

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 # 012	Order Date 10/11/2000
		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 310-1140-014/M94149			
		Serial Number	Currency USD	Net Amount 33302.00	
		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 02/16/2001
Marks and Tagging PUMP, A-LINE P5 FLOTATION CELL FEED 310-1140-014 / M94149 445014 4121001112 CAE2000 075 12		Order Contact TONY LIANE			
		Sales Contact TONY GEDEON			
		Document Requirements 4 Copies in English			
Pump Size APT61-24	N.Am. Pump Size 24X24-28	Casing Material A890 3A	Consistency 0.8-1.13 % BD	Pumped liquid ONP/OMG REP. STOCK	
Capacity Q 15051 USGPM	Head H 44 ft	NPSH av 26 ft	NPSH req 16.8 ft	pH 7-9	
Capacity in alternative unit 67000 GPM	Efficiency 81 %	Temperature 125 F	Dimensional drawing P20058	Characteristic curve K02321	
Impeller Type Special open	Impeller No. 286876	Impeller diameter 615 mm	Pump power P 212 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 315L	Power 250 HP	Rotational Speed 720 RPM	Manufacturer TOSHIBA	Future motor IEC/NEMA code 355L	
Frequency 60Hz	Voltage 2.3KV	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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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
 =====

GAS CONTENT:
Check for a 100% nitrogen gas head in
the pump and if not, change the head
and the motor to the 100% nitrogen head
and the motor to the 100% nitrogen head
and the motor to the 100% nitrogen head

PRODUCT SPECIFICATION		Description	APT61-24
		Serial Number	
		Time of delivery/EXW	02/09/2001
		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	310-1140-014/M94149

PROCESS DATA

Mill	13	NPSH av	26 ft
Process	270	Capacity Q	15051 USGPM
Application	P2 FLOTATION CELL	Head H	44 ft
Pumped liquid	ONP/OMG REP. STOCK	Characteristic curve	K02321
Temperature	125 F	Pump power P	212 HP
pH	7-9	Motor power	250 HP
Consistency	0.8-1.13 % BD	Efficiency	81 %
Gas content	6 TO 8 %	Pump rotational speed	710 RPM
Min head on suction side	2 ft	Variable speed	No
Max head on suction side	7 (STATIC) ft	NPSH req	16.8 ft

PUMP

Supplier	Easley	Impeller Material	AB90 3A
Dimensional drawing	P20058	Shaft Material	SS 2324
Conformity	89/392/EEC machinery /US	Casing Material	A890 3A
Version	09	Gasket Material	Klinger SIL-4430
Pump Size	APT61-24	O-ring Material	NBR
Impeller Type	Special open	Bearing Unit Lubrication	Oil lubrication
Impeller No.	286876	Bearing unit model	01 SS2324/NotSpec
Impeller diameter	615 mm	Constant level oiler 638	Yes
Impeller turning angle	22 °	Shaft Seal Fitting	P02
Impeller max.diameter	700 mm	Customer documents lang./q	EN/04
Flange Drilling	ASME B16.5 CLASS 150	Component documents lang./	EN/04
		Special parts	METCO 16 SLEEVE

DRIVE MOTOR For Information Only

Motor Supplied by	Customer	Rotational Speed	720 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 012
Telephone 514 - 333-7760
Telefax 514 - 333-6324 (bomcust1)

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	Serial Number		
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UNITED STATES	UNITED STATES		
Cust. order # 445014			
Cust. PO Line # ZOR			
Country code US	Equipment No	310-1140-014/M94149	

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

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INSPECTION LOCATION:

SULZER PROCESS PUMPS (CANADA) INC.	Contact Person	TONY GEDEON	
5055, rue Levy	LBU Order #	CAE2000075	
Saint-Laurent, Québec	LBU Position	012	
H4R 2N9	Telephone	514 - 333-7760	
Canada	Telefax	514 - 333-6324	(bomcust1)

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THE RAL 5019 (CAPRI BLUE) COLOR & GUARDS IN

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SUPPLIED NEMA MOTORS AT EASLEY, SC FACTORY

CUS. RESPONSABLE FOR MOUNTING NON-NEMA MOTORS

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PAINTING

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

012

Telephone

514 - 333-7760

Telefax

514 - 333-6324

(bomcust1)

AHLSTROM

Version 01> / en / 920908 / Replaces 901101 / K02321

The figure consists of two vertically stacked graphs sharing a common x-axis representing Flow Rate (Q) in USGPM, ranging from 0 to 25,000.

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

- Y-axis:** Head (H) in feet (ft), ranging from 0 to 100.
- Curves:**
 - Efficiency Curves (η %):** 75, 80, 83, 85, 87.
 - Power Curves (HP):** 610, 625, 640, 660, 680, 700.
- Annotation:** A vertical line is drawn at $Q = 15,000$ USGPM. An arrow points from this line to the 610 HP curve.

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

- Y-axis:** Power (P) in HP, ranging from 0 to 400.
- Curves:** 610, 625, 640, 660, 680, 700 (representing the power requirements for the corresponding pump models).

[illegible]

SERVICE:	A-Line P5 Flotation Cell Feed P.	FLOW (USGPM)	TDH (ft)
EQUIP. No.:	310-1140-014 / M94149	1505.00 15,051	44.00
CUST. P.O. No.:	445014	EFF. (%)	Power (HP)
API-C JOB No.:	CAE2000 075 12	81	250.0
DATE / REV.:	OCT-16-2000 / R. 0	NEMA PR.	NEMA FUT.
		BY OWNER	BY OWNER

APT Process Pumps

Dimensional drawing P20058

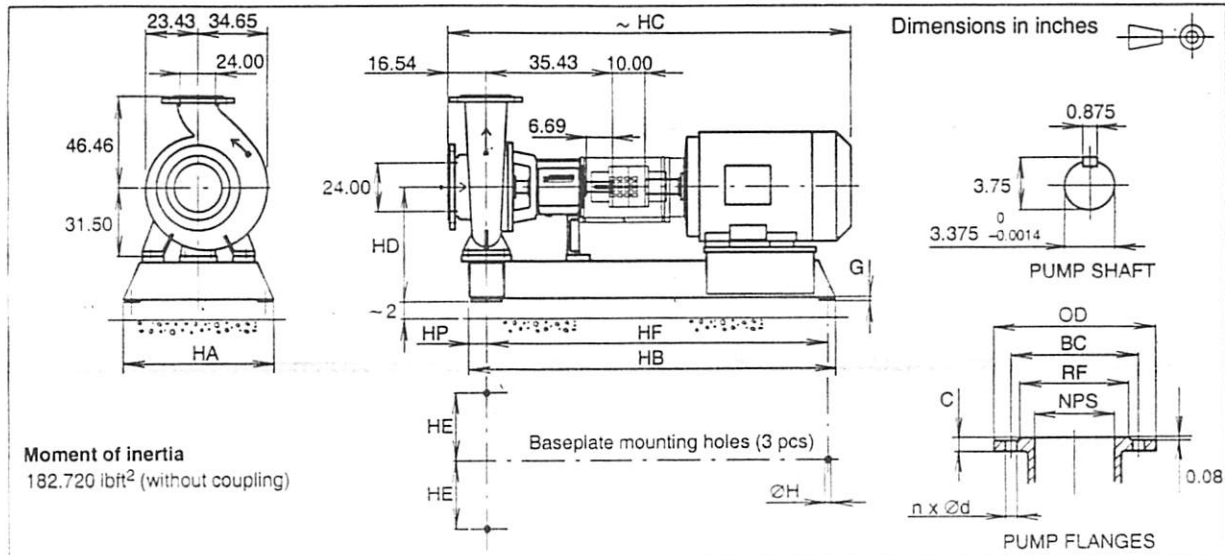


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Version 04 > / 940221 / en / P20058

APT61-24 (24x24-28)

Steel baseplate pump and motor



DIMENSIONS													
Primary motor frame	Max motor frame		Baseplate	HD	HC	HB	HP	HF	HA	HE	H	G	Weight lbs ¹³
447T	5011LL	449T	13	43.20	110.00	117.25	5.00	110.00	52.75	24.00	1.50	0.69	5710
449T	5011LL	-	13	43.20	116.00	117.25	5.00	110.00	52.75	24.00	1.50	0.69	5710
449TS	509LS	-	12	43.20	113.00	106.25	5.00	99.00	52.75	24.00	1.50	0.69	5580

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⁾
24.00	33.27	26.97	1.88	29.50	1.42	20	29.50	1.42	20

1. Max. NEMA motor frame, which can be installed onto the baseplate.	3. Weight without coupling and motor.
2. Max. NEMA motor frame with the same shaft height as primary motor.	4. Flange bolting straddles centerline.

FOR REFERENCE

SERVICE:	A Line P5 Flotation Cell Feed P.
EQUIP. No.:	310-1140-014 / M94149
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 12
HP / RPM / FRAME:	212.0 / 710 / 212.0

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

1315L

APT Process Pumps

Design data



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

Table 7 **Bearing unit size 6**

Pump type	61-20	61-24	62-16
Shaft diameters			
At impeller		2.953	
Under sleeve		3.543	
Between bearings		4.80	
At coupling		3.375	
Bearings			
Radial bearing type		NUP 320	
Thrust bearing type		2x7322 BECB	
Radial brg. life (HRS. x 10 ³) ⁽¹⁾	1000	500	500
Thrust brg. life (HRS. x 10 ³) ⁽¹⁾	150	100	100
Bearing span		13.20	
Shaft overhang		11.80	
Stuffing box			
Bore		5.197	
Depth		3.937	
Shaft sleeve dia.			
Packing		3.947	
Mechanical seal, general		3.750	
Mech. seal, ready-fitted ⁽²⁾		3.543	
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		-	
Impeller			
Front clearance (open impeller)		0.020	
Back clearance		0.040	
Eye area (in ²)			
Closed		-	
Open	302.0	308.0	308.0
Special open	302.0	308.0	308.0
Max. diameter solids (in)			
Closed		-	
Open	3.39	5.19	5.19
Special open	4.21	5.19	5.19
Max. shaft deflection at st. box		0.002	
Casing			
Type (single or dual)	DV	DV	DV
Casing thickness (iron)	0.95	0.95	0.95
Casing thickness (steel)	0.93	0.71	0.71
Bearing unit weight (LBS)		333	
HP/100 rpm (shaft SS2324)		120	

1) Min. L10h-life, full impeller dia., max. speed, direct coupled and 50 - 100 % BEP

2) Installed on the pump shaft

Pump 4-Line P5 Flotation Cell Feed

SERVICE:	A-Line P5 Flotation Cell Feed P.
EQUIP. No.:	310-1140-014 / M94149
CUST. P.O. No.:	445014
MODEL / SIZE:	APT61-24 / 24x24-28
API-C JOB No.:	CAE2000 075 12

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 P5 Flotation Cell Feed

SERVICE:	A-Line P5 Flotation Cell Feed P.
EQUIP. No.:	310-1140-014 / M94149
CUST. P.O. No.:	445014
MODEL / SPEED:	APT61-24 / 710
API-C JOB No.:	CAE2000 075 12