A71GP 4	7
1	STRAP	SOS (.43-1-1/2 OF .125 x .375 SST BAR	4933A71SP 4	6
4	TOP BAF	DWG	5066D91G01	5
4	MID BAF	DWG	5066D91G02	4
4	BOT BAF	DWG	5066D91G03	3
1	SPC ASSY	DWG	6537C51G01	2
1	HDRG SPRT A	DWG	1H6E68E01	1
1	HDR ASSY	DWG	8123D57G01	

LIST OF MATERIALS

Westinghouse Electric Corporation
ELECTRO-MECHANICAL DIV. — SUNNYVALE, CA. 94086

T.C. PROBE ASSEMBLY
SODIUM PUMP
T.C. ASSY.

E 04808 1H6E68

RELEASED
ENGINEERING DEPT.

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HOLD WITH "MUST"

APPROVALS: M.E. DYSHART 10-2-68; [illegible]

APPLICATION

Rockwell International Corporation
Atomics International Division
CANOGA PARK, CALIFORNIA

THERMOCOUPLE & PROBE ASSEMBLY (ISIP)

SIZE A | CODE IDENT NO. 80120 | DWG NO. N2660000035 | REV A

DWG NO. N2660000035 REV. A SHEET 1 (FRAME 2 OF)

N2660MM000001

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

9. DRAWING INTERPRETATION PER STDIISNA0019.
10. ALL DRAWING NUMBERS REFERRED TO IN GENERAL NOTES ARE WESTINGHOUSE DRAWING NO.
11. IDENTIFY PER NDDIAD1C4001, BAR AND TAG WITH PART NUMBER.
12. CLEAN PER NDDIAD1I0001, LEVEL 1
13. PACKAGE PER NDDIAD1I6001, LEVEL B
14. LOCATE AT ASSY
15. WESTINGHOUSE DWG 1H162829 IS AT DWG N2660000032. WESTINGHOUSE DWG 1H6E68 IS AT DWG N2660000035.
16. CLEAN PER NDDIAD1I0001, LEVEL 3.
17. PACKAGE PER NDDIAD0I6001, LEVEL B

Figure A1-2-13
Sheet 2

Page A1-0-15

N2660000035A1

N2660MM000001

REVISIONS EO. 86510			
LTR	DESCRIPTION	DATE	APPROVED

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER STO 115 NA 0019
2. IDENTIFY PER PART NO AND PURCHASE ORDER NO PER N001A0104001, TAG AND BAG
3. CLEAN PER N001A0110001 LEVEL 3
4. PACKAGE PER N001A0116001 LEVEL B

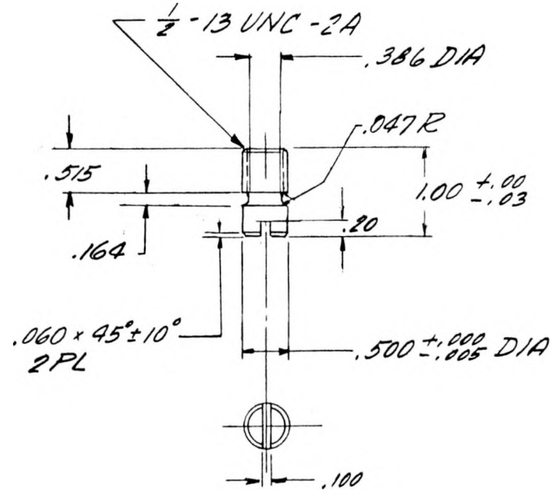


Figure A1-2-14

Page A1-0-16

QTY REQD	FIND NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						005
						004
						003
						002
	1	N2660000025-01	PIN	SST BAR	ASME-SA 193 TYPE 304	001

PARTS LIST

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

DASH NO.	NEXT USING DWG	MODEL
-01	N2662000015	266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS .XX = ± .03, .XXX = ± .010; ANGLES ± 30'; FRACTIONS ± 1/32

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040	± .001 — .001
.041	THRU	.130	± .002 — .001
.131	THRU	.229	± .003 — .001
.230	THRU	.500	± .004 — .001
.501	THRU	.750	± .005 — .001
.751	THRU	1.000	± .007 — .001
1.001	THRU	2.000	± .010 — .001

DR BY	P. JENCEK	6-20-78
CHK BY	[illegible]	6-21-78
	E.J. Anderson 4/27/78	CE Tanner 6/14/78
	[illegible] 7231-535	E.J. Hellen 6-28-78
M & P	[illegible]	6/27/78
STRESS	[illegible]	6-26-78

Rockwell International Corporation
Atomics International Division

PIN, LOCATOR

ISIP

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE FULL | REV. D-1 | SHEET

FORM N11A-A-2 REV. 3-73

8/74 DIETERICH-POST CLEARPRINT 1088-8

N2660000025 D-1

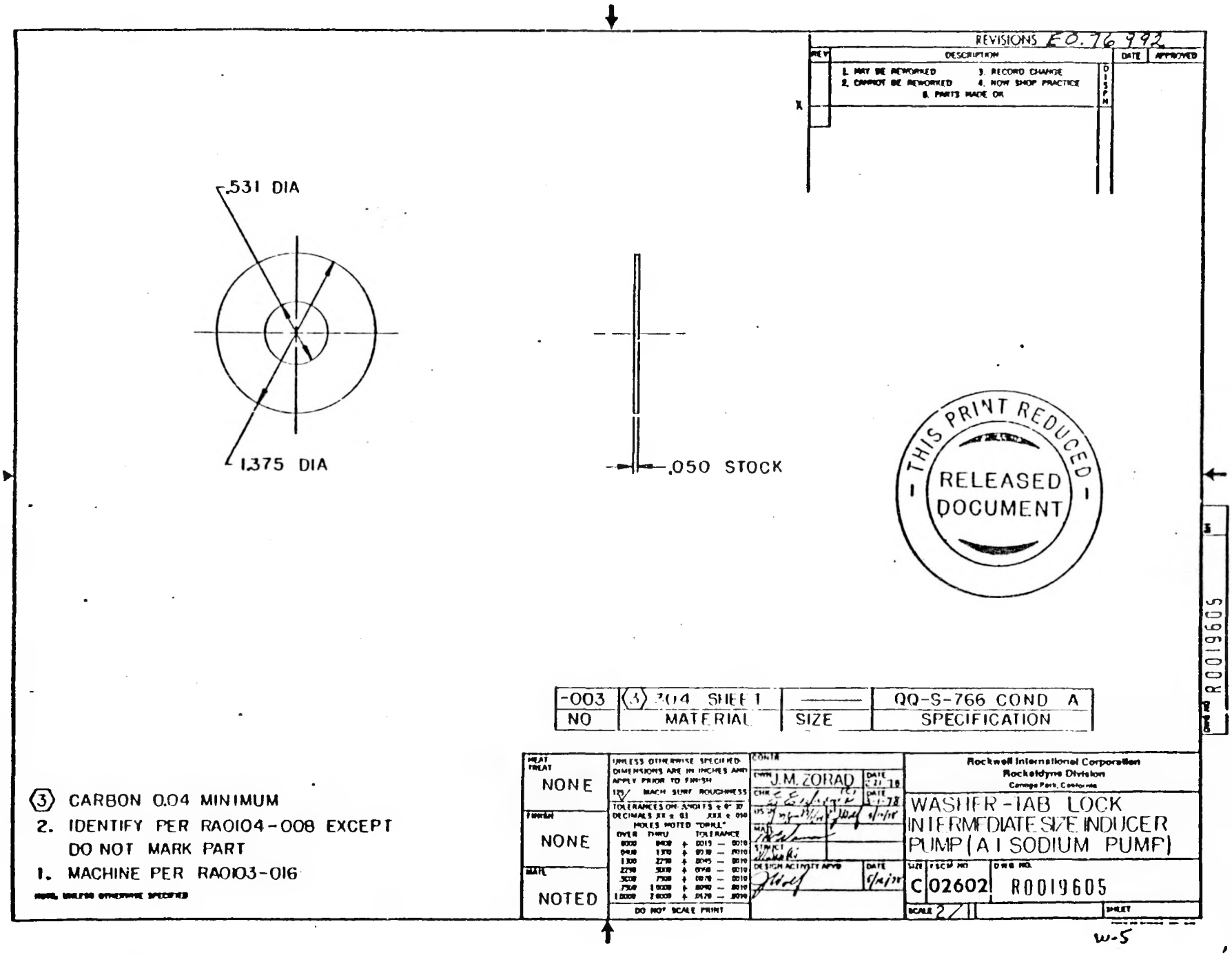


Figure A1-2-15 Tab Lock Washer

REVISIONS EO. 865.10			
LTR	DESCRIPTION	DATE	APPROVED

N2660MM000001

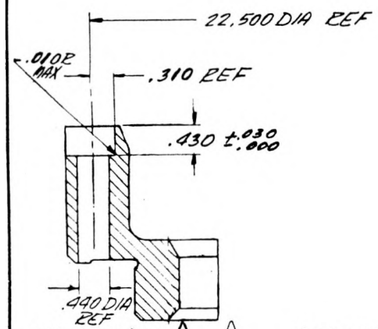
NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1 DRAWING INTERPRETATION PER STD 115 NA 0019

(2) IDENTIFY BY PART NO. & PURCHASE ORDER NO PER N001A0102001 ELECTROCHEMICAL ETCH

3 CLEAN PER N001A0110001, LEVEL 3.

4 PACKAGE PER N001A0116001 LEVEL B



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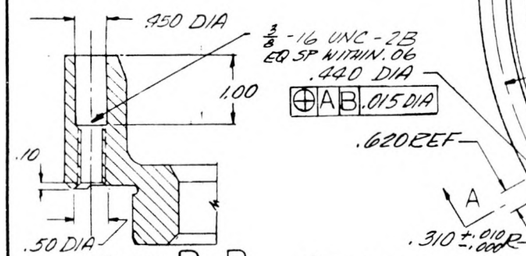
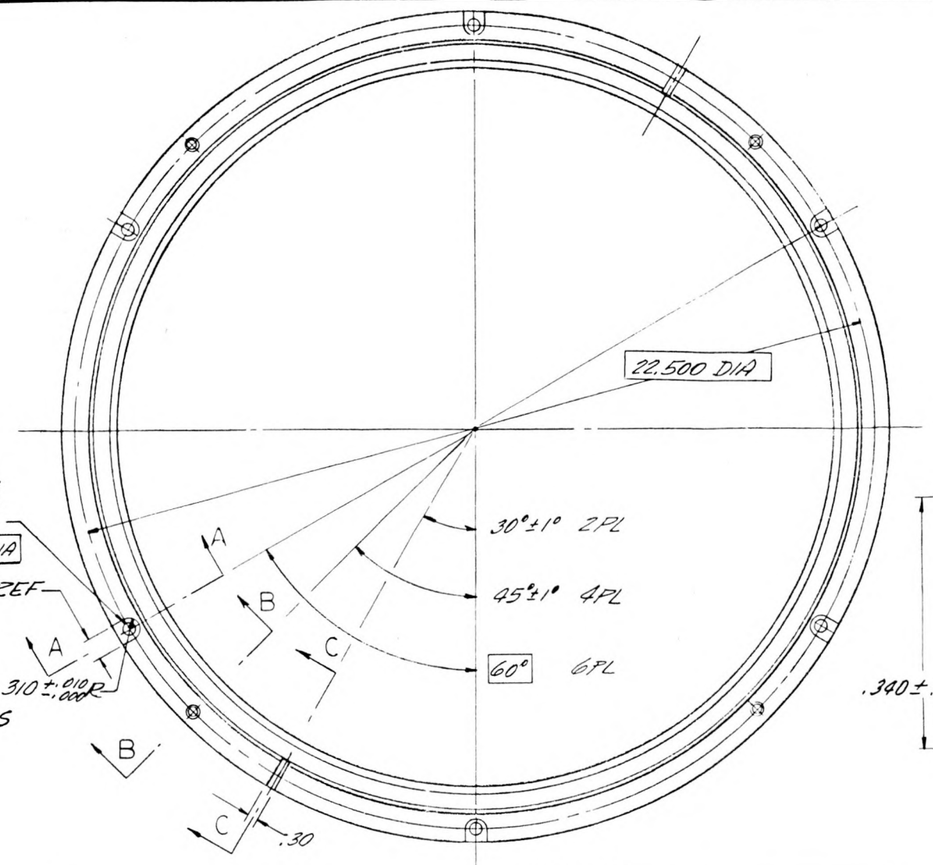
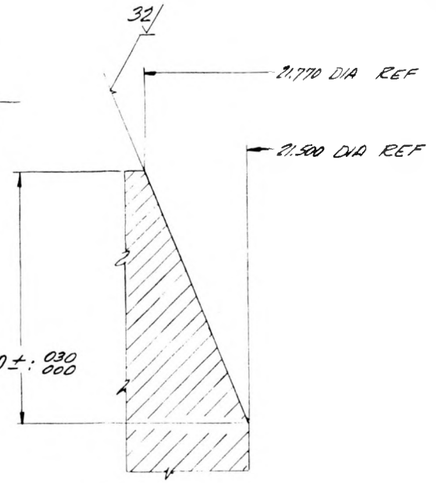
SCALE 1/1

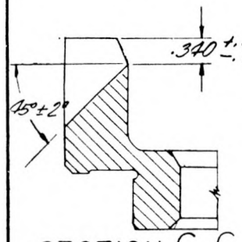


SECTION B-B 4 PLACES
SCALE 1/1





DETAIL D
SCALE 10/1



SECTION C-C
2 PLACES
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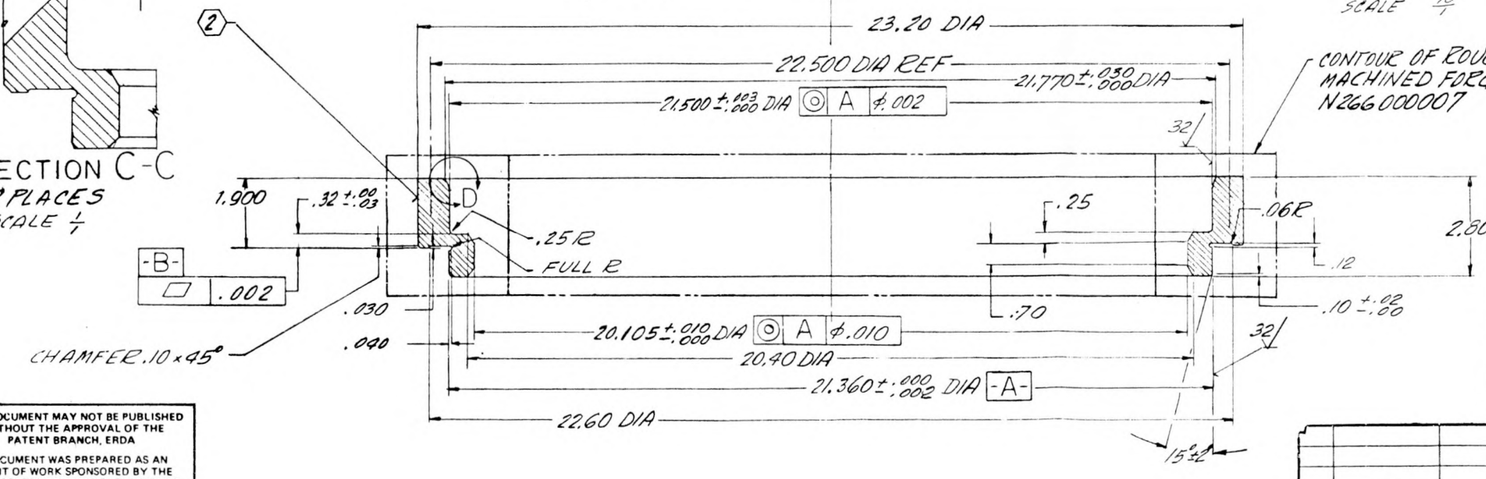

QTY PER ASSY	FIND NO	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	MFG FSCM NO. AND PART OR IDENTIFYING NO	DWG SPECIFICATIONS, SIZES, NO. TYPE, GRADE, ETC.
1		N266000012-01	SHIELD			

PARTS LIST

DASH NO.	NEXT USING DWG	MODEL
-01	N266MM015	N266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/32
.XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040	+.001 −.001
.041	THRU	.130	+.002 −.001
.131	THRU	.229	+.003 −.001
.230	THRU	.500	+.004 −.001
.501	THRU	.750	+.005 −.001
.751	THRU	1.000	+.007 −.001
1.001	THRU	2.000	+.010 −.001

DR BY	P. HENNER	5/15/78
CHK BY		
M & P		6/4/78
STRESS		

Rockwell International Corporation
Atomics International Division

SHIELD INSERT - PUMP (ISIP)

SIZE	CODE IDENT NO.	DRAWING NO.
D	09974	

SCALE 2/1 REV. 01 SHEET 1

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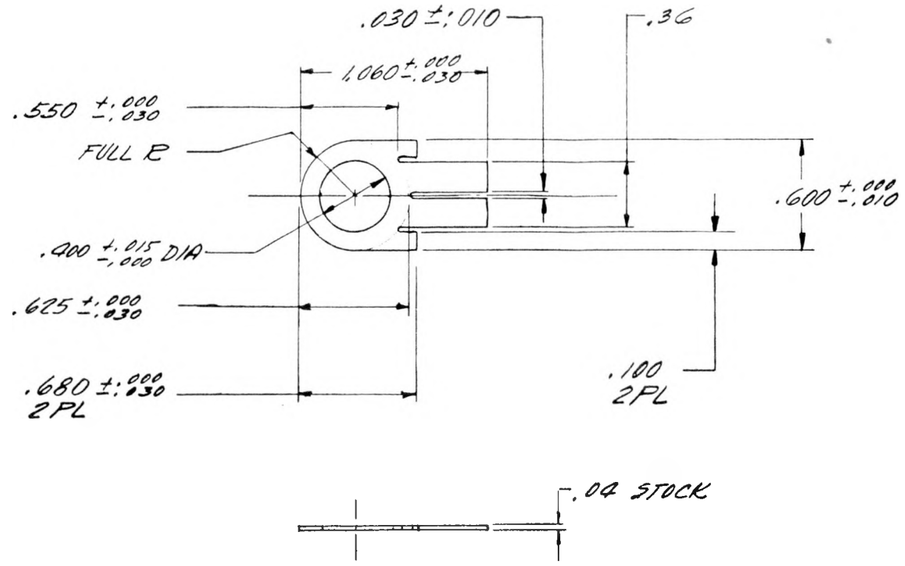
RELEASED
ENGINEERING DEPT.

Figure A1-2-16
Page A1-0-18

N266000012

N2660MM000001

REVISIONS EO. 86510			
LTR	DESCRIPTION	DATE	APPROVED



NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER STO115NA0019
2. IDENTIFY BY PART NO. & PURCHASE ORDER NO PER N001A0104001, TAG & BAG.
3. CLEAN PER N001A0110001, LEVEL 3
4. PACKAGE PER N001A0116001, LEVEL B

Figure A1-2-17
Page A1-0-19

QTY REQD	FIND NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						005
						004
						003
						002
	1	N2660000024	WASHER	TYPE 304 SHEET	SA240	001

PARTS LIST

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

DASH NO.	NEXT USING DWG	MODEL
-01	N2660000015	N266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/32
.XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040 : + .001 — .001
.041	THRU	.130 : + .002 — .001
.131	THRU	.229 : + .003 — .001
.230	THRU	.500 : + .004 — .001
.501	THRU	.750 : + .005 — .001
.751	THRU	1.000 : + .007 — .001
1.001	THRU	2.000 : + .010 — .001

DR BY	P.JENCKS	6-5-78
CHK BY	V. Spitsa	6/6/78
E.G. Anderson	C.O. Morgan	6/16/78
	731-338	
M. Lund Lee	Ty Harlan	6-27-78
M & P		6/20/78
STRESS	K. Hagny	6-26-78

Rockwell International Corporation
Atomics International Division

WASHER, TAB LOCK
(ISIP)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE 2/1 | REV | D-1 | SHEET 1

N2660000024 D1

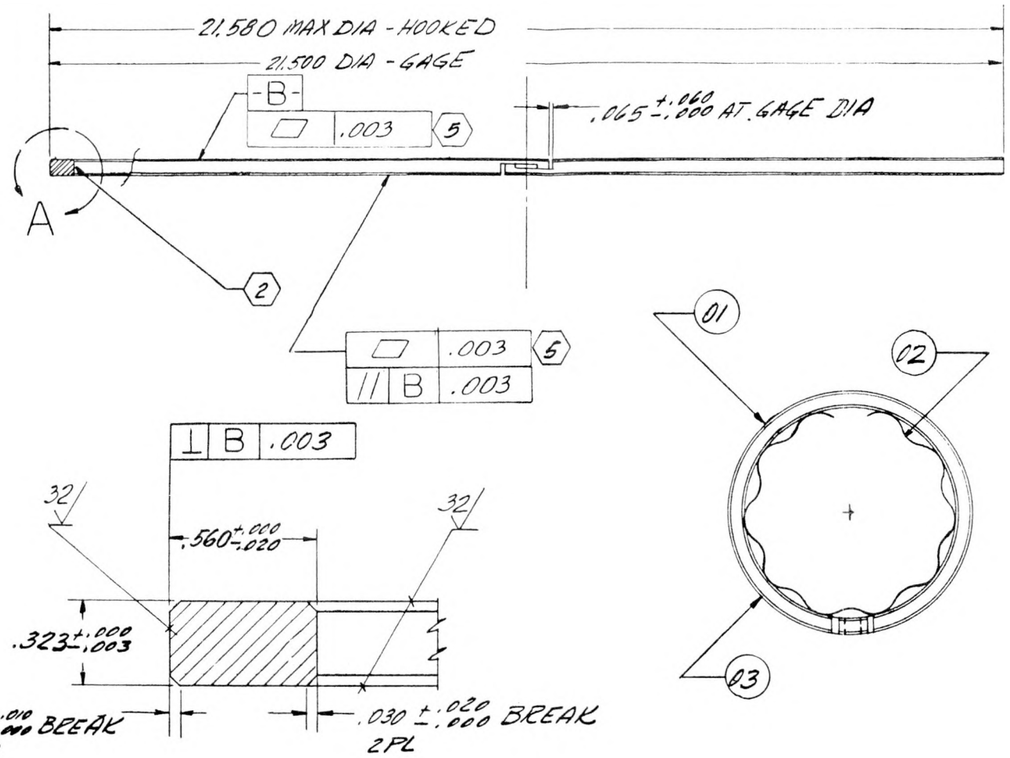
8/74 DIETERICH-POST CLEARPRINT 1000-6

N2660MM000001

REVISIONS EO 85450			
LTR	DESCRIPTION	DATE	APPROVED

Figure A1-2-18

Page A1-0-20



VIEW A

SCALE 3/1

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER STD115NA0049
2. SUPPLIER TO IDENTIFY ITEM WITH PART NUMBER AND SOURCE CONTROL DRAWING NUMBER N266E000023-01
3. PACKAGING AND PACKING SHALL BE IN ACCORDANCE WITH SUPPLIER COMMERCIAL PRACTICE AND COMMON CARRIERS REGULATIONS
4. MATERIAL : NICKEL ALLOY ASME SA637 GRADE 718; PRECIPITATION HARDENED CONDITION; DOUBLE VACUUM MELTED
5. FLAT WITH A 21.5 LB WEIGHT PLACED ON THE SIDE FACE
6. ONLY THE ITEM DESCRIBED ON THIS DRAWING, WHEN PROCURED FROM THE SUPPLIER LISTED HEREON IS APPROVED BY ENERGY SYSTEMS GROUP, CANOGA PARK, CA., FOR USE IN THE APPLICATION SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY ENERGY SYSTEMS GROUP OR BY HEDL.

SOURCE CONTROL DRAWING

SOURCE OF SUPPLY		
SCD DASH NUMBER	SUPPLIER	SUPPLIER PART NO
-01	DOVER CORP/COOK AIRTOMIC DIVISION, LOUISVILLE, KY, 40201	AAI-15227

	05					005
	04					004
1	03	-03	MARCEL SPRING	302 SST	MIL-S-5059C	003
1	02	-02	PISTON RING	(4)		002
	01	N266E000023-01	PISTON RING ASSY			001
QTY PER	FIND NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.

PARTS LIST

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 6-74

DASH NO.	NEXT USING DWG	MODEL
01	N266000015	266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/32
.XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"
.013 THRU .040 : + .001 — .001
.041 THRU .130 : + .002 — .001
.131 THRU .229 : + .003 — .001
.230 THRU .500 : + .004 — .001
.501 THRU .750 : + .005 — .001
.751 THRU 1.000 : + .007 — .001
1.001 THRU 2.000 : + .010 — .001

DR BY	P. FLEMMER	7/1/76
CHK BY		8/15/76
		8/13/76
M & P		
STRESS		

Rockwell International Corporation
Atomics International Division

PISTON RING - DIFFUSER SHROUD SEAL (1SIP)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE 1/2 SHEET

N266E000023

8/74 DIETERICH-POST CLEARPRINT 1000-B
FORM 741-F-7 NEW 6-75
FORM RI10-PI-2 REV. 5-73

N2660MM000001

REVISIONS LO. 86370			
LTR	DESCRIPTION	DATE	APPROVED

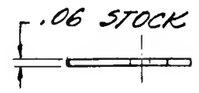
NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1 DRAWING INTERPRETATION PER ST0115 NA 0019

2 IDENTIFY BY PART NO. & PURCHASE ORDER NO PER N001A0104001, TAG AND BAG.

3 CLEAN PER N001A0110001, LEVEL 3.

4 PACKAGE PER N001A0116001, LEVEL B.



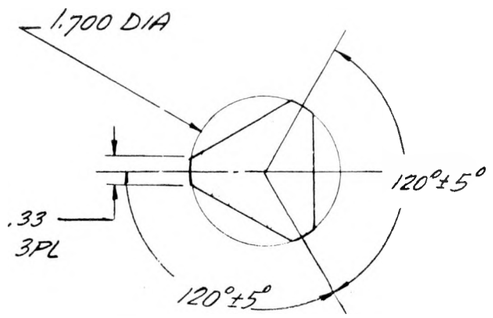


Figure A1-2-19
Page A1-0-21

N2660000022

PARTS LIST

QTY REQD	FIG. NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						005
						004
						003
						002
1		N266000022-01	TAG	SST 304	REVISE TO 2 SHEET	001

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

DASH NO.	NEXT USING DWG	MODEL
-01	N266R000015	266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/32
.XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040 : + .001 — .001
.041	THRU	.130 : + .002 — .001
.131	THRU	.229 : + .003 — .001
.230	THRU	.500 : + .004 — .001
.501	THRU	.750 : + .005 — .001
.751	THRU	1.000 : + .007 — .001
1.001	THRU	2.000 : + .010 — .001

DR BY	P.JENCEK	3-17-78
CHK BY	K. Dostie	4/26/78
PROJ. ENGR	D. Goodman	731-3301
M & P		6/29/78
STRESS		6/26/78

Rockwell International Corporation
Atomics International Division

TAB - BOLT RETAINER

(151P)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE 1/1 REV D-1 SHEET 1

8/74 DIETERICH-POST CLEARPRINT 1680-8

FORM N110-N-2 REV. 3-73

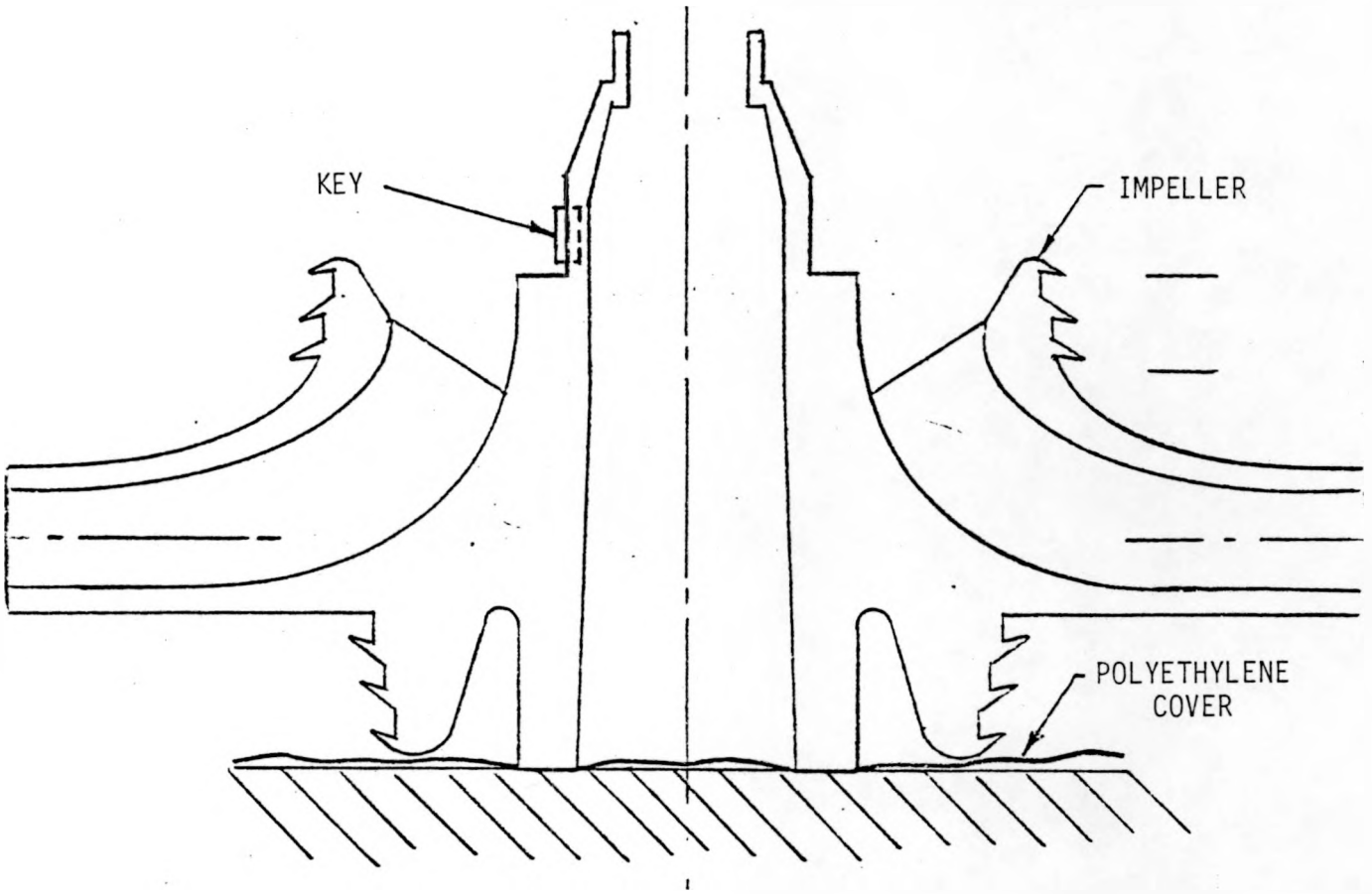


Figure A1-2-20. Impeller Facing Up with Impeller Key, on Polyethylene Covered Surface

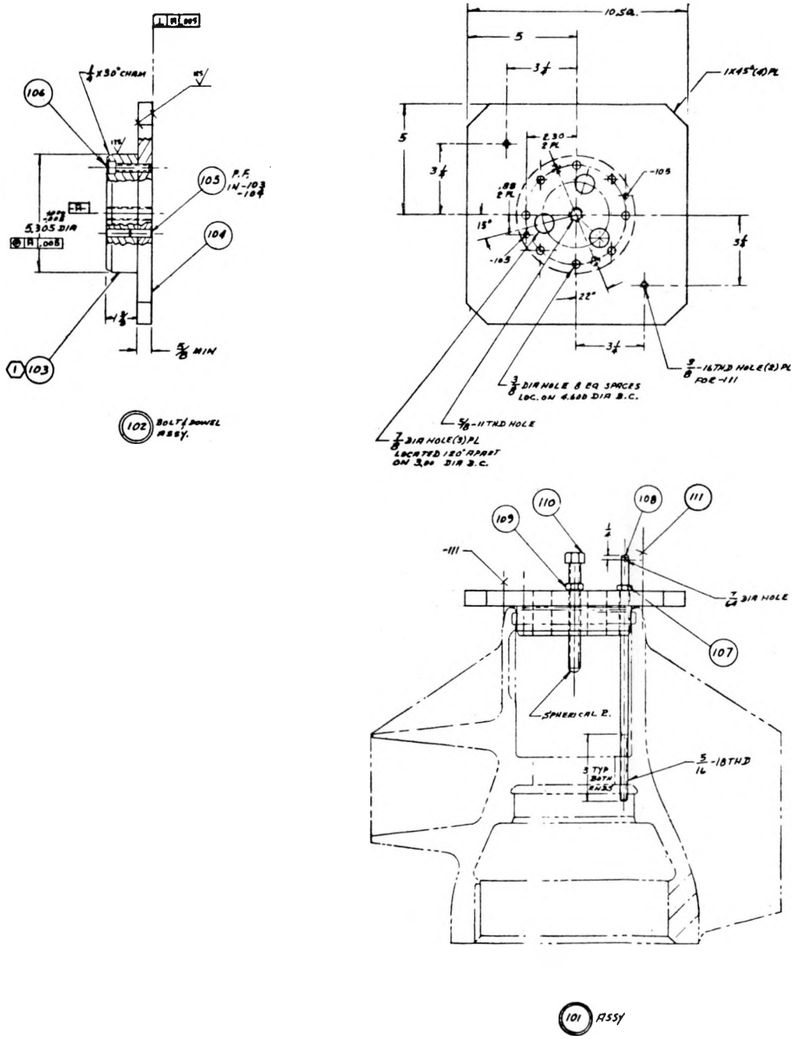
REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
	PRE RELEASE 1-27-78 FINAL RELEASE 8-11-8		

N2660MM000001

TOOL FUNCTION

1. TO CLAMP INDUCER FOR LIFTING PURPOSES.
2. TO CLAMP INDUCER & IMPELLER AS AN ASSY.
3. TO BE USED AS A REFERENCE GAGING SURFACE.

IDENTIFY
TOOL NO.
PART NO.
DATE
PROPERTY OF D.O.E.



NOTES

1. ATTACH PER BOLT & DOWEL CONSTR. LOCATE FASTENING APPROP. WHERE SHN.
2. BREAK ALL UNNECESSARY SHARP EDGES.
3. MAY BE PURCHASED FROM: SLATER TOOL & GAGES 8505 YATES AVE. L.A. CA. 90040 TEL 723-7251.
4. PROVIDE STORAGE BOX.

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ZONE	MATERIAL	DATA SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
2	-111	DOWEL HOIST RINGS	5 D	STL	CL-10-SNS (THOMAS LOAD HOIST CO.)	011
1	-110	HEX HD CAP SCREW	6 D	STL	5/8-11 THD X 5	010
1	-109	JAM NUT	6 B	STL	5/8-11 THD	009
8	-108	ROUND BAR	5 D	ALLOY STL 4130	5/16 X 2.18 X 11	008
8	-107	JAM HEX NUT	5 C	STL	5/16-18 THD	007
2	-106	SOCKET CAP SCREW	8 F	STL	5/16-18 THD X 1 1/2	006
2	-105	DOWEL PIN	7 F	STL	5/16 DIA X 1	005
1	-104	PLATE	7 A	CRES TYPE 304	3/8 X 10 X 10	004
1	-103	ROUND BAR	8 E	CRES TYPE 304	5 7/8 DIA X 1 1/2	003
1	-102	BOLT & DOWEL ASSY	8 D		5/8-103-106-105-106	002
1	-101	ASSY	6 A		5/8-102 THRU -111	001

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/64
.XXX = ± .010
DO NOT SCALE PRINT

DR BY ERIAS 7/20/78
CHK BY P. PARKER 8/15/78
APPD BY
MFG

Rockwell International Corporation
Atomics International Division

END PLATE

SIZE E | CODE IDENT NO 09974 | DRAWING NO
SCALE 1/2 | SHEET 1 OF 1

NEXT USING DWG | MODEL
APPLICATION

Figure A1-2-21
Page A1-0-23

F-6002450

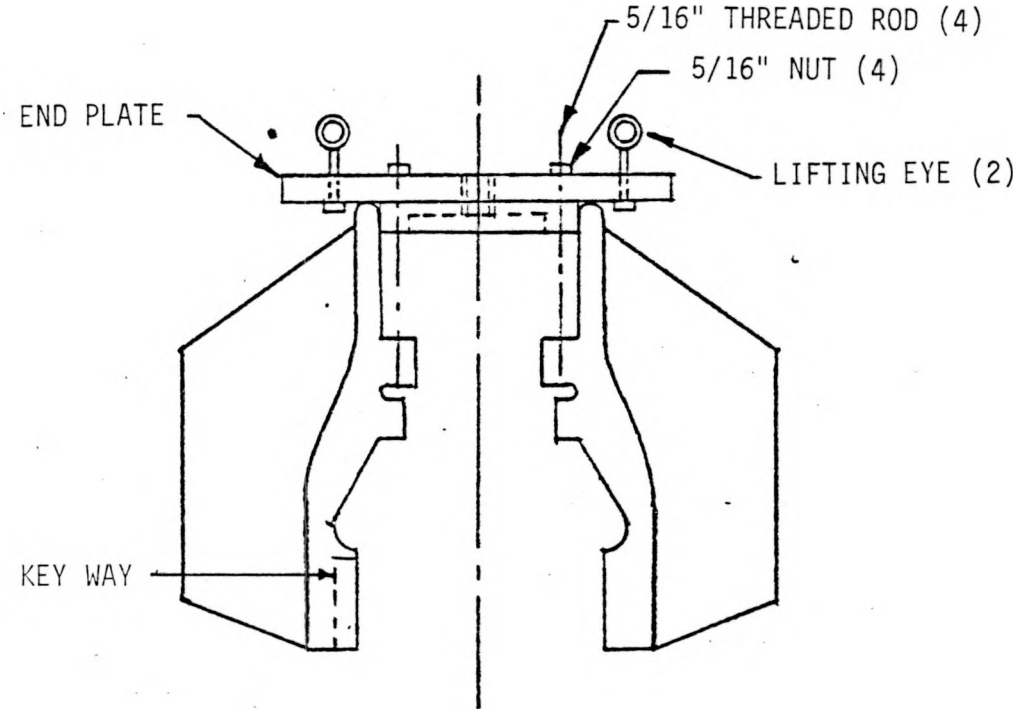


Figure A1-2-22. Inducer Internal Flange with End Plate Attached

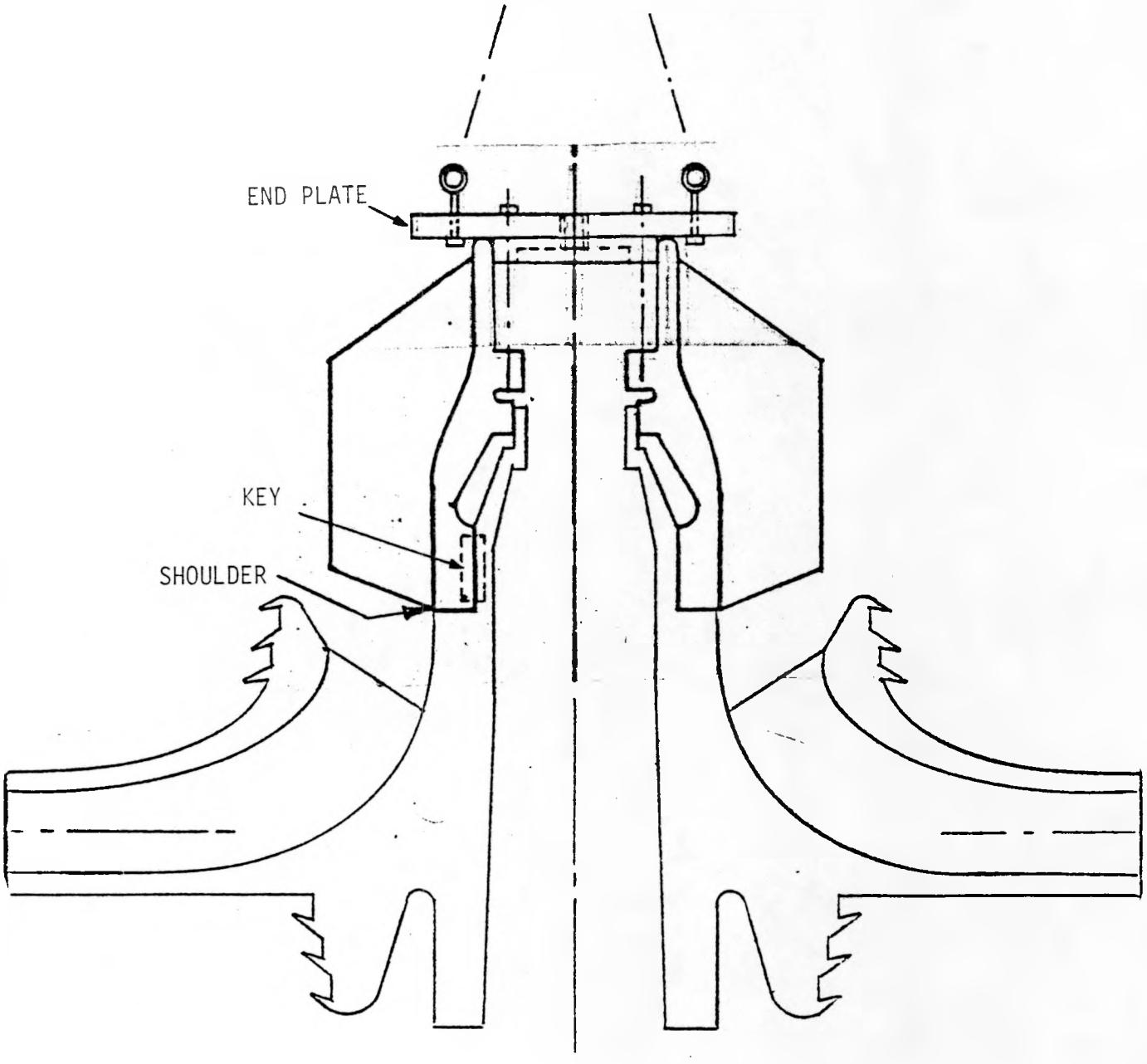


Figure A1-2-23. Inducer/Impeller Assembly with Inducer Key and End Plate Attached

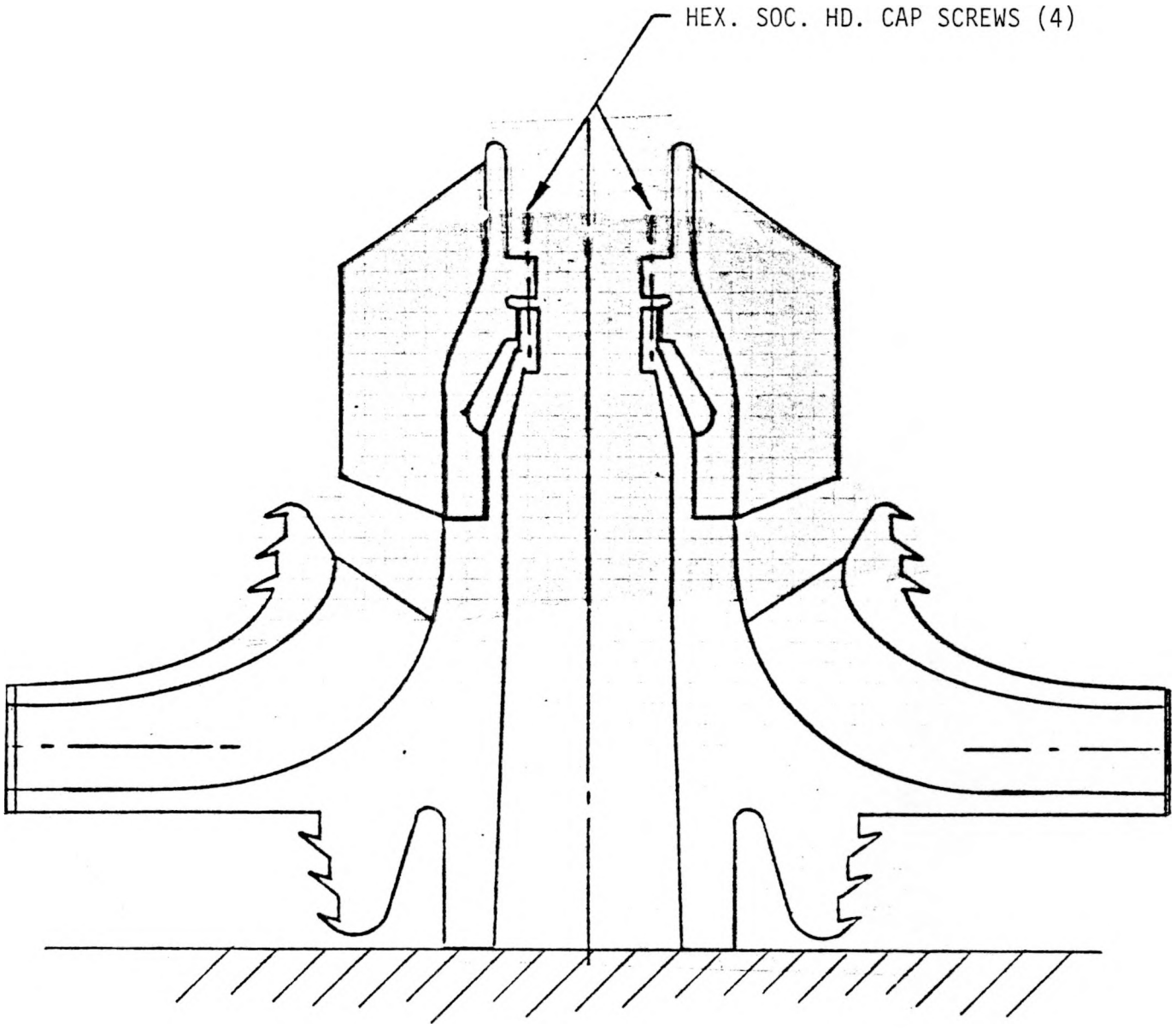


Figure A1-2-24. Inducer/Impeller Assembly with Hex Socket Head Cap Screws

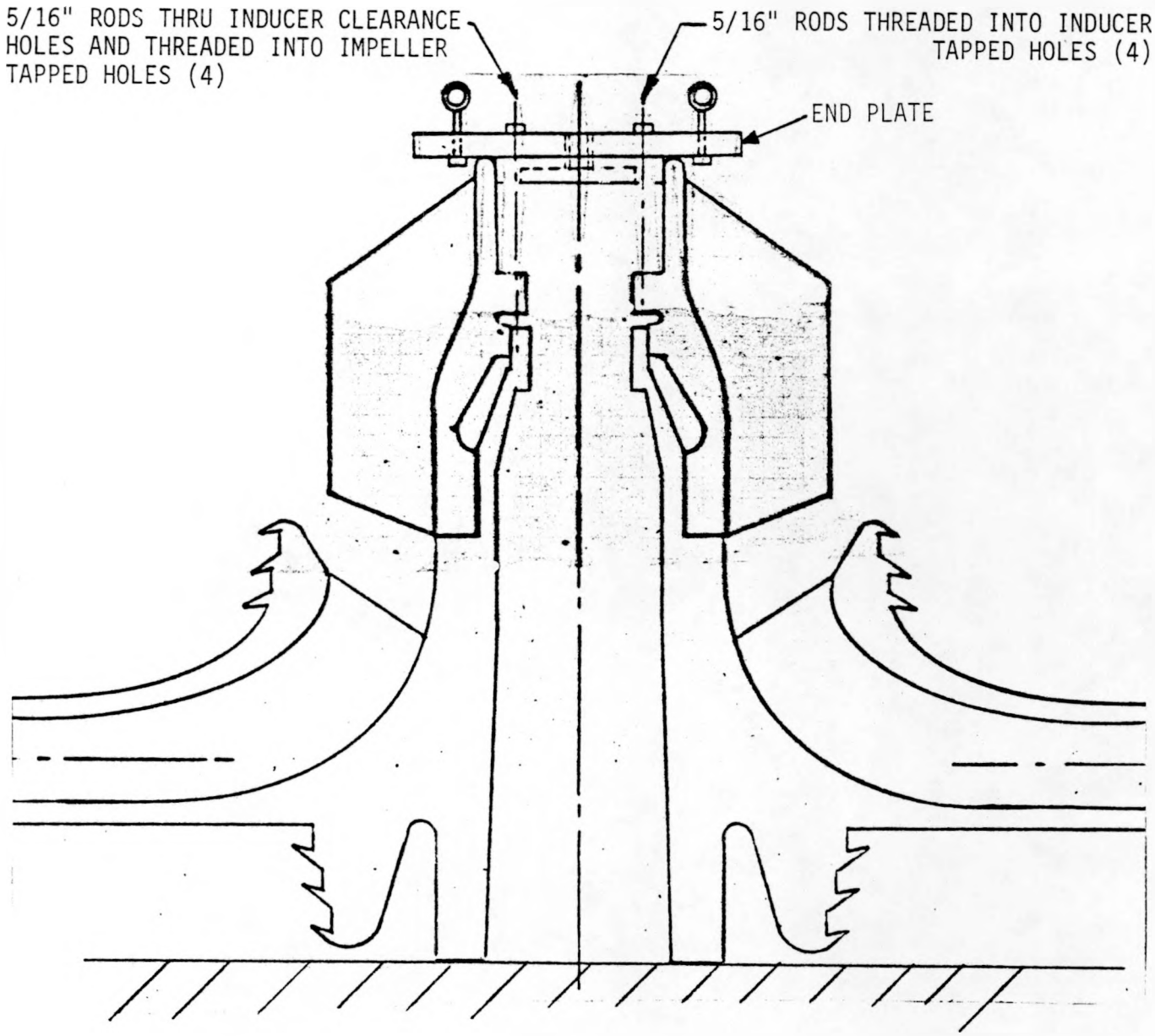


Figure A1-2-25. Inducer/Impeller Assembly with Threaded Rods and End Plate Attached

LTR	DESCRIPTION	DATE	APPROVED
02	SEE REVISION RECORD		

N2660MM000001

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1 DRAWING INTERPRETATION PER STD115-NA0019

(7) IDENTIFY BY PART NO. AND PURCHASE ORDER NUMBER PER N001A0104001 ELECTROCHEMICAL ETCH

3 CLEAN PER N001A0110001, LEVEL 3.

4 PACKAGE PER N001A0116001, LEVEL B

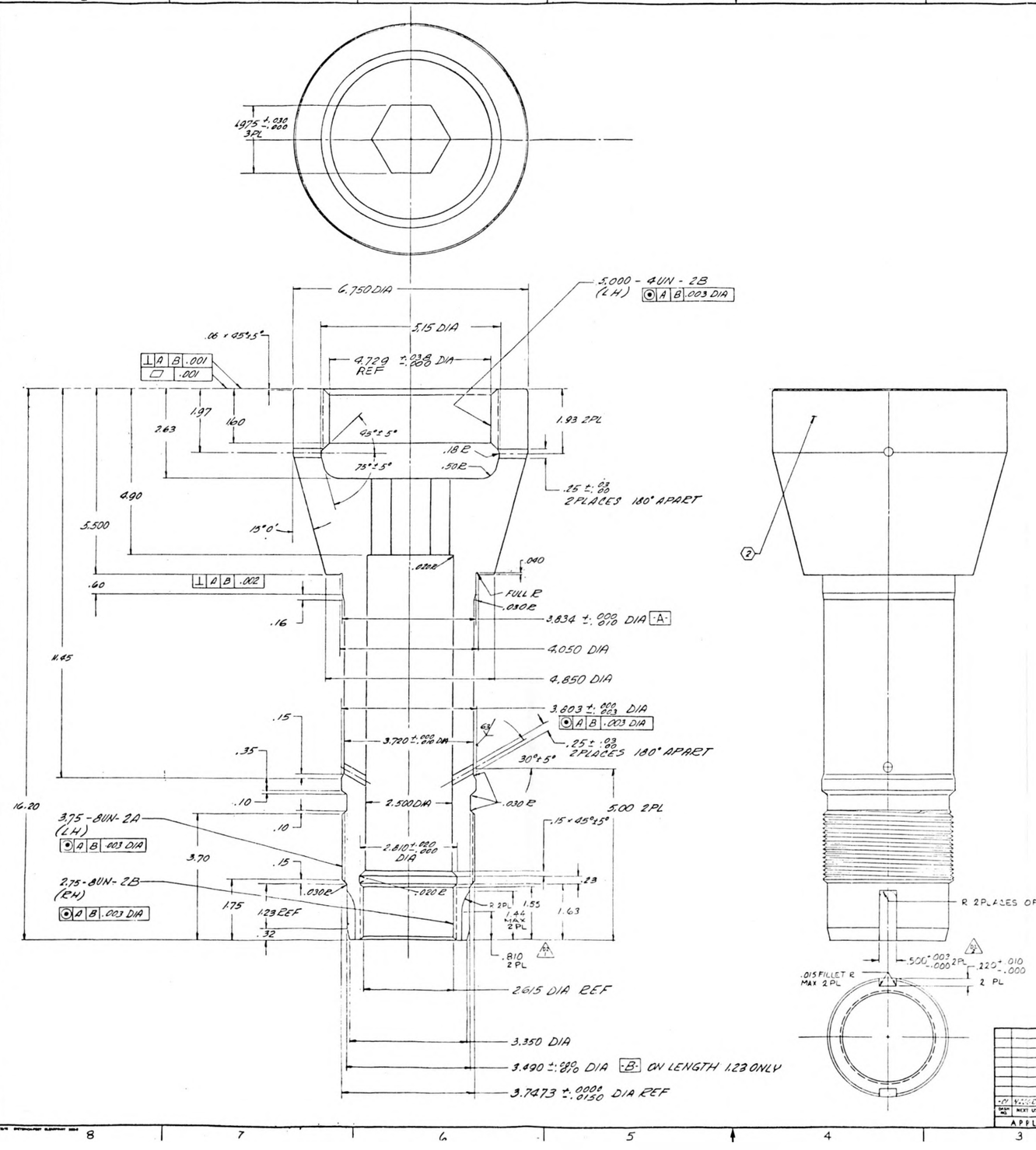


Figure A1-2-26
Page A1-0-28

RELEASED
ENGINEERING DEPT.

ITEM	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	MATL SPEC NO. OR SPECIFICATION
1	N2336000-01	TIE BOLT		

DR BY	CHK BY	Rockwell International Corporation Atomics International Division
		TIE BOLT - (1515)

SIZE	CODE IDENT NO.	DRAWING NO.
E	09974	

SCALE 1/1 SHEET 1

NEXT ASSY USED ON	APPLICATION
NEXT USING DWG	MODEL

REVISIONS EO 83279			
LTR	DESCRIPTION	DATE	APPROVED

N2660MM000001

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER STD115 UA019.
2. IDENTIFY BY PART NO. AND PURCHASE ORDER NUMBER PER N001A0104001, BAG AND TAG
3. CLEAN PER N001A0110001, LEVEL 3.
4. PACKAGE PER N001A0116001, LEVEL B

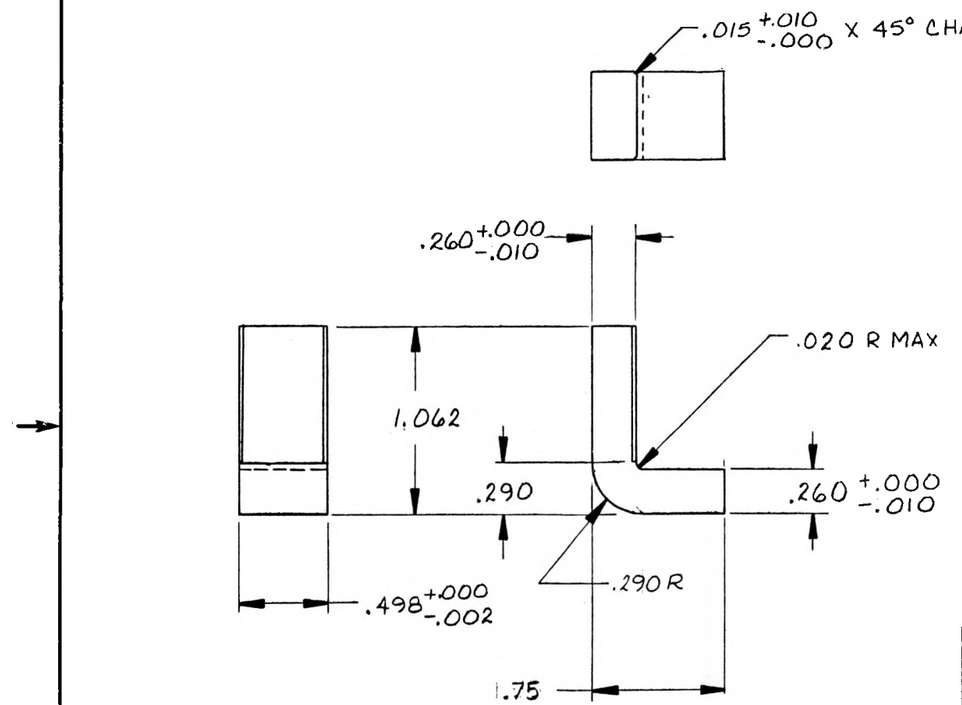


Figure A1-2-27
Page A1-0-29

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
					005
					004
					003
					002
	N2660000037-01	KEY	SST	ASTM A 479	001

PARTS LIST

DASH NO.	NEXT USING DWG	MODEL
-01	N2616000032	N266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS .XX = ± .03, .XXX = ± .010 | ANGLES ± 30' | FRACTIONS ± 1/32

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040	± .001 — .001
.041	THRU	.130	± .002 — .001
.131	THRU	.229	± .003 — .001
.230	THRU	.500	± .004 — .001
.501	THRU	.750	± .005 — .001
.751	THRU	1.000	± .007 — .001
1.001	THRU	2.000	± .010 — .001

DR BY M GRISHAM 10-19-78
CHK BY K. Doltsinis 10/20/78
T.J. Boardman by SLC 11/7
Ed Sonin 11/7 721-5860 E. Anderson 11/7/78
M&P Jerry Page 11/22/78
STRESS

Rockwell International Corporation
Atomics International Division

KEY - TIE BOLT
(1S1P)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE 2/1 SHEET

FORM N110-N-2 REV. 3-73

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FORM 741-P-7 REV. 10-78

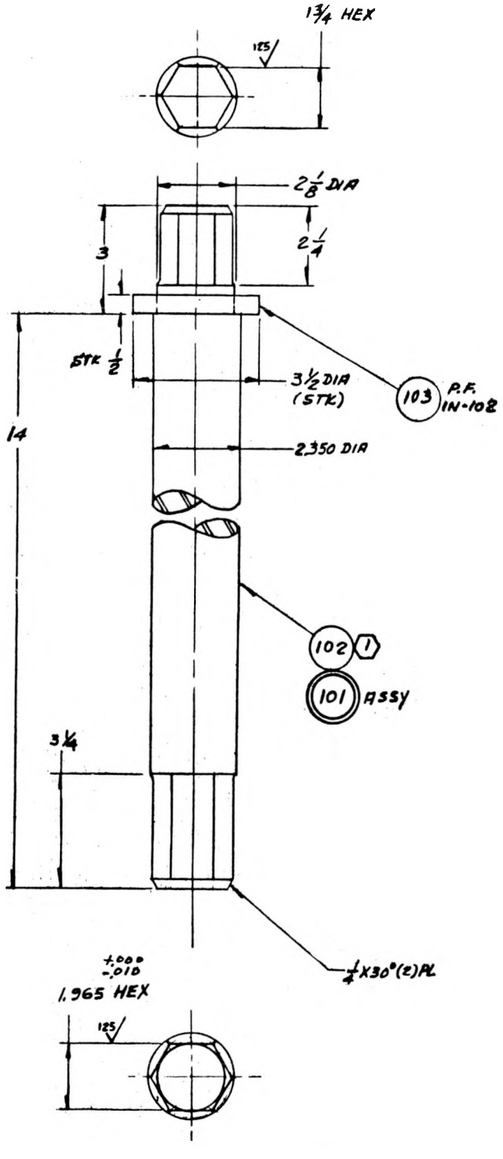
RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

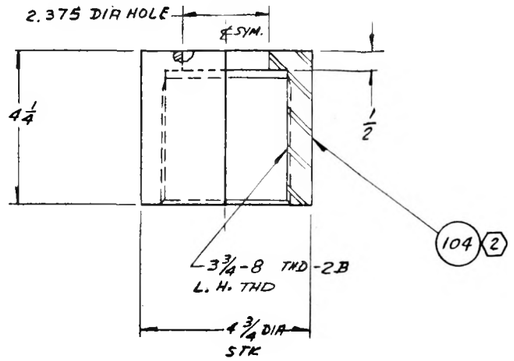
8/74 DIETERICH-POST CLEARPRINT 1888-8

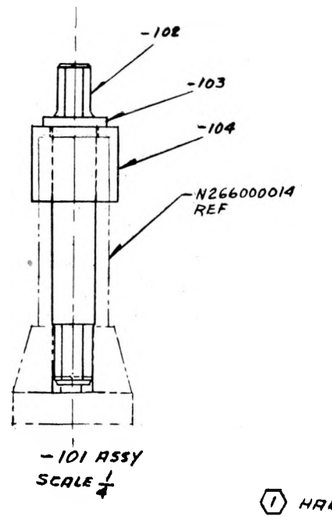
N2660000037 T1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
	PRE RELEASED 7-27-78 FINAL RELEASE 8-11-8		

N2660MM000001







-101 ASSY
SCALE 1/4

TOOL FUNCTION

ADAPTER TO SCREW ℄ TIGHTEN TO ℄ SPECIFIED TORQUE PART N2660000-14 TO PUMP SHAFT

IDENTIFY

TOOL NO.
PART NO.
DATE
PROPERTY OF D.O.E.

NOTES

1. HARDEN TO 36-40 Rc
2. INTERNAL THD TO BE FREE FITTING (-104 MUST TURN BY HAND FORCE).
3. BREAK ALL UNNECESSARY SHARP EDGES.
4. PROVIDE STORAGE BOX

Figure A1-2-28
Page A1-0-30

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
					005
1	-104	ROUND BAR	LOW CARB. H.R.S.	4 3/4 DIA X 4 1/4	004
1	-103	ROUND BAR	LOW CARB. H.R.S.	3 1/2 DIA X 1/2	003
1	-102	ROUND BAR	ALY. STL 4340 OR EQUV.	2 3/8 DIA X 17	002
1	-101	ASSY.		C/O -102-103	001

PARTS LIST

DASH NO.	NEXT USING DWG	MODEL

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON: DECIMALS .XX = ± .03, .XXX = ± .010; ANGLES ± 30'; FRACTIONS ± 1/16

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013 THRU .040	+ .001 − .001
.041 THRU .130	+ .002 − .001
.131 THRU .229	+ .003 − .001
.230 THRU .500	+ .005 − .001
.501 THRU .750	+ .006 − .001
.751 THRU 1.000	+ .007 − .001
1.001 THRU 2.000	+ .010 − .001

DR BY FRIAS 7/13/78
CHK BY R. FREDERICK 7/13/78
W. DOSHIER 8-10-78
M & P
STRESS

Rockwell International Corporation
Atomics International Division

GUIDE NUT

SIZE	CODE IDENT NO.	DRAWING NO.
D	09974	

SCALE 1/4 SHEET 1

T6002449

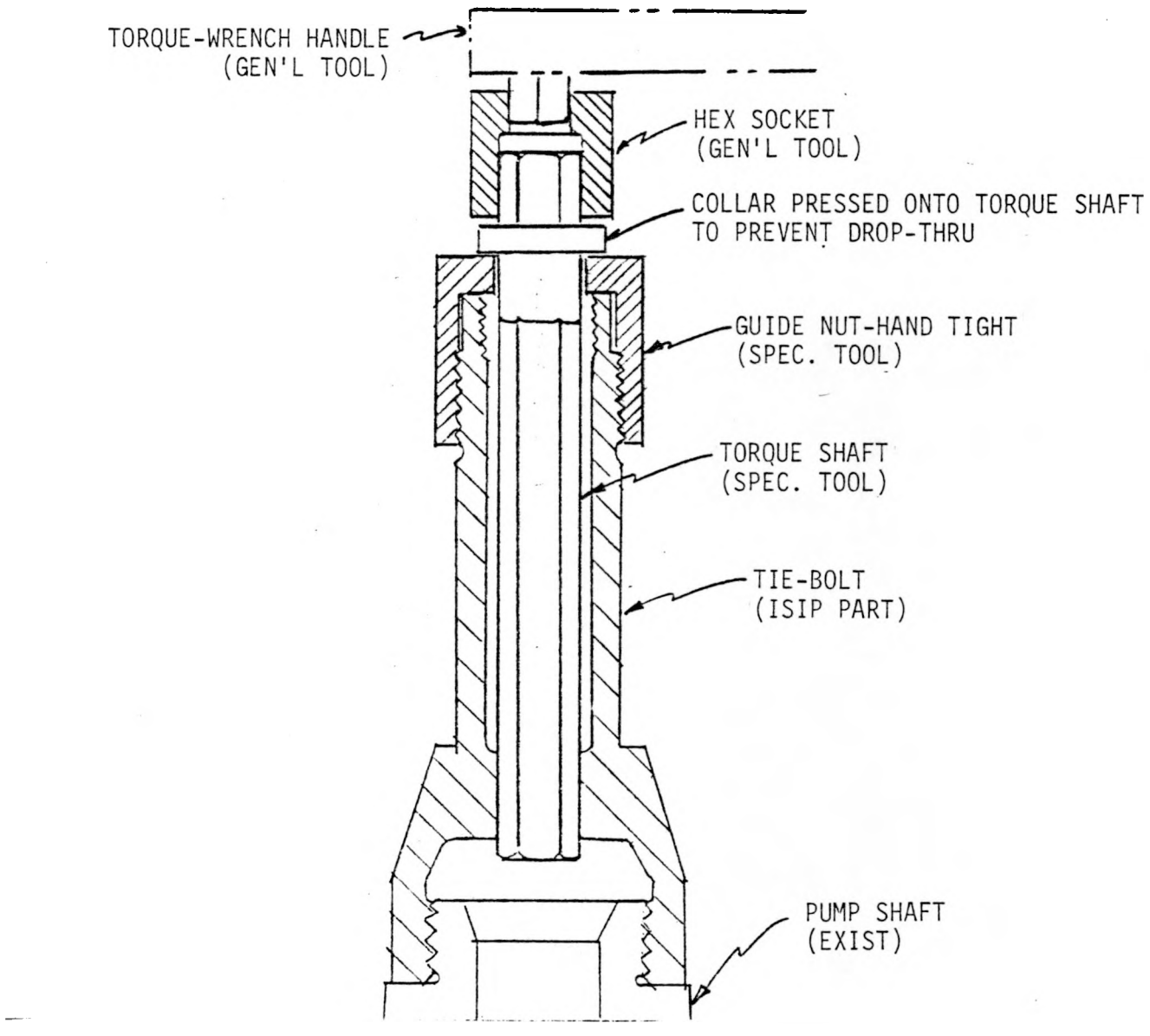
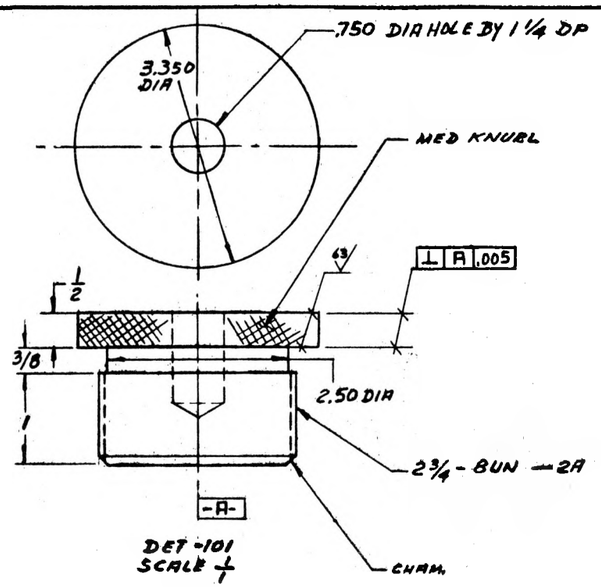
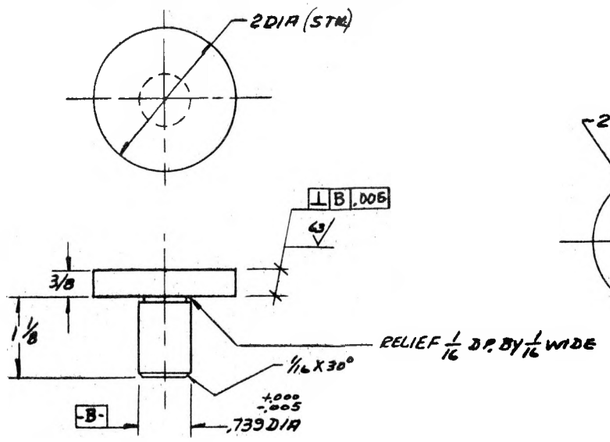


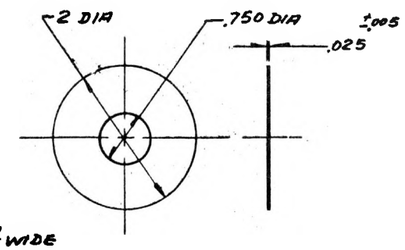
Figure A1-2-29. Attaching Torque Wrench to Tie-bolt and Torque Shaft



DET-101
SCALE 1/1



DET-102
SCALE 1/1

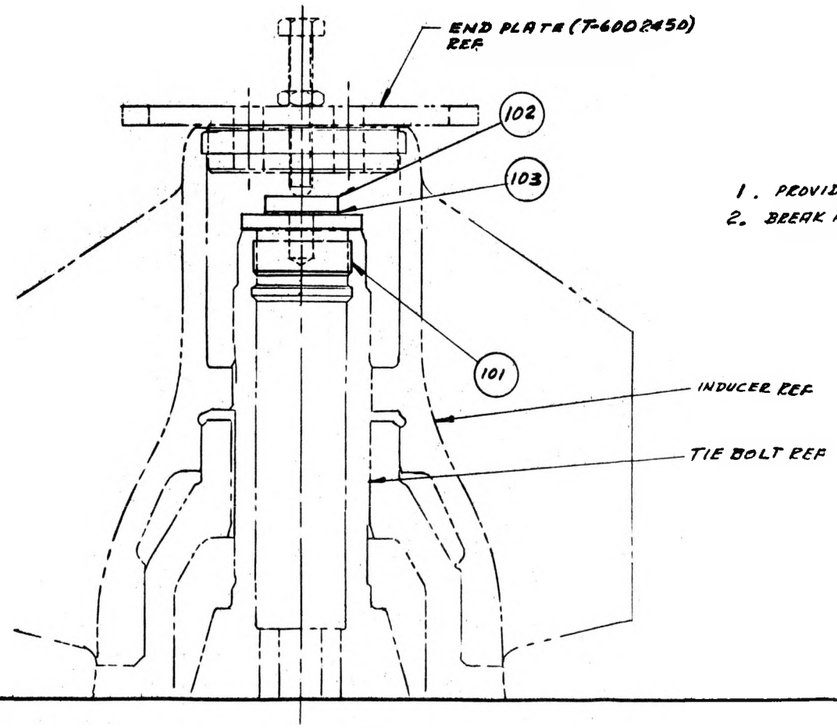


DET-103
SCALE 1/1

TOOL FUNCTION

DETS-101-102-103 ARE TO BE USED WITH TOOL (T-600 2450) FOR GAGING TENSION OF TIE-BOLT.

IDENTIFY
TOOL NO.
PART NO.
DATE
PROPERTY OF D.O.E.



NOTE

1. PROVIDE STORAGE BOX FOR ALL DETS.
2. BREAK ALL UNNECESSARY SHARP EDGES.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
	PRE RELEASE 7-27-78		
	FINAL RELEASE 8-11-8		

N2660MM000001

Figure A1-2-30
Page A1-0-32

QTY REQD	FIND NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS
	05				
	04				
1	03	-103	SHIM (STK)	STL	2 (O.D.) X 3/4 (I.D.) X .025 THICK
1	02	-102	ROUND BAR	CRES TYPE 304	2 DIA X 2
1	01	-101	ROUND BAR	CRES TYPE 304	3 1/2 DIA X 2 3/8

PARTS LIST

DASH NO.	NEXT USING DWG	MODEL

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS ANGLES FRACTIONS
.XX = ± .03 ± 30' ± 1/8
.XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"
.013 THRU .040 : +.001 −.001
.041 THRU .130 : +.002 −.001
.131 THRU .229 : +.003 −.001
.230 THRU .500 : +.004 −.001
.501 THRU .750 : +.005 −.001
.751 THRU 1.000 : +.007 −.001
1.001 THRU 2.000 : +.010 −.001

DR BY	FRIAS 7/21/78
CHK BY	R. FREDERICK 7/26/78
M. DOSHER	8-10-78
M&P	J.W. Matthews 8-11-8
STRESS	

Rockwell International Corporation
Atomics International Division

MEASUREMENT BUTTON

SIZE	CODE IDENT NO.	DRAWING NO.
D	09974	

SCALE 1/1 UNITED — SHEET 1 OF 1

T-6002448

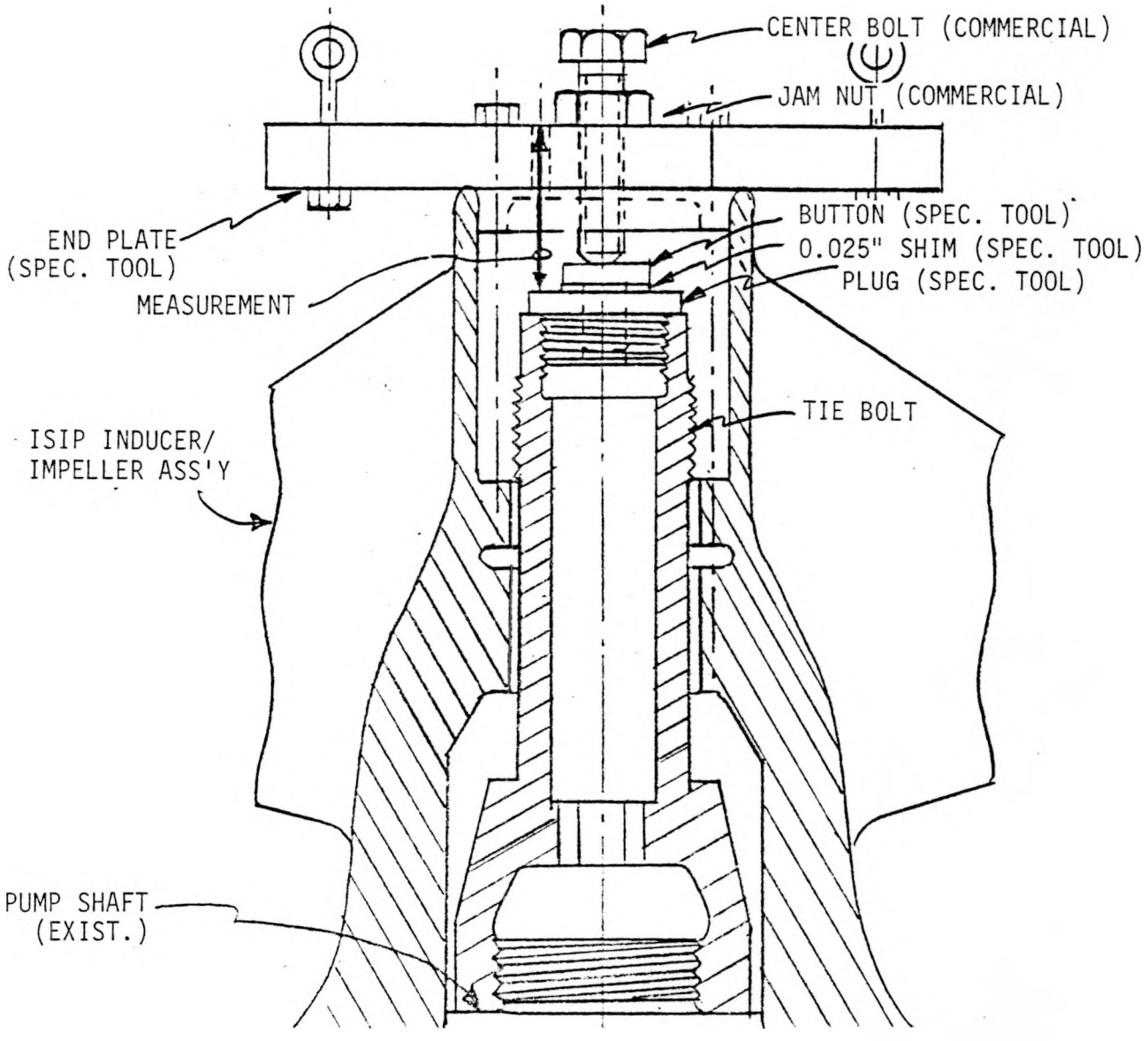
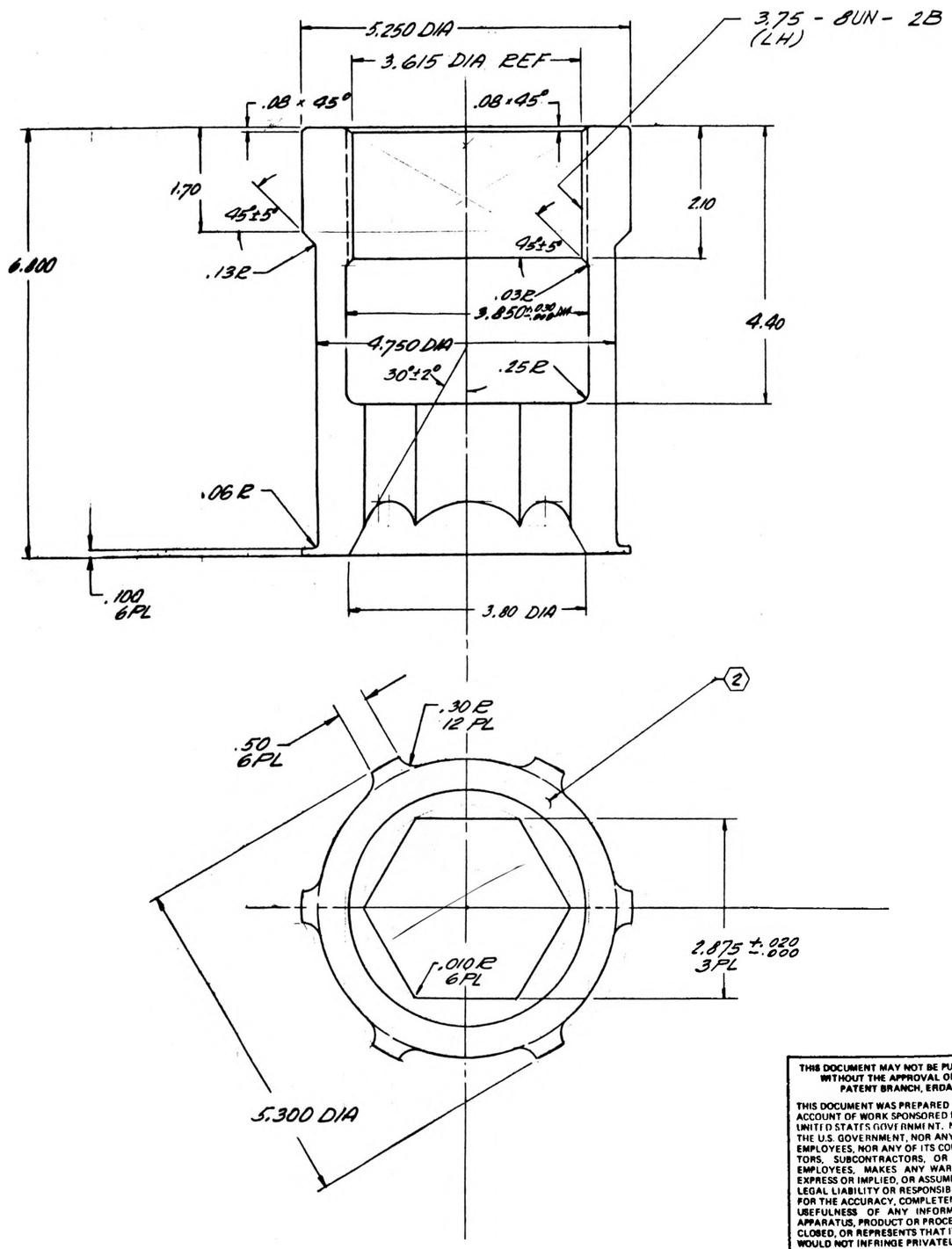


Figure A1-2-31. End Plate to Screw Plug Measurement

TO BE FURNISHED

Figure A1-2-32. Inducer/Impeller Assembly Special Puller, Drawing No. T6002490



REVISIONS EO 86510			
LTR	DESCRIPTION	DATE	APPROVED

N2660MM000001

NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1 DRAWING INTERPRETATION PER STO115NA0019

(2) IDENTIFY BY PART NO. AND PURCHASE ORDER NO. PER N001A0104001 ELECTROCHEMICAL ETCH

3 CLEAN PER N001A0110001, LEVEL 3

4 PACKAGE PER N001A0116001, LEVEL B

Figure A1-2-33

Page A1-0-35

QTY PER	FIND NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	LINE NO.
						005
						004
						003
						002
	1	N266000020-01	NUT		MAKE FROM N266000008	001

PARTS LIST

FORM 761-P-7 REV 8-75

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 REV 8-74

DASH NO.	NEXT USING DWG	MODEL
-01	N266E000015	N 266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON: DECIMALS ANGLES FRACTIONS .XX = ± .03 ± 30' ± 1/32 .XXX = ± .010

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013 THRU .040	± .001	— .001
.041 THRU .130	± .002	— .001
.131 THRU .229	± .003	— .001
.230 THRU .500	± .004	— .001
.501 THRU .750	± .005	— .001
.751 THRU 1.000	± .007	— .001
1.001 THRU 2.000	± .010	— .001

DR BY	P. JENICEK	3-17-76
CHK BY	K. Foltin	4/24/78
PE-3.1.4.4	C.B. Simmons	4/4/78
	73-2330	
		4/6/78
M & P		6/29/78
STRESS	K. Jongsma 6-26-78	

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PUMP SHAFT NUT ADAPTER - (SIP)

SIZE	CODE IDENT NO.	DRAWING NO.
D	09974	

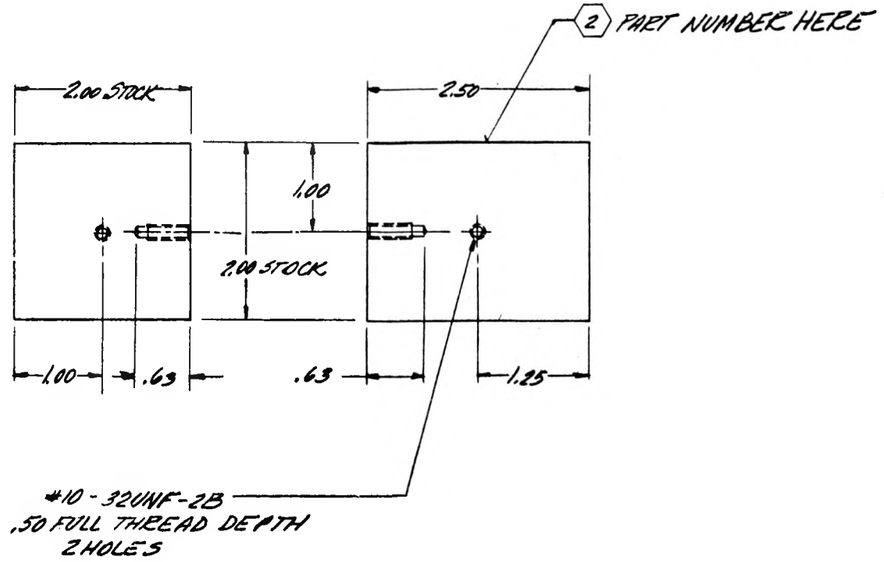
SCALE FULL | REV. L-1 | SHEET 1

FORM 1139-P-3 REV. 3-73

N2660MM000001

REVISIONS E.O. 85759

LTR	DESCRIPTION	DATE	APPROVED



NOTES: UNLESS OTHERWISE SPECIFIED ON THIS DRAWING

1. DRAWING INTERPRETATION PER ST OHSNA0019
2. IDENTIFY PER N001A0104001, ELECTROCHEMICAL ETCH
3. CLEAN PER N001A0110001, LEVEL 3
4. PACKAGE PER N001A0116001, LEVEL B

Figure A1-2-34
~~Sheet~~ 2

Page A1-0-36.

LINE NO.	DATA: SPECIFICATIONS SIZES, NOTES, VENDORS	MATERIAL	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	END NO
005					
004					
003					
002					
001	COMMERCIAL GRADE	SST 304 BAR	BLOCK	N2660000034-01	

PARTS LIST

FORM 741-P-7 NEW 8-78

RELEASED
ENGINEERING DEPT.
FORM 723-P-3 NEW 8-74

DASH NO.	NEXT USING DWG	MODEL
-01	N2660000032	266

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
DECIMALS XX = ± .03, XXX = ± .010; ANGLES ± 30'; FRACTIONS ± 1/32

DO NOT SCALE PRINT

HOLES NOTED "DRILL"

.013	THRU	.040	± .001 — .001
.041	THRU	.130	± .002 — .001
.131	THRU	.229	± .003 — .001
.230	THRU	.500	± .004 — .001
.501	THRU	.750	± .005 — .001
.751	THRU	1.000	± .007 — .001
1.001	THRU	2.000	± .010 — .001

DR BY	P. JENCEK	9/1/78
CHK BY		9/8/78
C. TORRUELLAS by Email 9-11-78	E. Anderson	9/14/78
J. Broadman 9-13-78		
M.E.		9/14/78
W.W. Dallas		
M & P		9/14/78
STRESS		9/18/78

Rockwell International Corporation
Atomics International Division

MOUNTING BLOCK - ACCELEROMETER (ISIP)

SIZE	CODE IDENT NO.	DRAWING NO.
C	09974	

SCALE FULL — SHEET

6/74 DIETZGEN-POST CLEARPRINT 1650-B

FORM N130-P1-C REV. 3-73

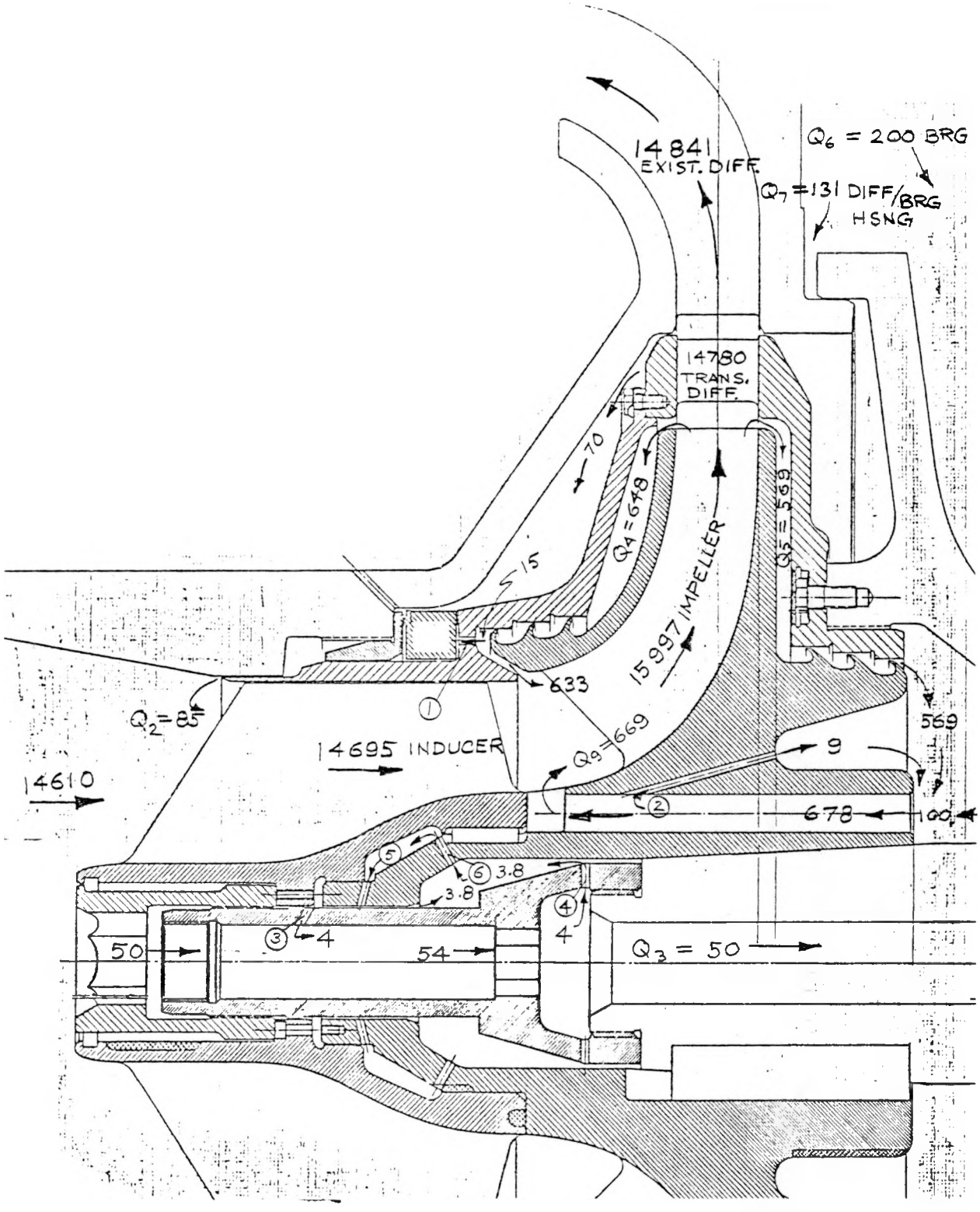


Figure A1-2-35. Internal Flow Diagram

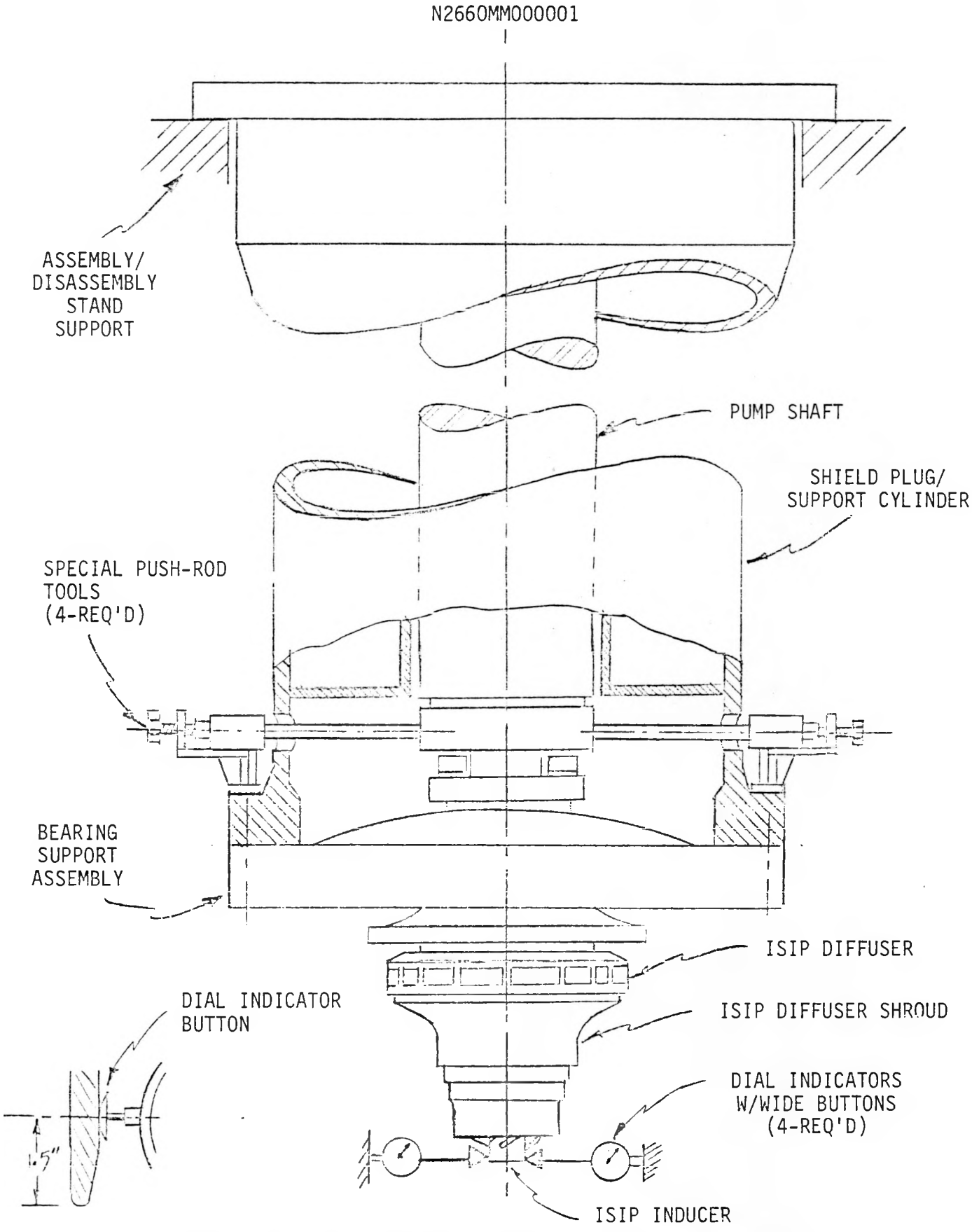


Figure A1-2-36. Push-Rod and Dial Indicator Arrangement

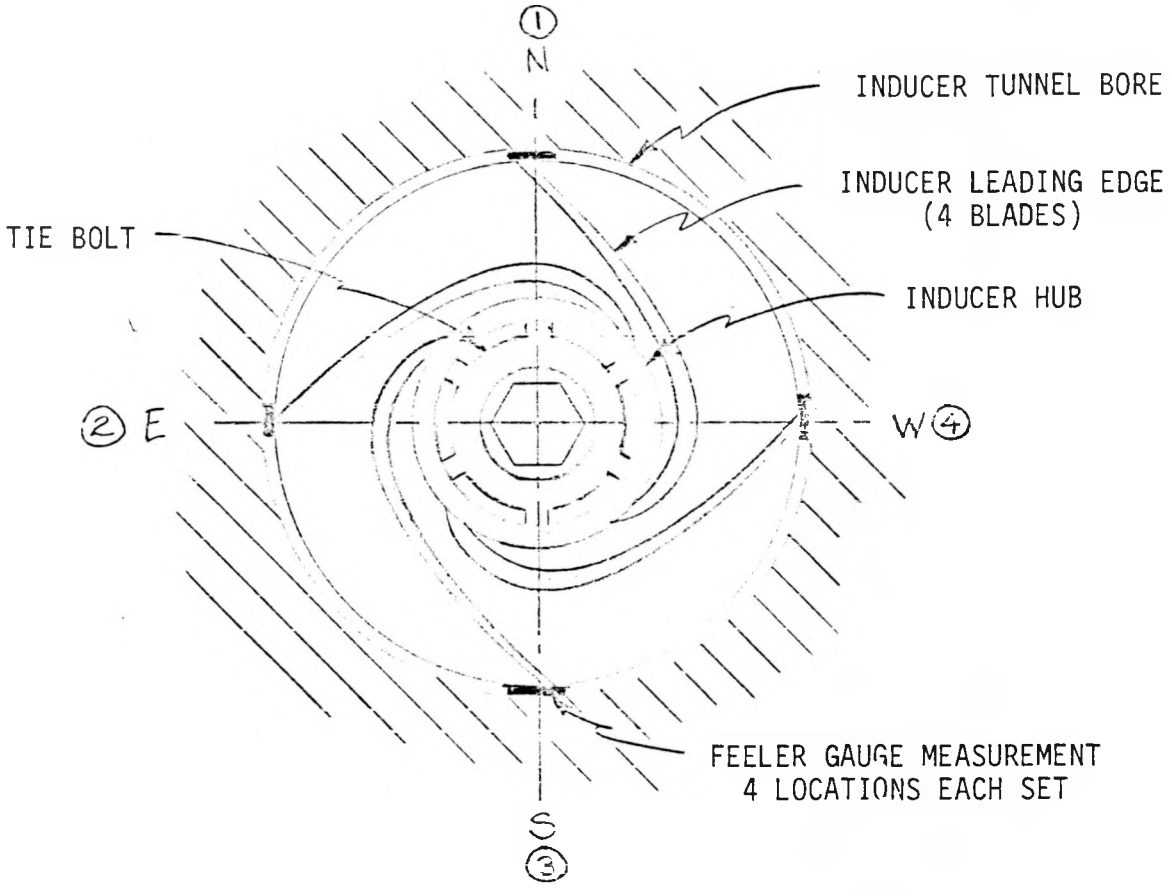


Figure A1-2-37. Inducer Inlet Looking UP, Showing Blade Tip Leading Edge Positions and Feeler Gauge Measurement Locations

TABLE A1-2-1

MEASUREMENT SEQUENCE

SAMPLE DATA SHEET

Upper Keyway Position	Shaft Contact Side (Pushed to)	A Dial Indicator Readings				B Feeler Gauge Measurements			
		1 North	2 East	3 South	4 West	1 North	2 East	3 South	4 West
I.	a) North								
	b) South								
	c) East								
	d) West								
II. (Pos. I + 90°)	a) North								
	b) South								
	c) East								
	d) West								
III. (Pos. I + 180°)	a) North								
	b) South								
	c) East								
	d) West								
IV. (Pos. I + 270°)	a) North								
	b) South								
	c) East								
	d) West								
V. (Same as Pos. I)	a) North								
	b) South								
	c) East								
	d) West								

TABLE A1-2-2

CALCULATIONS SHEET

SAMPLE CALCULATION SHEET

Upper Keyway Position	Shaft Motion Direction	C Dial Indicator Reading Change				D Average Dial Indicator Change in Direction of Motion	
		1 North	2 East	3 South	4 West	5 North & South	6 East & West
I.	e) North/South						
	f) East/West						
II.	e) North/South						
	f) East/West						
III.	e) North/South						
	f) East/West						
IV.	e) North/South						
	f) East/West						
V.	e) North/South						
	f) East/West						