

**MANUAL OVERRIDE (DECLUTCHABLE GEAR UNIT)****MODEL MOA****I N D E X**

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# VALUE

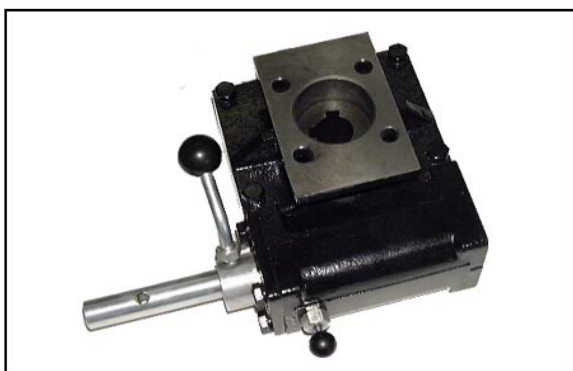
## Model MOA

### Manual Override - Declutchable Gear Units

The Manual Override series **MOA** of **Value Valves Co., Ltd.** employ a Declutchable Worm and Worm Wheel mechanism, and are ruggedly designed and produced for manually overriding pneumatic / hydraulic valve actuators in power and process applications.

Installed between the actuator and the valve mounting plate, series **MOA** are **Sandwich** Type declutchable gear units consisting of 5 frame models, with a practical torque coverage, and apply to either **Double Acting** or **Spring Return** pneumatic / hydraulic actuators.

**VALUE VALVES CO., LTD.** proudly turns out **MOA** series of Manual Override with world-class quality, performance and highly competitive price, for users of all industries requiring reliable manual operation of pneumatic / hydraulic actuators



## 1 GENERAL INFORMATION

The **MOA** series of **Manual Override** are

- **Totally enclosed, Grease** packed, lubricated for life and sealed to **IP65** (Consult factory for environmental specification options i.e. Grade IP67 or immersion services models.)
- **Sandwich** Type; for **Double Acting** or **Spring Return** pneumatic actuators
- With external bolting and adjustable mechanical stops in a **90° +/- 5°** Travel;
- Self-locking gear and declutch mechanism in both the engaged and disengaged positions
- Designed with a Safety Factor to withstand loads far in excess of their rated torque and proved Cycle Life exceeding requirement of major industrial standard
- Standard **-20°C (-4°F)** to **+120°C (+250°F)** working temperature range
- Suitable for use in all handwheel applications (Standard 8" – 24" Cast Iron handwheels)
- In **Powder Epoxy** finish

declutchable gear units with **Features** like

- **5** frame models; **Output Torque** from 250 NM / 2,200 inch-Lbs to 3,600 NM / 32,000 inch-Lbs
- Rugged construction cast iron **Enclosure**, hardened carbon steel **Worm** and ductile iron **Worm Wheel**
- Simple declutch arrangement by a **Cam**, a **Lever** (for operating) and a Spring Loaded **Locking Pin** (Plunger, to hold the gear unit in clutched or declutched position)
- **Direct mounting** to valves – pre-drilled **Base flange** in ISO5211 / MSS SP101 specification (or customized)
- **Direct mounting** to pneumatic / hydraulic actuators
- **Integral** Top Mounting Flange & **Replaceable Interface** accepts up to 3 sizes of ISO5211 / MSS SP101 bolt patterns
- High performance **Bearing** package ( Thrust Needle Bearings and Lubricated Bronze Shaft Bearings)
- **Environmental specification** options

## VALUE VALVES CO., LTD

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## 2 PERFORMANCE & SPECIFICATIONS

	Gear Ratio	Turns to Close	Output Torque (NM / inch-Lbs)	Input Torque (NM/inch-Lbs)	M.A. ( $\pm 10\%$ )	Max. Stem Bore (mm/inch)	Mounting Pattern		Weight (Kg / Lb)
							To Valve	To Actuator	
MOA-1	30:1	7.5	250 / 2,200	33 / 290	7.5	25.4 / 1.0	See Table of Mounting Patterns	See Table of Mounting Patterns	5.5 / 12
MOA-2	38:1	9.5	700 / 6,200	83 / 740	8.4	45 / 1.75			8 / 17.6
MOA-3	54:1	13.5	1,200 / 10,600	120 / 1,060	10	60 / 2.375			12 / 26
MOA-4	80:1	20	2,000 / 17,700	140 / 1,220	14.5	60 / 2.375			20 / 44
MOA-5	78:1	19.5	3,600 / 32,000	185 / 1,640	19.5	75 / 3.00			38 / 84

Remarks: Weight listed is approximate and exclusive of Handwheel and for standard material selections

## 3 DESIGN FEATURES & MATERIAL BILL

### 3-1 Design Features

**MOA** declutchable gear units are designed and built for long term service. Safety factor is considered to withstand loads far in excess of the rated torques, and cycle life in both factory test and industrial applications exceeds the requirement of major industrial standard.

Manual operation of the gear units during the failure of pneumatic / hydraulic operation is based on a Worm and a Worm Wheel mechanism

The Declutch Mechanism consists of a **Cam**, a **Declutch Lever** to shift the gear unit from Automatic to Manual status, and a spring-loaded **Locking Pin** (Plunger) to hold the gear unit in both the engaged and disengaged positions.

A Bearing package consisting of Needle Thrust Bearings and lubricated bronze Shaft Bearings is configured to upgrade efficiency and durability

### 3-2 Operation

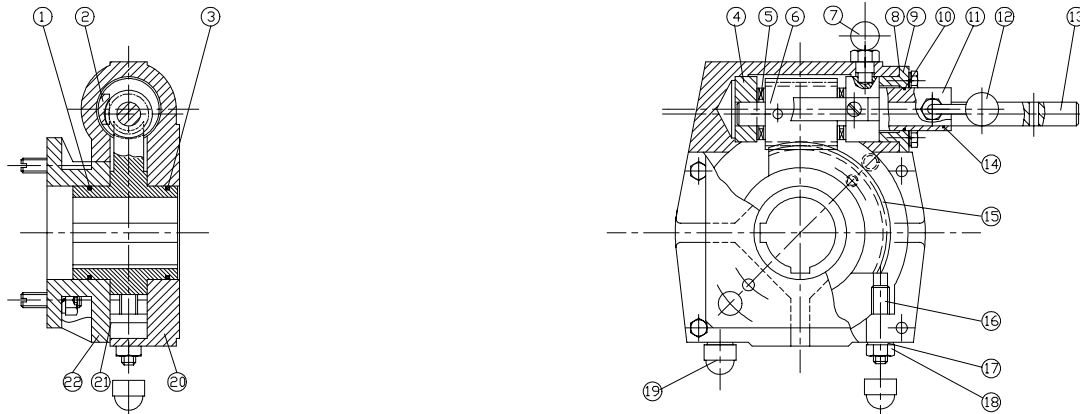
Normal operation is with the lever in the "OFF" position. In this position the worm is in declutch mode and the actuator is free to operate the valve.

To engage the clutch, pull the spring loaded Locking Pin and rotate the lever in clockwise to the "ON" position.

To declutch the gear operator, reverse the above procedure by rotating lever to "OFF" position.

**NOTE:** Slight movement on the handwheel may be required to align the worm and worm wheel when positioning the engagement lever.

### 3-3 Bill of Material



No	Part Name	Q'ty	Standard Material	No	Part Name	Q'ty	Standard Material
1	Quadrant O-ring	1	Rubber	12	Lever	1	Carbon Steel AISI 1045, Galvanized
2	Cam Bridge	1	Carbon Steel AISI 1045, Hardened	13	Input Shaft	1	Carbon Steel AISI 1045, Galvanized
3	Quadrant O-ring	1	Rubber	14	O-ring	1	Rubber
4	Cam	1	Carbon Steel AISI 1045 Hardened & Galvanized	15	Worm Wheel	1	Ductile Iron ASTM A536 65-45-12
5	Needle Thrust Bearing	2	AXK, Bearing Steel	16	Adjusting Screw	2	Alloy Steel AISI4142, Galvanized
6	Worm	1	Carbon Steel AISI 1045, Hardened	17	Gasket	2	Moulded Rubber
7	Locking Pin	1	Carbon Steel	18	Lock Nut	2	Carbon Steel, Galvanized
8	Gasket	1	Rubber	19	Protection Cap	1	Moulded Rubber
9	Bearing Block	1	Grey Cast Iron ASTM A126 Class B	20	Gear Housing	1	Grey Cast Iron ASTM A126 Class B
10	O-ring	1	Rubber	21	Gasket	1	Rubber
11	Cam	2	Carbon Steel AISI 1045 Hardened & Galvanized	22	Integral Top Flange	1	Grey Cast Iron ASTM A126 Class B

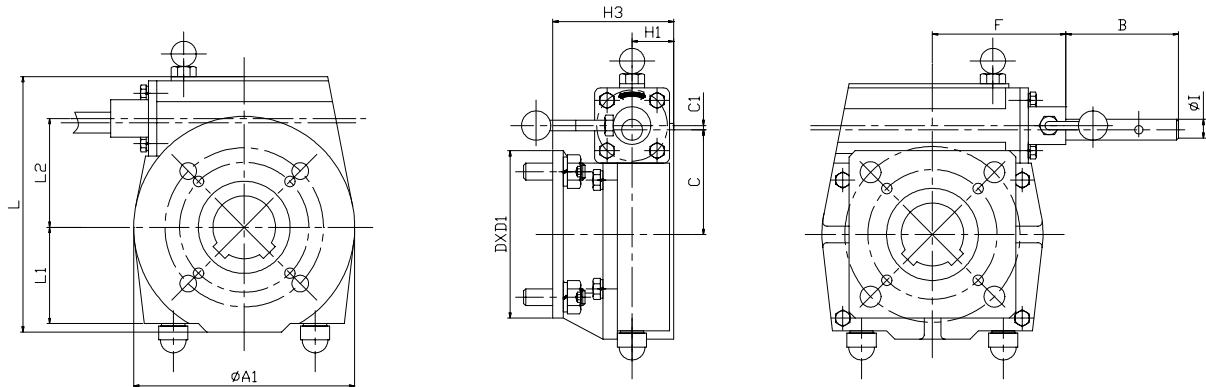
Remark: Material specifications listed are referred to standard models and please refer below for material options.

### 3-4 Material Options

MOA models of Manual Override provide following material options for environmental specifications required by different industrial applications (for details please consult factory):

- **Input Shaft** in stainless steel AISI 420 (Hardened) or AISI 304
- **Declutch Lever** and **Locking Pin** (Plunger) in stainless steel AISI 420
- Bronze **Cam**
- Ductile Iron **Gear Casing**
- **Stem Coupler** in carbon steel or stainless steel AISI 420 (optional accessory)
- Stainless steel **Bolting & Adjusting Screws (Stops)**

## 4 OVERALL DIMENSIONS (mm/inch)



Model No.	A1	B	C	C1	DxD1	F	H1	H3	ΦI	L	L1	L2
MOA-1	105 (4.13)	83 (3.27)	54 (2.13)	3 (0.12)	100x70 (3.94x2.76)	75 (2.95)	23 (0.91)	75 (2.95)	17 (0.67)	136 (5.35)	48 (1.89)	52 (2.05)
MOA-2	125 (4.92)	109.5 (4.31)	62.5 (2.46)	3 (0.12)	100x100 (3.93x3.93)	86.5 (3.41)	27.5 (1.08)	79 (3.11)	17 (0.67)	156 (6.14)	57 (2.25)	66 (2.60)
					110 x 110 (4.33 x 4.33)			82 (3.23)				
					130 x 130 (5.12 x 5.12)			88 (3.46)				
MOA-3	175 (6.89)	97 (3.82)	82.5 (3.25)	3 (0.12)	110 x 110 (4.33 x 4.33)	107 (4.21)	29 (1.14)	86 (3.38)	17 (0.67)	200 (7.87)	82.5 (3.25)	85.5 (3.37)
					130 x 130 (5.12 x 5.12)			95 (3.74)				
					156 x 156 (6.14 x 6.14)			103 (4.06)				
MOA-4	234 (9.21)	126 (4.96)	120 (4.72)	3 (0.12)	135x156 (5.31x6.14)	118 (4.65)	38 (1.50)	114 (4.49)	25 (0.98)	279 (10.98)	116 (4.57)	123 (4.84)
					156x156 (6.14x6.14)			114 (4.49)				
MOA-5	278 (10.94)	138 (5.43)	140 (5.51)	5 (0.20)	156x156 (6.14x6.14)	132 (5.20)	48 (1.89)	123 (4.84)	25 (0.98)	335 (13.19)	131 (5.16)	154 (6.06)
					215x215 (8.46x8.46)			125 (4.92)				

## 5 MOUNTING PATTERN

**Base Flange** – MOA models provide large sized Base Flange to accept up to 3 – 4 sizes of ISO5211 / MSS SP 101 bolt patterns for mounting to valve.

**Top Flange** – Integral and replaceable **Top Flange** can match the actuators in various flange sizes.

Table below gives the mounting specifications that are factory pre-drilled in ISO5211 / MSS SP 101 standard, and for customized mounting specifications please consult factory.

Model	Mounting to Valve - Base Flange		Mounting to Actuator – Top Flange	
	ISO 5210	MSS SP 102	ISO 5210	MSS SP 102
MOA-1	F05/F07	FA05/FA07	F05 / F07	FA 05 / FA 07
MOA-2	F07 / F10	FA07/FA10	F07 / F10	FA 07 / FA 10
			F12	FA 12
			F14	FA 14
MOA-3	F10 / F12 / F14	FA10/FA12/FA14	F10 / F12	FA 10 / FA 12
			F14	FA 14
			F16	FA 16
MOA-4	F14 / F16	FA14/FA16	F14	FA 14
			F16	FA 16
MOA-5	F16/F25	FA16/FA19/FA25	F16	FA 16
			F25	FA 19 / FA 25

**Model MOA**  
**Manual Override - Declutchable Gear Unit**

According to user's specifications and please refer to the attached sheet of Ordering Information for details.

### **Mounting Options**

We also provide following Mounting Options and please consult factory for details:

- Stem Coupler (in carbon steel or stainless steel 13% Chrome / SS304)
- Top or Base mounting bracket
- Top or Base Flange extensions

## **6 HANDWHEEL**

Stand handwheel configured for **MOA** Manual Override is in Cast Iron with powder Epoxy finish, size from 8" (DN200) through 24" (DN600) (Our Catalogue No. ASSC/HW1-V1/00).

For **Fabricated Tubular Steel Handwheels** please consult factory.

## **7 CONTACT & DISTRIBUTION INFORMATION**

### **V ALUE VALVES CO., LTD.**

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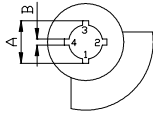
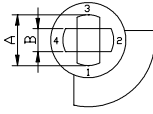
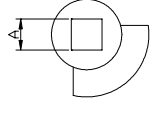
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## 8 ORDERING INFORMATION

### 8-1 Selection of Quantity, Accessories, Configurations & Specifications

Model				Remarks
Quantity				
Handwheel				
Environmental Specification & Material Option	Input Shaft			1 = Carbon Steel AISI 1045 Galvanized 2 = Stainless Steel AISI420 Hardened 3 = Stainless Steel AISI304
	Cam			1 = Carbon Steel AISI 1045 (Hardened & Galvanized) 2 = Bronze
	Declutch Lever			1 = Carbon Steel AISI 1045 Galvanized 2 = Stainless Steel AISI420 Hardened 3 = Stainless Steel AISI304
	Locking Pin (Plunger)			1 = Carbon Steel AISI 1045 Galvanized 2 = Stainless Steel AISI420 Hardened 3 = Stainless Steel AISI304
	Gear Casing			1 = Cast Iron ASTM A126 Class B 2 = Ductile Iron ASTM A536 65-45-12
	Bolting			1 = Carbon Steel, galvanized 2 = Stainless Steel AISI304
	Adjusting Stops Screws			1 = Alloy Steel AISI4142 Hardened
	Protection Caps & Gasket (for Adjusting Screws)			1 = Without 2 = With (Moulded Polymer())
	Coating			1 = Primed 2 = Powder Epoxy 3 = Other (specify)
	Color			Color or Color No.
Nameplate	Nameplate			1 = Standard 2 = Customer
	Casted Logo			1 = Raised 2 = Recessed
Input Shaft	Mounting with Handwheel			1 = Plain End 2 = H.W. Hole 3 = Keyway
	Rotation to Close			1 = Clockwise 2 = Counter-clockwise
	Min. Shaft Length			from centerline
Bore Pattern	Keyway(s)			 Viewed from Top
	Flat (Double D)			 Viewed from Top
	Square			 Viewed from Top
	Customer			Please specify details and drawings

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## 8-2 Mounting Pattern – Base & Top Flange Specifications

Model No.						Remarks	
Base Flange	ISO 5211						
	MSS SP101						
	Customer	No. Of Holes					
		Size / Thread					
		B.C.D. (mm/inch)					
	Holes & Position						1 = On Center 2 = Straddling Centerline
						1 = Counerbored 2 = Countersunk	
Top Flange	ISO 5211						
	MSS SP101						
	Customer	No. Of Holes					
		Size / Thread					
		B.C.D. (mm/inch)					
	Holes & Position						1 = OnsCenter 2 = Straddling Centerline
						1 = Counerbored 2 = Countersunk	
Options	Mounting Bracket					Specify details with drawings	
	Stem Coupler					Specify details with drawings	
						Specify details with drawings	