

SALES ACKNOWLEDGEMENT

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 # 007	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 310-1140-008/M94122		
		Serial Number	Currency USD	Net Amount 6195.00
		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, QUATERNARY COARSE SCREEN FEED 310-1140-008 / M94122 445014 4121001112 CAE2000 075 07		Order Contact TONY LIANE		
		Sales Contact TONY GEDEON		
		Document Requirements 4 Copies in English		
Pump Size NPT32-4	N.Am. Pump Size 6X4-13	Casing Material A890 3A	Consistency 1.5 % BD	Pumped liquid ONP/OMG REP. STOCK
Capacity Q 934 USGPM	Head H 125 ft	NPSH av 26 ft	NPSH req 14.8 ft	pH 7-9
Temperature 125 F	Efficiency 49 %	Density	Dimensional drawing P20120	Characteristic curve K01777
Impeller Type Vortex	Impeller No. 286243	Impeller diameter 305 mm	Pump power P 59 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 405T	Power 100 HP	Rotational Speed 1800 RPM	Manufacturer TOSHIBA	Motor Supplied by Customer
Frequency <i>60 Hz</i>	Voltage <i>460V</i>	Enclosure <i>TEFC</i>	<i>FLUORE MOTOR REC/</i> <i>1140</i>	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:				

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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
 =====

SULZER

PRODUCT SPECIFICATION	Description	NPT32-4	
	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	310-1140-008/M94122

PROCESS DATA

Mill	13	Capacity Q	934 USGPM
Process	270	Head H	125 ft
Application	QUATERNARY COARSE <i>SCREEN</i>	Characteristic curve	K01777
Pumped liquid	ONP/OMG REP. STOCK	Pump power P	59 HP
Temperature	125 F	Motor power	100 HP
pH	7-9	Efficiency	49 %
Consistency	1.5 % BD	Pump rotational speed	1770 RPM
Min head on suction side	1 ft	Variable speed	No
Max head on suction side	10 (STATIC) ft	NPSH req	14.8 ft
NPSH av	26 ft		

PUMP

Supplier	Easley	<i>IMPELLER MATERIAL A890 3A</i>	
Dimensional drawing	P20120	<i>SHAFT MATERIAL SS 2324</i>	
Conformity	89/392/EEC machinery /US	Casing Material	A890 3A
Version	09	Gasket Material	Klinger SIL-4430
Pump Size	NPT32-4	O-ring Material	NBR
Impeller Type	Vortex	Bearing Unit Lubrication	Oil lubrication
Impeller No.	286243	Bearing unit model	01 SS2324/NotSpec
Impeller diameter	305 mm	Constant level oiler 638	Yes
Impeller max.diameter	330 mm	Shaft Seal Fitting	P02
Flange Drilling	ASME B16.5 CLASS 150	Customer documents lang./q	EN/04
		Component documents lang./	EN/04
		Special parts	METCO 16 SLEEVE

DRIVE MOTOR

Motor Supplied by	Customer	Power	100 HP
Manufacturer	TOSHIBA	Motor mounting	IPU production unit
Rotational Speed	1800 RPM	<i>408T</i>	

SULZER PROCESS PUMPS (CANADA) INC.	Contact Person	TONY GEDEON	
5055, rue Levy	LBU Order #	CAE2000075	
Saint-Laurent, Québec	LBU Position	007	
H4R 2N9	Telephone	514 - 333-7760	
Canada	Telefax	514 - 333-6324	(bomcust1)

PRODUCT SPECIFICATION	Description		NPT32-4
	Serial Number		
	Time of delivery/EXW	02/02/2001	Page 2
	Date printed	10/13/2000	
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UNITED STATES	UNITED STATES		
Cust. order #	445014		
Cust. PO Line #	ZOR		
Country code	US	Equipment No	310-1140-008/M94122

C O U P L I N G

Motor IEC/NEMA code 405T

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 444T

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

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 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

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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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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
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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 007
 Telephone 514 - 333-7760
 Telefax 514 - 333-6324 (bomcust1)

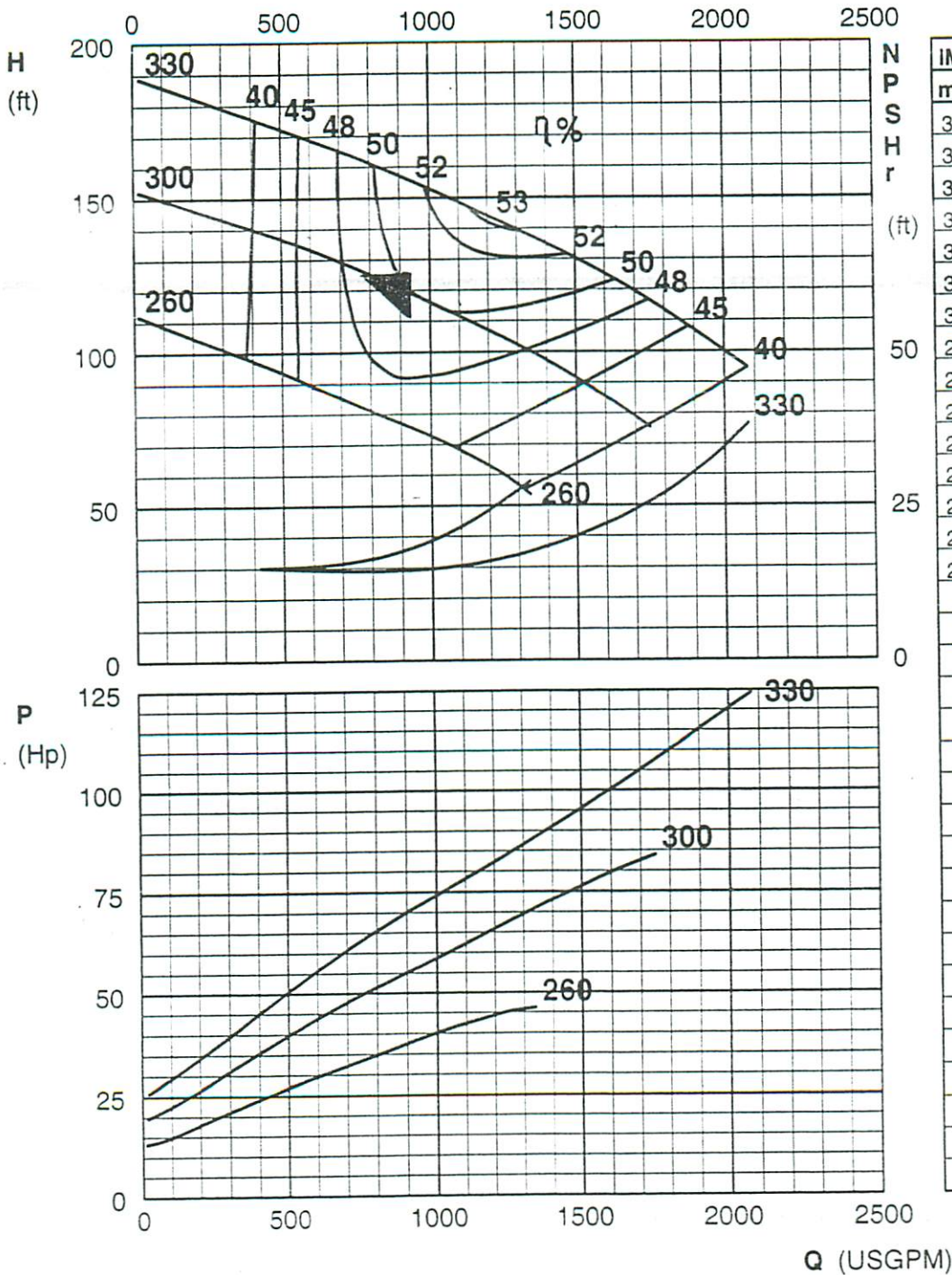
NPT Non-clogging pumps Characteristic curve K01777



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Version 01> / en / 920909 / Replaces 890401 / K01777

NPT32-4 (6x4-13)
Impeller 286243 VORTEX B1.38 Z9
1770 rpm



Handwritten note: The pump will have screen feed

SERVICE:	Qual. Coarse Screen Feed	FLOW (USGPM)	TDH (ft)
EQUIP. No.:	310-1140-008 / M94122	934.00	125.00
CUST. P.O. No.:	445014	EFF. (%)	Power (HP)
API-C JOB No.:	CAE2000 075 07	49	100.0
DATE / REV.:	OCT-16-2000 / R. 0	NEMA PR.	NEMA FUT.
		405T	444T

NPT Non-clogging Pumps Dimensional drawing P20120

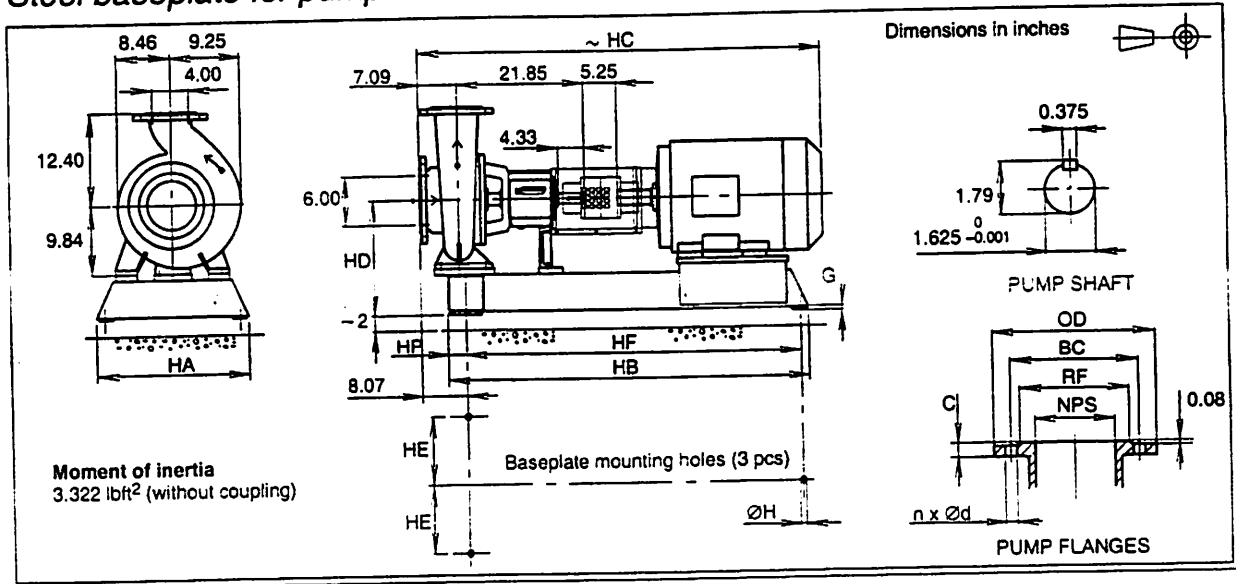


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Version 04 > / 940412 / en / P20120

NPT32-4 (6x4-13)

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 ⁽³⁾
	(1)	(2)											
215T	254T	-	3	15.35	51.70	52.50	2.00	49.25	24.75	11.00	0.75	0.44	515
254T	284T	256T	3	15.35	54.70	52.50	2.00	49.25	24.75	11.00	0.75	0.44	540
256T	284T	-	3	15.35	56.20	52.50	2.00	49.25	24.75	11.00	0.75	0.44	540
284T	324T	286T	4	17.35	57.70	60.25	3.00	56.00	24.75	11.00	1.00	0.44	590
286T	324T	-	4	17.35	59.20	60.25	3.00	56.00	24.75	11.00	1.00	0.44	590
324T	364T	326T	4	17.35	60.70	60.25	3.00	56.00	24.75	11.00	1.00	0.44	605
326T	364T	-	4	17.35	62.20	60.25	3.00	56.00	24.75	11.00	1.00	0.44	605
364T	405T	365T	5	17.35	65.20	68.25	3.00	63.75	28.38	12.75	1.00	0.44	630
364TS	405TS	365TS	4	17.35	63.20	60.25	3.00	56.00	24.75	11.00	1.00	0.44	620
365T	405T	-	5	17.35	66.20	68.25	3.00	63.75	28.38	12.75	1.00	0.44	630
365TS	405TS	-	4	17.35	64.20	60.25	3.00	56.00	24.75	11.00	1.00	0.44	620
404T	444T	405T	5	17.65	69.20	68.25	3.00	63.75	28.38	12.75	1.00	0.44	685
405T	444T	-	5	17.65	70.70	68.25	3.00	63.75	28.38	12.75	1.00	0.44	685

DRILLING OF FLANGES

NPS	OD	RF	C	ANSI B 16.1 Class 125			ANSI B 16.5 Class 150		
				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
6.00	12.01	8.35	1.00	9.50	0.88	8	9.50	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.

SERVICE:	Quat. Coarse Screen Feed P.
EQUIP. No.:	310-1140-008 / M94122
CUST. P.O. No.:	445014
API-C JOB No.:	CAE2000 075 07
HP / RPM / FRAME:	59.0 / 1770 / 405T

CERTIFIED FOR CONSTRUCTION	
DATE / REV.:	OCT-16-2000 / R. 0
SIGNED:	<i>S. A. M. e</i>

NPT Non-clogging Pumps

Design data



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Version 09 > / 960801 / en / N12855 / Page 2 (3)

Table 2 Bearing unit size 3

Pump type	31-4	32-3	32-4	33-3	33-4
Shaft diameters					
At impeller			1.575		
Under sleeve			1.969		
Between bearings			2.76		
At coupling			1.625		
Bearings					
Radial bearing type	NUP 311				
Thrust bearing type	2x7312 BECB				
Radial brg. life (HRS. x 10 ³) ⁽¹⁾	1000 +	1000 +	529	896	173
Thrust brg. life (HRS. x 10 ³) ⁽¹⁾	1000 +	1000 +	712	968	262
Bearing span			5.98		
Shaft overhang			8.50		
Stuffing box					
Bore			3.375		
Depth			3.071		
Shaft sleeve dia.					
Packing			2.375		
Mechanical seal, general			2.250		
Mech. seal, ready-fitted ⁽²⁾			1.969		
Packing size			0.500		
No. of packing rings			4		
Lantern ring width			0.67		
Neck bush clearance			0.02		
Distance to nearest obstruction			2.60		
Impeller					
Front clearance (closed impeller)			0.02		
Back clearance			0.04 ± 0.02		
Eye area (in ²)					
Closed	19.0	13.4	19.0	13.4	19.0
Vortex	-	-	-	-	-
Max. diameter solids (in)					
Closed	2.17	1.77	2.17	1.77	2.17
Vortex	2.36	1.97	2.36	1.97	2.36
Max. shaft deflection at st. box			0.002		
Casing					
Type (single or dual)	SV	SV	SV	SV	SV
Casing thickness (iron)	0.59	0.47	0.59	0.59	0.59
Casing thickness (steel)	0.47	0.39	0.47	0.47	0.47
Bearing unit weight (LBS)			112		
HP/100 rpm (shaft SS2324)			16		

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

PUMP: COARSE SCREEN FEED

SERVICE:	Quat. Coarse Screen Feed P.
EQUIP. No.:	310-1140-008 / M94122
CUST. P.O. No.:	445014
MODEL / SIZE:	NPT32-4 / 6X4-13
API-C JOB No.:	CAE2000 075 07

NPT Non-clogging Pumps

Shaft sealing



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Version 09 > / 960601 / en / N12623

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, slurries
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 (∅ in)

Bearing unit			
2	3	4	5
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

Pressure behind the impeller can approximately be calculated from the formula

$$p_T = p_0 + 0.7 \times 10^{-6} \rho g H - 1.1103 \times 10^{-9} \rho n^2 \left[(d_2/2)^2 - (d_b/2)^2 \right] - 4.4413 \times 10^{-9} \rho n^2 \left[(d_b/2)^2 - (d_5/2)^2 \right] \text{ MPa}$$

Where p_T = pressure behind the impeller (MPa)
 p_0 = inlet pressure (MPa)
 ρ = density of the liquid being pumped (kg/m³)
 H = pump head at the operating point in question (m)
 n = rotating speed of the pump (r/min)
 d_2 = impeller back plate diameter (m)
 d_b = impeller back vane diameter (m)
 d_5 = impeller hub diameter is in bearing unit no. 2 0.05 m, in bearing unit no. 3 0.06 m, and in bearing unit no. 4 0.07 m.

Atmospheric pressure used as reference pressure = 0 MPa.

PUMP, QUARTARY COARSE SCREEN FEED

SERVICE:	Quar. Coarse Screen Feed P.
EQUIP. No.:	310-1140-008 / M94122
CUST. P.O. No.:	445014
MODEL / SPEED:	NPT32-4 / 1770
APFC JOB No.:	CAE2000 075 07