Torr Scientific Ltd.

Specialists in UHV, Optical and X-ray Components

PRICE LIST 2017

ISSUE February 2017

Prices exclude shipping and VAT

Contents

Fused Silica Zero Length Viewports 4
Bonded Fused Silica Zero Length Viewports 5
Fused Silica Re-Entrant Viewports 6
Kodial Zero Length Viewports 7
Kodial Zero Length Viewports With ITO Coating 8
Kodial Zero Length Viewports With X-Ray Protection Lead Glass 9
Kodial Zero Length Viewports With ITO Coating and X-Ray Protection Lead Glass 10
Non-Magnetic Kodial Zero Length Viewports 11
Kodial Re-Entrant Viewports 11
200°C Sapphire Zero Length Viewports 12
High Temperature Sapphire Zero Length Viewports 13
Zinc Selenide Zero Length Viewports 14
Magnesium Fluoride Zero Length Viewports 15
Calcium Fluoride Zero Length Viewports 16
Barium Fluoride Zero Length Viewports 17
CVD Diamond UHV Viewports 18
Quartz Natural Z-cut Zero Length Viewports 19
Fused Silica UHV Laser Viewports With 'VAR' Anti-Reflective Coatings 20
Fused Silica UHV Viewports With Anti-Reflective Coatings 21
Fused Silica UHV Viewports With Broadband Anti-Reflective Coatings 22
Kodial Zero Length Viewports With Anti-Reflective Coatings 23
Kodial Zero Length Viewports With Broadband Anti-Reflective Coatings 24
Kodial Zero Length Viewports With 'VAR' Anti-Reflective Coatings 25

200°C Sapphire Zero Length Viewports With Anti-Reflective Coatings....26
200°C Sapphire Zero Length Viewports With Broadband Anti-Reflective Coatings....27
200°C Sapphire Zero Length Viewports With 'VAR' Anti-Reflective Coatings....28
AR Coated Zinc Selenide Zero Length Viewports....29
KF and ISO Centering Rings....31
CF Copper Gaskets....33
KF Blank Flanges....33
ISO Blank Claw Clamp Flanges....33
CF Blank Flanges....34
KF Swing Clamps....34
ISO Double Claw Clamps....34
CF Nuts, Bolts and Washers....35
Viewport Shutters....35
Attenuation Filter Wheels....35
Ceramic Breaks....36
BNC Feedthroughs....36
SHV-5 Feedthroughs....37
UHV CF RHEED Screens....38
Open Faced MCP Detectors....39
Ion Time-of-Flight Detector....39

Fused Silica Zero Length Viewports Specification

Seal Type	Braze
Maximum Temperature	200°C (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	20/10 scratch/dig
Parallelism	< 3 arc minutes
Flatness	< 8λ (λ/8 at 632.8nm over 75% of central area before brazing)
Laser Damage Threshold	2 J/cm^2 at 530nm (note, varies with wavelength, laser type and cleanliness of optic)

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16Q	NW16CF	34	15	1.5	12.7	304L	Kovar		£122.00	£118.19	£116.14
VPZ16Q-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£203.21	£183.91	£180.24
VPZ16Q-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£289.55	£279.83	£274.54
KVPZ16Q	KF16	25	15	1.5	15	316L	Kovar		£131.95	£127.60	£125.26
KVPZ25Q	KF25	40	20	2	18.5	316L	Kovar		£252.39	£236.37	£218.66
VPZ38Q	NW35CF	70	32	3	12.7	304L	Kovar		£147.32	£144.54	£141.83
VPZ38LAQ	NW35CF	70	38	3.5	12.7	304L	Kovar		£192.10	£185.40	£181.65
VPZ38Q-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£269.47	£243.87	£235.43
VPZ38QLA-LN	NW35CF	70	38	3.5	12.7	316LN	Kovar		£299.11	£270.69	£261.33
VPZ38Q-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£346.49	£334.85	£328.52
KVPZ40/32Q	KF40	55	32	3	12.7	316L	Kovar		£167.48	£164.31	£161.24
KVPZ40Q	KF40	55	38	3.5	18.5	316L	Kovar		£249.53	£233.69	£222.58
KVPZ50Q	KF50	75	38	3.5	15	316L	Kovar		£262.10	£245.47	£233.80
ISO63QVPZ	ISO63	95	38	3.5	12	316L	Kovar		£202.30	£195.60	£191.85
VPZ64Q	NW63CF	114	63	4.5	17.4	304L	Kovar		£412.00	£386.18	£367.82
VPZ64Q-LN	NW63CF	114	63	4.5	17.4	316LN	Kovar		£480.67	£446.71	£418.38
VPZ64Q-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£633.10	£583.47	£547.75
VPZ100Q	NW100CF	152	89	6	19.9	304L	Kovar		£589.68	£559.44	£533.51
VPZ100Q-LN	NW100CF	152	89	6	19.9	316LN	Kovar		£753.33	£692.43	£665.28
VPZ100Q-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£1,563.56	£1,508.62	£1,477.79
ISO100QVPZ	ISO100	130	63	4.5	12	316L	Kovar		£398.91	£372.57	£353.84
VPZ150Q	NW150CF	203	136	9.5	22.3	304L	Kovar		£1,338.00	£1,252.08	£1,187.62
VPZ150Q-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£1,498.93	£1,405.70	£1,354.65
VPZ150Q-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£2,113.64	£1,955.29	£1,855.93
ISO160QVPZ	ISO160	180	89	6	12	316L	Kovar		£642.28	£601.23	£574.78
VPZ200Q	NW200CF	254	136	9.5	24.5	304L	Kovar		£1,581.53	£1,493.89	£1,428.15

Bonded Fused Silica Zero Length Viewports

Seal Type	Bonded
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	<1x10^{-10} atm-cc/sec (He)
Pressure range	1 bar to 1x10^{-9} mbar
Surface quality	20/10 scratch/dig
Parallelism	< 3 arc minutes
Flatness (prior to bonding)	λ/8 at 632.8nm
Laser Damage Threshold	2 J/cm^2 at 530nm (note, varies with wavelength, laser type and cleanliness of optic)

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16Q	NW16CF	34	15	1.5	12.7	304L	Kovar		£117.88	£113.99	£111.90
BVPZ16Q-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£203.21	£183.91	£180.24
BVPZ16Q-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£289.55	£279.83	£274.54
BKVPZ16Q	KF16	25	15	1.5	15	316L	Kovar		£134.59	£130.15	£127.76
BKVPZ25Q	KF25	40	20	2	18.5	316L	Kovar		£257.44	£241.10	£223.03
BVPZ38Q	NW35CF	70	32	3	12.7	304L	Kovar		£150.26	£147.43	£144.67
BVPZ38LAQ	NW35CF	70	38	3.5	12.7	304L	Kovar		£192.10	£185.40	£181.65
BVPZ38Q-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£269.47	£243.87	£235.43
BVPZ38QLA-LN	NW35CF	70	38	3.5	12.7	316LN	Kovar		£299.11	£270.69	£261.33
BVPZ38Q-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£346.49	£334.85	£328.52
BKVPZ40/32Q	KF40	55	32	3	12.7	316L	Kovar		£170.82	£167.60	£164.46
BKVPZ40Q	KF40	55	38	3.5	18.5	316L	Kovar		£254.52	£238.37	£227.03
BKVPZ50Q	KF50	75	38	3.5	15	316L	Kovar		£267.34	£250.37	£238.47
BISO63QVPZ	ISO63	95	38	3.5	12	316L	Kovar		£202.30	£195.60	£191.85
BVPZ64Q	NW63CF	114	63	4.5	17.4	304L	Kovar		£378.51	£352.17	£333.44
BVPZ64Q-LN	NW63CF	114	63	4.5	17.4	316LN	Kovar		£480.67	£446.71	£418.38
BVPZ64Q-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£633.10	£583.47	£547.75
BVPZ100Q	NW100CF	152	89	6	19.9	304L	Kovar		£601.48	£570.63	£544.18
BVPZ100Q-LN	NW100CF	152	89	6	19.9	316LN	Kovar		£753.33	£692.43	£665.28
BVPZ100Q-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£1,563.56	£1,508.62	£1,477.79
BISO100QVPZ	ISO100	130	63	4.5	12	316L	Kovar		£398.91	£372.57	£353.84
BVPZ150Q	NW150CF	203	136	9.5	22.3	304L	Kovar		£1,305.02	£1,217.38	£1,151.63
BVPZ150Q-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£1,498.93	£1,405.70	£1,354.65
BVPZ150Q-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£2,113.64	£1,955.29	£1,855.93
BISO160QVPZ	ISO160	180	89	6	12	316L	Kovar		£642.28	£601.23	£574.78
BVPZ200Q	NW200CF	254	136	9.5	24.5	304L	Kovar		£1,581.53	£1,493.89	£1,428.15

Fused Silica Re-Entrant Viewports

Seal Type	Braze
Maximum Temperature	200°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	<1x10^{-10} atm-cc/sec (He)
Pressure range	1 bar to 1x10^{-11} mbar
Surface quality	20 /10 scratch/dig
Flatness	< 8λ

Part Number	Flange Type	OD mm	View Diameter mm	Tube OD mm	Tube ID mm	Length mm	Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPR38-111-Q	NW35CF	70	15	22.5	20.2	111	304L/316L	Kovar	£407.73	£394.69	£388.49
VPR64-138-Q	NW63CF	114	32	50.8	47.5	138	304L/316L	Kovar	£705.46	£685.07	£673.56
VPR64/38-80-Q	NW63CF	114	38	57.2	53.2	80	304L/316L	Kovar	£874.00	£844.48	£829.87
VPR100-201-Q	NW100CF	152	63	76.2	70.2	201	304L/316L	Kovar	£1,168.82	£1,110.42	£1,074.16
VPR150-330-Q	NW150CF	203	63	108	102	330	304L/316L	Kovar	£1,416.52	£1,348.48	£1,307.03
VPR200-330-Q	NW200CF	254	89	159	153	330	304L/316L	Kovar	£1,803.33	£1,726.93	£1,673.47

Kodial Zero Length Viewports

Seal Type	Induction
Maximum Temperature	350°C (KF versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16	NW16CF	34	15	1	12.7	304L	Kovar	£60.00	£57.00	£54.00
VPZ16-LN	NW16CF	34	15	1	12.7	316LN	Kovar	£107.05	£104.23	£99.73
KVPZ16	KF16	25	15	1	12.7	316L	Kovar	£68.00	£64.60	£61.20
KVPZ25	KF25	40	20	1.5	18.5	316L	Kovar	£75.00	£71.25	£67.50
VPZ38	NW35CF	70	32	3	12.7	304L	Kovar	£55.00	£53.63	£52.25
VPZ38LA	NW35CF	70	38	3	12.7	304L	Kovar	£63.65	£60.47	£57.29
VPZ38-LN	NW35CF	70	32	3	12.7	316LN	Kovar	£139.32	£139.13	£136.36
VPZ38LA-LN	NW35CF	70	38	3	12.7	316LN	Kovar	£146.90	£146.71	£143.78
KVPZ40LA	KF40	55	38	3	18.5	316L	Kovar	£79.00	£75.05	£71.10
KVPZ50	KF50	75	38	3	15	316L	Kovar	£89.00	£84.55	£80.10
VPZ50	NW50CF	86	38	3	16	304L	Kovar	£114.30	£111.63	£107.13
ISO63VPZ	ISO63	95	38	3	12	316L	Kovar	£73.65	£73.62	£72.40
VPZ64	NW63CF	114	63	3	17.4	304L	Kovar	£85.00	£82.88	£80.75
VPZ64LA	NW63CF	114	65	3.5	17.4	304L	Kovar	£155.92	£155.85	£152.88
VPZ64-LN	NW63CF	114	63	3	17.4	316LN	Kovar	£205.57	£205.29	£201.20
VPZ100	NW100CF	152	89	4	19.9	304L	Kovar	£212.00	£206.70	£201.40
VPZ100-LN	NW100CF	152	89	4	19.9	316LN	Kovar	£366.56	£366.07	£358.76
ISO100VPZ	ISO100	130	63	3	12	316L	Kovar	£116.65	£116.60	£114.76
VPZ150	NW150CF	203	136	6.5	22.3	304L	Kovar	£358.30	£349.34	£340.39
VPZ150-LN	NW150CF	203	136	8	22.3	316LN	Kovar	£546.78	£546.04	£535.14
ISO160VPZ	ISO160	180	89	4	12	316L	Kovar	£253.66	£253.56	£249.28
VPZ200	NW200CF	254	136	8	24.5	304L	Kovar	£460.00	£437.00	£414.00

Kodial Zero Length Viewports with ITO Coating

Seal Type	Induction
Weld Ring	Kovar
Coating	Indium Tin Oxide (ITO) on vacuum face of window
Maximum Temperature	350°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16ITO	NW16CF	34	15	1	12.7	304L	£164.34	£122.00	£115.37
VPZ16ITO-LN	NW16CF	34	15	1	12.7	316LN	£232.30	£168.70	£158.26
KVPZ16ITO	KF16	25	15	1	12.7	316L	£196.31	£153.06	£146.43
KVPZ25ITO	KF25	40	20	1.5	18.5	316L	£265.85	£203.91	£170.94
VPZ38ITO	NW35CF	70	32	2.5	12.7	304L	£175.75	£139.13	£130.56
VPZ38ITO-LN	NW35CF	70	32	2.5	12.7	316LN	£278.12	£220.47	£206.86
KVPZ40/32ITO	KF40	55	32	3	12.7	316L	£194.94	£157.76	£149.19
KVPZ50/32ITO	KF50	75	32	3	12.7	316L	£213.77	£175.05	£165.77
ISO63/32VPZITO	ISO63	95	32	3	12	316L	£204.36	£166.41	£157.48
VPZ64ITO	NW63CF	114	63	3	17.4	304L	£216.84	£171.46	£157.33
VPZ64ITO-LN	NW63CF	114	63	3	17.4	316LN	£351.81	£293.95	£265.89
VPZ100ITO	NW100CF	152	89	4	19.9	304L	£321.00	£309.42	£302.73
VPZ100ITO-LN	NW100CF	152	89	4	19.9	316LN	£458.60	£442.06	£432.53
ISO100VPZITO	ISO100	130	63	3	12	316L	£238.15	£192.17	£178.03
VPZ150ITO	NW150CF	203	136	6.5	22.3	304L	£487.21	£473.50	£434.76
VPZ150ITO-LN	NW150CF	203	136	6.5	22.3	316LN	£679.48	£647.47	£625.92
ISO160VPZITO	ISO160	180	89	4	12	316L	£352.06	£340.48	£333.79
VPZ200ITO	NW200CF	254	136	6.5	24.5	304L	£767.88	£754.16	£715.43

Kodial Zero Length Viewports With X-Ray Protection Lead Glass

Seal Type of the glass viewport only	Induction (note, the lead glass is an additional disc clipped in to the viewport)
Maximum Temperature	350°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Lead Glass Thickness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16LG	NW16CF	34	15	1	6	304L	Kovar	£98.46	£87.52	£81.65
VPZ16LG-LN	NW16CF	34	15	1	6	316LN	Kovar	£161.24	£151.76	£145.21
VPZ38LG	NW35CF	70	32	2.5	6	304L	Kovar	£114.90	£107.02	£105.18
VPZ38LG-LN	NW35CF	70	32	2.5	6	316LN	Kovar	£223.74	£210.58	£201.49
VPZ64LG	NW63CF	114	63	3	6	304L	Kovar	£185.81	£165.83	£160.89
VPZ64LG-LN	NW63CF	114	63	3	6	316LN	Kovar	£294.84	£278.37	£267.11
VPZ100LG	NW100CF	152	89	4	6	304L	Kovar	£353.48	£323.46	£301.76
VPZ100LG-LN	NW100CF	152	89	4	6	316LN	Kovar	£489.60	£459.30	£453.79
VPZ150LG	NW150CF	203	136	6.5	6	304L	Kovar	£611.68	£539.73	£503.53
VPZ150LG-LN	NW150CF	203	136	6.5	6	316LN	Kovar	£786.11	£715.67	£702.14

Kodial Zero Length Viewports with ITO Coating and X-Ray Protection Lead Glass

Seal Type of the glass viewport only	Induction (note, the lead glass is an additional disc clipped in to the viewport)
Weld Ring	Kovar
Coating	Indium Tin Oxide (ITO) on vacuum face of window
Maximum Temperature	350°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Lead Glass Thickness (mm)	Coating (on vacuum face of kodial)	Flange Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16ITOLG	NW16CF	34	15	1	6	ITO	304L	£210.29	£168.80	£159.65
VPZ16ITOLG-LN	NW16CF	34	15	1	6	ITO	316LN	£300.14	£220.17	£215.75
VPZ38ITOLG	NW35CF	70	32	2.5	6	ITO	304L	£231.32	£196.18	£185.41
VPZ38ITOLG-LN	NW35CF	70	32	2.5	6	ITO	316LN	£356.81	£287.05	£279.92
VPZ64ITOLG	NW63CF	114	63	3	6	ITO	304L	£314.81	£244.49	£232.05
VPZ64ITOLG-LN	NW63CF	114	63	3	6	ITO	316LN	£448.25	£391.56	£362.12
VPZ100ITOLG	NW100CF	152	89	4	6	ITO	304L	£450.65	£419.17	£398.71
VPZ100ITOLG-LN	NW100CF	152	89	4	6	ITO	316LN	£618.20	£593.29	£569.30
VPZ150ITOLG	NW150CF	203	136	6.5	6	ITO	304L	£713.01	£675.68	£627.54
VPZ150ITOLG-LN	NW150CF	203	136	6.5	6	ITO	316LN	£952.05	£865.93	£840.19

Non-Magnetic Kodial Zero Length Viewports

Seal Type	Bonded
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16-NM	NW16CF	34	15	1	12.7	316LN	Niobium	£329.77	£312.89	£301.63
BVPZ38-NM	NW35CF	70	32	2.5	12.7	316LN	Niobium	£376.15	£357.27	£344.75
BVPZ64-NM	NW63CF	114	63	3	17.4	316LN	Niobium	£493.86	£476.74	£421.62
BVPZ100-NM	NW100CF	152	89	4	19.9	316LN	Niobium	£1,479.44	£1,392.32	£1,333.31
BVPZ150-NM	NW150CF	203	136	6.5	22.3	316LN	Niobium	£1,709.46	£1,608.96	£1,539.51

Kodial Re-Entrant Viewports

Seal Type	Induction
Maximum Temperature	350°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	C	D	E	Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPR38-111	NW35CF	70	15	22.5	20.2	111	304L/316L	Kovar	£323.68	£312.89	£307.76
VPR64-138	NW63CF	114	32	50.8	47.5	138	304L/316L	Kovar	£571.20	£552.16	£543.11
VPR64/38-80	NW63CF	114	38	57.2	53.2	80	304L/316L	Kovar	£690.20	£667.19	£656.26
VPR100-201	NW100CF	152	63	76.2	70.2	201	304L/316L	Kovar	£766.36	£740.81	£728.67
VPR150-330	NW150CF	203	63	108	102	330	304L/316L	Kovar	£985.32	£952.48	£936.86
VPR200-330	NW200CF	254	89	159	153	330	304L/316L	Kovar	£1,223.32	£1,182.54	£1,163.16

200°C Sapphire Zero Length Viewports

Seal Type	Braze
Maximum Temperature	200°C (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	60 /40 scratch/dig
Flatness	< 8λ

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16S-200	NW16CF	34	15	1.5	12.7	304L	Kovar		£136.47	£133.89	£131.39
VPZ16S-LN-200	NW16CF	34	15	1.5	12.7	316LN	Kovar		£220.05	£215.39	£210.88
VPZ16S-NM-200	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£324.42	£310.71	£297.99
KVPZ16S-200	KF16	25	15	1.5	12.7	316L	Kovar		£166.13	£164.00	£161.49
KVPZ25S-200	KF25	40	20	1.5	18.5	316L	Kovar		£304.51	£271.37	£255.01
VPZ23S-200	NW35CF	70	23	1.5	12.7	304L	Kovar		£241.83	£238.86	£235.25
VPZ38S-200	NW35CF	70	32	1.5	12.7	304L	Kovar		£188.70	£185.06	£181.52
VPZ38LAS-200	NW35CF	70	38	1.5	12.7	304L	Kovar		£218.01	£213.81	£209.72
VPZ38S-LN-200	NW35CF	70	32	1.5	12.7	316LN	Kovar		£277.42	£265.85	£255.10
VPZ38LAS-LN-200	NW35CF	70	38	1.5	12.7	316LN	Kovar		£306.69	£293.90	£282.02
VPZ38S-NM-200	NW35CF	70	32	1.5	12.7	316LN	Niobium	Yes	£383.83	£376.43	£369.23
KVPZ40/32S-200	KF40	55	32	1.5	12.7	316L	Kovar		£208.63	£204.91	£201.00
KVPZ40S-200	KF40	55	38	1.5	18.5	316L	Kovar		£321.79	£295.59	£285.36
KVPZ50S-200	KF50	75	38	1.5	15	316L	Kovar		£335.05	£307.77	£297.12
VPZ64S-200	NW63CF	114	63	2	17.4	304L	Kovar		£412.00	£382.00	£370.29
VPZ64S-LN-200	NW63CF	114	63	2	17.4	316LN	Kovar		£457.58	£448.13	£432.21
VPZ64S-NM-200	NW63CF	114	63	2	17.4	316LN	Niobium	Yes	£620.17	£611.83	£598.52
ISO63SVPZ-200	ISO63	95	38	1.5	12	316L	Kovar		£228.52	£224.31	£220.23
VPZ100S-200	NW100CF	152	89	2.5	19.9	304L	Kovar		£880.93	£832.91	£793.74
VPZ100S-LN-200	NW100CF	152	89	2.5	19.9	316LN	Kovar		£974.07	£917.40	£874.78
VPZ100S-NM-200	NW100CF	152	89	2.5	19.9	316LN	Niobium	Yes	£1,988.82	£1,873.12	£1,810.37
ISO100SVPZ-200	ISO100	130	63	2	12	316L	Kovar		£432.00	£401.00	£388.29
VPZ150S-200	NW150CF	203	136	4	22.3	304L	Kovar		£2,303.49	£2,186.37	£2,071.54
VPZ150S-LN-200	NW150CF	203	136	4	22.3	316LN	Kovar		£2,462.61	£2,319.34	£2,182.93
VPZ150S-NM-200	NW150CF	203	136	4	22.3	316LN	Niobium	Yes	£3,189.03	£3,116.84	£2,968.87
ISO160SVPZ-200	ISO160	180	89	2.5	12	316L	Kovar		£913.37	£862.95	£821.82
VPZ200S-200	NW200CF	254	136	4	24.5	304L	Kovar		£2,548.02	£2,430.96	£2,312.11

High Temperature Sapphire Zero Length Viewports

Seal Type	Braze
Maximum Temperature	450°C 304L, 600°C 316LN (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	60 /40 scratch/dig
Flatness	< 8λ

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16S	NW16CF	34	15	1.5	12.7	304L	Kovar		£142.15	£139.47	£136.86
VPZ16S-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£229.22	£224.37	£219.67
VPZ16S-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£337.94	£323.65	£310.40
KVPZ16S	KF16	25	15	1.5	12.7	316L	Kovar		£173.05	£170.83	£168.22
KVPZ25S	KF25	40	20	1.5	18.5	316L	Kovar		£317.20	£282.67	£265.63
VPZ23S	NW35CF	70	23	1.5	12.7	304L	Kovar		£251.91	£248.81	£245.06
VPZ38S	NW35CF	70	32	1.5	12.7	304L	Kovar		£196.56	£192.77	£189.09
VPZ38LAS	NW35CF	70	38	1.5	12.7	304L	Kovar		£227.10	£222.72	£218.46
VPZ38S-LN	NW35CF	70	32	1.5	12.7	316LN	Kovar		£288.98	£276.92	£265.73
VPZ38LAS-LN	NW35CF	70	38	1.5	12.7	316LN	Kovar		£319.47	£306.14	£293.77
VPZ38S-NM	NW35CF	70	32	1.5	12.7	316LN	Niobium	Yes	£399.82	£392.11	£384.62
KVPZ40/32S	KF40	55	32	1.5	12.7	316L	Kovar		£217.32	£213.44	£209.37
KVPZ40S	KF40	55	38	1.5	18.5	316L	Kovar		£335.20	£307.91	£297.25
KVPZ50S	KF50	75	38	1.5	15	316L	Kovar		£349.01	£320.59	£309.50
VPZ64S	NW63CF	114	63	2	17.4	304L	Kovar		£429.17	£359.67	£347.22
VPZ64S-LN	NW63CF	114	63	2	17.4	316LN	Kovar		£476.65	£466.80	£450.22
VPZ64S-NM	NW63CF	114	63	2	17.4	316LN	Niobium	Yes	£646.01	£637.32	£623.46
ISO63SVPZ	ISO63	95	38	1.5	12	316L	Kovar		£402.05	£370.17	£357.73
VPZ100S	NW100CF	152	89	2.5	19.9	304L	Kovar		£917.64	£840.39	£798.77
VPZ100S-LN	NW100CF	152	89	2.5	19.9	316LN	Kovar		£1,014.65	£955.62	£911.23
VPZ100S-NM	NW100CF	152	89	2.5	19.9	316LN	Niobium	Yes	£2,071.69	£1,951.16	£1,885.80
ISO100SVPZ	ISO100	130	63	2	12	316L	Kovar		£450.00	£417.71	£404.47
VPZ150S	NW150CF	203	136	4	22.3	304L	Kovar		£2,399.47	£2,206.47	£2,084.46
VPZ150S-LN	NW150CF	203	136	4	22.3	316LN	Kovar		£2,565.22	£2,415.98	£2,273.88
VPZ150S-NM	NW150CF	203	136	4	22.3	316LN	Niobium	Yes	£3,321.90	£3,246.71	£3,092.57
ISO160SVPZ	ISO160	180	89	2.5	12	316L	Kovar		£950.08	£897.55	£854.71
VPZ200S	NW200CF	254	136	4	24.5	304L	Kovar		£2,654.19	£2,532.25	£2,408.45

Zinc Selenide Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar
Surface quality	60 /40 scratch/dig
Flatness (prior to bonding)	<2λ

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16ZnSe	NW16CF	34	15	1.5	12.7	304L	Kovar		£340.86	£324.16	£281.09
BVPZ16ZnSe-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£456.55	£410.32	£360.56
BVPZ16ZnSe-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£591.06	£539.06	£488.36
BKVPZ16ZnSe	KF16	25	15	1.5	15	316L	Kovar		£371.92	£355.68	£312.61
BKVPZ25ZnSe	KF25	40	20	2	18.5	316L	Kovar		£518.25	£472.66	£400.81
BVPZ38ZnSe	NW35CF	70	32	3	12.7	304L	Kovar		£431.35	£417.35	£405.99
BVPZ38LAZnSe	NW35CF	70	38	3.75	12.7	304L	Kovar		£886.15	£852.41	£817.40
BVPZ38ZnSe-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£633.32	£589.88	£534.76
BVPZ38LAZnSe-LN	NW35CF	70	38	3.75	12.7	316LN	Kovar		£1,047.58	£975.72	£924.71
BVPZ38ZnSe-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£723.90	£697.06	£683.50
BKVPZ40/32ZnSe	KF40	55	32	3	12.7	316L	Kovar		£452.22	£438.13	£426.38
BKVPZ40ZnSe	KF40	55	38	3.75	18.5	316L	Kovar		£989.25	£950.87	£919.18
BKVPZ50ZnSe	KF50	75	38	3.75	15	316L	Kovar		£1,056.51	£984.04	£932.60
BVPZ64ZnSe	NW63CF	114	63	5	17.4	304L	Kovar		£1,366.45	£1,318.47	£1,291.34
BVPZ64ZnSe-LN	NW63CF	114	63	5	17.4	316LN	Kovar		£1,727.96	£1,649.16	£1,598.65
BVPZ64ZnSe-NM	NW63CF	114	63	5	17.4	316LN	Niobium	Yes	£1,892.66	£1,822.48	£1,766.25
BISO63VPZZnSe	ISO63	95	38	3.75	12	316L	Kovar		£896.50	£862.76	£827.75
BVPZ100ZnSe	NW100CF	152	89	6.5	19.9	304L	Kovar		£4,341.25	£4,066.27	£3,873.46
BVPZ100ZnSe-LN	NW100CF	152	89	6.5	19.9	316LN	Kovar		£4,354.29	£4,078.48	£3,885.09
BVPZ100ZnSe-NM	NW100CF	152	89	6.5	19.9	316LN	Niobium	Yes	£5,565.79	£5,213.24	£4,966.05
BISO100VPZZnSe	ISO100	130	63	5	12	316L	Kovar		£1,387.15	£1,339.17	£1,312.05
BVPZ150ZnSe	NW150CF	203	136	9.5	22.3	304L	Kovar		£11,208.82	£10,803.17	£10,571.17
BVPZ150ZnSe-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£10,989.04	£10,591.35	£10,363.89
BVPZ150ZnSe-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£12,194.13	£11,752.82	£11,500.43
BISO160VPZZnSe	ISO160	180	89	6.5	12	316L	Kovar		£4,372.31	£4,097.33	£3,904.52
BVPZ200ZnSe	NW200CF	254	136	9.5	24.5	304L	Kovar		£11,489.48	£11,088.04	£10,856.04

Magnesium Fluoride Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar
Surface quality	60 /40 scratch/dig
Flatness (prior to bonding)	λ/4

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16MgF2	NW16CF	34	15	2.5	12.7	304L	316L		£260.52	£243.26	£167.23
BVPZ16MgF2-NM	NW16CF	34	15	2.5	12.7	316LN	316L Annealed	Yes	£334.03	£311.89	£256.87
BKVPZ16MgF2	KF16	40	15	2.5	15	316L	316L		£291.58	£274.79	£198.75
BKVPZ25MgF2	KF25	40	20	3	18.5	316L	316L		£404.56	£389.64	£374.83
BVPZ38MgF2	NW35CF	70	32	3	12.7	304L	316L		£398.27	£384.47	£358.35
BVPZ38LAMgF2	NW35CF	70	38	4	12.7	304L	316L		£767.26	£721.82	£680.98
BVPZ38MgF2-NM	NW35CF	70	32	3	12.7	316LN	316L Annealed	Yes	£614.51	£573.79	£486.06
BKVPZ40/32MgF2	KF40	55	32	3	12.7	316L	316L		£419.14	£405.25	£378.74
BKVPZ40MgF2	KF40	55	38	4	18.5	316L	316L		£830.62	£775.58	£727.05
BKVPZ50MgF2	KF50	75	38	4	15	316L	316L		£846.04	£789.98	£745.86
BVPZ64MgF2	NW63CF	114	63	5	17.4	304L	316L		£855.30	£806.31	£685.31
BVPZ64MgF2-NM	NW63CF	114	63	5	17.4	316LN	316L Annealed	Yes	£894.38	£838.75	£716.88
BISO63VPZMgF2	ISO63	95	38	4	12	316L	316L		£777.61	£732.17	£691.34
BVPZ100MgF2	NW100CF	152	89	6.5	19.9	304L	316L		£1,810.49	£1,697.88	£1,633.05
BVPZ100MgF2-NM	NW100CF	152	89	6.5	19.9	316LN	316L Annealed	Yes	£2,055.96	£1,928.08	£1,858.46
BISO100VPZMgF2	ISO100	130	63	5	12	316L	316L		£876.00	£827.01	£706.02
BVPZ150MgF2	NW150CF	203	136	9.5	22.3	304L	316L		£7,018.93	£6,582.35	£6,417.35
BVPZ150MgF2-NM	NW150CF	203	136	9.5	22.3	316LN	316L Annealed	Yes	£7,199.81	£6,751.98	£6,597.09
BISO160VPZMgF2	ISO160	180	89	6.5	12	316L	316L		£1,841.55	£1,728.94	£1,664.11
BVPZ200MgF2	NW200CF	254	136	9.5	24.5	304L	316L		£7,299.59	£6,867.22	£6,702.22

Calcium Fluoride Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar
Surface quality	60 /40 scratch/dig
Flatness (prior to bonding)	λ/4

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16CaF2	NW16CF	34	15	1.5	12.7	304L	316L		£223.25	£204.29	£162.99
BVPZ16CaF2-NM	NW16CF	34	15	1.5	12.7	316LN	316L Annealed	Yes	£326.34	£298.62	£279.90
BKVPZ16CaF2	KF16	40	15	1.5	15	316L	316L		£254.31	£235.81	£194.52
BKVPZ25CaF2	KF25	40	20	2	18.5	316L	316L		£393.66	£360.22	£326.07
BVPZ38CaF2	NW35CF	70	32	3	12.7	304L	316L		£359.20	£313.04	£265.85
BVPZ38LACaF2	NW35CF	70	38	3.5	12.7	304L	316L		£488.96	£451.64	£377.52
BVPZ38CaF2-NM	NW35CF	70	32	3	12.7	316LN	316L Annealed	Yes	£476.74	£436.25	£380.05
BKVPZ40/32CaF2	KF40	55	32	3	12.7	316L	316L		£380.07	£333.82	£286.24
BKVPZ40CaF2	KF40	55	38	3.5	18.5	316L	316L		£552.31	£505.40	£423.59
BKVPZ50CaF2	KF50	75	38	3.5	15	316L	316L		£572.15	£523.55	£443.90
BVPZ64CaF2	NW63CF	114	63	5	17.4	304L	316L		£815.19	£768.50	£662.90
BVPZ64CaF2-NM	NW63CF	114	63	5	17.4	316LN	316L Annealed	Yes	£1,123.47	£1,028.05	£985.36
BISO63VPZCaF2	ISO63	95	38	3.5	12	316L	316L		£499.31	£461.99	£387.88
BVPZ100CaF2	NW100CF	152	89	7	19.9	304L	316L		£1,642.31	£1,502.83	£1,420.23
BVPZ100CaF2-NM	NW100CF	152	89	7	19.9	316LN	316L Annealed	Yes	£1,970.66	£1,803.28	£1,713.20
BISO100VPZCaF2	ISO100	130	63	5	12	316L	316L		£835.90	£789.20	£683.61

Barium Fluoride Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar
Surface quality	60 /40 scratch/dig
Flatness (prior to bonding)	λ/4

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16BaF2	NW16CF	34	15	2	12.7	304L	316L		£314.33	£292.77	£326.51
BVPZ16BaF2-NM	NW16CF	34	15	2	12.7	316LN	316L Annealed	Yes	£377.28	£352.28	£456.95
BKVPZ16BaF2	KF16	40	15	2	15	316L	316L		£347.57	£326.51	£527.91
BKVPZ25BaF2	KF25	40	20	3	18.5	316L	316L		£489.38	£456.95	£780.04
BVPZ38BaF2	NW35CF	70	32	4	12.7	304L	316L		£565.38	£527.91	£632.56
BVPZ38LABaF2	NW35CF	70	38	5	12.7	304L	316L		£829.20	£780.04	£550.15
BVPZ38BaF2-NM	NW35CF	70	32	4	12.7	316LN	316L Annealed	Yes	£677.45	£632.56	£837.57
BKVPZ40/32BaF2	KF40	55	32	4	12.7	316L	316L		£587.71	£550.15	£853.60
BKVPZ40BaF2	KF40	55	38	5	18.5	316L	316L		£897.01	£837.57	£1,292.10
BKVPZ50BaF2	KF50	75	38	5	15	316L	316L		£914.18	£853.60	£1,438.68
BVPZ64BaF2	NW63CF	114	63	7	17.4	304L	316L		£1,377.80	£1,292.10	£1,330.80
BVPZ64BaF2-NM	NW63CF	114	63	7	17.4	316LN	316L Annealed	Yes	£1,534.10	£1,438.68	£2,805.00
BISO63VPZBaF2	ISO63	95	38	5	12	316L	316L		£849.91	£800.74	£570.86
BVPZ100BaF2	NW100CF	152	89	9	19.9	304L	316L		£2,991.04	£2,805.00	£2,817.16
BVPZ100BaF2-NM	NW100CF	152	89	9	19.9	316LN	316L Annealed	Yes	£3,322.02	£3,115.39	£3,115.39
BISO100VPZBaF2	ISO100	130	63	7	12	316L	316L		£1,398.51	£1,312.81	£1,310.10

CVD Diamond UHV Viewports

Seal Type	Braze
Maximum Temperature	450°C 304L, 600°C 316LN
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Window Roughness	30nm Ra
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar $<1x10^{-11}$ mbar

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	Weld Ring Material	Window Grade	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16CVDDX	NW16CF	34	15	0.5	12.7	304L	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ16CVDD	NW16CF	34	15	0.5	12.7	304L	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ16CVDDX-LN	NW16CF	34	15	0.5	12.7	316LN	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ16CVDD-LN	NW16CF	34	15	0.5	12.7	316LN	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/15CVDDX	NW35CF	70	15	0.5	12.7	304L	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ38/15CVDD	NW35CF	70	15	0.5	12.7	304L	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/15CVDDX-LN	NW35CF	70	15	0.5	12.7	316LN	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ38/15CVDD-LN	NW35CF	70	15	0.5	12.7	316LN	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/20CVDDX	NW35CF	70	20	1	12.7	304L	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ38/20CVDD	NW35CF	70	20	0.5	12.7	304L	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/20CVDDX-LN	NW35CF	70	20	1	12.7	316LN	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ38/20CVDD-LN	NW35CF	70	20	0.5	12.7	316LN	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/32CVDDX	NW35CF	70	32	1	12.7	304L	Kovar	X-ray	Quotation on request	Quotation on request	Quotation on request
VPZ38/32CVDD	NW35CF	70	32	0.7	12.7	304L	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request
VPZ38/32CVDD-LN	NW35CF	70	32	0.7	12.7	316LN	Kovar	Optical	Quotation on request	Quotation on request	Quotation on request

Quartz Natural Z-Cut Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar $<1x10^{-9}$ mbar
Surface quality	20/10 scratch/dig
Parallelism	< 3 arc minutes
Flatness (prior to bonding)	λ/2

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16NQZ	NW16CF	34	15	1.5	12.7	304L	Kovar		£416.59	£416.59	£315.52
BVPZ16NQZ-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£470.82	£470.82	£369.75
BKVPZ16NQZ	KF16	40	15	1.5	12.7	316L	Kovar		£426.45	£426.45	£325.38
BKVPZ25NQZ	KF25	40	20	3	18.5	316L	Kovar		£806.06	£485.61	£485.61
BVPZ38NQZ	NW35CF	70	32	3	12.7	304L	Kovar		£843.03	£468.35	£468.35
BVPZ38LANQZ	NW35CF	70	38	3.5	12.7	304L	Kovar		£1,215.25	£818.38	£818.38
BVPZ38NQZ-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£897.26	£522.58	£522.58
BKVPZ40/32NQZ	KF40	55	32	3	12.7	316L	Kovar		£875.08	£500.40	£500.40
BKVPZ40NQZ	KF40	55	38	3.5	18.5	316L	Kovar		£1,244.83	£847.96	£847.96
BKVPZ50NQZ	KF50	75	38	3.5	15	316L	Kovar		£1,269.48	£872.61	£872.61
BVPZ64NQZ	NW63CF	114	63	4.5	17.4	304L	Kovar		£1,024.26	£1,024.26	£1,024.26
BVPZ64NQZ-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£1,209.23	£1,209.23	£1,209.23
BISO63VPZNQZ	ISO63	95	38	3.5	12	316L	Kovar		£1,225.60	£828.73	£828.73
BVPZ100NQZ	NW100CF	152	89	6	19.9	304L	Kovar		£3,277.07	£1,598.50	£1,598.50
BVPZ100NQZ-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£3,495.17	£1,816.61	£1,816.61
BISO100VPZNQZ	ISO100	130	63	4.5	12	316L	Kovar		£1,044.96	£1,044.96	£1,044.96
BISO160VPZNQZ	ISO160	180	89	6	12	316L	Kovar		£3,308.13	£1,629.56	£1,629.56

Fused Silica UHV Laser Viewports With 'VAR' Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	20 /10 scratch/dig
Flatness	< 8λ
Laser Damage Threshold	2 J/cm^2 at 530nm (note, varies with wavelength, laser type and cleanliness of optic)
Coating	2-layer 'VAR' coating optimised to customer specified wavelength between 240nm and 1550nm
Reflectance	< 0,5% per face 1% total at the specified wavelength

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16QVAR	NW16CF	34	15	1.5	12.7	304L	Kovar		£446.08	£415.70	£393.00
VPZ16QVAR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£525.70	£482.60	£454.88
VPZ16QVAR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£612.41	£526.50	£497.63
KVPZ16QVAR	KF16	25	15	1.5	15	304L	Kovar		£441.20	£411.27	£388.90
KVPZ25QVAR	KF25	40	20	2	18.5	304L	Kovar		£479.84	£449.91	£427.54
VPZ38QVAR	NW35CF	70	32	3	12.7	304L	Kovar		£479.50	£415.33	£395.77
VPZ38LAQVAR	NW35CF	70	38*	3.5	12.7	304L	Kovar		£533.22	£463.86	£447.29
VPZ38QVAR-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£569.34	£424.10	£402.84
VPZ38LAQVAR-LN	NW35CF	70	38*	3.5	12.7	316LN	Kovar		£582.38	£441.46	£419.33
VPZ38QVAR-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£681.52	£584.97	£560.51
KVPZ40/32QVAR	KF40	55	32	3	12.7	304L	Kovar		£511.25	£447.83	£428.56
KVPZ40QVAR	KF40	55	38	3.5	18.5	304L	Kovar		£563.98	£495.64	£479.31
KVPZ50QVAR	KF50	75	38	3.5	15	304L	Kovar		£564.26	£495.92	£479.59
ISO63QVPZVAR	ISO63	95	38	3.5	12	304L	Kovar		£536.09	£467.75	£451.43
VPZ64QVAR	NW63CF	114	63	4.5	17.4	304L	Kovar		£766.03	£647.26	£597.50
VPZ64QVAR-LN	NW63CF	114	63	4.5	17.4	316LN	Kovar		£897.23	£727.15	£678.93
VPZ64QVAR-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£1,049.16	£966.67	£914.52
VPZ100QVAR	NW100CF	152	89	6	19.9	304L	Kovar		£1,203.32	£1,093.46	£1,037.50
VPZ100QVAR-LN	NW100CF	152	89	6	19.9	316LN	Kovar		£1,339.42	£1,222.00	£1,165.70
VPZ100QVAR-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£2,150.17	£1,904.71	£1,865.78
ISO100QVPZVAR	ISO100	130	63	4.5	12	304L	Kovar		£782.79	£665.77	£616.75
VPZ150QVAR	NW150CF	203	136	9.5	22.3	304L	Kovar		£2,044.77	£1,919.49	£1,832.56
VPZ150QVAR-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£2,249.09	£2,117.67	£1,996.23
VPZ150QVAR-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£2,791.94	£2,600.14	£2,482.34
ISO160QVPZVAR	ISO160	180	89	6	12	304L	Kovar		£1,216.74	£1,108.49	£1,042.96
VPZ200QVAR	NW200CF	254	136	9.5	24.5	316LN	Niobium	Yes	£2,833.82	£2,639.14	£2,519.58

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

Back

Fused Silica UHV Viewports With Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	20 /10 scratch/dig
Flatness	< 8λ
Coating	Single layer 1 x QWOT 'AR' coating optimised to customer specified wavelength range between 190nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16QAR	NW16CF	34	15	1.5	12.7	304L	Kovar		£236.69	£206.80	£203.01
VPZ16QAR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£311.80	£275.80	£264.23
VPZ16QAR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£401.70	£373.01	£355.95
KVPZ16QAR	KF16	25	15	1.5	15	304L	Kovar		£234.92	£205.46	£201.73
KVPZ25QAR	KF25	40	20	2	18.5	304L	Kovar		£273.56	£244.10	£240.37
VPZ38QAR	NW35CF	70	32	3	12.7	304L	Kovar		£274.67	£245.85	£236.59
VPZ38LAQAR	NW35CF	70	38*	3.5	12.7	304L	Kovar		£297.81	£262.35	£257.33
VPZ38QAR-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£378.98	£345.40	£328.98
VPZ38LAQAR-LN	NW35CF	70	38*	3.5	12.7	316LN	Kovar		£404.95	£370.05	£351.99
VPZ38QAR-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£509.80	£471.95	£446.56
KVPZ40/32QAR	KF40	55	32	3	12.7	304L	Kovar		£309.25	£280.84	£271.73
KVPZ40QAR	KF40	55	38	3.5	18.5	304L	Kovar		£332.05	£297.11	£292.16
KVPZ50QAR	KF50	75	38	3.5	15	304L	Kovar		£332.33	£297.39	£292.44
ISO63QVPZAR	ISO63	95	38	3.5	12	304L	Kovar		£304.16	£269.22	£264.28
VPZ64QAR	NW63CF	114	63	4.5	17.4	304L	Kovar		£512.82	£478.58	£451.43
VPZ64QAR-LN	NW63CF	114	63	4.5	17.4	316LN	Kovar		£620.99	£567.06	£531.40
VPZ64QAR-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£878.52	£820.51	£773.00
VPZ100QAR	NW100CF	152	89	6	19.9	304L	Kovar		£851.04	£736.26	£702.80
VPZ100QAR-LN	NW100CF	152	89	6	19.9	316LN	Kovar		£987.13	£865.84	£832.34
VPZ100QAR-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£1,797.88	£1,683.91	£1,646.39
ISO100QVPZAR	ISO100	130	63	4.5	12	304L	Kovar		£526.04	£492.31	£465.56
VPZ150QAR	NW150CF	203	136	9.5	22.3	304L	Kovar		£1,511.70	£1,393.72	£1,318.70
VPZ150QAR-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£1,708.19	£1,603.19	£1,547.13
VPZ150QAR-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£2,329.59	£2,124.67	£2,021.31
ISO160QVPZAR	ISO160	180	89	6	12	304L	Kovar		£869.66	£756.58	£723.61
VPZ200QAR	NW200CF	254	136	9.5	24.5	304L	Kovar		£1,644.40	£1,528.16	£1,454.25

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

Fused Silica UHV Viewports With Broadband Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Surface quality	20 /10 scratch/dig
Flatness	<8λ
Laser Damage Threshold	2 J/cm^2 at 530nm (note, varies with wavelength, laser type and cleanliness of optic)
Coating	4-layer BBAR coating optimised to customer specified wavelength range between 240nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16QBBAR	NW16CF	34	15	1.5	12.7	304L	Kovar		£382.13	£284.59	£271.62
VPZ16QBBAR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£474.49	£353.90	£338.11
VPZ16QBBAR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£561.20	£419.20	£398.47
KVPZ16QBBAR	KF16	25	15	1.5	15	304L	Kovar		£378.21	£282.10	£269.32
KVPZ25QBBAR	KF25	40	20	2	18.5	304L	Kovar		£416.84	£320.74	£307.96
VPZ38QBBAR	NW35CF	70	32	3	12.7	304L	Kovar		£401.25	£346.27	£323.28
VPZ38LAQBBAR	NW35CF	70	38*	3.5	12.7	304L	Kovar		£434.83	£391.34	£364.18
VPZ38QBBAR-LN	NW35CF	70	32	3	12.7	316LN	Kovar		£520.14	£419.74	£394.91
VPZ38LAQBBAR-LN	NW35CF	70	38*	3.5	12.7	316LN	Kovar		£547.84	£445.85	£419.02
VPZ38QBBAR-NM	NW35CF	70	32	3	12.7	316LN	Niobium	Yes	£636.00	£523.61	£495.12
KVPZ40/32QBBAR	KF40	55	32	3	12.7	304L	Kovar		£433.96	£379.79	£357.15
KVPZ40QBBAR	KF40	55	38	3.5	18.5	304L	Kovar		£467.03	£424.18	£397.44
KVPZ50QBBAR	KF50	75	38	3.5	15	304L	Kovar		£467.31	£424.46	£397.72
ISO63QVPZBBAR	ISO63	95	38	3.5	12	304L	Kovar		£439.15	£396.30	£391.05
VPZ64QBBAR	NW63CF	114	63	4.5	17.4	304L	Kovar		£733.00	£618.11	£568.26
VPZ64QBBAR-LN	NW63CF	114	63	4.5	17.4	316LN	Kovar		£841.17	£718.23	£655.42
VPZ64QBBAR-NM	NW63CF	114	63	4.5	17.4	316LN	Niobium	Yes	£1,245.12	£1,040.97	£1,000.50
VPZ100QBBAR	NW100CF	152	89	6	19.9	304L	Kovar		£1,076.72	£929.26	£874.48
VPZ100QBBAR-LN	NW100CF	152	89	6	19.9	316LN	Kovar		£1,212.82	£1,059.59	£1,003.18
VPZ100QBBAR-NM	NW100CF	152	89	6	19.9	316LN	Niobium	Yes	£2,023.56	£1,745.95	£1,712.23
ISO100QVPZBBAR	ISO100	130	63	4.5	12	304L	Kovar		£750.25	£637.06	£587.94
VPZ150QBBAR	NW150CF	203	136	9.5	22.3	304L	Kovar		£1,816.35	£1,690.87	£1,598.47
VPZ150QBBAR-LN	NW150CF	203	136	9.5	22.3	316LN	Kovar		£2,011.93	£1,874.55	£1,789.33
VPZ150QBBAR-NM	NW150CF	203	136	9.5	22.3	316LN	Niobium	Yes	£2,637.31	£2,463.42	£2,356.30
ISO160QVPZBBAR	ISO160	180	89	6	12	304L	Kovar		£1,092.01	£946.72	£892.76
VPZ200QBBAR	NW200CF	254	136	9.5	24.5	304L	Kovar		£1,944.55	£1,820.91	£1,729.89

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

Kodial Zero Length Viewports With Anti-Reflective Coatings

Seal Type	Induction
Maximum Temperature	350°C (KF versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Coating	Single layer 1 x QWOT 'AR' coating optimised to customer specified wavelength range between 190nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16AR	NW16CF	34	15	1	12.7	304L	Kovar	£138.59	£117.41	£115.50
VPZ16AR-LN	NW16CF	34	15	1	12.7	316LN	Kovar	£212.80	£182.80	£170.79
KVPZ16AR	KF16	25	15	1	12.7	316L	Kovar	£171.32	£150.64	£148.72
KVPZ25AR	KF25	40	20	1.5	18.5	316L	Kovar	£243.73	£210.74	£200.59
VPZ38AR	NW35CF	70	32	2.5	12.7	304L	Kovar	£160.02	£135.63	£130.34
VPZ38LAAR	NW35CF	70	38*	3	12.7	304L	Kovar	£169.28	£144.13	£138.47
VPZ38AR-LN	NW35CF	70	32	2.5	12.7	316LN	Kovar	£256.30	£226.38	£218.01
VPZ38LAAR-LN	NW35CF	70	38*	3	12.7	316LN	Kovar	£269.69	£235.50	£226.95
KVPZ40AR	KF40	55	38*	3	18.5	316L	Kovar	£241.24	£204.22	£196.49
KVPZ50AR	KF50	75	38*	3	15	316L	Kovar	£259.45	£221.74	£213.30
VPZ50AR	NW50CF	86	38*	3	16	304L	Kovar	£240.17	£203.52	£195.82
ISO63VPZAR	ISO63	95	38*	3	12	316L	Kovar	£180.19	£155.05	£149.38
VPZ64AR	NW63CF	114	63	3	17.4	304L	Kovar	£196.06	£170.39	£167.53
VPZ64LAAR	NW63CF	114	65	3.5	17.4	304L	Kovar	£256.55	£228.83	£224.86
VPZ64AR-LN	NW63CF	114	63	3	17.4	316LN	Kovar	£327.76	£290.79	£283.03
VPZ100AR	NW100CF	152	89	4	19.9	304L	Kovar	£431.88	£366.22	£355.92
VPZ100AR-LN	NW100CF	152	89	4	19.9	316LN	Kovar	£574.67	£501.45	£488.27
ISO100VPZAR	ISO100	130	63	3	12	316L	Kovar	£217.18	£191.50	£188.65
VPZ150AR	NW150CF	203	136	6.5	22.3	304L	Kovar	£542.95	£464.14	£456.24
VPZ150AR-LN	NW150CF	203	136	6.5	22.3	316LN	Kovar	£755.07	£689.81	£675.43
ISO160VPZAR	ISO160	180	89	4	12	316L	Kovar	£463.55	£397.89	£387.59
VPZ200AR	NW200CF	254	136	6.5	24.5	304L	Kovar	£823.61	£744.80	£736.90

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

Kodial Zero Length Viewports With Broadband Anti-Reflective Coatings

Seal Type	Induction
Maximum Temperature	350°C (KF versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Coating	4-layer BBAR coating optimised to customer specified wavelength range between 240nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16BBAR	NW16CF	34	15	1	12.7	304L	Kovar	£320.68	£239.95	£228.94
VPZ16BBAR-LN	NW16CF	34	15	1	12.7	316LN	Kovar	£367.28	£282.44	£263.98
KVPZ16BBAR	KF16	25	15	1	12.7	316L	Kovar	£353.42	£273.17	£262.16
KVPZ25BBAR	KF25	40	20	1.5	18.5	316L	Kovar	£405.11	£295.40	£267.43
VPZ38BBAR	NW35CF	70	32	2.5	12.7	304L	Kovar	£322.92	£274.02	£259.77
VPZ38LABBAR	NW35CF	70	38*	3	12.7	304L	Kovar	£337.64	£285.20	£271.56
VPZ38BBAR-LN	NW35CF	70	32	2.5	12.7	316LN	Kovar	£422.18	£346.95	£336.87
VPZ38LABBAR-LN	NW35CF	70	38*	3	12.7	316LN	Kovar	£431.28	£363.43	£352.87
KVPZ40BBAR	KF40	55	38*	3	18.5	316L	Kovar	£403.97	£283.82	£254.19
KVPZ50BBAR	KF50	75	38*	3	15	316L	Kovar	£416.37	£312.72	£280.07
VPZ50BBAR	NW50CF	86	38*	3	16	304L	Kovar	£408.52	£344.59	£328.92
ISO63VPZBBAR	ISO63	95	38*	3	12	316L	Kovar	£348.55	£296.11	£282.47
VPZ64BBAR	NW63CF	114	63	3	17.4	304L	Kovar	£446.96	£394.66	£373.25
VPZ64LABBAR	NW63CF	114	65	3.5	17.4	304L	Kovar	£518.18	£456.62	£431.42
VPZ64BBAR-LN	NW63CF	114	63	3	17.4	316LN	Kovar	£547.94	£489.19	£467.46
VPZ100BBAR	NW100CF	152	89	4	19.9	304L	Kovar	£657.57	£567.58	£536.89
VPZ100BBAR-LN	NW100CF	152	89	4	19.9	316LN	Kovar	£797.86	£692.89	£661.92
ISO100VPZBBAR	ISO100	130	63	3	12	316L	Kovar	£468.08	£415.78	£394.36
VPZ150BBAR	NW150CF	203	136	6.5	22.3	304L	Kovar	£935.51	£854.59	£840.22
VPZ150BBAR-LN	NW150CF	203	136	6.5	22.3	316LN	Kovar	£1,062.79	£1,028.56	£1,010.42
ISO160VPZBBAR	ISO160	180	89	4	12	316L	Kovar	£689.24	£599.24	£568.55
VPZ200BBAR	NW200CF	254	136	6.5	24.5	304L	Kovar	£1,216.17	£1,135.25	£1,120.88

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

Kodial Zero Length Viewports With 'VAR' Anti-Reflective Coatings

Seal Type	Induction
Maximum Temperature	350°C (KF versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Coating	2-layer 'VAR' coating optimised to customer specified wavelength between 240nm and 1550nm
Reflectance	< 0.5% per face 1% total at the specified wavelength

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	Weld Ring Material	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16VAR	NW16CF	34	15	1	12.7	304L	Kovar	£418.76	£310.79	£262.82
VPZ16VAR-LN	NW16CF	34	15	1	12.7	316LN	Kovar	£459.73	£337.29	£300.02
KVPZ16VAR	KF16	25	15	1	12.7	316L	Kovar	£451.50	£344.02	£296.04
KVPZ25VAR	KF25	40	20	1.5	18.5	316L	Kovar	£473.39	£346.89	£306.84
VPZ38VAR	NW35CF	70	32	2.5	12.7	304L	Kovar	£398.28	£346.02	£331.63
VPZ38LAVAR	NW35CF	70	38*	3	12.7	304L	Kovar	£423.32	£371.52	£356.04
VPZ38VAR-LN	NW35CF	70	32	2.5	12.7	316LN	Kovar	£477.94	£414.43	£406.46
VPZ38LAVAR-LN	NW35CF	70	38*	3	12.7	316LN	Kovar	£488.18	£433.66	£425.33
KVPZ40VAR	KF40	55	38*	3	18.5	316L	Kovar	£466.56	£330.26	£292.13
KVPZ50VAR	KF50	75	38*	3	15	316L	Kovar	£485.90	£362.76	£320.88
VPZ50VAR	NW50CF	86	38*	3	16	304L	Kovar	£494.20	£430.91	£413.39
ISO63VPZVAR	ISO63	95	38*	3	12	316L	Kovar	£434.23	£382.43	£366.95
VPZ64VAR	NW63CF	114	63	3	17.4	304L	Kovar	£527.33	£447.93	£437.32
VPZ64LAVAR	NW63CF	114	65	3.5	17.4	304L	Kovar	£598.54	£509.89	£495.49
VPZ64VAR-LN	NW63CF	114	63	3	17.4	316LN	Kovar	£627.51	£545.58	£526.95
VPZ100VAR	NW100CF	152	89	4	19.9	304L	Kovar	£854.64	£744.75	£711.47
VPZ100VAR-LN	NW100CF	152	89	4	19.9	316LN	Kovar	£977.87	£869.06	£835.29
ISO100VPZVAR	ISO100	130	63	3	12	316L	Kovar	£548.44	£469.04	£458.43
VPZ150VAR	NW150CF	203	136	6.5	22.3	304L	Kovar	£1,220.26	£1,055.40	£1,022.44
VPZ150VAR-LN	NW150CF	203	136	6.5	22.3	316LN	Kovar	£1,363.77	£1,218.47	£1,186.51
ISO160VPZVAR	ISO160	180	89	4	12	316L	Kovar	£886.31	£776.42	£743.13
VPZ200VAR	NW200CF	254	136	6.5	24.5	304L	Kovar	£1,500.93	£1,336.06	£1,303.10

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

200°C Sapphire viewports with Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar $<1x10^{-11}$ mbar
Surface quality	60/40 scratch/dig
Flatness	< 8λ
Coating	Single layer 1 x QWOT 'AR' coating optimised to customer specified wavelength range between 190nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16S-200-AR	NW16CF	34	15	1.5	12.7	304L	Kovar		£258.93	£230.05	£225.79
VPZ16S-200-AR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£331.28	£310.79	£298.22
VPZ16S-200-AR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£439.88	£406.72	£381.65
KVPZ16S-200-AR	KF16	25	15	1.5	12.7	316L	Kovar		£290.82	£262.42	£258.15
KVPZ25S-200-AR	KF25	40	20	1.5	18.5	316L	Kovar		£437.05	£375.64	£352.99
VPZ23S-200-AR	NW35CF	70	23	1.5	12.7	304L	Kovar		£364.58	£335.66	£326.80
VPZ38S-200-AR	NW35CF	70	32	1.5	12.7	304L	Kovar		£318.47	£288.38	£278.17
VPZ38LAS-200-AR	NW35CF	70	38	1.5	12.7	304L	Kovar		£323.45	£290.30	£284.97
VPZ38S-200-AR-LN	NW35CF	70	32	1.5	12.7	316LN	Kovar		£388.86	£370.25	£351.24
VPZ38LAS-200-AR-LN	NW35CF	70	38	1.5	12.7	316LN	Kovar		£414.34	£396.16	£375.28
VPZ38S-200-AR-NM	NW35CF	70	32	1.5	12.7	316LN	Niobium	Yes	£551.30	£517.53	£490.95
KVPZ40/32S-200-AR	KF40	55	32	1.5	12.7	316L	Kovar		£339.89	£309.72	£299.11
KVPZ40S-200-AR	KF40	55	38	1.5	18.5	316L	Kovar		£439.61	£382.73	£370.71
KVPZ50S-200-AR	KF50	75	38	1.5	15	316L	Kovar		£453.86	£395.82	£383.35
VPZ64S-200-AR	NW63CF	114	63	2	17.4	304L	Kovar		£681.35	£629.81	£602.80
VPZ64S-200-AR-LN	NW63CF	114	63	2	17.4	316LN	Kovar		£806.03	£767.36	£736.63
VPZ64S-200-AR-NM	NW63CF	114	63	2	17.4	316LN	Niobium	Yes	£1,169.49	£1,147.95	£1,114.52
ISO63SVPZ-200-AR	ISO63	95	38	1.5	12	316L	Kovar		£334.52	£312.44	£307.12
VPZ100S-200-AR	NW100CF	152	89	2.5	19.9	304L	Kovar		£1,486.80	£1,306.39	£1,243.23
VPZ100S-200-AR-LN	NW100CF	152	89	2.5	19.9	316LN	Kovar		£1,641.92	£1,483.41	£1,416.56
VPZ100S-200-AR-NM	NW100CF	152	89	2.5	19.9	316LN	Niobium	Yes	£3,007.97	£2,770.00	£2,675.56
ISO100SVPZ-200-AR	ISO100	130	63	2	12	316L	Kovar		£710.19	£696.54	£661.60
VPZ150S-200-AR	NW150CF	203	136	4	22.3	304L	Kovar		£2,427.55	£2,278.64	£2,153.09
VPZ150S-200-AR-LN	NW150CF	203	136	4	22.3	316LN	Kovar		£2,644.54	£2,491.22	£2,350.76
VPZ150S-200-AR-NM	NW150CF	203	136	4	22.3	316LN	Niobium	Yes	£3,408.17	£3,288.71	£3,136.70
ISO160SVPZ-200-AR	ISO160	180	89	2.5	12	316L	Kovar		£1,530.06	£1,349.65	£1,286.49
VPZ200S-200-AR	NW200CF	254	136	4	24.5	304L	Kovar		£2,700.97	£2,556.09	£2,430.62

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

200°C Sapphire viewports with Broadband Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar $<1x10^{-11}$ mbar
Surface quality	60/40 scratch/dig
Flatness	< 8λ
Coating	4-layer BBAR coating optimised to customer specified wavelength range between 240nm and 1550nm

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16S-200-BBAR	NW16CF	34	15	1.5	12.7	304L	Kovar		£406.53	£308.99	£295.40
VPZ16S-200-BBAR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£496.38	£390.05	£373.19
VPZ16S-200-BBAR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£601.74	£453.57	£424.80
KVPZ16S-200-BBAR	KF16	25	15	1.5	12.7	316L	Kovar		£438.41	£341.36	£327.77
KVPZ25S-200-BBAR	KF25	40	20	1.5	18.5	316L	Kovar		£600.81	£461.55	£420.83
VPZ23S-200-BBAR	NW35CF	70	23	1.5	12.7	304L	Kovar		£528.34	£421.57	£394.64
VPZ38S-200-BBAR	NW35CF	70	32	1.5	12.7	304L	Kovar		£446.92	£390.29	£366.16
VPZ38LAS-200-BBAR	NW35CF	70	38	1.5	12.7	304L	Kovar		£462.49	£421.20	£393.41
VPZ38S-200-BBAR-LN	NW35CF	70	32	1.5	12.7	316LN	Kovar		£532.10	£445.70	£418.14
VPZ38LAS-200-BBAR-LN	NW35CF	70	38	1.5	12.7	316LN	Kovar		£559.35	£473.08	£443.30
VPZ38S-200-BBAR-NM	NW35CF	70	32	1.5	12.7	316LN	Niobium	Yes	£679.36	£569.95	£540.23
KVPZ40/32S-200-BBAR	KF40	55	32	1.5	12.7	316L	Kovar		£468.34	£411.63	£387.09
KVPZ40S-200-BBAR	KF40	55	38	1.5	18.5	316L	Kovar		£578.64	£513.62	£479.14
KVPZ50S-200-BBAR	KF50	75	38	1.5	15	316L	Kovar		£592.90	£526.72	£491.78
VPZ64S-200-BBAR	NW63CF	114	63	2	17.4	304L	Kovar		£729.57	£609.45	£566.34
VPZ64S-200-BBAR-LN	NW63CF	114	63	2	17.4	316LN	Kovar		£822.21	£723.45	£673.07
VPZ64S-200-BBAR-NM	NW63CF	114	63	2	17.4	316LN	Niobium	Yes	£1,240.78	£1,076.48	£1,058.80
ISO63SVPZ-200-BBAR	ISO63	95	38	1.5	12	316L	Kovar		£473.56	£432.27	£404.48
VPZ100S-200-BBAR	NW100CF	152	89	2.5	19.9	304L	Kovar		£1,333.50	£1,166.31	£1,097.77
VPZ100S-200-BBAR-LN	NW100CF	152	89	2.5	19.9	316LN	Kovar		£1,448.72	£1,298.57	£1,225.67
VPZ100S-200-BBAR-NM	NW100CF	152	89	2.5	19.9	316LN	Niobium	Yes	£2,463.51	£2,120.67	£2,054.38
ISO100SVPZ-200-BBAR	ISO100	130	63	2	12	316L	Kovar		£751.00	£630.87	£587.77
VPZ150S-200-BBAR	NW150CF	203	136	4	22.3	304L	Kovar		£2,736.70	£2,580.17	£2,436.99
VPZ150S-200-BBAR-LN	NW150CF	203	136	4	22.3	316LN	Kovar		£2,952.76	£2,766.59	£2,596.54
VPZ150S-BBAR-NM	NW150CF	203	136	4	22.3	316LN	Niobium	Yes	£3,720.43	£3,632.47	£3,476.64
ISO160SVPZ-200-BBAR	ISO160	180	89	2.5	12	316L	Kovar		£1,365.64	£1,198.45	£1,129.90
VPZ200S-200-BBAR	NW200CF	254	136	4	24.5	304L	Kovar		£3,010.12	£2,857.62	£2,714.52

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

200°C Sapphire viewports with 'VAR' Anti-Reflective Coatings

Seal Type	Braze
Maximum Temperature	200°C (KF & ISO versions 150°C)
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar $<1x10^{-11}$ mbar
Surface quality	60/40 scratch/dig
Flatness	< 8λ
Coating	2-layer 'VAR' coating optimised to customer specified wavelength between 240nm and 1550nm
Reflectance	< 0.5% per face 1% total at the

Part Number	Flange Type	OD (mm)	View Diameter (mm)	Optic Thickness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16S-200-VAR	NW16CF	34	15	1.5	12.7	304L	Kovar		£471.41	£442.04	£418.57
VPZ16S-200-VAR-LN	NW16CF	34	15	1.5	12.7	316LN	Kovar		£548.34	£520.65	£491.69
VPZ16S-200-VAR-NM	NW16CF	34	15	1.5	12.7	316LN	Niobium	Yes	£653.70	£562.46	£525.42
KVPZ16S-200-VAR	KF16	25	15	1.5	12.7	316L	Kovar		£503.30	£474.41	£450.94
KVPZ25S-200-VAR	KF25	40	20	1.5	18.5	316L	Kovar		£670.10	£513.80	£460.82
VPZ23S-200-VAR	NW35CF	70	23	1.5	12.7	304L	Kovar		£597.62	£473.82	£434.62
VPZ38S-200-VAR	NW35CF	70	32	1.5	12.7	304L	Kovar		£526.32	£460.37	£439.71
VPZ38LAS-200-VAR	NW35CF	70	38	1.5	12.7	304L	Kovar		£562.34	£494.80	£477.73
VPZ38S-200-VAR-LN	NW35CF	70	32	1.5	12.7	316LN	Kovar		£582.01	£450.11	£426.19
VPZ38LAS-200-VAR-	NW35CF	70	38	1.5	12.7	316LN	Kovar		£594.39	£468.63	£443.61
VPZ38S-200-VAR-NM	NW35CF	70	32	1.5	12.7	316LN	Niobium	Yes	£725.55	£632.22	£606.58
KVPZ40/32S-200-VAR	KF40	55	32	1.5	12.7	316L	Kovar		£547.75	£481.71	£460.65
KVPZ40S-200-VAR	KF40	55	38	1.5	18.5	316L	Kovar		£678.49	£587.21	£563.47
KVPZ50S-200-VAR	KF50	75	38	1.5	15	316L	Kovar		£692.75	£600.31	£576.11
VPZ64S-200-VAR	NW63CF	114	63	2	17.4	304L	Kovar		£1,027.24	£860.21	£802.33
VPZ64S-200-VAR-LN	NW63CF	114	63	2	17.4	316LN	Kovar		£1,183.39	£986.05	£938.17
VPZ64S-200-VAR-NM	NW63CF	114	63	2	17.4	316LN	Niobium	Yes	£1,402.60	£1,347.61	£1,307.85
ISO63SVPZ-200-VAR	ISO63	95	38	1.5	12	316L	Kovar		£573.41	£505.87	£488.81
VPZ100S-200-VAR	NW100CF	152	89	2.5	19.9	304L	Kovar		£1,968.04	£1,794.34	£1,700.45
VPZ100S-200-VAR-LN	NW100CF	152	89	2.5	19.9	316LN	Kovar		£2,123.16	£1,969.95	£1,871.95
VPZ100S-200-VAR-NM	NW100CF	152	89	2.5	19.9	316LN	Niobium	Yes	£3,489.21	£3,071.62	£2,975.26
ISO100SVPZ-200-VAR	ISO100	130	63	2	12	316L	Kovar		£1,056.08	£889.05	£831.17
VPZ150S-200-VAR	NW150CF	203	136	4	22.3	304L	Kovar		£2,968.50	£2,812.17	£2,674.54
VPZ150S-200-VAR-LN	NW150CF	203	136	4	22.3	316LN	Kovar		£3,193.44	£3,013.30	£2,806.49
VPZ150S-200-VAR-NM	NW150CF	203	136	4	22.3	316LN	Niobium	Yes	£3,919.85	£3,810.80	£3,642.33
ISO160SVPZ-200-VAR	ISO160	180	89	2.5	12	304L	Kovar		£1,971.02	£1,842.47	£1,751.67
VPZ200S-200-VAR	NW200CF	254	136	4	24.5	304L	Kovar		£3,147.49	£2,999.64	£2,866.09

* Note that the position of the optic in the VPZ38LAQ design results in the coating being effective over the central >30mm only

AR Coated Zinc Selenide Zero Length Viewports

Seal Type	Bond
Maximum Temperature	120°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-9}$ mbar
Surface quality	60 /40 scratch/dig
Flatness (prior to bonding)	<2λ

Part Number	Flange Type & OD	View Diameter (mm)	Optic Thick-ness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	Coating	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ16ZnSe-10600	NW16CF 34mm	15	1.5	12.7	304L	Kovar		VAR 10.6μ	£763.37	£599.39	£544.44
BVPZ16ZnSe-2-15	NW16CF 34mm	15	1.5	12.7	304L	Kovar		BBAR 2-15μ	£1,335.89	£749.24	£680.55
BVPZ16ZnSe-LN-10600	NW16CF 34mm	15	1.5	12.7	316LN	Kovar		VAR 10.6μ	£853.51	£680.15	£618.75
BVPZ16ZnSe-LN-2-15	NW16CF 34mm	15	1.5	12.7	316LN	Kovar		BBAR 2-15μ	£1,414.81	£827.06	£752.20
BVPZ16ZnSe-NM-10600	NW16CF 34mm	15	1.5	12.7	316LN	Niobium	Yes	VAR 10.6μ	£1,015.79	£866.83	£828.73
BVPZ16ZnSe-NM-2-15	NW16CF 34mm	15	1.5	12.7	316LN	Niobium	Yes	BBAR 2-15μ	£1,588.32	£1,016.67	£964.84
BKVPZ16ZnSe-10600	KF16 25mm	15	1.5	12.7	316L	Kovar		VAR 10.6μ	£794.43	£630.92	£575.97
BKVPZ16ZnSe-2-15	KF16 25mm	15	1.5	12.7	316L	Kovar		BBAR 2-15μ	£1,366.95	£780.76	£712.08
BKVPZ25ZnSe-10600	KF25 40mm	20	2	18.5	316L	Kovar		VAR 10.6μ	£950.14	£790.24	£680.65
BKVPZ25ZnSe-2-15	KF25 40mm	20	2	18.5	316L	Kovar		BBAR 2-15μ	£1,634.89	£977.93	£841.50
BVPZ38ZnSe-10600	NW35CF 70mm	32	3	12.7	304L	Kovar		VAR 10.6μ	£863.24	£734.93	£656.88
BVPZ38ZnSe-2-15	NW35CF 70mm	32	3	12.7	304L	Kovar		BBAR 2-15μ	£1,726.48	£918.66	£821.10
BVPZ38LAZnSe-10600	NW35CF 70mm	38	3.75	12.7	304L	Kovar		VAR 10.6μ	£1,438.35	£1,288.07	£1,208.09
BVPZ38LAZnSe-2-15	NW35CF 70mm	38	3.75	12.7	304L	Kovar		BBAR 2-15μ	£2,157.53	£1,610.09	£1,510.11
BVPZ38ZnSe-LN-10600	NW35CF 70mm	32	3	12.7	316LN	Kovar		VAR 10.6μ	£993.94	£870.34	£817.64
BVPZ38ZnSe-LN-2-15	NW35CF 70mm	32	3	12.7	316LN	Kovar		BBAR 2-15μ	£1,840.25	£1,050.47	£978.64
BVPZ38LAZnSe-LN-10600	NW35CF 70mm	38	3.75	12.7	316LN	Kovar		VAR 10.6μ	£1,396.80	£1,294.27	£1,178.46
BVPZ38LAZnSe-LN-2-15	NW35CF 70mm	38	3.75	12.7	316LN	Kovar		BBAR 2-15μ	£2,101.87	£1,609.97	£1,474.56
BVPZ38ZnSe-NM-10600	NW35CF 70mm	32	3	12.7	316LN	Niobium	Yes	VAR 10.6μ	£1,280.45	£911.11	£843.32
BVPZ38ZnSe-NM-2-15	NW35CF 70mm	32	3	12.7	316LN	Niobium	Yes	BBAR 2-15μ	£2,143.70	£1,094.84	£1,007.54
BKVPZ40/32ZnSe-10600	KF40 55mm	32	3	12.7	316L	Kovar		VAR 10.6μ	£884.11	£755.71	£677.27
BKVPZ40/32ZnSe-2-15	KF40 55mm	32	3	12.7	316L	Kovar		BBAR 2-15μ	£1,747.35	£939.44	£841.49
BKVPZ40ZnSe-10600	KF40 55mm	38	3.75	18.5	316L	Kovar		VAR 10.6μ	£1,503.40	£1,289.62	£1,205.54
BKVPZ40ZnSe-2-15	KF40 55mm	38	3.75	18.5	316L	Kovar		BBAR 2-15μ	£2,222.58	£1,611.63	£1,507.56
BKVPZ50ZnSe-10600	KF50 75mm	38	3.75	15	316L	Kovar		VAR 10.6μ	£1,517.28	£1,322.79	£1,227.55
BKVPZ50ZnSe-2-15	KF50 75mm	38	3.75	15	316L	Kovar		BBAR 2-15μ	£2,236.46	£1,644.81	£1,529.58

Part Number	Flange Type & OD	View Diameter (mm)	Optic Thick-ness (mm)	Flange Thick-ness (mm)	Flange Material	Weld Ring Material	Non-Magnetic	Coating	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
BVPZ64ZnSe-10600	NW63CF 114mm	63	5	17.4	304L	Kovar		VAR 10.6µ	£1,828.84	£1,748.06	£1,663.88
BVPZ64ZnSe-2-15	NW63CF 114mm	63	5	17.4	304L	Kovar		BBAR 2-15µ	£2,743.25	£2,185.07	£2,079.85
BVPZ64ZnSe-LN-10600	NW63CF 114mm	63	5	17.4	316LN	Kovar		VAR 10.6µ	£1,999.13	£1,829.02	£1,735.58
BVPZ64ZnSe-LN-2-15	NW63CF 114mm	63	5	17.4	316LN	Kovar		BBAR 2-15µ	£2,895.62	£2,257.46	£2,143.39
BVPZ64ZnSe-NM-10600	NW63CF 114mm	63	5	17.4	316LN	Niobium	Yes	VAR 10.6µ	£2,169.26	£2,005.94	£1,905.91
BVPZ64ZnSe-NM-2-15	NW63CF 114mm	63	5	17.4	316LN	Niobium	Yes	BBAR 2-15µ	£3,083.67	£2,442.95	£2,321.88
BISO63VPZZnSe-10600	ISO63 95mm	38	3.75	12	316L	Kovar		VAR 10.6µ	£1,448.70	£1,298.43	£1,218.44
BISO63VPZZnSe-2-15	ISO63 95mm	38	3.75	12	316L	Kovar		BBAR 2-15µ	£2,167.88	£1,620.44	£1,520.46
BVPZ100ZnSe-2-15	NW100CF 152mm	89	6.5	19.9	304L	Kovar		BBAR 2-15µ	£5,215.64	£4,807.19	£4,609.73
BVPZ100ZnSe-LN-2-15	NW100CF 152mm	89	6.5	19.9	316LN	Kovar		BBAR 2-15µ	£5,208.82	£4,810.07	£4,612.49
BVPZ100ZnSe-NM-2-15	NW100CF 152mm	89	6.5	19.9	316LN	Niobium	Yes	BBAR 2-15µ	£6,429.57	£6,019.08	£5,771.84
BISO100VPZZnSe-10600	ISO100 130mm	63	5	12	316L	Kovar		VAR 10.6µ	£1,849.54	£1,768.76	£1,684.58
BISO100VPZZnSe-2-15	ISO100 130mm	63	5	12	316L	Kovar		BBAR 2-15µ	£2,763.96	£2,205.78	£2,100.55
BVPZ150ZnSe-2-15	NW150CF 203mm	136	9.5	22.3	304L	Kovar		BBAR 2-15µ	Quotation on request	Quotation on request	Quotation on request
BVPZ150ZnSe-LN-2-15	NW150CF 203mm	136	9.5	22.3	316LN	Kovar		BBAR 2-15µ	Quotation on request	Quotation on request	Quotation on request
BVPZ150ZnSe-NM-2-15	NW150CF 203mm	136	9.5	22.3	316LN	Niobium	Yes	BBAR 2-15µ	Quotation on request	Quotation on request	Quotation on request
BISO160VPZZnSe-2-15	ISO160 180mm	89	6.5	12	316L	Kovar		BBAR 2-15µ	£5,138.57	£4,736.15	£4,541.60
BVPZ200ZnSe-2-15	NW200CF 254mm	136	9.5	24.5	304L	Kovar		BBAR 2-15µ	Quotation on request	Quotation on request	Quotation on request

KF and ISO Centering Rings

O-Ring Options	Nitrile or Viton
Materials	Aliminium or Stainless Steel
Maximum Temperature	Nitrile 150°C, Viton 200°C

Part Number	Flange Type	Inner Material	O-Ring	Price GB£ Each Excluding Shipping
TSKF016000ANC	KF16	Aluminium	Nitrile	£2.61
TSKF016000AVC	KF16	Aluminium	Viton	£2.98
TSKF016000SNC	KF16	Stainless Steel	Nitrile	£2.87
TSKF016000SVC	KF16	Stainless Steel	Viton	£3.31
TSKF025000ANC	KF25	Aluminium	Nitrile	£3.13
TSKF025000AVC	KF25	Aluminium	Viton	£3.41
TSKF025000SNC	KF25	Stainless Steel	Nitrile	£4.27
TSKF025000SVC	KF25	Stainless Steel	Viton	£4.78
TSKF040000ANC	KF40	Aluminium	Nitrile	£3.70
TSKF040000AVC	KF40	Aluminium	Viton	£4.42
TSKF040000SNC	KF40	Stainless Steel	Nitrile	£4.75
TSKF040000SVC	KF40	Stainless Steel	Viton	£5.52
TSKF050000ANC	KF50	Aluminium	Nitrile	£6.68
TSKF050000AVC	KF50	Aluminium	Viton	£6.97
TSKF050000SNC	KF50	Stainless Steel	Nitrile	£6.83
TSKF050000SVC	KF50	Stainless Steel	Viton	£7.46

Part Number	Flange Type	Inner Material	O-Ring	Trapped Outer	Price GB£ Each Excluding Shipping
TSIS063000ANC	ISO63	Aluminium	Nitrile	None	£15.48
TSIS063000ANT	ISO63	Aluminium	Nitrile	Aluminium	£15.75
TSIS063000AVC	ISO63	Aluminium	Viton	None	£16.79
TSIS063000AVT	ISO63	Aluminium	Viton	Aluminium	£17.07
TSIS063000SNC	ISO63	Stainless Steel	Nitrile	None	£21.00
TSIS063000SNT	ISO63	Stainless Steel	Nitrile	Aluminium	£22.97
TSIS063000SVC	ISO63	Stainless Steel	Viton	None	£21.49
TSIS063000SVT	ISO63	Stainless Steel	Viton	Aluminium	£26.50
TSIS080000ANC	ISO80	Aluminium	Nitrile	None	£17.92
TSIS080000ANT	ISO80	Aluminium	Nitrile	Aluminium	£19.69
TSIS080000AVC	ISO80	Aluminium	Viton	None	£21.86
TSIS080000AVT	ISO80	Aluminium	Viton	Aluminium	£23.63

Part Number	Flange Type	Inner Material	O-Ring	Trapped Outer	Price GB£ Each Excluding Shipping
TSIS080000SNC	ISO80	Stainless Steel	Nitrile	None	£29.81
TSIS080000SNT	ISO80	Stainless Steel	Nitrile	Aluminium	£32.82
TSIS080000SVC	ISO80	Stainless Steel	Viton	None	£32.02
TSIS080000SVT	ISO80	Stainless Steel	Viton	Aluminium	£35.34
TSIS100000ANC	ISO100	Aluminium	Nitrile	None	£17.92
TSIS100000ANT	ISO100	Aluminium	Nitrile	Aluminium	£19.69
TSIS100000AVC	ISO100	Aluminium	Viton	None	£20.54
TSIS100000AVT	ISO100	Aluminium	Viton	Aluminium	£22.32
TSIS100000SNC	ISO100	Stainless Steel	Nitrile	None	£27.57
TSIS100000SNT	ISO100	Stainless Steel	Nitrile	Aluminium	£28.71
TSIS100000SVC	ISO100	Stainless Steel	Viton	None	£28.71
TSIS100000SVT	ISO100	Stainless Steel	Viton	Aluminium	£35.34
TSIS160000ANC	ISO160	Aluminium	Nitrile	None	£23.25
TSIS160000ANT	ISO160	Aluminium	Nitrile	Aluminium	£25.22
TSIS160000AVC	ISO160	Aluminium	Viton	None	£24.29
TSIS160000AVT	ISO160	Aluminium	Viton	Aluminium	£28.88
TSIS160000SNC	ISO160	Stainless Steel	Nitrile	None	£46.37
TSIS160000SNT	ISO160	Stainless Steel	Nitrile	Aluminium	£48.57
TSIS160000SVC	ISO160	Stainless Steel	Viton	None	£33.13
TSIS160000SVT	ISO160	Stainless Steel	Viton	Aluminium	£47.26
TSIS200000ANC	ISO200	Aluminium	Nitrile	None	£34.13
TSIS200000ANT	ISO200	Aluminium	Nitrile	Aluminium	£35.78
TSIS200000AVC	ISO200	Aluminium	Viton	None	£36.45
TSIS200000AVT	ISO200	Aluminium	Viton	Aluminium	£40.68
TSIS200000SNC	ISO200	Stainless Steel	Nitrile	None	£70.89
TSIS200000SNT	ISO200	Stainless Steel	Nitrile	Aluminium	£73.22
TSIS200000SVC	ISO200	Stainless Steel	Viton	None	£78.96
TSIS200000SVT	ISO200	Stainless Steel	Viton	Aluminium	£90.75
TSIS250000ANC	ISO250	Aluminium	Nitrile	None	£44.63
TSIS250000ANT	ISO250	Aluminium	Nitrile	Aluminium	£47.76
TSIS250000AVC	ISO250	Aluminium	Viton	None	£49.38
TSIS250000AVT	ISO250	Aluminium	Viton	Aluminium	£51.20
TSIS250000SNC	ISO250	Stainless Steel	Nitrile	None	£74.83
TSIS250000SNT	ISO250	Stainless Steel	Nitrile	Aluminium	£82.13
TSIS250000SVC	ISO250	Stainless Steel	Viton	None	£81.39
TSIS250000SVT	ISO250	Stainless Steel	Viton	Aluminium	£85.33

CF Copper Gaskets

Material	OFHC Copper
Thickness	2mm

Part Number	Flange Type OD	Annealed?	ID (mm)	Thickness (mm)	Pack QTY	Price GB£ Each Excluding Shipping
TSCF016016CUG	NW16CF 34mm	No	16	2	10	£8.16
TSCF016016CUA	NW16CF 34mm	Yes	16	2	5	£8.16
TSCF035037CUG	NW35CF 70mm	No	36.5	2	10	£11.52
TSCF035037CUA	NW35CF 70mm	Yes	36.5	2	5	£14.02
TSCF063063CUG	NW63CF 114mm	No	63.4	2	10	£24.42
TSCF063063CUA	NW63CF 114mm	Yes	63.4	2	5	£20.88
TSCF100102CUG	NW100CF 152mm	No	101.5	2	10	£34.13
TSCF100102CUA	NW100CF 152mm	Yes	101.5	2	5	£28.04
TSCF150153CUG	NW150CF 203mm	No	152.5	2	5	£23.73
TSCF150153CUA	NW150CF 203mm	Yes	152.5	2	5	£41.83

KF Blank Flanges

Part Number	Flange Type	OD (mm)	Thickness (mm)	Material	Price GB£ Each Excluding Shipping
TSKF016000ABK	KF16	30	6	Aluminium	£4.76
TSKF016000SBK	KF16	30	6	316L SS	£4.82
TSKF025000ABK	KF25	40	6	Aluminium	£5.26
TSKF025000SBK	KF25	40	6	316L SS	£5.38
TSKF040000ABK	KF40	55	6	Aluminium	£6.31
TSKF040000SBK	KF40	55	6	316L SS	£6.59
TSKF050000ABK	KF50	75	6	Aluminium	£13.35
TSKF050000SBK	KF50	75	6	316L SS	£13.60

ISO Blank Claw Clamp Flanges

Part Number	Flange Type	OD (mm)	Thickness (mm)	Material	Price GB£ Each Excluding Shipping
TSIS063000SBK	ISO63	95	12	316L SS	£34.00
TSIS080000SBK	ISO80	110	12	316L SS	£46.39
TSIS100000SBK	ISO100	130	12	316L SS	£43.52
TSIS160000SBK	ISO160	180	12	316L SS	£71.45
TSIS200000SBK	ISO200	240	12	316L SS	£164.41
TSIS250000SBK	ISO250	290	12	316L SS	£189.27

CF Blank Flanges

Part Number	Flange Type	OD (mm)	Thickness (mm)	Material	Price GB£ Each Excluding Shipping
TSCF016000SBK	NW16CF	34	7.6	304L SS	£12.06
TSCF016000LBK	NW16CF	34	7.6	316LN SS	£38.40
TSCF035000SBK	NW35CF	70	12.7	304L SS	£13.18
TSCF035000LBK	NW35CF	70	12.7	316LN SS	£65.06
TSCF063000SBK	NW63CF	114	17.4	304L SS	£41.44
TSCF063000LBK	NW63CF	114	17.4	316LN SS	£220.78
TSCF100000SBK	NW100CF	152	19.9	304L SS	£70.86
TSCF100000LBK	NW100CF	152	19.9	316LN SS	£387.17
TSCF150000SBK	NW150CF	203	22.3	304L SS	£116.64
TSCF150000LBK	NW150CF	203	22.3	316LN SS	Quotation on request

KF Swing Clamps

Part Number	Flange Type	Material	Thick (mm)	Price GB£ Each Excluding Shipping
TSKF016000ASC	KF16	Aluminium	12	£3.26
TSKF025000ASC	KF25	Aluminium	15	£4.08
TSKF040000ASC	KF40	Aluminium	15	£4.68
TSKF050000ASC	KF50	Aluminium	17	£6.42

ISO Double Claw Clamps

Part Number	Flange Type	Thread Size	Length (mm)	No. Required Per Flange	Material	Price GB£ Each Excluding Shipping
TSIS063250DCS	ISO63/250	M10	60	4	Mild Steel	£5.44
TSIS063100DCA	ISO63/100	M10	50	4	Aluminium	£3.13
TSIS160250DCA	ISO160/250	M10	52	4	Aluminium	£4.18

CF Nuts, Bolts and Washers

Part Number	Thread Size	Length (mm)	Pack QTY	Price GB£ Each Excluding Shipping
TSCF004020NBW	M4	20	25	£11.36
TSCF004035NBW	M4	35	25	£12.24
TSCF006035NBW	M6	35	25	£14.15
TSCF006050NBW	M6	50	25	£17.00
TSCF008045NBW	M8	45	50	£21.22
TSCF008050NBW	M8	50	50	£22.65
TSCF008060NBW	M8	60	50	£25.51
TSCF008070NBW	M8	70	50	£31.15

Viewport Shutters

Part Number	Flange Size	Price GB£ Each Excluding Shipping
VPS38	CF38 (70 mm)	Quotation on request
VPS64	CF64 (114 mm)	Quotation on request
VPS100	CF100 (152 mm)	Quotation on request
VPS150	CF150 (204 mm)	Quotation on request
VPS38AC	CF38 (70 mm)	Quotation on request
VPS64AC	CF64 (114 mm)	Quotation on request
VPS100AC	CF100 (152 mm)	Quotation on request
VPS150AC	CF150 (204 mm)	Quotation on request

Attenuation Filter Wheels

Part Number	Diameter (mm)	Price GB£ Each Excluding Shipping
LFW50	50	Quotation on request
LFW75	75	Quotation on request
LFW100	100	Quotation on request
LFW120	120	Quotation on request

Ceramic Breaks

Seal Type	Braze
Temperature	minus 200°C to 450°C (150°C for KF)
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to $1x10^{-11}$ mbar
Ceramic	High Grade Alumina

Part Number	Flange Type	OD (mm)	Length (mm)	ID (mm)	Electrical Rating	Flange Material	Weld End Material	Price GB£ Each Excluding Shipping
TSCF038020SCB	NW35CF	70	170	20	35kV	304L	Kovar	Quotation on request
TSCF038020LCB	NW35CF	70	170	20	35kV	316LN	Kovar	Quotation on request
TSKF040020SCB	KF40	55	170	20	35kV	316L	Kovar	Quotation on request
TSCF038034SCB	NW35CF	70	100	34	35kV	304L	Kovar	Quotation on request
TSCF038034LCB	NW35CF	70	100	34	35kV	316LN	Kovar	Quotation on request
TSKF040034SCB	KF40	55	100	34	35kV	316L	Kovar	Quotation on request

BNC Feedthroughs

Voltage	500V DC
Current	3A
Temperature	minus 200°C to 450°C (150°C for KF)
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	$<1x10^{-11}$ Torr

Part Number	Flange Type	OD (mm)	Length Without Connector (mm)	Length With Connector (mm)	No of FTs per Flange	Pin Dia (mm)	Material	Price GB£ Each Excluding Shipping
TSCF016001BNC	NW16CF	34	35	52	1	2.4	304 SS & Alumina	£122.91
TSCF035001BNC	NW35CF	70	35	52	1	2.4	304 SS & Alumina	£132.57
TSCF035002BNC	NW35CF	70	35	52	2	2.4	304 SS & Alumina	£224.45
TSCF035004BNC	NW35CF	70	35	52	4	2.4	304 SS & Alumina	£404.56
TSKF016001BNC	KF16	30	35	52	1	2.4	316/304 SS & Alumina	£116.30
TSKF025001BNC	KF25	40	35	52	1	2.4	316/304 SS & Alumina	£121.74
TSKF040001BNC	KF40	55	35	52	1	2.4	316/304 SS & Alumina	£119.43
TSKF040002BNC	KF40	55	35	52	2	2,4	316/304 SS & Alumina	£208.88

SHV-5 Feedthroughs

Voltage	5000V DC
Current	5A
Temperature	minus 200°C to 450°C (150°C for KF)
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	$<1x10^{-11}$ Torr

Part Number	Flange Type	OD (mm)	Length Without Connector (mm)	Length With Connector (mm)	No of FTs per Flange	Pin Dia (mm)	Material	Price GB£ Each Excluding Shipping
TSCF016001SHV	NW16CF	34	42	71	1	2.4	304 SS & Alumina	£193.21
TSCF035001SHV	NW35CF	70	42	71	1	2.4	304 SS & Alumina	£199.24
TSCF035002SHV	NW35CF	70	42	71	2	2.4	304 SS & Alumina	£343.23
TSCF035004SHV	NW35CF	70	42	71	4	2.4	304 SS & Alumina	£631.21
TSKF016001SHV	KF16	30	42	71	1	2.4	316/304 SS & Alumina	£184.18
TSKF025001SHV	KF25	40	42	71	1	2.4	316/304 SS & Alumina	£190.83
TSKF040001SHV	KF40	55	42	71	1	2.4	316/304 SS & Alumina	£201.11
TSKF040002SHV	KF40	55	42	71	2	2.4	316/304 SS & Alumina	£345.10

UHV CF RHEED Screens

Seal Type	Induction
Weld Ring	Kovar
Standard Phosphor	P22 yellow/green
Coating	Indium Tin Oxide (ITO) conducting underlayer on vacuum face of window
Maximum Temperature	350°C
Minimum Temperature	minus 20°C
Maximum Rate of Temperature Change	3°C per minute
Leak Rate	$<1x10^{-10}$ atm-cc/sec (He)
Pressure range	1 bar to 10^{-11} mbar

Part Number	Flange Type	OD (mm)	Screen Diameter (mm)	Optic Thickness (mm)	Flange Thickness (mm)	Flange Material	X-ray protection lead glass	1 off Price GB£ Each Excluding Shipping	5 off Price GB£ Each Excluding Shipping	10 off Price GB£ Each Excluding Shipping
VPZ16ITOP22	NW16CF	34	15	1	12.7	304L		£631.44	£534.25	£507.26
VPZ16ITOP22LG	NW16CF	34	15	1	12.7	304L	Yes	£682.40	£582.81	£555.83
VPZ16ITOP22-LN	NW16CF	34	15	1	12.7	316LN		£683.76	£584.10	£557.12
VPZ16ITOP22LG-LN	NW16CF	34	15	1	12.7	316LN	Yes	£734.73	£632.67	£605.69
VPZ38ITOP22	NW35CF	70	32	2.5	12.7	304L		£630.25	£553.13	£526.15
VPZ38ITOP22LG	NW35CF	70	32	2.5	12.7	304L	Yes	£658.66	£602.45	£585.51
VPZ38ITOP22-LN	NW35CF	70	32	2.5	12.7	316LN		£703.32	£636.25	£609.27
VPZ38ITOP22LG-LN	NW35CF	70	32	2.5	12.7	316LN	Yes	£739.18	£695.61	£668.63
VPZ64ITOP22	NW63CF	114	63	3	17.4	304L		£707.89	£633.49	£605.34
VPZ64ITOP22LG	NW63CF	114	63	3	17.4	304L	Yes	£801.33	£726.40	£698.25
VPZ64ITOP22-LN	NW63CF	114	63	3	17.4	316LN		£820.77	£745.74	£717.58
VPZ64ITOP22LG-LN	NW63CF	114	63	3	17.4	316LN	Yes	£914.21	£838.65	£810.49
VPZ100ITOP22	NW100CF	152	89	4	19.9	304L		£1,096.21	£1,025.94	£1,007.94
VPZ100ITOP22LG	NW100CF	152	89	4	19.9	304L	Yes	£1,248.34	£1,168.31	£1,147.82
VPZ100ITOP22-LN	NW100CF	152	89	4	19.9	316LN		£1,248.54	£1,168.50	£1,148.00
VPZ100ITOP22LG-LN	NW100CF	152	89	4	19.9	316LN	Yes	£1,400.67	£1,310.88	£1,287.88
VPZ150ITOP22	NW150CF	203	136	6.5	22.3	304L		£1,361.26	£1,274.79	£1,253.19
VPZ150ITOP22LG	NW150CF	203	136	6.5	22.3	304L	Yes	£1,625.04	£1,521.82	£1,496.02
VPZ150ITOP22-LN	NW150CF	203	136	6.5	22.3	316L		£1,609.99	£1,454.82	£1,430.16
VPZ150ITOP22LG-LN	NW150CF	203	136	6.5	22.3	316LN	Yes	£1,817.28	£1,701.84	£1,673.00

Open Faced MCP Detectors

MCP type	MCP Hard Edge
Open Area Ration	0,6
Gain	106- 107 typical
PHD	FWHM/A<120%
Strip current	<20μA
Feedthrough type	SHV

Part Number	Flange Type	OD (mm)	No. of MCPs	MCP OD (mm)	MCP Effective Dia (mm)	MCP Pore Size (μ)	Window/Screen	Price GB£ Each Excluding Shipping
TSCF100118OFD	NW100CF	154	1	18	14.5	4	Glass/P20	Quotation on request
TSCF100218OFD	NW100CF	154	2	18	14.5	4	Glass/P20	Quotation on request
TSIS100118OFD	ISO100	130	1	18	14.5	4	Glass/P20	Quotation on request
TSIS100218OFD	ISO100	130	2	18	14.5	4	Glass/P20	Quotation on request
TSCF100125OFD	NW100CF	154	1	25	20	12	Glass/P20	Quotation on request
TSCF100225OFD	NW100CF	154	2	25	20	12	Glass/P20	Quotation on request
TSIS100125OFD	ISO100	130	1	25	20	12	Glass/P20	Quotation on request
TSIS100125OFD	ISO100	130	2	25	20	12	Glass/P20	Quotation on request
TSCF100138OFD	NW100CF	154	1	38.5	32	12	Glass/P20	Quotation on request
TSCF100238OFD	NW100CF	154	2	38.5	32	12	Glass/P20	Quotation on request
TSIS100138OFD	ISO100	130	1	38.5	32	12	Glass/P20	Quotation on request
TSIS100238OFD	ISO100	130	2	38.5	32	12	Glass/P20	Quotation on request
TSCF100150OFD	NW100CF	154	1	50	42	12	Glass/P20	Quotation on request
TSCF100250OFD	NW100CF	154	2	50	42	12	Glass/P20	Quotation on request
TSIS100150OFD	ISO100	130	1	50	42	12	Glass/P20	Quotation on request
TSIS100150OFD	ISO100	130	2	50	42	12	Glass/P20	Quotation on request

Ion Time-of-Flight Detector

Part Number	MCP OD (mm)	MCP Effective Dia (mm)	MCP Pore Size (μ)	Price GB£ Each Excluding Shipping
TSUF000018TOF	18	14.5	4	Quotation on request
TSUF000025TOF	25	20	12	Quotation on request
TSUF000038TOF	38.5	32	12	Quotation on request

Terms and Conditions

Torr Scientific Limited
("The Company")

1. General
In these terms and conditions "Goods" includes the supply of services in accordance with the provisions hereof and "Delivery" includes performance of services as the context may admit. "Order" means an order accepted by the Company and includes contracts to provide services and also authorised amendments to an order. "Price" includes mutatis mutandis payment for Goods and/or services according to time expended, materials used or supplied or on any other basis than fixed price.

1.2 Estimates or quotations are an invitation to treat only and are valid for 60 days unless otherwise stated. No order will become effective until it is accepted or confirmed on behalf of The Company. Such accepted or confirmed Order will then comprise The Company's entire agreement with the buyer and merge all prior discussion quotation offers and understandings.

1.3 These terms and conditions exclude any other terms and conditions inconsistent therewith which a buyer might seek to impose even though such other terms and conditions may be submitted in a later document and/or purport to exclude or supersede any terms or conditions inconsistent with them or may be contained in any offer acceptance or counter offer made by the buyer.

2. Amendments to Order
Save as expressly agreed in writing signed by the Company's duly authorised representative or as provided by clause 5 hereof:-

2.1 If any information supplied by or on behalf of the buyer is insufficient, incorrect, inaccurate, misleading or if the buyer notifies The Company of any changes of requirements in relation to any Order offer or acceptance thereof by the Company The Company shall be entitled to amend the Price, the terms of payment and the delivery date or delivery schedule as in the circumstances The Company shall consider fair and reasonable. The Company shall as soon as practicable notify the buyer in writing of such amendments.

2.2 Any variation or amendments requested by the buyer will only be valid and binding on The Company when subjected to a change order relating to the Order duly placed upon and accepted by The Company in writing signed by a duly authorised representative and subject to appropriate adjustment in price, delivery date and any other matters.

3. Cancellation of Order
3.1 Cancellations of orders confirmed in writing and made before The Company has sent an order acknowledgment to the buyer a cancellation fee will be incurred.

3.2 Cancellation of orders confirmed in writing made after The Company has sent an order acknowledgment to the buyer. The Company reserves the right to apply up to a 100% cancellation fee against the total value of the order.

4. Delivery
Times quoted for delivery are to be treated as estimates only and The Company shall not be liable for failure to deliver within such time. Whether a time for delivery is quoted or not the time for delivery shall be extended by a reasonable period if delay in delivery is caused by anything beyond The Company's control. Any special delivery requirements must be notified to The Company at the time of placing an Order. A charge will be made to cover delivery of goods unless previously agreed in writing.

5. Amendments to Price
The price, delivery dates or any other terms relating to Goods are based upon The Company's assessment of materials, labour and buy-in prices and are subjected to revisions in respect of any increased cost to The Company in respect thereof.

6. Liability
6.1 All goods will be carefully inspected before delivery to ensure freedom from defects and general compliance with the Order. The Company undertakes to replace or repair at the option of The Company and to deliver any Goods or part thereof proved to the satisfaction of The Company to have been defective in material or workmanship when originally despatched, if returned to The Company and accompanied by an official Returns Authorisation Number from The Company within Twelve months from date of despatch.

Where The Company has manufactured the goods to a design of the Buyer no liability is accepted by The Company for design errors, which remains the responsibility of the buyer. The Company shall be entitled to charge for any additional works carried out at the buyer's request.

6.1 -a The Company has the right to void the warranty if the product: (i) is altered or modified in any way; (ii) is otherwise improperly installed; (iii) has been subjected to improper operation, misuse, abuse, accident or neglect.

6.2 The Buyer must examine the Goods immediately upon delivery and within 7 days thereafter notify The Company in writing of any defects and return any allegedly defective part or parts of the Goods to The Company or as the Company shall direct see 6.1 at the Buyers expense.

6.3 The Company shall not be liable for any Consequential loss or loss of profit howsoever arising (including by negligence) to the buyer the buyer's staff or any other third party.

6.4 The Company shall not be liable for any Consequential for any loss expense or damage howsoever arising (including by negligence) to the buyer the buyer's staff or any other third party.

7. Patents
The buyer covenants with The Company that it shall forthwith notify The Company of any allegation of infringement of any patent registered design trade mark copyright or other intellectual property right enjoyed by The Company or by the manufacture or supplier of the Goods or any part thereof.

8. Payment
8.1 Unless otherwise agreed or notified by The Company payment in full is due 30 days from the date of Invoice and is the essence of the contract.

8.2 The Company reserves the right at any time at its discretion to demand security for payment before continuing with or delivering any order.

8.3 Interest is chargeable at the discretion of The Company at 3% per month or part thereof on any late payment beyond the agreed payment terms.

9. Confidentiality
All information supplied by The Company in any form (other than information in the public domain) is supplied in confidence and must not be used by the buyer for any other purpose that the Order and must not be disclosed to any other party without The Company's express written consent and then only on conditions equivalent to this condition and with an express notification that the information was provided for the buyer only and it is not intended to be relied upon by any other party.

10. Assignment and Sub-Contracting
The Company may assign or sub-contract such part or parts of any Order as it sees fit.

11. Risk
The risk in the goods shall be passed onto the buyer at the point of delivery.

12. Customers Own Material
Free issued material issued to the Company for processing against an Order is carried out at the Buyers risk of damage or loss to that material.

12.1 It is the Buyers responsibility to notify The Company of any process or materials, which may have a damaging effect on the free issued material.

13. Lien
Until the company has received payment in full for any goods from the buyer The Company shall have a general and specific lien on all the Buyer's property in the possession or control of The Company for all monies due to The Company from the buyer.

14. Matters Beyond Company's Control
The Company shall not be liable for any loss, damage or expense howsoever arising from any delay or failure of performance arising from circumstance beyond its control including but not limited to earthquakes, flood, storm, force majeure, public enemies, invasion, national emergency, strikes, riots, boycott, interruption of services rendered by any public utility or interference from any government agency or official

15. Law
This agreement shall in all respects be governed by and constructed in accordance with the laws of England. The buyer submits to the jurisdiction of the English courts.

Torr Scientific Ltd.
Specialists in UHV, Optical and X-ray Components

Unit 11 Pebsham Rural Business Centre,
Pebsham Lane, Bexhill-on-Sea
East Sussex, TN40 2RZ, UK

Tel: **44 (0) 1424 225228**
Fax: **44 (0) 1424 221899**
E-mail: **sales@torrscientific.co.uk**