

The New TPS-compact and TPS-mobile Turbo Pumping Systems

Now featuring Agilent TwisTorr 305 FS
turbomolecular pump and Agilent TwisTorr 305 FSQ
high flow turbomolecular pump

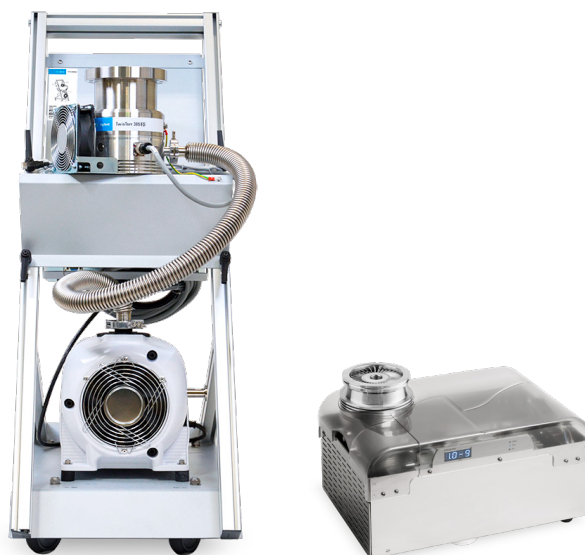


Table of Contents

New TPS-mobile and TPS-compact with TwisTorr 305

Introduction	3
TPS-compact	3
Gas ballast	4
Soft Start options	5
Pump down	5
Adaptive scroll pump driving firmware	5
TPS-mobile	6
Dimensions and physical characteristics	6
Auto soft start	7
Pumpdown	7
Configurations	8
Pressure gauge choices	8
Part numbers	9
TPS-compact	9
TPS-mobile	9

New TPS-mobile turbo pumping system and TPS-compact turbo pumping system with TwisTorr 305

Introduction

The TwisTorr 305 turbo pump product family has proven to be a solid performer for Agilent, in terms of product quality and manufacturing techniques.

The Agilent TwisTorr 305 is an easy product to control, and provides excellent reliability in several applications and configurations.

Extending the benefits of the 305 technology to TPS units is the natural next step: the TwisTorr 305 turbo pump is now available on a wide variety of pumping stations.

This technical overview will highlight the main points that make these products the ideal solution for customers who need a complete pumping system already configured and ready at the push of a button.

Agilent already offers a wide range of product options for turbo pumping systems, with turbo pumps ranging from 70 L/s to 700 L/s.

In terms of 300 L/s systems:

- The Agilent TPS-flexy turbo pumping system provides smart and flexible solutions, allowing the customer to choose each component of the pumping system, creating a customized configuration.
- The Agilent TPS-compact turbo pumping system is a small but feature-packed unit, offered with 12 different configurations. It consists of the Agilent 305 FS turbomolecular pump with several different inlet flanges and the Agilent IDP-3 dry scroll pump.

The Agilent TPS-mobile is available with almost 70 different configurations, featuring either the TwisTorr 305 FS turbomolecular pump or the Agilent TwisTorr 305 FSQ high flow turbomolecular pump. The choice of primary pumps includes multiple dry scroll pumps, and rotary vane pumps. Various gauge options are available.

The following sections provide details on the TPS-compact and TPS-mobile with TwisTorr 305.

TPS-compact

The TPS-compact is a smartly designed, small footprint unit featuring a metal cart with a clear plastic cover. A bright display shows the pressure (as long as a compatible optional active gauge is connected to the unit) and two fans on the side provide air cooling.

The turbo pump inlet is positioned outside the plastic cover to allow connection to the customer's system.



Figure 1. Agilent Turbo Pumping System TPS-Compact with TwisTorr 305.

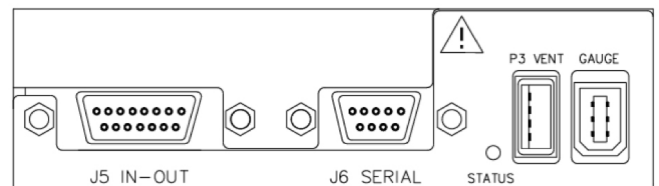


Figure 2. Multiple IN/OUT ports are present on the rear panel of the system to ensure connectivity.

As in the figure above, the J5 port allows for remote control of the unit; the J6 port allows for serial IN/OUT (RS 232 or RS 485); the P3 port controls the optional vent valve; and GAUGE controls an external optional pressure gauge.

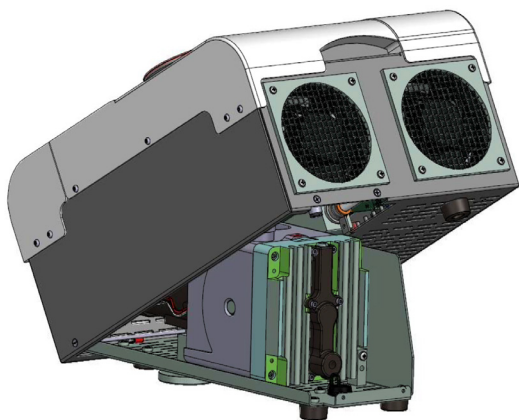
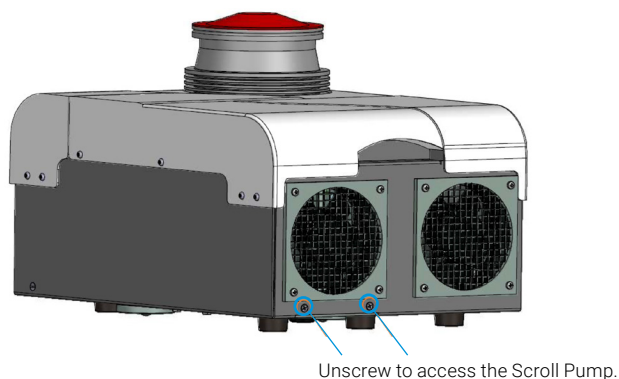
Gas ballast

The standard configuration has a seal screw installed in the 1/4"-20 thread in the top of the exhaust manifold. This configuration can be used for dry applications. When appreciable amounts of water are being pumped, remove the seal screw and replace it with the provided adapter and 1/8" NPT sintered filter plug.

Activating the gas ballast is easy. The user can perform this operation by opening the unit in the same way as it would be done to replace the tip seal.

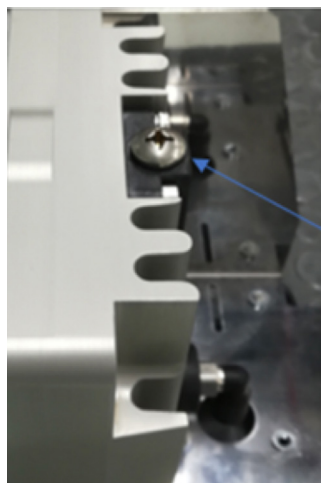
The breather valve to be used is included in the packaging of the TPS.

This operation must be performed with the TPS-compact power turned off entirely, with mains disconnected from the unit.



Notes:

- During operation of the gas ballast feature, the noise level may increase.
- According to the amount of moisture trapped in the system, the needed purging time can vary; a good practice is to leave the gas ballast active for 30 to 60 minutes following operation.



The gas ballast kit (IDP3GBKIT) contains:

- 1 breather vent
- 1 pipe adapter
- 1 O-ring

1. Unscrew to access the Scroll Pump.
2. Lift the TPS-compact to access the scroll pump site.
3. Unscrew to open the gas ballast and install the adapter with the breather vent.

Soft Start options

This function allows the user to set a soft-start to be performed the next time the unit is switched on.

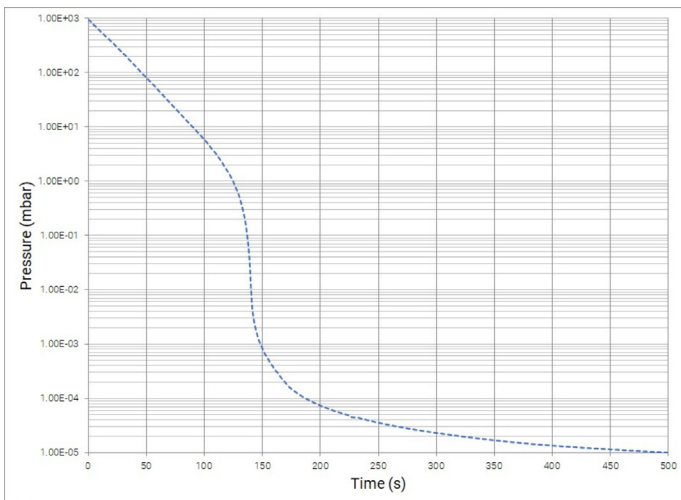
It is useful in case of a planned switch-off of the pumping system for a long time. The unit will take a few minutes more to start because an automatic redistribution of the grease in the bearing is performed.

At the next startup, the turbo pump will perform a soft start.

Pump down

In the following graph, the pump down curve is shown for an Agilent TPS-compact system equipped with the Agilent TwisTorr 305, for a 15 L chamber.

The curve was obtained using an Agilent IDP-7 primary pump.



Adaptive scroll pump driving firmware

The firmware of the TPS-compact continuously monitors the turbo pump's absorbed power, and automatically sets up the scroll backing pump operation according to the pumped gas load.

This feature reduces the overall scroll pump operation time up to 80%, resulting in an increased tip-seal lifetime for the scroll pump.

Nevertheless, there are instances when users may want this behavior disabled for their specific application.

Every TPS-compact comes with a mating connector (located in the accessory bag), which can be easily connected to the back of the unit. When connected, the adaptive algorithm is disabled.

TPS-mobile

TPS-mobile units are offered with different sizes of turbo pumps: 70 L/s, 300 L/s, 700 L/s.

The standard 300 L/s turbo that is offered is the TwisTorr 305, which implements the latest technology that Agilent can offer in Turbo pumps.

New TPS-mobile configurations include two models of TwisTorr 305: 305 FS and 305 FSQ. These models cover most user needs. While the 305 FS offers the highest compression ratio and is suggested for any application requiring very low base pressure, the 305 FSQ offers higher throughput performance, becoming ideal when gas load management is required.

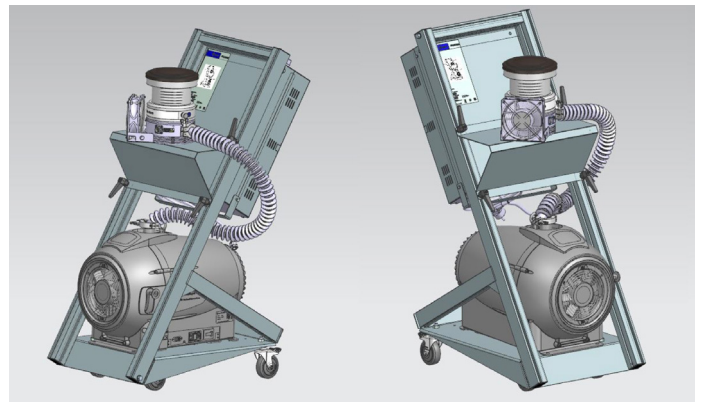
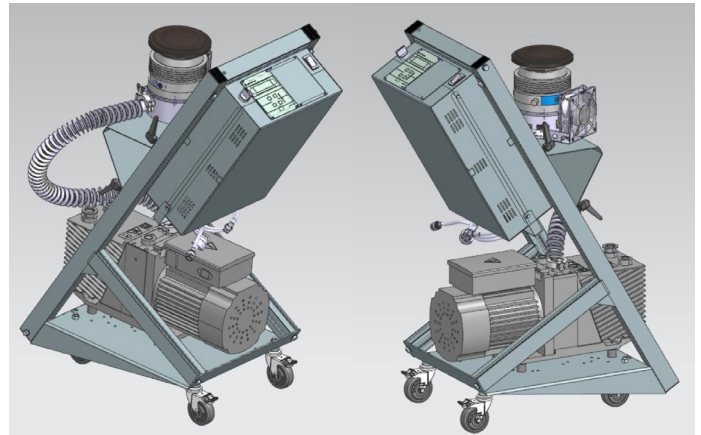
The user can then choose the right model among a wide array of TPS-mobile units.

Dimensions and physical characteristics

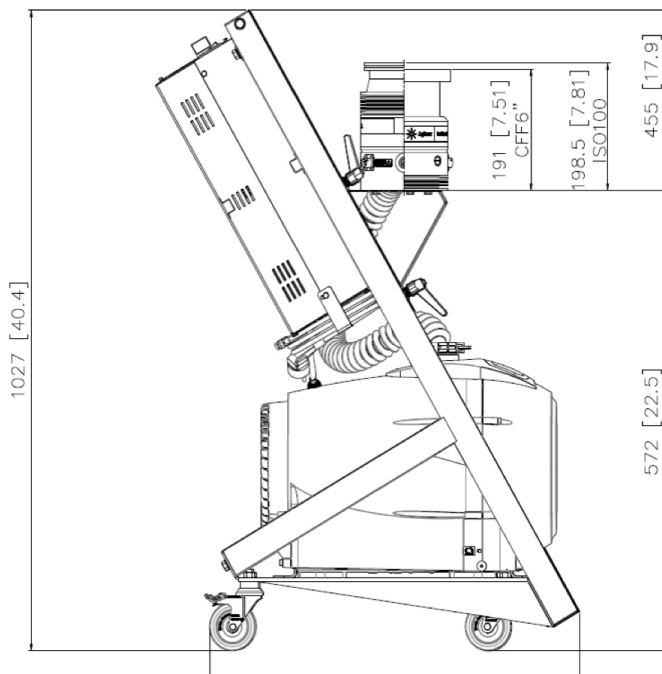
TPS-mobile units are small and equipped with wheels for easy one-handed maneuverability on any kind of surface.

The compact and essential cart provides a stable and secure installation for the pumping station, which can be transported anywhere.

Proper cooling is provided by the air-cooling kit, positioned beside the turbo pump.



TPS-mobile units equipped with TwisTorr 305 (and TwisTorr 74 FS) can be operated both with the turbo pump removed from the system and installed on the vacuum chamber, or leaving the turbo pump on the cart (in this case cart wheels must be locked).



Auto soft start

This function allows the user to set a soft start to be performed the next time the unit is switched on. This is useful in case of a planned switch-off of the pumping system for a long time.

When the soft start activates, the unit will take a few minutes longer to start because an automatic redistribution of the grease in the bearing is performed.

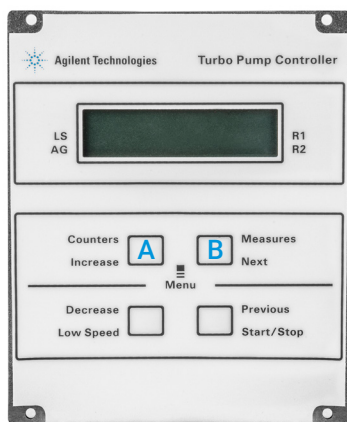


Figure 3. Agilent Turbo Pump Controller.

Enabling the Auto Soft start can be done either via serial communication, entering WIN 190 = 1, or via the front panel, following this simple procedure:

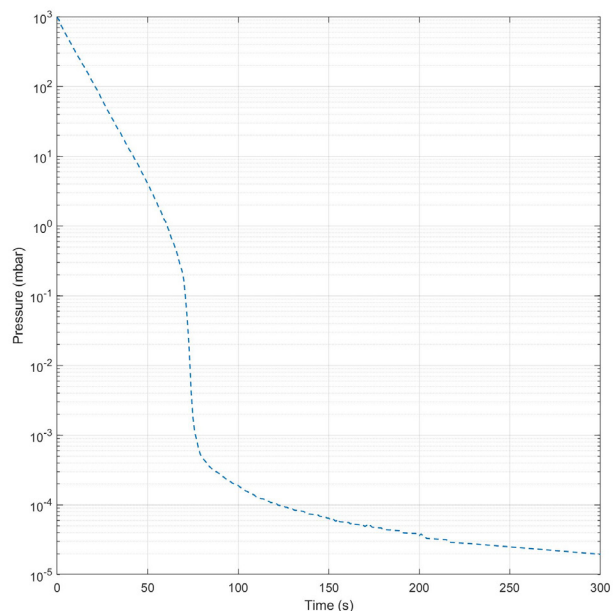
1. Press A and B at the same time
2. Keep pressing B until the label **AUTO SOFTSTART SETTING** appears
3. Press A to activate (**AUTO SOFTSTART YES**)
4. Exit the menu by pressing A and B at the same time

At the next startup (and only at the next startup), the turbo pump will perform a soft start.

Note: It is still possible to enable the soft start on all future startups of the TPS.

Pumpdown

In the following graph, the pumpdown curve is shown for an Agilent TPS-mobile system equipped with the Agilent TwisTorr 305, for a 15 L chamber. The curve was obtained using an Agilent IDP-7 primary pump.



Configurations

Agilent offers a vast selection of TPS-mobile configurations to satisfy most user needs. In essence, the selection of primary pumps includes dry scroll technology and rotary vane pumps, and among the primary pumps, the following have been selected for this document:

- Agilent DS 302 dual-stage oil-sealed rotary vane pump
- Agilent DS 602 dual-stage oil-sealed rotary vane pump
- Agilent IDP-3 dry scroll pump
- Agilent IDP-7 dry scroll pump
- Agilent IDP-15 dry scroll pump
- Agilent TS300 vacuum pump isolation valve
- Agilent TS600 vacuum pump isolation valve

All scroll pumps come with an isolation valve. For detailed model information, please see the "Part Numbers" chapter in this document.

The Agilent TwisTorr 305 is available in two different configurations: TwisTorr 305 FS (high compression version) and TwisTorr 305 FSQ (high throughput version).

Pressure gauge choices

In addition, three different configurations of gauges are available:

- No gauge
- Agilent FRG-700 Full Range Pirani inverted magnetron gauge
- Agilent XGS-600 vacuum gauge controller

The XGS-600 option includes an Agilent ConvecTorr gauge tube and an Agilent IMG-100 inverted magnetron gauge.

The measurement range of the ConvecTorr is from atmosphere to 1×10^{-4} Torr. The measurement range of the IMG-100 ranges from 1×10^{-3} to 5×10^{-9} Torr.

The measurement range of the FRG-700 is from atmosphere to 3.8×10^{-9} Torr.



Figure 4. XGS-600 vacuum gauge controller.



Figure 5. Agilent ConvecTorr gauge tube and Agilent IMG-100 inverted magnetron gauge.



Figure 6. FRG 700 Pirani Inverted Magnetron Gauge.

Part numbers

Part numbers for the TPS-compact and TPS-mobile with 305 turbo pumps are available for ordering online, in addition to the traditional sales channels.

TPS-Compact

Part Number	Turbo and Flange	Primary	Voltage	Power Cord
X3582-64000	305 FS ISO 100	IDP-3	115 V 60 Hz	US
X3582-64001	305 FS CFF 6	IDP-3	115 V 60 Hz	US
X3582-64002	305 FS ISO 160	IDP-3	115 V 60 Hz	US
X3582-64003	305 FS CFF 8	IDP-3	115 V 60 Hz	US
X3582-64004	305 FS ISO 100	IDP-3	230 V 50-60 Hz	EU
X3582-64005	305 FS CFF 6	IDP-3	230 V 50-60 Hz	EU
X3582-64006	305 FS ISO 160	IDP-3	230 V 50-60 Hz	EU
X3582-64007	305 FS CFF 8	IDP-3	230 V 50-60 Hz	EU
X3582-64008	305 FS ISO 100	IDP-3	100 V 60 Hz	US
X3582-64009	305 FS CFF 6	IDP-3	100 V 60 Hz	US
X3582-64010	305 FS ISO 160	IDP-3	100 V 60 Hz	US
X3582-64011	305 FS CFF 8	IDP-3	100 V 60 Hz	US

TPS-mobile

This product offering provides a wide choice of readily available part numbers. Agilent offers the possibility of creating new part numbers dedicated to special configurations that customers may need.

All TPS-mobile units are CE marked. Due to the many configurations available, the CSA mark can be obtained on a case-by-case basis.

Part Number	Turbo and Flange	Primary	Gauge	Voltage	Power Cord
X3581-64000	305 FS CFF 6	DS 302	No Gauge	120	US
X3581-64001	305 FS CFF 6	DS 302	No Gauge	220	EU
X3581-64002	305 FS CFF 6	DS 302	XGS-600	120	US
X3581-64003	305 FS CFF 6	DS 302	XGS-600	220	EU
X3581-64004	305 FS CFF 6	DS 302	FRG-700	120	US
X3581-64005	305 FS CFF 6	DS 302	FRG-700	220	EU
X3581-64006	305 FS CFF 6	DS 602	No Gauge	120	US

TPS-mobile

Part Number	Turbo and Flange	Primary	Gauge	Voltage	Power Cord
X3581-64007	305 FS CFF 6	DS 602	No Gauge	220	EU
X3581-64008	305 FS CFF 6	DS 602	XGS-600	120	US
X3581-64009	305 FS CFF 6	DS 602	XGS-600	220	EU
X3581-64010	305 FS CFF 6	DS 602	FRG-700	120	US
X3581-64011	305 FS CFF 6	DS 602	FRG-700	220	EU
X3581-64012	305 FS CFF 6	IDP-7	No Gauge	120	US
X3581-64013	305 FS CFF 6	IDP-7	No Gauge	220	EU
X3581-64014	305 FS CFF 6	IDP-7	XGS-600	120	US
X3581-64015	305 FS CFF 6	IDP-7	XGS-600	220	EU
X3581-64016	305 FS CFF 6	IDP-7	FRG-700	120	US
X3581-64017	305 FS CFF 6	IDP-7	FRG 700	220	EU
X3581-64018	305 FS CFF 6	IDP-15	No Gauge	120	US
X3581-64019	305 FS CFF 6	IDP-15	No Gauge	220	EU
X3581-64020	305 FS CFF 6	IDP-15	XGS-600	120	US
X3581-64021	305 FS CFF 6	IDP-15	XGS-600	220	EU
X3581-64022	305 FS CFF 6	IDP-15	FRG-700	120	US
X3581-64023	305 FS CFF 6	IDP-15	FRG-700	220	EU
X3581-64024	305 FS CFF 6	IDP-3	No Gauge	220	EU
X3581-64025	305 FS CFF 6	IDP-3	XGS-600	220	EU
X3581-64026	305 FS CFF 6	IDP-3	FRG-700	220	EU
X3581-64027	305 FS CFF 6	TS 300	No Gauge	120	US
X3581-64028	305 FS CFF 6	TS 300	No Gauge	220	EU
X3581-64029	305 FS CFF 6	TS 300	XGS-600	120	US
X3581-64030	305 FS CFF 6	TS 300	XGS-600	220	EU
X3581-64031	305 FS CFF 6	TS 300	FRG-700	120	US
X3581-64032	305 FS CFF 6	TS 300	FRG-700	220	EU
X3581-64500	305FSQ ISO 100	DS 302	No Gauge	120	US
X3581-64501	305FSQ ISO 100	DS 302	No Gauge	220	EU
X3581-64502	305FSQ ISO 100	DS 302	XGS-600	120	US
X3581-64503	305FSQ ISO 100	DS 302	XGS-600	220	EU
X3581-64504	305FSQ ISO 100	DS 302	FRG-700	120	US
X3581-64505	305FSQ ISO 100	DS 302	FRG-700	220	EU
X3581-64506	305FSQ ISO 100	DS 602	No Gauge	120	US

TPS-mobile

Part Number	Turbo and Flange	Primary	Gauge	Voltage	Power Cord
X3581-64507	305FSQ ISO 100	DS 602	No Gauge	220	EU
X3581-64508	305FSQ ISO 100	DS 602	XGS-600	120	US
X3581-64509	305FSQ ISO 100	DS 602	XGS-600	220	EU
X3581-64510	305FSQ ISO 100	DS 602	FRG-700	120	US
X3581-64511	305FSQ ISO 100	DS 602	FRG 700	220	EU
X3581-64512	305FSQ ISO 100	IDP-7	No Gauge	120	US
X3581-64513	305FSQ ISO 100	IDP-7	No Gauge	220	EU
X3581-64514	305FSQ ISO 100	IDP-7	XGS-600	120	US
X3581-64515	305FSQ ISO 100	IDP-7	XGS-600	220	EU
X3581-64516	305FSQ ISO 100	IDP-7	FRG-700	120	US
X3581-64517	305FSQ ISO 100	IDP-7	FRG-700	220	EU
X3581-64518	305FSQ ISO 100	IDP-15	No Gauge	120	US
X3581-64519	305FSQ ISO 100	IDP-15	No Gauge	220	EU
X3581-64520	305FSQ ISO 100	IDP-15	XGS-600	120	US
X3581-64521	305FSQ ISO 100	IDP-15	XGS-600	220	EU
X3581-64522	305FSQ ISO 100	IDP-15	FRG-700	120	US
X3581-64523	305FSQ ISO 100	IDP-15	FRG-700	220	EU
X3581-64524	305FSQ ISO 100	TS 300	No Gauge	120	US
X3581-64525	305FSQ ISO 100	TS 300	No Gauge	220	EU
X3581-64526	305FSQ ISO 100	TS 300	XGS-600	120	US
X3581-64527	305FSQ ISO 100	TS 300	XGS-600	220	EU
X3581-64528	305FSQ ISO 100	TS 300	FRG-700	120	US
X3581-64529	305FSQ ISO 100	TS 300	FRG-700	220	EU
X3581-64530	305FSQ ISO 100	TS 600	No Gauge	120	US
X3581-64531	305FSQ ISO 100	TS 600	No Gauge	220	EU
X3581-64532	305FSQ ISO 100	TS 600	XGS-600	120	US
X3581-64533	305FSQ ISO 100	TS 600	XGS-600	220	EU
X3581-64534	305FSQ ISO 100	TS 600	FRG-700	120	US
X3581-64535	305FSQ ISO 100	TS 600	FRG-700	220	EU

Contact information

Americas

Agilent Technologies
121 Hartwell Avenue,
Lexington, MA 02421 USA
Toll free: +1 800 882 7426
vpl-customer@agilent.com

Europe, Middle East, Africa, India

Agilent Technologies Italia SpA
Via F.lli Varian 54,
10040 Leini (Torino), Italy
Tel: +39 011 9979 111
Toll free: 00 800 234 234 00
vpt-customer@agilent.com

China

Beijing Office Agilent Technologies (China) Co. Ltd.
No.3, Wang Jing Bei Lu,
Chao Yang District,
Beijing, 100102, China
Toll free: 800 820 6778
contacts.vacuum@agilent.com

For more information, please contact
your Agilent representative or visit
www.agilent.com/chem/vacuum
where you can chat live with a vacuum expert.



www.agilent.com/chem/vacuum

DE10587649

This information is subject to change without notice.

© Agilent Technologies, Inc. 2022
Published in the USA, April 25, 2022
5994-4804EN