Dry Scroll Pumps

Dry scroll vacuum pumps have become increasingly popular since many modern applications require clean oil-free dry vacuum. They can pump from atmosphere down to their ultimate vacuum pressure which depends on the amount of gas compression governed by their mechanical design. The smallest commercial models have pumping speeds around 2 cfm and final pressures below 250 mTorr while the larger models can have pumping speeds up to 45 cfm and ultimate pressures down to the 10 mTorr range. There seems to be a trend, the more expensive larger commercial dry scroll vacuum pumps have better performance than the smaller models. With their excellent ultimate pressure and compact size dry scroll vacuum pumps are often used in combination with modern compound turbomolecular pumps to assemble completely dry high-vacuum pumping systems. Moreover, dry scroll vacuum pumps are often integrated into manufacturing and quality-control instruments to provide rough vacuum, some application examples are, scanning electron microscopes (SEM's), residual gas analyzers (RGA's), gas chromatography mass spectrometry (GC-MS), cryostats, beam lines, high energy physics experiments, helium leak detectors, vacuum furnaces, cryogenic pump regeneration, load lock systems, transfer & anti chambers, along with countless other general clean and dry laboratory vacuum applications.

The dry scroll and oil-sealed rotary vane vacuum pumps are often competing rival options to consider when purchasing a rough vacuum pump. When you are considering between a wet or dry rough pump you should keep in mind the following facts. Yes, it is true that oil-sealed dual-stage rotary vane pumps can reach a slightly higher ultimate pressure, which is on the order of 1 mTorr. However, this small increase in ultimate pressure is often negated by rotary vane's wet pumping process and corresponding drawbacks with vacuum pump oil; oil exhaust mist, oil back streaming, and the potential for oil suckback. When you operate a dry scroll vacuum pump you avoid the regular maintenance and expenses required by oil-sealed vacuum pumps, such as, changing vacuum pump oil and disposal costs of used oils. With this said, there are good benefits to oil-sealed rotary vane pumps that we should mention here for completeness. Oil-sealed rotary vane pumps can be manufactured from small to very large sizes, models with pumping speeds greater than 600 cfm are available. The dry scroll vacuum pump mechanical design does not scale well and are limited in size with the largest being around 45 cfm. Most industrial applications use oil-sealed rotary vane vacuum pumps which are very reliable, require little maintenance such as oil changes, and can last for decades of solid operation. In summary, you should purchase a vacuum pump that matches the requirements of your application. If your process requires absolutely clean and oil-free dry vacuum then the dry scroll pump is a very good option to consider.

How the Dry Scroll Pump Works

The dry scroll pumping mechanism includes two or more pairs of intermeshing involute scrolls, manufactured by cutting mirror image spiral grooves into two facing plates. One of the scroll pairs is stationary fixed while the other one moves in an orbiting motion with a small orbiting radius, often less than 1 cm. The dry scroll vacuum pumping mechanism is illustrated below where the fixed scroll is colored blue while the orbiting scroll is colored yellow. Note that, the movable scroll orbits but does not rotate, the scrolls do not touch, typical radial separation is small to prevent backflow leakage of gas and is often on the order of 0.0015 inches. The pumped gases arrive through the pump's inlet port to the outer edges of the scroll perimeter, see Fig 1a below, where these gases are forced to flow along the spiral helical path towards the center of the pump. Small inner pockets, crescent-shaped spaces, of gas are trapped, that are gradually reduced in size getting smaller, and are compressed as these pocket move towards the central exhaust port, see Figures Fig 3-1 thru Fig 3-4. This pumping motion is smooth acting without pulsations which are typical with oil-sealed rotary vane pumps. This scroll pump design adds ease of multi-staging so that low ultimate pressures can be achieved. The central portion of involute scroll should be designed to minimize remaining gas. The pumping speed and achieved compression level depends on the number on involute wraps, they should have 3 to 5 turns as needed to optimize gas compression and generate deep vacuum.

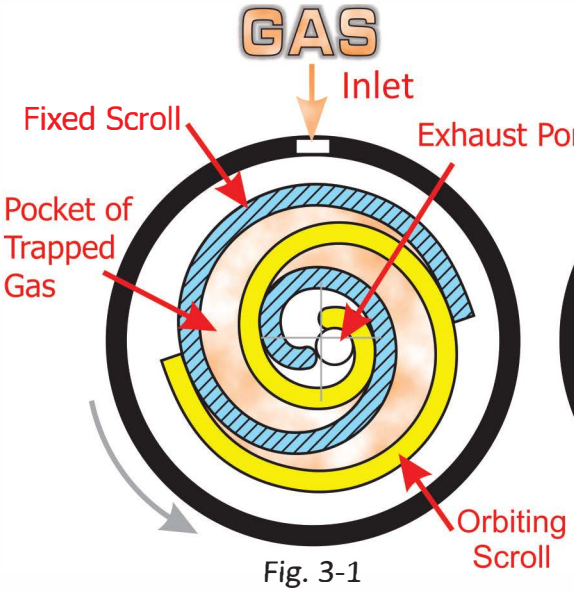


Fig. 3-1

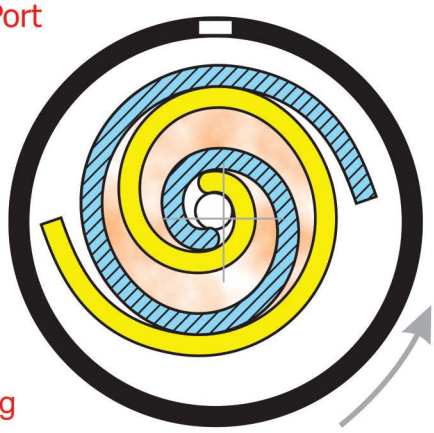


Fig. 3-2

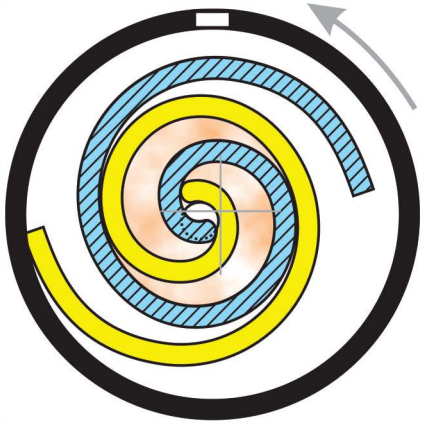


Fig. 3-3

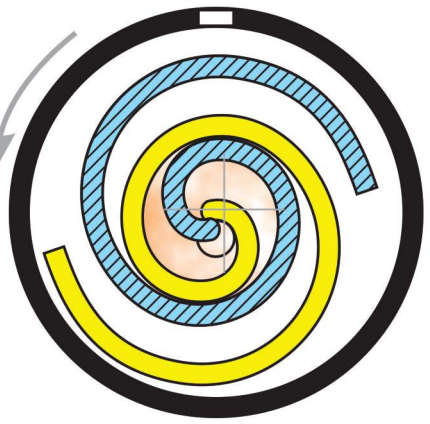
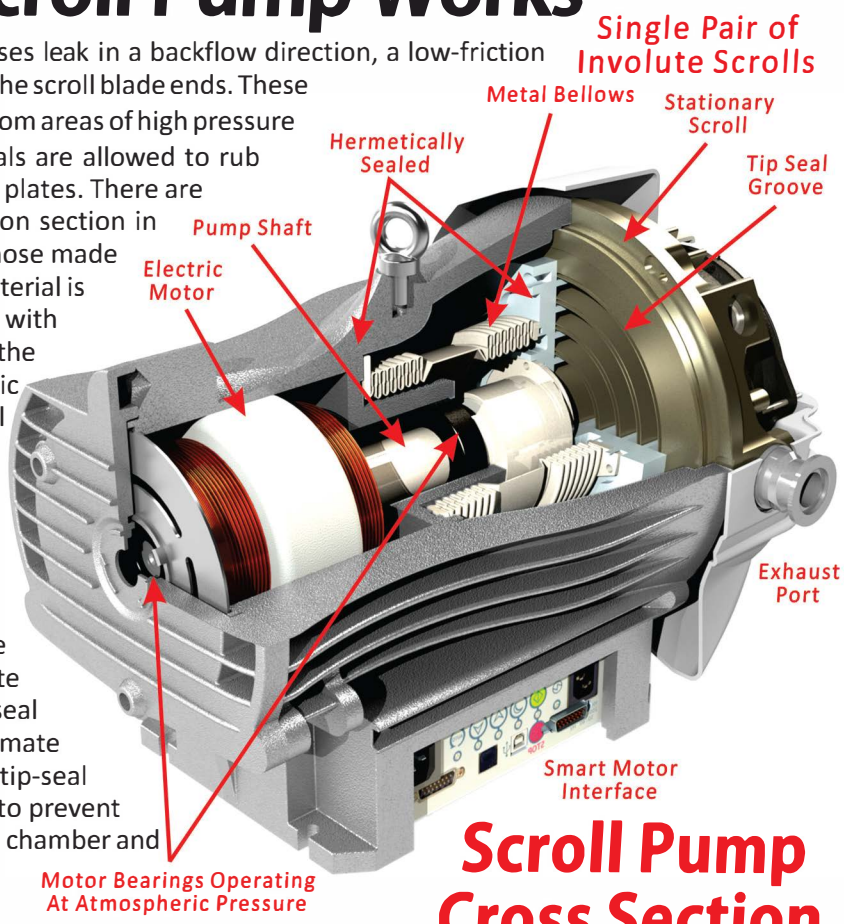


Fig. 3-4

(Cont.) How the Dry Scroll Pump Works

To reduce loss of compression, where pumped gases leak in a backflow direction, a low-friction polymer gasket seal is mounted in the free-edge of the scroll blade ends. These "Tip-Seals" are designed to keep gas from moving from areas of high pressure outward to areas of less compression. The tip-seals are allowed to rub against the bottom surface of both opposing scroll plates. There are two common types of tip seals, those with a Teflon section in front of an energized foam backing material and those made of solid Teflon material. The solid Teflon tip-seal material is a more modern design and is claimed to last longer with less failure issues from adverse reactions with the process gases, such as, the pumping of dilute organic vapors. The cross-sectional view of a dry scroll pump is shown to the side, where the solid tip seals are shown in the axial ends of the scroll pump blades. These tip-seals are wear items that have to be replaced, typically ever 1 year of solid operation for foam backed tip-seals. Pumps manufactured using solid tip seals boost longer 1.5 year replacement periods. The compression level of the dry scroll pump and its corresponding ultimate pressure will depend on the condition of the tip-seal material and as the seals degrade so will the ultimate vacuum pressure. The Teflon polymer produces tip-seal dust as it wears, intake filtrations is often needed to prevent this contaminate dust from getting into the vacuum chamber and roughing lines.



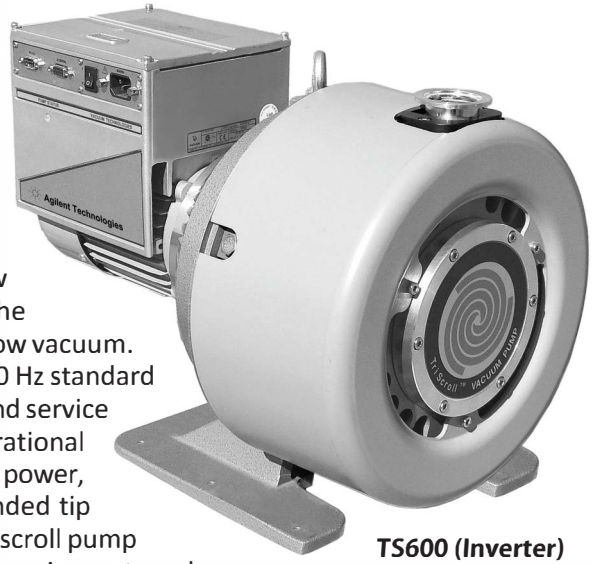
Scroll Pump Cross Section

There are two basic designs of scroll pumping mechanisms, those with a single pair and those with multiple pairs of intermeshing involute scrolls. The first commercial scroll pumps, in the mid 1990's, were designed with two pairs of involute scrolls connected in series between the pump inlet and exhaust to form a two-stage dry scroll pump. There have been recent design improvements, so that the compression of a two-stage dry scroll vacuum pump can be achieved with a single pair of scrolls. This more modern, single scroll pair design is easier for user maintenance as only the one fixed scroll needs to be removed to replace the tip-seals. The figure above shows a cross-sectional view of a dry scroll pump having a single scroll pair where the scroll blades can be seen intermeshing together. The cross section above includes a metal bellows tube which is used to prevent orbiting scroll rotation and keep the motor bearings and grease out of the vacuum pumping volume. This metal bellows device is flexible to the radial motion of the orbiting scroll but restricts rotational motion, so that crank-pins are not required to keep the orbiting scroll from contacting the stationary scroll. The metal bellows tubing is sealed by their outer edges with static O-rings. The orbiting scroll is cantilevered and eccentrically driven on a combination pump/motor shaft and powered by the electric motor. Good benefits of the design are that the pump/motor bearings operate at atmospheric pressure where they will run cooler. Since these bearings are outside the vacuum region, a more effective hydrocarbon bearing grease can be used instead of the thicker low vapor pressure PFPE grease. This design allows these dry scroll pumps to be hermitically sealed (free of leak prone dynamic shaft seals), more suitable for corrosive applications, completely dry, free of minute organic vapors from bearing greases.

(Cont.) How the Dry Scroll Pump Works

Some dry scroll pump models include an integrated anti-suckback valve in the pump intake port to protect the vacuum chamber and foreline from tip seal dust contamination that could suckback when motor power is interrupted. It is undesirable for gas to backflow through the scroll pump to fill the chamber volume on power removal from the motor. These anti-suckback valves are quick acting, can close on the order of milliseconds, and are very effective at preventing back flow of gases through the pump. On startup, the valve will remain closed until the pressure in the pump is lower than the static gas pressure in the adjacent foreline, at which time a weak opening spring force will fully open the valve back to its high conductance state. These anti-suckback valves are designed to conserve the pumping speed and not constrict the flow of pumped gas. If your pump requires this protection we offer an external anti-suckback solution in our Vacuum Pump Isolation (VPI) valve section of our catalog.

Inverter-Driven Dry Scroll Pumps



TS600 (Inverter)

Some modern dry scroll vacuum pump models include or can be ordered with a smart motor, sometimes called a world motor, which includes an internal frequency inverter. These smart motors can often auto-set themselves to a wide variety of input voltages so that the user does not need to manually set the motor voltage by rearrange internal motor wiring. These smart motors can also operate at variable motor speeds, allowing the pump's operating frequency to slow down, normal scroll pumps turn at 1800 rpms while standby state can typically slow down to 1200 rpms. When combined with a foreline pressure sensor the inverter-driven dry scroll pumps can sense when they are only holding low vacuum. Under those conditions the motor can automatically slow down from 30 Hz standard speed to 20 Hz where power consumption can drop by more than half and service life can be extended too many years of solid operation. Slower operational speeds in the idle condition benefit from running cooler, quitter, use less power, save energy, and longer periods between service requirements (extended tip seal and bearing life). The initial purchase cost of an inverter-driven dry scroll pump is a little higher but those expenses can be justified by lower operating & service costs and less down-time for routine tip-seal maintenance. A dry scroll pump with a smart motor should be considered for roughing applications on laboratory instruments where the system is often left running unattended where the pump is simply maintaining the vacuum.

Chemical & Condensable Vapor Series Dry Scroll Pumps

Initially, dry scroll vacuum pumps where limited to pumping of dry air applications. This is no longer the case and some modern designs can be used in applications where vapors from corrosive gases and condensable liquids are present in the vacuum volume. The major design improvements are the hermitically sealed pumps, which include the metal bellows, to separate the pumping volume from the motor & bearing sections of the pumps. Solid Teflon tip-seal material is also required as it is relatively inert to chemical attack, does not absorb solvent vapors, and remains solid in its original shaped form. The older style designs, that incorporate energized foam-backed Teflon tip-seals, suffer as the foam material is a weak point and not recommended for chemical applications.

These chemical series dry scroll pumps include chemical resistant rubbers, such as, Chemraz or Kalrez O-rings and poppet-style valves along with Stainless Steel fittings for extra protection from the pumped media. Corrosive series dry scroll pumps are often fitted with a gas ballast external nitrogen inert gas purge source to keep process gases moving forward to aid in the pumping of condensable vapors and result in superior vapor handling capabilities. With these improvements, chemical series dry scroll vacuum pumps are being used in evacuation of chemical containing applications, such as, centrifuges, coating machines, degassing, curing of oils & epoxy resins, distillation, extraction, filtration, freeze drying, gel drying, refrigeration manufacture, rotary evaporators, and solvent recovery processes.

Minor or Major Scroll Pump Maintenance Kits

Vacuum Pump Isolation Valve (VPI)

Accessories and Service Kits

The optional accessories for dry scroll vacuum pumps include, inlet trap filters, Vacuum Pump Isolation (VPI) valves, and an exhaust silencer (see items below). A justifiable concern when using dry scroll vacuum pumps is the fear of tip-seal dust (see Tip-Seal section of "How they work" above) from migrating back into the foreline or vacuum chamber in a gas backflow state when power is removed from the pumps electric motor. This failure can be eliminated by including an external VPI valve for anti-suckback that closes when power is removed from the pump. An intake filter trap with HEPA media is also recommended which traps tip-seal dust from moving into the foreline and also works in the opposite direction, to prevent process particulate from being sucked into the scroll pump. An exhaust silencer is often used to reduce the noise of a dry scroll pumps which are exhausted directly to the room air (note – chemical series pumps must be hard-piped to outside ventilation and are not allowed to be vented to the room air space). The exhaust silencer is also beneficial at capturing exhausted tip-seal dust and preventing it from contaminating a clean-room environment.

There are two basic maintenance kits available for dry scroll vacuum pumps; minor service kit which includes the tip-seals, exhaust valve, and corresponding O-rings and the major kit which includes the minor kit items along with the pump & motor seals, bearings, and grease. The installation of the minor kit is often easy and requires standard tools. The major kit, however, is an in-depth process and requires special tools and equipment to be installed correctly and is not recommended for the novice dry scroll pump user, requires tools, such as, oven for heating components, arbor press, and custom bearing pullers. Please keep Ideal Vacuum in mind when you need service as we offers both minor and major rebuild service for all dry scroll vacuum pumps.

Inlet Filtration Traps

Exhaust Filters

ANEST IWATA

ISP Series Scroll Meister

The Anest Iwata ISP series dry scroll vacuum pumps are economical and inexpensive to operate. They offer high-performance with the largest pumping speeds in a compact design, pumping speed ranges from 3.8 to 42 CFM. The Anest Iwata ISP series include the models: ISP-90, ISP-250C, ISP-500C, and ISP-1000, which are available in either single or three phase motors. The "C" series models have improved reliability, longer maintenance intervals, and a higher water vapor handling capacity. The Anest Iwata ISP series dry scroll pumps are an excellent alternative to consider when upgrading from a oil sealed rotary vane vacuum pump, as they do not require oil changes or oil mist & oil back streaming filters. We offer a wide selection of optional accessories including inlet traps, exhaust silencers, and maintenance rebuild kits.

Manufacture Warranty
Most NEW Pumps
IN STOCK

ISP-90
(3.8 CFM)

ISP-250C
(10.6 CFM)

ISP-500C
(21.2 CFM)

ISP-1000
(42.4 CFM)

- **Scanning Electron Microscopes (SEM)**
- **Ion Implanters**
- **General Clean Pump Applications**
- **Sputtering**
- **Turbo Pump Backing**
- **Ideal for Chamber Roughing**

Model	Ideal P/N	Anest Iwata P/N	Volts/Phase	Price*
ISP-90	P103314	200-51-9896	115/220 VAC 1Ø	$5,030.00
ISP-250C	P102171	200-51-9987	115/220 VAC 1Ø	$6,220.00
ISP-500C	P102170	200-51-9999	115/220 VAC 1Ø	$9,720.00
ISP-1000	P103315	200-51-9901	200-460 VAC 3Ø	$17,880.00

Scroll Meister ISP Series SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
ISP-90	31	12.1x7.2x8.9	KF25	KF16	52	3.8 (6.5)	108	3.7×10^{-2}
ISP-250C	55	15.7x9.9x13.2	KF25	KF16	58	10.6 (18)	300	1.2×10^{-2}
ISP-500C	101	17.4x11.3x15.6	KF40	KF25	62	21.2 (36)	600	7.5×10^{-3}
ISP-1000	123	20x14x18	KF40	KF40	67	42.4 (72)	1200	7.5×10^{-3}

* Catalog Pricing Subject to Change

Oerlikon Leybold SCROLLVAC

The Oerlikon Leybold SCROLLVAC SC series dry scroll vacuum pumps are available in 4 sizes: SC-5D, SC-15D, SC-30D, and SC-60D. The are inexpensive to operate and offer high performance in a compact design. They have a improved tip seal material that require less maintenance than competing foam backed tip seals. These Oerlikon Leybold SC series dry scroll vacuum pumps are an excellent option to consider when upgrading from oil-sealed rotary vane vacuum pumps, as you avoid issues common with oil sealed vacuum pumps, such as, routine oil changes, exhaust oil mist filters, backstreaming foreline traps, used waste oil disposal, and potential oil leaks. The Oerlikon Leybold ScrollVac SC series dry scroll pumps have a large pumping speed for their size which ranges from 3.8 to 42 CFM. We offer a wide selection of optional accessories including HEPA filter inlet traps, exhaust silencers, and maintenance rebuild kits.

- **Scanning Electron Microscopes**
- **Ion Implanters**
- **General Clean Pump Applications**
- **Sputtering**
- **Turbo Pump Backing**
- **Ideal for Chamber Roughing**

SC5D *(3.8 CFM)*

SC15D *(10.6 CFM)*

SC30D *(21.2 CFM)* **SC60D** *(42.4 CFM)*

Model	Ideal P/N	Oerlikon P/N	Volts/Phase	Price*
SC5D	P102314	133 100	115/220 VAC 1Ø	$4,500.00
SC15D	P102168	133 101	115/220 VAC 1Ø	$5,900.00
SC30D	P102169	133 102	115/220 VAC 1Ø	$9,900.00
SC60D	P105634	133 008	200/460 VAC 3Ø	$14,000.00

SCROLLVAC Series SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
SC5D	31	12.1x7.2x8.9	KF25	KF16	52	3.8 (6.5)	108	3.7×10^{-2}
SC15D	55	15.7x9.9x13.2	KF25	KF16	58	10.6 (18)	300	1.2×10^{-2}
SC30D	101	17.4x11.3x15.6	KF40	KF25	62	21.2 (36)	600	7.5×10^{-3}
SC60D	123	20x14x18	KF40	KF40	67	42.4 (72)	1200	7.5×10^{-3}

* Catalog Pricing Subject to Change

AGILENT Varian TRISCROLL

The Agilent Varian 300/600 TriScroll dry scroll vacuum pumps are designed for high reliability with a 8.8 or 17.7 CFM pumping speed and an ultimate pressure of 7×10^{-3} Torr. The TriScroll pumps produce oil-free vacuum with the unique patented TriScroll technology. These Agilent Varian TriScroll dry scroll vacuum pumps feature proven reliability and durability leading to superior cost of ownership and consistent performance. Applications include: scanning electron microscopes, primary backing pump for turbo systems, general purpose laboratory applications, beam lines, drying ovens, load locks, transfer chambers, cryogenics, manufacturing glove box enclosures and leak detection. These Agilent Varian TriScroll dry scroll vacuum pumps are available with 1 or 3 phase motors and can be set to operate on 115-230 or 200-460 VAC. They are brand new and come with a full manufacture warranty.

- **Scanning Electron Microscopes**
- **Ion Implanters**
- **General Clean Pump Applications**
- **1 or 3 Phase**
- **Sputtering**
- **Turbo Pump Backing**
- **Ideal for Chamber Roughing**

TriScroll 300
(8.8 CFM)

TriScroll 600
(17.7 CFM)

Model	Ideal P/N	Agilent P/N	Volts/Phase	Price*
TriScroll 300	P101943	PTS03001UNIV	115/220-230 VAC 1Ø	$6,319.00
TriScroll 300	P105108	PTS03003UNIV	200/230-460 VAC 3Ø	$6,319.00
TriScroll 600	P101942	PTS06001UNIV	115/220-230 VAC 1Ø	$10,267.00
TriScroll 600	P105109	PTS06003UNIV	200/230-460 VAC 3Ø	$9,873.00

Manufacture Warranty
Most NEW Pumps IN STOCK

TriScroll 300/600 SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
TriScroll 300	58	18.3x11.8x13.98	KF25	1/4" NPT	68	8.8 (15)	250	1×10^{-2}
TriScroll 600	70	18.3x11.8x13.98	KF40	3/8" NPT	68	17.7 (30)	500	7×10^{-3}

* Catalog Pricing Subject to Change

AGILENT Varian
TRISCROLL Inverter

The Agilent Varian 300/600 TriScroll Inverter dry scroll vacuum pumps are designed with an innovative frequency inverter technology which can provide benefits of lower operating power consumption, lower pump operating temperatures, lower noise levels (very quite operation), and longer service life between maintenance cycles. The Agilent Varian 300/600 TriScroll vacuum pumps offer reliability with a 8.8 or 17.7 CFM pumping speed and an ultimate pressure of 7 x 10 $^{-3}$ Torr. Agilent Technologies TriScroll Inverter pumps combine the benefits of frequency inverter technology and the performance of Agilent TriScroll dry primary vacuum pumps. The frequent maintenance requirements of oil-sealed rotary vane pumps are eliminated with dry scroll pumps, simplifying regulatory and environmental compliance, and eliminating oil disposal costs. Agilent TriScroll dry scroll pumps feature proven reliability and durability, providing consistent performance and superior cost of ownership.

TriScroll Inverter 300/600
(8.8 CFM) (17.7 CFM)

- **Pump Speed Constant Regardless of Frequency**
- **Adjustable Pump Speeds**
- **Pump Parameters Monitored Via Serial Interface**
- **Automatic Air Ballast**
- **Utilizes Agilent's T-Plus Software (optional)**

Model	Ideal P/N	Agilent P/N	Volts/Phase	Price*
TriScroll 300 Inverter	P103362	PTS03001INIV	100-115, 200-240 V 1Ø	$7,023.00
TriScroll 600 Inverter	P103363	PTS06001INIV	200-240 VAC 1Ø	$10,469.00

TriScroll 300/600 Inverter SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.) @60hz	Displacement L/min.	Ultimate Pressure (Torr)
TriScroll 300 Inverter	57	18.3x11.8x13.98	KF25	1/4" NPT	68	8.8 (15)	250	1 x10-2
TriScroll 600 Inverter	68	18.3x11.8x13.98	KF40	3/8" NPT	68	17.7 (30)	500	7 x 10-3

* Catalog Pricing Subject to Change

AGILENT Varian IDP-3

IDP3 Scroll Pump with Inlet Isolation Valve and Hour Meter
(2.1 CFM)

The Agilent Varian IDP-3 dry scroll vacuum pumps are a compact, high performance dry pump that provides affordable oil-free vacuum and easy system integration, and are suitable for a wide variety of applications. The Agilent Varian IDP-3 is the smallest dry scroll pump available on the market and is designed to offer great advantages of competing dry diaphragm vacuum pumps; providing smoother operation, deeper vacuum ultimate pressure, and larger pumping speeds. The Agilent Varian scroll pump employs an innovative hermetic design in which the motor and bearings are outside the vacuum space, allowing full isolation of all pumped gases. This delivers a robust pumping speed and a very low base pressure. The isolation valve model is factory installed with an Inlet Valve Kit, for applications where the process is sensitive to pump debris that can be carried back into the pump at turn off. The IDP-3 has AC and DC voltage models.

- **No Mechanisms Subject to Catastrophic Failure**
- **Lower Base Pressure than Diaphragm Pumps**
- **Oil Free - NO Contamination**
- **Hermetic Design**
- **Low Noise & Vibration**

Model	Volts/Phase	Ideal P/N	Agilent P/N	Price*
IDP-3	24 VDC 1Ø	P105311	IDP3D01	$2,775.00
IDP-3	100 VAC 1Ø	P105310	IDP3C01	$2,775.00
IDP-3	115 VAC 1Ø	P103089	IDP3B01	$2,775.00
IDP-3	220 VAC 1Ø	P105309	IDP3A01	$2,775.00
IDP-3 ✱	24 VDC 1Ø	P105314	IDP3D11	$2,825.00
IDP-3 ✱	100 VAC 1Ø	P105312	IDP3C11	$2,825.00
IDP-3 ✱	115 VAC 1Ø	P101940	IDP3B11	$2,825.00
IDP-3 ✱	220 VAC 1Ø	P105313	IDP3A11	$2,825.00

Model	Volts/Phase	Ideal P/N	Agilent P/N	Price*
IDP-3 ✱✱	24 VDC 1Ø	P105315	IDP3D21	$3,050.00
IDP-3 ✱✱	100 VAC 1Ø	P105316	IDP3C21	$3,050.00
IDP-3 ✱✱	115 VAC 1Ø	P103088	IDP3B21	$3,389.00
IDP-3 ✱✱	220 VAC 1Ø	P105317	IDP3A21	$3,389.00
IDP-3 ✱✱✱	24 VDC 1Ø	P105320	IDP3D31	$3,125.00
IDP-3 ✱✱✱	100 VAC 1Ø	P105318	IDP3C31	$3,125.00
IDP-3 ✱✱✱	115 VAC 1Ø	P103087	IDP3B31	$3,125.00
IDP-3 ✱✱✱	220 VAC 1Ø	P105319	IDP3A31	$3,125.00

✱ With Hour Meter ✱✱ With Inlet Isolation Valve ✱✱✱ With Hour Meter and Isolation Valve

IDP-3 Scroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
IDP3	21	14.09x5.50x7.13	KF16	1/4" NPT	55	2.1(3.6)	60	2.5 x 10-1

* Catalog Pricing Subject to Change

AGILENT Varian SH-110

The Agilent Varian SH-110 is a dry, hermetic scroll vacuum pump that provides industry leading features, such as, 4.0 CFM pumping speed and an ultimate pressure of $5.0x10^{-2}$ Torr. The Agilent Varian SH-110 dry scroll vacuum pump is designed for easy integration into OEM systems. Single stage in a compact package ideally suited for many applications including analytical instruments and research & development. The single sided scroll design makes the SH-110 easy for users to maintain and install the minor tip-seal replacement kit, no need for complex tooling. The Agilent Varian SH-110 models include an integrated anti-suck back valve that closes quickly when the pump is shut off preserving a clean dry vacuum in the foreline and vacuum systems.

.

- **Built-In Pump Isolation Valve**
- **Easy Tip Seal Replacement (Single Sided)**
- **Two-ply tip seals for better ultimate pressure**
- **Hour Meter**
- **Universal Power Supply 100/230V**
- **Automatic Air Ballast**
- **Low Temp Operation**
- **1/4 HP Motor for Low Power Consumption**

Manufacture Warranty
Most NEW Pumps IN STOCK

SH-110 Scroll Pump
(4.0 CFM)

Shown with (Optional) KF16 Exhaust Silencer with centering ring and hinge clamp P/N P104623

Model	Ideal P/N	Agilent P/N	Volts/Phase	Price*
SH-110	P101941	SH01101UNIV	Universal 100-230 V 1Ø	$4,658.00

SH-110 Sroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	CFM (M^3hr.) @60hz	Displacement L/min.	Ultimate Pressure (Torr)
SH-110	43	15.1x9.43x10.12	KF25	KF16	4.0 (6.6)	110	$5.0 x10^{-2}$

* Catalog Pricing Subject to Change

AGILENT Varian SH-112

Manufacture Warranty
Most NEW Pumps
IN STOCK

The Agilent Varian SH-112 is a dry scroll vacuum pump and has improved solid tip-seal technology, which can last up to 24 months between tip-seal replacements. The SH-112 is an improved version of the very popular SH-110 which uses a foamed backed tip-seal material. The SH-112 is a hermetic scroll vacuum pump that provides industry-leading features with a 4.0 CFM pumping speed and an ultimate pressure of $2.0x10^{-1}$ Torr. This single-stage pump produces a pumping speed of 110 l/m and achieves an ultimate pressure of 200 mTorr (0.26 mbar) in a compact package that is also ideally suited to end-user applications, including analytical instruments and R&D.

The Agilent Varian SH-112 dry scroll vacuum pump is designed for easy integration into OEM systems. The single sided scroll design makes the SH-112 easy for users to maintain and install the minor tip-seal replacement kit, no need for complex tooling. The Agilent Varian SH-112 models include an integrated anti-suck back valve that closes quickly when the pump is shut off preserving a clean dry vacuum in the foreline and vacuum system.

New MODEL

Now with Solid Tip Seals Lasting up to 24 Months

SH-112 Scroll Pump
(4.0 CFM)

Shown with (Optional)
KF16 Exhaust Silencer
P/N P103342

- **Built-In Pump Isolation Valve**
- **Easy Tip Seal Replacement (Single Sided)**
- **Hour Meter**
- **Solid tip seals for extended service interval (up to 24 months)**
- **Universal Power Supply 100/230V**
- **Automatic Air Ballast**
- **Low Temp Operation**
- **1/4 HP Motor for Low Power Consumption**

Model	Ideal P/N	Agilent P/N	Volts/Phase	Price*
SH-112	P106114	SH01121UHNIV	Universal 100-230 V 1Ø	$5,147.00

SH-110 Sroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	CFM (M^3hr.) @60hz	Displacement L/min.	Ultimate Pressure (Torr)
SH-112	43	15.1x9.43x10.12	KF25	KF16	4.0 (6.6)	110	$2.0 x10^{-1}$

* Catalog Pricing Subject to Change

AGILENT Varian IDP-15

IDP-15
Dry Scroll Pump

Manufacture Warranty
Most NEW Pumps
IN STOCK

IDP-15 Scroll Pump
(9.4 CFM)

The new Agilent Varian IDP-15 dry scroll vacuum pump is designed for extremely quiet < 50 dBA and low vibration operation, delivering a peak pumping speed of 9.4 cfm (15.4 m^3/hr) at 60 Hz, and produces an ultimate pressure of 10 mTorr. These new Agilent IDP-15 dry scroll pumps are hermetically-sealed being appropriate for rare gas and helium ^3He recirculation applications. The hermetic design with the vacuum space completely isolated from the motor and bearings provides a clean gas path through the pump, which eliminates any risk of oil or grease contamination. These key design elements of the IDP-15 allow the motor and bearings to run at atmospheric pressure which isolates them from being exposed to any vacuum process gases or water vapor from the application. The Agilent IDP-15 supports a global single-phase motor for operating voltages ranges between 100-120V or 200-230 VAC at 50/60Hz and incorporates an easy accessible simple switch to change between high and low voltage use. An optional integral isolation valve pump model (protects from backward migration through inlet) is also available.

- **Isolated Bearings/Motor**
- **Hermetic Design**
- **Easy Tip Seal Replacement (Single Sided) 15 minutes**
- **Hour Meter**
- **Universal Power Supply 100/230V**
- **Very Low Noise**
- **Optional Integral Isolation Valve**

Model	Ideal P/N	Agilent P/N	Volts/Phase	Price*
IDP-15	P105742	X3815-64000	Universal 100-230 V 1Ø	$6,750.00
IDP-15 w/isolation valve	P105741	X3815-64010	Universal 100-230 V 1Ø	$7,550.00

IDP-15 Sroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	CFM (M^3hr.) @60hz	Displacement L/min.	Ultimate Pressure (Torr)
IDP-15	75	19.1 x 13.1 x 14.3	KF25	KF16	9.4(15.4)	256	10 x10-3

* Catalog Pricing Subject to Change

Edwards nXDSi·iC·iR

EDWARDS Scroll Pump

These NEW nXDSi, iC, iR dry scroll pumps range from Edwards has exceptional pumping capability, ultimate vacuum performance and state-of-the-art design features. The Edwards nXDS Series is the best performing pump in its class. Extremely quite compared to other pumps. Its intelligent control functions and up to five year service interval offer low cost of ownership, making it the small dry pump of choice for today's most advanced technologies. The Edwards nXDS Series pumps are truly dry vacuum pumps, as all the bearings with their hydrocarbon lubricant, are isolated from the vacuum space. This next generation pump is a completely oil free dry scroll pump. nXDS improves on legacy XDS pumps by offering increased pumping speeds, combined with lower ultimate pressures, lower power consumption and lower noise. Gas ballast allows for pumping of condensable vapors including, water, solvents, dilute acids and bases. nXDS pumps also feature the latest in tip seal technology giving significantly longer life between tip seal changes. Integrated inverter drive with auto sensing voltage input delivers optimized pumping performance globally. The nXDS pumps are designed to be completely field serviceable.

With (Optional) KF25 Inlet/Exhaust Filter

New MODEL

nXDS6i (3.6 CFM)

nXDS10i (6.7 CFM)

With (Optional) KF25 Exhaust Silencer

Model 50/60hz 100-127, 200-240 V	Ideal P/N	Edwards P/N	Price*
nXDS6i	P105126	A735-01-983	$5,646.00
nXDS10i	P105130	A736-01-983	$7,058.00
nXDS15i	P105131	A737-01-983	$8,471.00
nXDS20i	P105132	A738-01-983	$9,532.00
nXDS6iC	P105127	A735-02-983	$6,140.00
nXDS10iC	P105124	A736-02-983	$7,553.00
nXDS15iC	P105128	A737-02-983	$8,966.00
nXDS20iC	P105129	A738-02-983	$10,465.00
nXDS6iR	P105134	A735-03-983	$5,646.00
nXDS10iR	P105133	A736-03-983	$7,058.00
nXDS15iR	P105135	A737-03-983	$8,471.00
nXDS20iR	P105125	A738-03-983	$9,532.00

Replaces XDS Series Pumps

3 Models

Standard nXDSi
For pumping standard non-corrosive gases.

Light Chemical nXDSiC
For pumping applications involving corrosive substances. With Chemraz internal valves and stainless steel fittings for extra protection.

Recirculation nXDSiR
For special applications such as gas re-circulation, rare gas pumping and recovery or other applications where the dilution of the pumped gas is undesirable, or where sealing is integral to minimizing potential gas loss.

nXDSi Series Scroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
nXDS6i	57	17.00x10.43x11.22	KF25	KF25	52	3.6 (6.2)	102	0.015
nXDS10i	57	17.00x10.43x11.22	KF25	KF25	52	6.7(11.4)	190	0.005
nXDS15i	57	17.00x10.43x11.22	KF25	KF25	52	8.9 (15.1)	252	0.005
nXDS20i	57	17.00x10.43x11.22	KF25	KF25	52	13(22.0)	368	0.022

* Catalog Pricing Subject to Change

Edwards XDS 35i

EDWARDS Scroll Pump

These Edwards XDS 35i Oil-Free Dry Scroll Vacuum Pumps have a patented bearing shield designed to isolate the vacuum environment from all forms of lubricant. This feature ensures that the bearing remains totally dry, as well as protecting it from any process gases. The adjustable gas ballast allows vapor to be handled and opens up the range of applications to many that were previously unsuited to scroll pumps. The Edwards XDS 35i Oil-Free Dry Scroll Vacuum Pump is designed for pumping condensable vapors, and uses materials selected for a wide range of laboratory applications. Pumping displacement for this pump is 21 CFM. Parts and accessories for this pump are available in this catalog.

XDS35i Scroll Pump
(21 CFM)

Manufacture Warranty
Most NEW Pumps IN STOCK

- **Patented Bearing Shield**
- **Totally Clean Vacuum**
- **General Clean Pump Applications**
- **No Bearings or Grease**
- **No Shaft Seals**
- **Turbo Pump Backing**
- **Simple Single Sided Scroll Design**

Shown with (Optional) KF25 Exhaust Silencer P/N P103344

Model	Ideal P/N	Edwards P/N	Volts/Phase	Price*
XDS35i	P102163	A73001983	100-120/200-230V 1Ø	$12,171.00

XDS 35i Scroll Pump SPECIFICATIONS

Model	Weight (lbs.)	L x W x H in.	Inlet	Outlet	Noise -dB(A)	CFM (M^3hr.)@60hz	Displacement L/min.	Ultimate Pressure(Torr)
XD35i	106	18.74x11.42x15.63	KF40	KF25	57	21 (30)	600	7.5x10-3

* Catalog Pricing Subject to Change

Dry Scroll Accessories - Parts - Kits

Oerlikon Leybold

SC5D, SC15D, SC30D, SC60D

ANEST IWATA

ISP-90, B,C - ISP-250, B,C - ISP-500, B,C, ISP-1000

Accessories - Parts - Kits

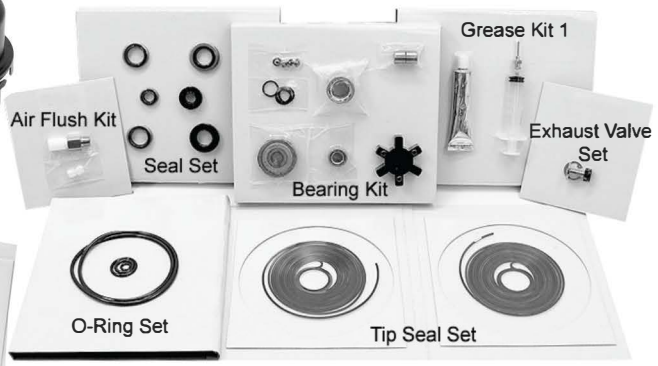
Small Maintenance Kit (minor kit)

Inlet Trap KF25 P101861

Exhaust Silencer KF25 P103344

Tip Seal Kit

Replacement Shaft



Large Maintenance Kit (major kit)

Accessories - Parts - Kits

Oerlikon Leybold	Pumps	IDEAL P/N	Price*
Tip Seal Replacement Kit	SC5D	P103319	$585.00
Minor Service Repair Kit	SC5D	P103321	$850.00
Major Service Repair Kit	SC5D	P103320	$1,375.00
Pin Crank Kit	SC5D		
Dry Scroll Pump Replacement Shaft	SC15D	P102831	$456.00
Tip Seal Replacement Kit	SC15D	P102820	$495.00
Minor Service Repair Kit	SC15D		
Major Service Repair Kit	SC15D	P102833	$1,495.00
Pin Crank Kit	SC15D		
Dry Scroll Pump Replacement Shaft	SC30D	P102832	$595.00
Tip Seal Replacement Kit	SC30D	P102823	$525.00
Minor Service Repair Kit	SC30D		
Major Service Repair Kit	SC30D	P102834	$1,495.00
Pin Crank Kit	SC30D		
Tip Seal Replacement Kit	SC60D		
Minor Service Repair Kit	SC60D		
Major Service Repair Kit	SC60D		
Pin Crank Kit	SC60D		
Exhaust Silencer (for outlet) KF16	SC5D, SC15D	P103342	$245.00
Exhaust Sillencer (for outlet) KF25	SC30D	P103344	$285.00
Inlet Trap Filter (for inlet) KF25	SC5D, SC15D	P101861	$130.25
Inlet Trap Filter (for inlet) KF40	SC30D, SC60D	P101866	$185.00

Anest Iwata	Pumps	IDEAL P/N	Price*
Tip Seal Replacement Kit	ISP90	P103319	$585.00
Minor Service Repair Kit	ISP90	P103321	$850.00
Major Service Repair Kit	ISP90	P103320	$1,375.00
Pin Crank Kit	ISP90		
Dry Scroll Pump Replacement Shaft	ISP250	P102825	$450.00
Tip Seal Replacement Kit	ISP250	P102819	$350.00
Minor Service Repair Kit	ISP250		
Major Service Repair Kit	ISP250	P102827	$1,495.00
Pin Crank Kit	ISP250		
Dry Scroll Pump Replacement Shaft	ISP500	P102826	$600.00
Tip Seal Replacement Kit	ISP500	P102824	$525.00
Minor Service Repair Kit	ISP500		
Major Service Repair Kit	ISP500	P102828	$1,495.00
Pin Crank Kit	ISP500		
Tip Seal Replacement Kit	ISP1000		
Minor Service Repair Kit	ISP1000		
Major Service Repair Kit	ISP1000		
Pin Crank Kit	ISP1000		
Exhaust Silencer (for outlet) KF16	ISP90, ISP250	P103342	$245.00
Exhaust Sillencer (for outlet) KF25	ISP500	P103344	$285.00
Inlet Trap Filter (for inlet) KF25	ISP90, ISP250	P101861	$130.25
Inlet Trap Filter (for inlet) KF40	ISP500, ISP1000	P101866	$185.00

* Catalog Pricing Subject to Change

Dry Scroll Accessories - Parts - Kits

AGILENT Varian

Accessories - Parts - Kits

ACCESSORIES	Pumps	IDEAL P/N	Agilent P/N	Price*
Vibration Isolation Kit (4 rubber feet)	SH110/SH112	P104526	SH110VIBISOKIT	$355.00
Tip Seal Kit SH110/SH100	SH110/SH100	P102815	SH0110TS	$247.18
Tip Seal Kit SH112	SH112	P106115	SH0112TS	$335.00
Exhaust Silencer Kit KF16 with hardware	SH110, SH112, IDP15	P104623	EXSLRSH110	$295.00
Exhaust Silencer KF16 no hardware	SH110, SH112, IDP15	P103342		$245.00
Replacement Element for KF16 Silencer (Paper)	SH110, SH112, IDP15	P103975		$89.00
Inlet Filter Trap KF25 with HEPA filter element	SH110, SH112, IDP15	P105744	SCRINTRPNW25	$512.39
Vibration Isolation Kit (4 rubber feet)	IDP2, IDP3	P104525		$330.00
Tip Seal Kit	IDP2, IDP3	P102813	IDP3TS	$284.90
Exhaust Silencer with muffler and install hardware	IDP3		EXSLRIDP3	$193.00
Tip Seal Kit	IDP15	P105743	X3815-67000	$490.00
Vibration Isolation Kit (4 rubber feet)	TS300/TS600	P103636	PTSVIBISOKIT	$264.00
Tip Seal Kit TS300	TS300	P102806	TSS0300TS	$225.00
Tip Seal Kit TS600	TS600	P102807	TSS0600TS	$335.00
Crank Pins (3)	TS300/TS600	P102805	X3815-67000	$285.00
Exhaust Silencer KF16 no hardware	TS300	P103342	PTSVIBISOKIT	$245.00
Replacement Element for KF16 Silencer (Paper)	TS300	P103975	PTSS0300TS	$89.00
Exhaust Extension Adapter for Silencers or Filter 1/4" MNPT to KF16	TS300	P103310	S4707002	$91.48
Exhaust Silencer KF25 no hardware	TS600	P103344		$285.00
Silencer spare paper element for P102938 & P103344 Silencers	TS600	P103974		$99.00
Exhaust Extension Adapter for Silencers or Filters 3/8" MNPT to KF25	TS600	P103311	S4807001	$49.68
Exhaust Silencer with muffler and install hardware	TS300/TS600	P106096	EXSLRTRISCROLL	$325.00
Inlet Filter Trap KF25with HEPA filter element	TS300	P105744	SCRINTRPNW25	$512.39
Inlet Filter Trap KF40 with HEPA filter element	TS600		SCRINTRPNW40	$615.80
Dry Scroll Pump Module TS300 (Inboard, Orbiting, Outboard Scrolls)	TS300	P104682	S4700304	$5,041.00
Dry Scroll Pump INBOARD Scroll only	TS300	P103619	S4858001	$730.00
Dry Scroll Pump ORBITING Scroll only	TS300	P103620	S4731001	$755.00
Dry Scroll Pump OUTBOARD Scroll only	TS300	P103621	S4732001	$940.00
Dry Scroll Pump Module TS600(Inboard, Orbiting, Outboard Scrolls)	TS600	P104683	S4800304	$5,972.00
Dry Scroll Pump INBOARD Scroll only	TS600	P103622	S4830001	$1,165.00
Dry Scroll Pump ORBITING Scroll only	TS600	P103623	S4831001	$885.00
Dry Scroll Pump OUTBOARD Scroll only	TS600	P103624	S4832001	$1,370.00
Major Repair Kit TS300	TS300	P102803	TSS0300MK	$725.00
Major Repair Kit TS600	TS600	P102804	TSS0600MK	$795.00
Carrying Handle	TS300	P105853	1S4721001	$37.29
Single Phase Motor 3/4 HP 110/220 VAC	TS300	P105851	S4743001	$799.00
Three Phase Motor 3/4 HP 220/480 VAC	TS300	P105859	S4739002	$706.79
HEPA exhaust Filter Kit with clamp, o ring & KF16 to 3/8 FNPT	TS300		PTS300EXFIL	$302.88
HEPA exhaust Filter Kit with clamp, o ring & KF25 to 3/8 FNPT	TS600		PTS600EXFIL	$302.88
Replacement HEPA filer media for the exhaust filter kit	TS300/TS600		110420110	
Inlet Pump Isolation Valve KF25 115VAC (KF40 available)	TS300	P103494	VPI1251205060	$711.00

Major Repair Kit TS300/TS600

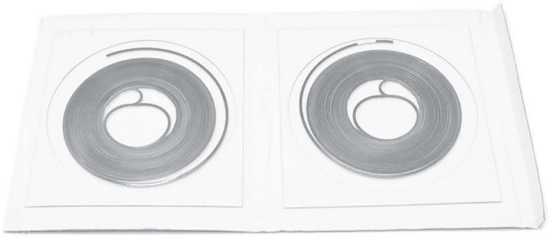
* Catalog Pricing Subject to Change

AGILENT Varian

Continued Accessories - Parts - Kits

ACCESSORIES	Pumps	IDEAL P/N	Agilent P/N	Price*
Motor coupling keyed for motor shaft with side set screw	TS300	P105854	622471058	$26.28
Motor coupling spider for motor	TS300	P105855	670086120	$28.70
Intake clamp, black anodized aluminum	TS300	P105856	S4708001	$35.10
Intake spool fitting, aluminum KF25	TS300	P105857	S4709001	$81.76
Intake screen for KF25 spool fitting	TS300	P105858	S4724001	$12.24
Orbiting scroll locknut w/ socket head cap screws	TS300/TS600	P105433	617919032	$65.92
Needle bearing for orbiting scroll on crank pin	TS600	P105933	330024	$37.44
Transition Frame	TS300	P105852	S4704001	$295.00
Transition Frame	TS600		S4804001	$295.00
Cowling Cover	TS300	P105850	S4705001	$69.95
Cowling Cover	TS600		S4805001	$75.00

ACCESSORIES	for legacy Pumps	IDEAL P/N	Agilent P/N	Price*
Replacement shaft	300DS	P102838	na	$456.00
Tip seal replacement kit	300DS	P102818	na	$350.00
Major repair kit	300DS	P102836	na	$1,495.00
Replacement shaft	600DS	P102837	na	$595.00
Tip seal replacement kit	600DS	P102822	na	$525.00
Major repair kit	600DS	P102835	na	$1,495.00



Legacy Scroll Pump 300DS / 600DS Tip Seal Kit

Legacy Scroll Pump 300DS / 600DS Replacement Shaft

Legacy Scroll Pump 300DS / 600DS Major Repair Kit

(4) Pump Vibration Isolation Mounts TS300/TS600

Motor Coupling Spider TS300

Transition Frame TS300/TS600

Motor Coupling TS300

Intake Clamp TS300

Replacement Motors 110VAC / 220VAC TS300/TS600

Intake Spool Fitting TS300

Intake Screen TS300

Cowling Cover TS300/TS600

Pump Module TS300/TS600

Inlet Isolation Valve TS300/TS600

Outlet Silencer with Muffler TS300/TS600

* Catalog Pricing Subject to Change

Dry Scroll Accessories - Parts - Kits

Edwards

nXDSi, iC, iR 6, 10, 15, 20
XDS 5, XDS 10, XDS 35i

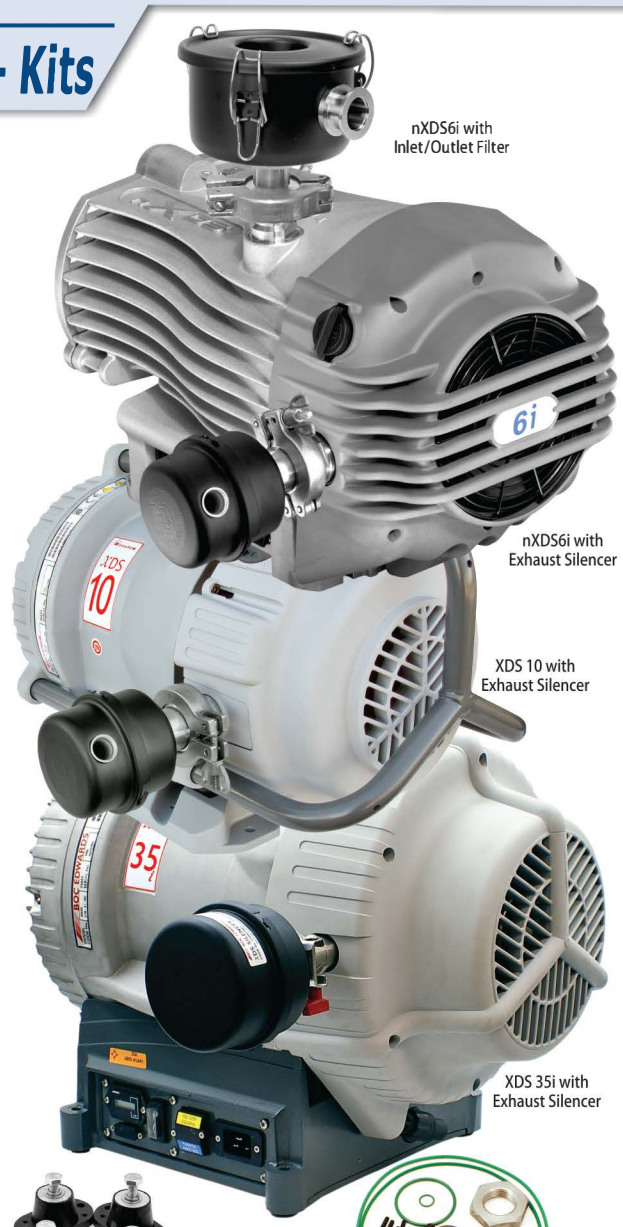
Accessories - Parts - Kits

ACCESSORIES PARTS - KITS	Pumps	IDEAL P/N	Edwards P/N	Price*
Exhaust Silencer Kit (OEM) KF25 with hardware	nXDSi, iC, iR	P102553	A505-97-000	$195.00
Silencer spare element for (OEM) KF25 Silencer	nXDSi, iC, iR	P105485	A505-97-800	$165.00
Exhaust Silencer Kit NON OEM KF25	nXDSi, iC, iR	P103343		$195.00
Silencer spare element for NON OEM KF25 Silencer	nXDSi, iC, iR	P103975		$89.00
Gas Ballast Adapter	nXDSi, iC, iR	P105482	A735-01-809	$295.99
Gas Ballast Adapter Kit converts nXDSi to nXDSiR Version	nXDSi	P105483	A735-01-806	$135.00
Vibration Isolation Kit (4 rubber feet)	nXDSi, iC, iR	P103793	A248-01-404	$147.00
Inlet/Exhaust Filter (OEM) KF25	nXDSi, iC, iR	P105484	NRD380000	$754.00
Replacement Elements for Inlet/Exhaust KF25 (1 micron)	nXDSi, iC, iR		A505-97-803	
Replacement Elements for Inlet/Exhaust KF25 (5 micron)	nXDSi, iC, iR		A505-97-802	
Exhaust Nozzle 3/8" to 15mm hose	nXDSi, iC, iR	P102717	A505-09-000	$49.99
Chemical Resistance Conversion Kit (nXDSi to nXDSiC)	nXDS6i, 10i, 15i		A735-01-807	
Chemical Resistance Conversion Kit (nXDSi to nXDSiC)	nXDS20i		A735-01-808	
AC Power Cord 10 amp 115/220 VAC (2meters)	nXDSi, iC, iR	P102990	A505-07-000	$39.95
Tip Seal Kit	nXDSi, iC, iR	P105546	A735-01-801	$491.00
Cooling Fan	nXDSi, iC, iR	P105486	A735-01-707	$309.40
Gas Ballast Control Knob	nXDSi, iC, iR		A735-01-059	
Bearing Replacement Kit	nXDSi, iC, iR	P105331	A735-01-802	$1,136.00
Exhaust Silencer Kit (OEM) KF25 with hardware	XDS5, 10	P102553	A505-97-000	$195.00
Silencer spare element for (OEM) KF25 Silencer	XDS5, 10	P105485	A505-97-800	$165.00
Exhaust Silencer Kit NON OEM KF25	XDS5, 10	P103343		$195.00
Silencer spare element for NON OEM KF25 Silencer	XDS5, 10	P103975		$89.00
Ballast Kit Complete Spare	XDS5, 10	P105481	A726-01-802	$241.65
Gas Ballast Adapter Kit (use at flow through gas ballast control)	XDS5, 10	P104597	A506-26-801	$245.00
Vibration Isolation Kit (4 rubber feet)	XDS5, 10	P103793	A248-01-404	$147.00
Exhaust Nozzle 3/8" to 15mm hose	XDS5, 10	P102717	A505-09-000	$49.99
Tip Seal Kit	XDS5, 10	P102620	A726-01-805	$250.00
Rear Bearing	XDS5, 10	P103284		$249.95
Front Bearing Replacement Kit	XDS5, 10	P102621	A726-01-823	$324.00
AC Power Cord 10 amp 115/220 VAC (2meters)	XDS5, 10	P102990	A505-07-000	$39.95
Exhaust Silencer Kit (OEM) KF25 with hardware	XDS 35i	P102938	A505-97-001	$253.00
Exhaust Silencer Kit NON OEM KF25	XDS 35i	P103344		$285.00
Silencer spare paper element for P102938 & P103344 Silencers	XDS 35i	P103974		$99.00
Gas Ballast Adapter Kit (use at flow through gas ballast control)	XDS 35i	P104597	A506-26-801	$245.00
Tip Seal and Exhaust Valve Service Kit	XDS 35i	P102809	A730-01-801	$395.00
Major Repair Kit	XDS 35i	P102810	A730-01-802	$750.00
AC Power Cord 10 amp 115/220 VAC (2m)	XDS 35i	P102992	A505-07-003	$59.00

Inlet/Outlet Filter
nXDS Series

Gas Ballast Adapter
nXDS Series

Cooling Fan
nXDS Series



nXDS6i with
Inlet/Outlet Filter

nXDS6i with
Exhaust Silencer

XDS 10 with
Exhaust Silencer

XDS 35i with
Exhaust Silencer

Vibration Isolation
Kit (4 feet)
All nXDS, XDS 5, 10

Exhaust Nozzle
All nXDS, XDS 5, 10

Major Repair Kit
XDS 35i

Tip Seal Kit XDS 5, 10

Gas Ballast Adapter
XDS 5, 10

AC Power Cord XDS35i

* Catalog Pricing
Subject to Change