INSTRUCTION MANUAL

3arm®

HEADS ANNEX

SERIES 1

SERIES 2

TECNOSPIRO MACHINE TOOL, S.L.U.
P.I Pla dels Vinyats I, s/n nau 1
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ISO 9001
BUREAU VERITAS
Certification

TECNOSPIRO
MACHINE TOOL SLU

DESIGN & QUALITY
3arm
Made in Barcelona

www.3arm.net

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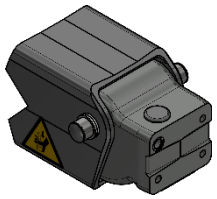
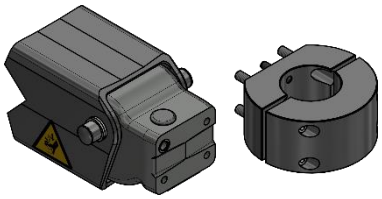
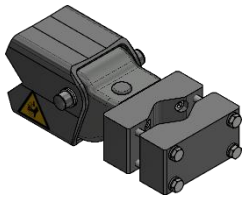
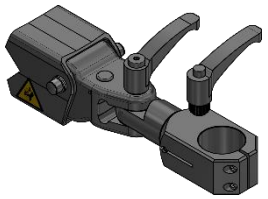
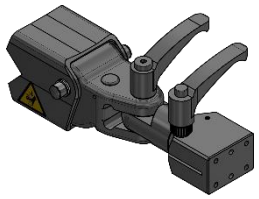
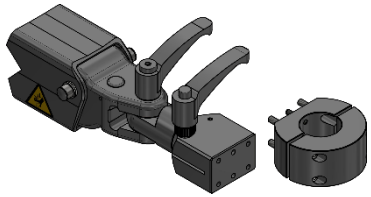
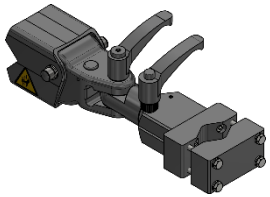
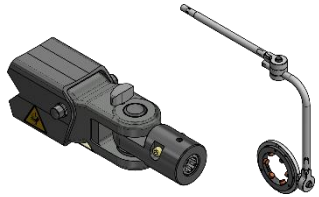
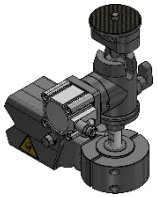
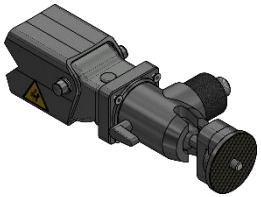
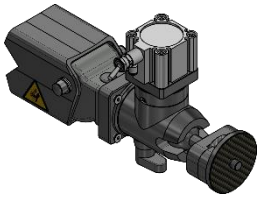
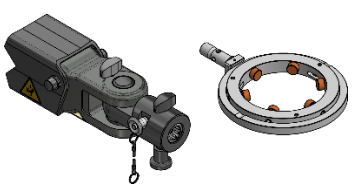
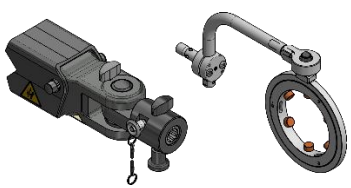
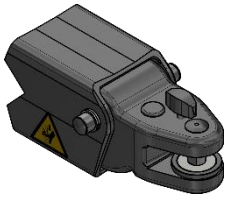
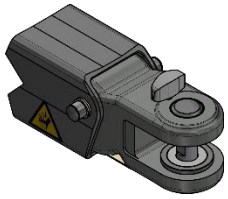
Date of revision: 26/09/2023

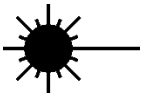
1. DESCRIPTION OF S1 - S2 HEADS

				
B - Vertical flat 0 kg **MV1005A4**	**BA** - Vertical flat + Flange 0 kg **MV1005A4 + M2Dxxx04 (Fixed)** **MV1005A4 + MV1PUxxx (Custom)**	**C** - Vertical V-block 0,5 kg **MV1006A4**	**D** - Articulated rotating 0.5 kg **MV1022A4**	**E** - Articulated flat rotating 0,5 kg **MV1007A4**
				
EA - Articulated flat rotary + flange 0.5 kg **MV1007A4 + M2Dxxx04 (Fixed)** **MV1007A4 + MV1PUxxx (Custom)**	**F** - Articulated rotary V-block 1 kg **MV1023A4**	**GA** - Multigyro 0.7 kg **MV1003B4 + MV3EExxx (Timco)** **MV1003B4 + MV3EFxxx (Timsand)** **MV1003B4 + MV3CUxxx (Custom)**	**K** - Adjustable strap 1.3 kg **M1200700**	**L** - Adjustable swivel head with vertical adjustment 1.5 kg **M1202400**
				
LA - Automatic adjustable ball head with vertical adjustment 1,5 kg **M1202500**	**LB** - Adjustable horizontal ball joint 1kg **M1202600**	**LC** - Automatic horizontal adjustable swivel 1kg **M1202700**	**NA** - Multi-position with quick change 0.7 kg **M1106200 + MV3MAxxx (Timco)** **M1106200 + MV3PBxxx (Timsand)** **M1106200 + MV3MUxxx (Custom)**	**TA**- Multi-position with quick change 0.7 kg **M1106200 + MV3LAxxx (Timco)** **M1106200 + MV3QBxxx (Timsand)** **M1106200 + MV3LUxxx (Custom)**
				
Z - Fork 0 kg **MV1012A4**	**ZA** - Reinforced fork 0.25 kg **M1202800**			

2. TOOLS

2.1 SYMBOLS AND ICONS

Throughout this manual you will see various symbols indicating the most suitable tool for that type of head.
Their meanings are summarised below:

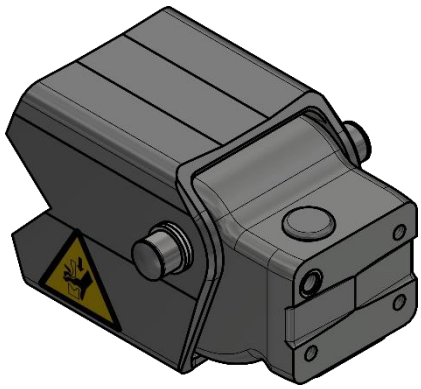
Torque screwdriver pistol		Manual scanner	
Impulse impact straight		Laser equipment	
Impulse/impact gun		Shearing machine	
Torque screwdriver, angled		Rivet gun	
Straight torque screwdriver		Spot welder	
High torque screwdriver with reaction bar		Stud welder	
Drill		Pneumatic hammer	
Straight grinder		Blower	
Radial grinder		Polishing machine	
Jigsaw		Personalised	
Saw			

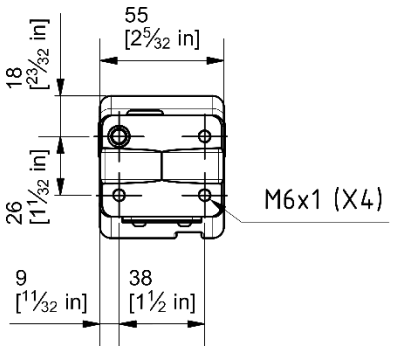
2.2 RECOMMENDED TOOLS PER HEAD

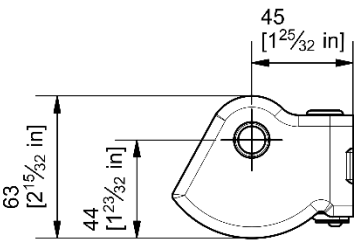
3ARM - HEADMEMBERS	TORQUE & SCREWDRIVERS						MACHINING					OPTICAL TOOLS		ASSEMBLY		Welding		OTHERS			
	Nutrunner Pistol	Straight impulse/ impact	Impulse/ impact pistol	Angled nutrunner	Straight nutrunner	Nutrunner with reaction bar	Drill	Straight grinder	Angular grinder	Keyhole saw	Sabre saw	Scanner	Laser equipment	Pliers	Rivet gun	Spot Welding	Stud Welding	Chipping hammer	Blower / Vacuum	Polisher	Custom
B												■	■								■
BA		■		■			■										■				
C		■																			
D					■																
E												■	■				■				■
EA		■		■	■		■														
F		■																			
GA								■	■	■				■	■	■			■	■	
K											■			■		■		■	■		
L												■	■								
LA												■	■								
LB												■	■								
LC												■	■								
NA		■	■		■	■	■	■		■				■	■	■	■			■	
TA	■		■			■	■	■	■	■				■	■	■				■	
Z																					■
ZA																					■

3. HEADS

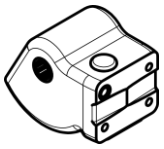
3.1 FLAT VERTICAL - B
MV1005A4





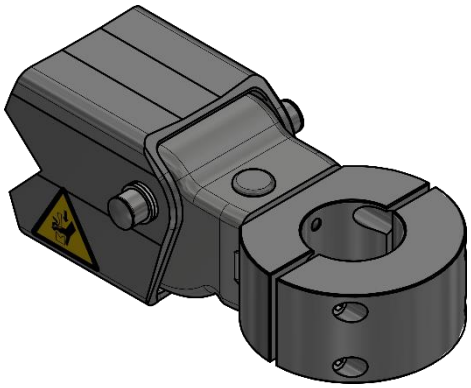


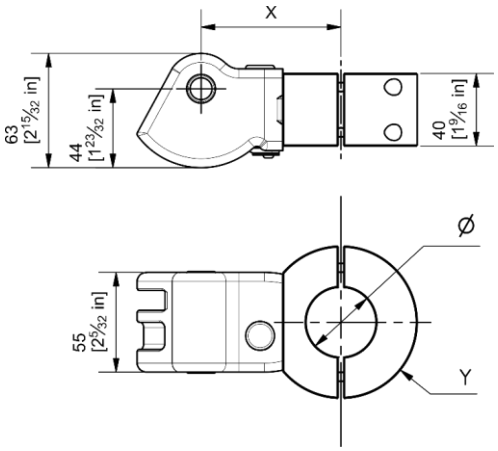
3.1.1 Spare parts

MV1005A4R	VERTICAL FLAT HEADMEMBER	

3.2 FLAT VERTICAL - BA
MV1005A4 + Flange

Fixed flange (M2Dxxx04)



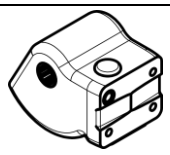
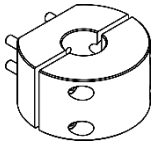


Ø: Specific diameter on request. (Max. diameter 52mm).

Dimensions	Ømin (mm)	Ømax (mm)	X (mm)	Y (mm)
Fixed flange	15 *(19/32")*	52 *(2 3/64")*	77 *(3 1/32")*	Ø84 *(3 5/16")*

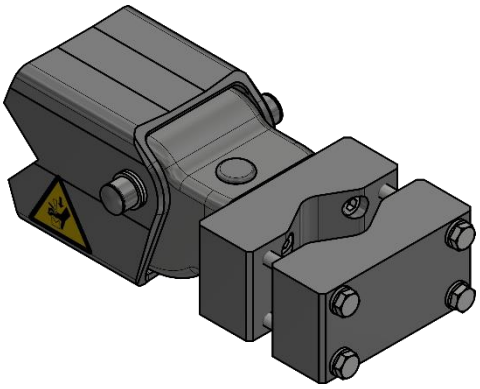
MAXIMUM TORQUE - Fixed flange (Nm)		
Arm	**Vertical**	**Horizontal**
S1	N/A	N/A
S2	120	90

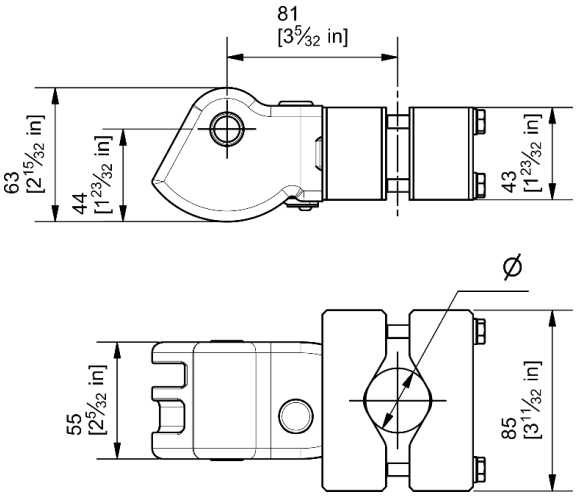
3.2.1 Spare parts

MV1005A4R	VERTICAL FLAT HEADMEMBER	
M2DXXX04[1]	RING ADAPTOR	

[1] XXX corresponds to the inner Ø in mm

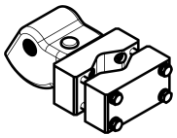
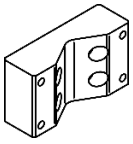
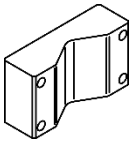
3.3 VERTICAL V-BLOCK - C
MV1006A4



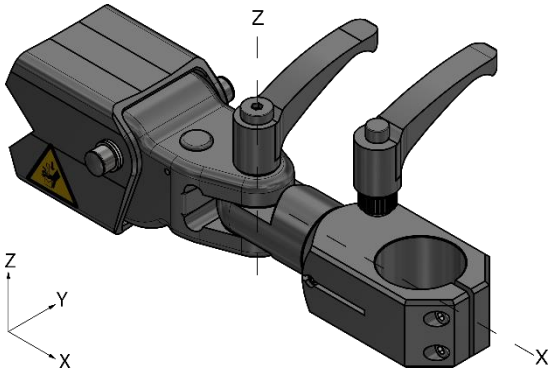


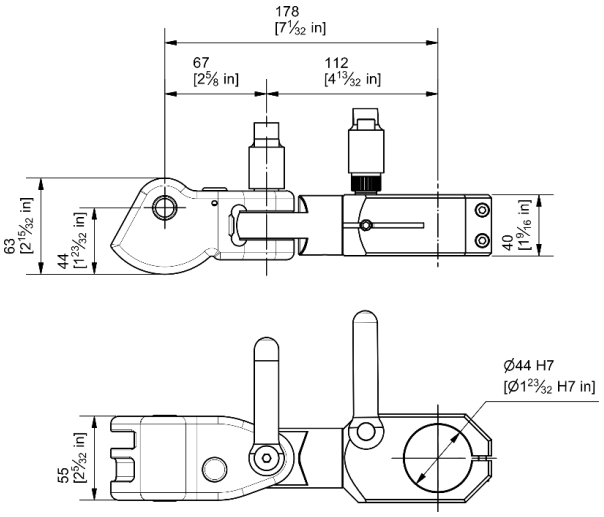
Not suitable for torque tools
Cylindrical or irregularly shaped tools
$Ø_{min}$: 25 mm/ $Ø_{max}$. 62 mm

3.3.1 Spare parts

MV1006A4R	VERTICAL HEADMEMBER - ADJUSTABLE DIAMETER	
MV200303	CLAMPING VICES - REAR BASE	
MV200403	CLAMPING VICES - FRONT BASE	

3.4 ROTARY ARTICULATED - D
MV1022A4





Maximum torque: 60Nm

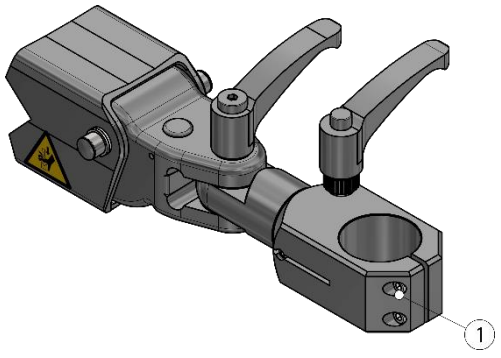
X: Rotates 360º. Manual locking in any position
Z: Rotates ±90º. Manual locking in any position

Max. tool diameter: 44mm (Adaptable bushing)

MAXIMUM TORQUE (Nm)			
Arm	**Vertical**	**Horizontal**	**Angle**
S1	N/A	N/A	N/A
S2	60	60	60

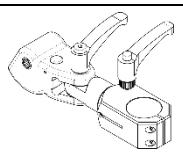
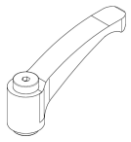
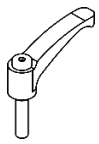
3.4.1 Installation and disassembly of the tool

1- Fit the tool (or the adapter sleeve) to the Ø44H7 and tighten the bolts (1) (Allen key 5mm)

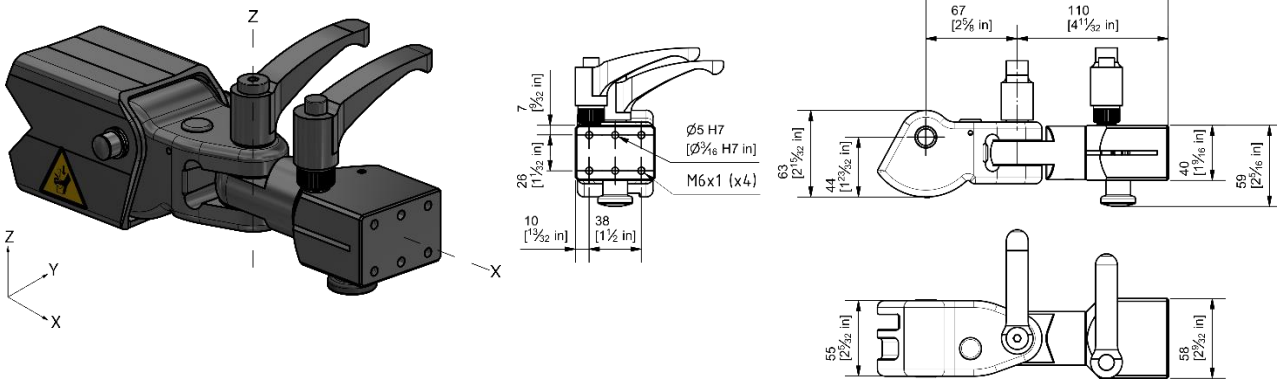


To disassemble the tool, remove the bolts (1) and screw them in on the other side (put a plate in the slot to release the tool). **Do not force, as it could damage the head.**

3.4.2 Spare parts

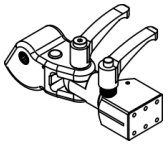
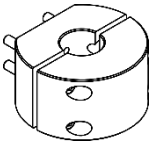
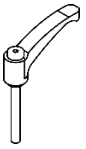
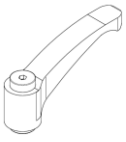
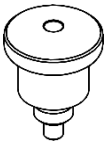
MV1022A4R	ORIENTABLE HEADMEMBER	
AC060566	HANDLE M8 [Axis X]	
AC060546	HANDLE M10x40 [Axis Z]	

3.5 ARTICULATED FLAT ROTARY - E
MV1007A4



X: Rotates 360º (4x90º)[2]. Manual locking in any position
Z: Rotates ±90º. Manual locking in any position.

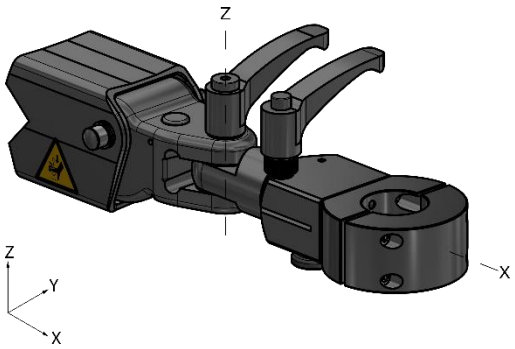
3.5.1 Spare parts

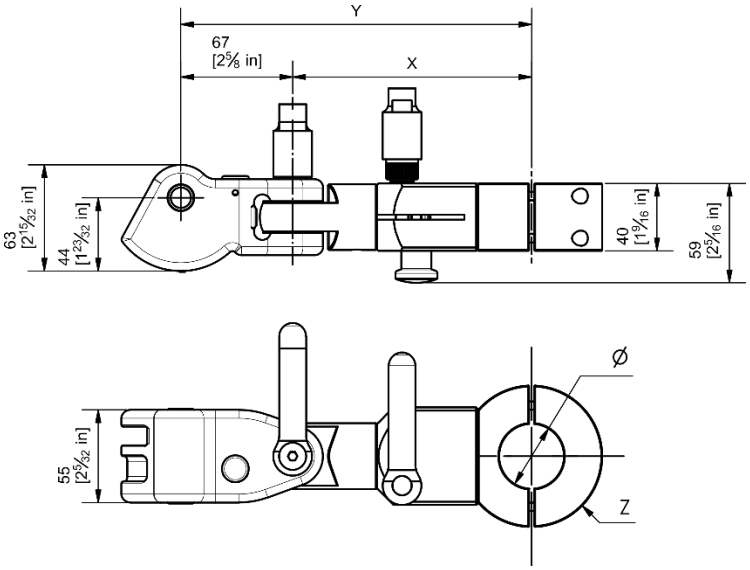
MV1007A4R	ARTICULATED ROTATIVE HEADMEMBER	
M2DXXX04[3]	RING ADAPTOR	
AC060546	HANDLE M10x40 [Axis Z]	
AC060566	HANDLE M8 [Axis X]	
CM175300	SMALL POSITIONER [Axis X]	

[2] The positioner only facilitates the 4x90° position, the X-axis handle must be locked.
[3] XXX corresponds to the inner Ø in mm

3.6 ARTICULATED FLAT ROTARY - EA MV1007A4 + Flange

Fixed flange (M2Dxxx04)





Dimensions	Ømin (mm)	Ømax (mm)	X (mm)	Y (mm)	Z (mm)
Fixed flange	15 *(19/32")*	52 *(2 3/64")*	142 *(5 19/32")*	208.5 *(8 13/64")*	Ø84 *(3 5/16")*

Maximum torque: 60Nm

X: Rotates 360º (4x90º)[4]. Manual locking in any position
Z: Rotates ±90º. Manual locking in any position

Ø: Specific diameter on request.

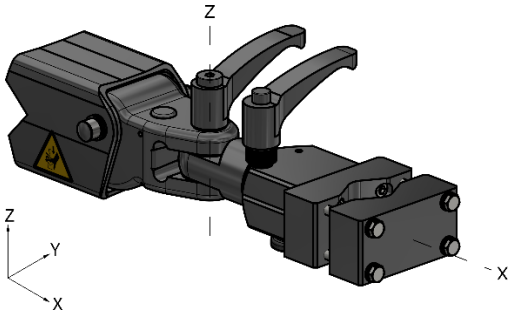
MAXIMUM TORQUE (Nm)			
Arm	**Vertical**	**Horizontal**	**Angle**
S1	N/A	N/A	N/A
S2	60	60	60

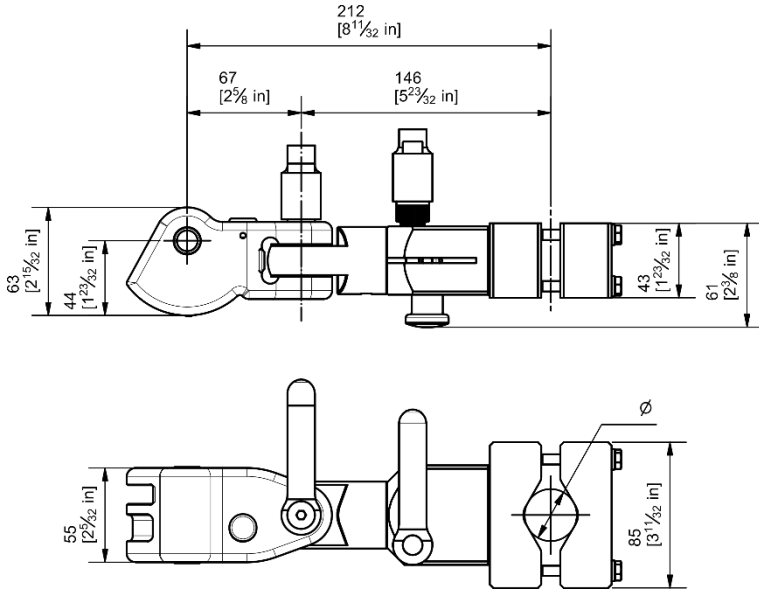
Spare parts [See Spare parts page 12].

[4] The positioner only facilitates the 4x90° position, the X-axis handle must be locked.

3.7 ARTICULATED ROTARY V-BLOCK - F

MV1023A4





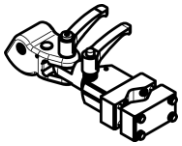
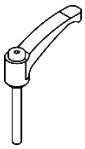
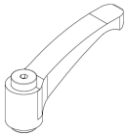
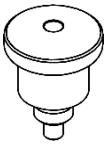
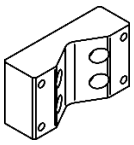
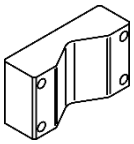
Not suitable for torque tools

Cylindrical or irregularly shaped tools
$Ø_{min}$: 25 mm/ $Ø_{max}$: 62 mm

X: Rotates 360º (4x90º)[5]. Manual locking in any position
Z: Rotates ±90º. Manual locking in any position

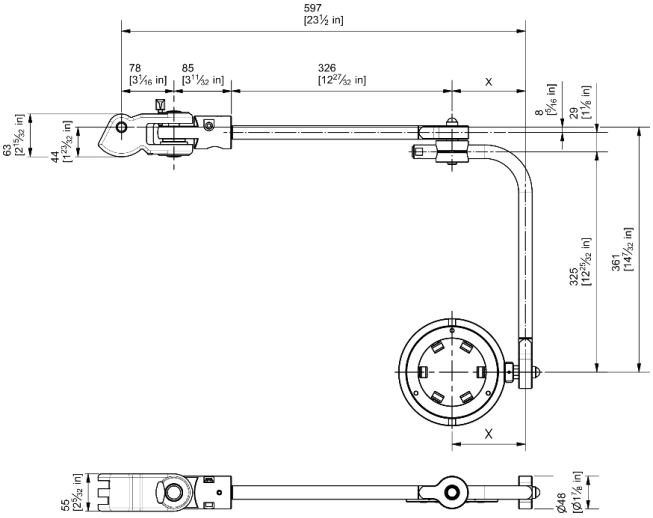
[5] The positioner only facilitates the 4x90° position, the X-axis handle must be locked.

3.7.1 Spare parts

MV1023A4R	ORIENTABLE & ADJUSTABLE HEADMEMBER	
AC060546	HANDLE M10x40 [Axis Z]	
AC060566	HANDLE M8 [Axis X]	
CM175300	SMALL POSITIONER [Axis X]	
MV200303	CLAMPING VICES - REAR BASE	
MV200403	CLAMPING VICES - FRONT BASE	

3.8 MULTIGIRO - GA

MV1003B4 + Handlebar

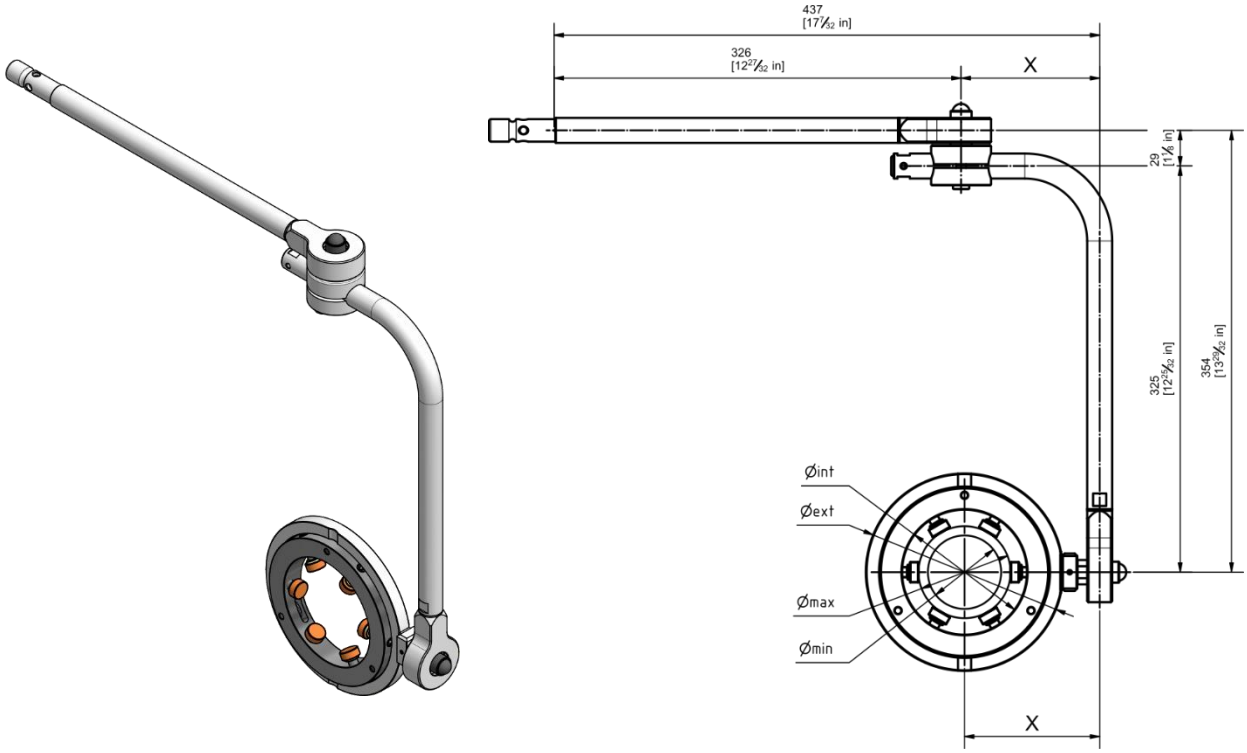


Requires L50 Locks

Z_1: Rotates ±90º. Non-lockable
Z_2: Rotates 360º. Non-lockable
X_1: Rotates 360º. Manual locking in 4 positions (4x90º)
X_2: Rotate 360º. Manual locking in any position (Optional)
Y: Rotates 360º. Non-lockable

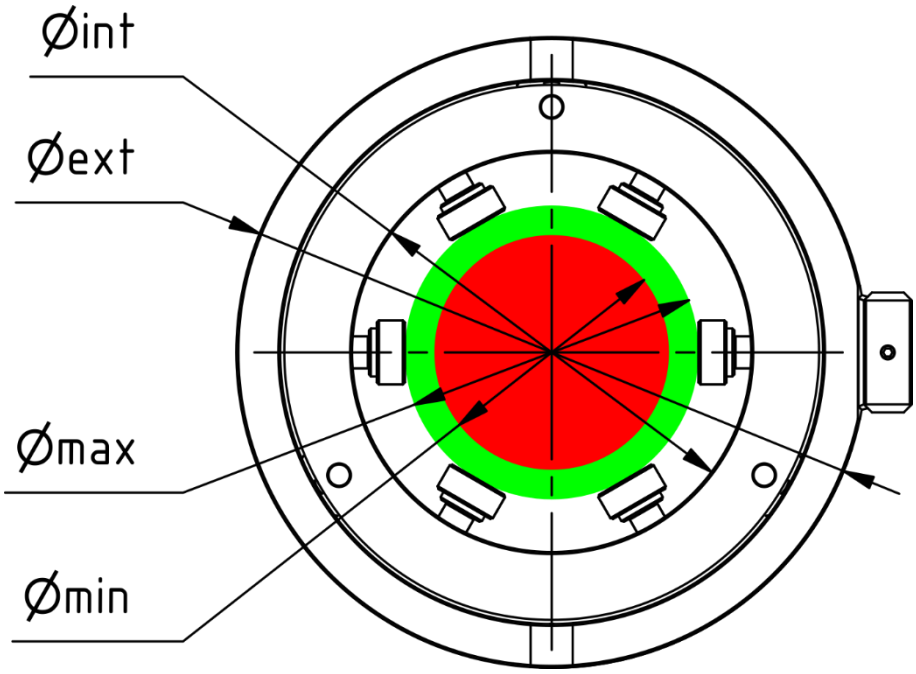
3.8.1 Handlebar Type A: TIMCO

Suitable for any type of tool.
Ref: MV3EExxx (xxx = internal diameter in mm)



- The X coordinate shall be as close as possible to the Z_2 axis of rotation to ensure good tool balancing. Xmin = 110mm

3.8.1.1 TIMCO Dimensions

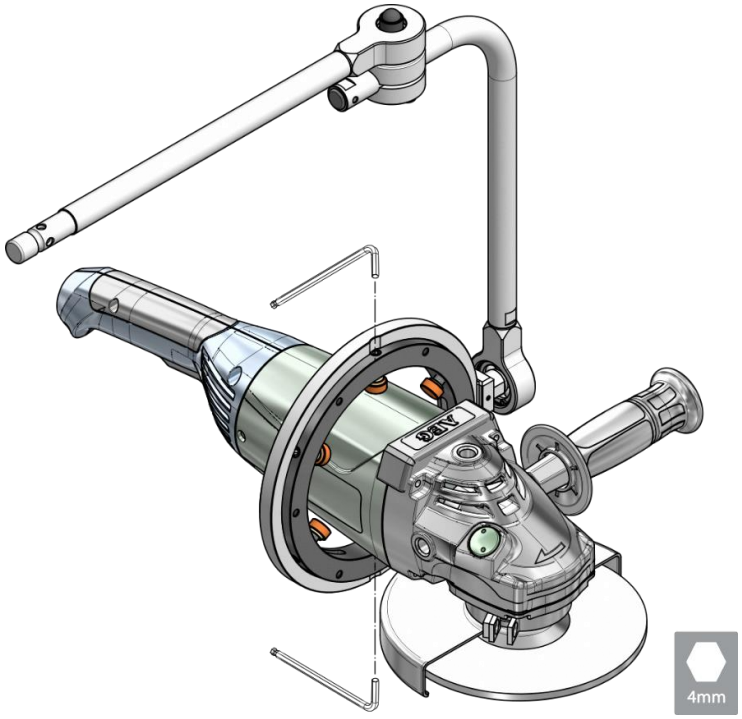


Øint		Øext		Ømin - Ømax tool	
mm	Inches	mm	Inches	mm	Inches
70	2 3/4"	128	5 3/64"	27 -57	1 1/16" - 2 1/4"
80	3 5/32"	138	5 7/16"	35 - 67	1 3/8" - 2 41/64"
90	3 35/64"	148	5 53/64"	45 - 77	1 49/64" - 3 1/32"
100	3 15/16"	158	6 7/32"	55 - 87	2 11/64" - 3 27/64"
110	4 21/64"	168	6 39/64"	65 - 97	2 9/16" - 3 13/16"
120	4 23/32"	178	7 1/64"	75 - 107	2 61/64" - 4 7/32"
130	5 1/8"	188	7 13/32"	85 - 117	3 11/32" - 4 39/64"
140	5 33/64"	198	7 51/64"	95 - 127	3 47/64" - 5"
150	5 29/32"	208	8 3/13"	105 - 137	4 9/64" - 5 25/64"
160	6 19/64"	218	8 37/64"	115 - 147	4 17/32" - 5 25/32"
170	6 11/16"	228	8 31/32"	125 - 157	4 59/64" - 6 3/16"
180	7 3/32"	238	9 3/8"	135 - 167	5 5/16" - 6 37/64"

- The tool diameter must be in the green zone (between Ømin and Ømax).
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.)
- Other dimensions on request

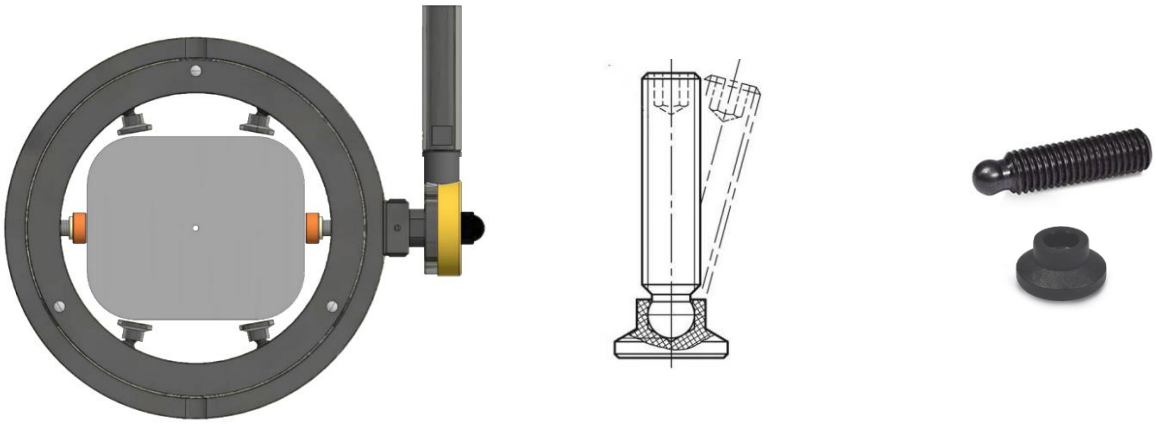
3.8.1.2 Assembly of the tool

1- Place the tool in the swivel support so that the weight is balanced on both sides of the support.
2- Once you have the tool in place, you must match the notches on the outer ring with the head of the Allen bolt. The tool must be tightened progressively, tightening using an "X" pattern.



In order to hold the tool in the correct way[6], Tecnospiro recommends the use of headless Allen studs with ball tip for thrust pads. This component allows the tool to be held from all sides, with the pads adapting to the surface of the tool.

Clamping foot kit with stud bolts **(M3297600)**



[6] Optionally, a tailor-made adapter can be manufactured to obtain an optimum fit.

3.8.1.3 Included accessories

In addition to type A drums (TIMCO), two types of **end caps (nylon and rubber)** and **studs (DIN-913 M8x25 and DIN-913 M8x20)**are included. (By default it is supplied assembled with Nylon cap and DIN-913 M8x20 stud bolt).

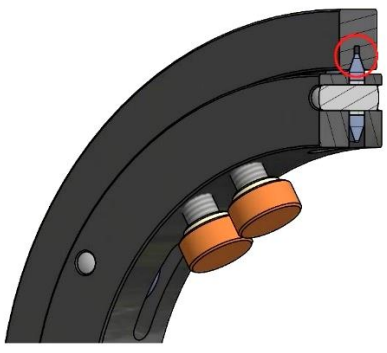
Nylon Cap MV31B803	**Rubber Cap MV31F303**
Material: Nylon Identifying colour: Translucent white Tightening level: High Level of Adaptation: Medium 	Material: Polyurethane Identifying colour: Red Tightening level: Medium Level of Adaptation: High 

Rubber caps (Polyurethane)**:**

- They should be used for applications with vibrations (impact tools), or with fragile tools (plastic housings).
- The rubber caps must be fitted in conjunction with the Nylon caps, so the clearance for the tool will be reduced.

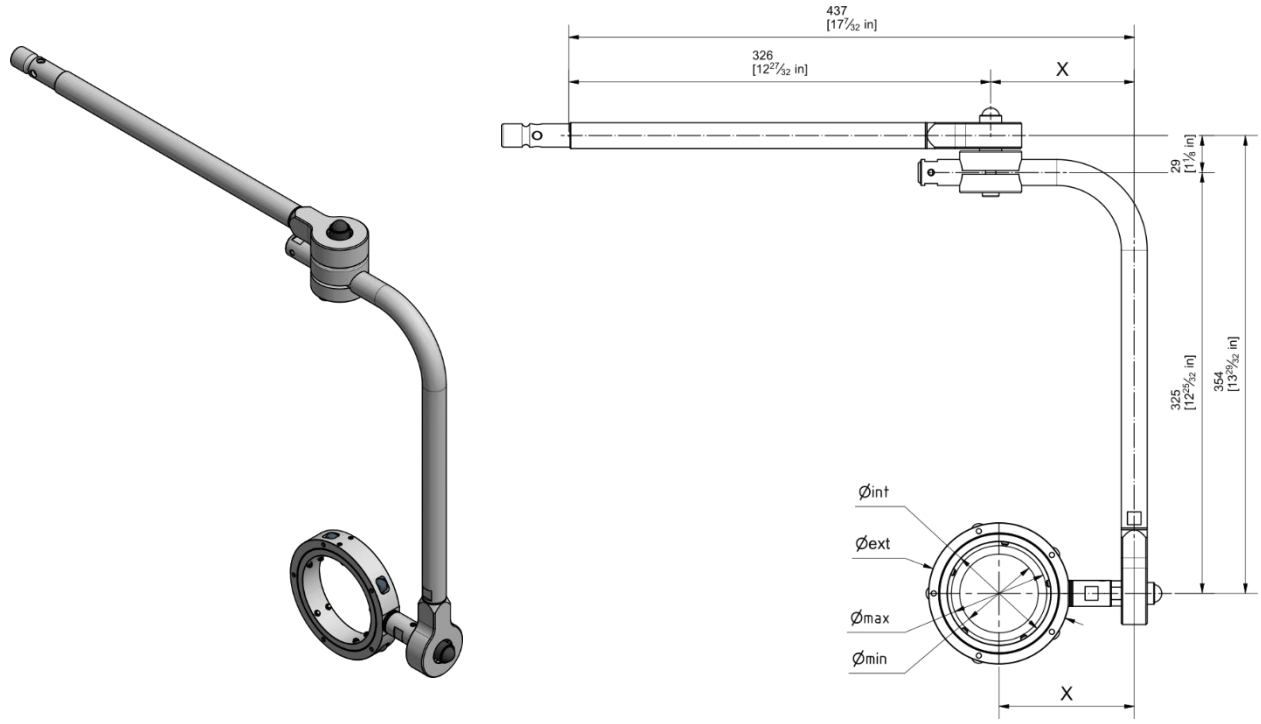
3.8.1.4 Maintenance and cleaning of drums

To keep the rotating drums clean, Tecnospiro recommends periodically blowing air into the drum while rotating the inner ring.
The way air is blown into the drums is important for the removal of dust accumulated in the groove. Dust and abrasive material could accumulate inside the groove and wear the drum tracks. To clean, blow air into the drum as shown in the picture. The inner ring should be rotated while blowing the air.



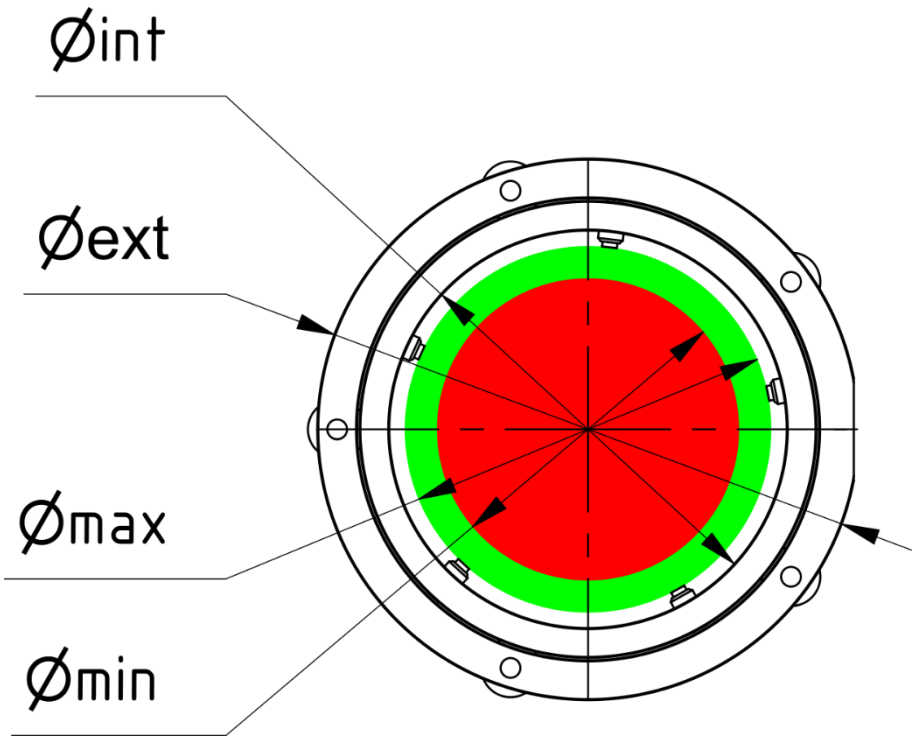
3.8.2 Handlebars Type B: TIMSAND

Suitable for tools with cylindrical clamping area.
Ref: MV3EFxxx (xxx = inside diameter in mm)



- The X coordinate shall be as close as possible to the Z_2 axis of rotation to ensure good tool balancing. Xmin = 110mm

3.8.2.1 TIMSAND dimensions



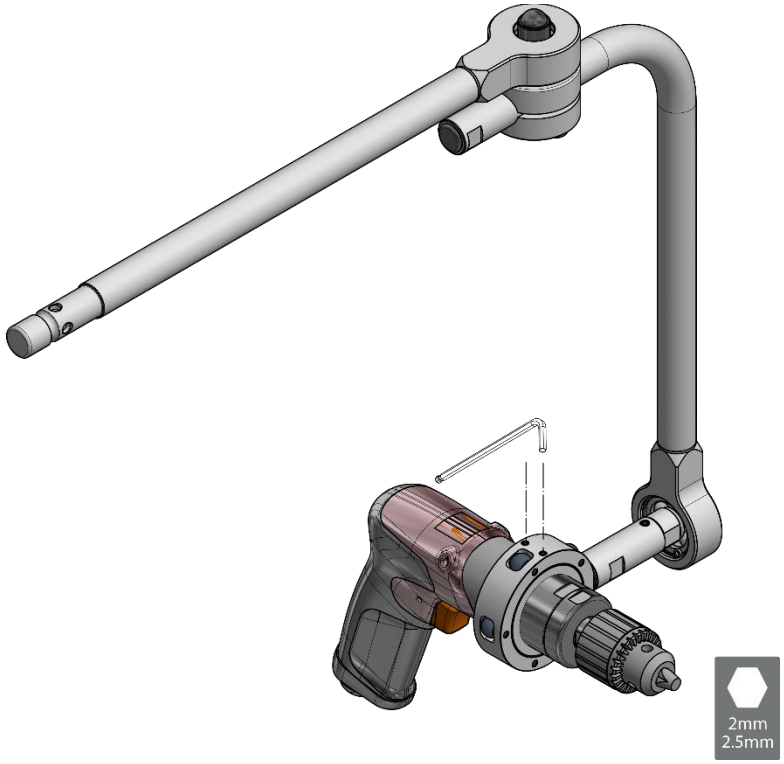
Øint.		Øext.		Ømin - Ømax tool	
mm	*Inches*	mm	*Inches*	mm	*Inches*
40	*1 37/64"*	69	*2 23/32"*	30 - 40	*1 3/16" - 1 37/64"*
50	*1 31/32"*	79	*3 7/64"*	40 - 50	*1 37/64" - 1 31/32"*
60	*2 23/64"*	89	*3 1/2"*	50 - 60	*1 31/32" - 2 23/64"*
70	*2 3/4"*	99	*3 57/64"*	60 - 70	*2 23/64" - 2 3/4"*
80	*3 5/32"*	109	*4 19/64"*	70 - 80	*2 3/4" - 3 5/32"*
90	*3 35/64"*	119	*4 11/16"*	80 - 90	*3 5/32" - 3 35/64"*
100	*3 15/16"*	129	*5 5/64"*	90 - 100	*3 35/64" - 3 15/16"*
110	*4 21/64"*	139	*5 15/32"*	100 - 110	*3 15/16" - 4 21/64"*
120	*4 23/32"*	149	*5 55/64"*	110 - 120	*4 21/64" - 4 23/32"*
130	*5 1/8"*	159	*6 17/64"*	120 - 130	*4 23/32" - 5 1/8"*

- The tool diameter must be in the green zone (between Ømin and Ømax).
- The use of a customised adapter bushing is recommended to ensure concentric fitting.
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.)
- Other dimensions on request

3.8.2.2 Assembly of the tool

For the **installation of the tool on Drum type B** follow the guidelines below.

1- Remove the stud bolts from the outer ring (2mm Allen key).
2- Insert the tool into the drum. Align the holes on the outer face of the outer ring with the studs holding the tool. Screw / unscrew these studs to achieve the correct grip on the tool (Allen key 2.5mm).
3- Repeat the previous step to ensure that the tool is properly adjusted around its perimeter. Secure the stud bolts with medium-strength Loctite to prevent loosening.



3.8.2.3 Included accessories

In addition to type B drums (TIMSAND), ***nylon tipped studs (M5x8)*** and ***metal studs (DIN-913 M5x6)*** are included.

By default it is supplied with the nylon tipped studs fitted.

Depending on the type of tool, the Nylon studs may be replaced by metal studs to achieve a closer fit for the diameter of the Drum in relation to the tool.

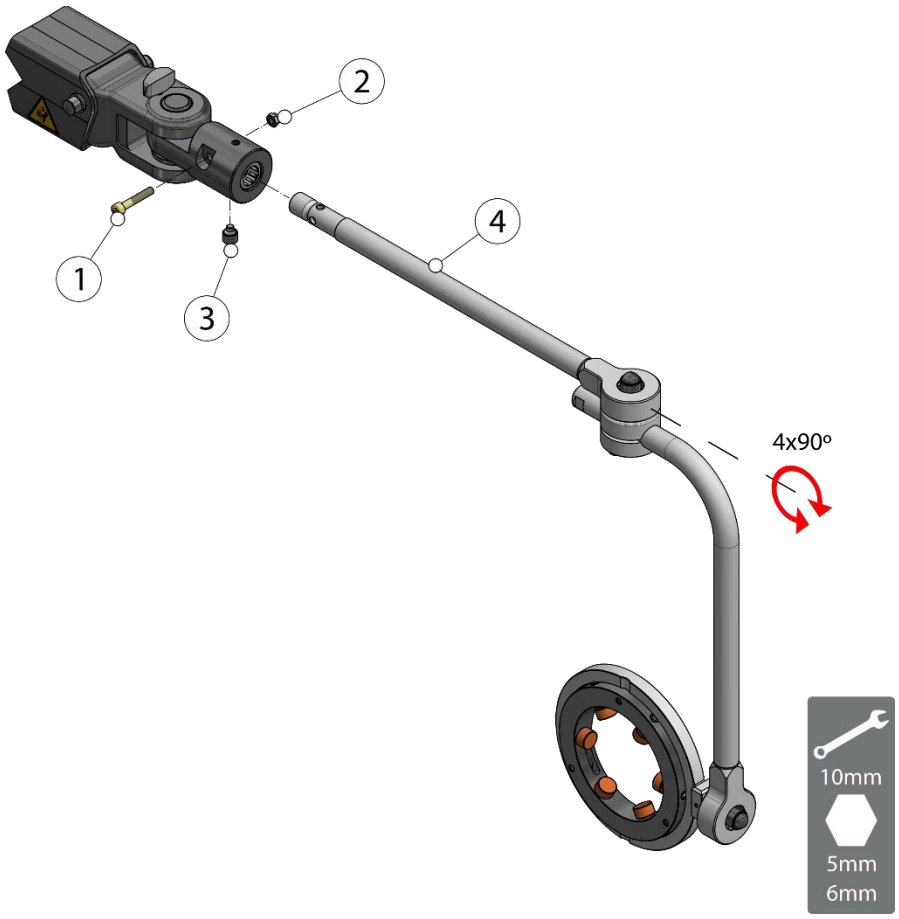
For maintenance and cleaning [See Maintenance and cleaning of drums page. 20].

3.8.3 Handlebar installation and working positions

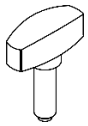
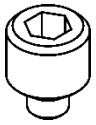
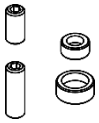
The head has 2 working modes:
- 360° handlebar free rotation
- Handlebar locking in one of the four positions (4x90º).

Follow the guidelines below for the **attachment and adjustment of the handlebars** (whether type A or B).

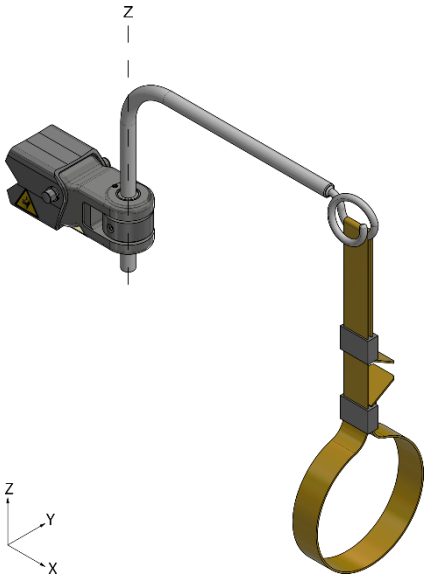
1- Remove the bolt (1) (Allen key 5mm) and the nut (2) (open-end spanner 10mm).
2- Remove the stud (3) (6mm Allen key).
3- Insert the handlebar (4) and fit the bolt (1) (Allen key 5mm) and the nut (2) (spanner 10mm) to fix the handlebar in place.
4- Screw in the threaded bolt (3) (6mm Allen key) to set the handlebar in one of the 4 positions (4x90º). If not, the handlebar will move freely on the X_1 axis (360°).

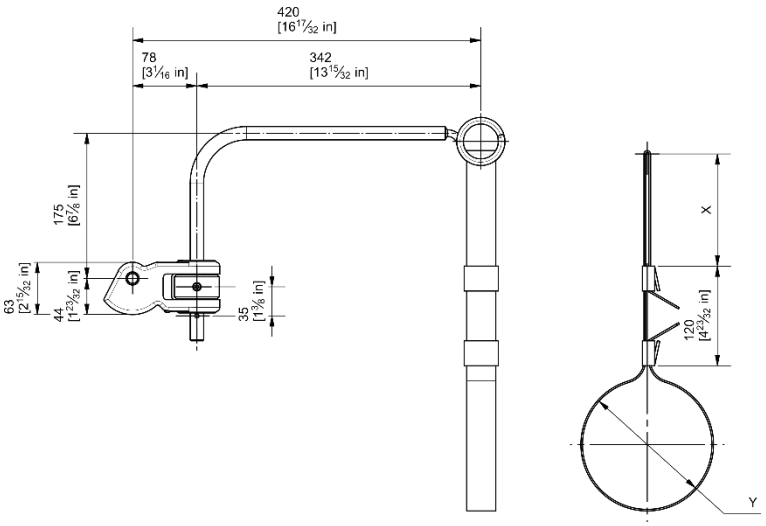


3.8.4 Spare parts

M3103300R	SECURING LEVER M8x24	
M3304100	POSITIONER	
MV331104	REPLACEMENT STUDS AND CAPS KIT	

3.9 ADJUSTABLE STRAP - K
M1200700





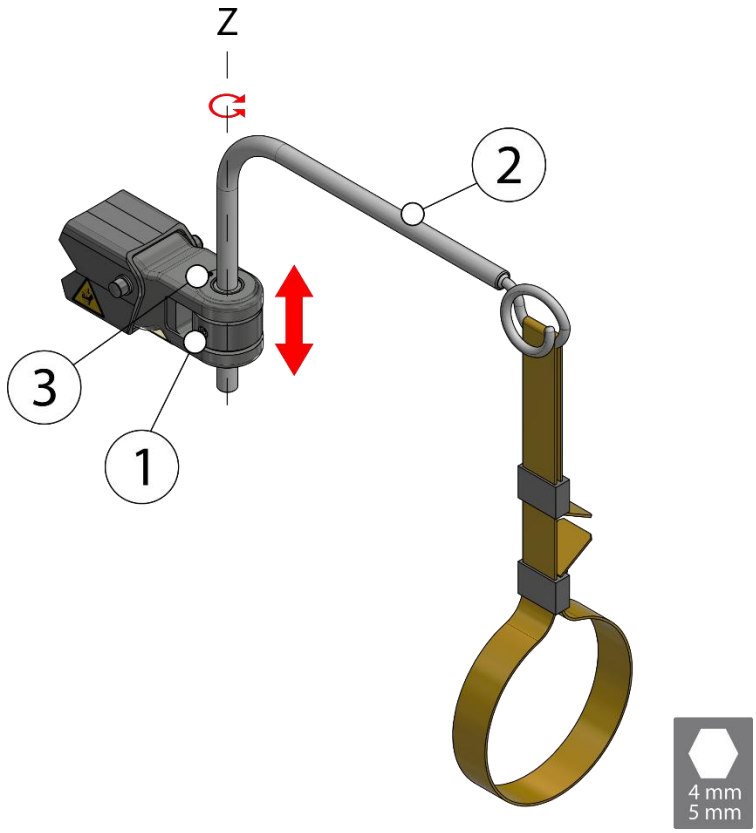
Z: 360º Turn

	X (mm)	Y (mm)
Dimensions	0 - 300 *(0 - 11 13/16")*	Ø0 - Ø225*(Ø0 - Ø8 55/64")*

3.9.1 Height and rotational friction adjustment

The bar has 2 points for working height adjustment set 35mm *(1 3/8")* apart. To set:

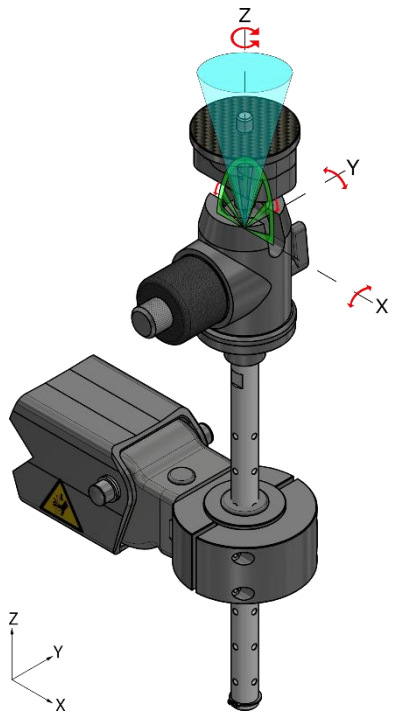
1- Remove the bolt (1) (4mm Allen key).
2- Move the bar (2) to the desired adjustment point and tighten the bolt (1) (4mm Allen key).
3- To regulate the friction of the Z-axis rotation, tighten or loosen the bolt (3) (3 mm Allen key).

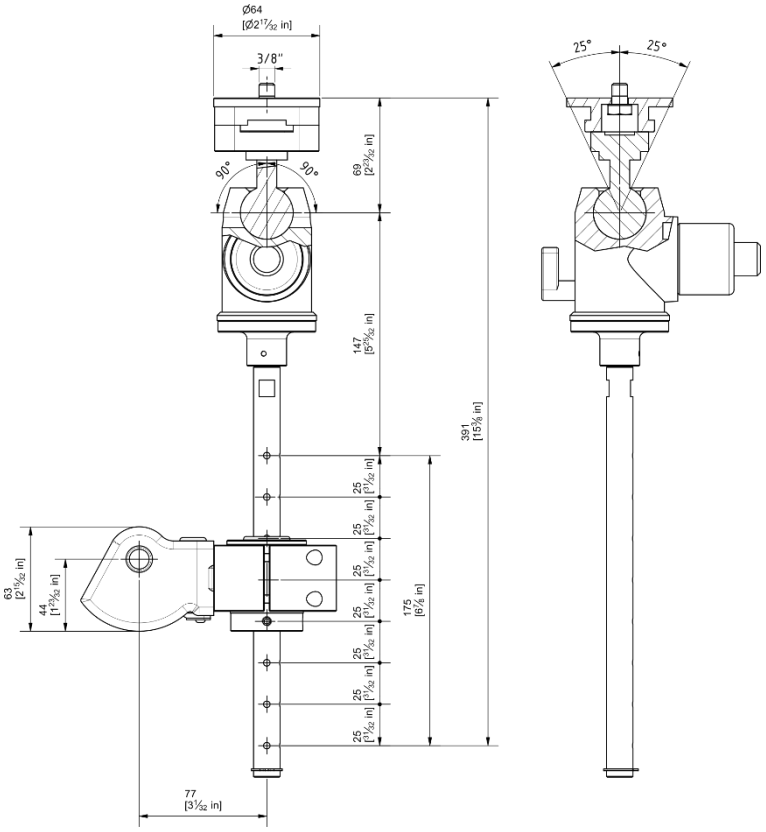


3.9.2 Spare parts

M3146400	FASTENING STRAP	

3.10 ADJUSTABLE BALL JOINT WITH VERTICAL ADJUSTMENT - L M1202400

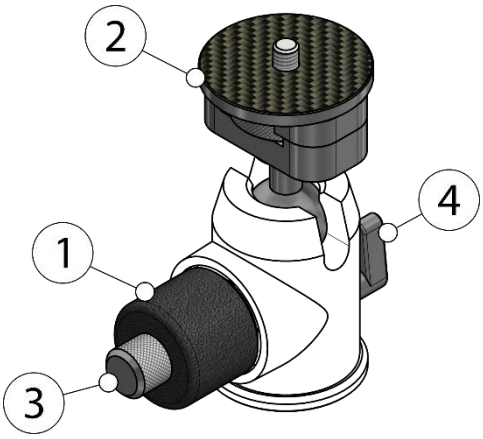




Z: Rotates 360º. Manual locking in any position.
Plane XZ: ±90º. Manual locking in any position.
Plane YZ: ±25º. Manual locking in any position.
Stroke adjustable up to 175mm in Z-axis.

3.10.1 Operation

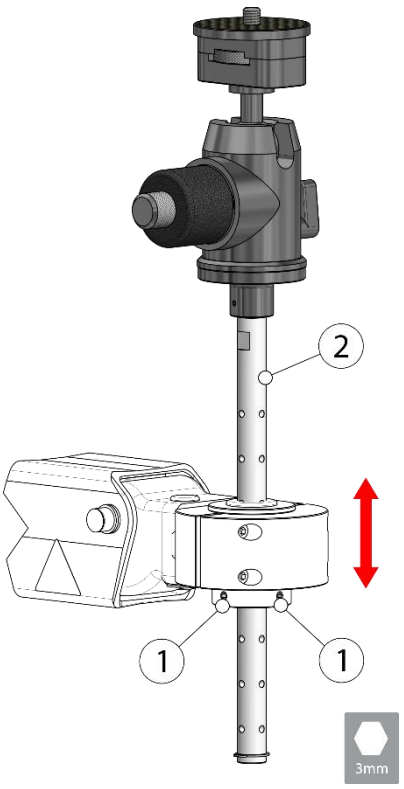
Turning the knob (1) will lock the movement of the support (2).
Turning the knob (3) will regulate the friction on the base (2) to adapt the smoothness of movement.
Turning the lever (4) will lock the rotation of the whole assembly.



3.10.2 Height adjustment

To adapt the vertical stroke of the assembly:

1- Loosen the stud bolts (1) (3mm Allen key).
2- Move the rod (2) to the desired position and re-tighten the studs (1).

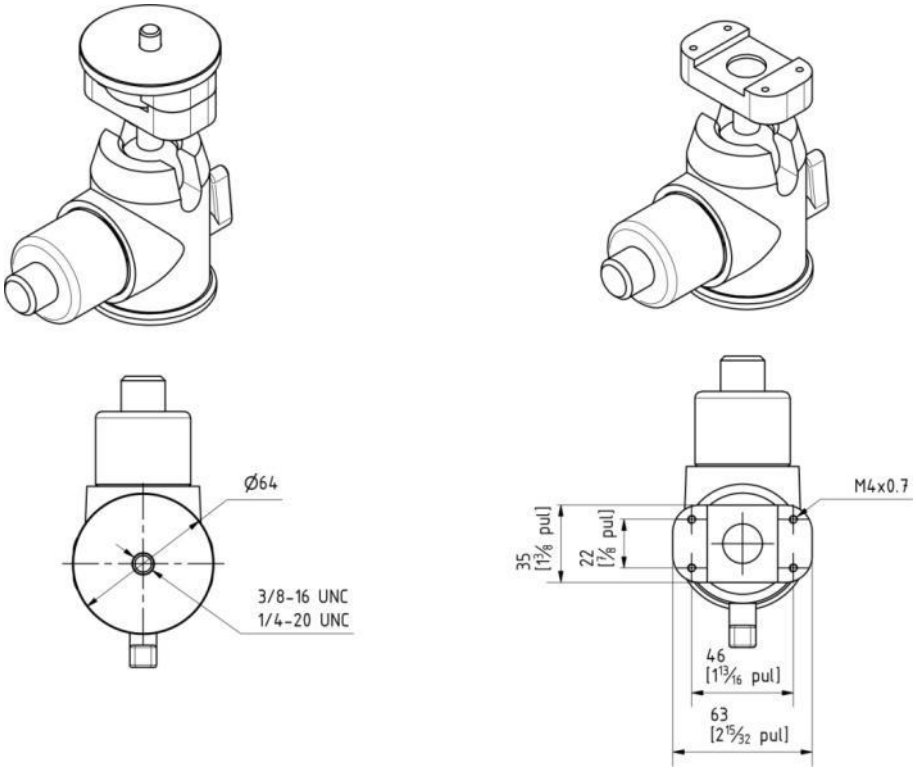


3.10.3 Grip ends

All variants of the "Manfrotto" L-head provide two ends for the attachment of the tool

- End with four anchor points (direct clamping)
- End with a single anchor point (clamped with a plate)

CLAMPING WITH CLAMPING PLATE DIRECT CLAMPING



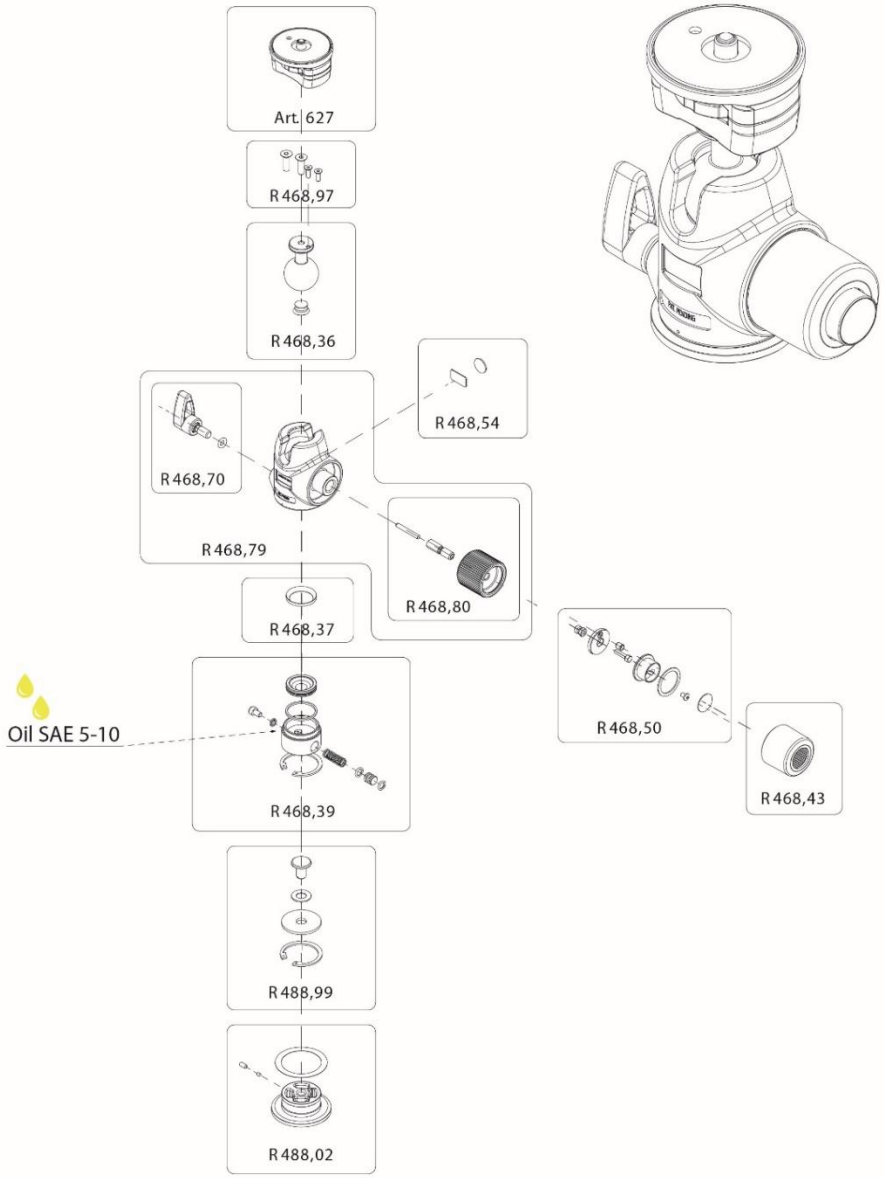
- At the same time, the clamp end can have two thread sizes:
  3/8-16UNC and 1/4-20 UNC.

- By default, the "Manfrotto" L-head is supplied with a clamping plate, but by removing the plush and the bolts that hold it in place, you can obtain the direct clamping end.

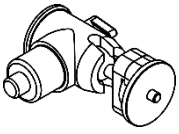
3.10.4 Adding oil

SAE 5-10 hydraulic oil should be added in cases where the system still does not function properly (does not lock) after the friction and dipstick adjustment has been carried out.

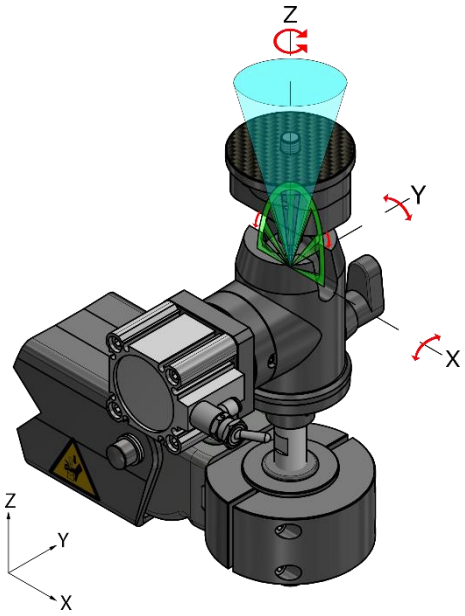
3.10.5 Spare parts manfrotto nord 468MG

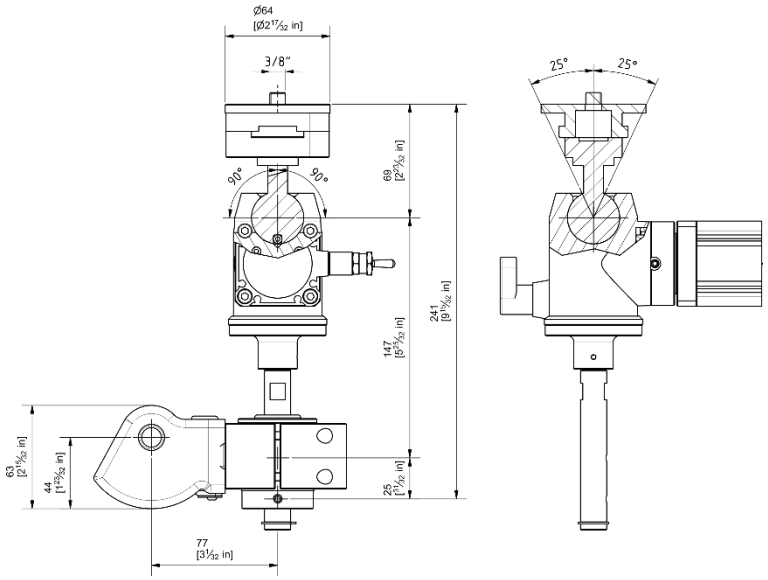


3.10.6 Spare parts

MV30C904	VERTICAL HEADMEMBER	
AC006196	HYDROSTATIC BALL JOINT	

3.11 AUTOMATIC ADJUSTABLE SWIVEL HEAD WITH VERTICAL ADJUSTMENT LA M1202500



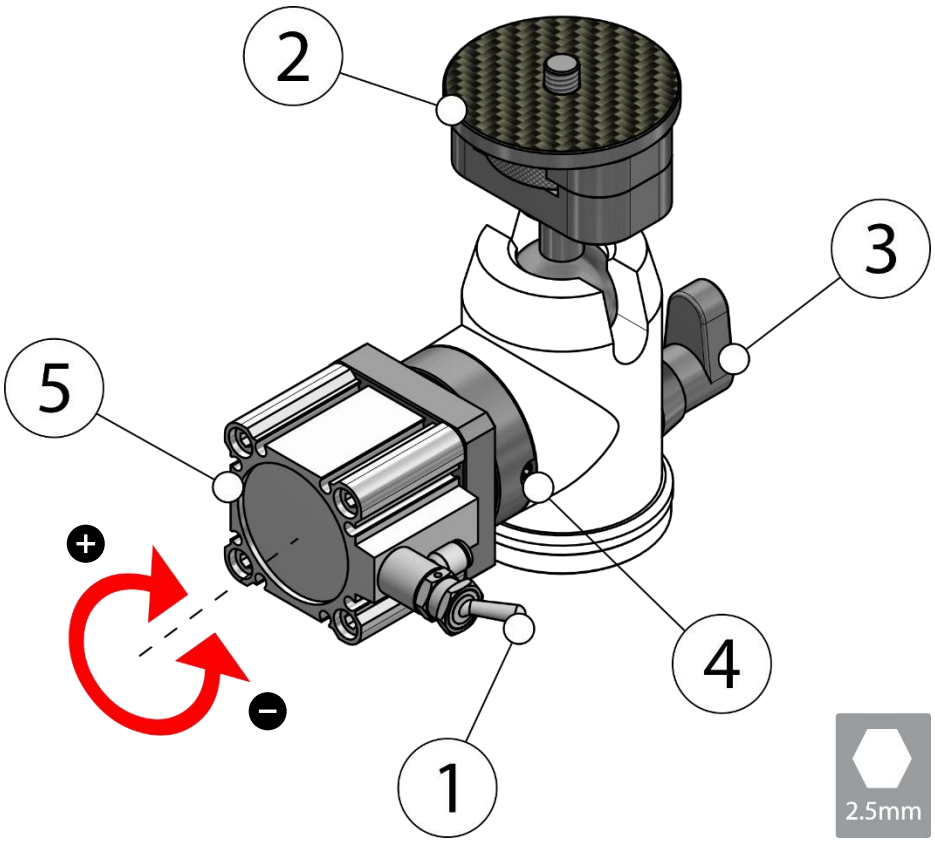


Z: Rotates 360º. Pneumatic locking in any position.
Plane XZ: ±90º. Pneumatic locking in any position.
Plane YZ: ±25º. Pneumatic locking in any position.
Stroke adjustable up to 175mm in Z-axis.

3.11.1 Operation

Activating the selector (1) will block the movement of the support (2).
Turning the lever (3) will lock the rotation of the whole assembly.
To adjust the friction, the smoothness of movement of the bracket (2). Loosen the two bolts (4) (2.5mm Allen key) and turn the cylinder assembly (5):

- Turn counter-clockwise for smoother movement.
- Turn clockwise to increase friction.



MAINTENANCE

✓ Friction adjustment must be carried out every 1000 operating cycles.

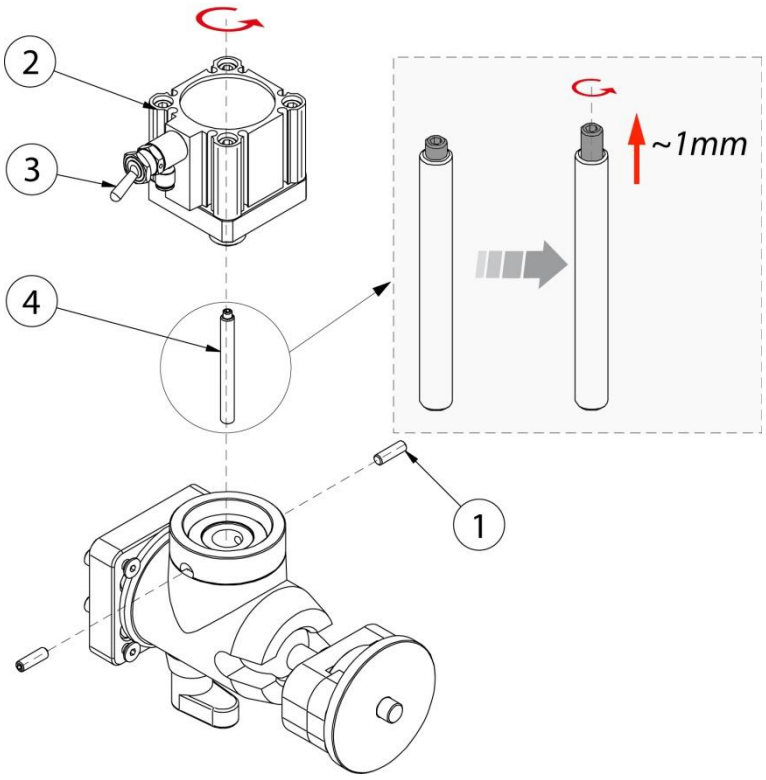
3.11.2 Connections

- The head requires a compressed air supply at 6 bar.
- The pipe must be suitable for work with compressed air and have an exterior diameter of Øext= 4mm

3.11.3 Cylinder stroke adjustment

To adjust the cylinder stroke (2) to achieve effective locking, follow the steps below:

1- The switch (3) must remain off, so that the end remains free.
2- Loosen the stud bolts (1) (2.5mm Allen key).
3- Remove the cylinder (2) by turning it counter-clockwise.
4- The rod (4) will then be free. Loosen the stud at the end of the rod to gain length (approx. 1 mm) (2 mm Allen key).
5- Put the rod (4) in place and proceed in reverse order to render the assembly operational.

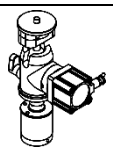
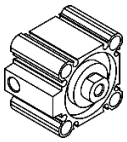


MAINTENANCE

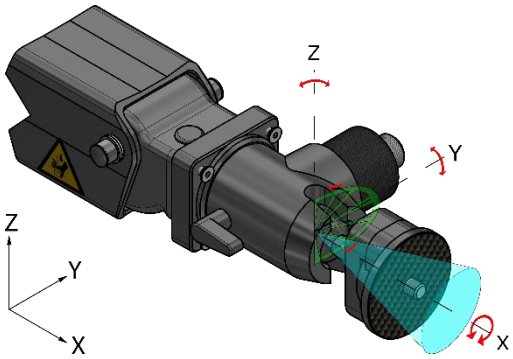
✓ The rod length must be increased by approx. 1 mm every 5000 operating cycles.

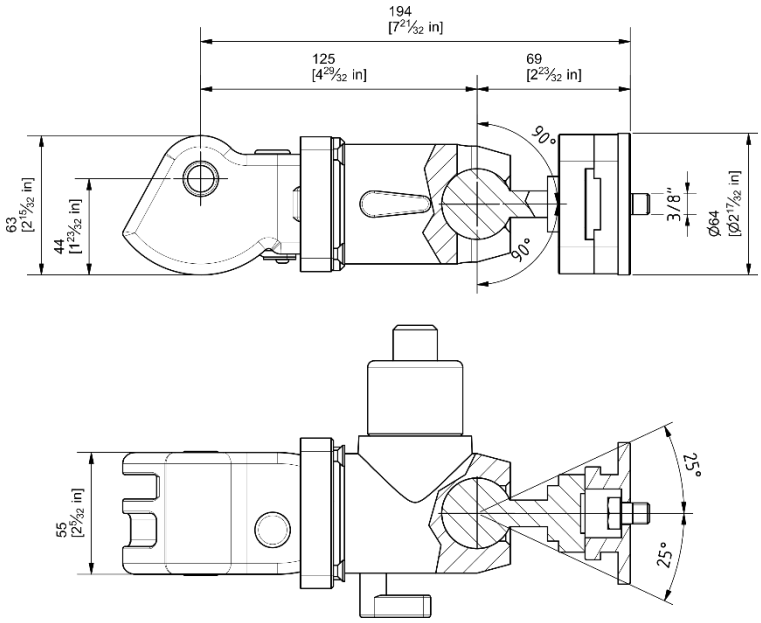
✓ For height adjustment [See Height adjustment page 29].
✓ Different grip endings [See Grip ends page 30].
✓ Adding oil [See Adding oil page 31].
✓ Exploded view [See Spare parts manfrotto nord 468MG page 31].

3.11.4 Spare parts

MV30D104	VERTICAL PNEUMATIC HEADMEMBER	
NH075006	CYLINDER	
NH027616	FITTING WITH SELECTOR	

3.12 HORIZONTAL ADJUSTABLE BALL JOINT - LB M1202600



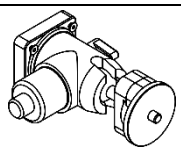


Maximum torque: 25Nm

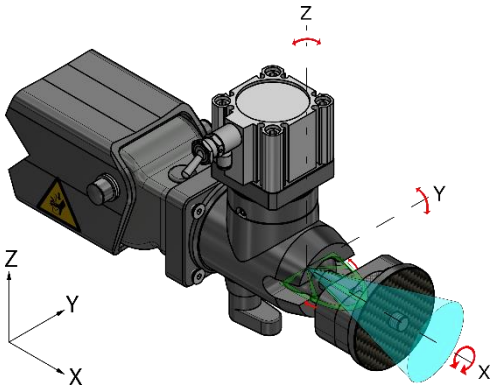
X: Rotates 360º. Manual locking in any position.
Plane XZ: ±90º. Manual locking in any position.
Plane XY: ±25º. Manual locking in any position.

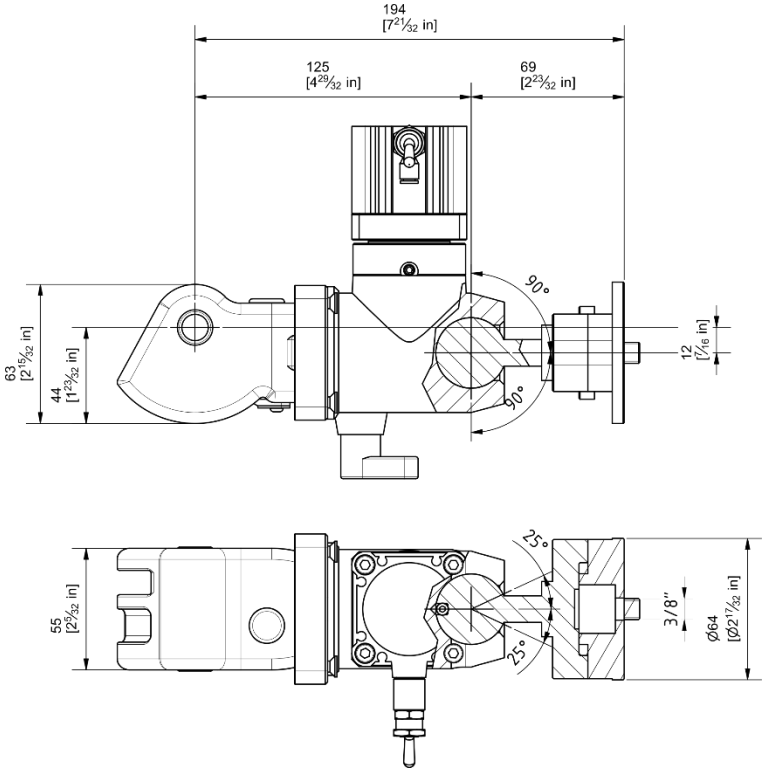
For operation [See Operation page 29].
Different grip endings [See Grip ends page 30].
Adding oil [See Adding oil page 31].
Exploded view [See Spare parts manfrotto nord 468MG page 31].
Spare parts [See Spare parts page 31].

3.12.1 Spare parts

M3103700	HORIZONTAL HEADMEMBER	

3.13 HORIZONTAL AUTOMATIC ADJUSTABLE SWIVEL HEAD - LC M1202700



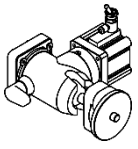


Maximum Torque: 25Nm

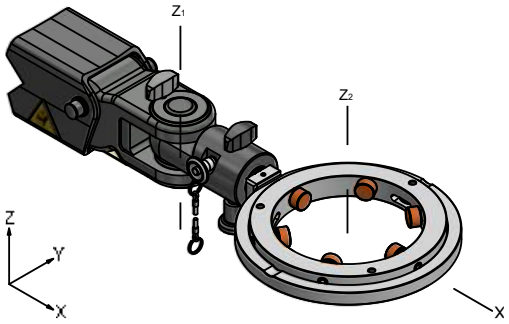
X: Rotates 360º. Pneumatic locking in any position.
Plane XY: ±90º. Pneumatic locking in any position.
Plane XZ: ±25º. Pneumatic locking in any position.

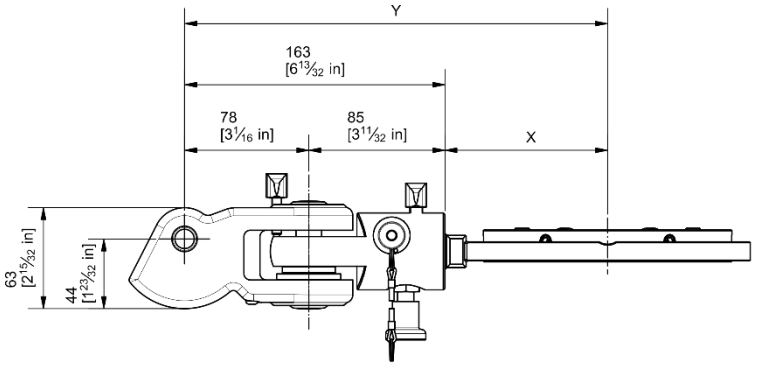
For operation [See Operation page 33].
For cylinder adjustment [See Cylinder stroke adjustment p. 34].
Different grip endings [See Grip ends page 30].
Adding oil [See Adding oil page 31].
Exploded view [See Spare parts manfrotto nord 468MG page 31].
Spare parts [See Spare parts page 35].

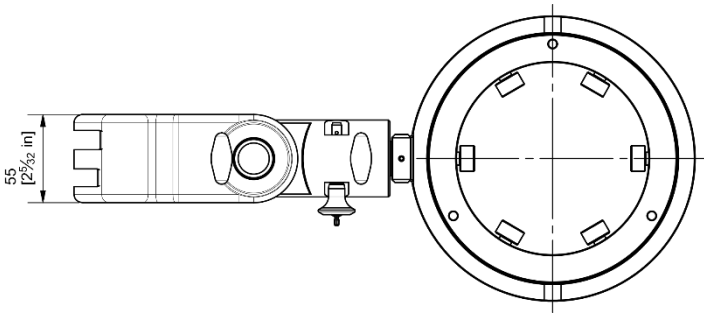
3.13.1 Spare parts

MV30D004	HEADMEMBER HORIZONTAL PNEUMATIC	

3.14 MULTI-POSITION WITH QUICK CHANGE - NA
M1106200 + Handlebar



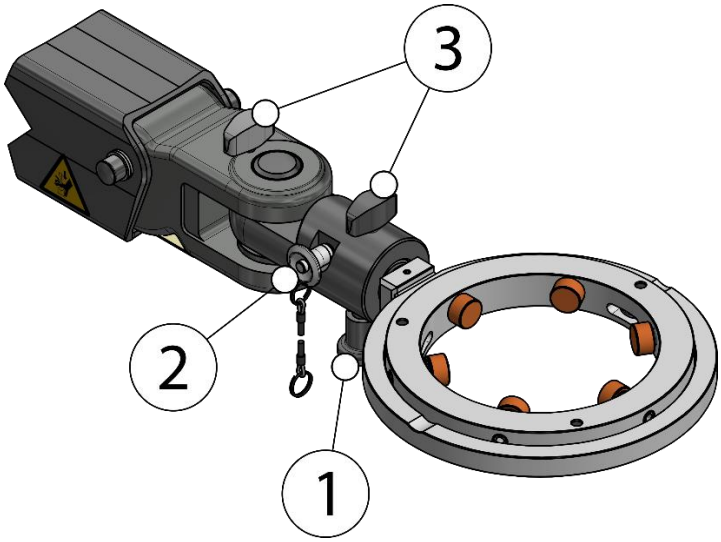




Z_1: Rotates ±90º. Non-lockable
Z_2: Rotates 360º. Non-lockable
X: Rotates 360º. Manual locking in 4 positions (4x90º)

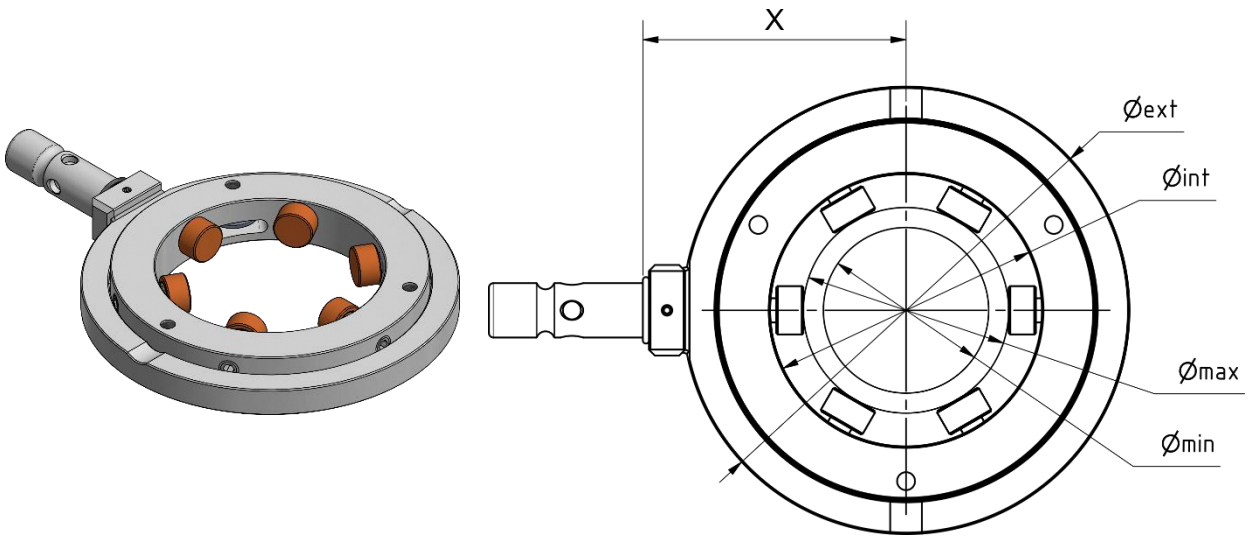
3.14.1 Movement and locking

The positioner (1) releases/locks the X movement (360°, 4x90°)
To remove the rod, release the positioner (1) and remove the pin (2).
The friction can be adjusted using the adjustment knobs (3).



3.14.2 Type A drums: TIMCO

Suitable for any type of tool.
Ref: MV3MAxxx (xxx = internal diameter in mm)

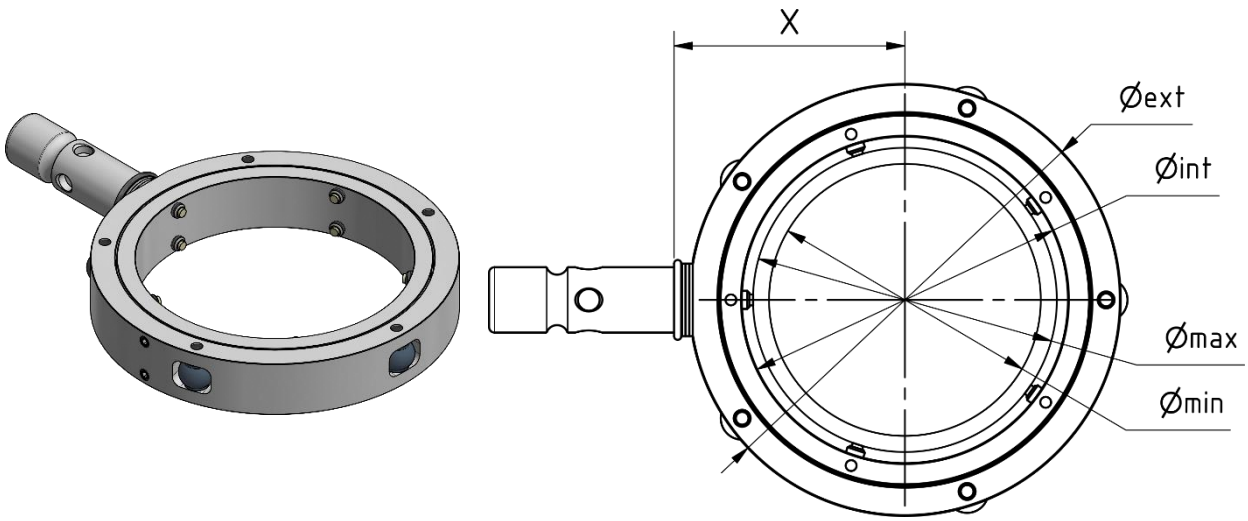


- Dimension X is approximately the outer radius plus 12mm ($X = \frac{\emptyset ext}{2} + 12$)
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.)
- Other dimensions on request

- ✓ TIMCO dimensions [See TIMCO Dimensions page 18].
- ✓ For tool assembly [See Assembly of the tool page 19].
- ✓ Included accessories [See Included accessories page 20].
- ✓ For maintenance and cleaning [See Maintenance and cleaning of drums page. 20].

3.14.3 Type B drums: TIMSAND

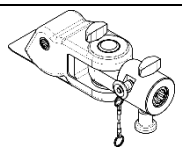
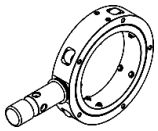
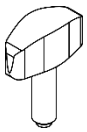
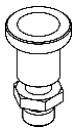
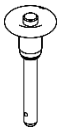
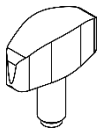
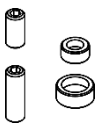
Suitable for tools with cylindrical clamping area.
Ref: MV3PBxxx (xxx = interior diameter in mm)



- Dimension X is approximately the outer radius plus 3mm ($X = \frac{Øext}{2} + 3$)
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.)
- Other dimensions on request

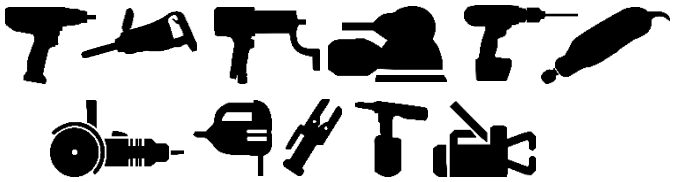
✓ TIMSAND dimensions [See TIMSAND dimensions page. 22].
✓ For tool assembly [See Assembly of the tool page 23].
✓ Included accessories [See Included accessories page 23].
✓ For maintenance and cleaning [See Maintenance and cleaning of drums page. 20].

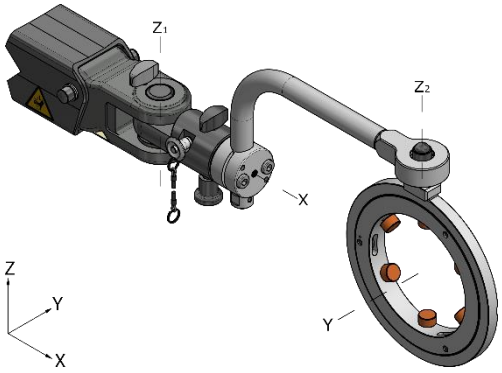
3.14.4 Spare parts

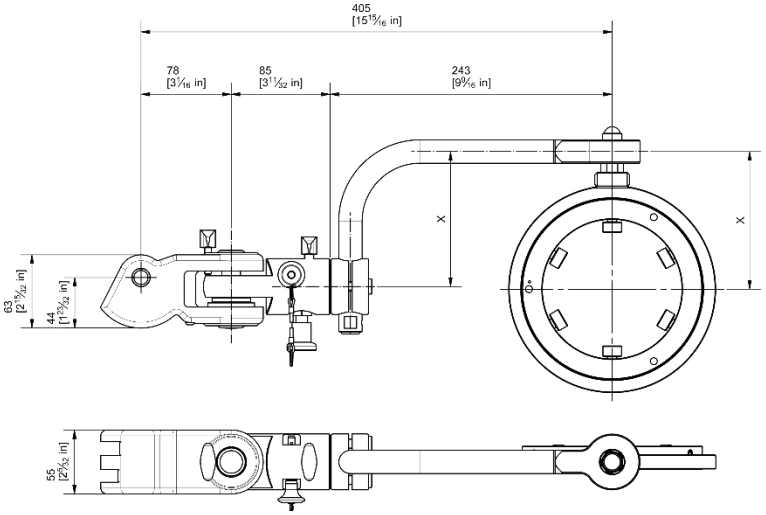
M1106200R	HEADMEMBER	
MV3MAXXX[7]	TIMCO GIMBAL	
MV3PBXXX	TIMSAND GIMBAL	
M1102200R	SECURING LEVER M8x24 [Axis$_{Z1}$] [Axis Z1]	
AC004046	POSITIONER	
CM125100	POSITIONER	
MV31K703R	SECURING LEVER M8x18.5	
MV331104	REPLACEMENT STUDS AND CAPS KIT	

[7] XXX corresponds to the $Ø_{int}$ in mm

3.15 MULTI-POSITION WITH QUICK-CHANGE– TA M1106200 + Handlebar







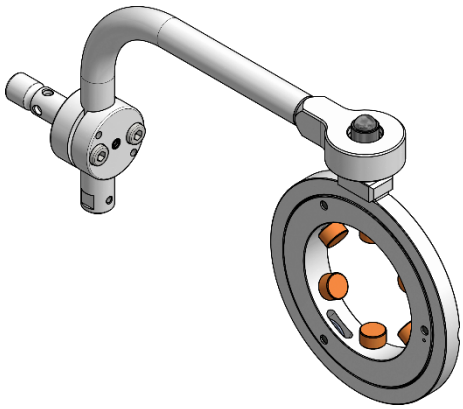
Requires L50 Locks

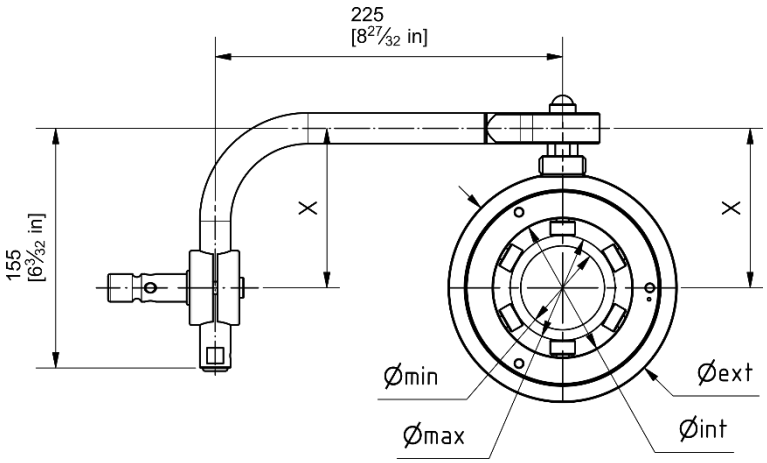
Z_1: Rotates ±90º. Non-lockable
Z_2: Rotates 360º. Non-lockable
X: Rotates 360º. Manual locking in 4 positions (4x90º)
Y: Rotates 360º. Non-Lockable

To view movements [See Movement and locking page 39].

3.15.1 Type A drums: TIMCO

Suitable for any type of tool.
Ref: MV3LAxxx (xxx = internal diameter in mm)



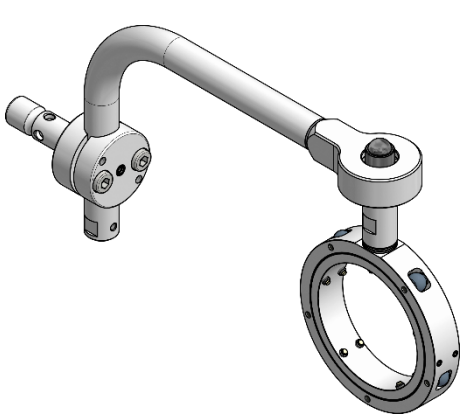


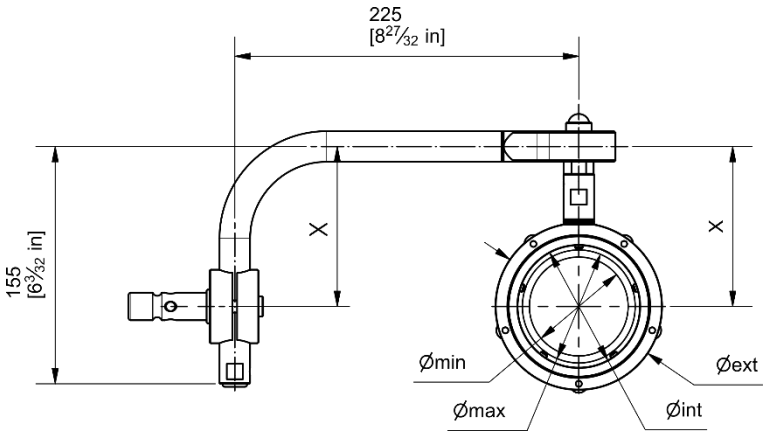
- The X dimension shall be as close as possible to the X axis of rotation to ensure good balancing of the tool.
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.).
- Other dimensions on request.

- ✓ TIMCO dimensions [See TIMCO Dimensions page 18].
- ✓ For tool assembly [See Assembly of the tool page 19].
- ✓ Included accessories [See Included accessories page 20].
- ✓ For maintenance and cleaning [See Maintenance and cleaning of drums page. 20].

3.15.2 Type B drums: TIMSAND

Suitable for tools with cylindrical clamping area.
Ref: MV3QBxxx (xxx = interior diameter in mm)





- The X dimension shall be as close as possible to the X axis of rotation to ensure good balancing of the tool.
- Maximum load 6 kg for applications with vibrating tools (impact, impulse, etc.).
- Other dimensions on request.

- ✓ TIMSAND dimensions [See TIMSAND dimensions page. 22].
- ✓ For tool assembly [See Assembly of the tool page 23].
- ✓ Included accessories [See Included accessories page 23].
- ✓ For maintenance and cleaning [See Maintenance and cleaning of drums page. 20].

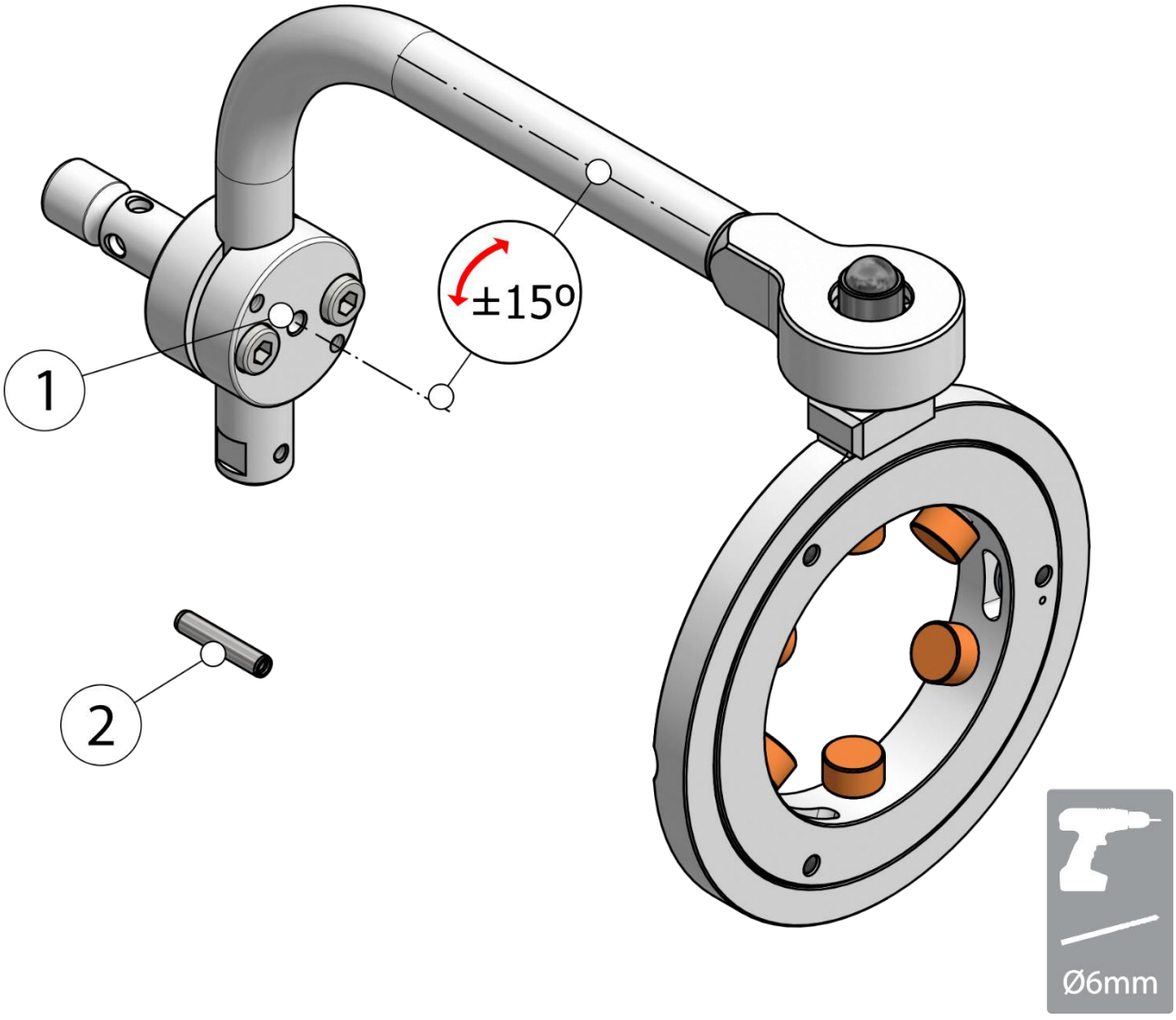
3.15.3 Handlebar adjustment and reinforcement

Once the handlebar adjustment has been completed, it can be secured by using a **DIN 7979 Ø6x30** dowel pin to reinforce the crankpin. To set:

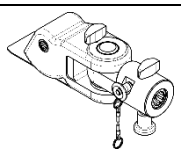
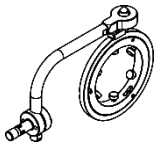
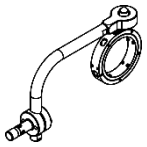
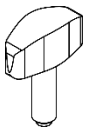
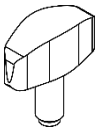
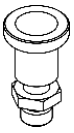
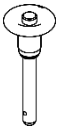
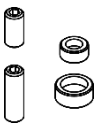
Ensure that the parallelism between the crankpin and the rod does not exceed ±15º.

1- Drill the handle bar using as a guide the existing hole in the crankpin (1) (Drill bit Ø6mm). The hole should be approximately 30mm deep (drill through the entire bar).

2- Insert the pin (2) into the drilled hole.

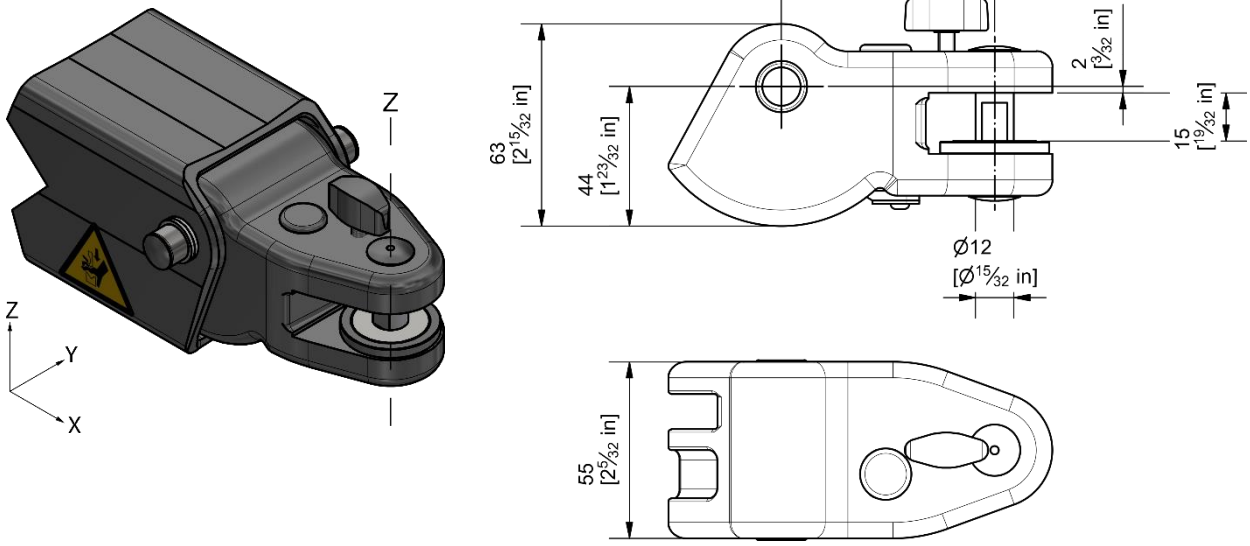


3.15.4 Spare parts

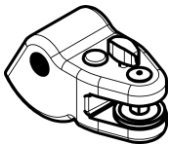
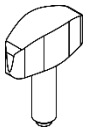
M1106200R	HEADMEMBER	
MV3LAXXX[8]	TIMCO GIMBAL	
MV3QBXXX	TIMSAND GIMBAL	
M1102200R	SECURING LEVER M8x24 [Axis$_{Z1}$] [Axis Z1]	
MV31K703R	SECURING LEVER M8x18.5	
AC004046	POSITIONER	
CM125100	POSITIONER Ø6x30	
MV331104	REPLACEMENT STUDS AND CAPS KIT	

[8] XXX corresponds to Ø in mm

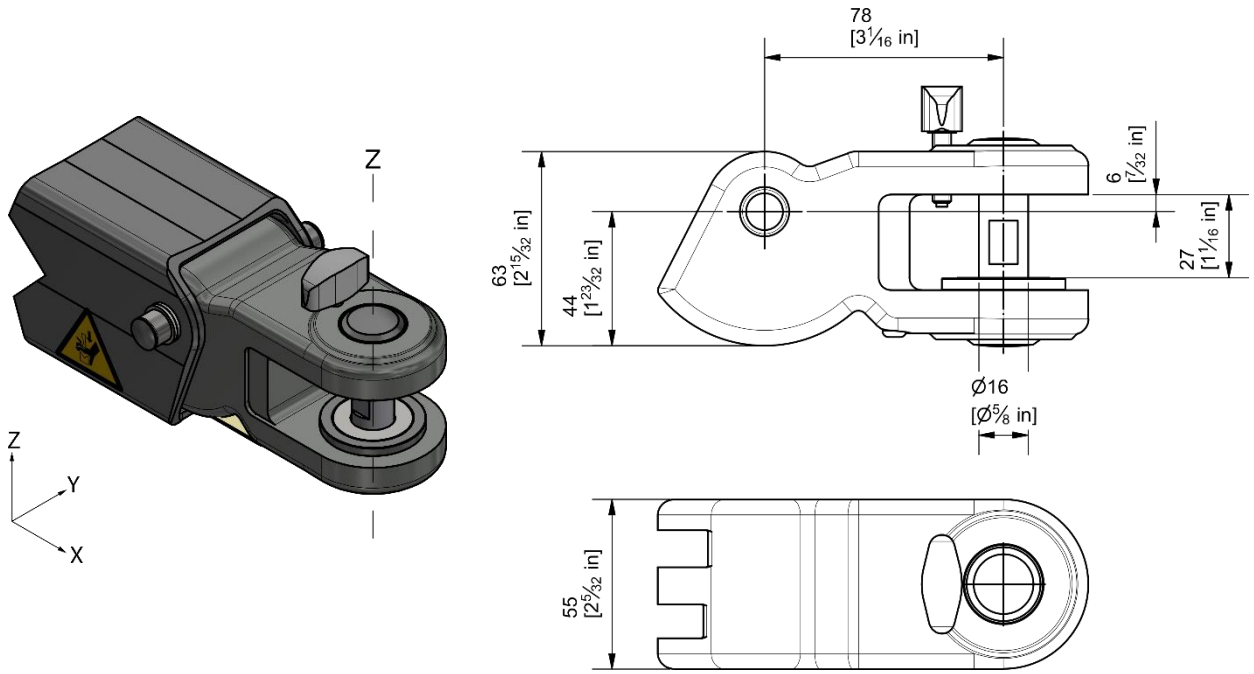
3.16 FORK - Z
MV1012A4



3.16.1 Spare parts

MV1012A4R	HEADMEMBER	
MV101503R	SECURING HANDLE M5	

3.17 REINFORCED FORK - ZA
M1202800



3.17.1 Spare parts

M1102200R	SECURING LEVER M6