

Manual Actuator

MR

MR Manual Gearbox
Force Transmission via Worm Gear
Force Transmission via Scotch-yoke Mechanism
Torque Range up to 16,000 Nm

Type Series Booklet



Legal information/Copyright

Type Series Booklet MR

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Manual Actuators

Manual Gearboxes

MR



Main applications

- Water
- Waste water
- Energy
- Industry
- Shipbuilding

Operating data

Operating properties

Characteristic	Value
MR	MR 25
	MR 50
	MR 100
	MR 200
	MR 400
	MR 800
	MR 1600
Temperature	
▪ Standard version	▪ -20 °C to +80 °C
▪ Marine version	▪ -50 °C to +80 °C
Output torque	Up to 16,000 Nm
Enclosure	
▪ Standard	▪ IP 67
▪ Variant	▪ IP 68 (30 metres of water)

Design details

Design

- The MR manual gearboxes developed by KSB-AMRI cover torques of up to 16,000 Nm.

- The MR manual gearboxes feature irreversible gear kinematics in any position. They are suitable for all fields of application and all types of quarter-turn valves (centred-disc or offset-disc butterfly valves, ball valves, etc.).
- Exterior coating:
 - Sealed standard version: polyurethane coating, average thickness 80 µm, colour: RAL 7016 anthracite grey
 - Marine version: two-coat system with epoxy top coat, average thickness 150 µm, colour: RAL 7016 anthracite grey.
- Actuator/valve interface to ISO 5211
- The manual gearboxes are equipped with removable adapters allowing them to be mounted on valves with different types of stem end (square or flat ends).
- The standard manual gearbox is supplied with a handwheel and a position indicator.
- The force required for actuating the handwheel is defined in the EN 12570 standard.
- MR manual gearboxes feature adjustable limit stops:
 - MR 25 to 200 ($\pm 2^\circ$) for opening and closing
 - MR 400 to 1600 ($\pm 2.5^\circ$) for closing
- Impact resistance: at least IK08 to EN 62262

Variants

- Operation via cardan joint, square for hydrant key or chain wheel after replacing the handwheel on site.
- AMTROBOX limit switch box
- Position indication by flag
- Handwheel locking arrangement with chain and padlock
- Anti-clockwise closing
- Special coatings for special ambient conditions
- Number of input turns (MR 400 to 1600 only): design modified to require a lower number of input turns (on request)
- Accessories for remote actuation
- Design to APSAD
- Design to UL

Product benefits

- Grease-packed for life (silicone-free grease) at the factory, therefore maintenance-free.
- Irreversible gear kinematics in any position

Technical data

Function

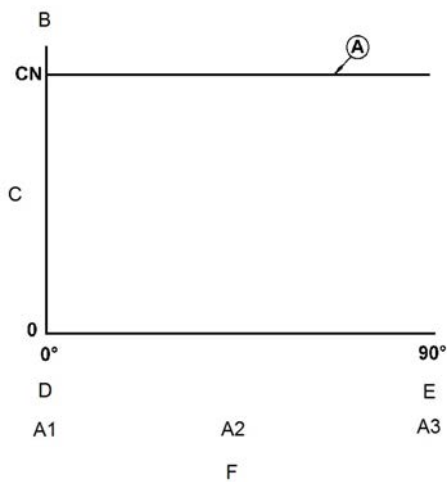
Standard MR manual gearboxes are designed for valve closure in clockwise direction. They can also be fitted in reverse if necessary.

MR 25 to 200: force transmission via irreversible worm gear kinematics in any position

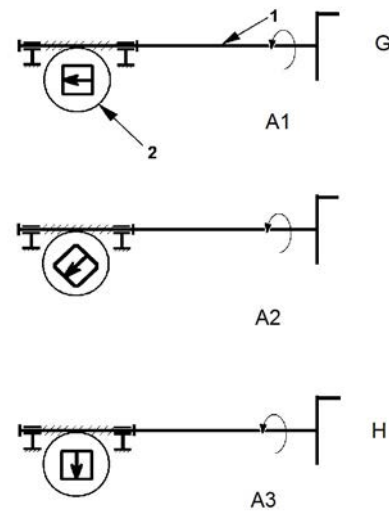
Force transmission via worm gear provides a constant output torque over the entire worm shaft travel.

When the operating element (handwheel, cardan joint, square for hydrant key, chain wheel) connected to the worm shaft ① is actuated, the worm wheel ② connected to the valve stem rotates.

Curve A: constant output torque



Schematic of force transmission via worm gear



A1: Fig. 1

A2: Fig. 2

A3: Fig. 3

B: Output torque

C: Multiplication coefficient

D: Closing

E: Opening

F: Opening angle in degrees

G: Closed

H: Open

MR 400 to 1600: force transmission via irreversible scotch-yoke kinematics in any position

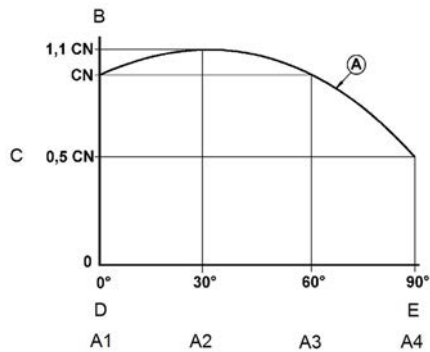
Force transmission via scotch-yoke kinematics generates output torques suitable for actuating butterfly valves with hydrodynamic torque (equal to the valve's maximum torque).

The movement is transmitted by means of the actuating stem ①, the sliding nut ②, the sliding pads ③ and the yoke ④.

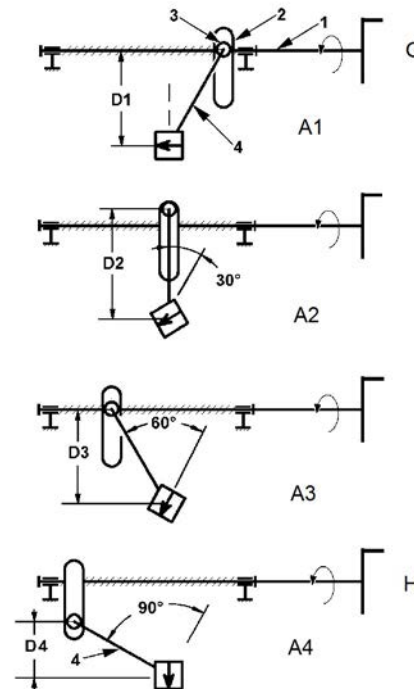
Actuation of the operating element (handwheel, cardan joint, square for hydrant key, chain wheel) connected to the actuating stem ① results in linear travel of the sliding nut ②.

This movement drives the sliding pads ③ in the grooves of the sliding nut ②, causing rotation of the yoke ④ together with the valve stem.

Curve A: output torque for F constant ($C = F \times D$)



Schematic of force transmission via scotch-yoke kinematics



A1: Fig. 1
A2: Fig. 2
A3: Fig. 3
A4: Fig. 4

B: Output torque
C: Multiplication coefficient
D: Closing
E: Opening

F: Opening angle in degrees
G: Closed
H: Open

Type series

[mm]

Size MR	Nominal output torque [Nm]	Nominal input torque [Nm]	Number of handwheel turns	Actuator flange, standardised to ISO*	Max. permissible stem dimensions		
					Height	Drive	
						Square end	Flat end
25	250	27	8,0	F07 - F10	50	22	22
50	500	42	10,0	F10 - F12	60	27	27
100	1000	70	12,5	F12 ou F14	70	36	36
200	2000	100	20,0	F14 ou F16	63	50	46
400	4000	100	48,0	F16	80	60	55
600	6000	170	53,5	F16 - F25	95	70	75
800	8000	100	138,0	F16 - F25	95	70	75
1200	12000	292	69,0	F25 - F30	110	90	85
1600	16000	100	290,5	F25 - F30	110	90	85

- * Direct mounting in the case of identical interfaces
Mounting by means of intermediate flange in the case of different interface sizes and footprints

Special features

MR 25 to 2000

Two different versions are available as required by the application.

Sealed standard version



Marine version VDI/VDE interface Increased safety and protection



Applications

- Industrial, non-saline, moderately corrosive atmospheres
- Cannot be equipped with a limit switch box

Applications

- Marine applications
- Industrial atmospheres with increased corrosivity
- Buried-service design
- Submersible design
- AMTROBOX limit switch box, VDI/VDE 3845 interface

MR 400, 800 and 1600

The manual gearboxes can be retrofitted with electric actuators on site.
Select the manual gearboxes and the suitable design from the table below.

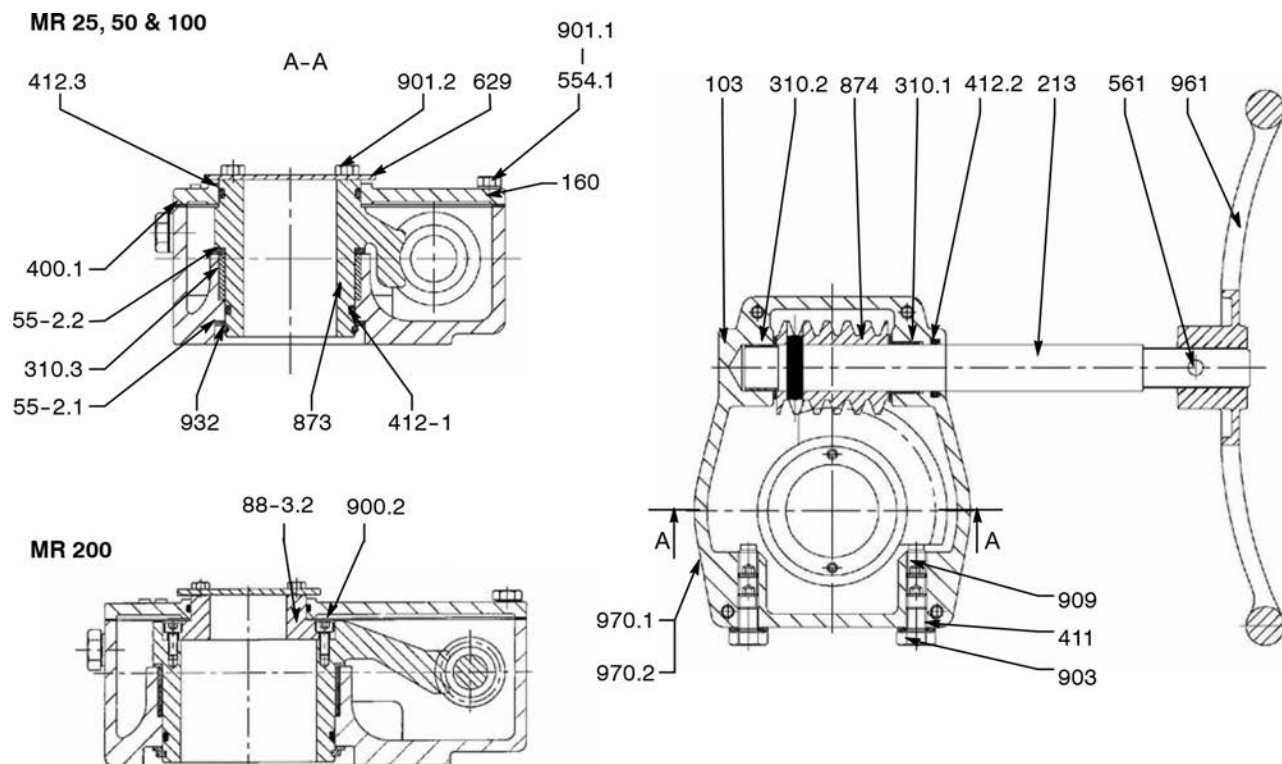
For local or remote electric actuation	Replaces manual gearbox as per "Actuator selection" document
Manual gearbox to be used	
MR 400	MR 200
	MR 400
MR 800	MR 600
	MR 800
MR 1600	MR 1200
	MR 1600

Materials

MR 25, 50, 100 and 200 - sealed standard version

Sectional drawing - Handwheel-actuated design

Handwheel-actuated design



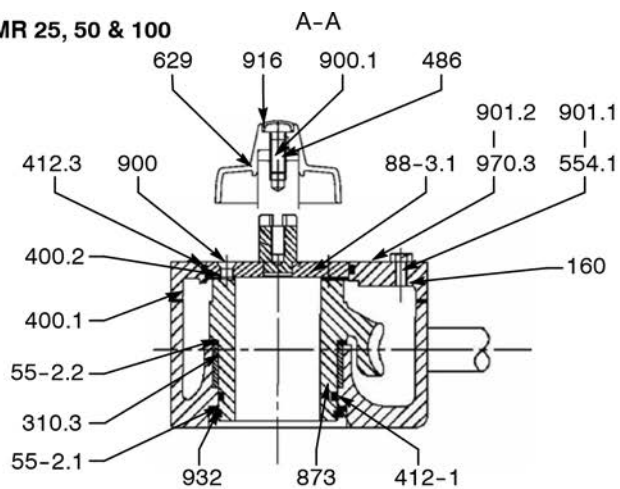
List of components: MR 25, 50, 100 and 200 - sealed standard version

Part No.	Description	Materials
103	Gear housing	Nodular cast iron JS 1040
160	Cover	Nodular cast iron JS 1040
213	Actuating stem	Stainless steel (13% chrome)
310.1	Self-lubricating plain bearing	Steel with PTFE coating
310.2	Self-lubricating plain bearing	Steel with PTFE coating
310.3	Self-lubricating plain bearing or surface treatment	Surface treatment
400.1	Gasket	Composite
411	Joint ring	Composite
412.1	O-ring	Nitrile
412.2	O-ring	Nitrile
412.3	O-ring	Nitrile
55-2.1	Anti-friction disc	Tempered steel
55-2.2	Anti-friction disc or surface treatment	Surface treatment
554.1	Washer	Stainless steel
561	Pin	Stainless steel
629	Position indicator	Polyamide 6-6
873	Worm wheel	Nodular cast iron JS 1040
874	Worm shaft	Tempered steel
88-3.2	Torque-transmitting element	Steel (MR 200 only)
900.2	Hexagon socket head cap screw	Tempered steel (MR 200 only)
901.1	Hexagon head bolt	Stainless steel
901.2	Hexagon head bolt	Stainless steel
903	Plug	Polyethylene or stainless steel
909	Adjusting screw	Tempered steel
932	External circlip	Tempered steel
961	Handwheel	Nodular cast iron
970.1	Name plate	Stainless steel
970.2	Installation instructions	

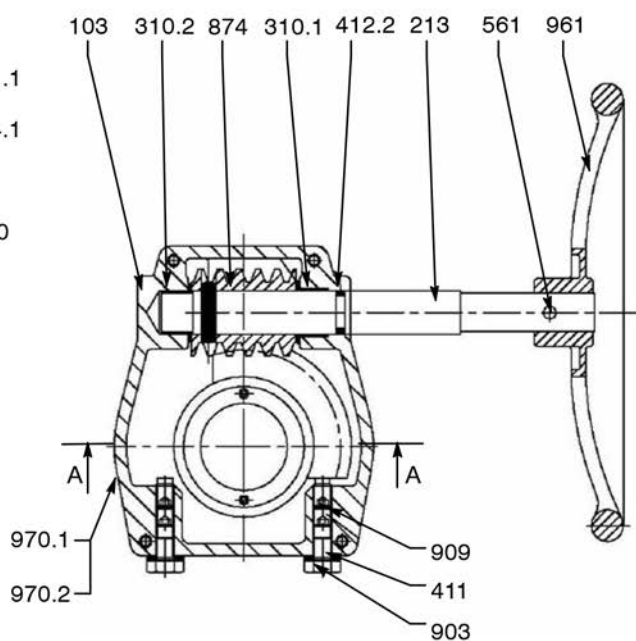
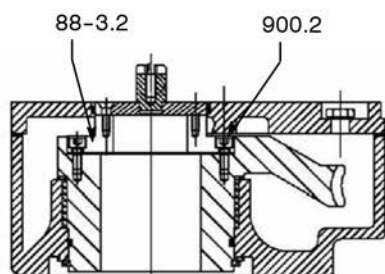
MR 25, 50, 100 and 200 - marine version

Sectional drawing: MR 25, 50, 100 and 200 - marine version

MR 25, 50 & 100



MR 200

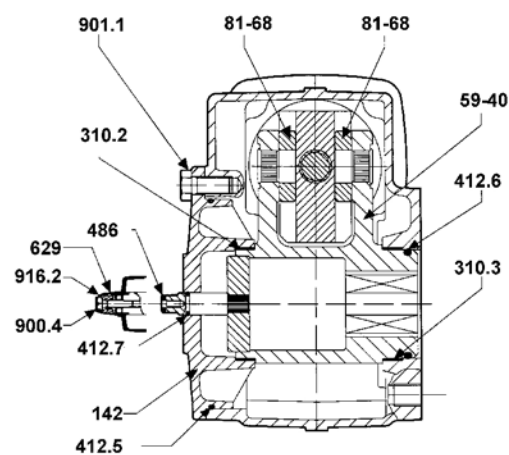
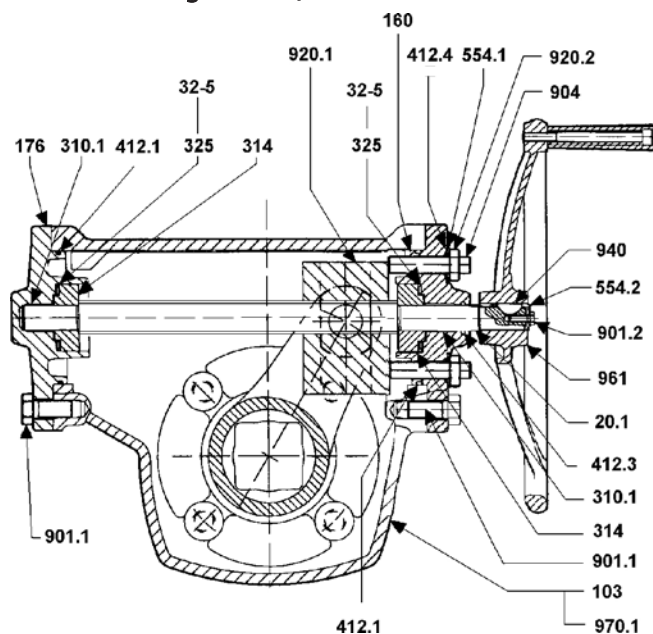


List of components: MR 25, 50, 100 and 200 - marine version

Part No.	Description	Materials
103	Gear housing	Nodular cast iron JS 1040
160	Cover	Nodular cast iron JS 1040
213	Actuating stem	Stainless steel 17.4
310.1	Self-lubricating plain bearing	Steel with PTFE coating
310.2	Self-lubricating plain bearing	Steel with PTFE coating
310.3	Self-lubricating plain bearing or surface treatment	Surface treatment
400.1	Gasket	Composite
400.2	Gasket	Composite
411	Joint ring	Composite
412.1	O-ring	Nitrile
412.2	O-ring	Nitrile
412.3	O-ring	Nitrile
486	Ball	Stainless steel
55-2.1	Anti-friction disc	Tempered steel
55-2.2	Anti-friction disc or surface treatment	Surface treatment
554.1	Washer	Stainless steel A4
561	Pin	Stainless steel
629	Position indicator	Polyamide 6-6
873	Worm wheel	Nodular cast iron JS 1040
874	Worm shaft	Tempered steel
88-3.1	Torque-transmitting element	Stainless steel 316L
88-3.2	Torque-transmitting element	Tempered steel (MR 200 only)
900	Countersunk head screw	Stainless steel A4
900.1	Hexagon socket head cap screw	Stainless steel A4
900.2	Hexagon socket head cap screw	Tempered steel (MR 200 only)
901.1	Hexagon head bolt	Stainless steel A4
901.2	Hexagon head bolt	Stainless steel A4
903	Plug	Stainless steel A4
909	Adjusting screw	Tempered steel
916	Plug	Polyethylene
932	External circlip	Tempered steel
961	Handwheel	Nodular cast iron
970.1	Name plate	Stainless steel
970.2	Installation instructions	
970.3	Label/plate	Stainless steel

MR 400, 600 and 1200

Sectional drawing: MR 400, 600 and 1200



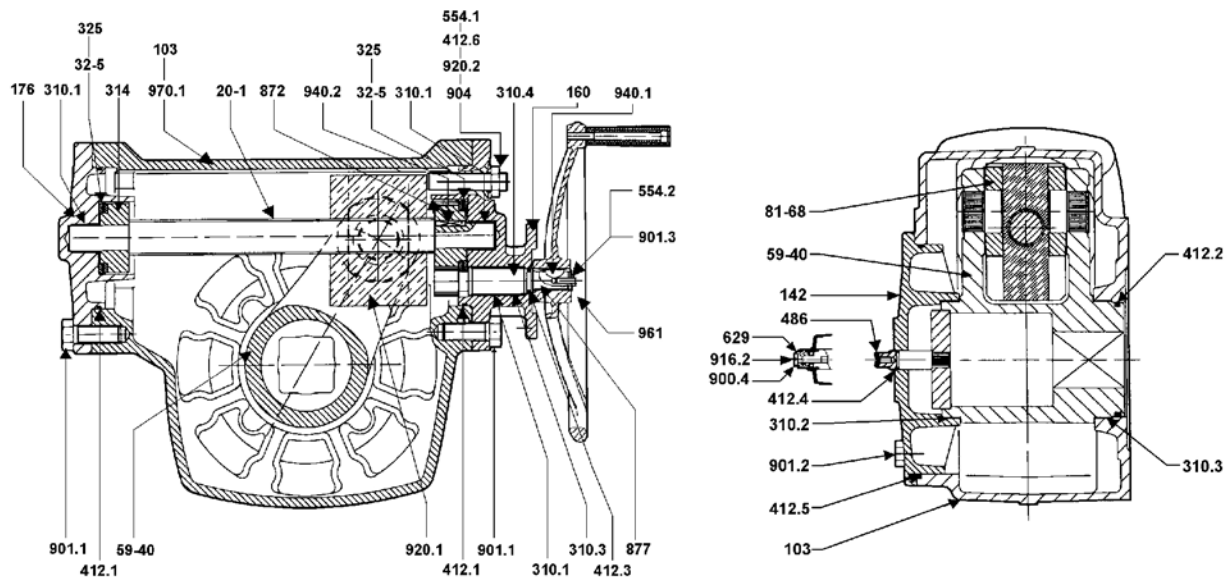
List of components: MR 400, 600 and 1200

Part No.	Description	Materials
103	Gear housing	Lamellar graphite cast iron JL 1040 or JS 1019* or nodular cast iron JS 1030 or JS 1019*
142	Cap	Lamellar graphite cast iron JL 1040 or JS 1019* or nodular cast iron JS 1030 or JS 1019*
160	Cover	Lamellar graphite cast iron JL 1040 or nodular cast iron JS 1030
176	Bottom	Lamellar graphite cast iron JL 1040 or nodular cast iron JS 1030
20-1	Actuating stem	Phosphate or nickel steel
310.1	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
310.2	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
310.3	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
314	Stop disc	Phosphate steel
325	Needle bearing	Tempered steel
32-5	Bearing disc	Tempered steel
412.1	O-ring	Nitrile
412.3	O-ring	Nitrile
412.4	O-ring	Nitrile
412.5	O-ring	Nitrile
412.6	O-ring	Nitrile
412.7	O-ring	Nitrile
486	Ball	Stainless steel
554.1	Washer	Stainless steel A4
554.2	Washer	Stainless steel A4
59-40	Actuating bush + indicator shaft	Nodular cast iron JS 1030 + stainless steel
629	Position indicator	Polyamide 6-6
81-68	Sliding pad	Nitrided steel
900.4	Bolt/screw	Stainless steel A4
901.1	Bolt/screw	Stainless steel A4
901.2	Bolt/screw	Stainless steel A4
904	Bolt/screw	Stainless steel A4
916.2	Plug	Polyamide 6-6
920.1	Sliding nut	Nodular cast iron JS 1060
920.2	Nut	Stainless steel A4
940	Woodruff key	Stainless steel
961	Handwheel	Nodular cast iron for MR 400 / steel for MR 600 and 1200
970.1	Name plate	Adhesive polyester

* JS 1019 for low-temperature version

MR 800 and 1600

Sectional drawing: actuation via handwheel and input-side primary reduction gear



List of components: MR

Part No.	Description	Materials
103	Gear housing	Lamellar graphite cast iron JL 1040 or JS 1019* or nodular cast iron JS 1030 or JS 1019*
142	Cap	Lamellar graphite cast iron JL 1040 or JS 1019* or nodular cast iron JS 1030 or JS 1019*
160	Cover with F10 motor interface	Lamellar graphite cast iron JL 1040 or nodular cast iron JS 1030
176	Bottom	Lamellar graphite cast iron JL 1040 or nodular cast iron JS 1030
20-1	Actuating stem	Phosphate or nickel steel
310.1	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
310.2	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
310.3	Self-lubricating plain bearing	Stainless steel with reinforced PTFE coating
310.4	Plain bearing	Stainless steel with reinforced PTFE coating
314	Stop disc	Phosphate steel
325	Needle bearing	Tempered steel
32-5	Bearing disc	Tempered steel
412.1	O-ring	Nitrile
412.2	O-ring	Nitrile
412.3	O-ring	Nitrile
412.4	O-ring	Nitrile
412.5	O-ring	Nitrile
412.6	O-ring	Nitrile
486	Ball	Stainless steel
554.1	Washer	Stainless steel A4
554.2	Washer	Stainless steel A4
59-40	Actuating bush + indicator shaft	Nodular cast iron JS 1030 + stainless steel
629	Position indicator	Polyamide 6-6
81-68	Sliding pad	Nitrided steel
900.4	Bolt/screw	Stainless steel A4
901.1	Bolt/screw	Stainless steel A4
901.2	Bolt/screw	Stainless steel A4
901.3	Bolt/screw	Stainless steel A4
904	Bolt/screw	Stainless steel A4
916.2	Plug	Polyamide 6-6
920.1	Sliding nut	Bronze
920.2	Nut	Stainless steel A4
940.1	Woodruff key	Stainless steel
940.2	Key	Steel
961	Handwheel	Nodular cast iron
970.1	Name plate	Adhesive polyester

* JS 1019 for low-temperature version

Removable adapter

The manual gearboxes are equipped with removable adapters selected in accordance with the required size and type of valve stem end (square, flat, keyed).

MR 25 and 50

Worm wheel with star drive for fitting the adapter in 45° increments

Flat-end adapter



Keyed adapter



Square-end adapter



MR 100 to 1600

Actuating bush with square drive for fitting the adapter in 90° increments

Square-end adapter

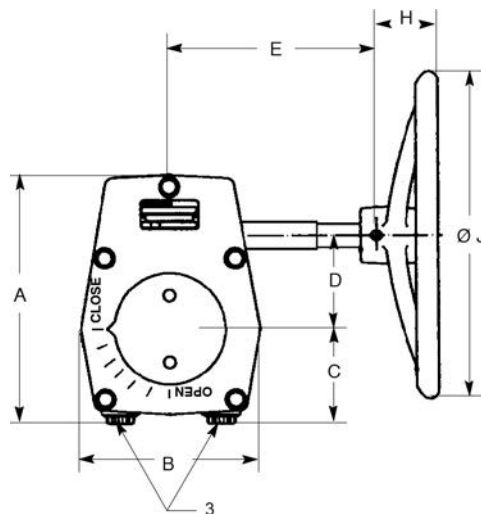
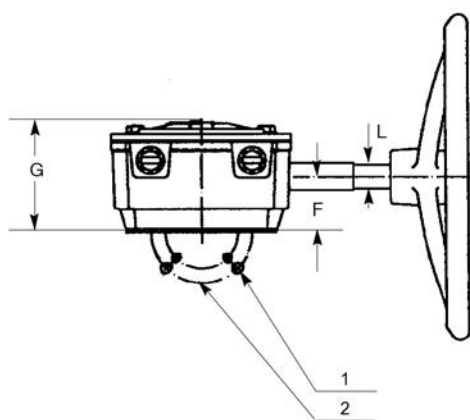


Dimensions

Drawings

Actuation by handwheel

MR 25 to 200

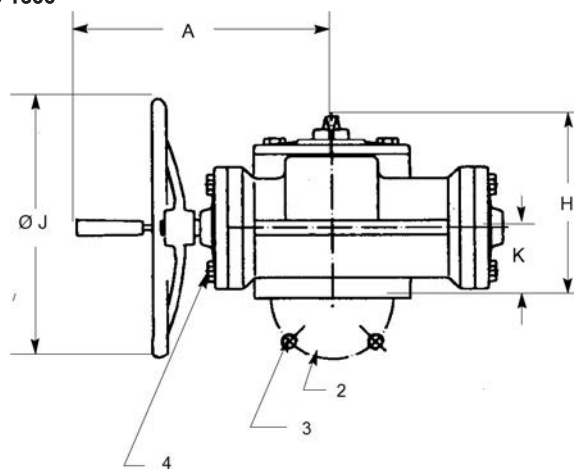
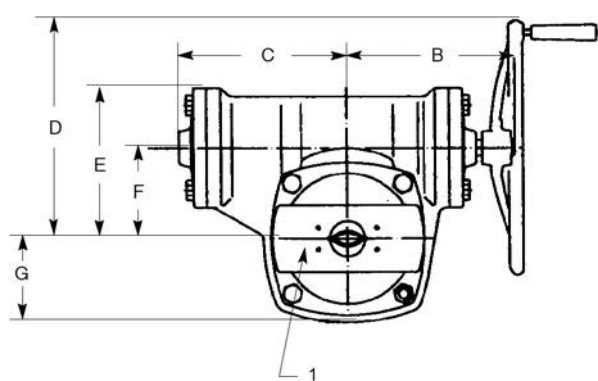


- 1 : n evenly spaced holes, dia. d2
2 : Bore diameter d1

- 3 : Adjustable stop bolts

Marine version: differs in dimension G and NAMUR VDI / VDE 3845 interface

MR 400 to 1600



- 1 : NAMUR VDI/VDE 3845 interface
2 : Bore diameter d1

- 3 : n evenly spaced holes, dia. d2
4 : Adjustable stop bolts for closing

Dimensions

[mm]

Size	Actuation by handwheel											
	A	B	C	D	E	F	G		H	J	K	L
MR							Sealed version	Marine version				
25	140	115	57	56	139	33	75	102	42	225	--	16
50	161	134	63	66	147	39	76	107	42	225	-	16
100	195	165	79	78	200	43	90	120	43	350	-	16
200	235	240	90	116	220	48	95	124	43	350	-	16
400	332	230	229	300	208	125	115		246	350	95	-
600	511	275	271	440	245	140	155		280	600	109	-
800	394	295	271	315	245	140	155		280	350	109	-
1200	680	320	337	580	338	180	180		336	800	131	-
1600	446	342	337	352	338	180	180		336	350	131	-

[mm]

Size	Actuation by handwheel					Weight
	ISO 5211 interface					
MR	Reference	Diameter d1	Diameter d2	n	[kg]	
25	F07	70	M8	4	6,0	
25	F10	102	M10	4	6,0	
50	F10	102	M10	4	7,5	
50	F12	125	M12	4	7,5	
100	F12	125	M12	4	14,0	
100	F14	140	M16	4	14,0	
200	F14	140	M16	4	21,5	
200	F16	165	M20	4	21,5	
400	F16	165	M20	4	58,0	
600	F16	165	M20	4	105,0	
600	F25	254	M16	8	105,0	
800	F16	165	M20	4	110,0	
800	F25	254	M16	8	110,0	
1200	F25	254	M16	8	175,0	
1200	F30	298	M20	8	175,0	
1600	F25	254	M16	8	183,0	
1600	F30	298	M20	8	183,0	

Variants

Actuation via cardan joint (tempered steel or stainless steel)

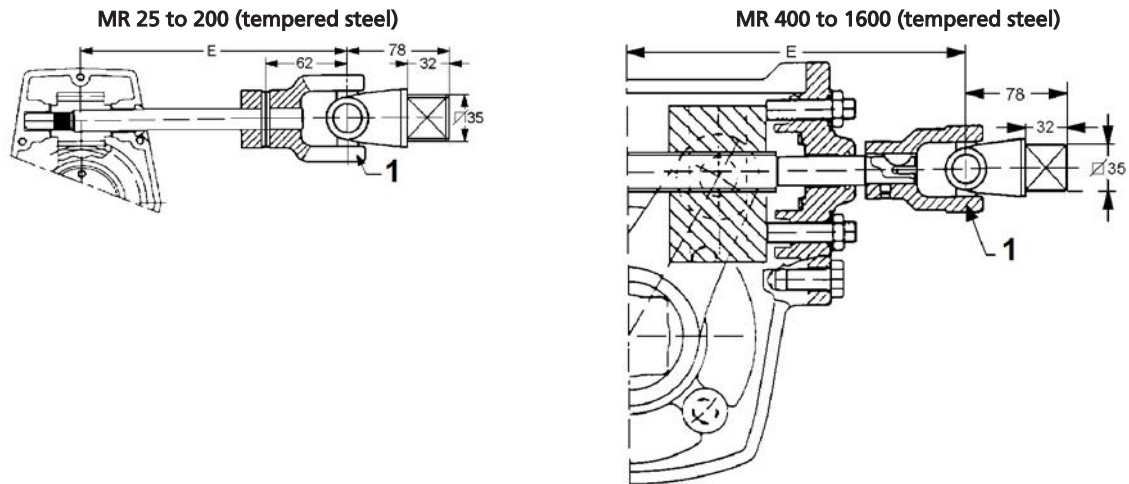
To enable actuation from a deck stand, the actuating stem is fitted with a cardan joint made of tempered steel and a 35-mm square end.

The cardan joint is galvanised.

The required length of transmission shaft (dia. 35 mm, max. length: 6 m) is included in the deck stand scope of supply.

A stainless steel variant of the cardan joint can be supplied for the entire type series.

Actuation from a deck stand is described in the "Options - Actuation accessories - Actuation from a deck stand" section.



1: cross, diameter 22 x 54

Size MR	E [mm]	Weight [kg]
25	201	6,0
50	210	7,5
100	262	12,5
200	282	20,0
400	244	58,0
600	285	105,0
800	318	110,0
1200	335	175,0
1600	367	183,0

Actuation via square for hydrant key

For valves installed in buried drinking water supply systems, the actuating stem is equipped with a square for hydrant key operation (30 or 50 mm) made of nodular cast iron JS 1030.

Manual gearboxes with a square for hydrant key operation can be operated as follows:

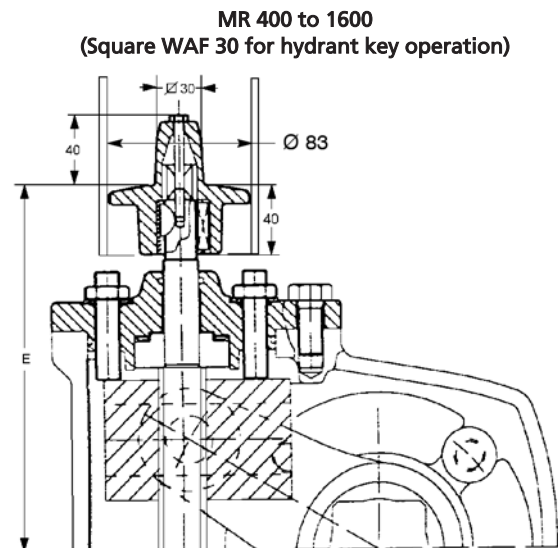
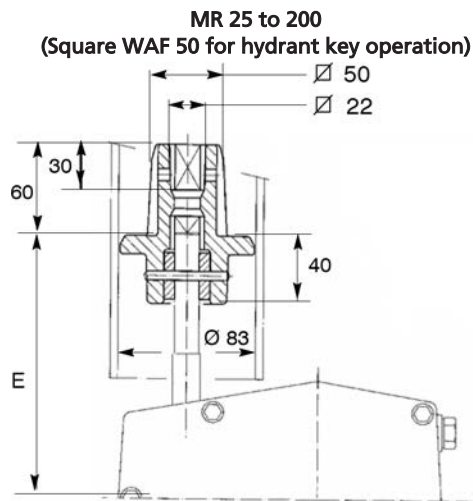
30-mm square:

- Handwheel (diameter: 315) made of nodular cast iron
- Socket wrench
- Straight lever (length: 370 mm) made of nodular cast iron

50-mm square:

- Extension rod with square end, protecting tube and valve box

Accessories are described in the "Options - Actuation accessories - Accessories for actuation via square for hydrant key operation" section



Size	Square WAF 30		Square WAF 50	
	MR	E [mm]	MR	E [mm]
25	165	5,5	165	6,0
50	173	7,0	173	7,5
100	226	12,0	226	12,5
200	246	19,5	246	20,0
400	222	57,0	222	59,0
600	325	103,0	330	107,0
800	295	108,0	295	111,0
1200	370	173,0	375	177,0
1600	345	180,0	345	184,0

Actuation via chain wheel

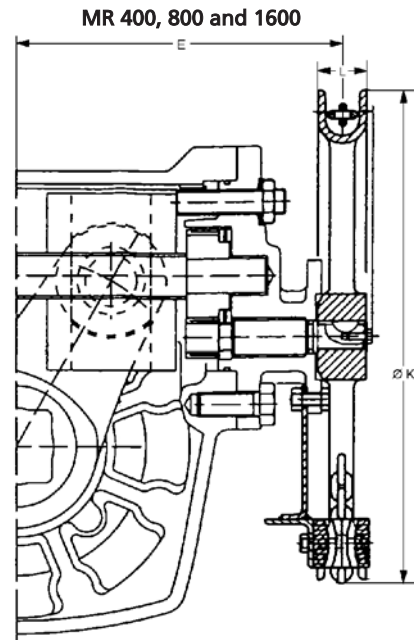
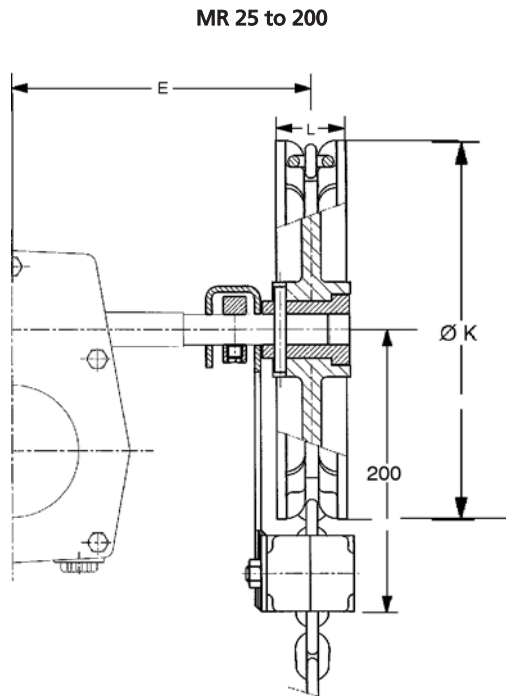
If piping is situated at a higher level and the actuating element is not accessible, the valve can be actuated via a chain wheel fitted on the stem of the manual gearbox (remote actuation).

The total chain length must be indicated when ordering (pitch: 18.5, size: 5, to DIN 766).

The chain is made of tempered steel or stainless steel.

For horizontal piping the MR manual gearbox must be fitted below the pipe, to ensure that the chain hangs down vertically.

* Weight per metre of chain: 0.8 kg



Size	E	K	L	Weight
MR	[mm]	[mm]	[mm]	[kg]
25	157	200	40	9,5
50	165	200	40	10,5
100	217	300	40	18,0
200	248	300	40	25,0
400	202	400	40	70,0
600	-	-	-	-
800	275	400	40	125,0
1200	-	-	-	-
1600	325	400	40	200,0

Actuation by handwheel, with extension

For some applications, the handwheel needs to be fitted at a distance from the manual gearbox.

This is accomplished by fitting a handwheel extension:

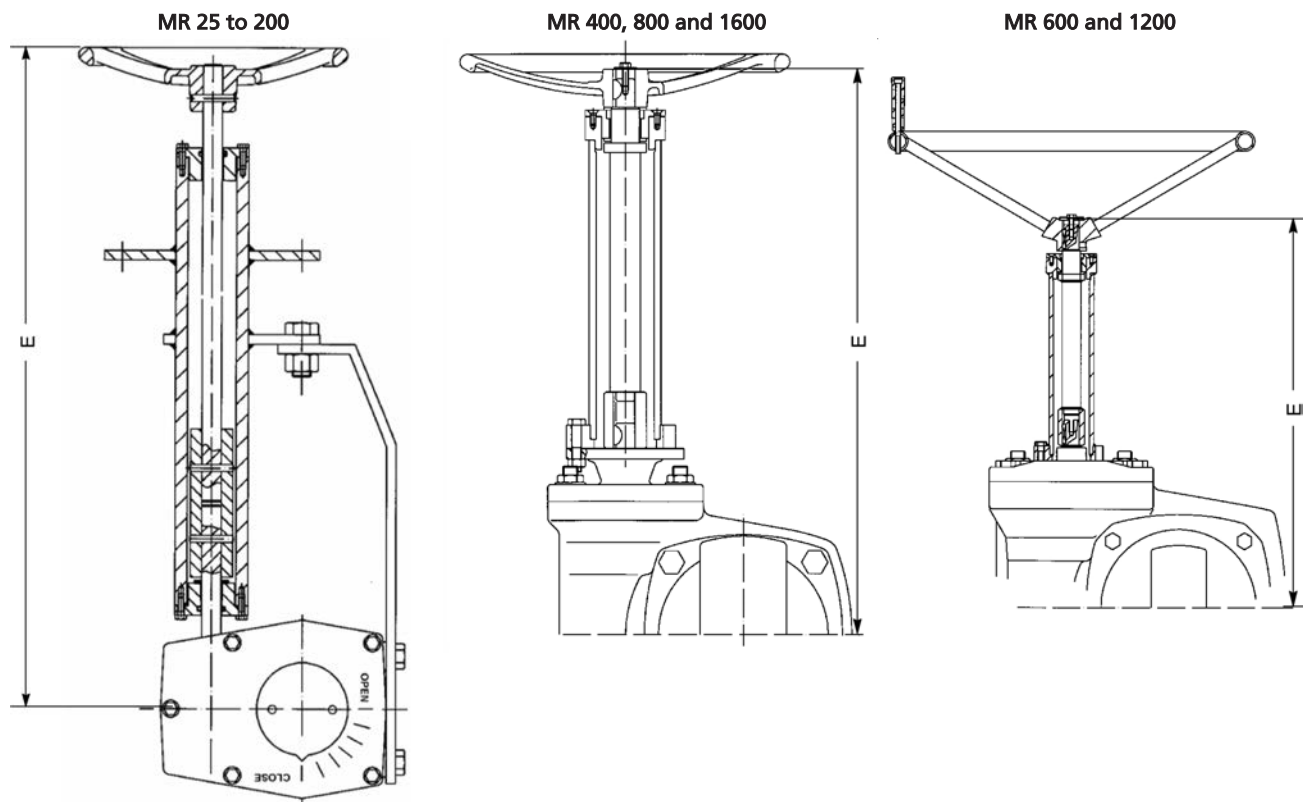
- Extension made of steel, with polyurethane coating, RAL 7016, thickness 80 µm (standard version)
- Transmission shaft and bolting made of stainless steel
- Handwheel (identical to standard handwheel of the manual gearbox)

Maximum extension (dimension E): 3 m. Longer extensions on request. Minimum length see table below.

Fitting an extra support is strongly recommended to safeguard the rigidity of the assembly. It must be supplied and fitted by the customer at the site.

Recommended set-up for this version:

- Valve fitted in a horizontal position
- MR fitted with the actuating stem in the vertical position
- Extension fitted with the axis in the vertical position



Size	E min.
MR	[mm]
25	500
50	550
100	600
200	600
400	500
600	500
800	500
1200	600
1600	600

Simpler solutions are available for the MR 25 to 200 models, provided that the transmission shaft is perfectly guided at the site (on request).

Options - Actuation accessories

Actuation from a deck stand

Standard version: actuation by handwheel

Some installations require valves to be actuated from a different level.

In others, site conditions require the valve's actuating element to be installed at a distance from the valve for reasons of accessibility.

A deck stand enables valves installed at a lower level to be actuated from a higher-level location.

The actuation process is performed either manually or electrically.

In such cases, the valve will be equipped with an MR manual gearbox with an output-side cardan joint and transmission shaft(s). Cardan joints are capable of accommodating some offset between the manual gearbox output shaft and the deck stand output shaft.

The maximum offset angle between the transmission shaft axis and the output shaft of the deck stand (or the manual gearbox) must not exceed 30°.

The cast standard deck stands are dust and splash-proof (IP 65).

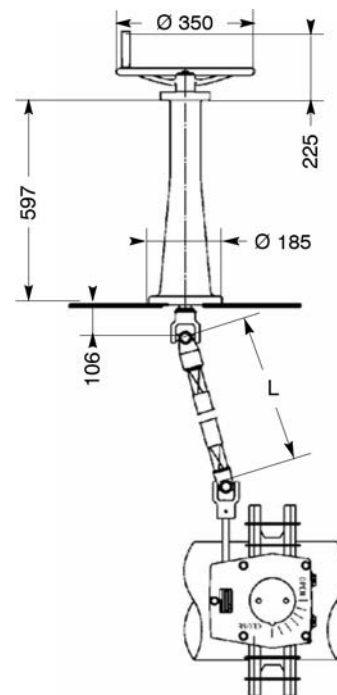
- Deck stand made of nodular cast iron
- Handwheel made of nodular cast iron
- Transmission elements made of tempered steel
- Cardan joint made of galvanised steel or stainless steel (optional)

Dimension L must equal at least 150 mm; it must not exceed 6 m.

The basic deck stand design is not equipped with a position indicator.

A variant with position indicator can be supplied.

Protection by polyurethane coating, thickness 80 µm, colour: RAL 7016 anthracite grey



The following manual gearboxes can be operated from a deck stand: MR 25, MR 50, MR 100, MR 200, MR 400, MR 800 and MR 1600.

MR 600 and MR 1200: request particulars.

Variant: electric actuation

The valve is actuated by an electric actuator which replaces the handwheel.

This actuation method can only be implemented on manual gearbox types MR 400, MR 800 and MR 1600 that can be motorised and feature a cardan joint output.

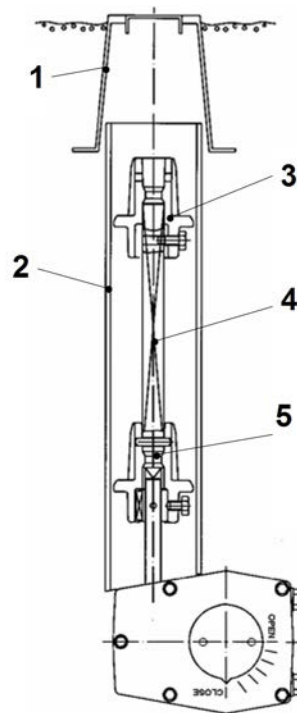
Remote actuation for buried MR

For buried service, remote actuation can be implemented by extension of the actuating element.

The extension set-up consists of:

- MR, actuated via a square for hydrant key operation (WAF 50, mandatory) which functions as an extension socket
- Extension rod with square (WAF 22), a standard length of 2 metres + square for hydrant key operation (WAF 30 or 50)
- Valve box and PVC protecting tube

Note: The extension rod is cut to the required length on site.
The assembly can be extended further by adding another extension socket and extension rod.

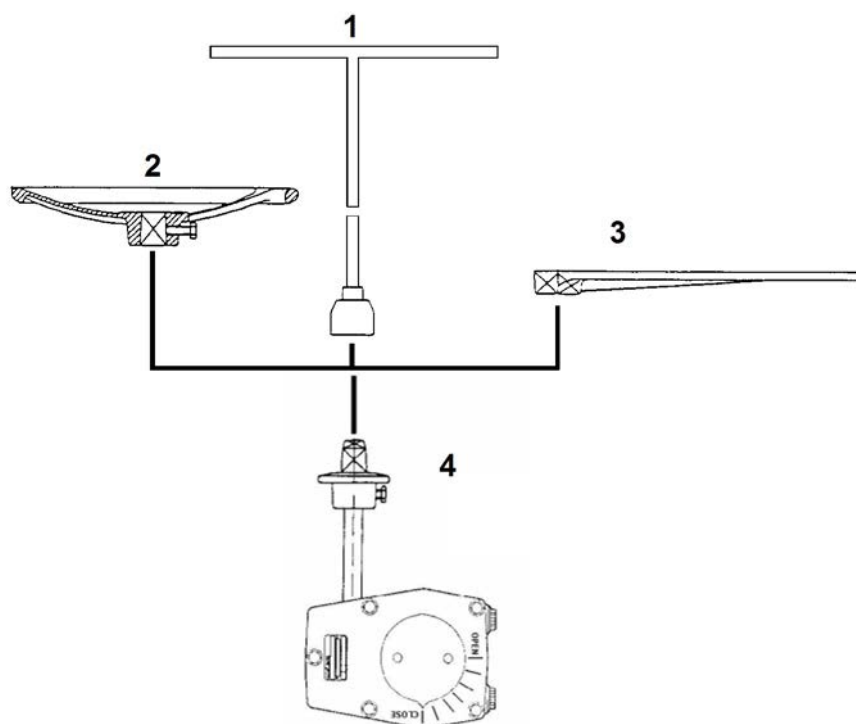


- | | |
|---------------------------------------------------|--------------------------------------------------------------------------------------|
| 1 : Valve box | 4 : Extension rod with square (WAF 22), max. length: 2 m |
| 2 : Protecting tube | 5 : Manual gearbox with square (WAF 50) for hydrant key operation / extension socket |
| 3 : Square WAF 30 or 50 for hydrant key operation | |

Accessories for actuating the square for hydrant key operation

The following accessories are available for operating manual gearboxes with a WAF 30 square for hydrant key operation:

- Handwheel made of nodular cast iron, dia. 315
- Socket wrench
- Straight lever, length: 370 mm



- 1 : Socket wrench
2 : Handwheel, dia. 315

- 3 : Straight lever, length: 370 mm
4 : Manual gearbox with WAF 30 square for hydrant key operation

For operating manual gearboxes with WAF 50 square for hydrant key operation: request particulars

Motorisation (MR 400, 800 and 1600 only)

MR manual gearboxes can also be supplied in a motorisable design. For this purpose, the sliding nut made of cast iron is replaced by one made of bronze, and an ISO 5210 - F10 interface is selected to accommodate the actuator (on request). These manual gearboxes (supplied with a handwheel) can be subsequently motorised or actuated remotely through a cardan output (remote actuation from an electrically operated deck stand).



Lead-sealed closed-position limit stop

The closed-position limit stop of the MR manual gearbox can be locked with a stainless steel wire/lead fixture. This option can be implemented on MR 25 to 200, marine version, and MR 400 to 1600.

Limit switch box

MR manual gearboxes can be fitted with an AMTROBOX limit switch box.

This box can be equipped with a maximum of three switches (1 for Open, 1 for Closed, and 1 for an adjustable intermediate position):

- Electrical standard or explosion-proof limit switch
- Standard or intrinsically safe proximity switch

Connection is effected either by cable gland or connector.

The limit switch box has an IP 67 enclosure as standard.

The AMTROBOX limit switch box is also available in an intrinsically safe or explosion-proof design.

MR 25 to 200
Marine version



MR 400 to 1600



Options

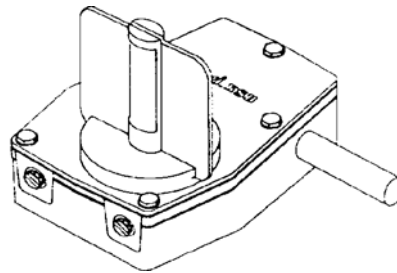
Flag indicator

MR 25 to 200

If the position of the valve disc needs to be visible from a distance, the position indicator is replaced by a yellow flag (RAL 1003) measuring 100x100 mm. Other colours are available on request.

MR 25 to 1600

Flag measuring 150x250 mm, red on both sides, normally used in marine applications. Flag can be designed to customer specification.



Handwheel locking arrangement

- By chain and padlock

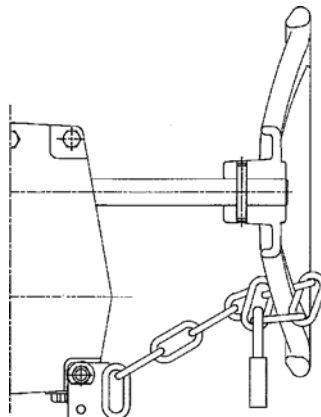
On request, MR manual gearboxes can be supplied with an arrangement for locking the handwheel using a padlock and stainless steel chain.

(Padlock included in KSB's scope of supply).

- By stainless steel plate and padlock

On request, MR manual gearboxes can be supplied with an arrangement for locking the handwheel using a stainless steel plate and padlock.

(Padlock included in KSB's scope of supply).



Design to APSAD**MR 25 to 1600**

These actuators comply with the French APSAD fire protection regulations.
In combination with ISORIA butterfly valves, MR manual gearboxes feature

- a gear housing made of nodular cast iron
- a system enabling blind mounting or a flat-ended actuating stem
- a yellow flag, 100x100 mm,
- a handwheel locking arrangement with chain and padlock,
- integrated contacts for electrical signals (optional for MR 25 to 200).

This unit is certified to APSAD.

Design to U.L. - UNDERWRITERS LABORATIES -**MR 25 to 400**

These actuators meet the requirements on fire protection systems in acc. with UL 1091.

In combination with ISORIA butterfly valves, MR manual gearboxes feature

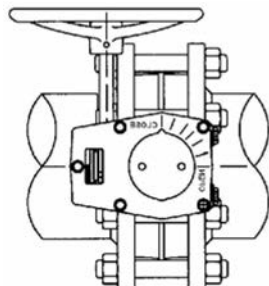
- a system enabling blind mounting or a flat-ended actuating stem
- a yellow flag, 100x100 mm,
- a handwheel locking arrangement with chain and padlock.

This unit is certified to UL.

Mounting onto the valve

MR 25 to 200

The actuator can be mounted on the valve in one position only.

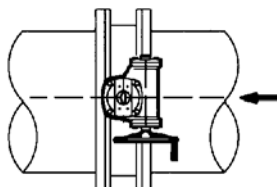


MR 400 to 1600

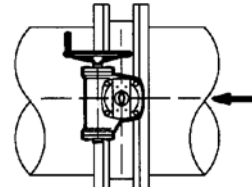
The actuator can be mounted on the valve in 4 different positions, offset by 90° (normal mounting position = N / 1).

Mounting position N

Position 1

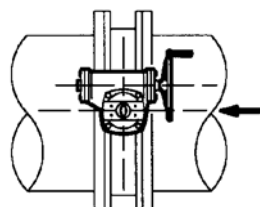


Position 2

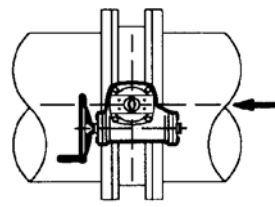


Mounting position M

Position 1



Position 2



← Flow direction of fluid handled – Valve shown in closed position



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