INSTRUCTION MANUAL

FOR THE

IMPCO-ESCHER WYSS

F2 FIBERIZER

CUSTOMER: Menasha Corporation
MILL: Otsego, Michigan
SERIAL NO. H-003
INGERSOLL-RAND S.O. NO. B-6035
CUSTOMER ORDER NO. 92432

APPLICABLE DRAWINGS:
GENERAL ARRANGEMENT: 65A-2000
GENERAL ASSEMBLY: 65C-2000-10
MAIN DRIVE ASSEMBLY: 65G-1003-10
JUNK TRAP ASSEMBLY: 65G-1000-10

June, 1981

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FOREWORD

This manual provides installation, operating, maintenance and lubrication instructions for the Fiberizer. Illustrations used are typical and show principal design features.

READ INSTRUCTION MANUAL CAREFULLY BEFORE INSTALLING AND RUNNING FIBERIZER

These instructions have been prepared as a service to our customers and are offered as suggested methods for the customer to follow in order to install and maintain the equipment properly. Should further information be desired, contact Ingersoll-Rand, Pulp Machinery Division. Include machine serial number and part number with any inquiries or requests for spare parts.

CAUTION

This is a METRIC machine. Use METRIC fasteners of the proper strength grade only. Do not interchange with U. S. STANDARD fasteners. DAMAGE OR INJURY MAY RESULT.

MANY METRIC and U. S. threads will mate but because of diameter differences they will not develop the full strength of the fasteners.

TABLE OF CONTENTS

FIBERIZER F2

APPLICATION

The Fiberizer is used for wet preparation of unsorted, mixed waste paper and generally installed directly after the continuous pulper.

Pumpable slushed paper stock is drawn from the pulper through a coarse perforated screen plate. Most of the floating impurities or light rejects and some of the heavy rejects are pumped to the Fiberizer in the stock flow.

The Fiberizer is used for further disintegration of the paper stock and continuous separation of light and heavy rejects from the stock. Light rejects are plastics, wood, etc. and heavy rejects metal and stones.

WORKING PRINCIPLE

The pre-slushed pumpable fiber suspension flows tangentially into the rotor housing. Rotor movement intensifies the tangential flow resulting in a cyclone-type action on the pulp slurry. Centrifugal forces, acting on the slurry throw the heavy rejects against the rotor housing wall. Since the rotor housing has a conical wall, heavy rejects move along the conical wall to the junk trap with a minimum retention time.

Heavy rejects are unloaded from the junk trap by pneumatically operated gate valves which are actuated periodically.

Light rejects are concentrated in the vortex of the stock within the rotor housing. These light rejects are discharged periodically through a pneumatically controlled gate valve located in the center of the cover. This cover is tapered

WORKING PRINCIPLE (Continued)

towards the inside to minimize turbulence and improve concentration of light rejects in the area where the rejects flows separate.

Paper stock is initially defiberized by the working edges of the rotor and defibering bars and further defiberized as it passes through the perforated screen plate and is discharged.

Pressure within the housing forces accepted stock through the perforated plate and out the discharge.

CONSTRUCTION

The main group assemblies of the Fiberizer F2 are the bearing housing, rotor, rotor housing, extraction chamber and junk trap.

1. Bearing Housing Group. A cast iron bearing housing supports the rotating elements. The rotor shaft is mounted in two cylindrical roller bearings and one four-point angular contact ball thrust bearing. The lower part of the housing has an oil sump which must be filled with oil up to the center line of the oil gage when the machine is running to ensure the proper splash lubrication of the bearings. Labyrinth seal rings exclude foreign material to protect the bearings.

2. Rotor Group. This group consists of the rotor, hub, cover plate, shaft nut, spacer, packing sleeve, and various screws. The rotor is bolted to the hub which is secured with a set screw locked shaft nut. A hub cover plate covers the rotor mounting cap screws and tapped jack-screw holes for disassembly. This cover plate assures smooth stock flow past the hub. All parts are manufactured from wear-resistant materials and the assembly is dynamically balanced to minimize the bearing load. The working edges of the rotor are hard faced as is the wearing surface of the packing sleeve. Clearance between the rotor and perforated plate is set by the rotor spacer ring to suit stock being processed.

CONSTRUCTION (Continued)

3. Extraction Chamber. The extraction chamber is bolted to the bearing housing. Defibering bars and clamps, the perforated plate and packing box are bolted to the extraction chamber. Five rings of packing and a lantern ring are used in the packing box which is water lubricated and cooled.

4. Rotor Housing. The rotor housing with a hinged cover is bolted to the extraction chamber. The housing diameter increases uniformly from the rotor towards the cover. Heavy rejects thrown against the housing wall by centrifugal forces are directed along the tapered wall to the junk trap. The heavy rejects enter the collector pocket at the largest diameter of the rotor housing and are discharged from the rejects outlet at the lowest point. The light rejects separation pipe in the center of the cover is equipped with a pneumatically operated gate valve. The gate valve blade is manufactured from stainless steel and the air pressure required for the gate valve is 550kPa (80 psig). Temperatures of up to 80°C do not have any adverse effect on the operation. All parts in contact with the stock are manufactured from stainless steel.

5. Junk Trap. The junk trap manufactured from stainless steel is flange mounted to the heavy rejects outlet at the lowest point of the rotor housing. The trap has an inspection window which is used to observe functioning of the trap. Seal water pressure is correct when the paper stock does not settle to the bottom of the trap while the heavy rejects settle in the junk trap. Seal water pressure must be higher than the inlet pressure (roughly equivalent to the inside pressure of the rotor housing). Seal water supply is required to fill the heavy rejects trap after the emptying and keep trap free of paper stock.

6. Drive. A V-belt drive rotates the rotor in a clockwise direction when standing and looking at the drive end.

FIBERIZER AUTOMATIC REJECTS DISCHARGE SYSTEM

DESCRIPTION

Rejects are automatically discharged from the Fiberizer through valves which are actuated by cycle timers and electrical controls.

Heavy rejects are collected in a junk trap equipped with a top and bottom valve. During the collection cycle, the top valve is open and the bottom valve is closed, with elutriation water entering into the junk trap to wash the heavy rejects free of fiber. This water flows past the top valve into the body of the Fiberizer, mixing with the stock slurry. A panel mounted heavy rejects cycle timer initiates the discharge cycle which starts with the top valve closing to seal off the body of the Fiberizer; then the bottom valve opens to allow collected rejects to discharge by gravity. The elutriation water stays on to flush the junk trap. After a time delay, the bottom valve closes and elutriation water fills the junk trap before the top valve opens to end the discharge cycle. Limit switches detect the position of the gate during valve operation. Should a valve malfunction and not operate, the cycle is stopped automatically. A heavy rejects alarm timer actuates an alarm when the discharge cycle exceeds a preset time.

When the power is turned off automatically by stopping the drive motor of the Fiberizer, the top junk trap valve closes and the bottom valve opens to drain. Power to the panel can be restored by a selector switch and the top valve may be opened by a second selector switch to drain the Fiberizer, if desired.

DESCRIPTION (Continued)

The light rejects are discharged from the Fiberizer at the periods set on a panel mounted light rejects timer. The light rejects valve opens and, after a time delay, closes, discharging accumulated light rejects. A limit switch detects the position of the gate. If the valve malfunctions and does not close after opening, an alarm is triggered by a light rejects alarm timer which is set to actuate when the discharge cycle exceeds a preset time.

The light rejects valve can be opened with a manually operated selector switch when power is restored to the panel.

INSTALLATION

Use only certified prints for construction layouts and installation of the Fiberizer. Be sure all prints are certified in the drawing block titled "Dimensions Certified Correct".

UNLOADING PRECAUTIONS

Each Fiberizer is carefully packed to prevent damage in transit. When shipment arrives, inspect each item listed on the shipping papers to assure that no damage or loss has occurred. If loss or damage is detected, notify the carrier immediately and file claim with the carrier.

PROTECTIVE COATINGS

Fiberizers are protected with anti-corrosive greases and oils when shipped. Under ordinary conditions, this protection lasts for three months. For severe conditions or longer periods, the customer should inspect the machine and renew the protection as required. Anti-corrosive greases and oils used to protect the bearings are compatible with recommended lubricants but should be purged during the initial lubrication. Exposed machined surfaces are protected with a rust preventative compound that can be removed with a suitable industrial safety solvent such as Stoddard solvent.

FIBERIZER FOUNDATION

1. Refer to the General Arrangement and Drive Assembly Drawings for mounting arrangements. Be sure that the Fiberizer is positioned so that the hinged cover can be opened when cleaning or maintenance is required.

FIBERIZER FOUNDATION (Continued)

2. Construct suitable reinforced piers for the Fiberizer. The Fiberizer bearing housing and rotor housing supports are grouted after leveling; therefore, allow a 25 to 30 mm (1-inch) space for grout. Top surface of foundation should be left rough to provide a good bonding surface for grout. Foundation load, including vibration allowance, is given on the General Arrangement Drawing.

3. Mount Fiberizer on piers. Shim under support surfaces to level Fiberizer and secure anchor bolts.

4. Grout under Fiberizer supports with a non-shrink grout. Recheck leveling and secureness of anchor bolts after grout sets.

5. Install adjustable motor base on foundation as shown on the Drive Drawing being sure that base adjustments permit belt installation without stretching belts as well as proper running tensioning.

6. Mount motor on base. Secure motor mount bolts when properly aligned.

PIPING AND VALVES

1. See the flange and bolt hole dimensions shown on the General Arrangement Drawing. Piping must be independently supported so that the Fiberizer is not subjected to external forces. Support the pipe so that alignment is maintained at the flanges.

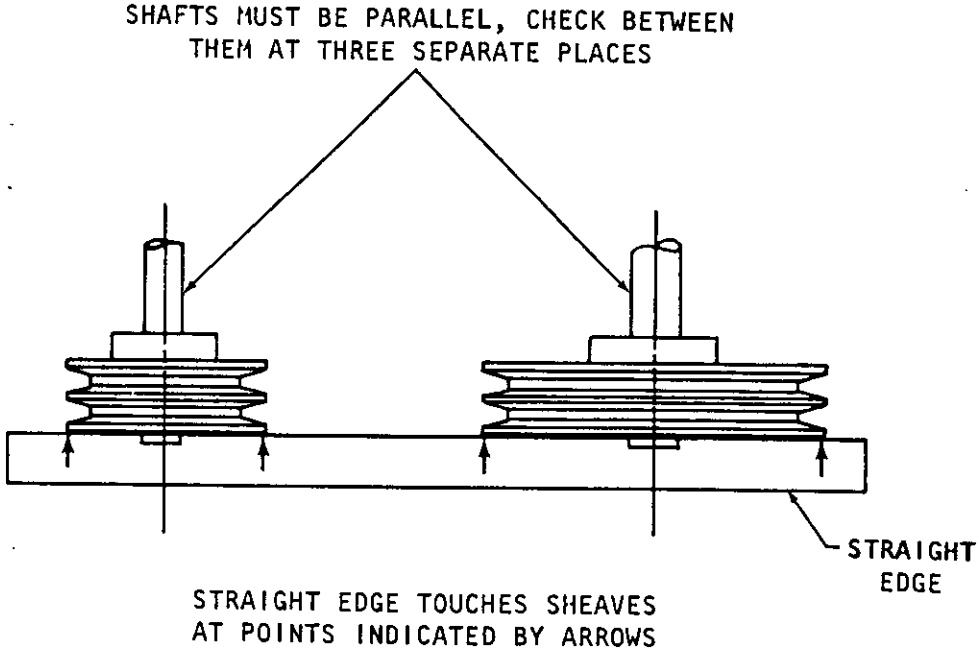
2. For proper operation, install inlet and outlet control valves to regulate flow. Pressure gages suitable for at least 400kPa (60 psig) should be installed in the inlet and outlet piping between the machine and control valves thus enabling monitoring of operating pressures.

SHAFT AND SHEAVE ALIGNMENT

Align motor so that motor and Fiberizer shafts are parallel. Check with a straightedge across the faces of sheaves. The straightedge will touch the

SHAFT AND SHEAVE ALIGNMENT (Continued)

sheaves at the points indicated by the arrows in the sketch below when the sheaves are aligned. Rotate each sheave a half revolution and recheck to assure that the sheaves run truly. Correct any misalignment.



2. Secure adjustable base for motor.

V-BELT INSTALLATION AND TENSIONING

The most important factor for successful operation of a V-belt drive is proper belt tensioning. Most V-belt problems can be eliminated by properly tensioning the V-belts. Correctly tensioned belts will not slip under peak load; however, there should be a slight bow on the slack side of the belts when operating under load.

1. With distance between sheaves reduced, loop V-belts over sheaves. Do not force V-belts onto sheaves.

2. Increase the center distance until slackness is removed and the belts are snug.

V-BELT INSTALLATION AND TENSIONING (Continued)

3. Start motor and adjust tension until the belts do not slip at start-up or under peak load and yet have a slight bow on the slack side of the drive.

4. Readjust after a few days operation when the belts have stabilized and seated themselves in the sheave grooves.

5. Readjust as required to compensate for belt and groove wear.

6. Mount guards before Fiberizer is put into operation.

BELT DRIVE PRECAUTIONS

1. Use matched belts. Unmatched belts have a short belt life as the load is not distributed equally among the belts on a multiple-belt drive. Belt sets should be checked prior to installation and sheave grooves checked for uneven wear if tension appears to be uneven from belt-to-belt during operation.

2. Determine cause of any unusual noise. Check for an improperly installed guard, loose belts, dirty or oily sheaves or excessive vibration. Squealing of belts as motor is started or while running is usually caused by poorly tensioned belts or by foreign material, oil, grease, etc., on the belt or in the sheave groove. Excessive vibration may be caused by slack belts that dance up and down.

3. Periodically, check belt tension. Loose belts will slip, causing excessive belt and sheave wear. Loose V-belts that sag too much may snap and break when the motor starts or when peak loads occur. Overtight belts with no sag on the slack side put an added load on the bearings. Periodically, check the tight side of a belt set to be sure that all of the belts are running tight; if one or more belts are running loose, the drive needs to be replaced with a matched set.

BELT DRIVE PRECAUTIONS (Continued)

4. Inspect sheaves to be sure all sheave grooves are smooth and uniform. Burrs or rough spots cause excessive wear. Dust, oil, rust or other foreign matter should be removed. Enlarged grooves should be checked with groove templates. A shiny groove bottom indicates excessive sheave or belt wear and that the belt is bottoming in the groove reducing its gripping power.

LUBRICATION, ANTI-FRICTION BEARINGS

RECOMMENDATIONS

This machine must be completely lubricated before initial start-up. The anti-corrosive oil used to protect the Fiberizer during shipment should be drained before the Fiberizer is started up. Lubricate the bearings with Type 12 Oil at initial start-up. Change oil at least once every six months. Check the oil in the bearing housing weekly. If sludge or contamination is observed in the oil, change oil and shorten the period between normal oil changes. See tables at the end of this section for recommended commercial lubricants. It is suggested that you work closely with the lubricant supplier in the application of these lubricants.

RUN-IN LUBRICATION PERIOD

Fill reservoir to the center of the sight gage using Type 12 Oil. Run-in machine for a period of 50 hours and then drain and relubricate the Fiberizer.

NORMAL LUBRICATION

The bearings are lubricated by running in an oil reservoir maintained to the level of the center of the lowest ball or roller in the rotor bearings. Oil seals are labyrinth type and do not require any special greasing. Lubricate bearings with Type 12 Oil. Maintain oil level in housing to the middle of the sight gage with the machine running. Drain oil and refill with fresh oil every six months or sooner if required.

LUBRICATION, ROTOR HOUSING COVER HINGE

NORMAL LUBRICATION

Grease hinges monthly through grease fittings (item 56), provided in hinge pins, to prevent corrosion in hinges. Use Type "A" Lubricant.

TYPE 12 LUBRICANT

Type 12 Lubricant is a high quality rust and oxidation inhibited, hydraulic oil possessing superior wear resisting qualities. The oil shall have a viscosity of 150 SSU at 100°F, a viscosity index of not less than 95, and possess good demulsibility properties.

The following is a list of suppliers of Type 12 Lubricants.

SUPPLIER	LUBRICANT
Amoco Oil Company	Rykon Oil 15
Atlantic Richfield Company	Duro AW S-150
Chevron U.S.A., Inc.	EP Hydraulic Oil 32
Cities Service Oil Company	A/W Hydraulic Oil 15 Pacemaker XD-15
Exxon U.S.A.	Nuto H 32
Gulf Oil Corporation	Gulf Harmony 32 AW
Hydrotex Industries	216 HD Hydraulic Oil - Light 251 HD Turbine Oil - Light
Imperial Oil & Grease Company	Molub-Alloy 601
Kendall Refining Company	R&O 047
Mobil Oil Corporation	Mobil DTE 24
Phillips Petroleum Company	Magnus A Oil, Grade 150
Shell Oil Company	Tellus Oil 32
Sun Petroleum Products Company	Sunvis 816 WR
Texaco Incorporated	Texaco Rando HD 32
Union Oil Company of California	Unax AW-150

LIST OF COMMERCIAL TYPE "A" LUBRICANTS

Supplier - United States	Normal Service Lubricant	Severe Service Lubricant
Amoco Oil Company	Amobar Gr. 2 Amolith Gr. 1 or 2	Rykon 1EP or 2EP
Atlantic Richfield Co.	Litholine H EP2	Litholine H EP2
Chevron U.S.A., Inc.	Polyurea EP Gr. 1 or 2	-
Cities Service Oil Co.	Citgo HEP-1, HEP-2	Citgo AP
Exxon U.S.A.	Unirex N2	Lidok 1EP, 2 EP, Ronex MP
Gulf Oil Corporation	Gulf Precision Gr 2 or Gulfcrown Gr. 2	Gulfcrown Gr. 2EP
Hydrotex Industries	Deluxe 650 Viscous Plate Deluxe 652 Viscous Plate	Deluxe M-32 Super Shield Deluxe M-33 Super Shield
Imperial Oil & Grease Co.	Molub-Alloy BRB-572 Molub-Alloy 1 and 2	Molub-Alloy 777 Molub-Alloy 777-1
Kendall Refining Co.	L-421 or L-427	L-426 or L-427
Mobil Oil Corporation	Mobilux 1 and 2 or Mobilith 21 and 22	Mobilux 1EP and 2EP or Mobilplex 46 and 47
Phillips Petroleum Co.	Philube MP Gr. L-1 or L-2	Philube 1EP or 2EP
Shell Oil Company	Alvania Gr. 1 or 2	Alvania Gr. 1EP or 2EP
Sun Petroleum Prod. Co.	Sunoco Prestige 41 Sunoco Multi-Duty 2	Sunoco 741EP Sunoco 742EP
Texaco Incorporated	Multifak 2	Multifak 2EP
Union Oil Co. of Calif.	Unoba 2EP	Unoba 2EP
Supplier - Canada		
Gulf Oil Canada Ltd.	Gulfcrown Heavy	Gulfcrown 2EP or Gulf Supercrown 2EP
Imperial Oil Limited	Esso MP Grease H	Unirex 2EP
Shell Canada Limited	Alvania Grease R2	Alvania Grease 2EP
Sun Oil Company Ltd.	Prestige 42 Grease	Prestige 741 or 742EP
Texaco Canada Ltd.	Marfak MP2	Multifak 2EP or Marfak AP

OPERATION

OPERATING DATA

Speed	525 RPM
Power Consumption	(200 H.P.) Maximum
Throughput	3500 Liters Per Minute (925 GPM) at 4 Percent Consistency
Stock Consistency	3.5 to 4.5 Percent O.D.
Junk Trap Water Pressure	Approximately 345 kPa (50 psi)
Seal Water Pressure	Approximately 48kPa (7 psi) Above Stock Outlet Pressure
Differential Pressure	55 - 75kPa (8 - 11 psi) Between Stock Inlet and Outlet

START-UP

1. Check oil level in bearing housing. Maintain oil level in the 1/2 to 3/4 range in the sight glass.

2. Flush out the stock lines to the Fiberizer.

CAUTION

Close all valves immediately upstream and downstream from the Fiberizer. Tag and lock out power source. Disconnect belts or coupling before opening the Defiberizer.

3. Open heavy rejects trap and drain out Fiberizer.

START-UP (Continued)

4. Open the hinged cover and check the rotor, stator and housing for cleanliness.

5. Turn rotor to be sure rotor turns freely.

6. Close the hinged cover.

7. Open seal water valve. Set pressure to 205kPa (30 psi) for initial start-up and adjust as required.

8. Set or check interval and opening time of the light rejects trap. Light rejects gate valve is still closed. Do not put control system in operation at this stage.

Standard values: Opening time = 2 seconds
Interval time = 10 to 15 seconds for mixed waste paper
Interval time = 20 to 30 seconds for sorted waste paper

9. Set or check interval and opening time of heavy rejects trap. Bottom gate valve is closed and top gate valve is open.

Standard values: Interval time = approximately 1 hour
Dumping time = approximately 20 seconds

10. Start up motor.

11. Open outlet gate valve.

12. Switch on pulper dump pump.

13. Open inlet gate valve.

14. Switch on control system for light rejects trap.

15. Set inlet and outlet valves for the light rejects discharge. Open and close the inlet and outlet gate valves respectively until the outlet flow maintains the correct level in the vibrating screen installed after the Fiberizer.

16. Start up vibrating screen.

START-UP (Continued)

17. Open showers for the vibrating screen.

18. Switch on operation control system for heavy rejects trap.

19. Adjust seal water pressure for shaft seal as required.

20. Regulate seal water pressure. Seal water pressure must always be higher than the stock pressure. Make sure seal water piping is not clogged with stock and that seal water pressure is maintained and not interrupted. During operation, the packing gland and seal water must be adjusted to allow only a "few drops per minute" discharge. This will lubricate, seal and cool the shaft and minimize packing sleeve wear.

21. Regulate interval of light rejects trap as required. Normally, the interval can be increased after about one hour of operation. Inspect the rejects accumulating at the vibrating screen to see if the interval time has been set correctly. If the rejects have a very large flake content or stock losses, the interval time is too short. If the rejects consist almost entirely of light components, the interval time is too high. (Concentration of plastics is too high in the rotor housing.) Temporary variations in the rejected stock composition, may be caused by variations in the waste paper furnish.

22. Regulate the interval time for the heavy rejects trap as required. The time has been set correctly when the trap is half filled with heavy rejects shortly before dumping.

OPERATING HINTS

1. Reduced throughput when no change is made in gate valve positions indicates a reduced open area on the perforated plate. The inlet and outlet pressure differential increased in this case and may be caused by the following:

OPERATING HINTS (Continued)

a. Rotor drive failure resulting in lack of rotor blade cleaning.

b. Excessive concentration of light rejects (especially plastics) in the rotor housing. This occurs when the interval time on the light rejects trap has been set too high. In general, the interval and opening time of the gate valve depends on the percentage of low specific gravity rejects in the waste paper feed stock and on the throughput.

c. Dried paper stock residues in the holes of the perforated plate resulting from insufficient flushing at shutdown.

d. Excessive clearance between working edges of rotor and perforated plate and rotor and difibering bars. The excessive clearance may be caused by wear or improper initial settings.

2. Increase of noise or vibrations in the rotor housing caused by air bubbles. Since air leaves the Fiberizer by way of the light rejects trap, action is unnecessary.

3. Adjust flow from Fiberizer to the vibrating screen by controlling the pressure on the light rejects trap. Change flow by opening and closing the inlet and outlet gate valves respectively.

4. Be sure that packing gland is adjusted properly and that seal water pressure is approximately 7 psi above cleaned stock outlet pressure at all times. Seal water must drip from the packing box when operating. If stock is emerging at the packing box, the reasons may be:

a. Seal water pipe clogged,

b. Seal water pressure too low or it has dropped or failed periodically,

c. Worn packings. Be sure water is free from sand and fibers and that no other pipe is connected to the seal water pipe.

STOPPING

1. Switch off pulper dump pump.
2. Flush out Fiberizer thoroughly.
3. Switch off heavy rejects trap control system.
4. Switch off light rejects trap control system.
5. Close inlet gate valve.
6. Switch off motor.
7. Close seal water valve for shaft seal.
8. Close seal water valve for heavy rejects trap.
9. Switch off vibrating screen.
10. Shut off spray water valve for vibrating screen.
11. Flush out the Fiberizer thoroughly on every shutdown extending over a long period. Then it is recommended to fill the Fiberizer with water to prevent drying up of any remaining stock residues in the holes of the perforated plate.

MAINTENANCE

PACKING BOX

IMPORTANT: The most common cause of packing failure is over-tightening of the packing gland. The packing is a throttling device that controls the seal water flow through the packing box.

Packing Removal and Packing Box Examination

1. Drain and flush out rotor housing.

CAUTION

Close seal water valves and all valves immediately upstream and downstream from the Fiberizer. Tag and lock out power source. Disconnect belts or coupling before repacking the Fiberizer.

2. Remove nuts from packing gland studs. Pull gland away from the packing and remove old packing from the packing box. Use care when removing packing and do not damage packing sleeve which is protected with a hard facing. Packing box has four outer packing rings, a lantern ring and one inner packing ring.

3. Clean packing box thoroughly. The packing box is split and can be easily removed from the rotor housing for cleaning.

4. Examine surface of packing sleeve. A scored or grooved sleeve causes excessive packing wear. Replace sleeve if deeply grooved or scored.

Packing Installation

Pack packing box as follows with 12 mm square braided packing made of long fibered white asbestos yarn which is teflon lubricated.. Pack box with five rings of packing.

1. Keeping packing clean, wrap packing snugly around shaft. Do not stretch or squeeze packing. Cut packing squarely with a sharp knife.

2. Wrap packing around shaft. Never wind packing into a packing box.

3. Starting at the butt joint, insert the first packing ring into the packing box. Ends of ring must make a perfect butt joint and leave no gap. Keep packing clean and prevent shaft scoring by foreign material imbedded in packing.

4. Seat the first packing ring. The first ring can be partially seated with the gland, but must be followed with a tamping tool as the gland flange prevents complete seating. Fully seat the first ring before proceeding with the next step.

5. Replace and seat lantern ring.

6. Installing one ring at a time, insert and seat the remaining rings. Install rings with the joints approximately 120 degrees apart. Ends of all rings must make a perfect butt joint and leave no gap.

7. After installing packing, take up packing gland bolts evenly so that gland is seated evenly and firmly on packing. Back off nuts and retighten nuts finger tight only.

OPERATING ADJUSTMENTS FOR PACKING GLANDS

1. Never tighten the packing gland so as to stop seal water flow completely. Allow seal water flow of at least a few drops per minute to prevent excessive friction and shaft wear. Water should drip from the packing box whenever machine is running.

OPERATING ADJUSTMENTS FOR PACKING GLANDS (Continued)

2. Check packing boxes at 15 minute intervals during the first few hours of operation. If heating occurs, back off the nuts on the packing gland studs to prevent overheating. The packing box should leak excessively at the start-up and be adjusted for a normal slow seal water flow after the break-in period. Do not tighten gland nuts more than 1/6 of a turn (1 flat) in 15 minutes running time. Adjust so that the shaft is always wet at the packing gland.

3. Replace old packing when packing is compressed to 2/3 of the original volume. At this point, the shaft does not receive the proper lubrication and may be damaged. Replace with new clean packing.

PERIODIC PACKING REPLACEMENT

Pulp fibers may enter the packing box; therefore, clean out the packing box and replace the packing at least once every three months. Inspect the packing closely to see if the packing period is satisfactory. Do not extend the packing period until mill experience indicates that the period could be lengthened safely.

ROTOR REPLACEMENT

1. Flush out rotor housing and shut down the Fiberizer.

CAUTION

Close all valves immediately upstream and downstream from the Fiberizer. Tag and lock out power source. Disconnect belts or coupling before opening the Fiberizer.

2. Disconnect light rejects outlet so that cover can be opened.

ROTOR REPLACEMENT (Continued)

3. Remove cover clamping screws (68) and washers (79) from cover flange and open cover.

4. Remove hub cover plate (16), which is attached with screws (72).

5. Remove cap screws (69) and washers (77) from rotor.

6. Pull rotor off hub using the m8 x 16 cover plate screw holes for jack screws.

7. Clean rotor mounting seat on hub and coat with Molykote.

8. Mount rotor on hub and secure with four screws installed 90 degrees apart. Use care when mounting rotor to assure that it is mounted squarely. Alternately tighten opposing screws to keep the rotor square as it is installed.

9. Check the rotor clearance with the screen plate. Nominal clearance is 2 mm. If the rotor clearance requires adjustment, pull rotor and hub and reassemble with a refitted rotor spacer ring. If clearance is too great, machine correct amount of metal off of spacer ring. If there is no clearance with original spacer, install a larger spacer. Remount rotor and hub if spacer adjustments were made.

REPLACEMENT OF DIFIBERING BARS

1. Flush out rotor housing and shut down the Fiberizer.

CAUTION

Close all valves immediately upstream and downstream from the Fiberizer. Tag and lock out power source. Disconnect belts or coupling before opening the Fiberizer.

2. Disconnect light rejects outlet piping so that cover can be opened.

REPLACEMENT OF DIFIBERING BARS (Continued)

3. Remove cover clamping screws (68) and washers (79) from cover flange and open cover.

4. Remove socket head cap screws (65) and washers (80) from the defibering bar clamp (22).

5. Remove the worn defibering bars (21) and install the new ones. Do not fully tighten clamping screws until running clearance adjustment is made.

6. Set the running clearance of 1.5 mm between the working edge of the rotor (17) and the defibering bar (21).

7. Secure the socket head cap screws (65).

SCREEN PLATE REPLACEMENT

1. Remove rotor and defibering bars following preceding procedures.

2. Remove screen plate (20), mounting screws (82) and take out screen plate.

3. Reassemble reversing procedure used for disassembly.

PACKING SLEEVE REPLACEMENT

1. Remove rotor following the preceding procedure. Item numbers in parentheses refer to items on the assembly.

2. Take off rotor spacer ring (13).

3. Remove packing gland (19) and packing (47).

4. Slide packing sleeve off the shaft.

5. Reverse procedure used for disassembly when reassembling packing sleeve. Be sure "O" ring end of sleeve is at rotor end and that "O" ring is installed in the groove. Be careful during reassembly as sleeve is covered with a hard faced coating.

6. Replace rotor being sure to check the rotor clearance at the screen plate and defibering bars after reassembly.

BEARING REPLACEMENT

1. Flush out rotor housing and shut down Fiberizer. Item numbers in parentheses refer to items on the assembly drawing.

CAUTION

Close all valves immediately upstream and downstream from the Fiberizer. Tag and lock out power source. Disconnect belts or coupling before opening the Defiberizer.

2. Dismount drive coupling or sheave.

3. Disconnect discharge and seal water piping.

4. Remove rotor following preceding procedure.

5. Remove packing from the packing box.

6. Support the rotor housing and extractor chamber for disassembly.

7. Remove the extractor chamber cap screws (64).

8. Remove mounting screws for bearing housing and separate bearing housing from extractor chamber.

9. Loosen socket set screw (66) in drive end labyrinth ring and take off labyrinth ring (10).

10. Remove cap screws (60) from the drive end bearing cover (5). Using the two socket set screws (61) in the tapped holes in the cover, jack cover out of bearing housing.

11. Loosen set screw (66) in seal ring (9) and slide ring off shaft. Shaft is spot drilled for screw point and screw must be backed out of this retaining hole.

12. Remove rotor end labyrinth ring (10), bearing cover (6) and seal ring (8) following procedure used with drive end.

BEARING REPLACEMENT (Continued)

13. Pull shaft (11) out of bearing housing (1).

14. Pull outer race of drive end bearing (34) out of bearing housing.

15. Remove retaining ring (48) at drive end of shaft and take off inner race of cylindrical bearing and bearing spacer (7).

16. Remove bearing locknut (37) and lockwasher (36) at rotor end of shaft.

17. Pull ball thrust bearing (35) at rotor end of shaft.

18. Pull cylindrical roller bearing (34) and bearing spacer (7) at rotor end of shaft.

19. Reverse procedure used for disassembly to reassemble Fiberizer.

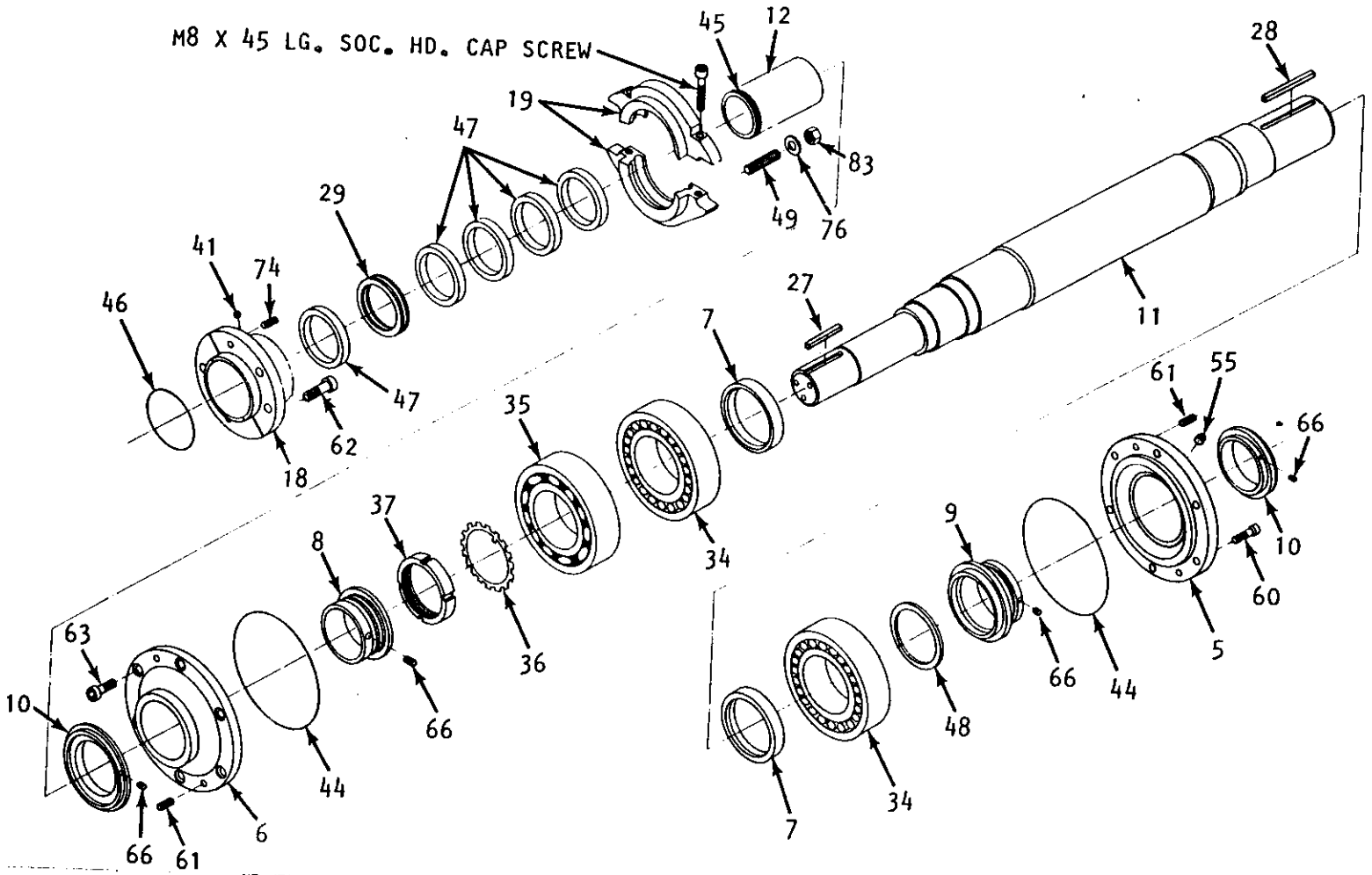
RECOMMENDED SPARE PARTS

IMPORTANT: When ordering spare parts, be sure to include the serial number of the machine, part name, item number and assembly drawing number.

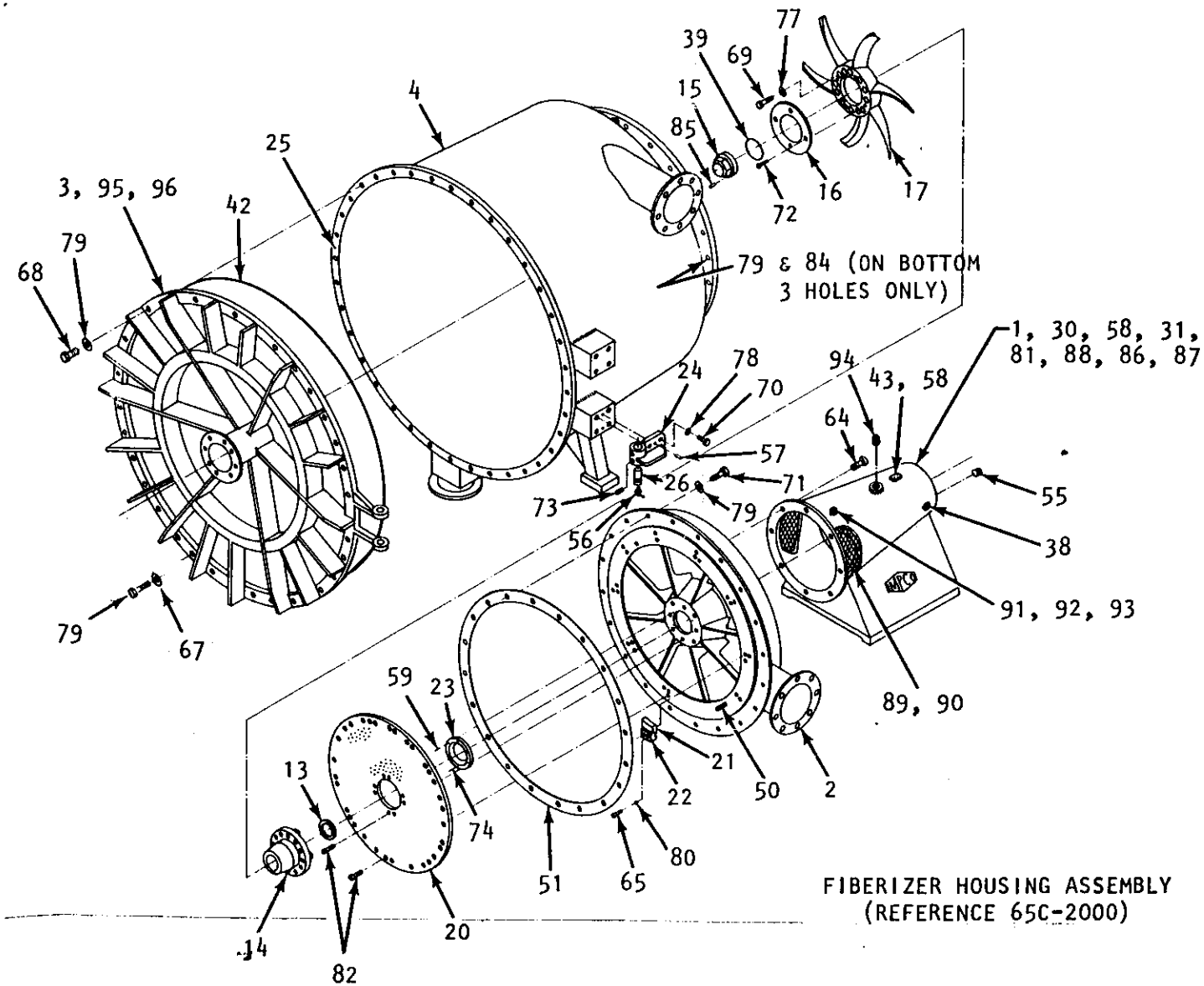
Item	Description	Suggested Stock
12	Packing Sleeve	1
17	Rotor	1
20	Screen Plate	1
21	Defibering Bar	10
22	Defibering Bar Clamp	10
29	Lantern Ring	1
34	Bearing, Cylindrical Roller	2
35	Bearing, Ball, Four Point Angular Contact	1
39	"O" Ring	1
42	"O" Ring	1
44	"O" Ring	2
45	"O" Ring	1
46	"O" Ring	1
47	Packing, 12 mm x 1830 mm (72") Long	1
51	Gasket	1

CAUTION

Use Ingersoll-Rand parts only. Substitutions may cause injury or damage.



F2 FIBERIZER SHAFT GROUP
(REFERENCE 65C-2000)



FIBERIZER HOUSING ASSEMBLY
(REFERENCE 65C-2000)

REVISION LETTER M

MACHINE- FIBERIZER F2

TITLE: GENERAL ASSEMBLY

ML 65C-2000

ITEM	DESCRIPTION	PART NO. OR MATERIAL	* INDICATES ADDITIONAL MATERIAL LIST (ML)	PART NUMBER 65C-2000-10	QUANTITY REQUIRED
63	SOCKET HD. CAP SCREW M10 x 35 LG	STEEL		6	
64	SOCKET HD. CAP SCREW M16 x 35 LG	304 ST. ST.		8	
65	SOC. HD. CAP SCREW M12 x 60 LG.	316 ST.ST.		20	
66	SOCKET SET SCREW (CONE POINT) M6 x 6 LG	STEEL		4	
67	HEX HD. CAP SCREW M24 x 70 LG	STEEL		4	
68	HEX HD. CAP SCREW M24 x 75 LG	STEEL		32	
69	HEX HD. CAP SCREW M16 x 35 LG	304 ST.ST.		12	
70	HEX HD. CAP SCREW M20 x 55 LG	STEEL		8	
71	HEX HD. CAP SCREW M24 x 50 LG.	STEEL		17	
72	FLAT HD. MACH. SCREW M8 x 16	304 ST. ST.		4	
73	HEX.SOC. SET SCREW (CONE POINT) M8 x 20 LG	STEEL		4	
74	HEX.SOC.SET SCREW (FLAT POINT) M8 x 10 LG	304 ST. ST.		4	
75	PARKER KALON RD. HD. DRIVE SCR. TYPE "U" #10 x 3/8" LG.	ST.ST.		4	
76	FLAT WASHER M12	STEEL		2	
77	FLAT WASHER M16	304 ST.ST.		12	
78	FLAT WASHER M20	STEEL		8	
79	FLAT WASHER M24	STEEL		56	
80	HI-COLLAR LOCKWASHER 1/2"	304 ST.ST.		20	
81	PARKER KALON RD. HD. DRIVE SCR. TYPE "U" #10 x3/8" LG.	ST.ST.		12	
82	LOW HEAD SOC. HD. CAP SCREW M12 x 16 LG 316 ST. ST.	A12901-16		12	
83	HEX NUT M12	304 ST. ST.		2	
84	HEX NUT M24	STEEL		3	
85	SOC. HD.SET SCREW (FLAT POINT) M8 x 20 LG	304 ST. ST.		2	
86	NAME PLATE - IMPCO	RTO-0019-2		1	
87	PARKER KALON RD. HD. DRIVE SCR. TYPE "U" #6 x 1/2" LG.	ST.ST.		2	
88	PATENT NO. PLATE	65M-1005-1		1	
89	COVER, HAND HOLE	67H-2004-10		2	
90	WASHER HD. MACH. SCR. 1/4-20 UNC x 1/2 LG.	STEEL		4	
91	ANGLE ADAPTER UNION 90°	A148-11		1	
92	STRAIGHT ADAPTER UNION	A148-22		1	
93	FLEXIBLE HOSE, HIGH PRESSURE 1/4"	A404-15		1	
94	SQ. HD. PIPE PLUG 3/4" NPTF	STEEL		1	

Ingersoll-Rand Company
PULP MACHINERY DIVISION

DISTRIBUTE ☐ ML 65C-2000 SHEET

DON'T DISTRIBUTE ☐ DATE 10-31-75 1 OF 5

REVISION LETTER M

MACHINE- FIBERIZER F2

TITLE: GENERAL ASSEMBLY

ML 65C-2000

ITEM	DESCRIPTION	PART NO. OR MATERIAL	* INDICATES ADDITIONAL MATERIAL LIST (ML)	PART NUMBER 65C-2000-10	QUANTITY REQUIRED
	GENERAL ASSEMBLY - STANDARD				
1	BEARING HOUSING	65D-1001-1		X	
2	EXTRACTION CHAMBER	65W-2000-10		1	
3	COVER	65D-2005-10		1	
4	ROTOR HOUSING	65D-2003-10		1	
5	BEARING COVER - FREE END	65H-1001-1		1	
6	BEARING COVER - HELD END	65H-1000-1		1	
7	BEARING SPACER	65M-1009-1		2	
8	SEAL RING - HELD END	65M-1010-1		1	
9	SEAL RING - FREE END	65M-1006-1		1	
10	LABYRINTH RING *	65M-1008-1		2	
11	SHAFT	65D-2001-1		1	
12	PACKING SLEEVE	65H-1012-1		1	
13	SPACER RING - ROTOR	65M-2004-1		1	
14	HUB-ROTOR	65D-2002-1		1	
15	NUT-SHAFT	65M-2000-1		1	
16	COVER PLATE - HUB	65M-2002-1		1	
17	ROTOR	65D-2000-10		1	
18	PACKING BOX	65H-1002-10		1	
19	PACKING GLAND	65M-1000-10		1	
20	SCREEN PLATE	(PER SPEC.)		1	
21	DEFIBERING BAR	65H-1005		1	
22	DEFIBERING BAR CLAMP	65M-1011-1		10	
23	FLANGE - PACKING BOX	65M-1013-1		10	
24	HINGE	65M-2003-1		1	
25	GUIDE PIN	65M-2005-10		2	
26	HINGE PIN Ø40 x 165 LG.	65M-1018-2		1	
27	KEY 14 x 22 x 123 LG	65M-2007-1		2	
28	KEY 14 x 25 x 84 LG	S0002-1		1	
29	LANTERN RING	S0002-1		1	
30	NAME PLATE - SERIAL	65M-1012-1		1	
31	"CAUTION" PLATE	64M-0018-2		1	
		H10-0147-1		1	

REVISION LETTER (m)

MACHINE- FIBERIZER F2

TITLE: GENERAL ASSEMBLY

ML 65C-2000

ITEM	DESCRIPTION	PART NO. OR MATERIAL	* INDICATES ADDITIONAL MATERIAL LIST (ML)	PART NUMBER 65C-2000-10	QUANTITY REQUIRED
32	"CAUTION" PLATE	M10-0385-1		2	
33					
34	CYLINDRICAL ROLLER BEARING (SKF NU320) OR EQUIV.	A10208-20		2	
35	FOUR POINT ANGULAR CONTACT BALL BEARING (FAG QJ320) OR EQUIV.	A10204-35		1	
36	BEARING LOCKWASHER Ø100	A10230-721		1	
37	BEARING LOCKNUT M100 x 2	A10230-621		1	
38	OIL SIGHT GAGE 3/4" NPTF	A175-52		2	
39	O-RING Ø95 x 4	A498-1023		1	
40					
41	HEX. SOC. PIPE PLUG 1/4" NPTF	STEEL		1	
42	O-RING Ø1670 x Ø10	A498-1024		1	
43	DIRECTION ARROW PLATE	R10-0174-1		1	
44	O-RING Ø230 x Ø3	A498-1042		2	
45	O-RING Ø90 x Ø3.5 OR EQUIV.	A497-16		1	
46	O-RING Ø115 x Ø4	A498-1048		1	
47	BRAIDED ASBESTOS - TEFLON LUB. PACKING 12mm SQ. x 1830 LG	S9988-1		1	
48	RETAINING RING EXTERNAL Ø100 x 3	A180-6008		1	
49	THREADED ROD M12 x 65 LG.	S9541-1		2	
50	THREADED ROD M24 x 75 LG	S9541-1		3	
51	GASKET	30643-223		1	
52					
53	CAUTION PLATE	H10-0259-2		1	
54	SOCKET SET SCREW (CONE POINT) M6 x 8 LG.	316 ST.ST.		2	
55	SQ. HD. PIPE PLUG 3/8" NPTF	STEEL		2	
56	GREASE FITTING 1/4" NPTF RIGHT ANGLE (PER SPEC.)	STEEL		2	
57	SPRING PIN Ø16 x 40 LG.	A266-1005		4	
58	PARKER KALON RD. HD. DR. SCREW, TYPE U #2 x 1/4" LG.	ST. ST.		8	
59	SOCKET HD. CAP SCREW M8 x 15 LG	304 ST. ST.		4	
60	SOCKET HD. CAP SCREW M8 x 25 LG.	STEEL		6	
61	SOCKET SET SCREW (FLAT POINT) M8 x 16 LG	STEEL		4	
62	HEX. HD. CAP SCREW M10 x 25 LG	STEEL		4	

Ingersoll-Rand Company
PULP MACHINERY DIVISION

DISTRIBUTE ☐ ML 65C-2000

DON'T DISTRIBUTE ☐ DATE 10-31-77

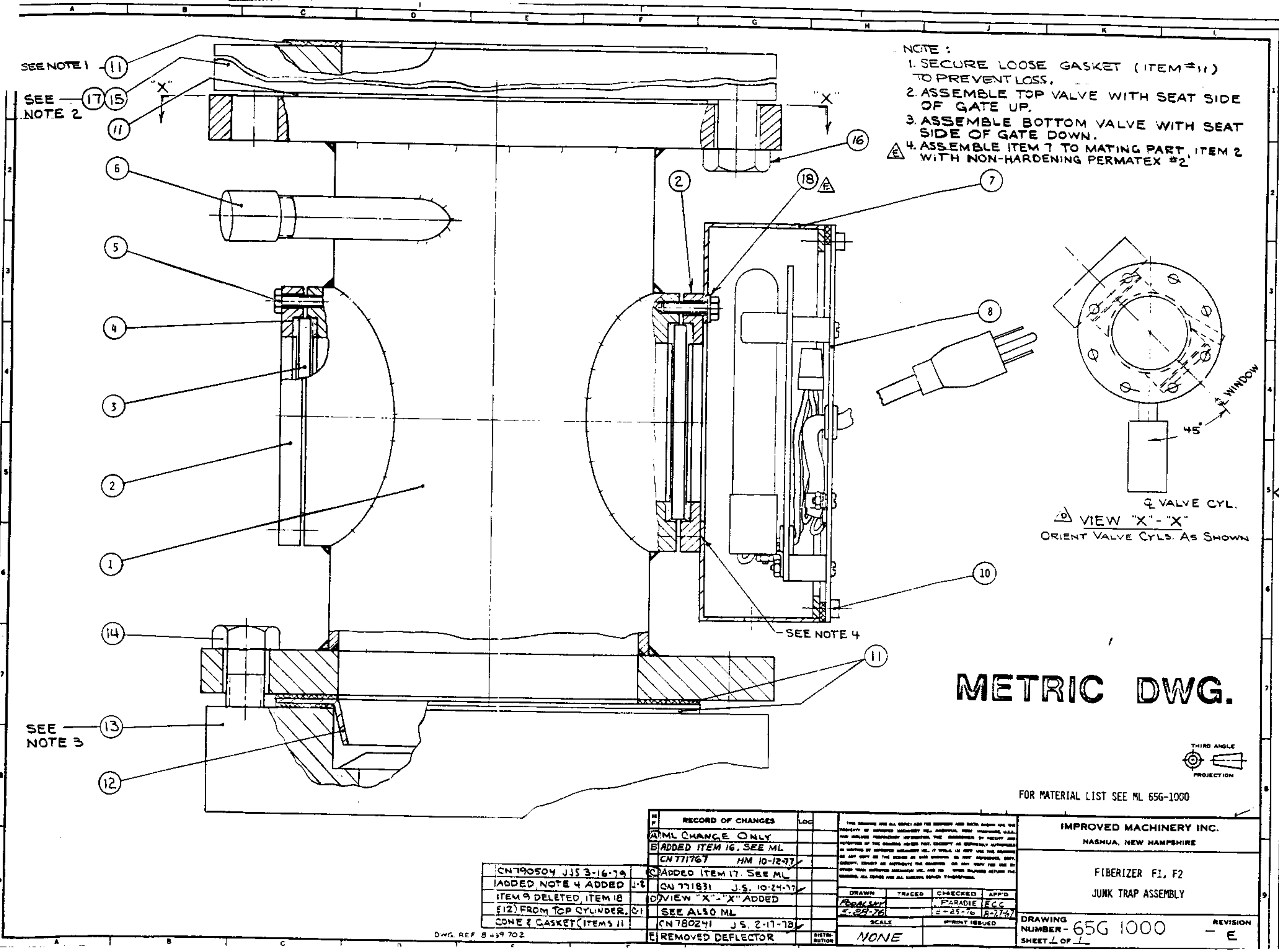
REVISION LETTER (M)

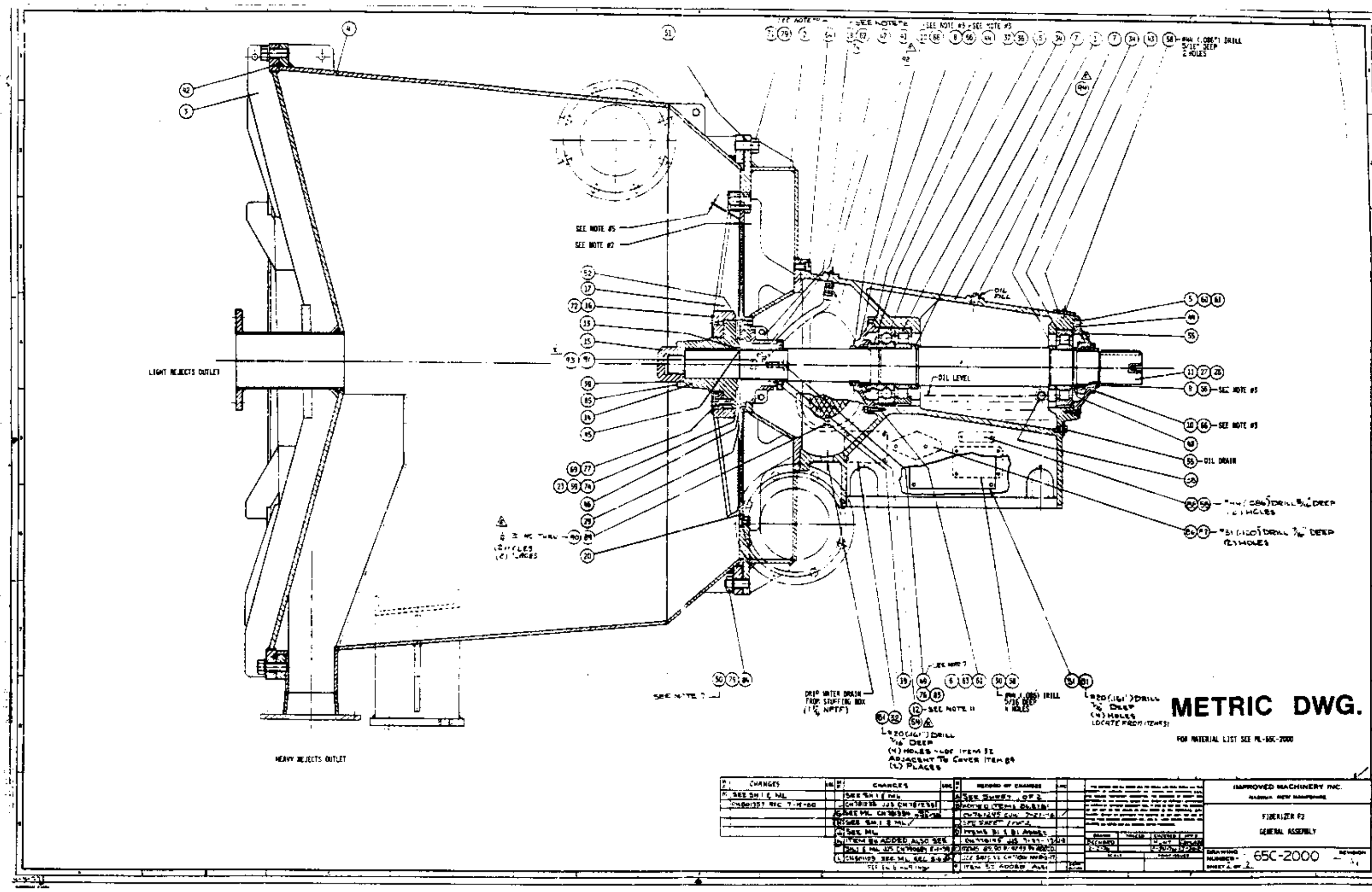
MACHINE- FIBERIZER F2

TITLE: GENERAL ASSEMBLY

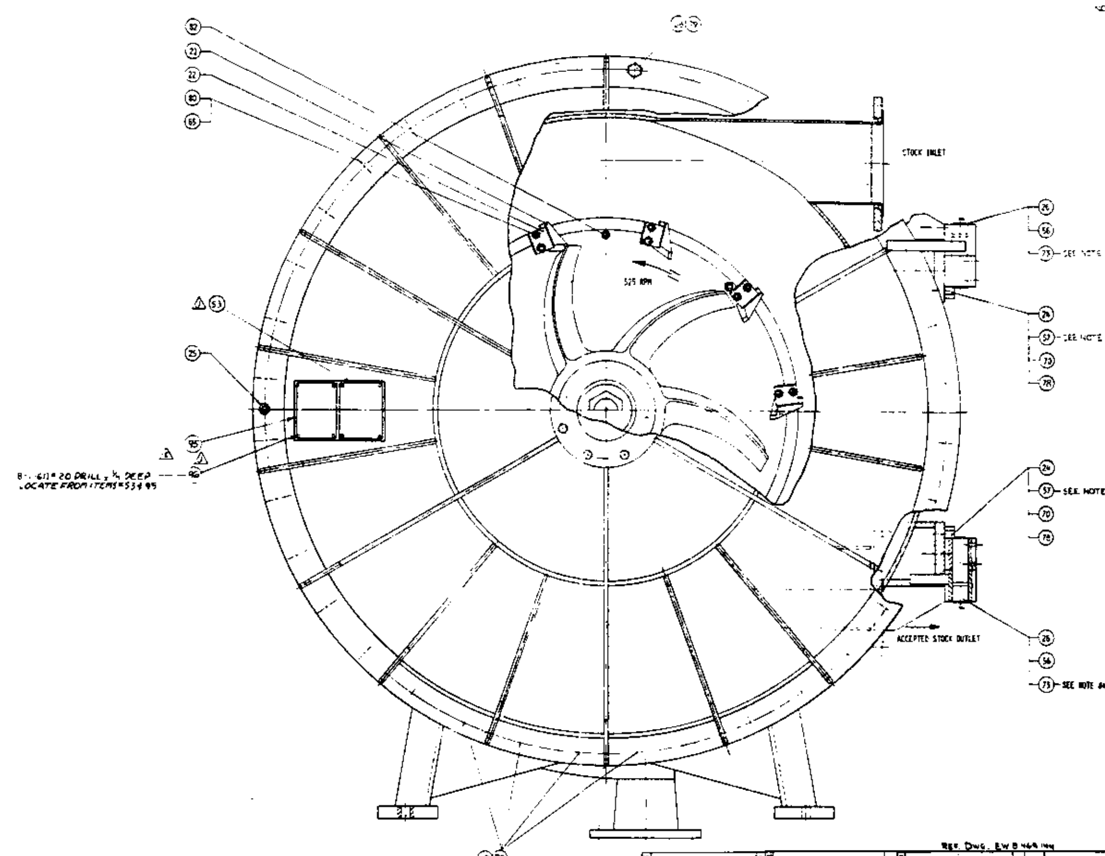
ML 65C-2000

ITEM	DESCRIPTION	PART NO. OR MATERIAL	ADDITIONAL SPEC. OR PART NO.	* INDICATES ADDITIONAL MATERIAL LIST (ML)	ASSY. PART NO. 65C-2000-10	QUANTITY REQUIRED
95	CAUTION PLATE	M10-0355-1			1	
96	PARKER KALON RD. HD. DRIVE SCR. TYPE "U"	ST.ST.			8	
	#10 x 3/8" LG.					


NOTE :
1. SECURE LOOSE GASKET (ITEM #11) TO PREVENT LOSS.
2. ASSEMBLE TOP VALVE WITH SEAT SIDE OF GATE UP.
3. ASSEMBLE BOTTOM VALVE WITH SEAT SIDE OF GATE DOWN.
E 4. ASSEMBLE ITEM 7 TO MATING PART, ITEM 2 WITH NON-HARDENING PERMATEX #2
SEE NOTE 1
SEE NOTE 2
SEE NOTE 3
SEE NOTE 4
"X"
"X"
45°
℄ WINDOW
℄ VALVE CYL.
D VIEW "X"-"X"
ORIENT VALVE CYLS. AS SHOWN
METRIC DWG.
THIRD ANGLE PROJECTION
FOR MATERIAL LIST SEE ML 65G-1000
RECORD OF CHANGES
A ML CHANGE ONLY
B ADDED ITEM 16, SEE ML
CN 771767 HM 10-12-77
C ADDED ITEM 17. SEE ML
CN 771831 J.S. 10-24-77
D VIEW "X"-"X" ADDED
SEE ALSO ML
CN 780241 J.S. 2-17-78
E REMOVED DEFLECTOR
CN 790504 JJS 3-16-79
ADDED NOTE 4 ADDED
ITEM 9 DELETED ITEM 18
(12) FROM TOP CYLINDER.
CONE & GASKET (ITEMS 11
DWG. REF. B 459 702
DRAWN
TRACED
CHECKED
APP'D
F. PARADIE
ECC
5-29-76
8-25-76
8-27-47
SCALE
NONE
PRINT ISSUED
IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE
FIBERIZER F1, F2
JUNK TRAP ASSEMBLY
DRAWING NUMBER- 65G 1000
SHEET 1 OF 1
REVISION - E



LIGHT REJECTS OUTLET
HEAVY REJECTS OUTLET
SEE NOTE #5
SEE NOTE #2
OIL FILL
OIL LEVEL
OIL DRAIN
DRIP WATER DRAIN FROM STUFFING BOX
METRIC DWG.
FOR MATERIAL LIST SEE ML-65C-2000
CHANGES
RECORD OF CHANGES
IMPROVED MACHINERY INC.
FIBERIZER F3
GENERAL ASSEMBLY
65C-2000



NOTE:

1. [illegible] AT ASSEMBLY.
2. MACHINE SPACER RING (ITEM #13) TO MAINTAIN A GAP OF 2MM AT ASSEMBLY.
3. SPOT DRILL SHAFT FOR SET SCREW (ITEM #66) AT ASSEMBLY.
4. SPOT DRILL HINGE PIN FOR SET SCREW (ITEM #73) AT ASSEMBLY.
5. ADJUST BARS (ITEM #21) TO MAINTAIN A GAP OF 1.5MM TO IMPELLER (ITEM #17) AT ASSEMBLY.
6. APPLY HARDENING PERMATEX #1 TO BOTH MATING SURFACES OF PACKING BOX ITEM 16, HALVES
7. ASSEMBLE THREADED RODS ITEM [illegible] USING LOCTITE GRADE AV 58110-3
8. INSTALL SOC. HD. CAP SCREWS ITEM 64 & ADAPTER UNION ITEM 92 WITH LOCTITE H/S 58110-9.
9. ASSEMBLE ALL INTERNAL FASTENERS ITEMS 59,65,69,72,74,82 & 85 USING LOCTITE GRADE AV 58110-3.
10. ~~PRIOR TO THE LOCTITE APPLICATION, THE SLEEVE & THE SHAFT MUST BE CHECKED FOR SIZE. ANY DEVIATION FROM SPECIFIED TOLERANCE OF THE SLEEVE OR SHAFT MUST BE REPORTED & CLEARED WITH ENGINEERING. CAREFULLY CLEAN THE ENTIRE BORE & ENDS OF THE SLEEVE WITH "LOC-QUIC" PER IMPCO SPEC. #58110-6. APPLY LOCTITE PER IMPCO SPEC. #58110-3 TO BOTH MATING SURFACES (SLEEVE & SHAFT) AND THEN SLIP THE SLEEVE INTO POSITION AS SHOWN. WHEN AXIAL POSITION IS ATTAINED, IMMEDIATELY TURN THE SLEEVE APPROX. 1/2 REVOLUTION TO EQUALIZE THE THICKNESS OF LOCTITE FILM ALL AROUND. THEREAFTER THE JOINT MUST NOT BE MOVED. NOTHING SHALL TOUCH THE SLEEVE UNTIL THE PROPER CURING TIME HAS ELAPSED.~~
11. SPOT SHAFT WITH 90° INCLUDED ANGLE DRILL POINT FOR (2) SET SCREWS, ITEM 54, IN PACKING SLEEVE, ITEM 12 AT ASSEMBLY.

8-.6(1)"20 DRILL, ½ DEEP LOCATE FROM ITEMS #53 & 85

METRIC DWG.

FOR MATERIAL LIST SEE ML-65C-2000

REF. DWG. EW B 469 144

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

FIBERIZER F2

GENERAL ASSEMBLY

SCALE: NONE

DRAWING NUMBER - 65C-2000 - [illegible]

SHEET 2 OF 2