

# SALES ACKNOWLEDGEMENT

# SULZER

Print Date 10/16/2000

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                                                                                                                                          |                                      |                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------|
| <b>SULZER PROCESS PUMPS (CANADA) INC.</b><br>5055, rue Levy, Saint-Laurent, Québec<br>H4R 2N9, Canada<br>Phone 514 - 333-7760 Fax 514 - 333-6324                                                                                                                                                                                                                                                                                                                                                                                          |                                   | Sulzer Order No.<br><b>CAE2000075</b>                                                                                                    | Item #<br><b>025</b>                 | Order Date<br><b>10/12/2000</b>                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   | Customer P.O. No.<br><b>445014</b>                                                                                                       | P.O. Date<br><b>09/22/2000</b>       |                                                    |
| Bill to<br><b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b><br><br><b>17589 PLANT ROAD</b><br><br><b>COOSA PINES, AL 35044-0555</b>                                                                                                                                                                                                                                                                                                                                                                                                             |                                   | Equipment Number<br><b>310-1140-036/M94256</b>                                                                                           |                                      |                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   | Serial Number                                                                                                                            | Currency<br><b>USD</b>               | Net Amount<br><b>5766.00</b>                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   | Terms of Payment<br><b>SPECIAL TERMS, SEE NOTE</b>                                                                                       |                                      |                                                    |
| Ship to<br><b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b><br><br><b>17589 PLANT ROAD</b><br><br><b>COOSA PINES, AL 35044-0555</b>                                                                                                                                                                                                                                                                                                                                                                                                             |                                   | Terms of Delivery<br><b>DDP (INCOTERMS 2000)</b><br><b>COOSA PINES, AL, PREPAID</b>                                                      |                                      |                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   | Way of Delivery<br><b>Truck</b>                                                                                                          |                                      | Onsite Date<br><b>01/19/2001</b>                   |
| Marks and Tagging<br><b>PUMP, QUARTERNARY</b><br><b>CLEANERS FEED</b><br><b>310-1140-036 / M94256</b><br><b>445014</b><br><b>4121001112</b><br><b>CAE2000 075 25</b>                                                                                                                                                                                                                                                                                                                                                                      |                                   | Order Contact<br><b>TONY LIANE</b><br><br>Sales Contact<br><b>TONY GEDEON</b><br><br>Document Requirements<br><b>4 Copies in English</b> |                                      |                                                    |
| Pump Size<br><b>APT32-4C</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N.Am. Pump Size<br><b>6X4C-13</b> | Casing Material<br><b>A890 3A</b>                                                                                                        | Consistency<br><b>0.45-0.6 % BD</b>  | Pumped liquid<br><b>DEINKED STOCK</b>              |
| Capacity Q<br><b>980 USGPM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Head H<br><b>105 ft</b>           | NPSH av<br><b>26 ft</b>                                                                                                                  | NPSH req<br><b>9.5 ft</b>            | pH<br><b>7-9</b>                                   |
| Capacity in alternative unit<br><b>71 %</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Efficiency<br><b>71 %</b>         | Temperature<br><b>125 F</b>                                                                                                              | Dimensional drawing<br><b>P20031</b> | Characteristic curve<br><b>K00804</b>              |
| Impeller Type<br><b>Open</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Impeller No.<br><b>283881</b>     | Impeller diameter<br><b>290 mm</b>                                                                                                       | Pump power P<br><b>37 HP</b>         | Base plate type<br><b>Pump Motor/Steel/Zinc</b>    |
| Coupling Type<br><b>Rex-Omega ES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mechanical seal type              | Coupling Guard material<br><b>S + Z EN10025</b>                                                                                          | Dynamic seal power                   | Shaft Seal Fitting<br><b>P02</b>                   |
| Motor IEC/NEMA code<br><b>326T</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Power<br><b>50 HP 50HP</b>        | Rotational Speed<br><b>1800 RPM</b>                                                                                                      | Manufacturer<br><b>TOSHIBA</b>       | Future motor IEC/NEMA code<br><b>364T</b>          |
| Frequency<br><b>50 Hz 60Hz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Voltage<br><b>460V</b>            | Enclosure<br><b>TEFC</b>                                                                                                                 | Motor Supplied by<br><b>Customer</b> | Bearing Unit Lubrication<br><b>Oil lubrication</b> |
| Order Remarks:<br>TERMS OF PAYMENT:<br>-----<br>ALL PAYMENTS ARE DUE NET THIRTY (30) DAYS AFTER<br>COMPLETION OF EACH EVENT AND RECEIPT OF INVOICE<br>COMPLETE WITH SUPPORTING DOCUMENTATION, WHICHEVER<br>OCCURS LAST<br>90% UPON DELIVERY OF EACH PUMP THAT HAS BEEN<br>RELEASED AND THE CORRESPONDING CHANGE ORDER ISSUED<br>10% HOLD BACK UNTIL COMMISSIONING AND ACCEPTANCE<br>BY BUYER<br>=====<br>PRICING:<br>-----<br>FOR NON-MENA MOTORS, FINAL PRICES ARE SUBJECT TO<br>CONFIRMATION AFTER RECEIPT OF CERTIFIED MOTOR<br>PRINTS |                                   |                                                                                                                                          |                                      |                                                    |
| =====<br>INSPECTION LOCATION:<br>-----<br>FOR INSPECTION PURPOSES PLEASE CONTACT:<br>MR. SAM SEWELL<br>SULZER PROCESS PUMPS (US)<br>155 AHLSTROM WAY (PUE FACTORY)<br>EASLEY, SC, USA, 29640<br>TEL: (864) 855-9090, FAX: (864) 855-9095<br>=====<br>PAINTING:<br>-----<br>SULZER STANDARD FACTORY APPLIED PAINTING WITH<br>THE RAL 5019 (CAPRI BLUE) COLOR & GUARDS IN<br>RAL 1021 (SAFETY YELLOW) AT NO EXTRA CHARGE<br>=====<br>FINAL IMPELLER TRIMS:                                                                                  |                                   |                                                                                                                                          |                                      |                                                    |

# SALES ACKNOWLEDGEMENT

# SULZER

Print Date 10/16/2000

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|                                                                                                     |                                                                                            |                |                   |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------|-------------------|
| <b>SULZER PROCESS PUMPS (CANADA) INC.</b>                                                           | Sulzer Order No.                                                                           | Item #         | Order Date        |
| 5055, rue Levy, Saint-Laurent, Québec<br>H4R 2N9, Canada<br>Phone 514 - 333-7760 Fax 514 - 333-6324 | <b>CAE2000075</b>                                                                          | <b>025</b>     | <b>10/12/2000</b> |
| <b>Bill to</b><br><b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b>                                        | Customer P.O. No                                                                           |                | P.O Date          |
| 17589 PLANT ROAD                                                                                    | <b>445014</b>                                                                              |                | <b>09/22/2000</b> |
| <b>COOSA PINES, AL 35044-0555</b>                                                                   | <b>Equipment Number</b><br><b>310-1140-036/M94256</b>                                      |                |                   |
| <b>Ship to</b><br><b>ALLIANCE FOREST PRODUCTS U.S. CORP.</b>                                        | Serial Number                                                                              | Currency       | Net Amount        |
| 17589 PLANT ROAD                                                                                    | <b>USD</b>                                                                                 | <b>5766.00</b> |                   |
| <b>COOSA PINES, AL 35044-0555</b>                                                                   | <b>Terms of Payment</b><br><b>SPECIAL TERMS, SEE NOTE</b>                                  |                |                   |
| <b>Marks and Tagging</b><br><b>PUMP, QUARTERNARY</b><br><b>CLEANERS FEED</b>                        | <b>Terms of Delivery</b><br><b>DDP (INCOTERMS 2000)</b><br><b>COOSA PINES, AL, PREPAID</b> |                |                   |
| 310-1140-036 / M94256                                                                               | Way of Delivery                                                                            |                | Onsite Date       |
| 445014                                                                                              | <b>Truck</b>                                                                               |                | <b>01/19/2001</b> |
| 4121001112                                                                                          | <b>Order Contact</b>                                                                       |                |                   |
| CAE2000 075 25                                                                                      | <b>TONY LIANE</b>                                                                          |                |                   |
|                                                                                                     | <b>Sales Contact</b>                                                                       |                |                   |
|                                                                                                     | <b>TONY GEDEON</b>                                                                         |                |                   |
|                                                                                                     | <b>Document Requirements</b>                                                               |                |                   |
|                                                                                                     | <b>4 Copies in English</b>                                                                 |                |                   |

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                         | APT32-4C            |
|----------------------------|--------|-------------------------------------|---------------------|
|                            |        | 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                        | 310-1140-036/M94256 |

## PROCESS DATA

|                          |                     |                       |           |
|--------------------------|---------------------|-----------------------|-----------|
| Mill                     | 13                  | NPSH av               | 26 ft     |
| Process                  | 270                 | Capacity Q            | 980 USGPM |
| Application              | QUAT. CLEANERS FEED | Head H                | 105 ft    |
| Pumped liquid            | DEINKED STOCK       | Characteristic curve  | K00804    |
| Temperature              | 125 F               | Pump power P          | 37 HP     |
| pH                       | 7-9                 | Motor power           | 50 HP     |
| Consistency              | 0.45-0.6 % BD       | Efficiency            | 71 %      |
| Gas content              | 0-1 %               | Pump rotational speed | 1760 RPM  |
| Min head on suction side | 1 ft                | Variable speed        | No        |
| Max head on suction side | 13 (STATIC) ft      | NPSH req              | 9.5 ft    |

## PUMP

|                        |                          |
|------------------------|--------------------------|
| Supplier               | Easley                   |
| Dimensional drawing    | P20031                   |
| Conformity             | 89/392/EEC machinery /US |
| Version                | 09                       |
| Pump Size              | APT32-4C                 |
| Impeller Type          | Open                     |
| Impeller No.           | 283881                   |
| Impeller diameter      | 290 mm                   |
| Impeller turning angle | 0 °                      |
| Impeller max.diameter  | 330 mm                   |
| Flange Drilling        | ASME B16.5 CLASS 150     |

IMPELLER MATERIAL A890 3A  
SHAFT MATERIAL SS 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 |
| Motor IEC/NEMA code | 325T     |
| Manufacturer        | TOSHIBA  |
| Rotational Speed    | 1800 RPM |

|                |                     |
|----------------|---------------------|
| Power          | 50 HP               |
| Frequency      | 60 Hz               |
| 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   | 025                       |
| Telephone      | 514 - 333-7760            |
| Telefax        | 514 - 333-6324 (bomcust1) |

|                                                                                                                                                                                              |                                                                                                                                                        |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>PRODUCT SPECIFICATION</b>                                                                                                                                                                 | <b>Description</b> APT32-4C                                                                                                                            |            |
|                                                                                                                                                                                              | Serial Number                                                                                                                                          |            |
|                                                                                                                                                                                              | Time of delivery/EXW                                                                                                                                   | 01/12/2001 |
|                                                                                                                                                                                              | Date printed                                                                                                                                           | 10/16/2000 |
|                                                                                                                                                                                              |                                                                                                                                                        | Page 2     |
| Customer<br>ALLIANCE FOREST PRODUCTS U.S. CORP.<br><br>17589 PLANT ROAD<br><br>COOSA PINES, AL 35044-0555<br>UNITED STATES<br>Cust. order # 445014<br>Cust. PO Line # ZOR<br>Country code US | ALLIANCE FOREST PRODUCTS U.S. CORP.<br><br>17589 PLANT ROAD<br><br>COOSA PINES, AL 35044-0555<br>UNITED STATES<br><br>Equipment No 310-1140-036/M94256 |            |

## 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 364T

## 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

=====

|                                                                                                    |                                                                       |                                                                      |            |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|------------|
| SULZER PROCESS PUMPS (CANADA) INC.<br>5055, rue Levy<br>Saint-Laurent, Québec<br>H4R 2N9<br>Canada | Contact Person<br>LBU Order #<br>LBU Position<br>Telephone<br>Telefax | TONY GEDEON<br>CAE2000075<br>025<br>514 - 333-7760<br>514 - 333-6324 | (bomcust1) |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|------------|

| PRODUCT SPECIFICATION               |        | Description                         | APT32-4C            |
|-------------------------------------|--------|-------------------------------------|---------------------|
|                                     |        | Serial Number                       |                     |
|                                     |        | Time of delivery/EXW                | 01/12/2001          |
|                                     |        | Date printed                        | 10/16/2000          |
|                                     |        | Page 3                              |                     |
| 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                        | 310-1140-036/M94256 |

## 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:

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. |  | Contact Person | TONY GEDEON               |
| 5055, rue Levy                     |  | LBU Order #    | CAE2000075                |
| Saint-Laurent, Québec              |  | LBU Position   | 025                       |
| H4R 2N9                            |  | Telephone      | 514 - 333-7760            |
| Canada                             |  | Telefax        | 514 - 333-6324 (bomcust1) |

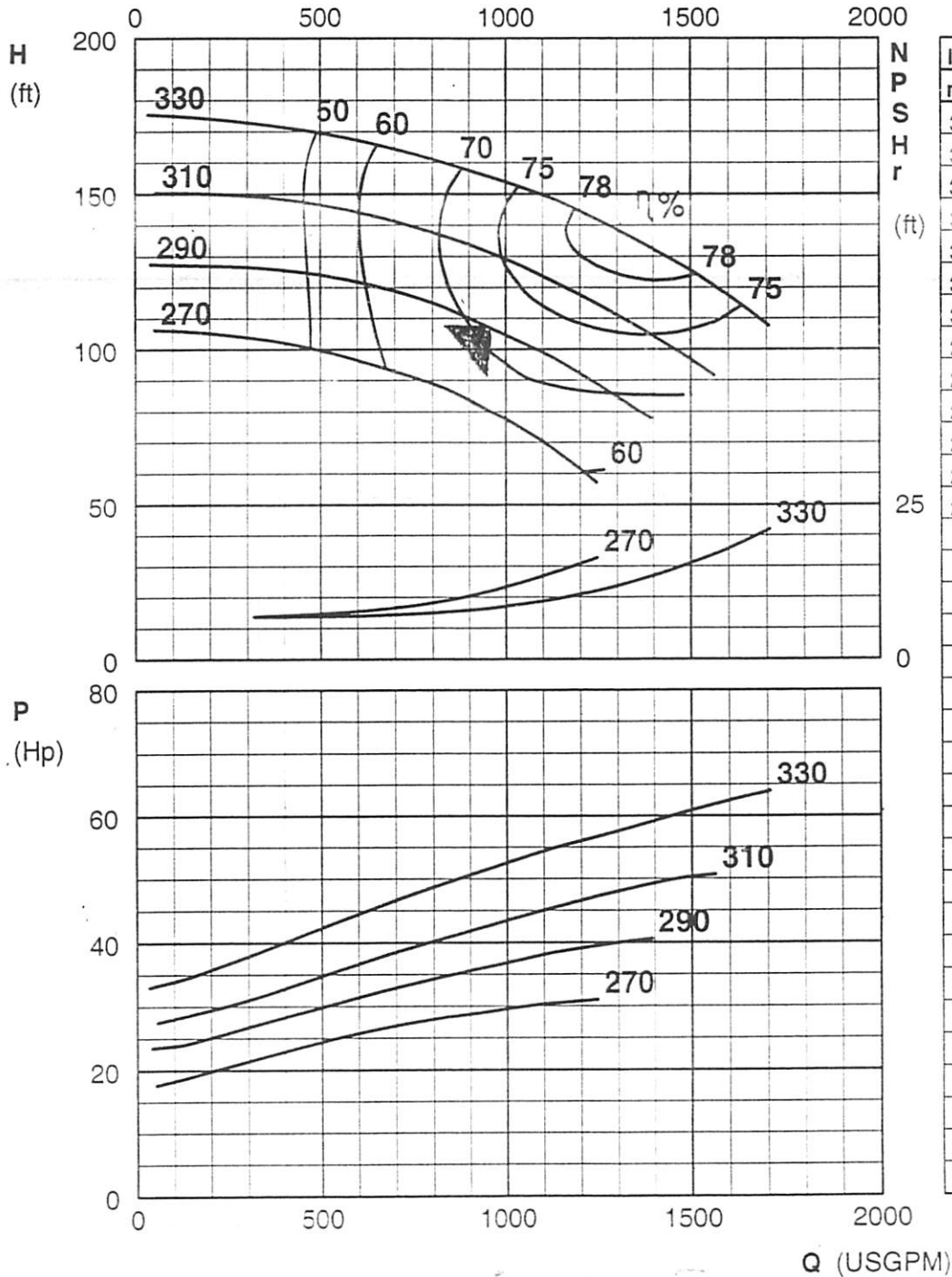
# APT Process pumps Characteristic curve K00804



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Version 01> / en / 960930 / Replaces 920630 / K00804

**APT32-4C (6x4C-13)**  
**Impeller 283881 OPEN B1.26 Z4**  
**1760 rpm**



| IMPELLER DIA |       |     |
|--------------|-------|-----|
| mm           | in    | deg |
| 330          | 12.99 | 0   |
| 325          | 12.80 | 0   |
| 320          | 12.60 | 0   |
| 315          | 12.40 | 0   |
| 310          | 12.20 | 0   |
| 305          | 12.01 | 0   |
| 300          | 11.81 | 0   |
| 295          | 11.61 | 0   |
| 290          | 11.42 | 0   |
| 285          | 11.22 | 0   |
| 280          | 11.02 | 0   |
| 275          | 10.83 | 0   |
| 270          | 10.23 | 0   |

|                 |                        |              |            |
|-----------------|------------------------|--------------|------------|
| SERVICE:        | Quat. Cleaners Feed P. | FLOW (USGPM) | TDH (ft)   |
| EQUIP. No.:     | 310-1140-036 / M94256  | 980.00       | 105.00     |
| CUST. P.O. No.: | 445014                 | EFF. (%)     | Power (HP) |
| API-C JOB No.:  | CAE2000 075 25         | 71           | 50.0       |
| DATE / REV.:    | OCT-16-2000 / R. 0     | NEMA PR.     | NEMA FUT.  |
|                 |                        | 326T         | 364T       |

# APT Process Pumps Dimensional drawing P20031

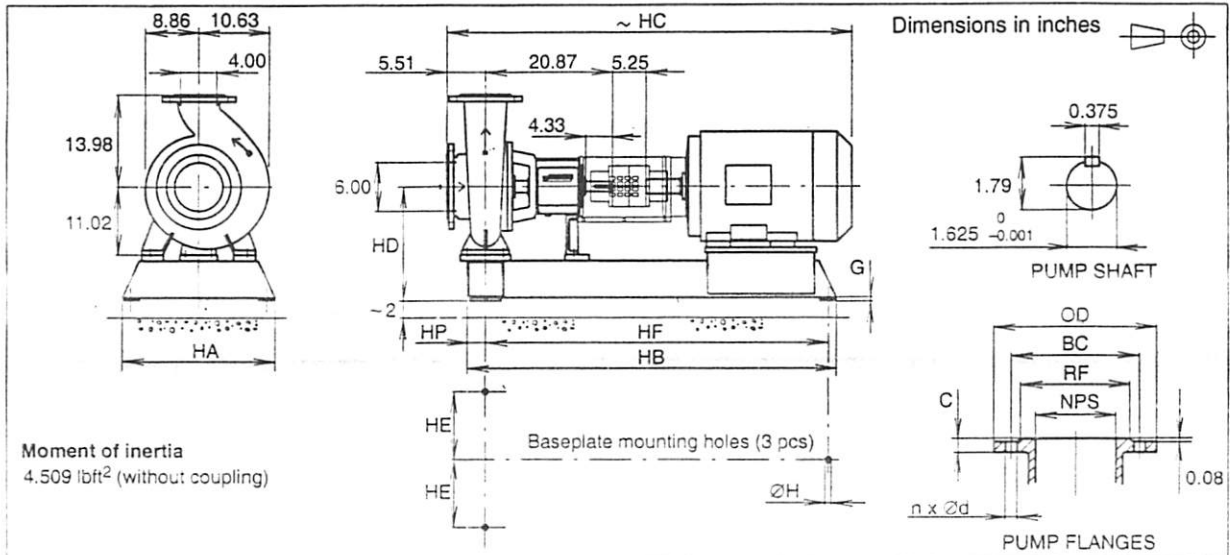


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Version 04 > / 940221 / en / P20031

## APT32-4C (6x4C-13)

Steel baseplate for 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 <sup>(3)</sup> |
|---------------------|---------------------|---------------------|-----------|-------|-------|-------|------|-------|-------|-------|------|------|---------------------------|
| 254T                | 284T                | 256T                | 3         | 16.80 | 54.50 | 52.50 | 2.00 | 49.25 | 24.75 | 11.00 | 0.75 | 0.44 | 615                       |
| 256T                | 284T                | -                   | 3         | 16.80 | 56.00 | 52.50 | 2.00 | 49.25 | 24.75 | 11.00 | 0.75 | 0.44 | 615                       |
| 284T                | 324T                | 286T                | 4         | 18.80 | 57.50 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 665                       |
| 286T                | 324T                | -                   | 4         | 18.80 | 59.00 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 665                       |
| 324T                | 364T                | 326T                | 4         | 18.80 | 60.50 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 675                       |
| 326T                | 364T                | -                   | 4         | 18.80 | 62.00 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 675                       |
| 364T                | 405T                | 365T                | 5         | 18.80 | 65.00 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 705                       |
| 364TS               | 405TS               | 365TS               | 4         | 18.80 | 63.00 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 690                       |
| 365T                | 405T                | -                   | 5         | 18.80 | 66.00 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 705                       |
| 365TS               | 405TS               | -                   | 4         | 18.80 | 64.00 | 60.25 | 3.00 | 56.00 | 24.75 | 11.00 | 1.00 | 0.44 | 690                       |
| 404T                | 444T                | 405T                | 5         | 18.80 | 69.00 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 760                       |
| 404TS               | 444TS               | 405TS               | 5         | 18.80 | 66.00 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 755                       |
| 405T                | 444T                | -                   | 5         | 18.80 | 70.50 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 760                       |
| 405TS               | 444TS               | -                   | 5         | 18.80 | 67.50 | 68.25 | 3.00 | 63.75 | 28.38 | 12.75 | 1.00 | 0.44 | 755                       |
| 444T                | 509LL               | 449T                | 7         | 21.15 | 74.50 | 85.00 | 3.50 | 80.00 | 32.63 | 15.00 | 1.25 | 0.56 | 1060                      |
| 444TS               | 509LS               | 449TS               | 7         | 21.15 | 70.50 | 85.00 | 3.50 | 80.00 | 32.63 | 15.00 | 1.25 | 0.56 | 1060                      |
| 445T                | 509LL               | 449T                | 7         | 21.15 | 76.50 | 85.00 | 3.50 | 80.00 | 32.63 | 15.00 | 1.25 | 0.56 | 1060                      |
| 445TS               | 509LS               | 449TS               | 7         | 21.15 | 73.00 | 85.00 | 3.50 | 80.00 | 32.63 | 15.00 | 1.25 | 0.56 | 1060                      |

### 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> |
| 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                |

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:          | Quat. Cleaners Feed P. |
| EQUIP. No.:       | 310-1140-036 / M94256  |
| CUST. P.O. No.:   | 445014                 |
| API-C JOB No.:    | CAE2000 075 25         |
| HP / RPM / FRAME: | 37.0 / 1760 / 326T     |

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


**AHLSTROM**

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| Pump type                                                 | 31-4  | 31-4C | 31-6  | 32-2B  | 32-3          | 32-4  | 32-V  | 33-4   | 33-4C |
|-----------------------------------------------------------|-------|-------|-------|--------|---------------|-------|-------|--------|-------|
| <b>Shaft diameters</b>                                    |       |       |       |        |               |       |       |        |       |
| At impeller                                               |       |       |       |        | 1.575         |       |       |        |       |
| Under sleeve                                              |       |       |       |        | 1.969         |       |       |        |       |
| Between bearings                                          |       |       |       |        | 2.76          |       |       |        |       |
| At coupling                                               |       |       |       |        | 1.625         |       |       |        |       |
| <b>Bearings</b>                                           |       |       |       |        |               |       |       |        |       |
| Radial bearing type                                       |       |       |       |        | NUP 311       |       |       |        |       |
| Thrust bearing type                                       |       |       |       |        | 2 x 7312 BECB |       |       |        |       |
| Radial brg. life (HRS. x 10 <sup>3</sup> ) <sup>(1)</sup> | 34    | 56    | 100   | 1000 + | 1000 +        | 370   | 75    | 1000 + | 170   |
| Thrust brg. life (HRS. x 10 <sup>3</sup> ) <sup>(1)</sup> | 32    | 48    | 130   | 1000 + | 1000 +        | 350   | 120   | 850    | 320   |
| Bearing span                                              |       |       |       |        | 5.98          |       |       |        |       |
| Shaft overhang                                            |       |       |       |        | 8.50          |       |       |        |       |
| <b>Stuffing box</b>                                       |       |       |       |        |               |       |       |        |       |
| Bore                                                      |       |       |       |        | 3.375         |       |       |        |       |
| Depth                                                     |       |       |       |        | 3.071         |       |       |        |       |
| Shaft sleeve dia.                                         |       |       |       |        |               |       |       |        |       |
| Packing                                                   |       |       |       |        | 2.375         |       |       |        |       |
| Mechanical seal, general                                  |       |       |       |        | 2.250         |       |       |        |       |
| Mech. seal, ready-fitted <sup>(2)</sup>                   |       |       |       |        | 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          |       |       |        |       |
| <b>Wear ring clearance</b>                                | 0.023 | 0.024 | 0.025 | 0.021  | 0.022         | 0.023 | 0.024 | 0.023  | 0.024 |
| <b>Impeller</b>                                           |       |       |       |        |               |       |       |        |       |
| Front clearance (open impeller)                           |       |       |       |        | 0.020         |       |       |        |       |
| Back clearance                                            |       |       |       |        | 0.040         |       |       |        |       |
| Eye area (in <sup>2</sup> )                               |       |       |       |        |               |       |       |        |       |
| Closed                                                    | 23.9  | 33.6  | 48.8  | 12.2   | 18.1          | 23.9  | 33.6  | 23.9   | 34.8  |
| Open                                                      | 23.9  | 33.6  | 48.8  | 12.2   | 18.1          | 23.9  | 33.6  | 23.9   | 34.8  |
| Special open                                              | -     | -     | -     | -      | 25.0          | 26.7  | 37.8  | 32.8   | 41.3  |
| Max. diameter solids (in)                                 |       |       |       |        |               |       |       |        |       |
| Closed                                                    | 0.98  | 1.26  | 1.57  | 0.35   | 0.51          | 0.71  | 1.02  | 0.51   | 0.87  |
| Open                                                      | 1.26  | 1.42  | 1.61  | 0.63   | 0.87          | 0.94  | 1.26  | 0.71   | 1.14  |
| Special open                                              | -     | -     | -     | -      | 1.30          | 0.94  | 1.26  | 1.14   | 1.14  |
| Max. shaft deflection at st. box                          |       |       |       |        | 0.002         |       |       |        |       |
| <b>Casing</b>                                             |       |       |       |        |               |       |       |        |       |
| Type (single or dual)                                     | SV    | SV    | SV    | SV     | SV            | SV    | SV    | SV     | SV    |
| Casing thickness (iron)                                   | 0.43  | 0.47  | 0.55  | 0.40   | 0.43          | 0.51  | 0.51  | 0.59   | 0.59  |
| Casing thickness (steel)                                  | 0.36  | 0.40  | 0.47  | 0.32   | 0.36          | 0.36  | 0.40  | 0.40   | 0.43  |
| <b>Bearing unit weight (LBS)</b>                          |       |       |       |        | 112           |       |       |        |       |
| <b>HP/100 rpm (shaft SS2324)</b>                          |       |       |       |        | 16            |       |       |        |       |

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

|                 |                        |
|-----------------|------------------------|
| SERVICE:        | Quat. Cleaners Feed P. |
| EQUIP. No.:     | 310-1140-036 / M94256  |
| CUST. P.O. No.: | 445014                 |
| MODEL / SIZE:   | APT32-4C / 6x4C-13     |
| API-C JOB No.:  | CAE2000 075 25         |

# 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 <sup>3</sup> .             |
| Flow rate (USGPM)                 | 0.5 - 0.8                                                                                                                                 |
| Pressure (psi)                    | $p_T + 7$ psi<br>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.

*Final, GUTTERNARY CLEANERS*

|                 |                        |
|-----------------|------------------------|
| SERVICE:        | Quat. Cleaners Feed P. |
| EQUIP. No.:     | 310-1140-036 / M94256  |
| CUST. P.O. No.: | 445014                 |
| MODEL / SPEED:  | APT32-4C / 1760        |
| API-C JOB No.:  | CAE2000 075 25         |