

"APPROVED"

Chief mechanical engineer

of «Shurtan GCC», LLC

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2021 y.



Technical specification for the purchase  
of a centrifugal pump for the needs of LLC "Shurtan GCC"

## 1. GENERAL INFORMATION

1.1 Name
Centrifugal pump of the hot extruder system.
1.2 The basis and purpose of the purchase of goods
Basis: Approved application of the polyethylene production workshop for 2021. Purpose: Replacement of a failed centrifugal pump.
1.3 Information about the novelty (year of production / release of the product)
The equipment must be new, not previously used. All components, assemblies, parts and components must be manufactured no earlier than 2021.
1.4 Stages of development / manufacture
According to the NTD and CD of the manufacturer.
1.5 Documents for development / manufacture
According to the NTD and CD of the manufacturer.

## 2. SCOPE OF APPLICATION

The GA-2304 centrifugal pump is used for pumping coolant oil into the extruder zones.

## 3. OPERATING CONDITIONS

3.1 Общие условия эксплуатации
Place of operation: Polyethylene production workshop, installation of finishing finishing of LLC "Shurtan GCC".
Pump operation mode: Continuous operation, 8000 hours per year.

## 4. TECHNICAL REQUIREMENTS

4.1 Basic technical requirements	
Pump Model	RA3146
Direction of rotation (view from the coupling side):	counterclock-wise
Casing thickness - minimum	5/16" inches
Corrosion tolerance и	1/8" inches
Flanges: ANSI. Surface finish class	300 RF 125 Ra
Suction pressure - maximum	1000 kPa
Maximum power 3500 rpm	75 Horse power
Radial bearing, sleeve lubricated by pump	7308 BG A pair of corner contacts
$L^3/D^4$	2.1
Material class	22
Pumping temperature: minimum-maximum	-20°F 600°F
Hydrostatic test pressure	3800 kPa
<b>Operating mode:</b> GA-2304	
Liquid: Oil coolant;	
Suction operating temperature: 280 °C;	
Kinematic viscosity at 40 °C: 29.05 mm <sup>2</sup> /s;	
Capacity: 11.4 m <sup>3</sup> /h;	
RPM pump: 2900 min <sup>-1</sup>	
Pressure drop: ΔP = 275 kPa.	
<b>Construction:</b>	
Model: <b>RA3146</b> ;	
Type: Centrifugal;	
Cylinder positions: Horizontal;	





Фланец на всасе: ANSI 2", 300 lbs;

Фланец на выходе: ANSI 1.5", 300 lbs;

#### 4.2 Main technical, economic and operational indicators

For stable operation of the centrifugal pump, the repair period and replacement of spare parts should be no more than once per year.

The centrifugal pump must comply with the technical and operational characteristics of the Dean pump pump, the polyethylene production shop currently uses the pump of this company. A similar product, completely identical in function, application, brand, model, quality and technical characteristics of the above pump can be provided.

#### 4.3 Design requirements, installation and technical requirements

The centrifugal pump offered by the companies must correspond to the location of the centrifugal pump installed in the polyethylene production shop.

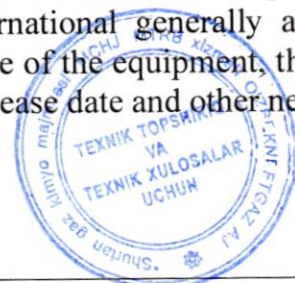
#### 4.4 Requirements for materials

PART NO	PART NAME	CLASS 22 RA 3146
3	Impeller	C.I.(1)
4*	Impeller Key	Steel (2)
5	Casing	D.L. (10)
6A	Casing Ring (Only some sizes)	Iron (7)
9	Bearing Housing Foot	Steel (2)
12*	Impeller Bolt/Nut	Steel (2) Bolt
12A*	Impeller Washer	Steel (2)
13*	Mechanical Seal Gland	Steel (2)
25A*	Shaft Bearing-Theist-Ball	Angular Cont. (Pair)
26	Bearing Housing	D.L. (10)
28*	Bearing End Cover	C.I.(1)
29*	Pump Shaft	11-13 S/S (12)
31*	Thrust Bearing Lock Nut	Steel (2)
31 A*	Thrust Bearing Lock Washer	Steel (2)
56	Casino Foot	C-I-(1)
75*	Snap Ring	Steel (2)
75 A*	Snap Ring	N.A.
76*	Grease Seal-Front	Viton (13)
76 A*	Grease Seal-Rear	Buna (14)
77	Casing Gasket	Asbestos (11)
77B*	Bearing End Cover Gasket	Buna (14)
95A*	Mechanical Seal Stationary	Niresist & Viton
95B*	Mechanical Seal Rotary	S/S & Carbon w/Viton
180*	Radial Bearing Cartridge	Carbon & Steel
325*	Seal Gland Gasket	Viton (13)
365*	Mechanical Seal Retainer	Steel (2)

#### 4.5 Marking requirements

The marking must comply with the requirements of the state standards of the Republic of Uzbekistan, which do not contradict and are not inferior to international generally accepted standards. The marking of the goods must contain the decrypted name of the equipment, the name of the manufacturer, the address of the manufacturer's location, the release date and other necessary information. The basic marking data must contain:

- name or trademark of the manufacturer;
- symbol equipment;
- designation of the standard or technical conditions;





- nominal values of feed, head (pressure) and speed;
- serial number of the pump according to the system of the manufacturer;
- year of manufacture of the equipment.

#### 4.6 Size and packaging requirements

The dimensions of the goods according to the regulatory and technical documents of the manufacturer.

Packaging should be carried out in such a way as to exclude the movement of cargo in containers during loading, transportation and unloading. The container must be marked in accordance with the requirements of GOST 14192-96.

#### 4.7 Requirements for SPA and wear parts

The centrifugal pump provided by the companies must additionally have two-year spare parts specified below:

PART NO	PART NAME	CLASS 22 RA 3146
6A	Casing Ring (Only some sizes)	Iron (7)
25A*	Shaft Bearing-Theist-Ball	Angular Cont. (Pair)
31*	Thrust Bearing Lock Nut	Steel (2)
31 A*	Thrust Bearing Lock Washer	Steel (2)
75*	Snap Ring	Steel (2)
75 A*	Snap Ring	N.A.
76*	Grease Seal-Front	Viton (13)
76 A*	Grease Seal-Rear	Buna (14)
77	Casing Gasket	Asbestos (11)
77B*	Bearing End Cover Gasket	Buna (14)
95A*	Mechanical Seal Stationary	Niresist & Viton
95B*	Mechanical Seal Rotary	S/S & Carbon w/Viton
325*	Seal Gland Gasket	Viton (13)

### 5. REQUIREMENTS FOR THE RULES OF DELIVERY AND ACCEPTANCE

#### 5.1 The order of delivery and acceptance, additional requirements of the Customer

The goods are accepted after the test, in accordance with the technical parameters of paragraphs 4.1 and 4.7, after that, an acceptance certificate is issued in accordance with the contract.

Acceptance and input control of Products for compliance with quantity, quality and size is carried out at the Customer's warehouse. In case of non-conformity of the delivered goods with the ordered specification or if the goods have not passed the entrance quality control, the Supplier is obliged to replace it within the period specified in the delivery contract. The transportation costs for the replacement of the goods are borne by the Supplier of the goods.

#### 5.2 Requirements for the transfer of technical and other documents to the customer when delivering the goods.

The product must be accompanied by the following documentation:

- certificate of conformity of the goods;
- certificate for materials for manufacturing;
- product passport;
- manufacturer's test certificate;
- invoice (invoice) Seller with a description of the goods, indicating the quantity, unit price and total amount;





- a bill of lading issued in the name of the consignee with a mark of the departure station and a mark of the destination, the name of the Customer, the number and date of signing of the current contract;
- certificate of origin of the country of the goods indicating the invoice number and date;
- packing list;
- the test certificate of the goods of an independent inspection company (third party)
- the certificate of quality of the goods issued by the manufacturer;
- product safety data sheet.

#### 6. REQUIREMENTS FOR THE GUARANTEE PERIOD

The goods must be produced no more than six months before the date of shipment, in full compliance with the description, technical conditions, manufacturer's specification and/or the terms of this technical specification, as well as to ensure the quality provided.

#### 7. QUALITY AND CLASSIFICATION REQUIREMENTS

The product must be of high quality, the quality guarantee period is at least 2 years.

It is necessary to provide certificates (international standards ISO 9001, 14001, 45001, 50001, manufacturer's quality certificate and/or other certificates of international, recognized laboratories and test centers).

The service life of the product in accordance with the regulatory and technical documentation is 2 years.

#### 8. REQUIREMENTS FOR QUANTITY, CONFIGURATION, AND DELIVERY TIME (PERIODICITY)

No	Name of product	Unit of measurement	Quantity
1	Centrifugal pump	Piece	1
2	Two-year spare parts		

Before the delivery of the centrifugal pump, the Customer is provided with a detailed drawing of the centrifugal pump for approval.

The participating companies present their technical and commercial proposals to the Customer. The customer must give a technical conclusion.

The delivery time of the goods is 3 months (90 calendar days) after the conclusion of the contract.

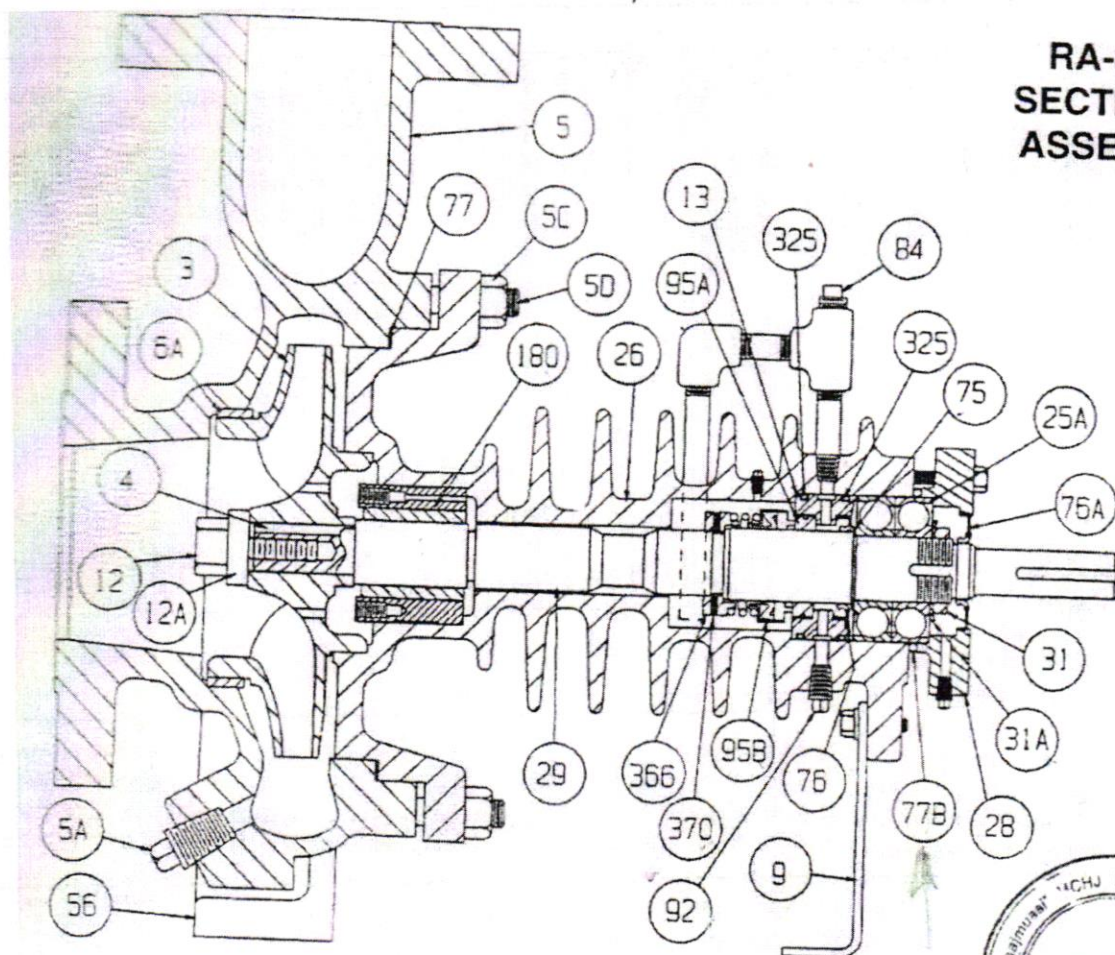
#### 9. LIST OF APPLICATIONS

No	Name of the application	Number of sheets
1	Drawing of the centrifugal pump	2 (two) sheets

*\*If there is a misunderstanding or an error in the English version of the terms of reference, use the Russian version.*



**RA-3146  
SECTIONAL  
ASSEMBLY**





## INSTALLATION

Always wear the appropriate protective apparel when working on or around the pumping equipment. Safety glasses with side shields, heavy work gloves (use insulated work gloves when handling hot items), steel-toed shoes, hard hat, and any other protective gear as needed for protection. One example of other gear would be breathing apparatus when working near toxic materials. Use lifting devices, manufactured expressly for the purpose of lifting, to move the pumping machinery. Do not attempt to lift the assembly or its components manually. Use only devices with lifting capabilities in excess of the weight of the unit being lifted. Inspect straps, chains, hooks, etc. for damage and lifting capability before use.

Personal injury, death, and/or equipment damage could occur if good lifting practices are not used.

### APPLICATION AND REAPPLICATION

At the time of installation, the equipment received should have already been selected for the service required. You must read the paperwork for the installation and check the serial number of the pump to assure that you are installing the correct pump into the service for which it was selected.

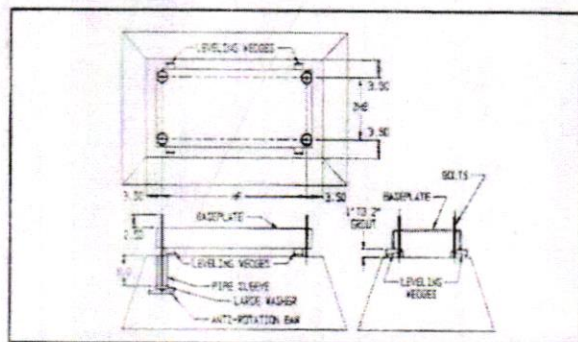
Many pumps look identical from the outside but can be made of different materials and/or be constructed differently inside. Personal injury, death, equipment damage, product (pumpage) damage, and/or product loss could occur if the incorrect pump is installed.

Do not transfer an existing pump to any other service conditions until you have thoroughly reviewed the pump construction, materials, sizing, sealing, pressure containing capability, head/capacity capability, and temperature capability with respect to the required service. Consult your Dean Pump sales engineer with all the service requirements and a full description of the existing pump (including the serial number), seal, and sub-systems so that we can assist you in a successful reapplication.

### PUMP FOUNDATION

The pump foundation provides rigid support to the baseplate and maintains the exact alignment of the pumping unit. Baseplates are designed to rigidly support the pump and driver without vibration or distortion only when they are properly set, leveled, and secured to the foundation.

The purchaser may elect to mount the pump without grouting the baseplate. In any case the baseplate must be fully supported by the customer's mounting means to prevent vibration and distortion.



TYPICAL FOUNDATION LAYOUT

### BASEPLATE MOUNTING AND ALIGNMENT

The sequence of mounting which must be observed for proper baseplate and pump mounting is:

- 1) Place baseplate, with pump and driver mounted thereon, on the pump foundation.

- 2) Use wedges under the baseplate edges, at each foundation bolt, to properly support and level the unit. Check this with a spirit level. Pull down the baseplate mounting bolt nuts tightly and recheck for level. Correct if necessary.

- 3) Align the driver to the pump. See "Pump and Driver Alignment" on page 5.

- 4) Grout the baseplate. **Do not grout the baseplate to the foundation until the pump and driver are correctly aligned.** Channel type baseplates are made with open ends to allow easy grouting and do not require grouting holes in the baseplate. Fabricated structural steel baseplates are provided with grouting holes. Fill the entire void under the baseplate with grout and firmly embed the baseplate edges.

- 5) Install "new" gaskets, of the correct material for the service, and the correct size per ASME B16.20, or ASME B16.21 at the suction and the discharge flanges of the pump. Use only new gaskets.

Connect the suction and discharge piping without forcing the piping into position. See "Suction and Discharge Piping" below. The pipe flanges must line up with the pump flanges "freely".

Install a "new" bolt, of the correct size per ASME/ANSI B16.5, in every bolt hole. Tighten all bolts evenly. Use only new uncorroded fasteners.

### WARNING:

**Strain caused by "forcing", improper flange bolting, and/or misalignment may cause failure of the pumping unit, flanges, piping and/or fluid (pumpage) release which could cause personal injury, death, and/or damage to this and/or other equipment.**

### WARNING:

**Make sure that all piping is installed into its correct connection. Installation of a pipe into an incorrect location could result in an explosion and personal injury or death as well as damage to this and/or other equipment.**

**Install pressure relief valves in any cavities that could be subjected to pressures in excess of the allowable working pressure. Explosion, personal injury, death, and/or damage to this and/or other equipment may occur if pressure exceeds allowable.**

- 6) Recheck the alignment between the driver (motor, turbine, or engine) and pump shafts. Installation of piping may have forced the pump out of alignment. If so, correct the piping to remove the distorting load, and realign the pump and driver.

- 7) The pump and driver alignment must again be checked at the operating temperature and alignment corrected under the hot condition.

- 8) After about two weeks of normal pump operation the pump and driver alignment should again be checked under the hot condition. If alignment is still correct, the driver feet may be doweled to the baseplate. If the alignment has changed, realign the unit and recheck after two weeks.

### SUCTION AND DISCHARGE PIPING

Suction and discharge nozzle sizes of Dean pumps are selected for proper performance of the pumping unit and are not intended to determine the suction and discharge pipe sizes. Pipe sizes must be determined by the user based on the system requirements.

Suction piping should have a minimum friction loss, and thus should be as short and straight as possible with a pipe diameter as large as economically feasible for the flow rate and head.

