

Transmission Flats (TF)



- For measuring surface quality or transmitted wavefront of flat surfaces or optics.
- 4 and 6-inch flats mount direct onto matching interferometer or mount.
- Storage case included.

Description ⁽¹⁾	Clear Aperture	Quality ⁽²⁾	ZYGO P/N
33 mm	32.5 mm	$\lambda/20$ PV	6024-0312-01
33 mm, Dynaflect™	32.5 mm	$\lambda/20$ PV	6024-0420-01
4 inch	100 mm	$\lambda/20$ PV	6024-0314-01
4 inch, Dynaflect	100 mm	$\lambda/20$ PV	6024-0385-01
4 inch, long radius	100 mm	$\lambda/20$ PV	6024-0341-01
6 inch	150 mm	$\lambda/20$ PV	6024-0317-01
6 inch, Dynaflect	150 mm	$\lambda/20$ PV	6024-0419-01
12 inch	300 mm	$\lambda/15$ PVr	6068-0452-01
18 inch	450 mm	$\lambda/15$ PVr	6068-0456-01

- (1) Standard optics accommodate surfaces from 0.1% to 40% reflectivity; Dynaflect coated optics accommodate surfaces from 4% to 99% reflectivity.
 (2) Surface quality specified over clear aperture with interferometer in horizontal configuration.

Reference Flats (RF)



- Use with a transmission flat when measuring the transmitted wavefront of flat optics.
- 4 and 6-inch flats mount direct onto matching interferometer or mount.
- Storage case included.

Description	Clear Aperture	Quality ⁽¹⁾	ZYGO P/N
33 mm, 4%	32.5 mm	$\lambda/20$ PV	6024-0312-01
33 mm, 90%	32.5 mm	$\lambda/20$ PV	6024-0307-01
4 inch, 4%	100 mm	$\lambda/20$ PV	6024-0314-01
4 inch, 90%	100 mm	$\lambda/20$ PV	6024-0309-01
6 inch, 4%	150 mm	$\lambda/20$ PV	6024-0317-01
6 inch, 90%	150 mm	$\lambda/20$ PV	6024-0318-01
12 inch, 4%	300 mm	$\lambda/15$ PVr	6068-0454-01
12 inch, 90%	300 mm	$\lambda/15$ PVr	6068-0455-01
18 inch, 4%	450 mm	$\lambda/15$ PVr	6068-0458-01
18 inch, 90%	450 mm	$\lambda/15$ PVr	6068-0459-01

- (1) Surface quality specified over clear aperture with interferometer in horizontal configuration.

Reference Spheres (RS)



- Use with a transmission sphere when measuring the transmitted wavefront of spherical optics.
- Mount onto Adjustable Mount with a Self Centering Element Holder.
- Storage case included.

Aperture	R/No.	Reflectivity	Quality	ZYGO P/N
25 mm	0.51	4%	$\lambda/10$ ⁽¹⁾	6024-0302-01
25 mm	0.51	40%	$\lambda/10$ ⁽¹⁾	6024-0448-01
37 mm	0.68	4%	$\lambda/20$	6024-0304-01
37 mm	0.68	40%	$\lambda/20$	6024-0305-01

- (1) Surface quality is $\lambda/20$ over central f/0.65 and $\lambda/10$ over any f/0.65 subaperture.

Transmission Spheres (TS)



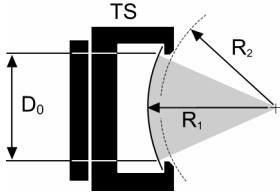
- For measuring surface quality or transmitted wavefront of concave or convex surfaces or optics.
- Mount direct on matching interferometer or mount.
- 6 inch series have integral lift handles.
- Operational wavelength of 633 nm.
- Storage case included.

Aperture/Type ⁽¹⁾	f/No	Quality ⁽²⁾	ZYGO P/N
25 mm	0.58	$\lambda/10$	6024-0472-01
25 mm	0.7	$\lambda/10$	6024-0474-01
25 mm	1.0	$\lambda/10$	6024-0476-01
4 inch	0.65	$\lambda/10$	6024-0454-11
4 inch	0.65	$\lambda/20$	6024-0454-13
4 inch	0.75	$\lambda/10$	6024-0444-11
4 inch	0.75	$\lambda/20$	6024-0444-13
4 inch, Dynaflect	0.75	$\lambda/10$	6024-0444-14
4 inch, UltraSphere	0.75	$\lambda/50^{(3)}$	6024-0444-15
4 inch	1.5	$\lambda/10$	6024-0430-11
4 inch	1.5	$\lambda/20$	6024-0430-13
4 inch, Dynaflect	1.5	$\lambda/10$	6024-0430-14
4 inch, UltraSphere	1.5	$\lambda/50^{(3)}$	6024-0430-15
4 inch	3.3	$\lambda/10$	6024-0399-11
4 inch	3.3	$\lambda/20$	6024-0399-13
4 inch, Dynaflect	3.3	$\lambda/10$	6024-0399-14
4 inch, UltraSphere	3.3	$\lambda/50^{(3)}$	6024-0399-15
4 inch	7.1	$\lambda/10$	6024-0404-11
4 inch	7.1	$\lambda/20$	6024-0404-13
4 inch, Dynaflect	7.1	$\lambda/10$	6024-0404-14
4 inch	10.7	$\lambda/10$	6024-0410-11
4 inch	10.7	$\lambda/20$	6024-0410-13
4 inch, Dynaflect	10.7	$\lambda/10$	6024-0410-14
6 inch	0.8	$\lambda/10$	6024-0458-11
6 inch	0.8	$\lambda/20^{(3)}$	6024-0458-13
6 inch	1.1	$\lambda/10$	6024-0455-11
6 inch	1.1	$\lambda/20^{(3)}$	6024-0455-13
6 inch	2.2	$\lambda/10$	6024-0414-11
6 inch	2.2	$\lambda/20^{(3)}$	6024-0414-13
6 inch	3.5	$\lambda/10$	6024-0413-11
6 inch	3.5	$\lambda/20^{(3)}$	6024-0413-13
6 inch	5.4	$\lambda/10$	6024-0417-11
6 inch	5.4	$\lambda/20^{(3)}$	6024-0417-13
6 inch	7.2	$\lambda/10$	6024-0405-11
6 inch	7.2	$\lambda/20^{(3)}$	6024-0405-13

The above specifications apply over the clear aperture as defined in the TS Part Coverage table.

- (1) Standard optics accommodate surfaces with 0.1% to 40% reflectivity; Dynaflect coated optics accommodate surfaces with 4% to 99% reflectivity.
- (2) Surface quality for standard and Dynaflect optics specified as PV over clear aperture with interferometer in horizontal configuration.
- (3) Quality specified using PVr parameter. PVr is defined as the 36 term Zernike fit plus 3 times the rms residual of the Zernike fit.
($PVr = PV_{36 \text{ Zernike}} + 3 \times \sigma_{36 \text{ Zernike Residual}}$)

TS Selection Guidelines



R_1 is the actual radius of the transmission sphere.

D_0 is the housing diameter opening (clear aperture).

R_2 is the maximum measurable part radius for convex surfaces with diameters larger than D_0 .

For optimum coverage:

TS f/No should be greater than part R/no.

TS diameter (D_0) should be larger than part diameter.

If using an attenuation filter the measurable part radius may be reduced.

For specific coverage calculations, use the ZYGO Transmission Sphere Selector Tool, OMP-0495.

TS Part Coverage

Diameter	f/No	R_1 (mm)	D_0 (mm)	R_2 (mm)
25 mm	f/0.58	8.0	14.8	7
25 mm	f/0.7	12.0	19.0	11
25 mm	f/1.0	20.0	24.1	17
4 inch	f/0.65	38.7	62.0	36
4 inch	f/0.75	48.2	65.5	45
4 inch	f/1.5	121.2	93.7	115
4 inch	f/3.3	298.0	89.2	282
4 inch	f/7.1	681.7	98.1	674
4 inch	f/10.7	1039.2	100.4	1030
6 inch	f/0.8	80.0	104.9	77
6 inch	f/1.1	123.3	128.4	118
6 inch	f/2.2	290.0	164.1	274
6 inch	f/3.5	475.8	164.1	458
6 inch	f/5.4	776.4	164.1	761
6 inch	f/7.2	1045.0	164.1	1022

Converger and Diverger TS



Converger TS

- For testing midrange convex spherical surfaces.
- Test surface radius must be less than or equal to the Converger radius.

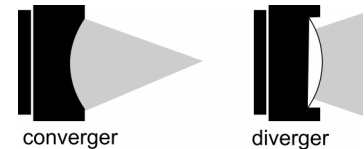


Diverger TS

- For testing midrange concave spherical surfaces.
- Test surface radius must be greater than or equal to the Diverger radius so the center of curvature is coincident with focus.

Converger and Diverger

- 4-inch mount.
- $\lambda/10$ quality (surface error).
- Storage case included.



Radius (mm) ⁽¹⁾

Type	f/No	Maximum (or shorter)	Minimum (or longer)	ZYGO P/N
Diverger	f/15		-1500	6024-0283-01
Converger	f/15	+1500		6024-0284-01
Diverger	f/25		-2500	6024-0285-01
Converger	f/25	+2500		6024-0286-01
Diverger	f/35		-3500	6024-0287-01
Converger	f/35	+3500		6024-0288-01
Diverger	f/45		-4500	6024-0289-01
Converger	f/45	+4500		6024-0290-01
Diverger	f/80		-8000	6024-0291-01
Converger	f/80	+8000		6024-0292-01

(1) A negative radius is a concave surface, a positive value denotes convex.

Mounts

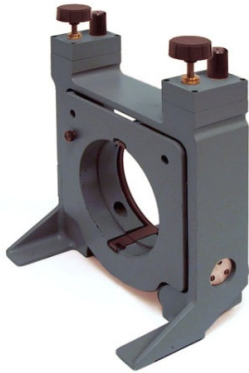
Accessory Receptacle



- Mounts to output of interferometer or Phase Measuring Receptacle (PMR).
- 4.25 in. (108 mm) beam centerline height.
- $\pm 2^\circ$ tip and tilt adjustment.
- 4 or 6 inch interface.
- 4 inch shown.

Mount	Description	ZYGO P/N
Accessory Receptacle	4 inch interface	6500-0105-02
Accessory Receptacle	6 inch interface	6500-0111-02
Adjustable Mount	4 inch interface	6500-0104-50
Adjustable Mount	6 inch interface	6500-0106-50
5-Axis Mount	5 axes: X, Y, Z, Tip, Tilt; 4 inch interface	6500-0475-01
X-Y Stage	6 inch interface	6500-0110-02

Adjustable Mount



- Holds test parts or optics.
- 4.25 in. (108 mm) beam centerline height.
- $\pm 2^\circ$ tip and tilt adjustment.
- 4 or 6 inch interface.
- Accepts matching accessories.
- 4 inch shown.



About Adjustment Screws

ZYGO mounts use 100 TPI adjustment screws with a standard 3/8 in. x 40 TPI collet. These screws may be replaced with similar adjustment screws or micrometers. Note that use of substitution parts may affect normal operation of the mount and void the warranty.

5-Axis Mount



- 13 mm X and Y adjustment.
- 50 mm Z adjustment.
- $\pm 2^\circ$ tip and tilt adjustment.
- 4.25 in. (108 mm) beam centerline height.
- Accepts 4 in. accessories.
- Optional mount guide (p/n 6500-0479-01) allows use with rail.

X-Y Stage



- Attach to Accessory Receptacle or Adjustable Mount.
- 13 mm X and Y adjustment.
- Accepts 6 in. accessories.

Mount Accessories

2-Axis Motorized Mount Kit



- Can be attached to 4 inch or 6 inch 2-Axis Adjustable Mount (not included).
- Provides automated tip/tilt and/or auto null capability.
- Includes Joystick and Electronic Enclosure (not shown).
- For CAN based mainframes.
- Requires MetroPro 8.3 or later.

4 in. Self Centering Element Holder (SCEH)



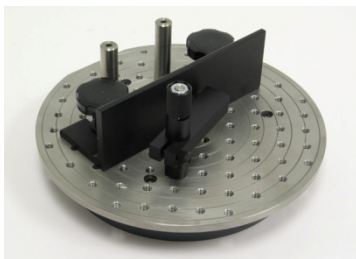
- 4 in. bayonet interface.
- Holds elements of various sizes.
- 5 mm to 100 mm capacity.
- Fixed posts.

6 in. Self Centering Element Holder (SCEH)



- 6 in. bayonet interface.
- Holds elements of various sizes.
- 5 mm to 200 mm capacity.
- Adaptable posts.
- Provides indexed 360° part rotation.

Universal Element Holder



- 6 in. bayonet interface.
- 1/4-20 UNC threaded holes.
- Includes adjustable hardware to hold test parts (as shown).

PVC Platform



- 6 in. bayonet interface.
- Serves as part platform or custom fixture base for downward configuration.

Accessory	Description	ZYGO P/N
2-Axis Motorized Mount Kit	Upgrade kit for 2-Axis Mount; includes actuators, joystick, and electronics	6500-0656-50
Self Centering Element Holder	4 inch	6024-0161-01
Self Centering Element Holder	6 inch	6500-0107-01
Universal Element Holder	6 inch	6500-0130-01
PVC Platform	6 inch	6500-0137-01
Accessory Adapter	6 in. to 4 in. Bayonet	6500-0132-01
Adapter Plate	4 in. to 6 in. bayonet	6024-0356-01
Bayonet Adapter	4 in. to 25 mm F Mount	6500-0491-01
F Mount Bayonet Adapter	25 mm Bayonet to 25 mm F Mount	6500-0492-01
PMR Mounting Plate	Adapter for MUX Cube	6500-1334-01

Mount Accessories (continued)**Accessory Adapter (6 in. – 4 in. Bayonet)**

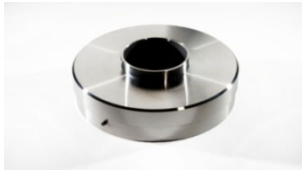
(part numbers on previous page)



- 6 in. bayonet interface.
- Mounts to 6 in. Accessory Receptacle or Adjustable Mount.
- Enables use of 4 in. accessories.

Adapter Plate (4 in. – 6 in. Bayonet)

- 4 in. bayonet interface.
- Mounts to 4 inch bayonet interface and provides use of 6 inch bayonet accessories.
- For example, adapts 6 in. SCEH so it can fit into the 5-Axis Mount.

Bayonet Adapter (4 in. – 25 mm F Mount)

- 4 in. bayonet interface.
- Mounts to 4 in. Accessory Receptacle or Adjustable Mount.
- Enables use of 25 mm accessories.

**F Mount Bayonet Adapter
(25 mm Bayonet – 25 mm F Mount)**

- For use with 4 in. to 25 mm Aperture Converter.
- Enables use of 25 mm F Mount accessories in converter.
- Shown here with Converter and mounted 25 mm TS.

PMR Mounting Plate

- Enables mounting of PMR to MUX Cube.
- Requires four 10-32 screws.

Output Accessories

Attenuation Filter



- Optimize measurement of highly reflective parts.
- Helps produce good fringe contrast.
- Position between test part and standard TF.
- $\leq \lambda/10$ transmitted wavefront quality.
- For the 4 inch filter, transmittance thru the pellicle is $20\pm4\%$ @ 10° angle of incidence @ $\lambda = 632.8$ nm.

Accessory	Description	ZYGO P/N
Attenuation Filter	4 inch	6024-0322-01
Attenuation Filter	6 inch	6024-0323-01
Aperture Converter	4 to 6 inch, horizontal	6024-0380-02
Aperture Converter	4 to 6 inch, vertical	6024-0380-03
Aperture Converter	4 inch to 25 mm, horizontal	6024-0429-01
MUX Cube	4 inch aperture	6168-0100-03
PMR Assembly	Phase Modulation Receptacle	6500-0147-02
PMR Extension Cable	10 ft long	1115-801-070

4 in. to 6 in. Aperture Converter (vertical)



- 4 in. bayonet interface.
- Converts 4 in. aperture to 6 in.

4 in. to 6 in. Aperture Converter (horizontal)



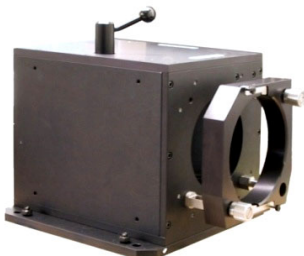
- 4 in. bayonet interface.
- Converts 4 in. aperture to 6 in.
- Includes stand.

4 in. to 25 mm Aperture Converter



- 4 in. bayonet interface.
- Converts 4 in. aperture to 25 mm.
- Requires F Mount Bayonet Adapter to use 25 mm TS.

MUX Cube



- Provides multiple measurement channels; one straight, the other at 90 degrees.
- Select path with knob.
- Tip/Tilt Mount with 4 in. interface included.
- Provides an optional location to mount a PMR (adapter plate required).

Output Accessories (continued)

PMR Assembly



- Enables piezo driven mechanical phase shifting.
- Mounts to interferometer mainframe or MUX Cube.
- MUX Cube mounting requires PMR Mounting Plate.

(part numbers on previous page)

PMR Extension Cable



- Used when remotely mounting PMR on MUX Cube.
- 10 ft long.

Remote



Wireless Remote

- ~100 ft range.
- Requires wired remote as antenna.
- For CAN based mainframes.

Accessory	Description	ZYGO P/N
Remote Extension Cable	Extension cable for wired remote (10 m)	1115-800-345
Wireless Remote	Wireless remote	6500-0559-12
Wireless Remote Kit	Includes a standard wired remote plus a wireless remote	6500-0559-13

Power Kits for Electronics



120V Domestic

- Includes 2 line cords.
- Power surge suppressor included.



220/240V European

- Includes both UK and European line cords.
- Power surge suppressor included.



100V Japan

- Includes 2 line cords and adapters.

Power Kit	ZYGO P/N
120V Domestic	6500-0149-01
220/240V European	6500-0149-02
100V Japan	6500-0149-03

Vibration Isolation and Tables

Stainless Steel Table (horizontal)



- Isolates instrument from external vibration sources.
- Stainless steel table with 1/4x20 UNC threaded holes on 1 in. centers.

Stainless Steel Table (vertical)



- Isolates instrument from external vibration sources.
- Stainless steel table with counterweight.

Optical Table Mounting Kit



- Secures mainframe to optical table.
- Accommodates both English 1 inch and metric 25 mm hole spacing.

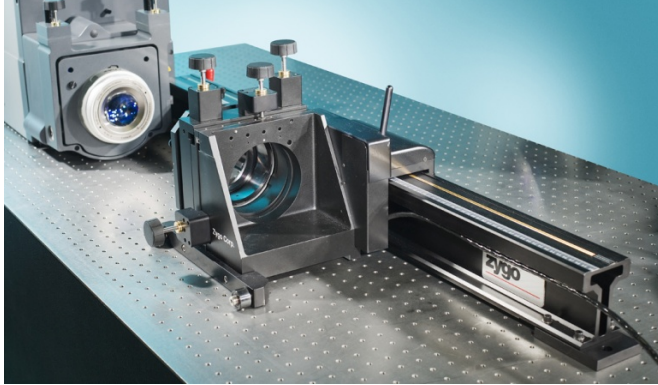
Worktable



- Provides work surface near instrument.
- Includes one shelf to hold components
- 34 x 28 x 35 in. (LWH)

Item (LWH)	Configuration	Description	ZYGO P/N
Granite Top 96 x 30 x 6 in.	Horizontal	Granite only (no isolators)	6090-0152-01
Stainless Steel Table 96 x 36 x 8 in.	Horizontal	For 4 and 6 inch aperture systems; with four 18 in. high isolator posts	6068-0405-01
Stainless Steel Table 48 x 36 x 30 in.	Vertical	Isolation system only; for use with 1 m and 1.5 m Vertical Kits only	1840-700-104
Stainless Steel Table 24 x 24 x 20 in.	Vertical	Isolation system only; for use with 1.5 m Vertical Kit only	1840-700-015
Stainless Steel Table 30 x 30 x 20 in.	Vertical	Isolation system only; for use with 2 m Vertical Kit only	1840-700-118
Optical Table Mounting Kit	For optical tables w/holes (horizontal)	Mounting hardware for horizontal tables with threads	6500-0179-02
Worktable	N/A	Small work-height standalone table for computer	6300-2130-01

Radius of Curvature (Horizontal)

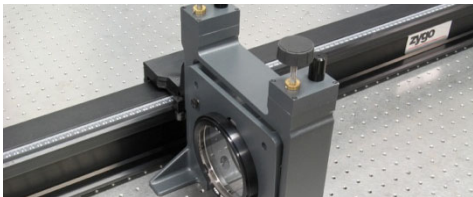


- Horizontal radius metrology requires a rail, a 5-axis rail mount, and the appropriate interferometer mainframe and MetroPro software.
- The *Encoded* solution provides precise (1 μm) z-axis position feedback directly to the software via an encoder.
- The *Interferometric* solution provides ultra-precise (20 nm) z-axis position feedback directly to the software via a displacement measuring interferometer (dmi).
- The *manual* encoded radius configuration is compatible with either MetroPro (8.3.3 or later) or MetroPro X, and displays position data on a digital readout. This is the only configuration that does not require a CAN based interferometer.
- The *manual* interferometric radius configuration requires a CAN based interferometer and can operate with either MetroPro (8.3.3 or later) or MetroPro X.
- All *motorized* radius configurations require a CAN based interferometer and MetroPro X software. The motorized version provides autonull capability.

		Rail		5-Axis Rail Mount	
		1.5 m	2 m	Manual	Motorized XYZ
Manual	<i>Interferometric</i>	6500-0450-01	6500-0450-21	6500-0478-21	6500-0478-23
	<i>Encoded</i>	6500-0450-02	6500-0450-22	6500-0478-11	6500-0478-13
Motorized	<i>Interferometric</i>	6500-0450-03	6500-0450-23	6500-0478-21	6500-0478-23
	<i>Encoded</i>	6500-0450-04	6500-0450-24	6500-0478-11	6500-0478-13

Choose Rail and 5-Axis Rail Mount p/n's based on manual/motorized and interferometric/encoded.

Rail



- Made of extruded aluminum.
- Available in either 1.5 or 2 meter lengths.
- The rail interface height is coincident to the interferometer optical centerline.
- Attaches and aligns to mainframe with ball clamp interface or can be mounted directly to optical table.
- The interferometric rail has a 1 mm graduated ruler scale.
- The encoded rail has an encoder strip and is calibrated for linearity to less than 50 μm over the length of the rail.

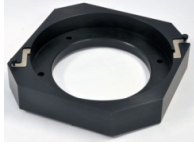
5-Axis Rail Mount



- Available in manual or motorized XYZ versions.
- The manual mount slides on pads and can be removed from the rail for stand-alone use.
- The motorized mount is on rollers for easy translation between catseye and confocal positions.
- All mounts have a quick-release clamp that assures alignment to the rail and the optical axis.
- The encoded mount includes an integrated encoder sensor.
- The interferometric mount includes an integral retroreflector.
- Provides convenient 4.25 in. (108 mm) beam height.
- Accepts 4 in. accessories and 6 in. accessories (with optional Adapter Plate, p/n 6500-0469-01).
- An optional Self Centering Element Holder is recommended for holding test parts in the mount.

Radius of Curvature (continued)

6 in. Adapter Plate



- Attaches to front face of 5-Axis Rail Mount.
- Accepts 6 in. accessories.

Accessory	Description	ZYGO P/N
6 in. Adapter Plate	Enables 5-Axis Rail Mount to accept 6 in. accessories	6500-0469-01
Adjustable Mount Clamp	Add-on clamp for 2-Axis Adjustable Mount	6500-0448-01

Adjustable Mount Clamp



- Attaches to side of 2-Axis Adjustable Mount (mount not included).
- Simple rail clamp interface.
- Non-encoded.
- Not intended for radius metrology.
- Use for quick alignment of test parts.

Vertical Kits

Vertical Workstation Kit



- Part stage is made up of x-y stage, tip/tilt accessory receptacle, and manual z-axis.
- Includes: three rods, baseplate, two mounting arms, and part stage.
- Interferometer not included.

(Shown without included safety baseplate.)

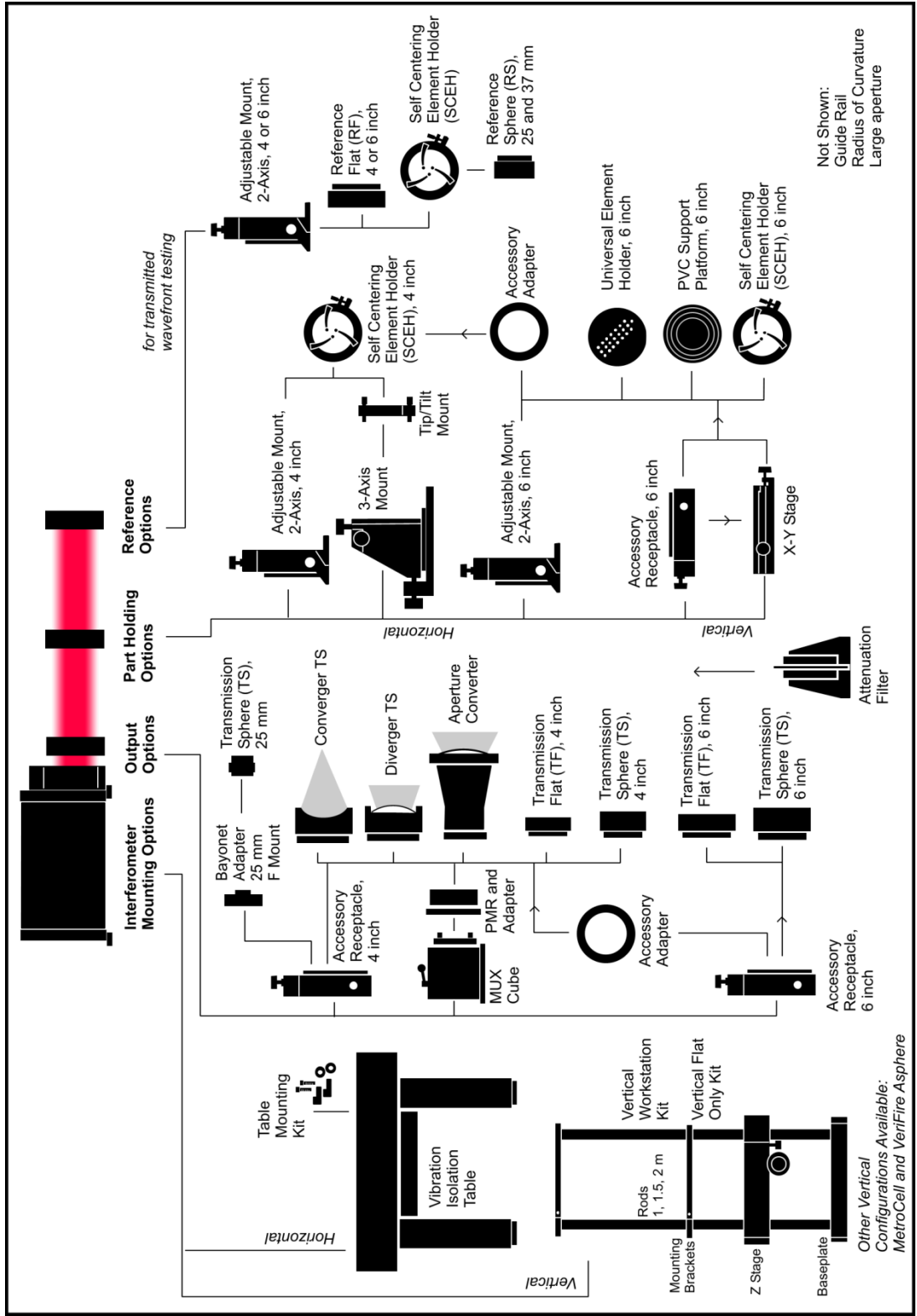
Accessory	Description	ZYGO P/N
Vertical Workstation Kit	1.5 m rods, part stage with 4 in. accessory receptacle	6500-0166-05
Vertical Workstation Kit	1.5 m rods, part stage with 6 in. accessory receptacle	6500-0166-06
Vertical Workstation Kit	2 m rods, part stage with 6 in. accessory receptacle	6500-0166-07
Vertical Flat Only Kit	1 m rods, 6 in. accessory receptacle, PVC platform, for 4 inch mainframe	6500-0164-03
Vertical Flat Only Kit	1.5 m rods, 6 in. accessory receptacle, PVC platform, for 6 inch mainframe	6500-0164-04
Short Radius Kit	1.5 m rods, manual x-y stage, manual z-axis, for 4 inch mainframe; for motorized z-axis add p/n 6500-0651-01	6500-0165-02

Short Radius Kit



- Small optics workstation is made up of manual x-y stage and manual or motorized encoded z-axis.
- Includes: three rods, baseplate, two mounting arms, and a small optics workstation.
- Interferometer not included.

Laser Interferometer Accessories



Information subject to change without notice.



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