

SALES ACKNOWLEDGEMENT

SULZER

Print Date 10/13/2000

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SULZER PROCESS PUMPS (CANADA) INC. 5055, rue Levy, Saint-Laurent, Québec H4R 2N9, Canada Phone 514 - 333-7760 Fax 514 - 333-6324			Sulzer Order No. CAE2000075	Item # 040	Order Date 10/12/2000
			Customer P.O. No. 445014		P.O. Date 09/22/2000
Bill to ALLIANCE FOREST PRODUCTS U.S. CORP. 17589 PLANT ROAD COOSA PINES, AL 35044-0555			Equipment Number 310-1140-027/M94197		
			Serial Number	Currency USD	Net Amount 16244.00
Ship to ALLIANCE FOREST PRODUCTS U.S. CORP. 17589 PLANT ROAD COOSA PINES, AL 35044-0555			Terms of Payment SPECIAL TERMS, SEE NOTE		
			Terms of Delivery DDP (INCOTERMS 2000) COOSA PINES, AL, PREPAID		
Marks and Tagging PUMP, B-LINE S2 FLOTATION CELL FEED 310-1140-027/M94197 445014 4121001112 CAE2000 075 40			Way of Delivery Truck		Onsite Date 02/16/2001
			Order Contact TONY LIANE		
			Sales Contact TONY GEDEON		
			Document Requirements 4 Copies in English		
Pump Size APT52-14	N.Am. Pump Size 16X14-20	Casing Material A890 3A	Consistency 0.5-0.8 % BD	Pumped liquid ONP 10MG Rep. Stock	
Capacity Q 5592 USGPM	Head H 35 ft	NPSH av 40 ft	NPSH req 13.5 ft	pH 7-9	
<i>GAS CONTROL</i> Capacity in alternative unit UPTO 89% BY 100	Efficiency 81 %	Temperature 125 F	Dimensional drawing P20044	Characteristic curve K00869	
Impeller Type Open	Impeller No. 283894	Impeller diameter 425 mm	Pump power P 65 HP	Base plate type Pump Motor/Steel/Zinc	
Coupling Type Rex-Omega ES	Mechanical seal type	Coupling Guard material S + Z EN10025	Dynamic seal power	Shaft Seal Fitting P02	
Motor IEC/NEMA code 444T	Power 75 HP	Rotational Speed 900 RPM	Manufacturer TOSHIBA	Future motor IEC/NEMA code 445T	
Frequency 60 HZ	Voltage 460V	Enclosure TEFC	Motor Supplied by Customer	Bearing Unit Lubrication Oil lubrication	

Order Remarks:

TERMS OF PAYMENT:

ALL PAYMENTS ARE DUE NET THIRTY (30) DAYS AFTER COMPLETION OF EACH EVENT AND RECEIPT OF INVOICE COMPLETE WITH SUPPORTING DOCUMENTATION, WHICHEVER OCCURS LAST

90% UPON DELIVERY OF EACH PUMP THAT HAS BEEN RELEASED AND THE CORRESPONDING CHANGE ORDER ISSUED

10% HOLD BACK UNTIL COMMISSIONING AND ACCEPTANCE BY BUYER

=====

PRICING:

FOR NON-MENA MOTORS, FINAL PRICES ARE SUBJECT TO CONFIRMATION AFTER RECEIPT OF CERTIFIED MOTOR PRINTS

=====

INSPECTION LOCATION:

FOR INSPECTION PURPOSES PLEASE CONTACT:

MR. SAM SEWELL

SULZER PROCESS PUMPS (US)

155 AHLSTROM WAY (PUE FACTORY)

EASLEY, SC, USA, 29640

TEL: (864) 855-9090, FAX: (864) 855-9095

=====

PAINTING:

SULZER STANDARD FACTORY APPLIED PAINTING WITH THE RAL 5019 (CAPRI BLUE) COLOR & GUARDS IN RAL 1021 (SAFETY YELLOW) AT NO EXTRA CHARGE

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FINAL IMPELLER TRIMS:

SECRET

1. The purpose of this document is to provide information regarding the status of the project.

2. The project is currently in the planning stage and is expected to be completed by the end of the year.

3. The project is being managed by the Project Manager and is being funded by the Department of Defense.

4. The project is being implemented in a phased manner and is expected to be completed by the end of the year.

5. The project is being implemented in a phased manner and is expected to be completed by the end of the year.

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PRODUCT SPECIFICATION	Description	APT52-14	
	Serial Number		
	Time of delivery/EXW	02/02/2001	
	Date printed	10/13/2000	Page 1
Customer	ALLIANCE FOREST PRODUCTS U.S. CORP.		
17589 PLANT ROAD	17589 PLANT ROAD		
COOSA PINES, AL 35044-0555	COOSA PINES, AL 35044-0555		
UNITED STATES	UNITED STATES		
Cust. order #	445014		
Cust. PO Line #	ZOR		
Country code	US	Equipment No	310-1140-027/M94197

PROCESS DATA

Mill	13	Capacity Q	5592 USGPM
Process	270	Head H	35 ft
Application	<i>Sec.</i> FLOTATION CELL	Characteristic curve	K00869
Temperature	125 F	Pump power P	65 HP
pH	7-9	Motor power	75 HP
Consistency	0.5-0.8 % BD	Efficiency	81 %
Gas content	8 %	Pump rotational speed	885 RPM
Min head on suction side	13.5 (PRESSURE) ft	Variable speed	No
Max head on suction side	17 (STATIC) ft	NPSH req	13.5 ft
NPSH av	40 ft		

PUMP

Supplier	Easley
Dimensional drawing	P20044
Conformity	89/392/EEC machinery /US
Version	09
Pump Size	APT52-14
Impeller Type	Open
Impeller No.	283894
Impeller diameter	425 mm
Impeller turning angle	19 °
Impeller max.diameter	477 mm
Flange Drilling	ASME B16.5 CLASS 150

IMPELLER MATERIAL A890 3A
SHAFT MATERIAL 55 2324

Casing Material	A890 3A
Gasket Material	Klinger SIL-4430
O-ring Material	NBR
Bearing Unit Lubrication	Oil lubrication
Bearing unit model	01 SS2324/NotSpec
Constant level oiler 638	Yes
Shaft Seal Fitting	P02
Customer documents lang./q	EN/04
Component documents lang./	EN/04
Special parts	METCO 16 SLEEVE

DRIVE MOTOR

Motor Supplied by	Customer	Rotational Speed	900 RPM
Motor IEC/NEMA code	444T	Power	75 HP
Manufacturer	TOSHIBA	Motor mounting	IPU production unit

SULZER PROCESS PUMPS (CANADA) INC.
5055, rue Levy
Saint-Laurent, Québec
H4R 2N9
Canada

Contact Person	TONY GEDEON
LBU Order #	CAE2000075
LBU Position	040
Telephone	514 - 333-7760
Telefax	514 - 333-6324 (bomcust1)

PRODUCT SPECIFICATION	Description	APT52-14	
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Country code	US	Equipment No	310-1140-027/M94197

COUPLING

Coupling Type Rex-Omega ES

COUPLING GUARD

Coupling Guard material S+Z EN10025

BASE PLATE

Base plate type Pump Motor/Steel/Zinc Foundation screw type Grouted
Future motor IEC/NEMA code 445T

MOTOR ALIGNMENT BLOCK

ORDER REMARKS

TERMS OF PAYMENT:

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COMPLETION OF EACH EVENT AND RECEIPT OF INVOICE
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PRICING:

FOR NON-MENA MOTORS, FINAL PRICES ARE SUBJECT TO
CONFIRMATION AFTER RECEIPT OF CERTIFIED MOTOR
PRINTS

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 RAL 1021 (SAFETY YELLOW) AT NO EXTRA CHARGE

FINAL IMPELLER TRIMS:

MUST BE PROVIDED SIX (6) WEEKS PRIOR TO DELIVERY
 EXCEPT FOR APT6, APT54 & APT55 WHICH WILL REQUIRE
 THEM NINE (9) WEEKS PRIOR TO DELIVERY

MOTOR MOUNTING:

SULZER WILL DRILL BASE PLATES AS PER CERTIFIED
 MOTOR PRINTS BY CUS. SULZER WILL MOUNT CUS.
 SUPPLIED NEMA MOTORS AT EASLEY, SC FACTORY
 CUS. RESPONSABLE FOR MOUNTING NON-NEMA MOTORS

P A I N T I N G

Painting E180/3-Fe Sa2 1/2 SFS4962
 Color Shade RAL-5019

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AHLSTROM

Version 01> / en / 920702 / Replaces 870301 / K00869

The figure consists of two vertically stacked graphs sharing a common x-axis representing Flow Rate (Q) in USGPM, ranging from 0 to 10,000.

Top Graph: Head (H) vs. Flow Rate (Q)

- Y-axis:** Head (H) in feet (ft), ranging from 0 to 100.
- Curves:** Three power curves are shown, labeled 420, 445, and 477 HP.
- Efficiency Contours:** Several efficiency contours are plotted, labeled with efficiency percentages: 70, 80, 85, and 87.
- Operating Point:** A specific operating point is marked with a dot and a small shaded area, located at approximately 5,000 USGPM and 35 ft of head.

Bottom Graph: Power (P) vs. Flow Rate (Q)

- Y-axis:** Power (P) in Horsepower (Hp), ranging from 0 to 125.
- Curves:** Three power curves are shown, labeled 420, 445, and 477 HP, corresponding to the curves in the top graph.

[illegible]

PUMP, B-LINE S2 FLOTATION CELL FEED

SERVICE:	B-1 Plus S-2 Flotation Cell Feed P.
EQUIP. No.:	310-1140-027 / M94197
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 40
DATE / REV.:	OCT-16-2000 / R. 0

FLOW (USGPM)	TDH (ft)
5592.00	35.00
EFF. (%)	Power (HP)
81	75.0
NEMA PR.	NEMA FUT.
444T	445T

APT Process Pumps

Dimensional drawing P20044

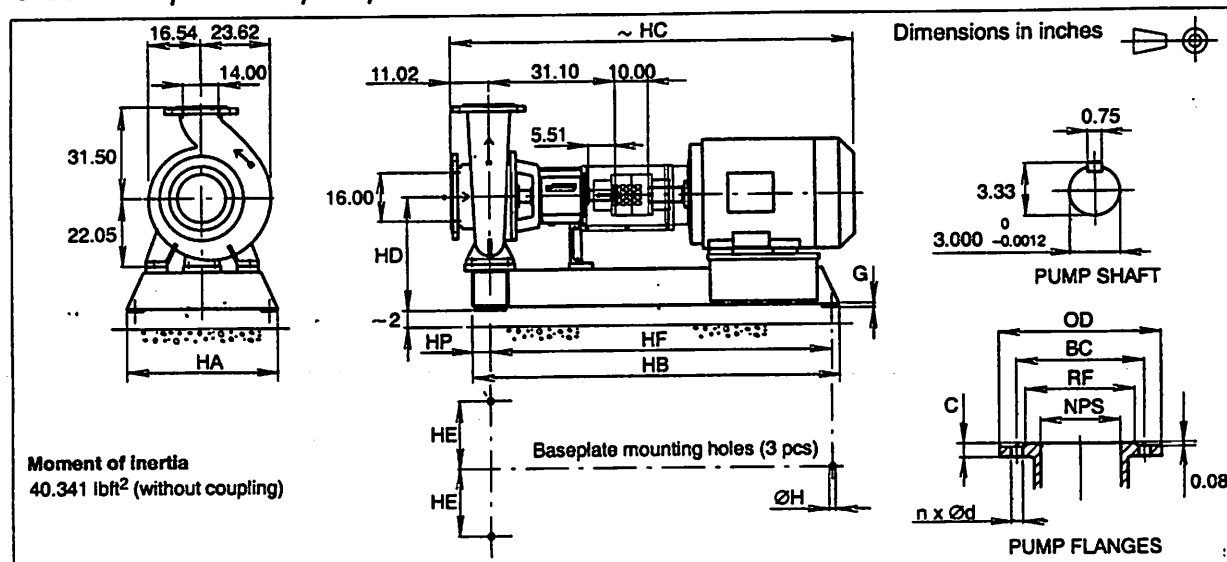


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Version 04 > / 940221 / en / P20044

APT52-14 (16x14-20)

Steel baseplate for pump and motor



DIMENSIONS													
Primary motor frame	Max motor frame		Baseplate	HD	HC	HB	HP	HF	HA	HE	H	G	Weight lbs (3)
	(1)	(2)											
405T	444T	-	9	34.25	91.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	2500
444T	509LL	449T	9	34.25	95.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	2700
445T	509LL	449T	9	34.25	97.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	2700
447T	5011LL	449T	10	34.25	100.00	112.25	5.00	105.00	45.63	20.50	1.50	0.69	2820
447TS	509LS	449TS	9	34.25	98.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	2700
449T	5011LL	-	10	34.25	106.00	112.25	5.00	105.00	45.63	20.50	1.50	0.69	2820
449TS	509LS	-	9	34.25	103.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	2700

DRILLING OF FLANGES									
				ANSI B 16.1 Class 125			ANSI B 16.5 Class 150		
NPS	OD	RF	C	BC	d	n (4)	BC	d	n (4)
14.00	21.26	16.50	1.38	18.75	1.12	12	18.75	1.12	12
16.00	23.82	18.98	1.44	21.25	1.12	16	21.25	1.12	16

1. Max. NEMA motor frame, which can be installed onto the baseplate.
2. Max. NEMA motor frame with the same shaft height as primary motor.

3. Weight without coupling and motor.
4. Flange bolting straddles centerline.

PUMP B-LINE S2 FLOTATION CELL FEED.

SERVICE:	S Line S2 Flotation Cell Feed P.
EQUIP. No.:	310-1140-027 / M94197
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 40
HP / RPM / FRAME:	65.0 / 885 / 444T

CERTIFIED FOR CONSTRUCTION	
DATE / REV.:	OCT-16-2000 / R. 0
SIGNED:	S. Attie

APT Process Pumps

Design data



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Version 09 > / 960801 / en / N12851 / Page 5 (7)

Table 5 Bearing unit size 5

Pump type	51-10	51-12	52-14	52-16	53-4	53-6	53-8	53-10	53-12
Shaft diameters									
At impeller	2.559								
Under sleeve	3.150								
Between bearings	4.09								
At coupling	3.000								
Bearings									
Radial bearing type	NUP 317								
Thrust bearing type	2x7318 BECB								
Radial brg. life (HRS. x 10 ³) ⁽¹⁾	1000 +	1000 +	1000 +	1000 +	1000 +	1000 +	700	1000 +	1000 +
Thrust brg. life (HRS. x 10 ³) ⁽¹⁾	100	250	340	100	700	520	70	75	80
Bearing span	11.10								
Shaft overhang	11.75								
Stuffing box									
Bore	4.750								
Depth	3.937								
Shaft sleeve dia.									
Packing	3.500								
Mechanical seal, general	3.375								
Mech. seal, ready-fitted ⁽²⁾	3.150								
Packing size	0.625								
No. of packing rings	4								
Lantern ring width	0.79								
Neck bush clearance	0.042								
Distance to nearest obstruction	3.94								
Wear ring clearance	0.029	0.031	0.032	0.034	0.024	0.027	0.027	0.029	0.031
Impeller									
Front clearance (open impeller)	0.020								
Back clearance	0.040								
Eye area (in ²)									
Closed	102.3	132.5	164.8	206.5	44.9	64.9	73.6	102.3	140.7
Open	102.3	132.5	164.8	206.5	44.9	64.9	73.6	102.3	140.7
Special open	117.0	132.5	164.8	206.5	-	-	73.6	102.3	140.7
Max. diameter solids (in)									
Closed	2.05	1.89	2.56	2.87	0.67	1.14	1.38	1.93	2.44
Open	2.13	2.72	2.48	3.74	1.06	1.54	1.38	1.93	2.52
Special open	2.12	2.72	3.31	3.74	-	-	1.38	1.93	2.52
Max. shaft deflection at st. box	0.002								
Casing									
Type (single or dual)	DV	DV	DV	DV	SV	SV	SV	DV	DV
Casing thickness (iron)	0.71	0.71	0.75	0.79	0.63	0.71	0.71	0.71	0.71
Casing thickness (steel)	0.55	0.55	0.59	0.63	0.51	0.55	0.55	0.55	0.59
Bearing unit weight (LBS)	333								
HP/100 rpm (shaft SS2324)	74								

- 1) Min. L10h-life, full impeller dia., max. speed, direct coupled and 50 - 100 % BEP
- 2) Installed on the pump shaft

PUMP, B-LINE S2 FLOTATION CELL FEED.

SERVICE:	B-Line S2 Flotation Cell Feed P.
EQUIP. No.:	310-1140-027 / M94197
CUST. P.O. No.:	445014
MODEL / SIZE:	APT52-14 / 16x14-20
API-C JOB No.:	CAE2000 075 40

APT Process Pumps

Shaft sealing



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Version 09 > / 960601 / en / N12559

Gland packings

Fitting P02

2 braids + lantern ring + 2 braids. Standard casing cover. Installed onto the shaft wearing sleeve.

Characteristics of fitting

E	External flushing that prevents pumped liquid from precipitating in the sealing housing. Flushing liquid is mixed with the pumped liquid.
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Pumped liquid	Impure liquids, stock, lye
Temperature (°F)	max 250
Stuffing box pressure p_T (psi)	Positive or negative

Sealing waters	
Connection No.	020
Size (NPT)	3/8 - 18
Quality	External clean water, maximum particle size 0.002 in, maximum solid material content (PPM-value) 0.00027 lb/in ³ .
Flow rate (USGPM)	0.5 - 0.8
Pressure (psi)	$p_T + 7$ psi min. 7 psi

Seal size (Ø in)

Bearing unit					
1	2	3	4	5	6
1 5/8 x 2 3/8 x 3/8	2 x 2 3/4 x 3/8	2 3/8 x 3 3/8 x 1/2	2 3/4 x 3 3/4 x 1/2	3 1/2 x 4 3/4 x 5/8	3.937 x 5.198 x 5/8

Pressure behind the impeller can approximately be calculated from the formula

$$p_T = p_0 - 0.725 \text{ psi}$$

Where p_T = pressure behind the impeller (psi)
 p_0 = inlet pressure (psi)

Atmospheric pressure used as reference pressure = 0 psi.

PUMP, B-LINE S2 FLOTATION CELL FEED

SERVICE:	B-Line S2 Flotation Cell Feed P.
EQUIP. No.:	310-1140-027 / M94197
CUST. P.O. No.:	445014
MODEL / SPEED:	APT52-14 / 885
API-C JOB No.:	CAE2000 075 40