

## SALES ACKNOWLEDGEMENT

Print Date 10/16/2000

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<b>SULZER PROCESS PUMPS (CANADA) INC.</b> 5055, rue Levy, Saint-Laurent, Québec H4R 2N9, Canada Phone 514 - 333-7760 Fax 514 - 333-6324	Sulzer Order No. <b>CAE2000075</b>	Item # <b>035</b>	Order Date <b>10/12/2000</b>
	Customer P.O. No. <b>445014</b>		P.O Date <b>09/22/2000</b>
Bill to <b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b>  <b>17589 PLANT ROAD</b>  <b>COOSA PINES, AL 35044-0555</b>	Equipment Number <b>310-1140-063/M94435</b>		
	Serial Number	Currency <b>USD</b>	Net Amount <b>7613.00</b>
	Terms of Payment <b>SPECIAL TERMS, SEE NOTE</b>		
Ship to <b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b>  <b>17589 PLANT ROAD</b>  <b>COOSA PINES, AL 35044-0555</b>	Terms of Delivery <b>DDP (INCOTERMS 2000)</b> <b>COOSA PINES, AL, PREPAID</b>		
	Way of Delivery <b>Truck</b>		Onsite Date <b>01/19/2001</b>
Marks and Tagging <b>PUMP, FLOTATION CELL</b> <b>SHOWER BOOSTER</b> <b>310-1140-063 / M94435</b> <b>445014</b> <b>4121001112</b> <b>CAE2000 075 35</b>	Order Contact <b>TONY LIANE</b>		
	Sales Contact <b>TONY GEDEON</b>		
	Document Requirements <b>4 Copies in English</b>		
	Remarks Continued		

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:  
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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  
 =====

# SULZER

PRODUCT SPECIFICATION		Description	
		APT41-8	
		Serial Number	
		Time of delivery/EXW	01/12/2001
		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	310-1140-063/M94435

## PROCESS DATA

Mill	13	Capacity Q	1710 USGPM
Process	270	Head H	80 ft
Application	FLOT. CELL SHOWER	Characteristic curve	K01946
Pumped liquid	WHITE WATER	Pump power P	60.5 HP
Temperature	125 F	Motor power	75 HP
pH	7-9	Efficiency	58 %
Consistency	0.01 % BD	Pump rotational speed	1770 RPM
Min head on suction side	60 (PRESSURE) ft	Variable speed	No
Max head on suction side	115 (STATIC) ft	NPSH req	16 ft
NPSH av	86 ft	<i>INCLUDE PRESSURE MAXIMUM =</i>	

## PUMP

Supplier	Easley
Dimensional drawing	P20034
Conformity	89/392/EEC machinery /US
Version	09
Pump Size	APT41-8
Impeller Type	Special open
Impeller No.	286136
Impeller diameter	280 mm
Impeller turning angle	18 °
Impeller max.diameter	322 mm
Flange Drilling	ASME B16.5 CLASS 150

*IMPELLER MATERIAL A890 3A  
SHAFT MATERIAL SS2324*

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	1800 RPM
Motor IEC/NEMA code	365T	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	035
Telephone	514 - 333-7760
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(bomcust1)

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	Equipment No	310-1140-063/M94435	

**C O U P L I N G**

Coupling Type Rex-Omega ES

**C O U P L I N G G U A R D**

Coupling Guard material S+Z EN10025

**B A S E P L A T E**

Base plate type Pump Motor/Steel/Zinc Foundation screw type Grouted  
 Future motor IEC/NEMA code 405T

**M O T O R A L I G N M E N T B L O C K**

**O R D E R R E M A R K S**

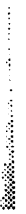
**TERMS OF PAYMENT:**

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 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  
 =====

SULZER PROCESS PUMPS (CANADA) INC.	Contact Person	TONY GEDEON	
5055, rue Levy	LBU Order #	CAE2000075	
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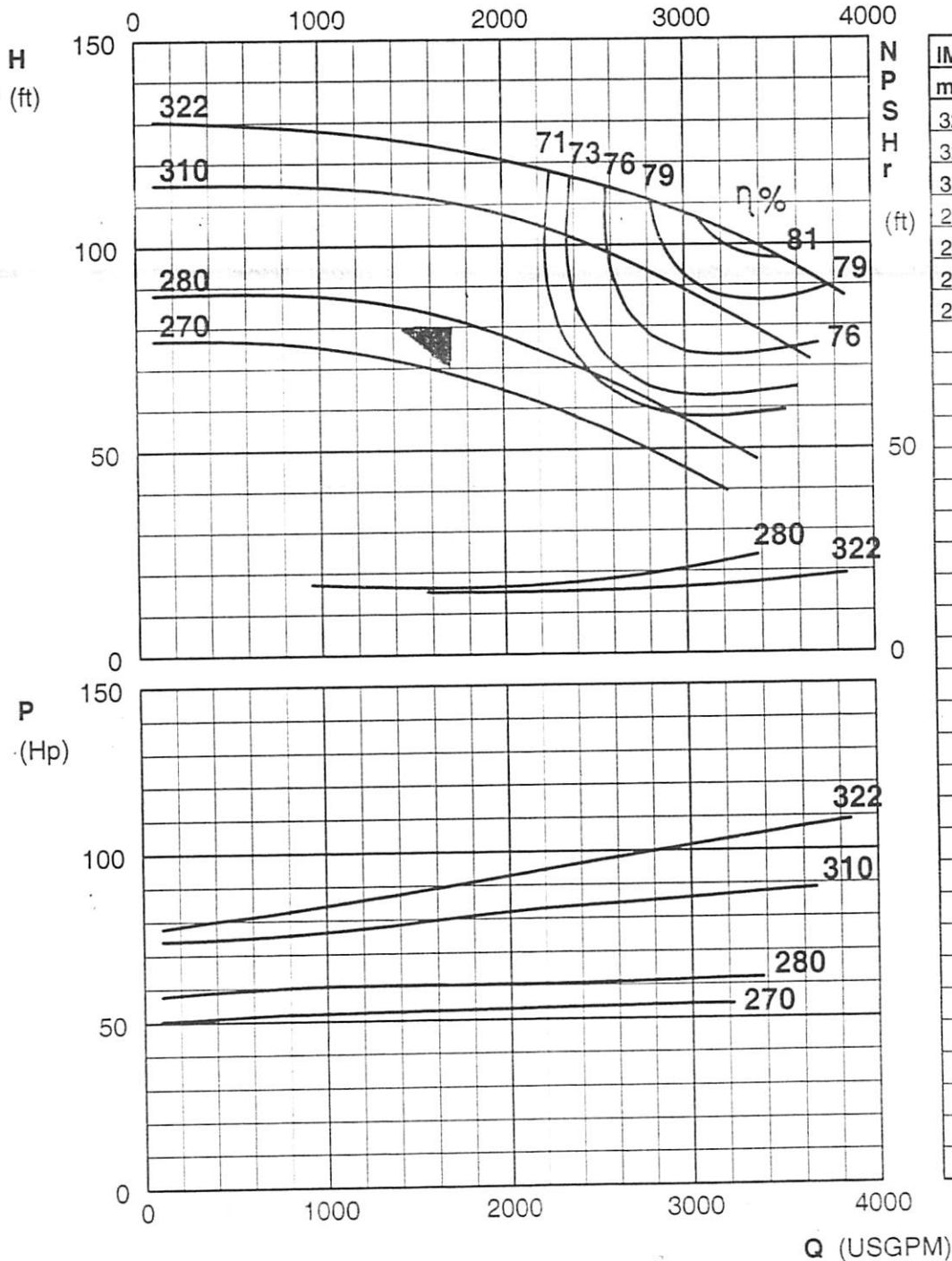
# APT Process pumps Characteristic curve K01946



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Version 01 > / en / 960701 / Replaces 920825 / K01946

**APT41-8 (10x8-13)**  
**Impeller 286136 OPEN B2.13 Z4**  
**1770 rpm**



IMPELLER DIA		
mm	in	deg
322	12.67	10
320	12.59	10
310	12.20	12
290	11.42	16
285	11.22	17
280	11.02	18
270	10.63	20

*Flow: 1710 USGPM, TDH: 80 ft, Power: 58 HP*

SERVICE:	Flotation Cells Showers Booster P...
EQUIP. No.:	310-1140-063 / M94435
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 35
DATE / REV.:	OCT-16-2000 / R. 0

FLOW (USGPM)	1710.00	TDH (ft)	80.00
EFF. (%)	58	Power (HP)	75.0
NEMA PR.	365T	NEMA FUT.	405T

# APT Process Pumps

## Dimensional drawing P20034

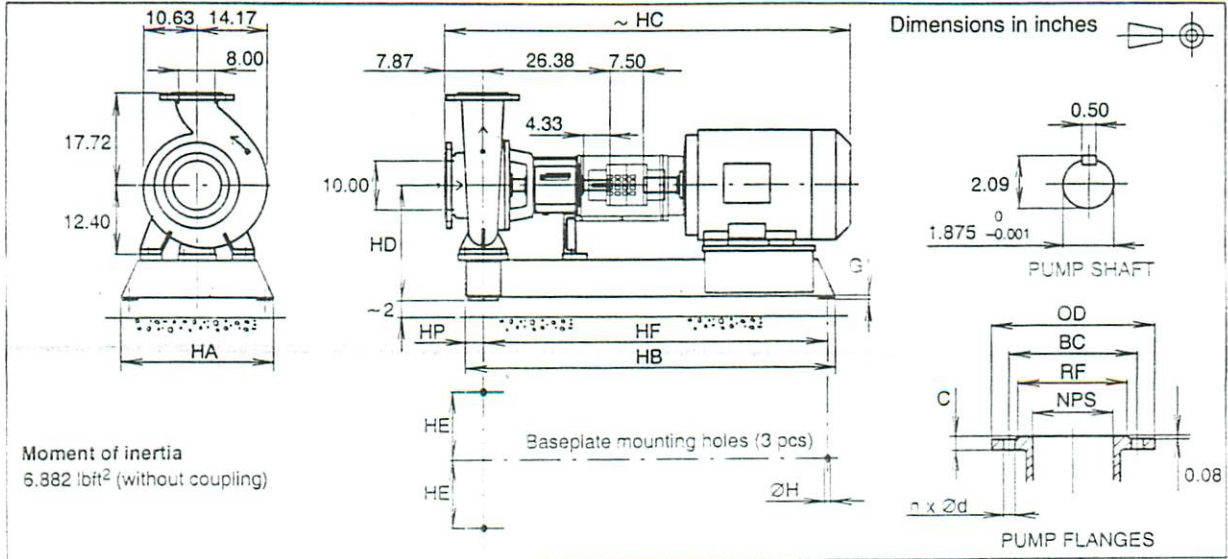


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Version 04 > / 940221 / en / P20034

### APT41-8 (10x8-13)

#### 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 <sup>(3)</sup>
	(1)	(2)											
284T	324T	286T	5	20.15	67.50	68.25	3.00	63.75	28.38	12.75	1.00	0.44	925
286T	324T	-	5	20.15	69.00	68.25	3.00	63.75	28.38	12.75	1.00	0.44	925
324T	364T	326T	5	20.15	70.50	68.25	3.00	63.75	28.38	12.75	1.00	0.44	940
326T	364T	-	5	20.15	72.00	68.25	3.00	63.75	28.38	12.75	1.00	0.44	940
364T	405T	365T	6	21.25	75.00	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1050
365T	405T	-	6	21.25	76.00	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1050
365TS	405TS	-	5	20.15	74.00	68.25	3.00	63.75	28.38	12.75	1.00	0.44	960
404T	444T	405T	6	21.25	79.00	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1115
404TS	444TS	405TS	5	20.15	76.00	68.25	3.00	63.75	28.38	12.75	1.00	0.44	1020
405T	444T	-	6	21.25	80.50	77.00	3.50	72.00	28.75	13.00	1.25	0.56	1115
405TS	444TS	-	5	20.15	77.50	68.25	3.00	63.75	28.38	12.75	1.00	0.44	1020
444T	509LL	449T	8	24.25	84.50	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450
444TS	509LS	449TS	8	24.25	80.50	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450
445T	509LL	449T	8	24.25	86.50	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450
445TS	509LS	449TS	8	24.25	83.00	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450
447T	5011LL	449T	9	24.25	90.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	1560
447TS	509LS	449TS	8	24.25	88.00	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450
449T	5011LL	-	9	24.25	96.00	101.75	5.00	94.50	45.63	20.50	1.50	0.69	1560
449TS	509LS	-	8	24.25	93.00	97.00	5.00	89.75	34.63	15.00	1.50	0.69	1450

#### DRILLING OF FLANGES

ANSI B 16.1 Class 125							ANSI B 16.5 Class 150		
NPS	OD	RF	C	BC	d	n <sup>(4)</sup>	BC	d	n <sup>(4)</sup>
8.00	13.78	10.47	1.12	11.75	0.88	8	11.75	0.88	8
10.00	16.93	12.50	1.19	14.25	1.00	12	14.25	1.00	12

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.

SERVICE:	Flotation Cells Showers Booster P.
EQUIP. No.:	310-1140-063 / M94435
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 35
HP / RPM / FRAME:	61.0 / 1770 / 365T

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

# APT Process Pumps

## Design data



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Version 09 > / 960801 / en / N12851 / Page 4 (7)

**Table 4 Bearing unit size**

Pump type	41-8	41-12	42-6	42-8	43-10	43-12	44-6	44-8
<b>Shaft diameters</b>								
At impeller	1.772							
Under sleeve	2.362							
Between bearings	3.15							
At coupling	1.875							
<b>Bearings</b>								
Radial bearing type	NUP 313							
Thrust bearing type	2x 7314 BECB							
Radial brg. life (HRS. x 10 <sup>3</sup> ) (1)	1000 +	480	200	300	180	1000 +	1000 -	150
Thrust brg. life (HRS. x 10 <sup>3</sup> ) (1)	500	120	430	100	70	180	220	50
Bearing span	8.74							
Shaft overhang	10.83							
<b>Stuffing box</b>								
Bore	3.750							
Depth	3.071							
Shaft sleeve dia.								
Packing	2.750							
Mechanical seal, general	2.625							
Mech. seal, ready-fitted (2)	2.362							
Packing size	10.500							
No. of packing rings	4							
Lantern ring width	0.67							
Neck bush clearance	0.023							
Distance to nearest obstruction	4.21							
<b>Wear ring clearance</b>	0.027	0.029	0.025	0.027	0.029	0.029	0.025	0.027
<b>Impeller</b>								
Front clearance (open impeller)	0.020							
Back clearance	0.040							
Eye area (in <sup>2</sup> )								
Closed	70.1	99.5	50.6	71.3	99.5	118.5	43.9	73.6
Open	70.1	99.5	50.6	71.3	99.5	118.5	43.9	73.6
Special open	70.1	99.5	53.7	77.3	108.8	118.5	55.5	77.9
Max. diameter solids (in)								
Closed	1.69	1.81	1.34	1.38	2.13	2.09	1.06	1.61
Open	1.85	2.20	1.50	1.89	2.44	2.13	1.06	1.81
Special open	2.12	2.75	1.50	1.93	2.48	2.79	1.06	1.81
Max. shaft deflection at st. box	0.002							
<b>Casing</b>								
Type (single or dual)	SV	SV	SV	SV	SV	DV	SV	SV
Casing thickness (iron)	0.63	0.75	0.51	0.63	0.71	0.71	0.67	0.63
Casing thickness (steel)	0.51	0.59	0.43	0.51	0.55	0.55	0.47	0.51
Bearing unit weight (LBS)	180							
HP/100 rpm (shaft SS2324)	28							

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

SERVICE:	Flotation Cells Showers Booster P...
EQUIP. No.:	310-1140-063 / M94435
CUST. P.O. No.:	445014
MODEL / SPEED:	APT41-8 / 1770
API-C JOB No.:	CAE2000 075 35

# 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

<b>E</b>	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

<b>Sealing waters</b>	
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 <sup>3</sup> .
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.

*Flotation Cells Showers Boosters*

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