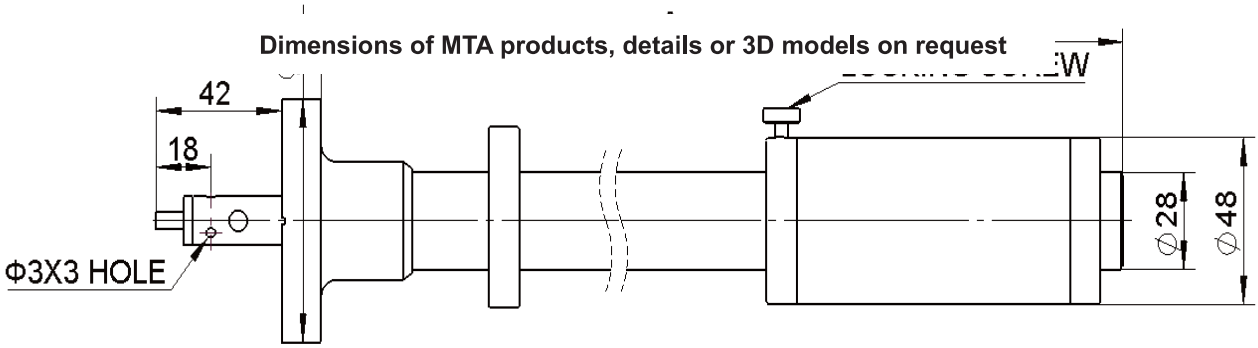
Section 3. Sample Transfer Devices

Magnetic Transfer Rod

- Magnetically Coupled Linear and Rotary Motion
- Bakeable to 150°C with External Magnets
- Material: SS 316 / NdFeB Magnet
- 14mm Hollow Shaft Probe
- High Torque & Stiffness
- NW40CF Mounting Flange
- UHV Rated to 10^{-11}mbar
- Mounted in any Orientation

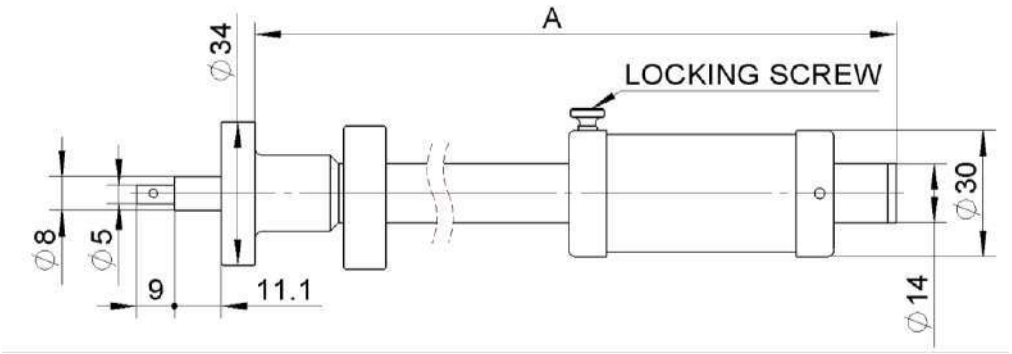


Flange OD		Travel	External Length- A	Weight	Part Number
mm	inch	mm		(kg)	
70	2.75	450	633	1.6	MTR45
		600	798	2.2	MTR60
		900	1118	2.8	MTR90

For applications that require combined rotary and linear movement, Magnetic Transfer Rods can be used. These devices use a magnetic coupling to drive both linear and rotary movement to the shaft. The shaft is mounted with bearings that allow it to move in both a linear and rotational manner. The MTA is a completely enclosed welded structure. At the end of the in-vacuum shaft special designed into which sample carrying mechanism or other custom devices can be mounted.

Miniature Transfer Arm

- Magnetically Coupled Linear and Rotary Motion
- Bakeable to 150°C with External Magnets
- Material: SS 316 / NdFeB Magnet
- 8 mm Shaft Probe
- High Torque & Stiffness
- NW16CF Mounting Flange
- UHV Rated to 10^{-11}mbar
- Mounted in any Orientation
- Position Lock



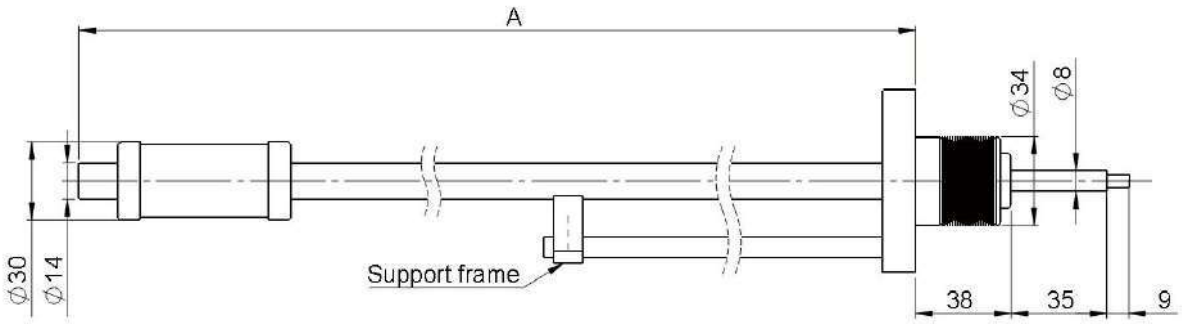
Dimensions of MTM products, details or 3D models on request

Flange OD		Travel	External Length- A	Weight (kg)	Part Number
Mm	inch	mm			
34	1.33	150	258	0.5	MTM15
		250	358	0.6	MTM25
		350	458	0.7	MTM35

These magnetic linear/rotary motion drives labeled as the MTM series offer an ideal solution for applications where space or weight is tight restricted while linear and rotary motion is still required.
The Miniature Transfer Arm has CF16 mounting flange and with 8mm Shaft, small but not weak, with NdFeB magnet it is powerful for most sample handling applications.
The MTM products works with max 0.8N.m Torque and Axial Thrust is 60N.

Wobble Stick

- Magnetically Coupled Linear and Rotary Motion
- Bakeable to 150°C with External Magnets
- Material: SS 316 / NdFeB Magnet
- 8 mm Shaft Probe
- High Torque & Stiffness
- NW40CF Mounting Flange
- UHV Rated to 10^{-11}mbar
- Mounted in any Orientation
- Position Lock



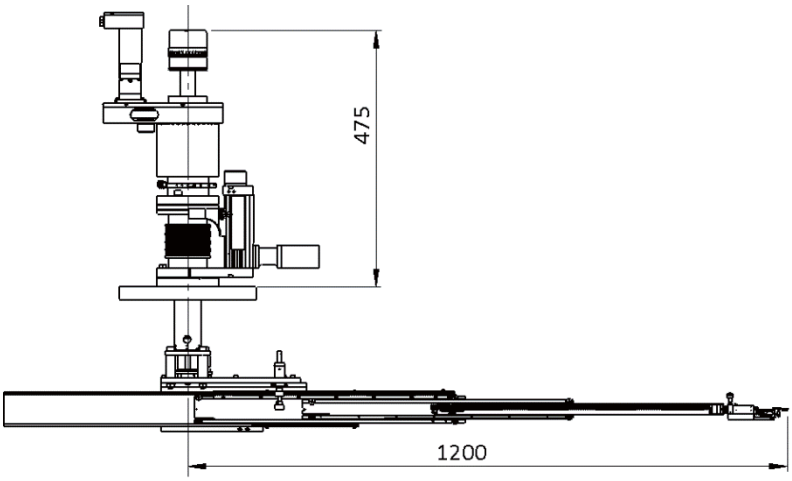
Dimensions of WS products, details or 3D models on request

Flange OD		Travel	External Length- A	Tilt	Weight	Part Number
mm	inch	mm		(°)	(kg)	
70	2.75	150	233	20	0.8	WS15
		250	333	20	0.9	WS25
		350	433	20	1.0	WS35

This Wobble Stick combines edge welded bellows and magnetic coupling technologies, enable the inner 8mm shaft move linear and rotary and at the same time achieve the tilt range up to 20 degrees.
With NdFeB permanent magnet, the devices has max 0.8N.m Torque and Axial Thrust is 60N.
Extra supporting Frame is available to hold the shaft horizontal when not used.

Radical Telescope Transfer Arm

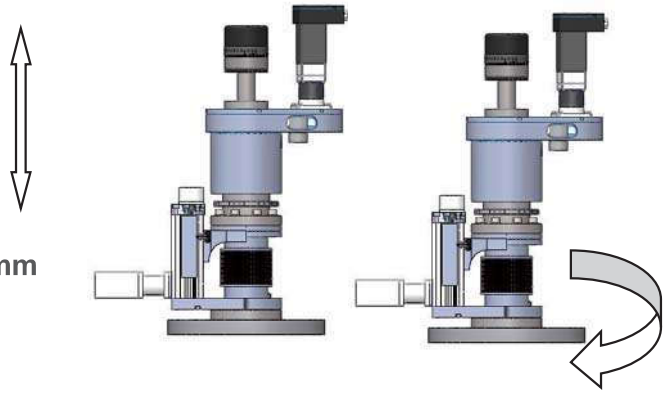
- Continous Rotary Motion
- Extended up to 1200mm
- Rotation Reproducibility < 0.1° (motorized)
- Linear Reproducibility < 0.1° (motorized)
- UHV Rated to 10^{-11}mbar
- Bakable to 120°C
- High Load Carrying Capability
- Mounting Flange: NW100CF
- Constructed with Fully UHV Compatible Material



The Telescope Transfer Arm provides a cost-effective solution for radial distribution sample transfer applications providing arm rotation and arm extension.

A high torque magnetically-coupled Magi Drive precisely rotates the transfer arm to align with the desired chamber port. A second rotary drive is used to drive the innovative telescopic mechanism to provide an arm extension up to 1200 mm.

The arm be either motorized or manually motivated. And more freedom could be added to allow the arm:

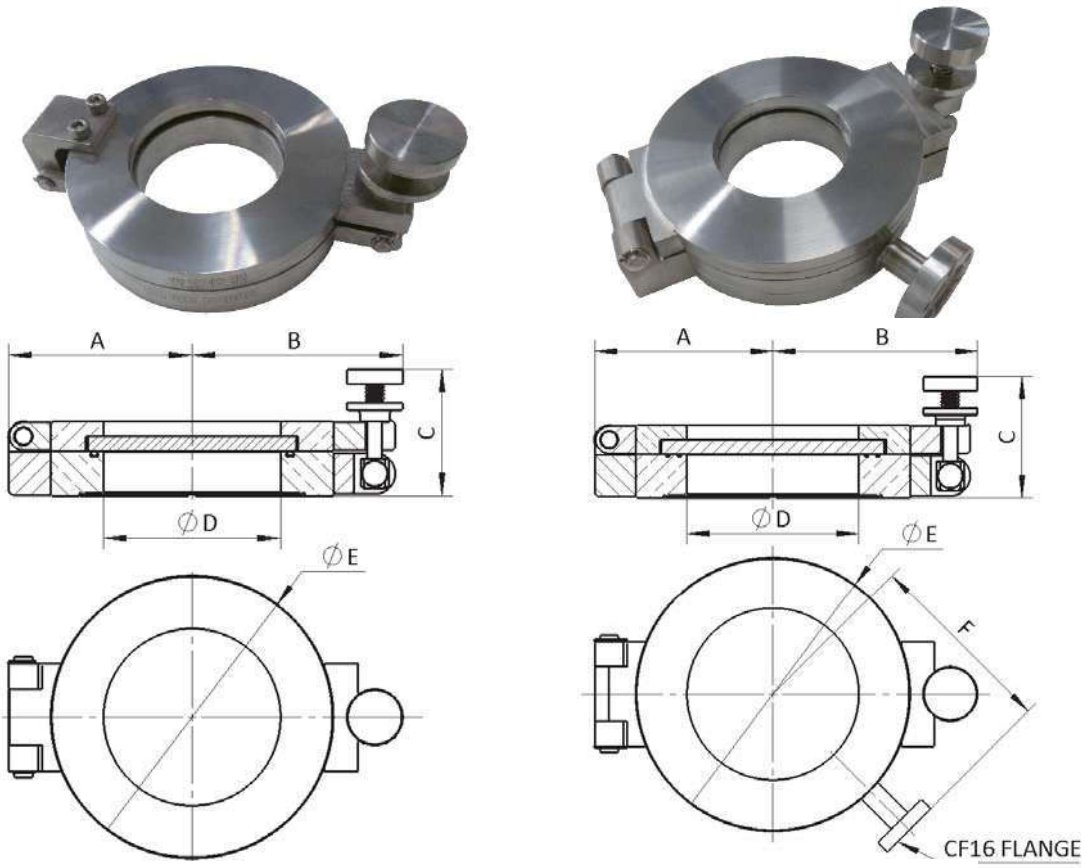


Z Shift up to 50mm

Rotation along the extension axis

Sample could be rotated to face any directions

Fast Entry Door & Differential Pumped Fast Entry Door



Without Differential Pump

With Differential Pump

Flange（OD）		Type	A	B	C	D	E	F	Weight (Kg)	Part Number
mm	inch		mm							
70	2.75	Without Differential Pump	48	35	32	40	70		0.5	FED2
114	4.50		79	88	59	61	114		2.0	FED4
152	6.00		99	113	68	95	152		4.0	FED6
114	4.50	With Differential Pump	79	88	59	61	114	80	2.3	FED4-DP
152	6.00		99	113	68	95	152	107	4.4	FED6-DP

Fast Entry Doors provide convenient and fast manual loading of samples in and out of vacuum chambers. Doors are fitted with a spring-loaded hand knob locking mechanism, this patented design also prevent the Load Lock Chamber from being over-pressurized as the door will be pushed open.

Two types of Fast Entry Doors are offered to the market for different application. The conventional model has single Viton® elastomer seal and suitable for vacuum sealing to 10-8 mbar, the convention model uses Quartz as window material and it is replaceable. The other model is designed for UHV application and could seal the chamber to 10-10 mbar by double elastomer seals and differential pumping in between.

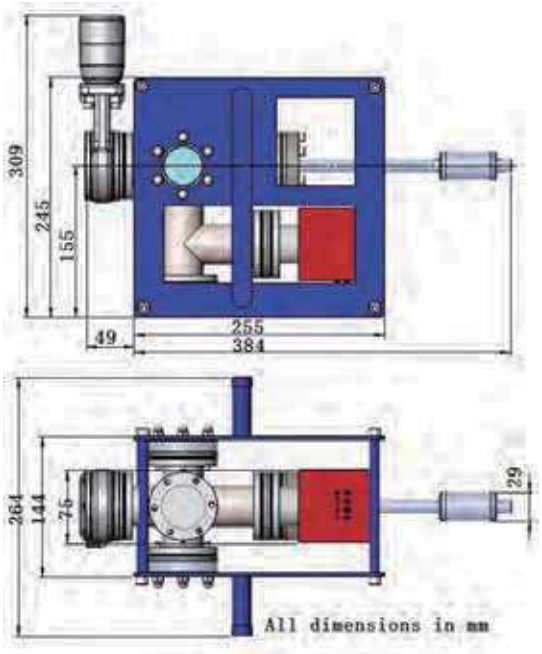
These Fast Entry Doors are compatible with all NW-CF flanges and could be installed with either tapped or clear hole flange. However please confirm with our sales or distributor for the bolt hole orientation for proper installation.

Fermi Instruments also offers larger and customized fast entry doors.

Portable UHV Suitcase

This is an easy to transport UHV Suitcase, it is leak tested and baked out to UHV before shipment, thus it is ready to use at the time of open box. There is a combination pump (Ion/NEG) keeps the inner volume constantly in UHV environment even at the shortage of power, thus it is an ideal tool for carrying sensitive samples for remote instruments.

This UHV suitcase adopts a very compact design which reduces the total weight and keeps all functionalities at the same time. It connects to other systems via one VAT NW40CF Manual Gate Valve and transfer sample holders by one transfer arm. With UHV compatible viewports, it is now possible to monitor the samples even in the process of transport.



Battery and Convertor

Multiple Sample Park

Shock Proof Travel Case

Accessory

Key Features

Chamber Material

SS 316 Standard, Ti Alloy Optional

Base Pressure

1x 10^{-10} mbar with standard configuration

UHV Pumps

SAES Nextorr 200D for Standard

Number of Viewports

2X 2.75inch Kodial Viewports Standard, Optional to 4

Sample Holder Type

Flag Type Sample Holder

Sample Holder Capiacity

Standard for 1 holder, Optional to 6