



Enviro-Equipment Inc.
10120 Industrial Drive
Pineville NC 28134
www.enviroequipment.com

EI STOCK #1703

400 CFM Dual Phase Extraction System with 40 GPM Treatment Equipment

Parts List:

NOTE	DESCRIPTION	MANUFACTURER	MODEL NO.	VOLTAGE	PHASE	POWER	NOTES
1	24" X 48" FLOOR OPENING	SENECA					
2	FLOOR SUMP	SENECA					W/ HIGH LEVEL SWITCH
3	200 GALLON KNOCKOUT TANK	SENECA	92-24-120-200				RATED FOR 650CFM W/ 12" MIST ELIMINATOR
4	SIGHT GLASS	SENECA					
5	8-INCH CLEANOUT	SENECA					W/ FURCO AND STEEL PLATE
6	DILUTION AIR INTAKE FILTER/SILENCER	SOLBERG	FS-30P-200				REPLACEMENT FILTER ELEMENT 30P
7	INLINE FILTER	SOLBERG	CSL-234P-400				REPLACEMENT FILTER ELEMENT 234P
8	AIR STRIPPER INTAKE FILTER/SILENCER	SOLBERG	FG-74P-600				REPLACEMENT FILTER ELEMENT 74P
9	OIL SEALED LIQUID RING PUMP	TRAVAINI	TRO400S-1A	230/460V	3	25HP	390 ACFM @ 20" HG, EXPLOSION-PROOF
10	4-INCH CS DISCHARGE STACK	SENECA					
11a	TRANSFER PUMP	PRICE	CD100SS	230/460V	3	1.5 HP	3450 RPM, EXP
11b	TRANSFER PUMP	PRICE	CD100SS	230/460V	3	2.0 HP	3450 RPM, EXP
11c	TRANSFER PUMP	PRICE	CD100SS	230/460V	3	2.0 HP	3500 RPM, EXP
12	STAINLESS STEEL BAG FILTER HOUSINGS	CSD	007A1304L020N1VC4				FURNISHED WITH 50 MICRON BAG FILTERS
13	OIL/WATER SEPARATOR	HYDROQUIP	HQI AGM-25S-HP-1H-IP				30 GPM STAINLESS STEEL
14	OIL/WATER SEPARATOR STAND	SENECA	CUSTOM				
15	200 GALLON EQUALIZATION TANK	NORWESCO	PCO-200				
16	AIR STRIPPER	QED	4.4P	230/460V	3	3 HP	40 GPM RATED
17	AIR STRIPPER BLOWER	NEW YORK BLOWER	1803A3	230/460V	3	3 HP	300 CFM, EXP
18	64" DOUBLE DOOR	DOOLITTLE					
19	18-INCH SUPPLY FAN	NEW YORK BLOWER	SN-122-H	115/230V	1	0.25 HP	1900 CFM, EXPLOSION-PROOF
20	PASSIVE VENT						
21	EXP LIGHT SWITCH						EXP
22	THERMOSTAT						EXP
23	EMERGENCY STOP SWITCH						EXP
24	EXP LIGHT	CROUSE-HINDS	VXHF25GP	115V	1		EXP
25	EXPLOSION-PROOF FORCED AIR HEATER	CHROMOLOX	CXH-A-10-23-32-40-20EP	230V	1	10 KW	EXPLOSION-PROOF
26	OUTDOOR FLOODLIGHT	RAB	STL110R	115V	1		SENSOR ACTIVATED
27	LRP EXHAUST VENT	SENECA					W/ RECIRCULATION VENT
28	CONTROL PANEL	SENECA	CUSTOM	230V	3		
29	LOAD CENTER	SENECA	CUSTOM	230V	3		SERVICE ENTRY RATED
30	JUNCTION BOX	SENECA		115V			CHEMICAL FEED J-BOX
31	LRP SECONDARY CONTAINMENT	SENECA	CUSTOM				
32	SECONDARY CONTAINMENT	SENECA	CUSTOM				
33	NOT USED						
34	SOFT START PANEL						
35	ADJUSTABLE VENT	SENECA	CUSTOM				
36	SHELF 1' X 4'	SENECA	CUSTOM				
37	FIRST AID KIT	GRAINGER	39N577				
38	FIRE EXTINGUISHER	KIDDE	4T889				10 LBS
39	NOT USED						
40	OXIDIZER BYPASS SWITCH	SENECA	CUSTOM				

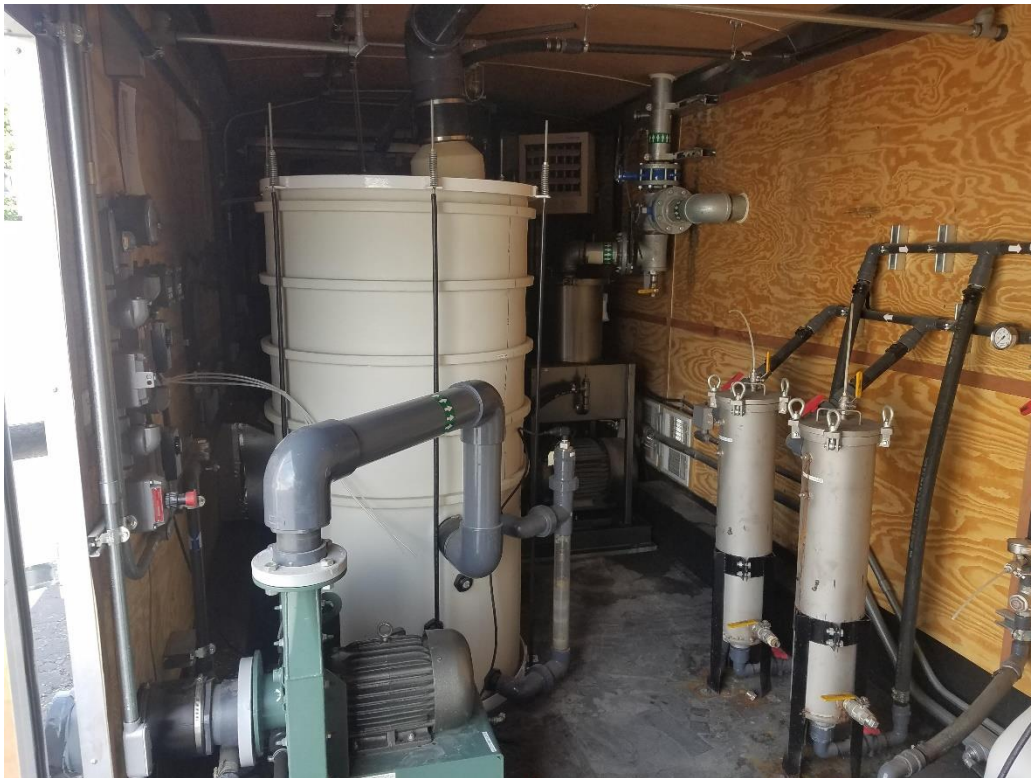


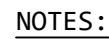
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1. PIPE SUPPORTS TO BE INSTALLED AS REQUIRED.
2. REFER TO PROCESS AND INSTRUMENTATION DIAGRAM FOR PIPING DETAIL (VALVES, SAMPLE PORTS, ETC.) AND SEQUENCE OF OPERATION.
3. VERIFY CLEARANCE TO REMOVE COALESCING MEDIA FROM OIL / WATER SEPARATOR (ITEM #13).

ASBUILT



Seneca Companies



The Complete Solution

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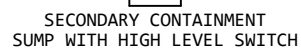
WILCOX ENVIRONMENTAL ENGINEERING
ROACHDALE
2 FOREST HOME STREET
ROACHDALE, INDIANA 46172

EQUIPMENT LAYOUT

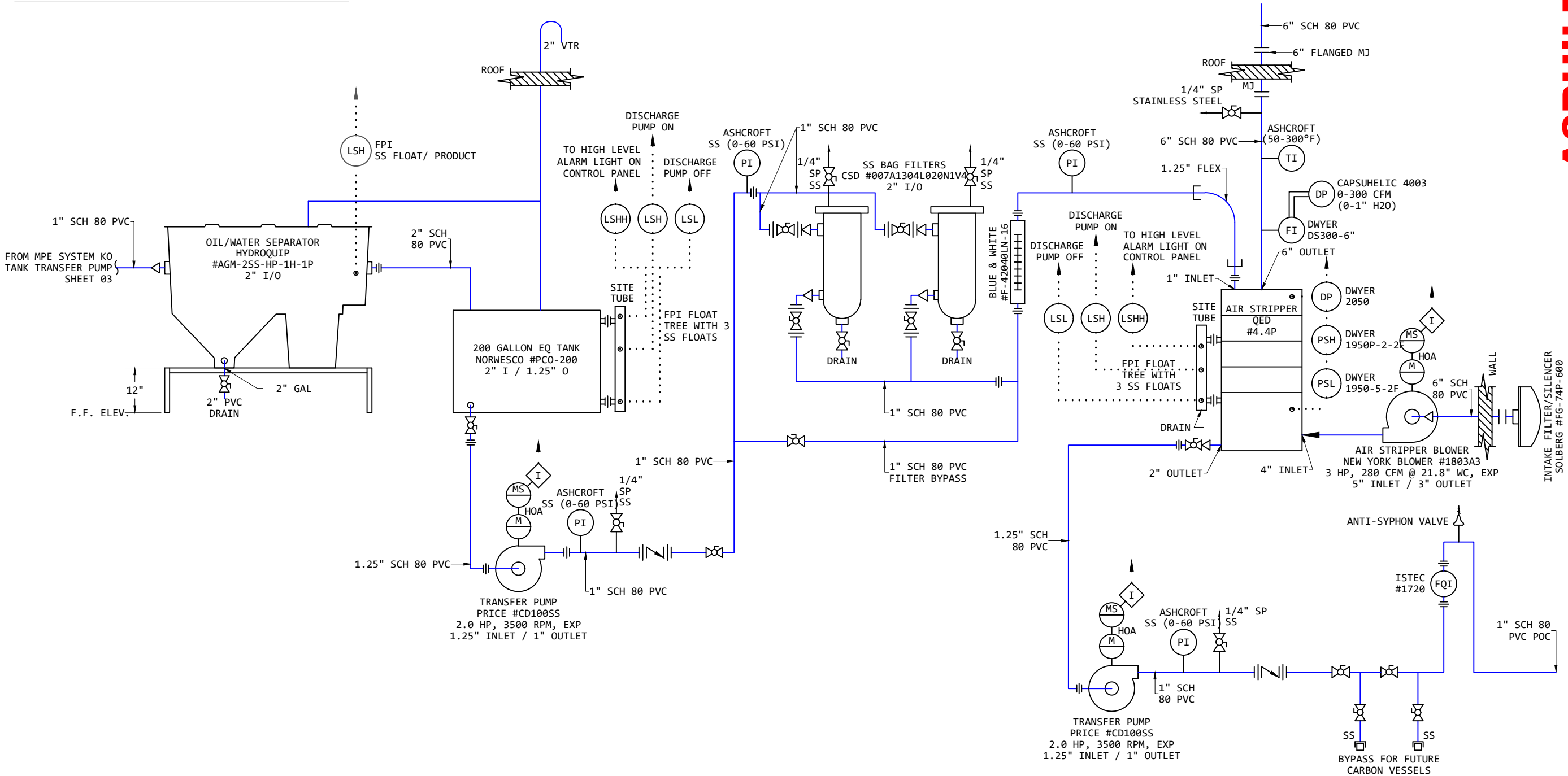
• **NOT A STUDENT** nor

DATE:
10/20/2016
DRAWN BY:
DARRICK WORRALL
CHECKED BY:
DAN NOLAN
SCALE:
1/2" = 1'
PROJECT NO:
1716031
SHEET NO.

FILE LOCATION: G:\DRAWINGS\SENECA REMEDIATION\WILCOX ENVIRONMENTAL ENGINEERING - ROACHDALE - 1716031\1716031S01-05



GROUNDWATER TREATMENT SYSTEM



ASBUILT

REV NO	DATE
01	12/16/2016
02	01/09/2017

JOB DESCRIPTION: WILCOX ENVIRONMENTAL ENGINEERING ROACHDALE 2 FOREST HOME STREET ROACHDALE, INDIANA 46172	SHEET TITLE: PROCESS AND INSTRUMENTATION DIAGRAM GROUNDWATER TREATMENT SYSTEM

DATE: 10/20/2016
DRAWN BY: DARRICK WORRALL
CHECKED BY: DAN NOLAN
SCALE: NO SCALE
PROJECT NO: 1716031
SHEET NO: 04



Liquid Ring & Rotary Vane Vacuum Pumps and Systems

DynaSeal™ Liquid Ring Vacuum Systems

www.travaini.com



Liquid Ring & Rotary Vane Vacuum Pumps and Systems



www.travaini.com

DynaSeal™

Benefits

DynaSeal™ Standard Specifications:

≥ 15" Hg Vacuum; 60-120° F Ambient Temperatures; 180° F Inlet Gas Temperature Max; 180° F Discharge Gas/Oil Temperature; If conditions differ, consult factory for recommended design modifications.

200° F Inlet Gas – Consult factory.

Capacity Range Standards

15-1000 ACFM. Larger systems available **upon request**.

Low Noise Level.

Unlike rotary screw vacuum pumps, which run at rotor speeds as high as 9000-rpm, DynaSeal™ systems operate at conservative speeds (1750-rpm) resulting in low noise levels (75-80 dBA at 3-ft.) acceptable to the environment without the need for sound enclosures.

Minimal Maintenance.

DynaSeal™ systems typically only require an oil change and replacement of discharge filter every 10,000 hours under normal operating conditions. No other maintenance is required except for periodic greasing of bearings.

Not affected by carry-over of soft solids or liquids.

DynaSeal™ systems can handle carry-over of soft solids and liquids without damage to the system components. We do however recommend to install an inlet filter/strainer or knock-out pot in those applications where a high carry-over of either solids or liquids is expected.

Designed for continuous operation.

DynaSeal™ systems are designed for continuous operation over the full vacuum range without overheating.

Automatic Temperature Control.

Prevents low temperature operation, reduces accumulation of water and other liquids in the reservoir and decreases the risk of bacteria growth. This optional feature is very important in hospital and other intermittent duty applications.

Low Vibration.

DynaSeal™ systems require no special foundations or anti-vibration mountings as a standard.

High-Quality Manufacturing Standards.

Travaini pumps are manufactured under ISO 9001 quality control standards.

Quality Control

DynaSeal™ systems are a “proven design”. Combine this with our inline quality procedures and outgoing inspection, this provides you with the leading quality in the industry.

Custom Solutions

DynaSeal™ systems can be provided in single or multiple system configurations with programmable controllers to meet your specific requirements. Explosion proof designs for those stringent environments. Wide range of materials including stainless steel, copper, etc.



Principle of Operation

A multi-bladed impeller mounted on a shaft is positioned eccentrically in a cylindrical housing, partially filled with liquid. Portplates with inlet and discharge openings are positioned on each side of the impeller (Figure 1). As the impeller rotates, centrifugal force pushes the liquid outward, forming a liquid ring (Figure 2). Looking at the **YELLOW** area of the impeller chambers (Figure 3), we see that on the right hand side, from the top down, the chamber volume increases as the liquid ring moves outward, creating a vacuum in the impeller chamber. on the left hand side, the volume decreases as the liquid moves inward, increasing the pressure in the chambers until the discharge takes place through the discharge opening. A continuous flow of fresh sealing liquid is supplied to the pump.

Seal Fluid Technology

In our ongoing search for better solutions, we can offer alternative sealing fluids that are environmentally friendly. Unlike other types of vacuum pumps, our liquid ring design requires no internal lubrication because there is no metal to metal contact between rotating and stationary parts and the bearings are located external to the pumping chamber. This allows for more diversity when choosing the sealing fluid because the lubricating properties of the fluid are not critical.

The Travaini DynaSeal™ system offers a simple, low maintenance design with low noise and vibration levels, as well as reduced operating costs.

Count on Travaini for in-depth experience, technology and innovation. Our extensive inventory of pumps and replacement parts can, in most instances, be shipped the same day. Superior service is our #1 goal.

DynaSeal™, you can't beat the system.

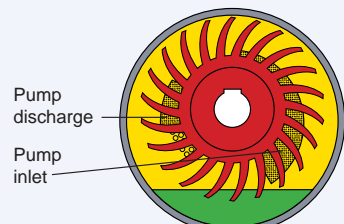


Figure 1

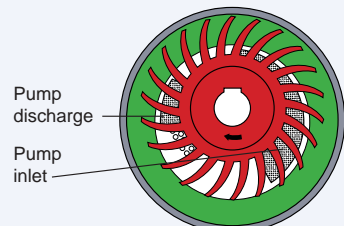


Figure 2

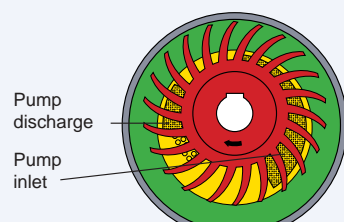


Figure 3

Air-cooled Liquid Ring Vacuum Systems



Typical System Features & Options

1 ADVANCED LIQUID RING VACUUM PUMP DESIGN Offers high efficiency, reliability and minimum maintenance. External bearings and ample clearance between rotating parts eliminate the need for internal lubrication.

2 ELECTRIC CONTROL PANEL Each system includes a NEMA 12 electrical control panel complete with magnetic starter and overload protection, 110-volt control circuit and hour meter as standard. Wiring to motor and control switches is completed at the factory.

3 HIGH TEMPERATURE SWITCH Shuts unit down at 225°F in case oil flow to unit is interrupted.

4 BACK PRESSURE GAUGE Shows condition of demister element and if element requires service. It also indicates back pressure from piping system.

5 AIR/OIL SEPARATOR Includes a highly efficient demister element to remove oil mist from discharge air. Exhaust is 99.9% oil-free.

6 OIL RESERVOIR Mounted overhead for positive oil flow pressure and sized for adequate oil capacity, cooling

and efficient separation by internal baffles. A sight gauge complete with temperature gauge is included.

7 INLET CHECK VALVE Properly sized and suitable for vacuum.

8 HIGH EFFICIENCY AIR-COOLED HEAT EXCHANGER Allows system to operate at moderate temperatures with ambient temperatures as high as 110°. Water-cooled units are available.

9 PUMP OR MOTOR-MOUNTED COOLING FAN Provides high air flow for maximum cooling without the need for a separate fan motor, except for units of 50-hp and larger which have electric-drive fan units.

10 SOLENOID VALVE Shuts down oil flow to pump when unit is stopped.

11 MONOBLOCK MOTOR MOUNTING DESIGN Standard up to 25-hp, eliminates misalignment problems by flange mounting to a standard NEMA C-face motor. (TEFC motors with a 1.15 service factor are standard) a heavy-duty flexible coupling ensures trouble-free service.

12 MANUAL UNLOADER VALVE WITH FILTER SILENCER Aids in vacuum unloading and/or relief of the pump prior to start-up and shutdown. (Electric unloading—optional)

13 VACUUM RELIEF VALVE WITH SILENCER (OPTIONAL) Field adjustable to control maximum vacuum level.

14 TEMPERATURE CONTROL VALVE (OPTIONAL) Allowing the system to reach operating temperature very quickly which is important especially for outdoor installations and intermittent duties.

15 HIGH AND LOW OIL LEVEL SWITCH (OPTIONAL) To protect pump from loss of oil.

EXPLOSION PROOF DESIGN
(Optional)

DynaSeal™ Systems are used extensively in industries such as:

- Hospitals, healthcare and pharmaceutical
- Solvent and vapor recovery
- Soil remediation
- Wood working and wood impregnation
- Electronics and semi-conductors
- Printing and paper converting
- Food and meat processing
- Plastics, automotive and aircraft
- Sterilization and impregnation
- Plus numerous others

Made in the USA. DynaSeal™ systems are designed, built, and tested at our facility in Yorktown, Virginia.

The “Mini” Series

Models – TRO-075VM, TRO-110VM AND TRO-160VM



Latest concept of our patented DynaSeal™ System

- Features:**
- Space Saving
 - Vastly Improved Mist Elimination
 - Cost Savings
 - 3 Models Available

Using our 3 monoblock vari-ported pump designs, models TRM 40-110, 40-150, and 40-200, we offer these three systems, 5, 7.5, and 10 hp, configured to incorporate the above features.

The traditional oil sealed systems has a footprint almost twice the length and 50% wider than the “MINI” Series. By incorporating the monoblock pump design, we have developed the “MINI” package to fit within equipment or locations that require economies of space.

Traditional oil-sealed packages have been designed to handle vacuums beyond 15” HgV, as the majority of applications require. Below 15” HgV, the coalescing filters are not designed to fully handle the oil mist. The new “MINI” Series was designed to coalesce from 0-30” Hg vacuum through our unique filter element and specially formulated synthetic oil.

The simplicity of the “MINI” design has resulted in reduced costs which allow us to pass the savings on to you, our customers. Cost is always a priority without sacrificing the quality you’ve come to expect from Travaini products.

Standard DynaSeal™ Models

System Model	Nominal Capacity ACFM	Motor HP	Maximum End Vacuum in. Hg	Approximate Dimensions (in) L x W x H	Approximate Weight (Lbs)
TRO015H	15	2	29	38 x 17 x 40	340
TRO015S	15	1.5	26	38 x 17 x 40	340
TRO035S	35	3	26	38 x 17 x 40	340
TRO035H	35	3	29	38 x 17 x 40	340
TRO050H	50	5	29.5	38 x 17 x 40	435
TRO075S	75	5	27	43 x 17 x 40	530
TRO075-VM**	75	5	29	32 X 25 X 43	500
TRO110V	110	7.5	29.5	55 x 25 x 51	920
TRO110-VM**	110	7.5	29	32 X 25 X 43	540
TRO140H	140	10	29.5	55 x 25 x 51	1005
TRO160V	160	10	29.5	65 x 26 x 51	1070
TRO160-VM**	160	10	29	32 X 25 X 43	570
TRO200V	200	15	29.5	65 x 26 x 56	1300
TRO200H	200	15	29.5	65 x 26 x 56	1325
TRO250H	250	20	29.5	65 x 26 x 56	1350
TRO300V	300	20	29.5	65 x 26 x 56	1355
TRO300H	300	25	29.5	65 x 26 x 56	1430
TRO400S	380	25	28	83 x 35 x 64	1900
TRO425H	425	40	29.5	83 x 35 X 64	2250
TRO500S	500	40	28	83 x 35 x 64	2150
TRO700S*	700	50	26	80 X 63 X 58	3550
TRO750H*	750	50	29.5	80 X 63 X 58	3750
TRO900S*	900	60	26	80 X 63 X 58	3650
TRO950H*	950	60	29.5	80 X 63 X 58	4016
TRO1000S*	1000	75	26	80 X 63 X 58	3750
TRO1000H*	1050	100	29.5	80 X 63 X 58	4302

**VM = Mini Series
*PUMPS ARE V-belt driven.

DynaSeal™ Standard Specifications:
≥ 15” Hg Vacuum; 60-120° F Ambient Temperatures; 180° F Inlet Gas Temperature Max; 180° F Discharge Gas/Oil Temperature; If conditions differ, consult factory for recommended design modifications.

- Explosion proof designs are available upon request.
- Larger capacity systems are available upon request.
- DynaSeal™ systems are available in multiple pump configurations with a wide range of optional accessories.
- DynaSeal™ systems can be customized per O.E.M. specification and for special applications.
- DynaSeal™ systems are sold and serviced through a nation-wide distributor network.