

Advantage



MEDICAL/SURGICAL CENTRAL VACUUM SYSTEMS



CENTRAL VACUUM SYSTEMS FOR THE MODERN MEDICAL FACILITY

WHY BECKER?

With the many types of vacuum pumps—reciprocating; water, or oil sealed liquid ring; rotary screw; claw-type; multi-stage regenerative blowers; and oil-less, lubricated, or oil flooded rotary vane—that are available for use in medical facilities for their medical/surgical vacuum systems, it is difficult to know what type of pump to choose. Furthermore, there are many sources of supply for these pumps, ranging from packagers to distributors of medical equipment to pump manufacturers.

One type of pump—the rotary vane—has remained popular since the beginning, while others types have come and gone in popularity. They are efficient, very easy to service, and are field repairable.

Becker introduced the Advantage-L oil-flooded vacuum systems for medical facilities two decades ago. The Advantage-L system was, and remains, the most advanced central vacuum system on the market, offering features no other system has.

After several years of testing, in 1994 Becker introduced the medical industry to the first new development in pump design for use in central vacuum systems in decades—the 100% oil-less vacuum pump.

Becker invented the oil-less pump nearly a century ago, but they were never available in sizes large enough for use in central vacuum systems until recent years. Then, Becker began testing them for suitability in medical applications. Their acceptance has been remarkable, and because of this success Becker made an oil-less version of the Advantage-L system, which we call the Advantage-D.

Advantage-D systems are probably the most maintenance-free systems currently on the market. They are available in a wide range of capacities to fit the needs of most medical facilities. And, no pump is as easy to service in the field as our oil-less pumps.

Our latest innovation is the introduction of the Advantage-X series of systems featuring the X-Series dry vane pumps equipped with the world's longest lasting dry vanes. We guarantee these pumps for 20,000 operating hours or three years, whichever comes first. Our Advantage-X systems are warranted for *four years*.

Becker offers true choice of types of pumps and systems for use in your facility—Oil-flooded or Oil-less in either tank mounted or modular/expandable designs. Of course, all our medical systems are designed to meet the current requirements of the NFPA 99 standard.

You need to look no further than Becker for the answer to your needs.

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SIZING

The NFPA no longer makes sizing recommendations for health care facilities, leaving the final determination up to the manufacturers, design engineers, or health care staff.

There are several methods available for sizing central systems for hospitals, each resulting in different—and often widely varying—results. Choosing the proper

sizing method, therefore, is important. Results may vary by as much as 2:1, so careful consideration of the proper sizing method is critical to patient and staff.

Becker's sizing method is based on experience gained from over a thousand installations, and includes up-to-date terminal requirements that are found in many of today's health care facilities.

USAGE TYPE A TERMINALS

Location **Recommended No. of Terminals**

General Operating Room	3
Orthopedic Surgery	3
Surgical Cystoscopy and Endoscopy	3
Critical Care (General)	3
Isolation (Critical)	3
Coronary Critical Care	2
Pediatric Critical Care	3
Newborn Intensive Care	3
Cardio, Ortho, Neurological	3
Post-Anesthesia Care Unit	3
Caesarean/Delivery Room	3
Recovery Room	3
Labor/Delivery/Recovery (LDR)	2
Birthing Rooms	2
Triage Area	1
(Definitive Emergency Care)	
Definitive Emergency Care, Exam/Treatment Room	1
Definitive Emergency Care, Holding Area	1
Trauma/Cardiac Room	3
Cardiac Catheterization Lab	2
Special Procedures (Anesthetizing)	3
Special Procedures (Non-Anesthetizing)	2
Additional Anesthetizing locations	3

SIZING EQUATION

Vacuum Pump Size (SCFM*) =

$$(N_A \times UF_A \times 0.25) + (N_B \times UF_B \times 0.25) + (N_{OR} \times 1.5) + (N_{WAGD}^{**} \times 1.8)$$

Where:

N_A = Number of A Type Terminals
 N_B = Number of B Type Terminals
 N_{OR} = Number of Operating Rooms
 N_{WAGD} = Number of WAGD Terminals**
 UF_A = Use Factor for A Type Terminals
 UF_B = Use Factor for B Type Terminals

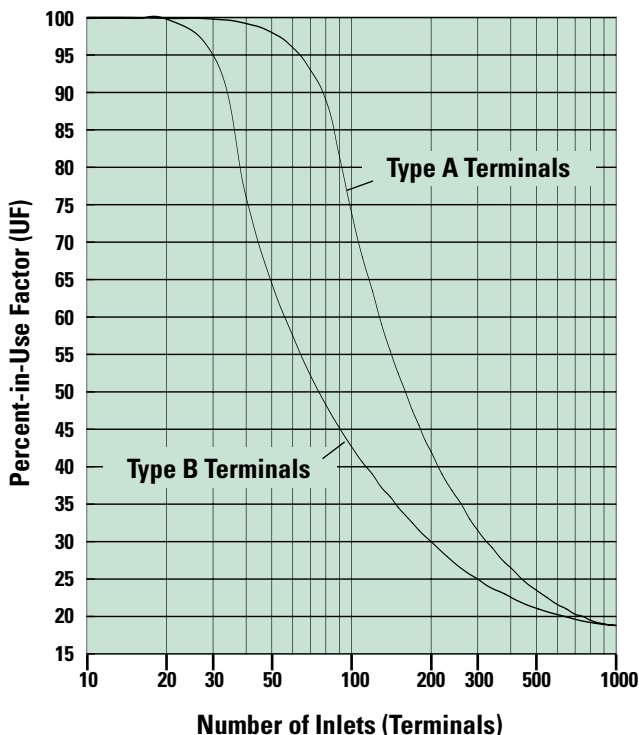
* SCFM at 19" Hg (or the lead vacuum switch set point).

** Add this factor only when the WAGD needs are being included in the Medical/Surgical system.

USAGE TYPE B TERMINALS

Location **Recommended No. of Terminals**

Patient Rooms	1
(Medical and Surgical)	(Accessible to ea. bed)
Examination and Treatment Room	1
(Medical, Surgical, Postpartum Care)	
Isolation (Infectious and Protective; Medical and Surgical)	1
Security Room	1
(Medical, Surgical, Postpartum)	
Newborn Nursery (Full-Term) ¹	1
Pediatric Nursery	1
Pediatric and Adolescent	1
Seclusion Treatment Room	--
Anesthesia Workroom	--
Outpatient Recovery	3
Postpartum Bedroom	1
Labor Room	1
Labor/Delivery/Recovery/Postpartum (LDRP)	2
Initial Emergency Management	1
	(per bed)
Orthopedic and Cast Room	1
Catheterization Labs	2
Autopsy Room	1
	(per workstation)
Surgical Excision Room	1
Dialysis Units	0.5/bed
Respiratory Care	convenience
Central Supply	convenience
Equipment Repair, Calibration	convenience
Teaching	convenience



¹ In facilities with newborn intensive care units, terminal requirements in a newborn nursery (full-term) may be reduced.

Advantage-D

Advantage-X

Advantage-L

Advantage-P

FEATURES and BENEFITS

Automatic Alternation

The lead and lag pumps automatically alternate on a first on-first off basis; this ensures that all pumps share the duty cycle equally. The first pump will not run again until all other pumps in the system run. This extends the life of the pumps and the service interval.

Lead/Lag Operation

All multiplex systems feature a cascading control system enabling operation of only those pumps necessary to meet demand, thereby saving energy.

Pressure Transducer

All multiplex systems use a pressure transducer. This keeps the vacuum system operating between two fixed set points, unlike systems that use multiple mechanical vacuum switches, each of which has different set points. A transducer provides high accuracy and repeatability.



Bleed Valves

On all Advantage-L and P systems, we include inlet bleed valves to vent the vacuum in the inlet line and permit removal of the inlet filter cover for service—something forgotten by most other brands (Advantage-D and Advantage-X systems are self-venting).



Redundant Transformers

While NFPA-99 requires redundant low voltage reducing devices, not all methods are truly redundant. Ours uses a relay to automatically switch from the failed unit to the backup unit; in addition, we provide an indicator light to warn when the system is operating on the backup transformer (something most other brands do not provide).

Expandable

All systems (other than tank mounted units) are expandable and grow as your facility grows, and **all** expand from duplex to sextuplex (6-pump system). Expansion can be done in about a hour without shutting down the system, and no parts are discarded when expanding. Inexpensive control and pump modules are available from stock.



Inlet Filters

Every system includes inlet filters before each pump to prevent pump damage due to foreign particles.

Modular

Our expandable systems are modular, with no section wider than the opening of a standard 36" doorway, on most models. Modules quickly bolt together, and are designed to mix and match to meet specific requirements.



Programmable Controller Operated

All functions in **every** Becker multiplex system are controlled by a programmable controller. No new EEPROM is ever needed when expanding—once programmed, always programmed. If the PLC ever needs replacing, the system can be operated in manual mode.

High Efficiency Motors

Most of our pumps use heavy duty high efficiency motors with class-F insulation as standard equipment.

Convenient Service Points

All service points are easily accessible. No dangerous crawling over components is necessary.

Compact

Our expandable units have a footprint that is among the smallest of any system on the market, and expand vertically to save valuable space.

Single Point Service Connections

Once the unit is placed in position and fastened together, only one inlet, discharge (optional), and electrical connection is required.

Quiet

Rotary operation has no pulsations, and sound reducing technology is built-in, resulting in some of the quietest pumps in the world.

Vibration-Free

Smooth running rotary vane pumps require no special foundations; in fact, a nickle can be placed on edge on a running pump.

Air Cooled

All Becker pumps are air cooled, meaning no water is ever needed for cooling and operation.

No Water

None of our systems use water for any reason. Water and sewer charges are eliminated and water pollution is never a problem. Furthermore, your dependence on another utility is eliminated.



Optional Tank Drain Assembly

An optional manual or automatically operated tank drain assembly is offered. A full receiver bypass is **standard**, which permits servicing of the receiver without interrupting the vacuum supply. Meets current NFPA 99 specifications.

Reserve Pump Alarm

An alarm, which signals when the reserve pump is in operation by a red light and steady 95 dBA tone, is standard equipment in our control panel. It can also indicate, with a flashing light, an optional low vacuum, low oil level, high exhaust filter pressure, high discharge temperature, or other alarm. A push-to-silence button is included. An auxiliary dry contact for remote signaling is standard equipment.

Emergency Stop Button

If an emergency should arise, the push of a single button will stop the operation of the entire system.



No Oil

Advantage-D and Advantage-X systems are 100% oil-less; therefore, there is no oil to fill, drain, change, or discard. No oil aerosols are ever present in the discharge air.

Meets NFPA 99

Each of our systems are designed and built to meet the current version of the NFPA 99 Health Care Facilities requirements for medical/surgical vacuum systems.

Becker

Advantage-X

Extended-Life Dry Central Vacuum Systems

NEW!

To further enhance our confidence in the X-Series pumps, we are granting a warranty of *four years* on the entire system.

Our dry vacuum pumps have long had the best reputation in the industry. They have always had a reputation as the pumps with the longest-wearing vanes in the industry.

Recently, Becker took a giant step by introducing our X-Series dry vane pump with vanes that last so long that we are offering an incredible guaranteed life of 20,000 hours or three years, whichever comes first. No other pump is more maintenance free.

Now, Becker is introducing our new Advantage-X series of central vacuum systems for medical/surgical applications. To further enhance our confidence in the X-Series pumps, we are granting a warranty of *four years* on the entire system.

Advantage-X systems are ideal for use where any of the following conditions are a concern:

- Where any oil mist, or aerosols, pres-

ent in the discharge air could contaminate the workplace, or damage roofing membranes.

- Where oil filling, changing, and disposal is an inconvenience, or a hazard.
- If oil leaks persist.
- Where water and sewage charges add to your cost of operation.
- If water pollution is a concern.
- If you would like to minimize your maintenance requirements due to personnel downsizing.

Advantage-X Central Vacuum Systems offer the ultimate in maintenance-free operation. The Advantage-X system is identical in every way in operation and features to the well established Advantage-D dry vane systems (see pg. 8), with the exception of the use of the X-Series pumps and extended warranty.

For more information on the Advantage-X systems, call our factory at 888-633-1083, and ask to speak with your local Becker representative.



X-Series Dry Vane Pump

Becker

Advantage-P

Lubricated Auto-Purge Laboratory Central Vacuum Systems

NEW!

Advantage-P systems employ a special method of purging any hazardous or corrosive gases that may be present at the time of pump shutdown.

Our Dekatorr oil flooded vacuum pumps have long been a favorite in hospitals and industrial applications where quiet, dependable pumps are needed. Advantage-P Auto-Purge Laboratory systems employ the Becker Dekatorr pumps and a special method of purging any hazardous or corrosive gases that may be present at time of pump shutdown. Advantage-P systems are available in a wide variety of designs to fill any requirement you may have.

Tank Mounted Models

Systems are available in both simplex and duplex tank mounted versions. These are the most cost effective units, offering capacities adequate for many facilities. Included are all of the necessary accessories such as inlet check valves, isolation valves, inlet filters, flexible connectors and vibration isolators. All duplex systems employ computer controlled automatic alternating controls for first-on/first-off, lead/lag operation.

Modular/Expandable Models

These are the premier Becker central vacuum systems. They are available as duplex through sextuplex systems, with additional capacity upon request. All are expandable up to a sextuplex, using standard factory modules. As with the tank mounted units, all come with the basic accessories; mounting, however, is vertical. Each pump is mounted on its

Advantage DS630P3



own stand, which stack, one above the other.

Automatically alternating lead/lag, or "cascading", controls ensure that each pump will have approximately the same amount of running time. All pumps operate on a first-on/first-off sequence—a pump can not start again until all other pumps have run.

Upon shutdown, the main inlet line closes and a bleed valve opens to permit a measured amount of atmospheric air into the pump to purge any remaining gases that may cause damage to the pump. The pump will run with this purge line open for a certain period, after which, the pump will turn off.

A call to our factory will put you in touch with an expert to help you determine the exact system you need.

Becker

Advantage-D

Dry Central Vacuum Systems

Advantage-D systems can operate all the way from atmospheric pressure to as much as 27"Hg; all our multiplex systems are PC operated, and all (except tank mounted units) are fully expandable to a sextuplex!

Our dry vacuum pumps have long had the best reputation in the industry. In 1994, we introduced the world's first standard line of 100% oil-less rotary vane central vacuum systems, which quickly became the most popular type of system in the USA. Advantage-D systems are ideal for use where any of the following conditions are a concern:

- Where any oil mist, or aerosols, present in the discharge air could contaminate the workplace, or damage roofing membranes.
- Where oil filling, changing, and disposal is an inconvenience, or a hazard.
- If oil leaks persist.
- Where water and sewage charges add to your cost of operation.
- If water pollution is a concern.
- If you would like to minimize your maintenance requirements due to personnel downsizing.

Tank Mounted Models

Systems are available in both simplex and duplex tank mounted versions. These are the most cost effective units, offering capacities adequate for many facilities, while providing the basic functions of automatic operation, controlled by a programmable controller. They are compact in design due to the pumps being mounted on top of the receiver.

Included are all of the necessary accessories such as inlet check valves, isolation valves, inlet filters, flexible connectors and vibration iso-

lators. Controls permit automatic first-on/first-off, lead/lag operation that remains within two preset vacuum levels.

Modular/Expandable Models

These are the premier Becker central vacuum systems. They are available as duplex, triplex, quadruplex, pentaplex, or sextuplex systems, with additional capacity upon request. Except for the latter, all are expandable, using standard factory modules, up to a sextuplex. As with the tank mounted units, all come with the basic accessories; mounting, however, is vertical. Each pump is mounted on its own stand, which stacks, one above the other. Each pump is connected to a central manifold, which is plumbed to a vertical receiver.

The control panel employs a programmable controller to determine the operating sequence of the pumps. Automatically alternating lead/lag, or "cascading", controls operate on a first-on/first-off basis. This ensures that each pump will have approximately the same amount of running time. This evens the wear on all pumps and prevents the reserve pump from deteriorating due to lack of use. Minimum run timers on all pumps prevent excessive wear on motors due to a high frequency of starts. Another feature of the control panel is the inclusion of a lag pump, or reserve pump, alarm, which can also serve as an alarm for other optional switches.

The entire system can be upgraded with additional capacity by adding a pump and electrical module. This can be performed in minutes with no interruption to the integrity of the vacuum system. Isolation valves are already installed for up to 6 pumps, and individual disconnects are provided for each motor. Since the system is vertically oriented, additional floor space may not be required. All service points are easily accessible without crawling over piping and pumps. All systems are compliant with the current version of the NFPA 99 standard.

Many medical facilities are being serviced by vacuum pumps that may not be the most ideal, simply because of the fact that there was no "ideal" solution. The majority of pumps used in the past required either oil or water for operation. Oil provides lubrication and cooling, but is not without its penalties. If operation is continuously below about 20" Hg, oil aerosols may be emitted, causing "smoking". This fouls equipment or discharge piping, and can be damaging to roof membranes. Water, on the other hand, requires dependence upon another utility, adding cost, and may cause contamination of the water supply. We often make compromises because there is no alternative.

The introduction of the Advantage-D dry central vacuum systems means that there is an alternative. One that can be operated at all vacuum levels from atmospheric to as high as 27"Hg, depending on model; one that is air cooled and requires no oil or wa-



Advantage DS80D3

ter for operation; one that doesn't require oil filling, changes, draining or disposal; one that is self lubricated and minimizes any routine maintenance, thus freeing up personnel for other tasks.

Of course, not everyone prefers a dry system. Some prefer to operate at higher vacuum levels, and some may want a pump with higher efficiency—especially if operating at higher elevations. An oil flooded system, such as one of our Advantage-L systems shown on page 10 and 11, may then be a better choice. But, if your preference is for a system that requires a mini-

imum of maintenance, then the Advantage-D may be the ideal choice.

A call to our factory will put you in touch with an expert to help you determine the exact system you need.

Advantage-D

Becker

Advantage-L

Lubricated Central Vacuum Systems

Advantage-L systems are among the most efficient available, with CFM per HP ratios among the highest in the industry; all multiplex systems are PC operated, and all (except tank mounted units) are expandable to a sextuplex!

Our Dekatorr oil flooded vacuum pumps have long been a favorite in hospitals where quiet, dependable pumps are needed. Advantage-L systems employ the Becker Dekatorr pumps and are ideal for use where any of the following may apply:

- Where dry pumps may not be preferred due to slightly lower capacity at higher vacuum levels.
- Where water and sewage charges add to your cost of operation.
- If water pollution is a concern.

The Advantage-L systems are available in a wide variety of designs to fill any requirement you may have.

Tank Mounted Models

Systems are available in both simplex and duplex tank mounted versions. These are the most cost effective units, offering capacities adequate for many facilities. They are compact in design due to the pumps being mounted on top of the receiver. Included are all of the necessary accessories such as inlet check valves, isolation valves, inlet filters, flexible connectors and vibration isolators. A receiver bypass is standard, which permits servicing of the receiver without interruption to the system. All duplex systems employ computer controlled automatic alternating controls for first-on/first-off, lead/lag operation.

Modular/Expandable Models

These are the premier Becker central vacuum systems. They are available as

duplex through sextuplex systems, with additional capacity upon request. All are expandable up to a sextuplex, using standard factory modules. As with the tank mounted units, all come with the basic accessories; mounting, however, is vertical. Each pump is mounted on its own stand, which stack, one above the other. Each pump is connected to a central manifold, which is plumbed to a vertical receiver.

A standard receiver bypass line permits servicing of the receiver without interruption of the system, an NFPA 99 requirement. An optional tank drain, designed as an integral part of the system, allows draining of the receiver with no interruption to the vacuum system.

The control panel utilizes a programmable controller to determine the operating sequence of the pumps. Automatically alternating lead/lag, or "cascading", controls ensure that each pump will have approximately the same amount of running time. This evens the wear on all pumps. All pumps operate on a first-on/first-off sequence—a pump can not start again until all other pumps have run. Minimum run timers on all pumps prevent excessive wear on motors due to a high frequency of starts.

Another feature of the control panel is the inclusion of a lag pump, or reserve pump alarm. The entire system can be upgraded with additional capacity by adding a pump and electrical module. This procedure can be performed in min-

utes with no interruption to the integrity of the vacuum system. Isolation valves are already installed for up to 6 pumps, and individual disconnects are provided for each motor. Since the system is vertically oriented, additional floor space may not be required. All service points are easily accessible without crawling over piping and pumps.

Advantage-L central vacuum systems give you an alternative to liquid ring systems: they can be operated at vacuum levels from about 19" Hg to as high as 29.84" Hg (2 torr) with no danger of cavitation; they are air cooled and require no water for operation; they do not require dependence upon another utility; they do not foul or contaminate our water supply.

Not all facilities may want an oil flooded vacuum system. Some may prefer pumps that are more maintenance-free, or where changing oil periodically is not practical. In these cases you may want to consider one of our Advantage-D dry central vacuum systems that employs 100% oil-less pumps, shown on pages 8 and 9.

A call to our factory will put you in touch with an expert to help you determine the exact system you need.



Advantage DS630L3

Advantage-L

General Performance and Dimensional Details

Advantage-L and P Lubricated Systems

MODEL ¹	SCFM (NFPA Capacity*)			Horsepower**	Tank (Gal's)	Overall Dim's**		
	0"Hg	19"Hg	24"Hg			Length (in.)	Depth (in.)	Height (in.)
Horizontal Tank Mounted Simplex Systems								
ST20L/P	12.4	4.5	2.5	0.9	60	50	29	45
ST40L/P	28.8	10.5	5.7	2.4	60	50	29	45
ST70L/P	49	17.8	9.6	3	120	71	32	50
ST100L/P	71	25.8	13.9	5	120	71	32	50
ST165L/P	113	41.0	22.1	5	120	71	32	56
ST190L/P	129	47.6	25.6	7.5	120	71	32	56
ST250L/P	168	61.0	32.9	10	240	88	32	62
Horizontal Tank Mounted Duplex Systems								
DT20L/P3	12.4	4.5	2.5	0.9	60	61	30	50
DT40L/P3	28.8	10.5	5.7	2.4	60	61	30	50
DT70L/P3	49	17.8	9.6	3	120	86	30	55
DT100L/P3	71	25.8	13.9	5	120	86	30	55
DT165L/P3	113	41.0	22.1	5	120	86	34	55
DT190L/P3	129	47.6	25.6	7.5	120	86	36	55
DT250L/P3	168	61.0	32.9	10	240	100	44	62
Modular/Expandable Duplex Systems								
DS20L/P3	12.4	4.5	2.5	0.9	120	48	54	91
DS40L/P3	28.8	10.5	5.7	2.4	120	48	54	91
DS70L/P3	49	17.8	9.6	3	120	56	54	91
DS100L/P3	71	25.8	13.9	5	120	56	54	91
DS165L/P3	113	41.0	22.1	5	240	68	66	109
DS190L/P3	129	47.6	25.6	7.5	240	68	66	109
DS250L/P3	168	61.0	32.9	10	240	68	66	109
DS400L/P3	290	105	56.8	15	240	104	60	100
DS630L/P3	440	160	86.2	25	240	104	60	100
Modular/Expandable Triplex Systems								
TS20L/P3	24.8	9.0	5.0	1.8	120	48	54	91
TS40L/P3	57.6	21	11.4	4.8	120	48	54	91
TS70L/P3	98	35.6	19.2	6	120	56	54	91
TS100L/P3	142	51.6	27.8	10	120	56	54	91
TS165L/P3	226	82.0	44.2	10	240	68	66	109
TS190L/P3	258	95.2	51.2	15	240	68	66	109
TS250L/P3	336	122	65.8	20	240	68	66	109
TS400L/P3	580	210	113.6	30	2x240	104	128	119
TS630L/P3	880	320	172.4	50	2x240	104	128	119
Modular/Expandable Quadruplex Systems								
QS20L/P3	37.2	13.5	7.5	2.7	120	68	54	91
QS40L/P3	86.4	31.5	17.1	7.2	120	68	54	91
QS70L/P3	147	53.4	28.8	9	120	84	54	91
QS100L/P3	213	77.4	41.7	15	120	84	54	91
QS165L/P3	339	123	66.3	15	240	102	66	109
QS190L/P3	387	142.8	76.8	22.5	240	102	66	109
QS250L/P3	504	183	98.7	30	240	102	66	109
QS400L/P3	870	315	170.4	45	2x240	104	128	119
QS630L/P3	1320	480	258.6	75	2x240	104	128	119

¹ Substitute L or P

For Pentaplex and Sextuplex system performance, contact factory.

Advantage-D and X Dry Systems

MODEL ²	SCFM (NFPA Capacity*)			Horsepower**	Tank (Gal's)	Overall Dim's**		
	0"Hg	19"Hg	24"Hg			Length (in.)	Depth (in.)	Height (in.)
Horizontal Tank Mounted Simplex Systems								
ST25D/X	18	5.32	2.0	1.2	60	50	29	45
ST40D/X	28	8.27	3.1	2	60	50	29	45
ST60D/X	39	12.5	5.5	3	120	71	32	50
ST80D/X	48	15.4	6.8	5	120	71	32	50
ST100D/X	69	22.1	9.8	5	120	71	32	50
ST140D/X	95	30.4	13.4 ³	7.5	120	71	32	50
ST200D/X	130	41.4	18.4	7.5	240	88	37	62
ST250D/X	173	55.4	24.5	10	240	88	37	62
Horizontal Tank Mounted Duplex Systems								
DT25D/X3	18	5.32	2.0	1.2	60	61	30	50
DT40D/X3	28	8.27	3.1	2	60	61	30	50
DT60D/X3	39	12.5	5.5	3	120	86	32	55
DT80D/X3	48	15.4	6.8	5	120	86	34	55
DT100D/X3	69	22.1	9.8	5	120	86	40	55
DT140D/X3	95	30.4	13.4 ³	7.5	120	86	40	55
DT200D/X3	130	41.4	18.4	7.5	240	100	52	62
DT250D/X3	173	55.4	24.5	10	240	100	52	62
Modular/Expandable Duplex Systems								
DS25D/X3	18	5.32	2.0	1.2	120	48	54	91
DS40D/X3	28	8.27	3.1	2	120	48	54	91
DS60D/X3	39	12.5	5.5	3	120	56	54	91
DS80D/X3	48	15.4	6.8	5	120	56	54	91
DS100D/X3	69	22.1	9.8	5	120	56	54	91
DS140D/X3	95	30.4	13.4 ³	7.5	240	68	66	109
DS200D/X3	130	41.4	18.4	7.5	240	68	66	109
DS250D/X3	173	55.4	24.5	10	240	68	66	109
DS400D/X3	280	89.7	59.6 ³	24	240			Contact factory
Modular/Expandable Triplex Systems								
TS25D/X3	36	10.64	4.0	2.4	120	48	54	91
TS40D/X3	56	16.54	6.2	4	120	48	54	91
TS60D/X3	78	25.0	11.0	6	120	56	54	91
TS80D/X3	96	30.8	13.6	10	120	56	54	91
TS100D/X3	138	44.2	19.6	10	120	56	54	91
TS140D/X3	190	60.8	26.8 ³	15	240	68	66	109
TS200D/X3	260	82.8	36.8	15	240	68	66	109
TS250D/X3	346	110.8	49.0	20	240	68	66	109
TS400D/X3	560	179.4	119.2 ³	48	2x240			Contact factory
Modular/Expandable Quadruplex Systems								
QS25D/X3	54	15.96	6.0	3.6	120	68	54	91
QS40D/X3	84	24.81	9.2	6	120	68	54	91
QS60D/X3	117	37.5	16.5	9	120	84	54	91
QS80D/X3	144	46.2	20.4	15	120	84	54	91
QS100D/X3	207	66.3	29.4	15	120	84	54	91
QS140D/X3	285	91.2	40.2 ³	22.5	240	104	66	109
QS200D/X3	390	124.2	55.2	22.5	240	104	66	109
QS250D/X3	519	166.2	73.5	30	240	104	66	109
QS400D/X3	840	269.1	178.8 ³	72	2x240			Contact factory

² Substitute D or X

³ Performance stated at 22 in.Hg

For Pentaplex and Sextuplex system performance, contact factory.

Advantage-D and X Dry Vertical Tank Mounted Systems

MODEL ⁴	SCFM (NFPA Capacity*)			Horsepower**	Tank (Gal's)	Overall Dim's**		
	0"Hg	19"Hg	2½"Hg			Length (in.)	Depth (in.)	Height (in.)
Vertical Tank Mounted Simplex Systems								
ST10D/X-V	7	2.07	0.77	0.6	60	42.3	20	67
ST16D/X-V	11	3.25	1.2	0.94	60	42.3	20	67
ST25D/X-V	18	5.32	2.0	1.2	60	42.3	20	67
ST40D/X-V	28	8.27	3.1	2	60	42.3	20	67
ST60D/X-V	39	12.5	5.5	3	120	54	30	74
ST80D/X-V	48	15.4	6.8	5	120	54	30	74
Vertical Tank Mounted Duplex Systems								
DT10D/X-V	7	2.07	0.77	0.6	60	45	27	68
DT16D/X-V	11	3.25	1.2	0.94	60	45	27	68
DT25D/X-V	18	5.32	2.0	1.2	60	45	29	70
DT40D/X-V	28	8.27	3.1	2	60	45	29	70
DT60D/X-V	39	12.5	5.5	3	120	54	33	74
DT80D/X-V	48	15.4	6.8	5	120	54	33	74

⁴ Substitute D or X

* Except for simplex systems, data is for an NFPA 99 Level 1 system, which requires a reserve pump; thus, performance in this table is for the total number of pumps in the system, minus 1 (i.e., a Triplex TS100D3 would be designed for 2 pumps with a total flow of 44.2 SCFM at 19"Hg, and total HP of 10. The reserve pump produces 22.1 SCFM and uses a 5 HP motor, and is not included in the tables presented on this page).

** **See pages 14, 15.** These dimensions are for estimates of the overall system envelope, and should *not* be depended on for installation details. The dimensions are subject to change without notice. **Contact the factory for certified dimensional drawings.**

Pentaplex and Sextuplex Systems are available as a factory standard design—contact the factory. Custom designed systems also available.

Becker Pumps Corp. reserves the right to alter data without notice.

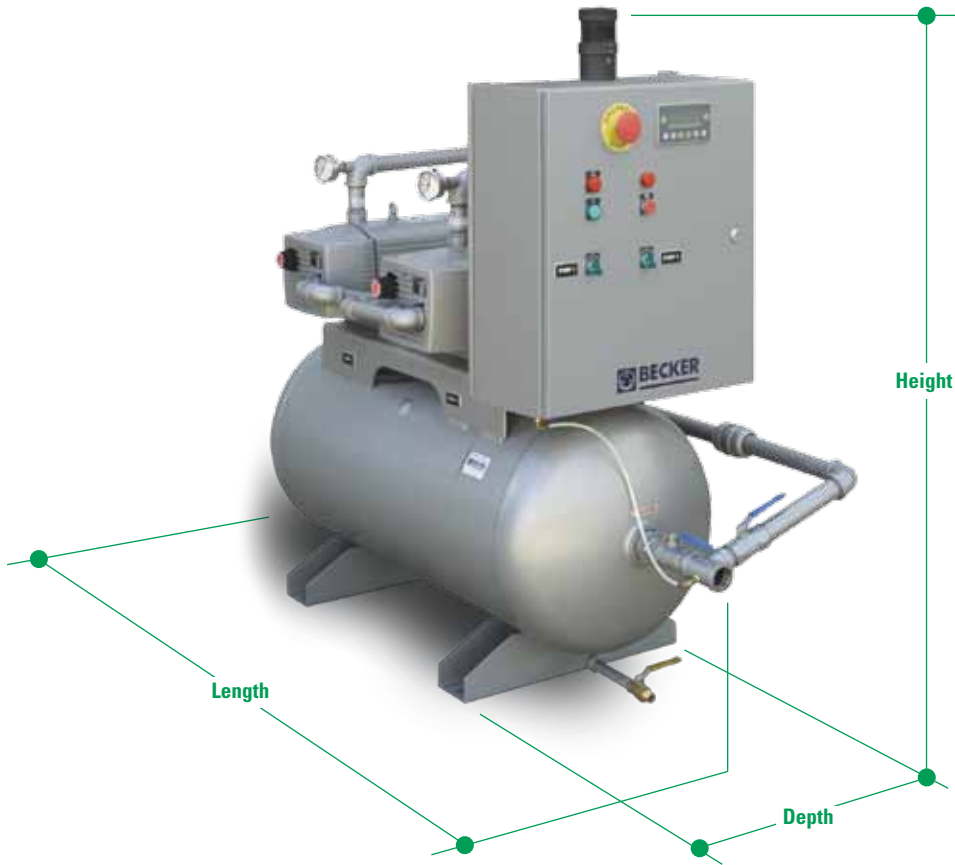
Full specifications may be found on the Becker website at www.beckerpumps.com.
Select the **Downloads** menu, then **Specifications**.

Overall Dimensions

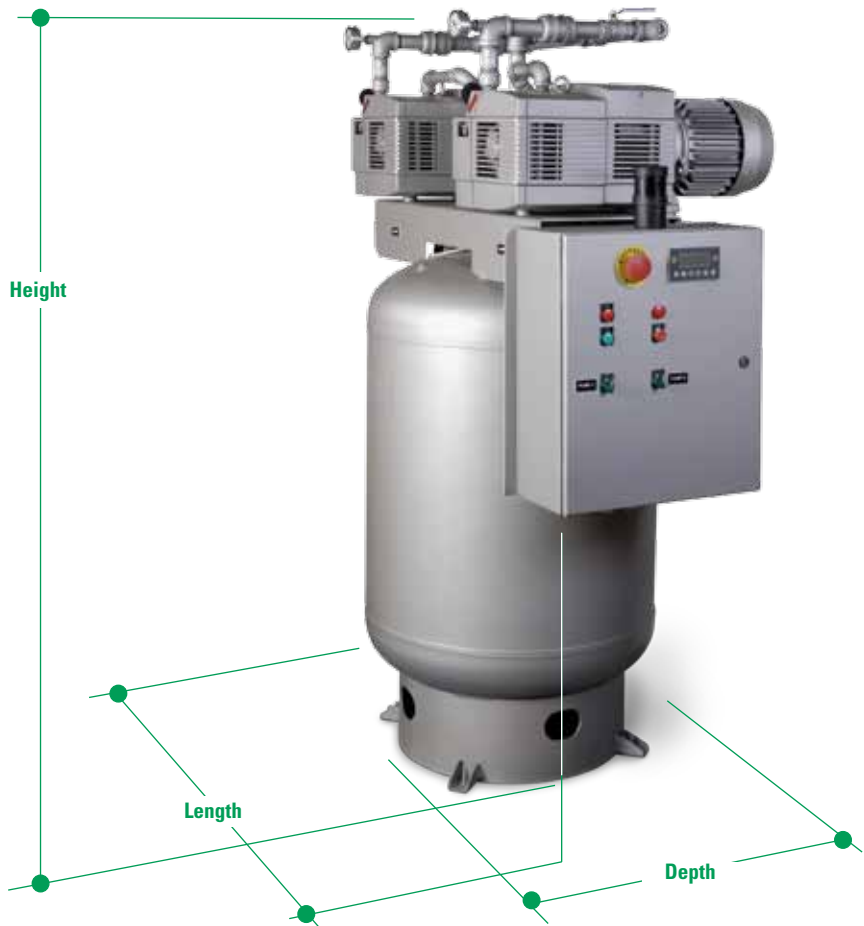


Modular/Expandable Systems

**Horizontal Tank Mounted
Systems (ST, DT)**



**Vertical Tank Mounted
Systems (ST-V, DT-V)**





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