

SALES ACKNOWLEDGEMENT

SULZER

Print Date 10/16/2000

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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 # 033	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 310-1140-055/M94337		
		Serial Number	Currency USD	Net Amount 9638.00
		Terms of Payment SPECIAL TERMS, SEE NOTE		
Ship to ALLIANCE FOREST PRODUCTS U.S. CORP. 17589 PLANT ROAD COOSA PINES, AL 35044-0555		Terms of Delivery DDP (INCOTERMS 2000) COOSA PINES, AL, PREPAID		
		Way of Delivery Truck		Onsite Date 01/26/2001
Marks and Tagging PUMP, A-LINE DISC THICKENER SHOWER 310-1140-055 / M94337 445014 4121001112 CAE2000 075 33		Order Contact TONY LIANE		
		Sales Contact TONY GEDEON		
		Document Requirements 4 Copies in English		
Pump Size APT53-4	N.Am. Pump Size 8X4-21	Casing Material A890 3A	Consistency 0.01 % BD	Pumped liquid WHITE WATER
Capacity Q 1710 USGPM	Head H 310 ft	NPSH av 26 ft	NPSH req 24 ft	pH 7-9
Capacity in alternative unit 68 %	Efficiency 68 %	Temperature 125 F	Dimensional drawing P20046	Characteristic curve K02005
Impeller Type Open	Impeller No. 285944	Impeller diameter 465 mm	Pump power P 198 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 5010US	Power 250 HP	Rotational Speed 1800 RPM	Manufacturer TOSHIBA	Future motor IEC/NEMA code 5010 US
Frequency 60 Hz	Voltage 2.3 KV	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 ===== FINAL IMPELLER TRIMS:				

SALES ACKNOWLEDGEMENT

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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 # 033	Order Date 10/12/2000
	Customer P.O. No 445014		P.O Date 09/22/2000
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	Way of Delivery Truck		Onsite Date 01/26/2001
	Order Contact TONY LIANE		
Marks and Tagging PUMP, A-LINE DISC THICKENER SHOWER 310-1140-055 / M94337 445014 4121001112 CAE2000 075 33	Sales Contact TONY GEDEON		
	Document Requirements 4 Copies in English		
Remarks Continued ----- 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 =====			

PRODUCT SPECIFICATION		Description	APT53-4
		Serial Number	
		Time of delivery/EXW	01/19/2001
		Date printed	10/16/2000
		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	310-1140-055/M94337

PROCESS DATA

Mill	13	Capacity Q	1710 USGPM
Process	270	Head H	310 ft
Application	DISC THICKENER <i>SAME</i>	Characteristic curve	K02005
Pumped liquid	WHITE WATER	Pump power P	198 HP
Temperature	125 F	Motor power	250 HP
pH	7-9	Efficiency	68 %
Consistency	0.01 % BD	Pump rotational speed	1780 RPM
Min head on suction side	1 ft	Variable speed	No
Max head on suction side	13 (STATIC) ft	NPSH req	24 ft
NPSH av	26 ft		

PUMP

Supplier	Easley
Dimensional drawing	P20046
Conformity	89/392/EEC machinery /US
Version	09
Pump Size	APT53-4
Impeller Type	Open
Impeller No.	285944
Impeller diameter	465 mm
Impeller turning angle	0 °
Impeller max.diameter	532 mm
Flange Drilling	ASME B16.5 CLASS 150

<i>IMPELLER MATERIAL</i>	<i>A890 3A</i>
<i>SHAFT MATERIAL</i>	<i>SS2324</i>
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 For Information Only

Motor Supplied by	Customer	Rotational Speed	1800 RPM
Manufacturer	TOSHIBA	Power	250 HP

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

Contact Person TONY GEDEON
LBU Order # CAE2000075
LBU Position 033
Telephone 514 - 333-7760
Telefax 514 - 333-6324 (bomcust1)

PRODUCT SPECIFICATION	Description	APT53-4	
	Serial Number		
	Time of delivery/EXW	01/19/2001	
	Date printed	10/16/2000	Page 2
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	310-1140-055/M94337

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

MOTOR ALIGNMENT BLOCK

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:

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

Contact Person	TONY GEDEON
LBU Order #	CAE2000075
LBU Position	033
Telephone	514 - 333-7760
Telefax	514 - 333-6324 (bomcust1)

SECRET

100-443887-100

the 1990s, the number of people in the world who are illiterate has increased from 750 million to 850 million. The number of illiterate people in the world is still increasing at a rate of 10 million per year. The number of illiterate people in the world is still increasing at a rate of 10 million per year. The number of illiterate people in the world is still increasing at a rate of 10 million per year.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The number of transformed cells was determined by the number of colonies obtained on the selective medium. The results are the mean of three independent experiments. Error bars represent the standard deviation.

2000年12月15日

PRODUCT SPECIFICATION	Description APT53-4	
	Serial Number	
	Time of delivery/EXW	01/19/2001
	Date printed	10/16/2000
Customer		
ALLIANCE FOREST PRODUCTS U.S. CORP.	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	310-1140-055/M94337

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

=====

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

SULZER PROCESS PUMPS (CANADA) INC.

5055, rue Levy

Saint-Laurent, Québec

H4R 2N9

Canada

Contact Person

TONY GEDEON

LBU Order #

CAE2000075

LBU Position

033

Telephone

514 - 333-7760

Telefax

514 - 333-6324

(bomcust1)

AHLSTROM

Version 01> / en / 920702 / Replaces 890904 / K02005

The figure consists of two vertically aligned graphs sharing a common x-axis representing Discharge (Q) in USGPM, ranging from 0 to 3000.

Top Graph: Head (H) vs. Discharge (Q)

- Y-axis:** Head (H) in feet, ranging from 0 to 500.
- Curves:** Four efficiency curves are shown, labeled 60, 65, 68, and 71%.
- Operating Point:** A specific point is marked on the 68% efficiency curve at approximately 1700 USGPM and 290 feet of head.
- Other Labels:** The top graph also includes labels for specific head values: 532, 495, 455, and 400 feet, which correspond to the power curves in the bottom graph.

Bottom Graph: Power (P) vs. Discharge (Q)

- Y-axis:** Power (P) in horsepower (Hp), ranging from 0 to 400.
- Curves:** Four power curves are shown, labeled 400, 455, 495, and 532 Hp, corresponding to the head values in the top graph.

IMPELLER DIA		
mm	in	deg
532	20.94	0
525	20.67	0
520	20.47	0
515	20.28	0
510	20.08	0
505	19.88	0
500	19.29	0
495	19.49	0
490	19.29	0
485	19.09	0
480	18.90	0
475	18.70	0
470	18.50	0
465	18.31	0
460	18.11	0
455	17.91	0
450	17.72	0
445	17.52	0
440	17.32	0
435	17.13	0
430	16.93	0
425	16.73	0
420	16.54	0
415	16.34	0
410	16.14	0
405	15.94	0
400	15.75	0

SERVICE:	A-Line Disc Thickener Showers P.	FLOW (USGPM)	TDH (R)
EQUIP. No.:	310-1140-055 / M94337	1710.00	310.00
CUST. P.O. No.:	445014	EFF. (%)	Power (HP)
API-C JOB No.:	CAE2000 075 33	68	250.0
DATE / REV.:	OCT-16-2000 / R. 0	NEMA PR.	NEMA FUT.
		BY OWNER	BY OWNER

APT Process Pumps

Dimensional drawing P20046

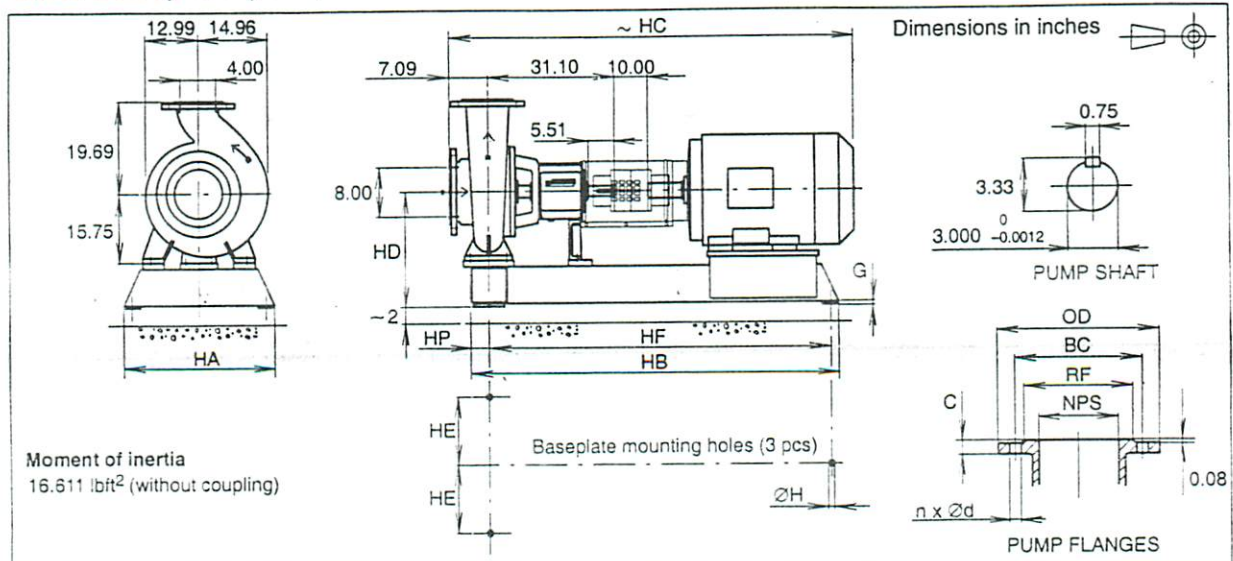


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Version 04 > / 940221 / en / P20046

APT53-4 (8x4-21)

Steel baseplate pump and motor



DIMENSIONS

Primary motor frame	Max motor frame (1)	Max motor frame (2)	Baseplate	HD	HC	HB	HP	HF	HA	HE	H	G	Weight lbs ⁽³⁾
364T	405T	365T	6	24.60	80.50	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1220
365T	405T	-	6	24.60	81.50	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1220
404T	444T	405T	7	24.60	84.50	85.00	3.50	80.00	32.63	15.00	1.25	0.56	1320
405T	444T	-	7	24.60	86.00	85.00	3.50	80.00	32.63	15.00	1.25	0.56	1320
444T	509LL	449T	9	27.60	91.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	1690
445T	509LL	449T	9	27.60	93.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	1690
447T	5011LL	449T	10	27.60	96.00	112.25	5.00	105.00	45.63	20.50	1.50	0.69	1795
447TS	509LS	449TS	8	27.60	94.00	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1650
449T	5011LL	-	10	27.60	102.00	112.25	5.00	105.00	45.63	20.50	1.50	0.69	1795
449TS	509LS	-	8	27.60	99.00	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1650

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⁾
4.00	9.02	6.10	0.94	7.50	0.75	8	7.50	0.75	8
8.00	13.78	10.47	1.12	11.75	0.88	8	11.75	0.88	8

- Max. NEMA motor frame, which can be installed onto the baseplate.
- Max. NEMA motor frame with the same shaft height as primary motor.
- Weight without coupling and motor.
- Flange bolting straddles centerline.

FOR REFERENCE

SERVICE:	A Line Disc Thickener Showers P.
EQUIP. No.:	310-1140-055 / M94337
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 33
HP / RPM / FRAME:	198.0 / 1780 / BY OWNER

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

5010 US

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	2 x 7318 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 A-Line Disc Thickeners Showers

SERVICE:	A-Line Disc Thickeners Showers P.
EQUIP. No.:	310-1140-055 / M94337
CUST. P.O. No.:	445014
MODEL / SIZE:	APT53-4 / 8x4-21
API-C JOB No.:	CAE2000 075 33

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.
----------	---

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, A-LINE DISC THICKENER SHOWERS.

SERVICE:	A Line Disc Thickener Showers P.
EQUIP. No.:	310-1140-055 / M94337
CUST. P.O. No.:	445014
MODEL / SPEED:	APT53-4 / 1780
API-C JOB No.:	CAE2000 075 33