PART 1-A

TOWER ASSEMBLY - KAPLAN

1A-1 BOTTOM RING

Reference drawing no.	226F34609
Piece no.	01
Quantity	01
Segments	02
Height	4"
Outside diameter	132.875"
Inside diameter	106.250"
Material	ASMT A-36
Weight estimated	6,600 lbs.

1A.1.2 BUSHING

Reference drawing no.	226D34667
Piece no.	05
Quantity	18
Height	2.875"
Outside diameter	4.8905"
Wall thickness	0.3125"
Material	Delrin
Type	AF

1A.1.3 SEAL RING

Reference drawing no.	226F34609
Piece no.	22
Quantity	18
Cross section	0.210"
Inside diameter	4.250"
Model	2-347
Material	Buna-N
Make	Parker Seal

1A.1.4 DISCHARGE RING

Reference drawing no.	226F34605
Piece no.	02
Quantity	01
Outside diameter - maximum	107.250"
Inside diameter - maximum	105.000"
Height	24.625"
Wall thickness - minimum	1.100"
Material	ASTM A-36
Weight - estimated	2625 lbs.

PART 1-A

TOWER ASSEMBLY - KAPLAN

1A.2 WICKET GATE

Reference drawing no.	226D34610
Piece no.	02
Quantity	18
Height - stems included	66.375"
Height - gate only	38.970"
Length	22.424"
Thickness - maximum	4.484"

PART 1-A

TOWER ASSEMBLY - KAPLAN

1A.3 HEAD COVER

Reference drawing no.	226F34611
Piece no.	01
Quantity	01
Height	47.750"
Outside diameter	142.000"
Material	Cast iron
Weight - estimated	22,000 lbs.

1A.3.1 LINER

Reference drawing no.	226D34676
Piece no.	01
Quantity	24
Length	14.000"
Width	2.500"
Thickness	0.625"
Material	Nylatron
Type	GSM
Weight	1 lb.

1A.3.2 LINER

Reference drawing no.	226D34676
Piece no.	02
Quantity	12
Length	14.000"
Width	2.500"
Inside radius	39.875"
Thickness	0.625"
Material	Nylatron
Type	GSM
Weight	1 lb.

1A.3.3 BUSHING - UPPER

Reference drawing no.	226D34667
Piece no.	01
Quantity	18
Height	2.240"
Outside diameter	4.890"
Wall thickness	0.3125"
Material	Nylatron
Type	GSM

PART 1-A

TOWER ASSEMBLY - KAPLAN

1A.3.4 BUSHING - LOWER

Reference drawing no.	226D34667
Piece no.	03
Quantity	18
Height	4.130"
Outside diameter	5.1405"
Wall thickness	0.3125"
Material	Delrin
Type	AF

1A.3.5 PACKING

Reference drawing no.	226F34611
Piece no.	08
Quantity	18 sets
Cross section	0.625" square
Outside diameter	5.750"
Model	4025
Material	Teflon impregnated braided asbestos
Make	Anchor
Supplier	Robco Inc.

1A.3.6 FACING PLATE

Reference drawing no.	226D34667
Piece no.	03
Quantity	01
Segments	06
Length - maximum	67.875"
Outside diameter	135.750"
Inside diameter	111.000"
Thickness	0.875"
Material	ASTM, A-36
Weight - each segment	190 lbs.

PART 1-A

TOWER ASSEMBLY - KAPLAN

1A.4 INNER HEAD COVER

Reference drawing no.	226F34608
Piece no.	02
Quantity	01
Height	15.750"
Outside diameter - maximum	40.000"
Material	Welded steel
Weight	820 lbs.

1A.4.1 SEAL RING

Reference drawing no.	226F34608
Piece no.	19
Quantity	01
Cross section	3/16" dia.
Inside diameter	38"
Mean developed length	120"
Material	Neoprene.

PART 2A

SUMP PUMP FOR HEAD COVER

2A.1 SUMP PUMP ARRANGEMENT

2A.1.1 VALVE

Reference drawing no.	226F34632
Piece no.	17
Quantity	02
Model no.	212P
Type	Globe
Size	1"
Material	Bronze
Make	Crane
Supplier	Crane Supply Co.

2A.1.2 CHECK VALVE

Reference drawing no.	226F34632
Piece no.	18
Quantity	02
Model no.	72
Type	Lift check
Size	1"
Material	Bronze
Rated	200 lb.
Make	Crane
Supplier	Crane Supply Co.

2A.1.3 LIQUID LEVEL CONTROL

Reference drawing no.	226F34632
Piece no.	25
Quantity	01
Model	2E1F0
Resister - set point Model	2Z1E
Electrode fitting Model	3E2A
Two electrodes Model	3R2A0
Make	Warrick Controls
Supplier	Davis Controls Ltd.

PART 2A

SUMP PUMP FOR HEAD COVER

2A.1.4 LIQUID LEVEL CONTROL

Reference drawing no.	226F34632
Piece no.	27
Quantity	01
Model consist of one	2E1F0
and one	2D1F0
Resister - two set point Model	2Z1E
Electrode fitting Model	3E3A
Three electrodes Model	3R2A0
Electrodes length	2 Ft, cut to suit at assembly
Make	Warrick Controls
Supplier	Davis Controls Ltd.

2A.1.5 PUMP AND MOTOR

Reference drawing no.	226F34632
Piece no.	28
Quantity	02
Series	BE 33
Type	Self priming
Capacity	50 USGPM
Motor	1/3 HP
Phase	Single
Voltage	115 VAC
Make	Monarch
Supplier	Higginson Equipment Sales Ltd.

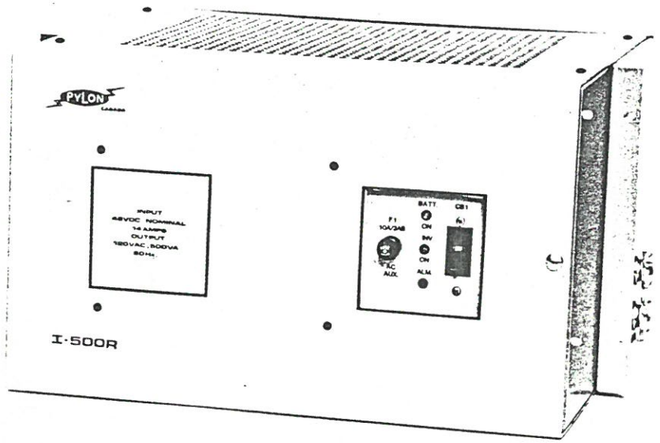
2A.1.6 INVERTER

Reference drawing no.	226D34637
Piece no.	03
Quantity	01
Model	I-500R-130
Input voltage	130 V.D.C.
Output voltage	117 V.A.C.
Power	500 VA
Make	Pylon Electronic
Supplier	Pylon Electronic Dev. Co.

PYLON

INVERTERS

Bulletin G-22



SERIES I - 500R

The PYLON® series I-500R Inverters are intended as a primary source of "no-break" 117VAC, 60Hz AC power for applications where continuity of AC power is critical.

This telecommunications grade unit provides 117VAC, 60Hz sine wave power at 500VA maximum continuous duty. The frequency is crystal controlled and synchronized to the line. The output is regulated, isolated, short-circuit protected and can provide peak surge capacity exceeding 600VA. The unit is convection cooled and incorporates a thermal cut-out switch as added protection.

The series I-500R is designed for parallel operation in 117VAC AC power plants comprising up to six inverters for outputs to 3KVA. Small inverter plants may therefore be expanded at minimal cost as and when demand increases. An additional feature of this concept is that for, say, a 2KVA plant, only one additional I-500R inverter is required to provide redundancy.

The series I-500R is built on a modular basis for efficient servicing and maintains the traditional high quality of parts and workmanship of other PYLON products.

®REGISTERED TRADE MARK USA and CANADA

APPLICATIONS

Telephone Central Office UPS
Telecommunications systems
Emergency power systems
Alarm systems
Data centres
Shipboard UPS
Microwave repeater systems
Mobile communications
Instrumentation systems
Switching and transformer station UPS
Medical emergency AC power
Computer UPS

FEATURES

Sine wave output
Regulated
Automatic short-circuit recovery
Short-circuit protection
Crystal controlled frequency
Parallel operation for expansion
Parallel operation for redundancy
Line synchronization
Line transfer
Thermal overload protection
Extended alarm contacts

(PATENTS PENDING)

(ALL RIGHTS RESERVED)

SPECIFICATIONS

Input	Model I-500R-24	Model I-500R-48	Model I-500R-130
Input voltage (nominal)	24 Vdc	48 Vdc	130 Vdc
Input voltage range	21-28 Vdc	42-56 Vdc	105-140 Vdc
Input current at 500VA load	29.5 A	13.5 A	5.6 A
Idle current	7 A	3.5 A	1.5 A
Battery feedback noise, dBrnC max.	30, on 800 Ahr battery	30, on 400 Ahr battery	30, on 200 Ahr battery
Efficiency	60%	70%	70%

Output

Output voltage	117VAC nominal
Output current	4.3 A max. continuous
Power	500VA max. continuous
Surge power	625VA for 10 min
Reactive load performance	rated 500VA into a load having a power factor 0.8 leading for lagging
Output waveform	sine wave
Distortion	less than 5% at unity power factor
Load regulation	± 5%
Line regulation	± 5%
Frequency (line synchronized)	60Hz nominal
Frequency (free running)	59.7Hz ± 0.05% (crystal controlled) 60Hz ± 0.05% (optional)

Protection

Output	*separate line fuse *short circuit protected *current limiting *foldback limiting *automatic transfer to line in case of inverter failure (transfer 15 m Sec)
Input	*over temperature protection *magnetic circuit breaker
Transient	*input and output line surge immunity to ANSI472
Battery	*automatic battery low voltage disconnect (optional)

Alarms and Indications

Local visual (LED)	inverter ON (green) battery connected (green) inverter OFF (red)
Extended alarm	dry A or B contact for inverter OFF

Environmental

Operating temperature	0-50°C
Operating humidity	0-95% (non condensing)

Mechanical

Overall dimensions width	17″	(432 mm)
height	10¼″	(260 mm)
depth	14½″	(368 mm)
Projection in front of rack	6″	(153 mm)
Projection behind rack	9″	(229 mm)
Weight (net)	71 lbs	(32 kg)
Finish	two tone grey	
Mounting	19″ or 23″ rack	

Output at 220VAC, 50Hz available on special request

SYSTEM ACCESSORIES

Accessory equipment to provide distribution, alarms, interconnection and transfer functions for Pylon power plants:

CC-1 — Set, Plug-In Interconnection Cables one of each part B43015 and B43016. One part forms part of the overall cable harness of the system and the plug cable is wired to each inverter. This enables an inverter to be unplugged from a system without cable changes.

JCP-2 — Junction Control Panel. Provides interconnecting points for input and output connections. Includes local remote alarm and transfer facilities. Ammeter and voltmeter included. Maximum capacity 3KVA (6 inverters). Please specify 24, 48 or 130 Vdc operation.

JCP-3 — Similar to JCP-2, but with maximum capacity of 6KVA.

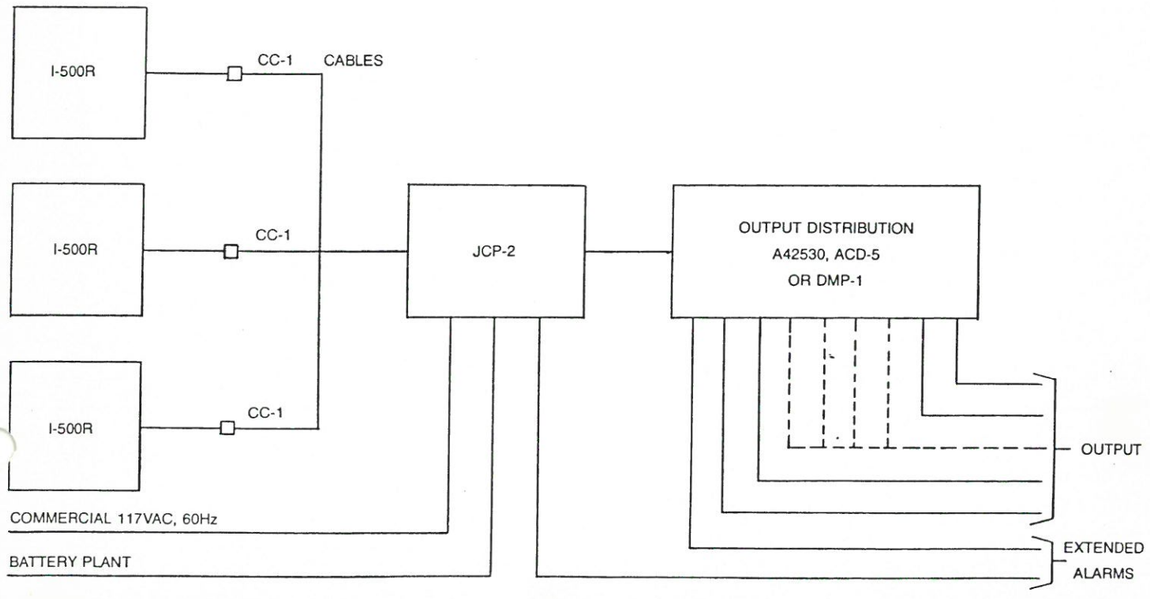
A42530 — Distribution Panel. Accepts up to 18 circuit breakers for load distribution. Recommend AM-1 Curve 3. 1, 2, 4, 5 and 10A ratings.

DMP-1 — AC Distribution and Metering Panel. Maximum input capacity 50A. Output distributed via 10 individual 5A circuit breakers. Current may be read for individual circuits and total load. Dry contacts extended alarms for tripping of any circuit breaker.

ACD-5 — AC Distribution Panel. Accepts up to 5 modules. Each module contains a power receptacle and circuit breaker.
Available modules are: MU-15 duplex receptacle, 15A max.
MU-20 20A max., twist lock
MU-25 25A max., twist lock
MU-30 30A max., twist lock

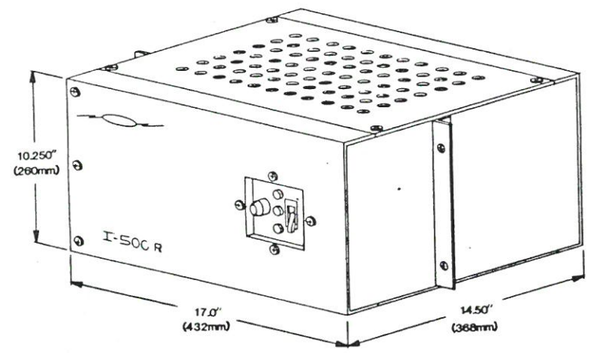
TYPICAL SYSTEM

Typical 1KVA plant with redundancy.

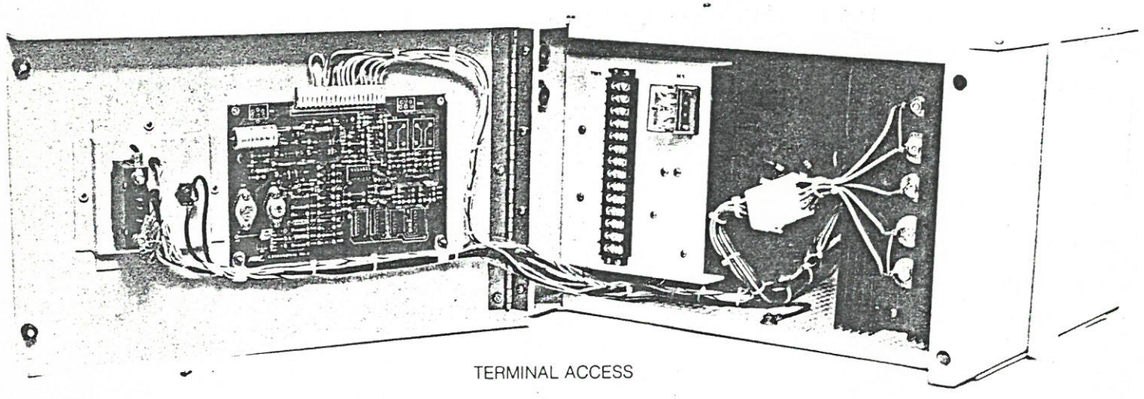


ORDERING INFORMATION

I-500R-24	Inverter, 500VA max. output, 24 Vdc nom. input.
I-500R-48	Inverter, 500VA max. output, 48 Vdc nom. input.
I-500R-130	Inverter, 500VA max. output, 130 Vdc nom. input.
CC-1	Set plug-in interconnecting cables.
JCP-2	Junction control panel, max. 3KVA. Please specify 24, 48 or 130 Vdc operation.
JCP-3	Junction control panel, max. 6KVA. Please specify 24, 48 or 130 Vdc operation.
A42530	Distribution panel (AC output).
DMP-1	Distribution and metering panel (AC output).
ACD-5	AC distribution panel. Please specify quantity and type of module. Max. 5 modules per ACD-5. MU-15 is duplex 15A max., MU-20, twist lock 20A max., MU-25, twist lock 25A max., MU-30, twist lock 30A max.



SERIES
I-500R



TERMINAL ACCESS

PYLON PRODUCTS YOU CAN COUNT ON

PYLON ELECTRONIC DEVELOPMENT company, ltd.

2300 Victoria St.,
Lachine, Québec H8S 1Z3
Canada

Montreal (514) 637-1186
Ottawa (613) 226-7920
Toronto (416) 663-5787

Telex: 05-821680

LINE NUMBER ON PARTS BILL WHICH IS INDICATED IN LOWER RH CORNER

INTAKE SIDE

SECTION "E-E"

SECTION "F-F"

1"-11½ NPT DRILL Ø1.141 1 HOLE IN HEAD COVER AT EACH AIR VALVE POCKET AT SHOP ASSEMBLY.

CONNECTION FOR GENERATOR COOLING WATER RETURN

DISCHARGE LINE OF BOTH PUMPS TO BE ON SAME ELEVATION.

9.687 REF.

3.000

1"-11½ NPT DRILL Ø1.141 1 HOLE IN HEAD COVER AT EACH AIR VALVE POCKET AT SHOP ASSEMBLY.

CLEAN WATER SUPPLY

PACKING BOX PIPING 226F34631.

HEAD COVER 226F34611

16,500 R REF.

MAIN GUIDE BEARING 226F34621

30.250

35°

0.500 GAP MAX.

INNER HEAD COVER 226F34608

SECTION A-A

5"F U25 & ⅜"-16 UNC BOTTOM 3 HOLES IN HEAD COVER MARK OFF FROM PUMP SUPPORT (6) AT SHOP ASSEMBLY, DRILL 0.875 DEEP. (DO NOT DRILL THRU) TYP. FOR BOTH PUMPS.

USE AS NECESSARY

11°-15' REF.

54°

50° REF.

5° REF.

5.000

PUMP DC CONTROLLED THRU INVERTOR

¼" T (0.375 O.D.) FEMING SUPPLY.

AIR VALVE

AIR VALVE

OPEN 10% TYP. 2 VALVES.

12°-30'

PUMP - A.C. CONTROLLED

VIEW "D-E"

SECTION "B-B" (A.C. CONTROL)

PUMP START

PUMP STOP

6.500

2.000

SECTION "C-C" (D.C. CONTROL)

HIGH LEVEL ALARM

PUMP STOP & ALARM (A.C. MALFUNCTION)

PUMP STOP

7.250

8.000

2.000

(1) 6001 - ASSEMBLY

PAINTING 226A34602

ALL PIPES & FITTINGS TO BE PAINTED IN ACCORDANCE WITH 226A34602 SYSTEM NO. 2.

246-900216 132

CITY OF TALLAHASSEE JACKSON BLUFF HYDROELECTRIC PROJECT KAPLAN TURBINE U-3

SUMP PUMP & LEVEL CONTROL

ATELIERS D'INGENIERIE DOMINION BRIDGE CANADA LTD. JACKSON ENGINEERING WORKS MONTREAL, CANADA

226F34633 1 1 B

PART 3A

RUNNER

3A.1 RUNNER ARRANGEMENT

3A.1.1 RUNNER HUB

Reference drawing no.	226F34615
Piece no.	01
Quantity	01
Height	33.500"
Outside diameter - maximum	41.375"
Material	ASTM, A-27, Gr. 65-35, Class 1.
Weight - estimated	4350 lbs.

3A.1.2 SEAL RING

Reference drawing no.	226F34614
Piece no.	11
Quantity	01
Model	2-324
Type	O'ring
Inside diameter	1.350"
Cross section	3/16" dia.
Material	Buna-N
Make	Parker
Supplier	Le Roulement National Ltée.

3A.1.3 SEAL RING

Reference drawing no.	226F34614
Piece	12
Quantity	01
Inside diameter	29.500"
Cross section	0.250" dia.
Mean developed length	93.500"
Material	Neoprene

3A.1.4 SEAL RING

Reference drawing no.	226F34614
Piece no.	40
Quantity	01
Type	O'ring
Inside diameter	1.600"
Cross section	0.210"
Material	Buna-N.

PART 3A

RUNNER

3A.2 BLADE AND LEVER ASSEMBLY

3A.2.1 RUNNER BLADE

Reference drawing no.	226F34613
Piece no.	02
Quantity	05
Material	ASTM, A-743, Gr. CA-6NM
Weight - estimated	1075 lbs.

3A.2.2 THRUST PLATE

Reference drawing no.	226F34689
Piece no.	09
Quantity	05
Length	14.250"
Width	10.500"
Thickness	Nominal 0.500"
Material	ASTM B-584, Alloy C93700
Weight - estimated	17 lbs.

3A.2.3 THRUST BEARING

Reference drawing no.	226F34689
Piece no.	10
Quantity	05
Outside diameter	13.938"
Inside diameter	7.125"
Thickness	0.250
Material	ASTM, B-584, Alloy C93700
Weight	9 lbs.

3A.2.4 TRUNNION BEARING

Reference drawing no.	226F34689
Piece no.	11
Quantity	05
Outside diameter	7.756"
Wall thickness	0.375"
Length	3.062"
Material	ASTM B-584, Alloy C93700
Weight	9 lbs.

PART 3A

RUNNER

3A.2.5 BUSHING

Reference drawing no.	226F34689
Piece no.	12
Quantity	10
Outside diameter	2.504"
Wall thickness	0.250"
Length	1.985"
Material	ASTM B-584, Alloy C93700
Weight	1 lb.

3A.2.6 SEAL RING

Reference drawing no.	226F34686
Piece no.	30
Quantity	05
Inside diameter	15.463"
Cross section	3/16" dia.
Mean developed length	49.187"
Material	Neoprene

3A.2.7 BUSHING

Reference drawing no.	226F34623
Piece no.	07
Quantity	01
Flange outside diameter	12.250"
Bushing outside diameter	10.000"
Bushing inside diameter	8.502"
Length	3.750"
Material	ASTM B-584, Alloy C93700
Weight	35 lbs.

3A.2.8 PISTON RING

Reference drawing no.	226F34614
Piece no.	12-143
Quantity	02
Type	OWL-double seal
Material	Cast iron
Weight - each	18 lbs.
Supplier	Robco Inc.

PART 3A

RUNNER

3A.2.9 SEAL RING

Reference drawing no.	226F34614
Piece no.	13-143
Quantity	01
Model	2-448
Type	O'ring
Inside diameter	9.475"
Cross section	0.250"
Material	Buna-N
Make	Parker
Supplier	Le Roulement National Ltée.

3A.2.10 SEAL RING

Reference drawing no.	226F34614
Piece no.	14-143
Quantity	01
Model	7-446
Type	QUAD-X
Inside diameter	8.475 I.D.
Cross section	0.250"
Material	Buna-N
Make	Parker
Supplier	Le Roulement National Ltée.

3A.2.11 SEAL RING

Reference drawing no.	226F34614
Piece no.	15-143
Quantity	01
Type	O'ring
Inside diameter	2.100"
Cross section	0.210"
Material	Buna-N

3A.3

RUNNER CONE ARRANGEMENT

3A.3.1 UPPER CONE

Reference drawing no.	226F34616
Piece no.	01
Quantity	01
Outside diameter - Top end	35.875"
Outside diameter - Lower end	30.020"
Height	11.500"
Material	Welded steel plate
Weight - estimated	900 lbs.

3A.3.2 SEAL RING

Reference drawing no.	226F34614
Piece no.	5-144
Quantity	01
Inside diameter	34"
Cross section	0.250"
Mean developed length	107.625"
Material	Neoprene

3A.3.3 LOWER CONE

Reference drawing no.	226F34616
Piece no.	03
Quantity	01
Outside diameter - top end	30.020"
Outside diameter - lower end	17.500"
Height	15.500"
Material	Welded steel plate
Weight - estimated	380 lbs.

3A.3

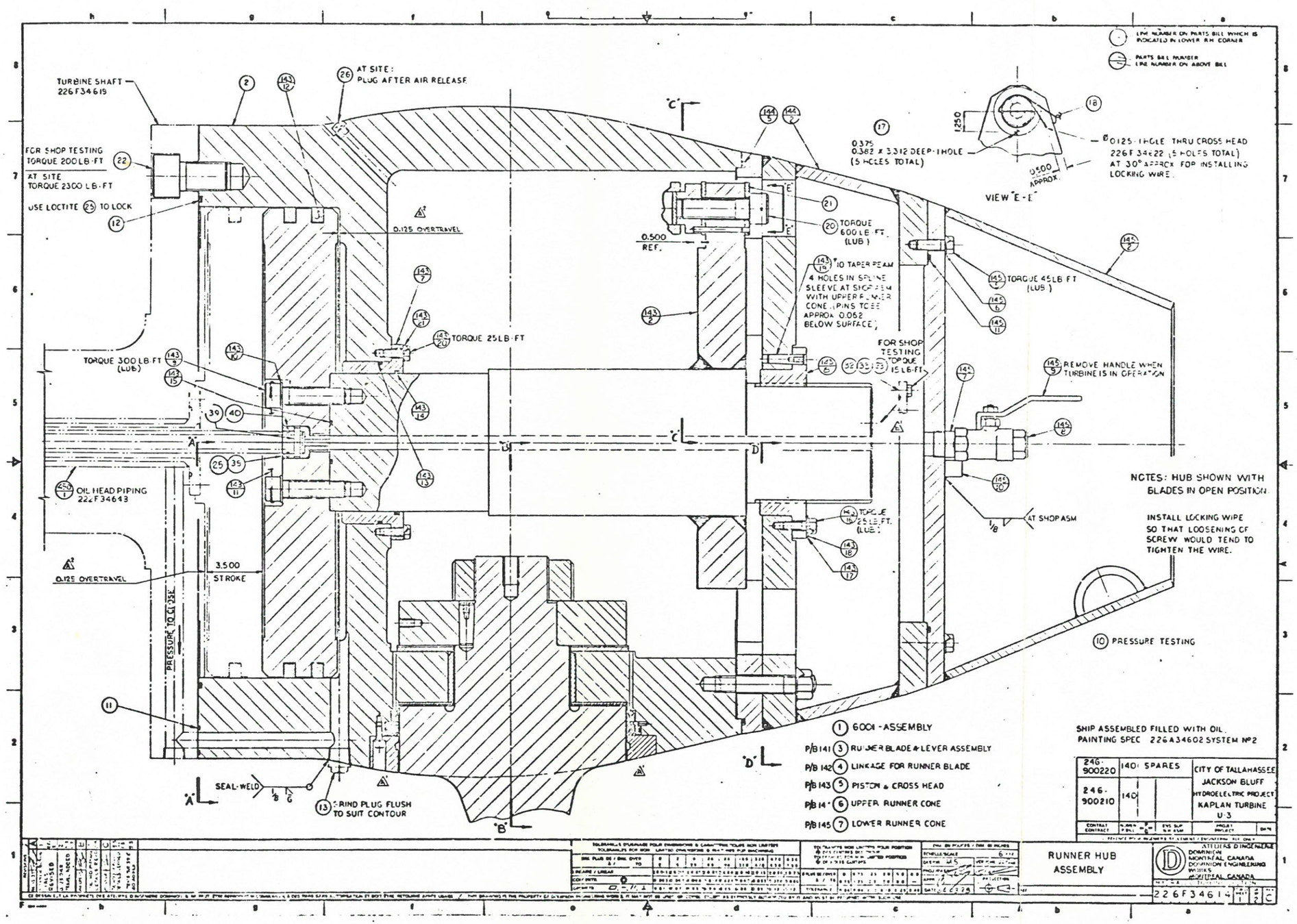
RUNNER CONE ARRANGEMENT

3A.3.4 VALVE

Reference drawing no.	266F34614
Piece no.	9-145
Quantity	01
Model	Econ-o-mite
Type	Ball
Series	42
Size	1 1/4"
Material	Stainless steel
Make	Worcester
Supplier	Electro-Tech Instruments Ltd.

3A.3.5 SEAL RING

Reference drawing no.	226F34614
Piece no.	11-145
Quantity	01
Inside diameter	22.500"
Cross section	0.250"
Mean developed length	71.500"
Material	Neoprene.


LINE NUMBER ON PARTS BILL WHICH IS INDICATED IN LOWER R.H. CORNER
PARTS BILL NUMBER
LINE NUMBER ON ABOVE BILL
TURBINE SHAFT 226F34619
AT SITE: PLUG AFTER AIR RELEASE
FOR SHOP TESTING TORQUE 200 LB-FT
AT SITE TORQUE 2300 LB-FT
USE LOCTITE (25) TO LOCK
0.125 OVERTRAVEL
0.500 REF.
TORQUE 600 LB-FT (LUB)
10 TAPER REAM 4 HOLES IN SPLINE SLEEVE AT SHOP ASSEM WITH UPPER RUNNER CONE. (PINS TO BE APPROX 0.062 BELOW SURFACE)
TORQUE 45 LB FT (LUB)
TORQUE 25 LB-FT
TORQUE 300 LB-FT (LUB)
FOR SHOP TESTING TORQUE 15 LB-FT
REMOVE HANDLE WHEN TURBINE IS IN OPERATION
0.375 0.382 x 3.312 DEEP-1 HOLE (5 HOLES TOTAL)
Ø0.125-1 HOLE THRU CROSS HEAD 226F34622 (5 HOLES TOTAL) AT 30° APPROX FOR INSTALLING LOCKING WIRE.
0.500 APPROX
VIEW "E-E"
OIL HEAD PIPING 226F34643
3.500 STROKE
PRESSURE TO CYL
SEAL-WELL
GRIND PLUG FLUSH TO SUIT CONTOUR
TOGGLE 25 LB.FT. (LUB.)
AT SHOP ASM
NOTES: HUB SHOWN WITH BLADES IN OPEN POSITION.
INSTALL LOCKING WIRE SO THAT LOOSENING OF SCREW WOULD TEND TO TIGHTEN THE WIRE.
10 PRESSURE TESTING
1 6001 - ASSEMBLY
P/B 141 (3) RUNNER BLADE & LEVER ASSEMBLY
P/B 142 (4) LINKAGE FOR RUNNER BLADE
P/B 143 (5) PISTON & CROSS HEAD
P/B 14- (6) UPPER RUNNER CONE
P/B 145 (7) LOWER RUNNER CONE
SHIP ASSEMBLED FILLED WITH OIL.
PAINTING SPEC 226A34602 SYSTEM Nº2
246-900220 1401 SPARES
246-900210 1401
CITY OF TALLAHASSEE
JACKSON BLUFF HYDROELECTRIC PROJECT
KAPLAN TURBINE U-3
RUNNER HUB ASSEMBLY
ATELIERS D'INGENIERIE DOMINION MONTREAL CANADA
DOMINION ENGINEERING WORKS MONTREAL CANADA
226F34614
DEVISED
TRACED
CHECKED

(-) LINE NUMBER ON PARTS BILL WHICH IS INDICATED IN LOWER R.H. CORNER

(-/-) PARTS BILL NUMBER
LINE NUMBER ON ABOVE BILL

PART SECTION 'C-C'

(141/1) RUNNER BLADE AND LEVER ASSEMBLY
226F34686

PART SECTION 'D-D'

PART SECTION 'B-B'

BLADE

UPPER RUNNER CONE
226F34616

RUNNER HUB
226F34615

(144/2)

(15)

(14)

(16) TORQUE 700 LB-FT

(14)

SECTION 'F-F'

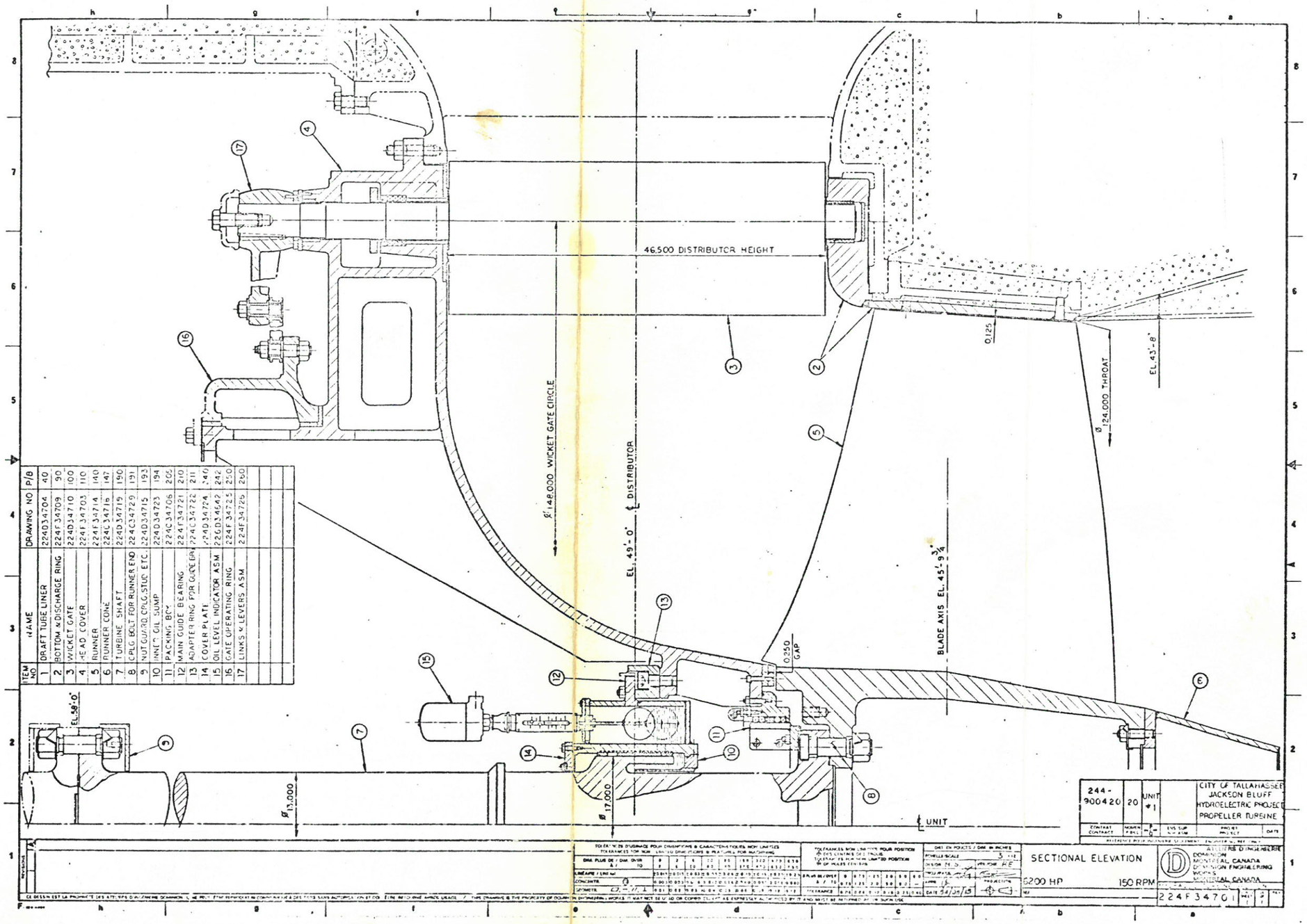
PART SECTION 'A-A'

245-900220	140	SPARES	CITY OF TALLAHASSEE
246 900210	140		JACKSON BLUFF HYDROELECTRIC PROJECT KAPLAN TURBINE U-3

RUNNER HUB ASSEMBLY

DOMINION ENGINEERING WORKS LIMITED GENERAL ELECTRIC CANADA

226F34614 C



ITEM NO	NAME	DRAWING NO	P/B
1	DRAFT TUBE LINER	224D34704	40
2	BOTTOM & DISCHARGE RING	224F34709	90
3	WICKET GATE	224D34710	100
4	HEAD COVER	224F34703	110
5	RUNNER	224F34714	140
6	RUNNER CONE	224C34716	147
7	TURBINE SHAFT	224D34719	190
8	CPLG BOLT FOR RUNNER END	224C34729	191
9	NUT GUARD CPLG STUD ETC.	224D34715	193
10	INNER OIL SUMP	224D34723	194
11	PACKING BOX	224C34706	206
12	MAIN GUIDE BEARING	224F34721	210
13	ADAPTER RING FOR GUIDE BRG	224C34722	211
14	COVER PLATE	224D34724	240
15	OIL LEVEL INDICATOR ASM	226D34642	242
16	GATE OPERATING RING	224F34725	250
17	LINKS & LEVERS ASM	224F34726	260

244-900420	20	UNIT #1		CITY OF TALLAHASSEE JACKSON BLUFF HYDROELECTRIC PROJECT PROPELLER TURBINE

SECTIONAL ELEVATION

6200 HP 150 RPM

DOMINION ENGINEERING WORKS MONTREAL CANADA

224F34701

GAP CLEARANCE - SEE BLADE DWG 226F34G13

GRIND RUNNER HUB LOCALLY IF NECESSARY TO CLEAR LEVER AND LUG AT ASSEMBLY IN SHOP

GRIND HEAD OF SOC HEAD CAPSCREW FLUSH WITH GLAND AT FINAL ASSEMBLY IN SHOP IF NECESSARY

SECTION B-B

BEND METAL OVER CAPSCREW AND THRUST PLATE TO LOCK SCREWS AT ASSEMBLY IN SHOP

TORQUE SPLINE NUT (5) TO 16000 LBS. FT. AT ASSEMBLY IN SHOP AND LOCK SPLINE NUT WITH PIN (6) AS SHOWN FOR TORQUE WRENCH SEE DWG.

BLADE CLOSED

BLADE OPEN

MID

LEVER

22°-39'

LEVER SHOWN IN MID POSITION
(LOOKING AT LEVER FROM INSIDE OF RUNNER HUB)

*12 TAPER REAM B-HOLES EQUALLY SPACED FROM POSITION SHOWN AT ASSEMBLY IN SHOP AFTER SETTING RUNNER BLADE TO ANGLE GIVEN ON BLADE POSITION DWG. 226F34G94

BEND METAL OVER CAPSCREW TO LOCK

FOR FINAL ADJUSTMENT OF LUG SPACER DETERMINED BY HYDRAULIC ENGINEERING

CROSS HEAD 226F34G22

FOR TORQUING AND LOCKING OF CAPSCREW AND DOWELING OF LUG SEE RUNNER HUB ASSEMBLY 226F34G14

SECTION C-C

AFTER TORQUING SPLINE NUT DRILL Ø 0.375 I- HOLE IN LEVER, AS SHOWN AND TACK WELD PIN (6) TO LEVER ORIENTATION OF PIN NOT IMPORTANT.

FOR FINAL MACHINING OF THRUST PLATE (9) SEE DWG. 226F34G89 0.375 REF 0.505 TO 0.007 CLEARANCE.

℄ OF HUB

0.750

℄ OF BLADE AXIS

DIM 'B'

DIM 'A'

*12 TAPER PINS TO BE 0.125 BELOW SURFACE.

USE LOCTITE TO LOCK SOC HEAD CAPSCREW AT FINAL ASSEMBLY IN SHOP

F.E.N FACE AGAINST RUNNER HUB

(1) G001 ASSEMBLY

SECTION A-A

(142/3) RUNNER HUB 226F34G13

TOP OF RUNNER HUB

LINE NUMBER ON PARTS BILL WHICH IS INDICATED IN LOWER RH CORNER

PARTS BILL NUMBER LINE NUMBER ON ABOVE BILL

246-900220 | 141 | SPARES

246-900210 | 141 | 226F34614

CITY OF TALLAHASSEE
JACKSON BLUFF
HYDROELECTRIC PROJECT
KAPLAN TURBINE
U 3

RUNNER BLADE AND LEVER ASSEMBLY

ATELIERS D'INGÉNIERIE DOMINION MONTREAL CANADA
DOMINION ENGINEERING WORKS MONTREAL CANADA

226F34686 | 1 | B

PART 4A

SHAFT AND PACKING BOX

4A.1 SHAFT ARRANGEMENT

4A.1.1 MAIN SHAFT

Reference drawing no.	226F34619
Piece no.	02
Quantity	01
Length	126.125"
Flange outside diameter - upper	19.750"
Flange outside diameter - lower	39.000"
Bearing journal diameter	14.991"
Shaft diameter	11.250"
Material	ASTM A-668, Class "D"
Weight - estimated	4,500 lbs.

4A.1.2 INNER OIL SUMP

Reference drawing no.	226D34693
Piece no.	01
Quantity	01
Flange diameter	15.366"
Inside diameter	11.750"
Sump outside diameter	12.125"
Wall thickness	3/16"
Height	8.250
Material	ASTM A-36
Weight	45 lbs.

4A.1.3 SEAL RING

Reference drawing no.	226F34693
Piece no.	05
Quantity	01
Inside diameter	14.750"
Cross sectio[redacted]	

PART 4A

SHAFT AND PACKING BOX

4A.1.4 COUPLING STUDS

Reference drawing no.	226D34670
Piece no.	09
Quantity	10
Length - total	8.500"
Body diameter	1.9995"
Thread size	1 3/4" - 8UN
Material	ASTM A-576, G10450
Weight	7 lb.

4A.1.5 NUT GUARD

Reference drawing no.	226D34670
Piece no.	02
Quantity	01
Segments	02
Outside diameter	20.500"
Bore diameter	11.375"
Height	3.125"
Material	Welded steel
Weight estimated - two halves	60 lbs.

PART 4A

SHAFT AND PACKING BOX

4A.2 SHAFT PACKING SEAL ARRANGEMENT

4A

PART 4A

SHAFT AND PACKING BOX

4A.3.3 VALVE

Reference drawing no.	226F34631
Piece no.	22
Quantity	02
Material	

PART 4A

SHAFT AND PACKING BOX

4A.3.6 PRESSURE REGULATOR

Reference drawing no.	226F34631
Piece no.	28
Quantity	01
Model	G984W-04A
Inlet pressure	75 PSI
Outlet working pressure	22 PSI
Size	1/2" NPT
Range of adjustment	5 PSI to 50 PSI
Make	Trerice
Supplier	H.O. Trerice Co.

4A.3.7 WATER FILTER

Reference drawing no.	226F34631
Piece no.	29
Quantity	01
Model	Dual
Type	OW/WB
Element mesh opening - maximum	.012"
Normal working pressure	50 PSI
Make	Airpel
Supplier	Dry-Con Ltd.

Trerice

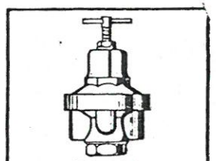
PRESSURE REGULATORS
SELF CONTAINED TYPE
STRAINERS AND SAFETY VALVES

SERIES NO. 984 TRERICE PRESSURE REGULATORS

For Steam—Air—Gas—Water—Oil

A good small regulator for installation on process equipment and service lines where the demand is not great. The valve bodies are forged bronze. Diaphragms are rubber or phosphor bronze and discs are rubber, neoprene or fibre depending upon the service demands.

Maximum Inlet Pressure 400 P.S.I.—Maximum Operating Temperature 350°F. REDUCED PRESSURE RANGES IN P.S.I. 5 to 50, 10 to 100, 25 to 150. In ordering please state:—Quantity, catalog number, name, size, inlet and outlet pressures, and service (Steam, water, etc.).



NO. 984

CATALOG NUMBERS 984 SERIES			
Sizes — Inches	1/4	3/8	1/2
Face to Face — Inches	1 3/4	2 3/4	2 3/4
Height — Inches	3 5/8	5 1/2	5 1/2
For Air, Gas, Water or Oil	984W-ACU	984W-ADU	984W-AEU
For Steam	984S-ACU	984S-ADU	984S-AEU

SERIES NO. 1001 TRERICE PRESSURE REGULATORS

For Water or Air

The bronze body regulator has a full pipe size seat opening and is thereby capable of supplying full pipe size volume at the reduced pressure. The seat disc is of special construction not affected by hot water.

Maximum Inlet Pressure: 250 lbs. REDUCED PRESSURE RANGES IN P.S.I. ARE: 5 to 28, 25 to 84, 50 to 125. In ordering please state: Quantity, catalog number, name, size inlet and outlet pressures, and service (water or air). Maximum temperature is 180°F.



NO. 1001

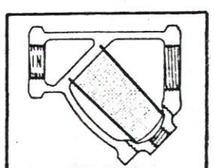
CATALOG NUMBERS 1001 SERIES							
Size — Inches	1/2	3/4	1	1 1/4	1 1/2	2	*2 1/2
Catalog Number	1001-AEX	1001-AGX	1001-AIX	1001-AKX	1001-AMX	1001-AOX	1001-CQX

Sizes above 2½" on application. *2½" size is cast iron galvanized.

SERIES NO. 1100 TRERICE STRAINERS

A Strainer should be installed in pipe lines ahead of Pressure Regulators, Steam Traps, Temperature Control Valves and similar equipment. The TRERICE Series No. 1100 Y-type strainers are furnished standard with brass screens having 1/64" perforations. A blow-off valve should be installed so that the screen can be cleaned from time to time.

In Ordering please state: Quantity, catalog number, name, size, screwed or flanged ends, (if flanged state standard or extra heavy and drilling), and service.



NO. 1100

CATALOG NUMBERS 1100 SERIES (Cast Iron Body)													
Connection	**Screen Material**	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"
250 # Screwed	Brass	1100-DF	1100-EF	1100-GF	1100-IF	1100-KF	1100-MF	1100-OF	----	----	----	----	----
	St. Steel	1100-DI	1100-EI	1100-GI	1100-II	1100-KI	1100-MI	1100-OI	----	----	----	----	----
125 lb. Flgd.	Brass	----	----	----	----	----	----	1100-OFB	1100-QFB	1100-SFB	1100-UFB	1100-WFB	1100-YFB
	St. Steel	----	----	----	----	----	----	1100-OIB	1100-QIB	1100-SIB	1100-UIB	1100-WIB	1100-YIB
250 lb. Flgd.	Brass	----	----	----	----	----	----	1100-OFD	1100-QFD	1100-SFD	1100-UFD	1100-WFD	1100-YFD
	St. Steel	----	----	----	----	----	----	1100-OID	1100-QID	1100-SID	1100-UID	1100-WID	1100-YID

For extra screens see price sheet.

Trerice

PRESSURE REGULATORS

CAPACITY TABLES

The proper sizing of a regulating valve is one of the most important factors to be considered in its selection. A valve that is too small will not maintain the desired capacity during peak load conditions. A valve that is too large will give poor control and is subject to rapid wear of the seating surfaces.

The following tables are based on actual flow tests and are offered as an aid in selecting the correct size TRERICE Regulating Valve to use. Correction factors and proper table to use in determining capacities of TRERICE Valves are listed by catalog number as follow:

Series 91500	Steam Flow — Use Table D, Water Flow — Use Table E
Series 922	Steam Flow — Use Table D, Water Flow — Use Table E Double Seated Valves — use 50%, Single Seated Valves — use 30% of capacities listed in tables.
Series 984	Air or Steam — use Table A Water — use Table B
Series 1001	Water Flow — use 50% of Table E

For capacities of TRERICE Regulating Valves for use on media other than steam, water or air consult the factory giving complete information as to valve size or capacity requirements, inlet and outlet pressure desired, temperature, viscosity, etc.

TABLE A

SIZE		1/4"		3/8"		1/2"	
Inlet Pressure	Outlet Pressure	AIR C.F.M.	STEAM Lbs./Hr.	AIR C.F.M.	STEAM Lbs./Hr.	AIR C.F.M.	STEAM Lbs./Hr.
25	10 or less	15	42	30	84	65	182
50	25 or less	25	70	50	140	100	280
100	60 or less	50	140	100	280	200	560
150	90 or less	75	210	150	420	280	784

TABLE B

Water in gallons per minute at 60°F.

Press. Drop Lbs.	Valve Sizes		
	1/4"	3/8"	1/2"
10	2	4	7
25	3	6	11
50	4	8	16
100	6	12	22

TABLE C

STEAM REQUIRED TO HEAT WATER ACCORDING TO TEMPERATURE RISE AND GALLONS PER HOUR

Temp. Rise °F.	U.S. GALLONS OF WATER HEATED PER HOUR—For fuel oil, use half the lbs. per hour of steam listed.																	
	25	50	75	100	150	200	300	400	500	750	1000	1500	2000	3000	4000	5000	7500	10000
	POUNDS OF STEAM PER HOUR REQUIRED																	
10						17	25	33	42	63	83	120	167	250	330	420	620	830
20					25	33	50	67	83	125	167	250	330	500	670	830	1250	1670
30				25	37	50	75	100	125	190	250	370	500	750	1000	1250	1900	2500
40			25	33	50	66	100	130	170	250	330	500	660	1000	1330	1700	2500	3300
50		21	31	42	63	84	125	170	210	310	420	630	840	1250	1680	2100	3100	4200
60	12	25	37	50	75	100	150	200	250	370	500	750	1000	1500	2000	2500	3700	5000
80	16	33	50	67	100	130	200	270	330	500	670	1000	1340	2000	2700	3300	5000	6700
100	21	42	63	83	120	170	250	330	420	630	830	1250	1700	2500	3300	4200	6300	8300
120	25	50	75	100	150	200	300	400	500	750	1000	1500	2000	3000	4000	5000	7500	10000
140	29	58	88	117	175	230	350	470	580	880	1170	1750	2340	3500	4700	5800	8800	11700
160	33	66	100	133	200	270	400	530	660	1000	1330	2000	2700	4000	5300	6600	10000	13300
180	37	75	113	150	225	300	450	600	750	1125	1500	2200	3050	4500	5950	7500	11300	14950
200	42	84	126	165	250	330	500	660	840	1260	1660	2500	3400	5000	6600	8300	12600	16600

Trerice

PRESSURE REGULATORS

CAPACITY TABLES

TABLE D

VALVE CAPACITIES IN POUNDS PER HOUR OF SATURATED STEAM

Inlet PSIG	Outlet PSIG	NOMINAL VALVE SIZE—N.P.T.										
		½	¾	1	1¼	1½	2	2½	3	4	5	6
0	VAC	45	90	145	240	340	540	820	1090	2100	3003	5250
5	4	50	100	150	260	360	560	840	1140	2160	3180	5300
	2	82	165	245	425	590	925	1400	1870	3575	5200	8800
	0	100	200	300	520	720	1125	1700	2275	4350	6300	11000
10	8	75	150	225	405	565	900	1325	1800	3475	5080	8250
	5	111	221	335	600	840	1330	1990	2680	6000	7450	12250
	0	140	275	410	740	1040	1650	2475	3320	6400	9200	16800
20	15	138	280	415	775	1070	1750	2570	3450	6700	9400	15000
	10	180	365	545	1010	1410	2280	3375	4500	8750	12300	21000
	5	200	410	610	1120	1560	2520	3750	5000	9700	13600	25200
30	25	160	325	490	880	1220	1970	2950	3900	7650	10750	17300
	20	213	435	650	1175	1630	2625	3900	5200	10100	14300	23500
	10	260	530	800	1430	2000	3200	4800	6300	12350	17400	31000
40	30	240	485	755	1320	1825	2950	4425	5820	11550	16000	26000
	20	310	615	965	1660	2325	3720	5610	7450	14550	20500	35000
	15	320	640	1000	1740	2425	3880	5900	7700	15050	21300	38900
50	40	275	550	880	1420	2075	3250	5000	6650	12850	18200	28500
	30	355	710	1120	1900	2675	4200	6500	8700	16550	23900	40000
	25	375	750	1200	2050	2850	4500	6900	9100	17700	25300	44800
60	50	275	575	915	1600	2240	3525	5350	7100	13900	19800	31000
	40	365	755	1200	2100	2950	4600	7000	9300	18100	26100	42500
	30	410	850	1350	2350	3300	5200	7950	10500	20400	29200	51000
75	65	320	640	1020	1750	2410	3850	5800	7700	15000	21250	35000
	50	455	915	1490	2500	3250	5550	8400	11100	21600	31200	51000
	35	520	1040	1680	2840	3930	6300	9500	12600	24300	35200	62000
100	80	490	1000	1570	2680	3800	6000	9100	12000	23000	33800	55000
	65	600	1220	1900	3300	4680	7400	11100	14750	28400	41200	69000
	50	660	1330	2100	3620	5100	8050	12100	16050	30900	45100	80000
125	100	590	1210	1910	3250	4600	7300	10900	14600	27800	40250	66000
	80	740	1500	2370	4060	5700	9000	13550	18000	34750	50250	85000
	60	800	1620	2600	4400	6200	9800	14680	19600	37500	55000	96000
150	125	660	1325	2100	3650	5050	8000	12100	16200	30800	45400	72500
	100	850	1710	2750	4700	6600	10400	15500	21000	40000	59250	100000
	75	950	1900	3050	5200	7300	11600	17250	23100	44100	65000	115000
175	150	710	1420	2300	3900	5550	8800	13000	17400	33000	49500	78000
	120	970	1925	3125	5300	7450	11800	17600	23600	44900	66800	110000
	85	1100	2200	3525	6000	8400	13350	19800	26600	50500	75000	130000
200	160	950	1890	3000	5150	7200	11500	17000	22800	43100	64100	105000
	130	1160	2325	3725	6250	8750	13900	20800	27800	53000	78200	135000
	100	1250	2500	4000	6800	9500	15150	22500	30200	57300	85000	150000
225	180	1050	2110	3390	5750	8000	12800	19000	25300	48100	72250	115000
	140	1320	2640	4200	7100	10000	15900	23700	31500	60000	90000	155000
	110	1400	2800	4450	7600	10650	16900	25050	33700	64000	95000	170000
250	200	1170	2330	3725	6300	8900	14100	21000	28100	54200	80000	130000
	150	1475	2950	4725	8000	11200	17900	26400	35700	68500	100250	175000
	125	1550	3100	4950	8400	11750	18600	27600	37200	70500	105100	185000

RATED CAPACITIES DO NOT INCREASE FOR OUTLET PRESSURES LOWER THAN LOWEST SHOWN FOR EACH INLET PRESSURE.

FOR SUPERHEATED STEAM CORRECT FIGURES IN TABLE "D" AS FOLLOWS:

With 50°F. Superheat multiply by .96
With 100°F. Superheat multiply by .94
With 150°F. Superheat multiply by .90
With 200°F. Superheat multiply by .87
With 300°F. Superheat multiply by .80

FOR AIR CAPACITIES: Divide figures in table "D" for the desired pressure reduction by 2.8 to obtain CUBIC FEET OF FREE AIR PER MINUTE AT 60°F.

FOR GAS CAPACITIES: Divide the figures in table "D" for the desired pressure reduction by 2.8 times the square root of the specific gravity of the gas to obtain CUBIC FEET OF FREE GAS PER MINUTE AT 60°F.

TABLE E

VALVE CAPACITIES IN U. S. GALLONS OF WATER PER MINUTE

Press. Drop PSIG	VALVE SIZE — N.P.T.									
	½	¾	1	1¼	1½	2	2½	3	4	5	6
1	4	8	12	21	30	47	70	94	169	265	467
2	6	11	17	30	42	66	99	133	253	374	660
3	7	13	21	37	51	81	121	163	310	458	808
4	8	15	25	42	59	94	140	188	358	530	934
5	9	17	28	47	66	105	156	210	400	592	1043
7	10	21	33	56	79	124	185	248	474	702	1235
10	12	25	39	67	94	148	221	297	566	837	1475
20	17	35	55	95	133	210	313	420	800	1183	2085
30	21	43	68	116	163	257	383	515	980	1450	2560
40	25	49	78	134	188	297	442	594	1130	1675	2950
50	28	55	88	150	210	332	495	665	1265	1870	3300
60	30	60	96	164	230	364	542	728	1386	2050	3620
75	34	68	107	183	257	407	606	814	1550	2295	4050
100	39	78	124	212	297	470	700	940	1790	2650	4670
125	44	87	139	237	332	526	783	1050	2000	2960	5215
150	48	96	152	260	364	576	858	1150	2190	3250	5720
175	51	103	164	280	392	622	925	1240	2365	3550	6170
200	55	110	175	300	420	665	990	1330	2530	3750	6600
225	58	117	186	318	445	705	1050	1410	2680	3975	7000
250	61	123	196	335	470	743	1100	1480	2830	4180	7380

HEATING WATER WITH STEAM—To heat a given quantity of water a given number of °F. per hour with steam, first determine the number of lbs. per hour of steam needed, by referring to the gallons of water heated per hour table opposite the temperature rise required. Then refer to the lbs. per hour steam capacity table opposite the maximum pressure drop for the operating steam pressure and find the proper valve size.

EXAMPLE: Size a valve for heating 1500 gals. per hour of water from 40°F. to 200°F. (160°F. rise) using 1000 P.S.I. saturated steam.
In table "C" we find that 2000 lbs. per hour of steam will re required and by referring to table "D" we find that a 1" double seated valve will pass 2100 lbs. per hour of saturated steam and is the closest size to suit the requirements.

FLOW OF WATER AT GIVEN PRESSURE DROP—To control the flow of a given volume of water per minute first determine the allowed pressure drop thru the valve and then refer to the gallons of water per minute on table "E". Opposite the pressure drop locate the gallons per minute required and the valve size.

EXAMPLE: Size a valve for passing 20 G.P.M. of water allowing a maximum pressure drop of 30 P.S.I. thru the valve.
Referring to table "E" we find that a 1/2" valve will pass 21 G.P.M. with a 30 P.S.I. drop, however, the 1/2" valve is only furnished in single seated type and the capacity would actually be 70% of the valve listed in the table. Therefore, the 1/2" valve does not have enough capacity and a 3/4" valve should be used.

HEATING FUEL OIL WITH STEAM—To heat a given quantity of fuel oil a given number of °F. per hour with steam, first determine the number of lbs. of steam per hour required to heat a similar number of gallons of water per hour on table "C". Since we are heating oil in place of water divide the number of lbs. of steam per hour by 2 and then refer to table "D" opposite the maximum pressure drop for the operating steam pressure and find the proper valve size.

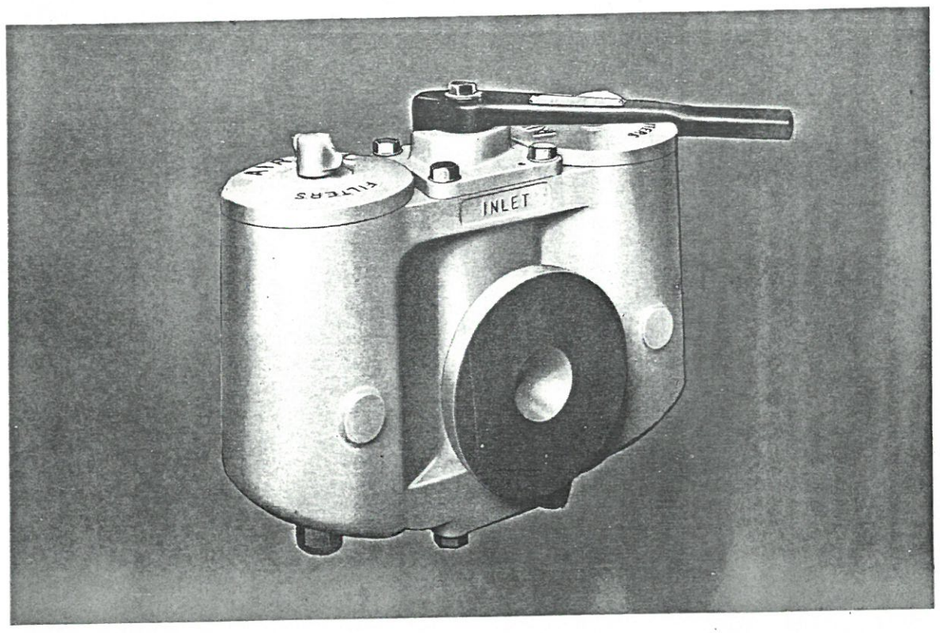
EXAMPLE: Size a valve for heating 400 gals. per hour of fuel oil from 30°F. to 150°F. (120°F. rise) using 10 P.S.I. saturated steam. In table "C" we find that 400 lbs. per hour will be required to heat the above quantity of water. Dividing this by 2 gives us 200 lbs. of steam per hour to heat 400 gals. of fuel oil 120°F. per hour. Our steam capacity table "D" shows us that a 3/4" valve would be the proper size to use.

GUARANTEE

The H.O. TRERICE CO. guarantees products of its manufacture to be free from defects in workmanship and material for a period of one year from the date of shipment to the original purchaser, and will repair or replace such products, F.O.B. Factory, which our examination shall reveal to be defective. We assume no other responsibility. Equipment and specifications are subject to change without notice.

AIRPEL TYPE OW DUAL FILTER

FOR EFFICIENT CONTINUOUS *LIQUID FILTRATION*



AIRPEL OW DUAL FILTERS FOR USE WITH WATER, LIGHT AND HEAVY OILS, PARAFFIN AND OTHER LIQUIDS

WHEN CONTINUOUS FLOW IS ESSENTIAL

Operation of the central changeover cock permits isolation of either filter chamber for removal and cleaning of the element whilst flow continues through the other.

The following specifications are standard:

		Body Material
OW/O	for oil and non-corrosive liquids	Cast Iron
OW/WB	for fresh and sea water	Cast Iron
OW/GM	for fresh and sea water	Gunmetal

For other corrosive services see Type OW/CS/SS.

Size Range

Screwed	½" – 2½"	: 13mm – 65mm	BSP – NPT
Flanged	1" – 6"	: 25mm – 150mm	BS10, BS4504, ANSI, DIN.

Normal Working Pressure

150lb/in² : 10·34 bar

Higher pressures available.

Test Pressure

300lb/in² : 20·69 bar

STANDARD SPECIFICATIONS

Type	OW/O	OW/WB	OW/GM
Body and Covers	CI	CI	GM
Cock	CI	GM (inc. sleeve)	GM
Internal M/c Parts	MS	SS	SS
External M/c Parts		Plated MS	
Elements	SS/MS	SS/SS	SS/SS
Drain Plugs	BR	BR	BR

MATERIAL SPECIFICATIONS

CI	Close grained Cast Iron to BS1452 GD14 (min)
GM	Gunmetal to BS1400 LG4C(BRONZE)
MS	Mild Steel to EN1A
SS	Stainless Steel to EN58
BR	Brass
SS/MS	Stainless Steel Mesh/Mild Steel Perforation
SS/SS	Stainless Steel Mesh/Stainless Steel Perforation

'O' Ring Seals available in Nitrile, Viton and E.P. synthetic rubbers, subject to following temperature limitations:

Nitrile	−40 °C to + 80 °C
Viton	−20 °C to +200 °C
E.P.	−50 °C to +100 °C

ELEMENT DATA

STANDARD CONSTRUCTION

FINENESS OF FILTER ELEMENT SIZE OF APERTURES ins	mm	microns	MATERIALS AND REF. NUMBERS Mild Steel Perforation	Stainless Steel Perforation	PERCENTAGE CLEAR AREA (See Dimension Page for superficial area)
PERFORATED PLATE					
PERFORATION Per sq. inch					
11 ·250	6·35		M 11	S 11	54
33 ·125	3·17		M 33	S 33	39·6
78 ·077	1·96		M 78	S 78	36·3
124 ·063	1·60		M 124	S 124	38·7
265 ·034	·86		M 265	S 265	24·1
SQUARE MESH GAUZE			WITH STAINLESS STEEL GAUZE		
MESH Per Linear inch					
20 ·036	·925	925	M 20	S 20	53
30 ·022	·551	551	M 30	S 30	42
40 ·015	·381	381	M 40	S 40	40
50 ·013	·335	335	M 50	S 50	44
60 ·0099	·251	251	M 60	S 60	35
80 ·0073	·185	185	M 80	S 80	34·1
100			M 100	S 100	36

AIRPEL

TYPE OW
DUAL
FILTER

SITION 3.
LLOWING
VING TO
D FILTER
BER AND
MUST BE
RING
FLOW
ESSARY
SEALS.
AT THE
GLAND

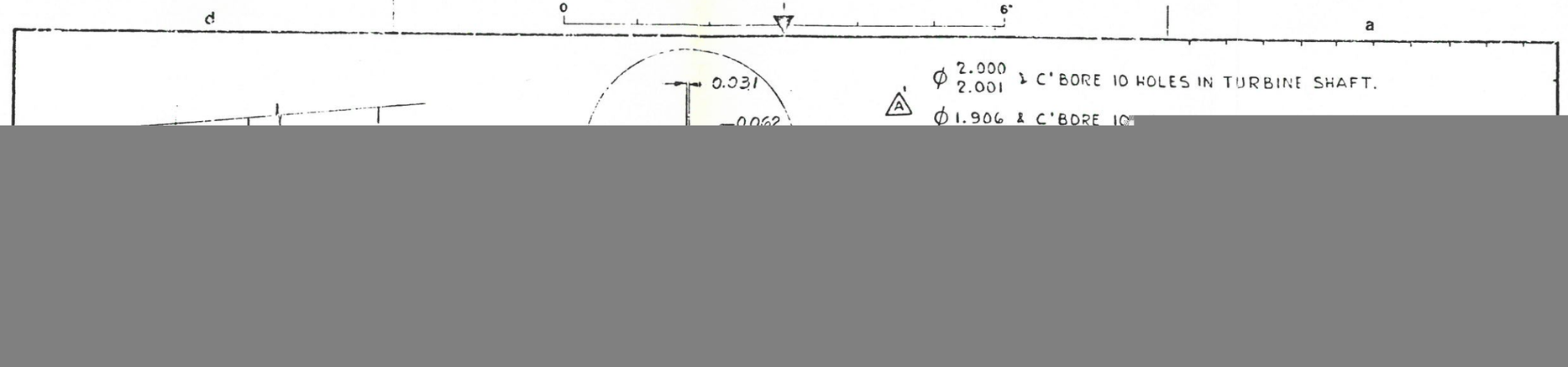
Dominion Engineering Works

General Index

PART A - Technical Design Data — Propeller Turbine
Technical Design Data — Kaplan Turbine

Description of Main Turbine Components.

[redacted]


d
0
6"
a
0.031
0.062
A'
ϕ 2.000 2.001 & C'BORE 10 HOLES IN TURBINE SHAFT.
ϕ 1.906 & C'BORE 10

PART 5A

GUIDE BEARING AND COVER PLATE

5A.1 BEARING ARRANGEMENT

5A.1.1 GUIDE BEARING

Reference drawing no.	226F34621
Piece no.	02
Quantity	01
Sections	02
Height	15.500"
Outside diameter - max.	38.500"
Inside diameter	15.000"
Material	Welded steel
Babbitt type	ASTM B-23 Alloy #7
Weight - total	750 lbs.

5A.1.2 INSPECTION COVER

Reference drawing no.	226A34680
Piece no.	01
Quantity	02
Length	4.250"
Width	3.500"
Thickness	0.500"
Material	Clear transparent acrylic plastic
Supplier	Johnston Industrial Plastics Ltd.

5A.1.3 GASKET

Reference drawing no.	226F34621
Piece no.	24
Quantity	02
Outside dimension	4.250" x 3.500"
Inside dimension	2.500" x 2.000"
Thickness	0.062"
Material	Hydroil

PART 5A

GUIDE BEARING AND COVER PLATE

5A.2 COVER PLATE ARRANGEMENT

5A.2.1 COVER PLATE

Reference drawing no.	226D34624
Piece no.	02
Quantity	01
Sections	02
Outside diameter	18.250"
Inside diameter	13.500"
Thickness	1.250"
Material	ASTM A-283 Grade D
Weight	50 lbs.

5A.2.2 PACKING RING

Reference drawing no.	226D34624
Piece no.	06
Quantity	01
Sections	02
Cut on inside radius of	5.625"
Width	1.000"
Thickness	0.375"
Material	White Felt SAE F5

5A.2.3 RESISTANCE TEMPERATURE DETECTOR

Reference drawing no.	226D34624
Piece no.	11
Quantity	02
Model	S53C121.Z.36
Diameter	0.250"
Length	12-1/8"
Rated	10 ohms @ 25 deg. C.
Make	Minco
Supplier	Quontime Products Ltd.

PART 5A

GUIDE BEARING AND COVER PLATE

5A.2.4 CONNECTION HEAD

Reference drawing no.	226D34624
Piece no.	12
Quantity	01
Model	F102-3T
Size	1/2" NPT x 1/2" conduit
Make	Minco
Supplier	Quontime Products Ltd.

5A.2.5 FLUID SEAL TRANSITION FITTING

Reference drawing no.	226D34624
Piece no.	13
Quantity	01
Model	F-132
Make	Minco
Supplier	Quontime Products Ltd.

5A.2.6 TEMPERATURE INDICATOR

Reference drawing no.	226D34624
Piece no.	14
Quantity	01
Model	

PART 5A

GUIDE BEARING AND COVER PLATE

5A.3 OIL INDICATOR ARRANGEMENT

5A.3.1 OIL LEVEL INDICATOR SWITCH

Dominion Engineering Works

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT P[illegible]

7A.1.9 WINDOWS

Reference drawing no.	226B34652
Piece no.	09
Quantity	04
External dimension	7.500" x 6.00[illegible]
Thickness	0.250"
Material	Plexi[illegible]

Dominion Engineering Works

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.1.16 SEAL - GE SPEED SWITCH

Reference

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.1.20 THRUST BALL BEARING

Reference drawing no.	226F34644
Piece no.	44
Quantity	01
Series	511
Cat. Bearing	51112
Make	SKF
Supplier	SKF Co. Ltd.

7A.1.21 BEARING

Reference drawing no.	226F34644
Piece no.	44
Quantity	02
Type	Ball bearing
Series	62
Cat. Bearing	6204-27
Make	SKF
Supplier	SKF Co. Ltd.

7A.1.22 AIR BREATHER

Reference drawing no.	226F34644
Piece no.	49
Quantity	01
Type	A-series breather filter
Part Number	A13829
Connection	3/4" NPT
Make	Purolator
Supplier	Purolator Products Ltd.

7A.1.23 LEVEL GAUGE

Reference drawing no.	226F34644
Piece no.	64
Quantity	01
Catalog No.	84
Figure	5-8200
Make	Ernst Gage
Supplier	Ernst Gage Co.

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.1.24 VALVE

Reference drawing no.	226F34644
Piece no.	68
Quantity	02
Type	Regulating & shut off valve
Size	3/8"
Catalog No.	S-1VS6
Inlet and outlet	3/8" swage lok
Material	Forged steel
Make	Whitney
Supplier	Laurentian Valve & FIttings

7A.1.25 VALVE

Reference drawing no.	226F34644
Piece no.	69
Quantity	02
Type	Angle - regulating
Size	3/8"
Catalog No.	S-1VS6-A
Inlet and outlet	3/8 swage lok
Material	Forged steel
Make	Whitney
Supplier	Laurentian Valve & Fittings.

7A.1.26 VALVE

Reference drawingno.	226F34644
Piece no.	70
Quantity	01
Type	Shut off
Size	1/4"
Catalog No.	S-1VF4
Inlet and outlet	1/4" NPT Female
Material	Forged steel
Make	Whitney
Supplier	Laurentian Valve & Fittings.

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.2 GOVERNOR PIPING ARRANGEMENT

7A.2.1 GASKET

Reference drawing no.	226F34640
Piece no.	19
Quantity	02
Size	1 1/2"
Rated @	600 lbs.
Thickness	1/16"
Material	Cranite
Supplier	Crane Supply Co.

7A.2.2 GASKET

Reference drawing no.	226F34640
Piece no.	24
Quantity	02
Outside diameter	2.500"
Inside diameter	1.875"
Thickness	0.125"
Material	Micarta Grade "C"
Supplier	Daly's Engineered Plastics.

7A.2.23 BUSHING

Reference drawing no.

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.3 INSTRUMENT PANEL ARRANGEMENT

7A.3.1 ALTITUDE GAUGE

Reference drawing no.	226F34607
Piece no.	08
Quantity	01
Series	615
Type	Wall mounted
Dial size	4 1/2"
Range	0-70 feet of water
Connect[illegible]	

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

PART 7A

OIL HEAD, CONTROL PIPING AND INSTRUMENT PANEL

7A.4.4 SEAL - INTERMEDIATE TO LARGE PIPE CONNECTION

Reference drawing no.	226F34643
Piece no.	14
Quantity	01
Model	2-139
Type	O'ring

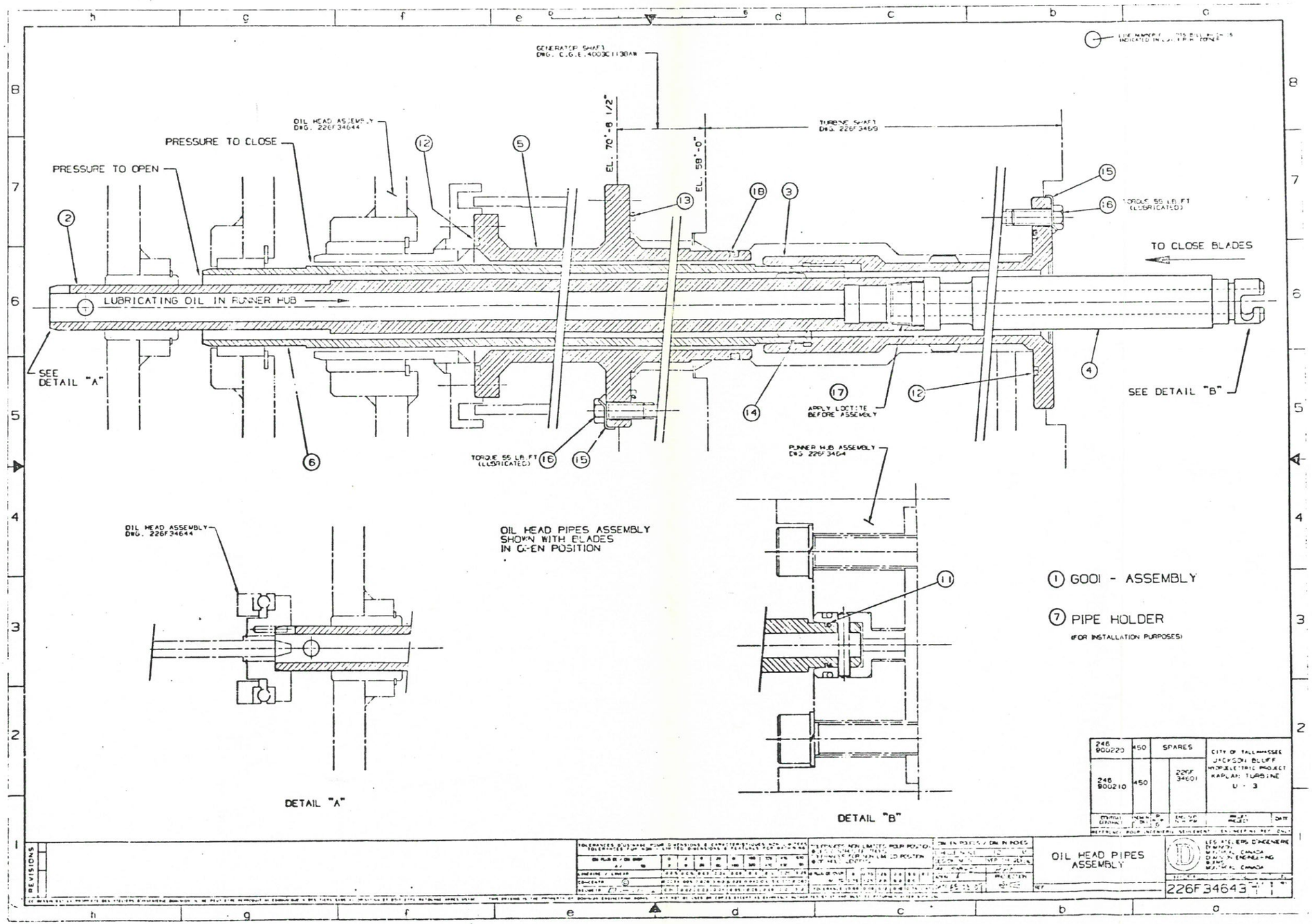
Trerice

PRESSURE GAUGES
No. 600 SERIES
3½"–4½"–6"–8½"–12" SIZES

The No. 600 TRERICE Pressure Gauge offers maximum quality, accuracy and styling at a budget price. This gauge is furnished standard with a

LINE NUMBER ON PARTS BILL WHICH IS INDICATED IN LOWER R.H. CORNER

PARTS BILL NUMBER
LINE NUMBER ON ABOVE BILL


GENERATOR SHAFT
DWG. C.G.E. 4003C113BAN
EL. 70'-8 1/2"
EL. 58'-0"
TURBINE SHAFT
DWG. 226F3409
OIL HEAD ASSEMBLY
DWG. 226F34644
PRESSURE TO CLOSE
PRESSURE TO OPEN
LUBRICATING OIL IN RUNNER HUB
TO CLOSE BLADES
SEE DETAIL "A"
SEE DETAIL "B"
TORQUE 55 LB. FT (LUBRICATED)
APPLY LOCTITE BEFORE ASSEMBLY
RUNNER HUB ASSEMBLY
DWG 226F3404
OIL HEAD ASSEMBLY
DWG. 226F34644
OIL HEAD PIPES ASSEMBLY
SHOWN WITH BLADES
IN OPEN POSITION
DETAIL "A"
DETAIL "B"
(1) 6001 - ASSEMBLY
(7) PIPE HOLDER
(FOR INSTALLATION PURPOSES)
248 900220 450 SPARES
248 900210 450 226F 34601
CITY OF TALLAHASSEE
JACKSON BLUFF
HYDROELECTRIC PROJECT
KAPLAN TURBINE
U - 3
OIL HEAD PIPES ASSEMBLY
226F34643
REVISIONS