

"APPROVED"

Chief mechanical engineer  
of «Shurtan GCC», LLC  
K. Allayorov  
2021 y.

## TECHNICAL ASSIGNMENT

for the purchase of  
membrane pump for the needs of LLC "Shurtan GCC"

## 1. GENERAL INFORMATION

1.1 Name
Diaphragm pump
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 diaphragm 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

1. A diaphragm pump is used to load decontaminating substances into a storage container.
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## 3. OPERATING CONDITIONS

3.1 General operating conditions
The place of operation is a polyethylene production workshop, LLC "Shurtan GCC".
Pump operation mode: Periodic operation, used only during loading.

## 4. TECHNICAL REQUIREMENTS

4.1 Basic technical requirements
<b>Operating mode</b> Liquid: pelargonic acid and pentanedioic acid; Suction temperature: environment; Capacity: 4.9 m <sup>3</sup> /h; RPM pump: 380 min <sup>-1</sup> Inlet pressure: P=700 kPa; <b>Construction</b> Model: PX1/SSAAA/0070; Type: Membrane; Number of membrane: 2 pieces; Fitting: ANSI 1/2"(13mm); Wetted parts and external piston: 316 SS; Central Section: Aluminum; Air Valve: Aluminum; Diaphragms: TNL;
4.2 Main technical, economic and operational indicators
For stable operation of the diaphragm pump, the repair period and replacement of spare parts should be no more than once a year.
4.3 Design requirements, installation and technical requirements
The diaphragm pump offered by the companies must correspond to the location of the diaphragm pump installed in the polyethylene production shop.
4.4 Requirements for materials
According to the NTD and CD of the manufacturer. Provide certificates of the material.



#### 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 and according to subsection 4.1 of this technical specification.

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 spare parts and wear parts

Provided by companies, the diaphragm pump must additionally have two-year spare parts listed below:

Name	Qty	P/N / PX1/SSNNN/0070
Pro-Flo X™ Air Valve Assembly	3	01-2030-06
End Cap	3	01-2340-06
0-Ring (-1251, End Cap (1.362 x .103)	3	01-2395-52
Gasket. Air Valve, Pro-Flo X™	3	01-2620-52
Gasket Muffler Plate, Pro-Flo X™	3	01-3502-52
0-Ring (-206), Air Adjustment Pin (.484 x .139)	3	00-1300-52
Shaft Seal	6	01-3220-55
Pilot Sleeve Assembly	3	01-3880-99
Pilot Spool Retaining O-Ring	6	04-2650-49-700
Retaining Ring	6	00-2650-03
Shaft	3	01-3810-03
Disc Spring	6	01-6802-08
Inner Piston	6	01-3711-08
Diaphragm	6	01-1010-56
Ball, Valve	12	01-1080-56
Seat, Valve	12	01-1120-03
Valve Seat 0-Ring	12	01-1200-56
0-Ring (-120), Manifold (.987 x .103)	12	01-1300-56

### 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 testing the diaphragm pump, if the technical parameters correspond to paragraph 4.1, 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;
- 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;
- certificate of quality of the goods issued by the manufacturer;
- product safety data sheet.

## 6. 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 4 years.

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

No	Product name	Technical data	Unit.	Qty
1	Diaphragm pump	Model: : PX1/SSAAA/0070	Pieces	3
2	Two-year spare parts			

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

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

The delivery period of the goods is 2 months (60 calendar days) after the conclusion of the contract.

Transport delivery: CIP - Republic of Uzbekistan, Kashkadarya region, Guzar district, Shurtan settlement, 180300

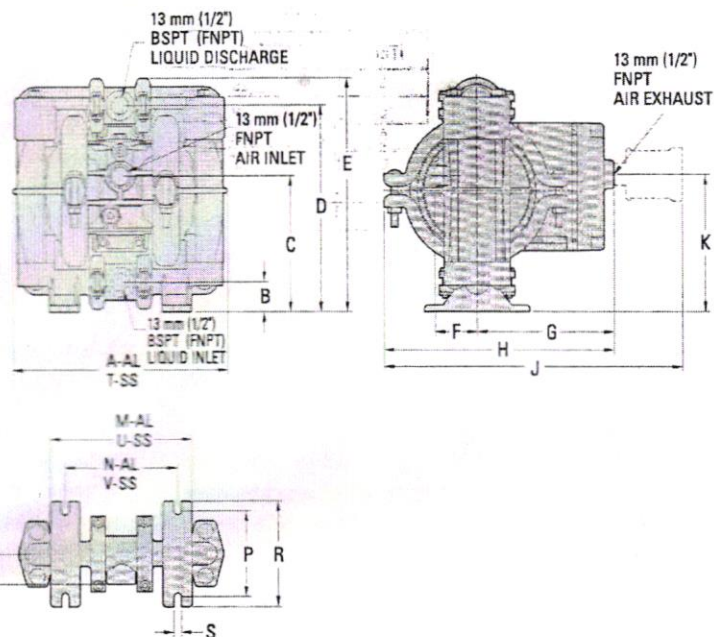
## 8. LIST OF APPLICATIONS

No	Name of the application	Number of sheets
1	<i>Drawing of the diaphragm pump</i>	<i>1 (one) sheet</i>

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



## PX1 METAL



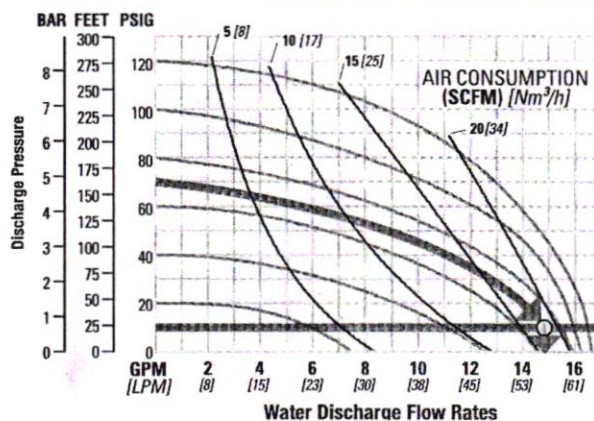
## DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	208	8.2
B	28	1.1
C	130	5.1
D	198	7.8
E	224	8.8
F	41	1.6
G	132	5.2
H	221	8.7
J	361	14.2
K	132	5.2
L	30	1.2
M	137	5.4
N	109	4.3
P	84	3.3
R	102	4.0
S	8	0.3
T	203	8.0
U	142	5.6
V	112	4.4

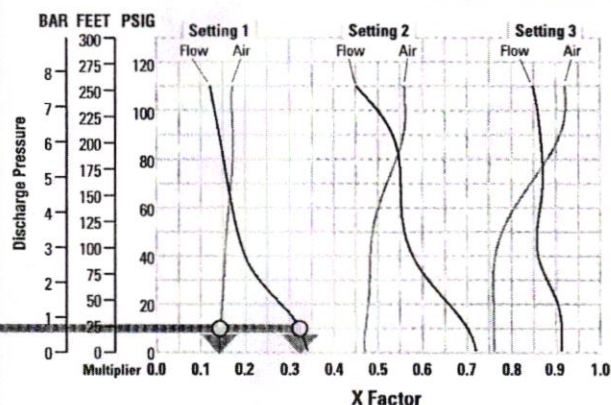
BSP threads available.

## PX1 METAL TPE-FITTED

### SETTING 4 PERFORMANCE CURVE



### EMS CURVE



### TECHNICAL DATA

Height	.....224 mm (8.8")
Width	.....208 mm (8.2")
Depth	.....287 mm (11.3")
Ship Weight	..... Aluminum 6 kg (13 lbs.)
	..... 316 Stainless Steel 9 kg (20 lbs.)
Air Inlet	..... 13 mm (1/2")
Inlet	..... 13 mm (1/2")
Outlet	..... 13 mm (1/2")
Suction Lift	..... 5.7 m Dry (18.7')
	..... 9.3 m Wet (30.6')
Disp. Per Stroke	..... 0.11 l (0.029 gal.) <sup>1</sup>
Max. Flow Rate	..... 62.8 lpm (16.6 gpm)
Max. Size Solids	..... 1.6 mm (1/16")

<sup>1</sup>Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

The Efficiency Management System (EMS) can be used to optimize the performance of your Wilden pump for specific applications. The pump is delivered with the EMS adjusted to setting 4, which allows maximum flow.

The EMS curve allows the pump user to determine flow and air consumption at each EMS setting. For any EMS setting and discharge pressure, the "X factor" is used as a multiplier with the original values from the setting 4 performance curve to calculate the actual flow and air consumption values for that specific EMS setting. Note: you can interpolate between the setting curves for operation at intermediate EMS settings.

### EXAMPLE

A PX1 metal, TPE-fitted pump operating at EMS setting 4, achieved a flow rate of 56.0 lpm (14.8 gpm) using 29.7 Nm<sup>3</sup>/h (17.5 scfm) of air when run at 4.8 bar (70 psig) air inlet pressure and 0.7 bar (10 psig) discharge pressure (See dot on flow chart).

The end user did not require that much flow and wanted to reduce air consumption at his facility. He determined that EMS setting 1 would meet his needs. At 0.7 bar (10 psig) discharge pressure and EMS setting 1, the flow "X factor" is .32 and the air "X factor" is .14.

Multiplying the original setting 4 values by the "X factors" provides the setting 1 flow rate of 17.8 lpm (4.7 gpm) and an air consumption of 4.2 Nm<sup>3</sup>/h (2.5 scfm). The flow rate was reduced by 68% while the air consumption was reduced by 86%, thus providing increased efficiency.

