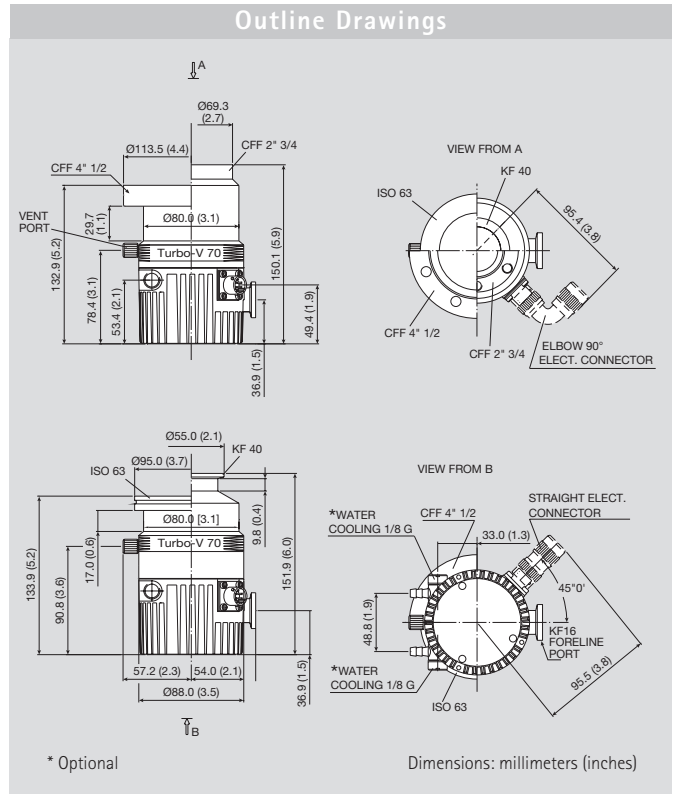


Turbo-V 70

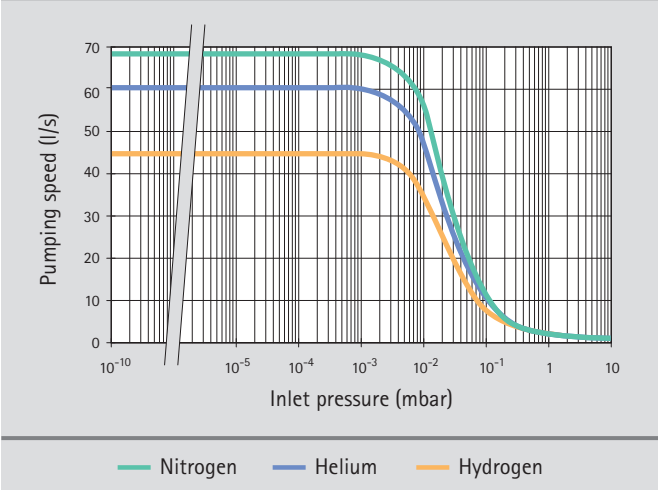


Technical Specifications

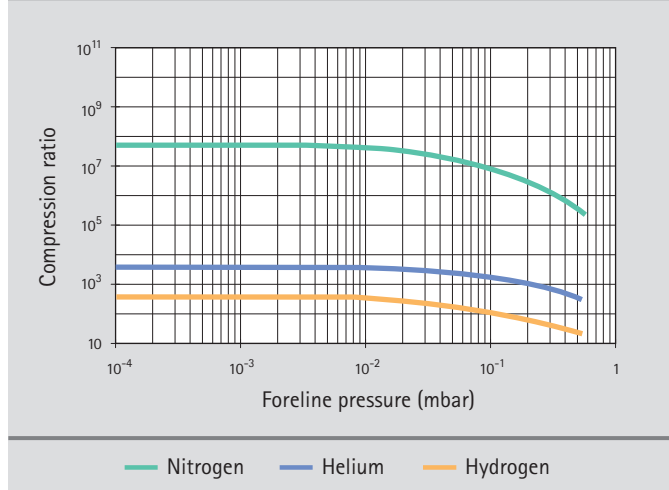
Pumping speed (l/s)			
With CF 4 1/2" or ISO 63:	N ₂ : 68 l/s	He: 60 l/s	H ₂ : 45 l/s
With CF 2 3/4" or KF 40:	N ₂ : 46 l/s	He: 52 l/s	H ₂ : 42 l/s
Compression ratio	N ₂ : 5 x 10 ⁷	He: 4 x 10 ³	H ₂ : 4 x 10 ²
Base pressure*	1 x 10 ⁻⁹ mbar (8 x 10 ⁻¹⁰ Torr)		
Inlet flange	CF 4 1/2" O.D.		ISO 63
	CF 2 3/4" O.D.		KF 40
Foreline flange	KF 16		
Rotational speed	75,000 rpm		
Start-up time	< 60 seconds		
Recommended forepump	Mechanical: Varian DS 102		
Operating position	Any		
Cooling requirements	Natural air convection Forced air or water optional		
Bakeout temperature	120 °C at inlet flange max. (CF flange) 80 °C at inlet flange max. (ISO flange)		
Vibration level (displacement)	<0.01 µm at inlet flange		
Weight kg (lbs)	ISO: 1.6 (3.5)		CF: 2.3 (5)

* According to standard DIN 28 428, the base pressure is measured in a leak-free test dome, 48 hours after completion of test dome bake-out, with a Turbopump fitted with a ConFlat flange and using the recommended backing pump.

Nitrogen Pumping Speed vs Inlet Pressure (DN 63 only)



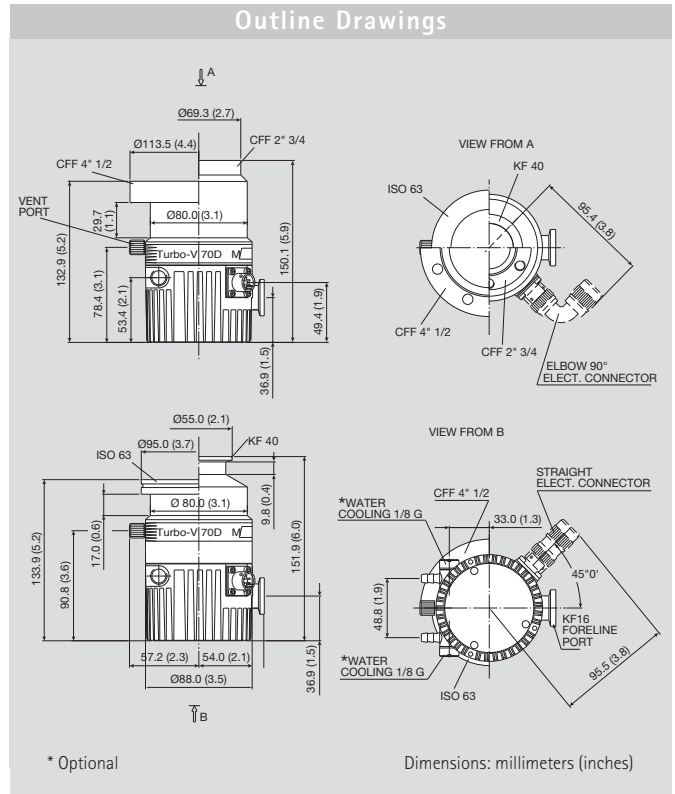
Compression Ratio vs Foreline Pressure



Ordering Information

Description	Weight kg (lbs)	Part Number
Pumps		
Turbo-V 70 pump with ISO 63 inlet flange	1.6 (3.5)	9699357
Turbo-V 70 pump with CF 4 1/2" inlet flange	2.3 (5.0)	9699358
Turbo-V 70 pump with KF 40 inlet flange	1.6 (3.5)	9699359
Turbo-V 70 pump with CF 2 3/4" inlet flange	2.3 (5.0)	9699360
Controllers		
Turbo-V 70 1/4 Rack controller, 220 V	3.6 (8.0)	9699405
Turbo-V 70 1/4 Rack controller, 120 V	3.6 (8.0)	9699505
Turbo-V 70 Navigator controller, 24 Vdc	1.0 (2.2)	9698970
Turbo-V 70 Navigator controller, 120/220 Vac	1.0 (2.2)	9698971
Accessories		
Inlet screen, KF 40	0.5 (1.0)	9699309
Inlet screen, CF 35	0.5 (1.0)	9699328
Inlet screen, DN 63	0.5 (1.0)	9699300
Heater band, 120 V	1.0 (2.0)	9699802
Heater band, 220 V	1.0 (2.0)	9699801
Water cooling kit - metallic model	0.5 (1.0)	9699337
Water cooling kit - plastic model	0.5 (1.0)	9699347
Air cooling kit	2.2 (5.0)	9699310
Vibration damper, DN 63 ISO	0.5 (1.0)	9699375
Vibration damper, 4 1/2" CF	0.5 (1.0)	9699376
Vent flange, NW 10 KF	0.5 (1.0)	9699108
Vent device with adjustable delay time	2.2 (5.0)	9699831
Vent valve with fixed delay time	2.0 (4.0)	9699843

Turbo-V 70D

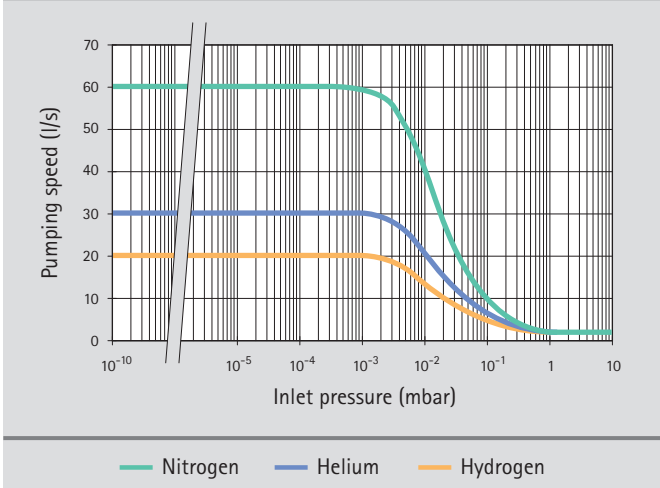


Technical Specifications

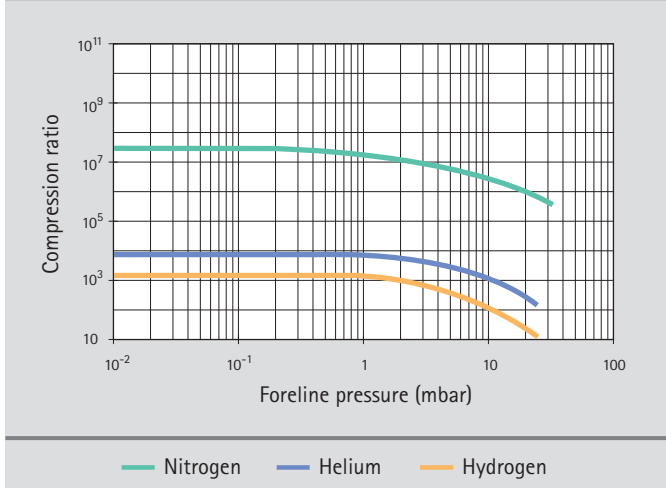
Pumping speed (l/s)			
With CF 4 1/2" or ISO 63:	N ₂ : 60 l/s	He: 30 l/s	H ₂ : 20 l/s
With CF 2 3/4" or KF 40:	N ₂ : 40 l/s	He: 27 l/s	H ₂ : 20 l/s
Compression ratio	N ₂ : 5 x 10 ⁷	He: 7 x 10 ³	H ₂ : 1.5 x 10 ³
Base pressure* (with recommended mechanical forepump)	1 x 10 ⁻⁹ mbar (8 x 10 ⁻¹⁰ Torr)		
(with recommended dry forepump)	1 x 10 ⁻⁶ mbar (8 x 10 ⁻⁷ Torr)		
Inlet flange	CF 4 1/2" O.D.	ISO 63	
	CF 2 3/4" O.D.	KF 40	
Foreline flange	KF 16		
Rotational speed	75,000 rpm		
Start-up time	< 60 seconds		
Recommended forepump	Mechanical: Varian DS 102 Dry scroll: Varian SH-100		
Operating position	Any		
Cooling requirements	Natural air convection Forced air or water optional		
Bakeout temperature	120 °C at inlet flange max. (CF flange) 80 °C at inlet flange max. (ISO flange)		
Vibration level (displacement)	<0.01 µm at inlet flange		
Weight kg (lbs)	ISO: 1.6 (3.5) CF: 2.3 (5)		

* According to standard DIN 28 428, the base pressure is measured in a leak-free test dome, 48 hours after completion of test dome bake-out, with a Turbopump fitted with a ConFlat flange and using the recommended backing pump.

Nitrogen Pumping Speed vs Inlet Pressure (DN 63 only)



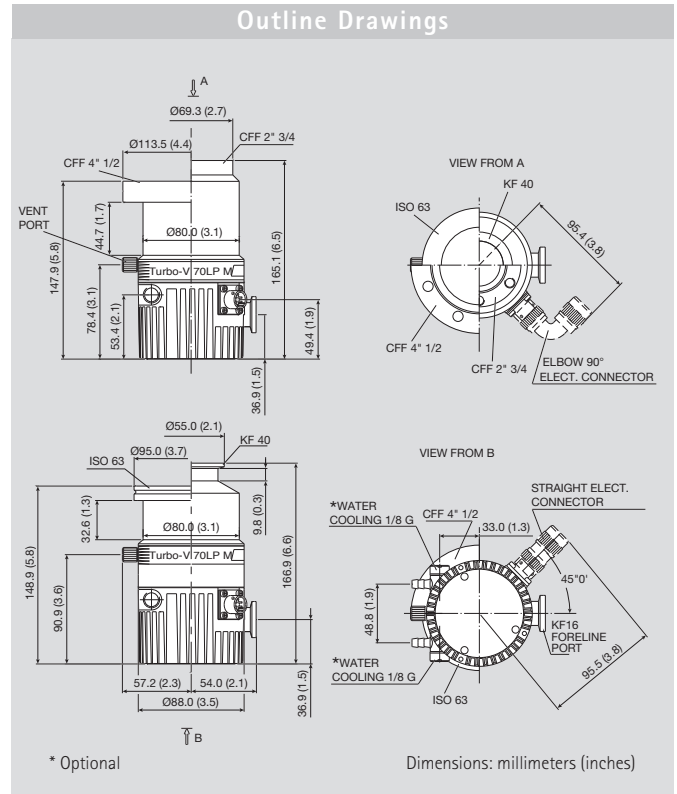
Compression Ratio vs Foreline Pressure



Ordering Information

Description	Weight kg (lbs)	Part Number
Pumps		
Turbo-V 70D pump with ISO 63 inlet flange	1.6 (3.5)	9699361
Turbo-V 70D pump with CF 4 1/4" inlet flange	2.3 (5.0)	9699362
Turbo-V 70D pump with KF 40 inlet flange	1.6 (3.5)	9699363
Turbo-V 70D pump with CF 2 3/4" inlet flange	2.3 (5.0)	9699364
Controllers		
Turbo-V 70 1/4 Rack controller, 220 V	3.6 (8.0)	9699405
Turbo-V 70 1/4 Rack controller, 120 V	3.6 (8.0)	9699505
Turbo-V 70 Navigator controller, 24 Vdc	1.0 (2.2)	9698970
Turbo-V 70 Navigator controller, 120/220 Vac	1.0 (2.2)	9698971
Accessories		
Inlet screen, KF 40	0.5 (1.0)	9699309
Inlet screen, CF 35	0.5 (1.0)	9699328
Inlet screen, DN 63	0.5 (1.0)	9699300
Heater band, 120 V	1.0 (2.0)	9699802
Heater band, 220 V	1.0 (2.0)	9699801
Water cooling kit – metallic model	0.5 (1.0)	9699337
Water cooling kit – plastic model	0.5 (1.0)	9699347
Air cooling kit	2.2 (5.0)	9699310
Vibration damper, DN 63 ISO	0.5 (1.0)	9699375
Vibration damper, 4 1/2" CF	0.5 (1.0)	9699376
Vent flange, NW 10 KF	0.5 (1.0)	9699108
Vent device with adjustable delay time	2.2 (5.0)	9699831
Vent valve with fixed delay time	2.0 (4.0)	9699843

Turbo-V 70LP

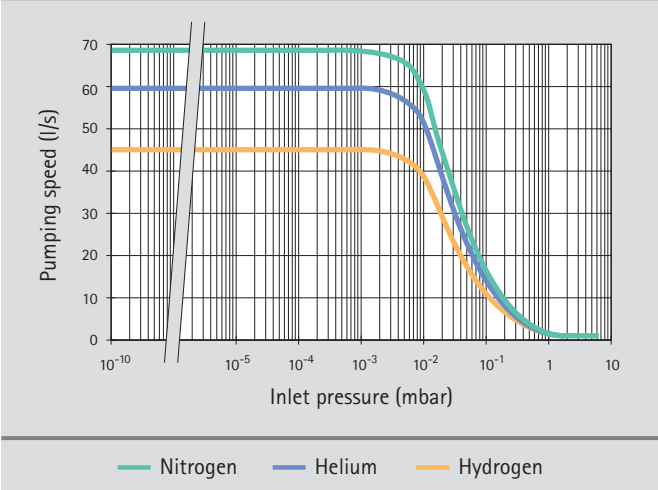


Technical Specifications

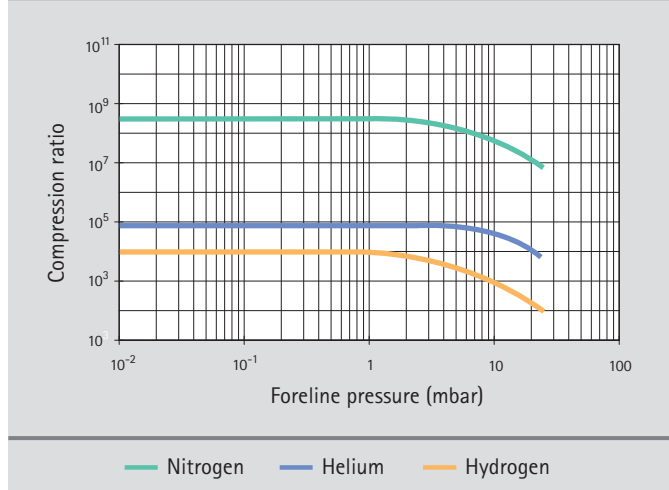
Pumping speed (l/s)			
With CF 4 1/2" or ISO 63:	N ₂ : 68 l/s	He: 60 l/s	H ₂ : 45 l/s
With CF 2 3/4" or KF 40:	N ₂ : 46 l/s	He: 52 l/s	H ₂ : 42 l/s
Compression ratio	N ₂ : 5 x 10 ⁸	He: 8 x 10 ⁴	H ₂ : 1 x 10 ⁴
Base pressure* (with recommended mechanical forepump)	2 x 10 ⁻¹⁰ mbar (1.5 x 10 ⁻¹⁰ Torr)		
(with recommended dry forepump)	2 x 10 ⁻⁹ mbar (1.5 x 10 ⁻⁹ Torr)		
Inlet flange	CF 4 1/2" O.D.	ISO 63	
	CF 2 3/4" O.D.	KF 40	
Foreline flange	KF 16		
Rotational speed	75,000 rpm		
Start-up time	< 60 seconds		
Recommended forepump	Mechanical: Varian DS 102		
	Dry scroll: Varian SH-100		
Operating position	Any		
Cooling requirements	Natural air convection		
	Forced air or water optional		
Bakeout temperature	120 °C at inlet flange max. (CF flange)		
	80 °C at inlet flange max. (ISO flange)		
Vibration level (displacement)	<0.01 µm at inlet flange		
Weight kg (lbs)	ISO: 1.7 (3.7)		
	CF: 2.5 (5.5)		

* According to standard DIN 28 428, the base pressure is measured in a leak-free test dome, 48 hours after completion of test dome bake-out, with a Turbopump fitted with a ConFlat flange and using the recommended backing pump.

Nitrogen Pumping Speed vs Inlet Pressure (DN 63 only)



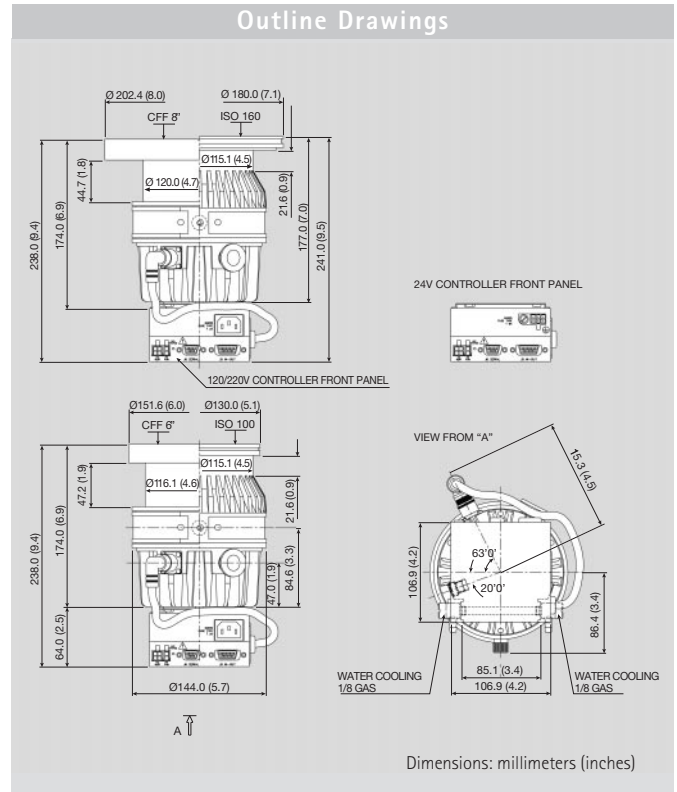
Compression Ratio vs Foreline Pressure



Ordering Information

Description	Weight kg (lbs)	Part Number
Pumps		
Turbo-V 70LP pump with ISO 63 inlet flange	1.7 (3.7)	9699365
Turbo-V 70LP pump with CF 4 1/2" inlet flange	2.5 (5.5)	9699366
Turbo-V 70LP pump with KF 40 inlet flange	1.7 (3.7)	9699367
Turbo-V 70LP pump with CF 2 3/4" inlet flange	2.5 (5.5)	9699368
Controllers		
Turbo-V 70 1/4 Rack controller, 220 V	3.6 (8.0)	9699405
Turbo-V 70 1/4 Rack controller, 120 V	3.6 (8.0)	9699505
Turbo-V 70 Navigator controller, 24 Vdc	1.0 (2.2)	9698970
Turbo-V 70 Navigator controller, 120/220 Vac	1.0 (2.2)	9698971
Accessories		
Inlet screen, KF 40	0.5 (1.0)	9699309
Inlet screen, CF 35	0.5 (1.0)	9699328
Inlet screen, DN 63	0.5 (1.0)	9699300
Heater band, 120 V	1.0 (2.0)	9699802
Heater band, 220 V	1.0 (2.0)	9699801
Water cooling kit – metallic model	0.5 (1.0)	9699337
Water cooling kit – plastic model	0.5 (1.0)	9699347
Air cooling kit	2.2 (5.0)	9699310
Vibration damper, DN 63 ISO	0.5 (1.0)	9699375
Vibration damper, 4 1/2" CFF	0.5 (1.0)	9699376
Vent flange, NW 10 KF	0.5 (1.0)	9699108
Vent device with adjustable delay time	2.2 (5.0)	9699831
Vent valve with fixed delay time	2.0 (4.0)	9699843

Turbo-V 301 Navigator

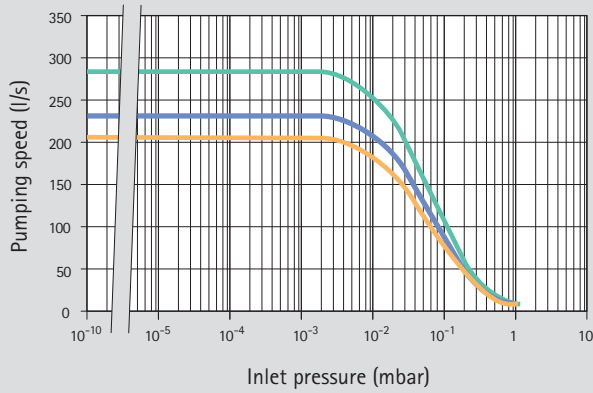


Technical Specifications

Pumping speed			
With CF 8" or ISO 160:	N ₂ : 280 l/s	He: 230 l/s	H ₂ : 210 l/s
With CF 6" or ISO 100:	N ₂ : 250 l/s	He: 220 l/s	H ₂ : 200 l/s
Compression ratio	N ₂ : 7 x 10 ⁸	He: 1 x 10 ⁵	H ₂ : 1 x 10 ⁴
Base pressure * (with recommended forepump)	mechanical: < 5 x 10 ⁻¹⁰ mbar (Torr) dry: < 5 x 10 ⁻⁹ mbar (Torr)		
Inlet flange	CF 8" O.D.	ISO 160	
	CF 6" O.D.	ISO 100	
Foreline flange	KF16 (KF25 optional)		
Rotational speed	56,000 rpm		
Start-up time	< 3 minutes		
Recommended forepump	Mechanical: Varian DS 102 Dry scroll: Varian SH-100		
Operating position	Any		
Cooling requirements	Natural air convection Forced air or water optional		
Bakeout temperature	120 °C at inlet flange max. (CF flange) 80 °C at inlet flange max. (ISO flange)		
Vibration level (displacement)	<0.01 μm at inlet flange		
Weight kg (lbs)			
Kit: (Pump + Navigator controller)	ISO 100 and 160: 4.5 (10) CF 6" and 8": 8 (17.6)		
Navigator controller	1 (2.2)		
1/4 Rack controller	4,5 (10)		

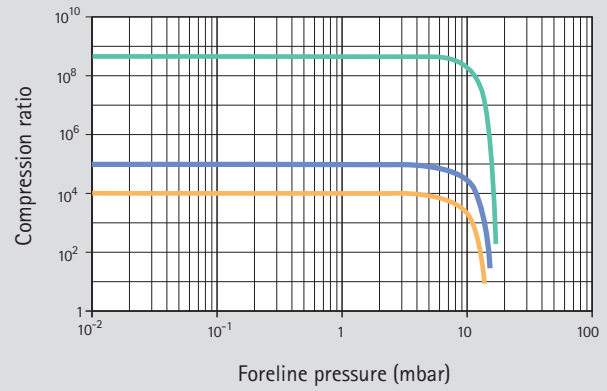
* According to standard DIN 28 428, the base pressure is measured in a leak-free test dome, 48 hours after completion of test dome bake-out, with a Turbopump fitted with a ConFlat flange and using the recommended backing pump.

Nitrogen Pumping Speed vs Inlet Pressure (DN 160 only)



— Nitrogen — Helium — Hydrogen

Compression Ratio vs Foreline Pressure



— Nitrogen — Helium — Hydrogen

Ordering Information

Description	Weight kg (lbs)	Part Number
Complete Systems (Pump + Navigator Controller)		
Turbo-V 301 Navigator complete system, ISO 100, 24 Vdc	4.5 (10.0)	9698824
Turbo-V 301 Navigator complete system, CF 6", 24 Vdc	8.0 (17.6)	9698825
Turbo-V 301 Navigator complete system, ISO 160, 24 Vdc	4.5 (10.0)	9698826
Turbo-V 301 Navigator complete system, CF 8", 24 Vdc	8.0 (17.6)	9698827
Turbo-V 301 Navigator complete system, ISO 100, 120/220 Vac	4.5 (10.0)	9698828
Turbo-V 301 Navigator complete system, CF 6", 120/220 Vac	8.0 (17.6)	9698829
Turbo-V 301 Navigator complete system, ISO 160, 120/220 Vac	4.5 (10.0)	9698830
Turbo-V 301 Navigator complete system, CF 8", 120/220 Vac	8.0 (17.6)	9698831
<i>Complete system includes: Pump, Inlet screen, Navigator controller, 2 Mains cables (NEMA plug and European plug), Serial cable and Navigator software, Bracket for side mounting</i>		
Pumps		
Turbo-V 301 Navigator pump, ISO 100	4.2 (9.2)	9698918
Turbo-V 301 Navigator pump, CF 6"	7.7 (16.8)	9698919
Turbo-V 301 Navigator pump, ISO 160	4.2 (9.2)	9698920
Turbo-V 301 Navigator pump, CF 8"	7.7 (16.8)	9698921
Controllers		
Turbo-V 301 Navigator controller, 24 Vdc	1.0 (2.2)	9698972
Turbo-V 301 Navigator controller, 120/220 Vac	1.0 (2.2)	9698973
Turbo-V 301 1/4 Rack controller, 220 V	4.5 (10.0)	9699437
Turbo-V 301 1/4 Rack controller, 110 V	4.5 (10.0)	9699537

Description	Weight kg (lbs)	Part Number
Accessories		
Mains cable NEMA plug, 3m long	0.5 (1.0)	9699958
Mains cable European plug, 3m long	0.5 (1.0)	9699957
Serial cable and Navigator Software	0.5 (1.0)	9699883
Inlet Screen DN100	0.5 (1.0)	9699302
Inlet Screen DN160	0.5 (1.0)	9699304
Heater band 120 Vac	1.0 (2.0)	9699804
Heater band 220 Vac	1.0 (2.0)	9699803
Water cooling kit	0.5 (1.0)	9699337
Plastic water cooling kit	0.5 (1.0)	9699347
Air cooling kit	3.0 (7.0)	9699299
Fan extension cable	0.5 (1.0)	9699949
<i>(to be used when the pump is supplied by rack controller 9699437 or 9699537)</i>		
Bracket for Navigator controller side mounting	2.0 (4.0)	9699970
Vibration damper ISO 100	3.0 (7.0)	9699344
Vibration damper CF 6"	3.0 (7.0)	9699334
Vibration damper ISO 160	4.0 (9.0)	9699345
Vibration damper CF 8"	4.0 (9.0)	9699335
Vent flange, NW 10 KF / M8	0.5 (1.0)	9699108
Vent device with adjustable delay time for standard rack controller	2.0 (4.0)	9699831
Vent valve for standard rack controller	2.0 (4.0)	9699843
Vent valve for Navigator controller	2.0 (4.0)	9699834
Purge valve 10 SCCM NW16KF - M12	0.2 (0.5)	9699239
Purge valve 10 SCCM 1/4 Swagelok - M12	0.2 (0.5)	9699240
Purge valve 20 SCCM NW16KF - M12	0.2 (0.5)	9699241
Purge valve 20 SCCM 1/4 Swagelok - M12	0.2 (0.5)	9699242
Purge valve 10 SCCM 1/4 Swagelok - 1/4 Swagelok	0.2 (0.5)	9699232
Purge valve 20 SCCM 1/4 Swagelok - 1/4 Swagelok	0.2 (0.5)	9699236
Foreline flange KF25 1/4 gas	0.2 (0.5)	9699130