

## 8. MOTORS

### 8.1 M10 TO M66A MOTOR SPECIFICATIONS & DIMENSION TABLE

		M10	M16	M22	M28	M38A	M66A	
	Weight	9.5 kg (20.9 lbs)		11 kg (24.3 lbs)		21.5kg (47.4 lbs)		
	Construction	Cast iron (ductile iron)						
	Max. working press.	21 MPa (3000 psi)						
	Fluid media	Mineral oil						
	Viscosity range	ISO 32 to 46 (SUS 140-230)						
	Temperature range	-30°C to +100°C (-22°F to +212°F)						
	Speed range	0-7000 rpm				0-4500 rpm		
	Rotation	CW - Standard (CCW - Optional)						
	Duty cycle	Intermittent						
	Overall volumetric efficiency	95% (minimum)						
	Displacement	9.98cc (0.6 cu.in.)	15.59cc (0.95 cu.in)	22.1 cc (1.35 cu.in.)	28 cc (1.71 cu.in.)	38 cc (2.32 cu.in.)	66 cc (4 cu.in.)	
	Max. torque at 21 MPa (3000 psi)	30 Nm (22 lbf.ft.)	48 Nm (35 lbf.ft.)	66 Nm (49 lbf.ft.)	84 Nm (62 lbf.ft.)	124 Nm (92 lbf.ft.)	216 Nm (160 lbf.ft.)	
Dimensions in mm)	Overall length	A	293mm (11.5")	328.5mm (12.9")		435mm (17.1")		
	Max. motor length	B	225mm (8.9")	260mm (10.2")		328mm (12.9")		
	Motor diameter	C	89.5mm (3.5")	101.5mm (4")		130mm (5.1")		
	Dist. between ports	D	41.3mm (1.63")	47.6mm (1.87")		65mm (2.6")		
	Inlet port	E	3/8" NPT	3/8" NPT		SAE 12		
	Outlet port	F	3/8" NPT	1/2" NPT		SAE 12		
	Flange thickness	G	Depends upon configuration				21mm (0.83")	
	Pinion hsg. Length	H					113mm (4.5")	
	Mounting flange						SAE 3	
Flange to ring gear (FRG)		50.8mm (2")						

#### **Part numbers:**

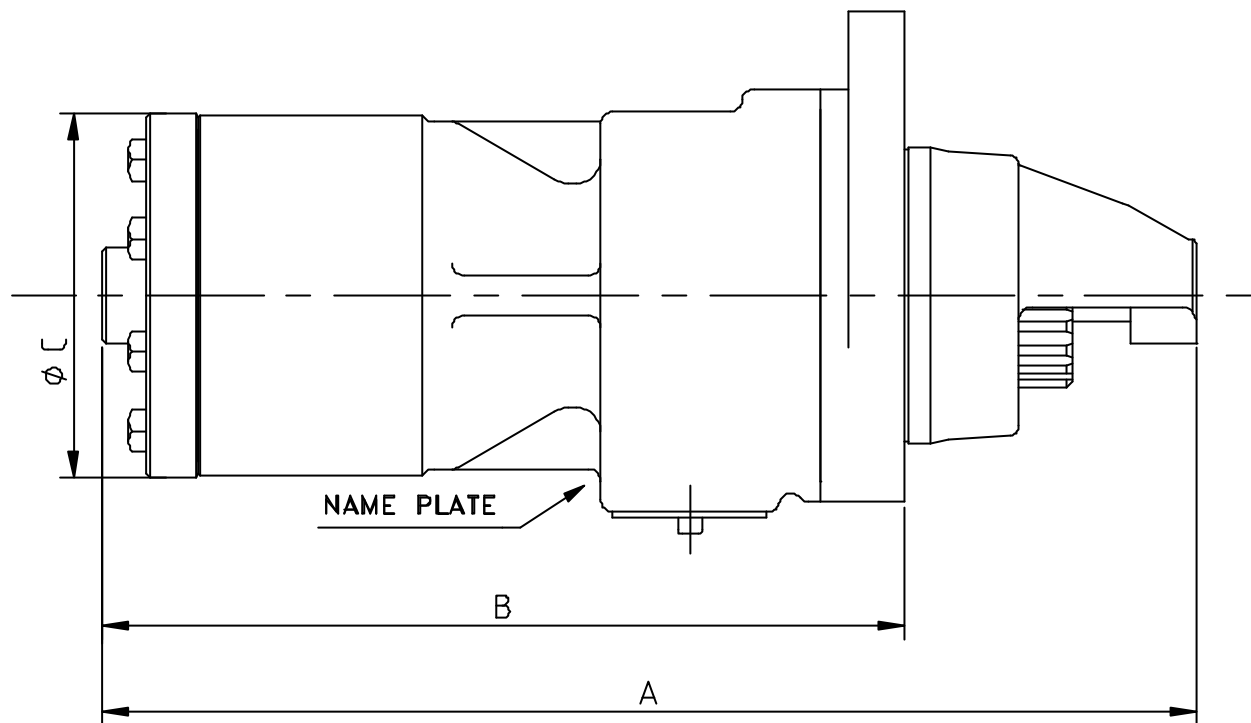
See "STARTER MOTOR ORDERING CODE" on page 12-2

#### **Features:**

- ? Light weight yet aluminium free.
- ? Rugged, long life construction.
- ? Reduced internal case pressure.
- ? Improved seal design.
- ? Non-sparking, beryllium copper drives and marinised anti-corrosion models available.

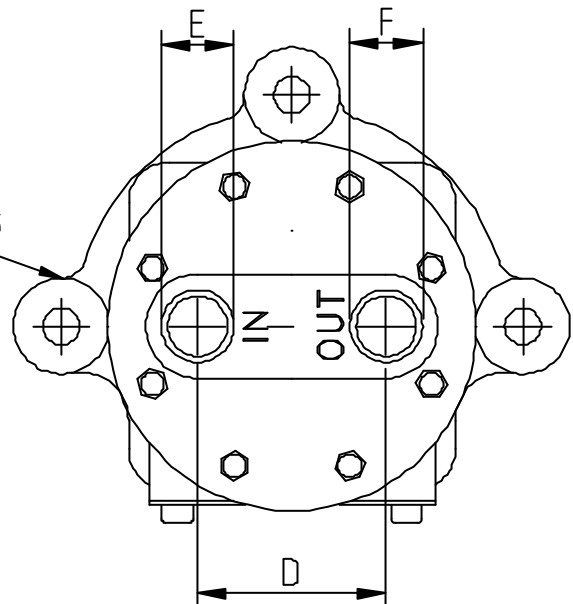
Specifications are subject to change without prior notice due to product improvements.

## 8.2 M10 TO M28 MOTOR DIMENSIONS



FOR MOUNTING DIMENSIONS  
REFER TO MODEL TYPE

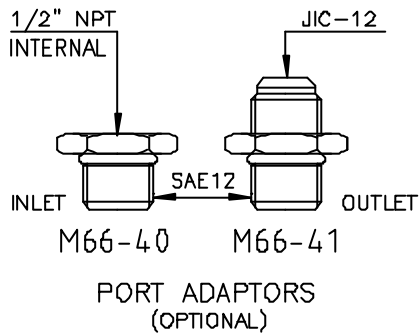
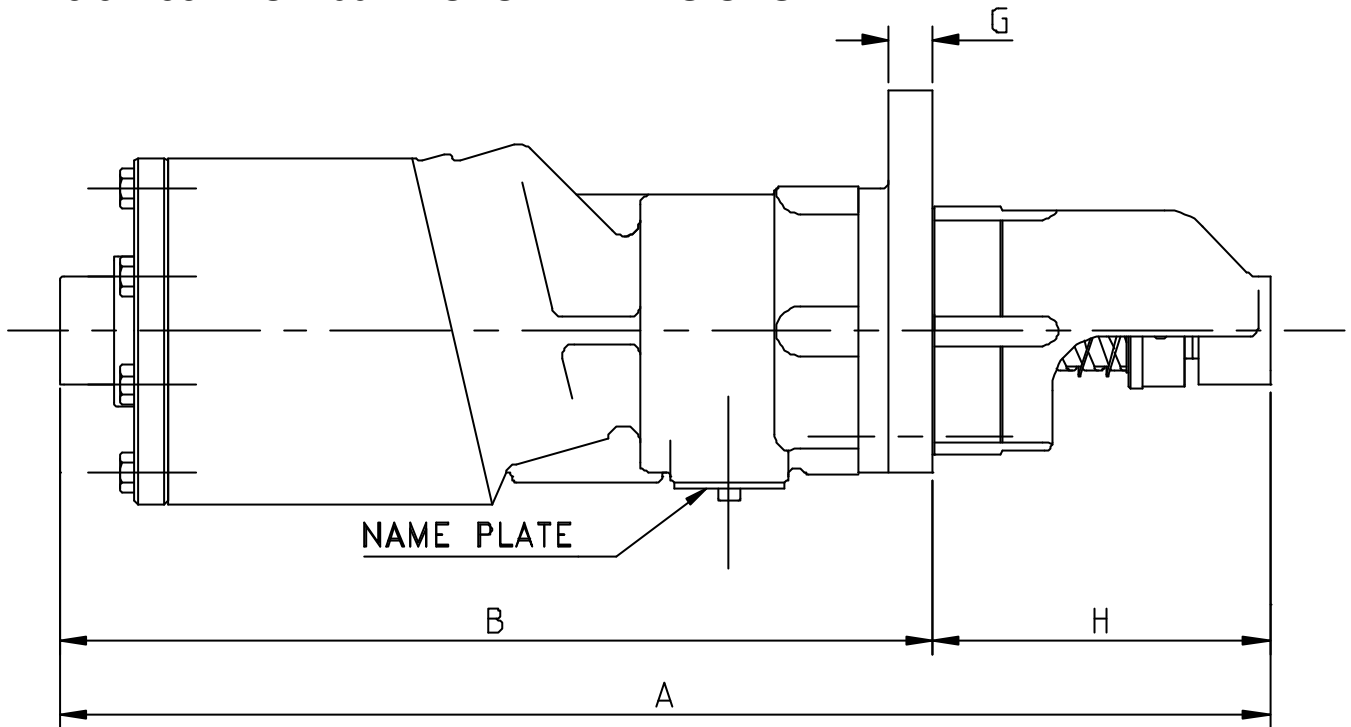
- ? For clockwise rotation orientate port plate as shown.
- ? For counter clockwise rotation, orientate port plate 180° and ensure that CCW drive is used.



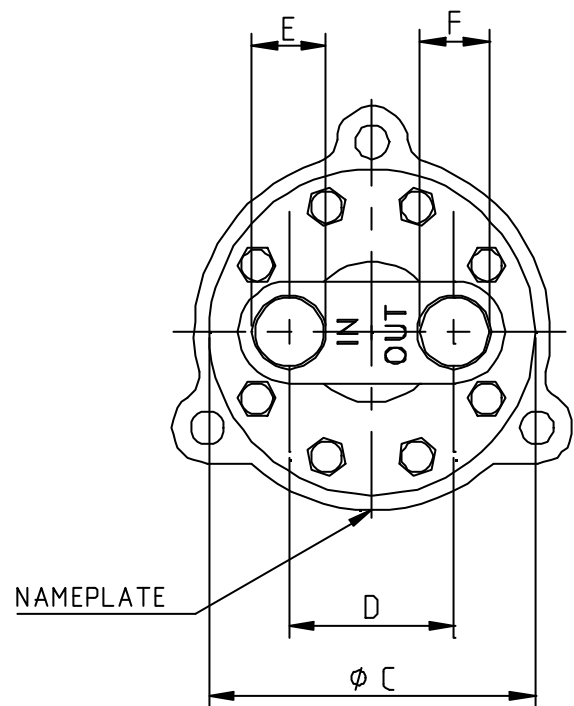
For model variations see "STARTER MOTOR ORDERING CODE" on page 12-2.

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### 8.3 M38A TO M66A MOTOR DIMENSIONS

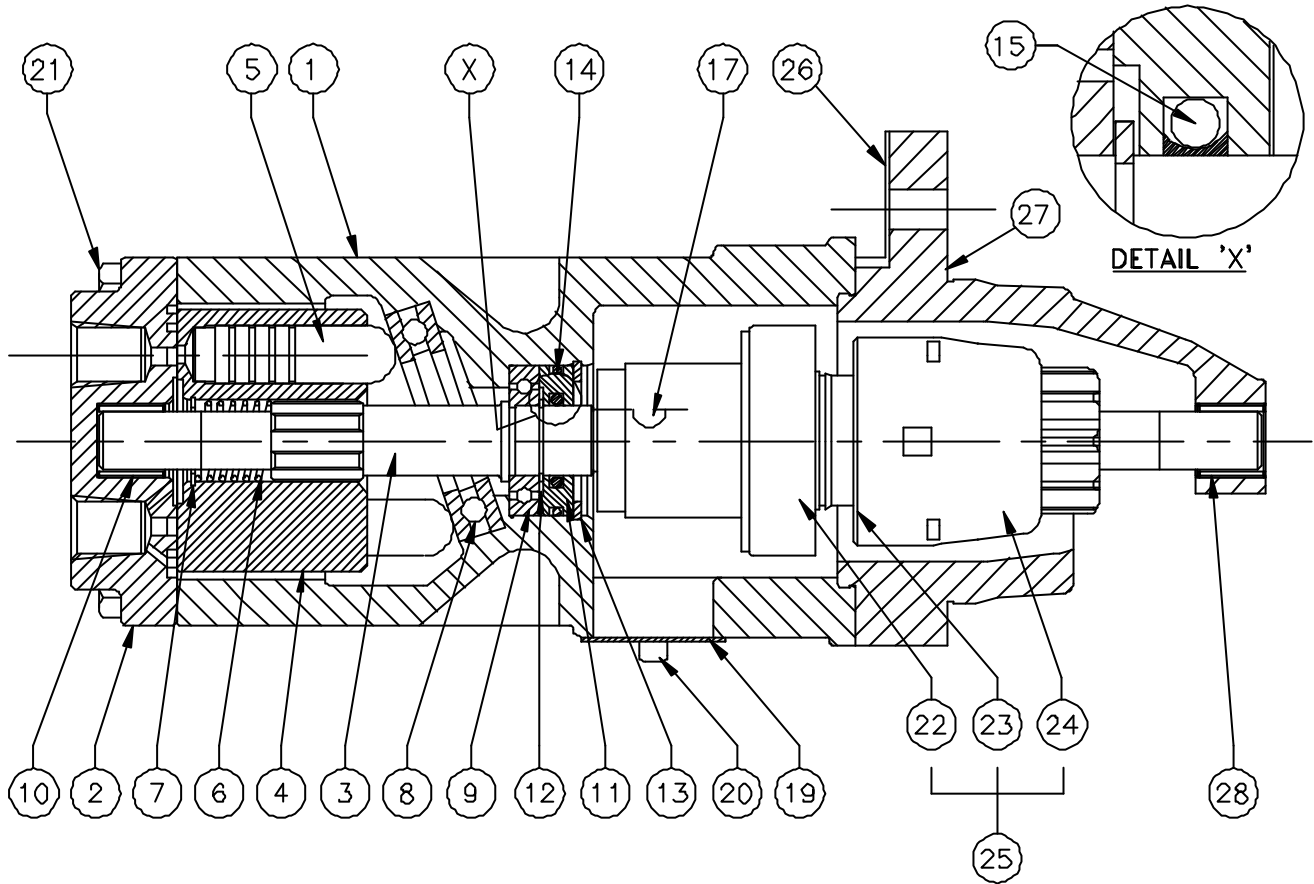


- ? For clockwise rotation orientate port plate as shown.
- ? For counter clockwise rotation, orientate port plate 180° and ensure that CCW drive is used.
- ? For model variations see "STARTER MOTOR ORDERING CODE" on page 12-2.
- ? Please note that port adaptors are sold separately and must therefore be ordered extra



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### 8.4 M10 AND M16 MOTOR PARTS LIST



Item	Description	Qty	Part no.
1	Motor housing	1	M10-01
2	Port plate	1	M10-02
3	Shaft	1	M10-03
4	Barrel	1	M□□-04
5	Piston	7	M□□-05
6	Spring	1	M10-06
7	Circlip (barrel)	1	M10-07
8	Thrust bearing	1	M10-08
9	Centre bearing	1	M22-09
10	Bearing (port plate)	1	M10-10
11	Seal holder	1	M22-11
12	Circlip (bearing)	1	M22-12
13	Circlip (holder)	1	M22-13
14	O-ring (holder)	1	M22-14

Item	Description	Qty	Part no.
15	Shaft seal assembly	1	M22-15/16
17	Key	1	M22-17
19	Nameplate	1	M22-19
20	Screw	2	M22-20
21	Bolt	8	M10-21
22	Drive (excl. 23 and 24)	1	M08-23
23	Circlip (gear)	1	M08-24
24	Pinion gear	1	M08-25-□
25	Drive assembly	1	M08-B□
26	Pinion housing	1	M22-H□
27	Bolt (pinion housing)	4	M22-28-□
28	Bearing (pinion hsg.)	1	M22-10

**Bolt length**

1 – 30mm

2 – 40mm

3 – 55mm

See ordering code on section 12

Pages 12-3 to 12-5

Items 10-17 and 28 included in repair kit M22-RK

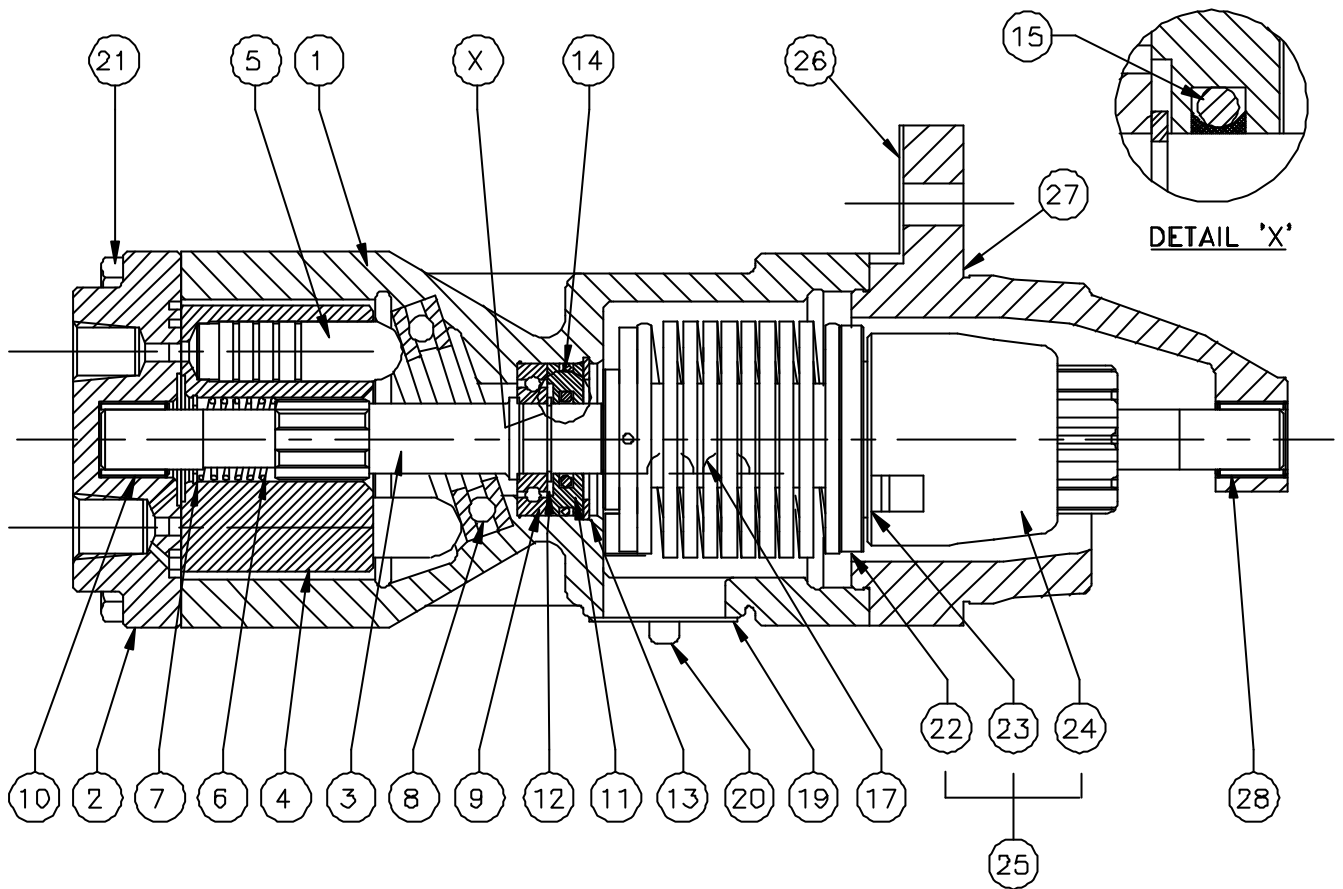
Items 22-24 comprise drive assembly

**Motor size**

10 or 16

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### 8.5 M22 AND M28 MOTOR PARTS LIST



Item	Description	Qty	Part no.
1	Motor housing	1	M22-01
2	Port plate	1	M22-02
3	Shaft	1	M22-03
4	Barrel	1	M□□-04
5	Piston	7	M□□-05
6	Spring	1	M22-06
7	Circlip (barrel)	1	M22-07
8	Thrust bearing	1	M22-08
9	Centre bearing	1	M22-09
10	Bearing (port plate)	1	M22-10
11	Seal holder	1	M22-11
12	Circlip (bearing)	1	M22-12
13	Circlip (holder)	1	M22-13
14	O-ring (holder)	1	M22-14

Item	Description	Qty	Part no.
15	Shaft seal assembly	1	M22-15/16
17	Key	2	M22-17
19	Nameplate	1	M22-19
20	Screw	2	M22-20
21	Bolt (port plate)	8	M22-21
22	Drive (excl. 23 and 24)	1	M22-23
23	Circlip (gear)	1	M22-24
24	Pinion gear	1	M22-25-□
25	Drive assembly	1	M22-B□
26	Pinion housing	1	M22-H□
27	Bolt (not illustrated)	4	M22-28-□
28	Bearing (pinion hsg.)	1	M22-10

**Bolt length**

- 1 – 30mm
- 2 – 40mm
- 3 – 55mm

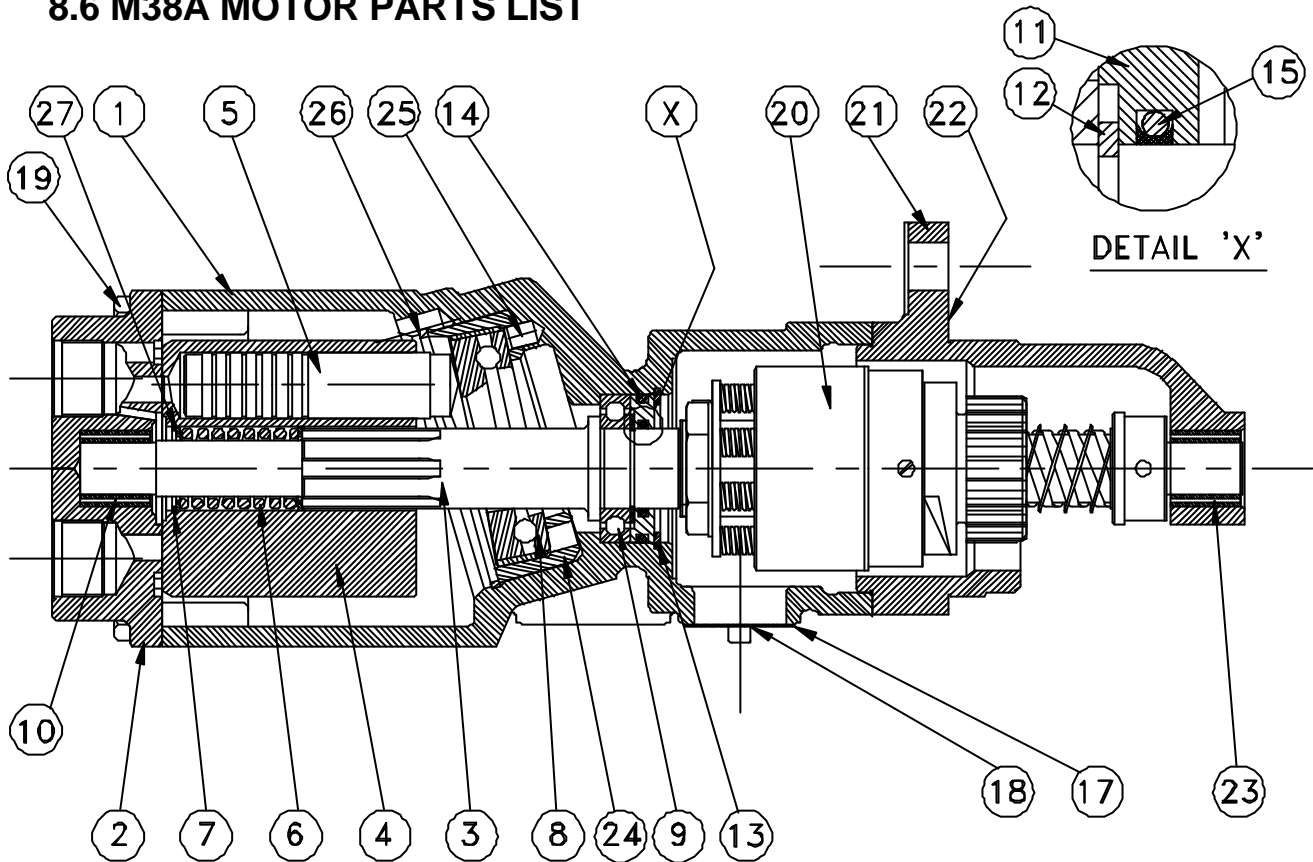
See ordering code on section 12  
Pages 12-3 to 12-5

Items 10-17 and 28 included in repair kit M22-RK  
Items 22-24 comprise drive assembly

**Motor size**  
22 or 28

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### 8.6 M38A MOTOR PARTS LIST



Item	Description	Qty	Part no.
1	Motor housing	1	M66-01
2	Port plate	1	M66-02
3	Shaft	1	M38A-03
4	Barrel	1	M66-04
5	Piston	7	M66-05
6	Spring	1	M66-06
7	Circlip (barrel)	1	M66-07
8	Thrust bearing	1	M66-08
9	Centre bearing	1	M66-09
10	Bearing (port plate)	1	M66-10
11	Seal holder	1	M66-11
12	Circlip (bearing)	1	M66-12
13	Circlip (holder)	1	M66-13
14	O-ring (holder)	1	M66-14

Item	Description	Qty	Part no.
15	Shaft seal assembly	1	M66-15/16
17	Nameplate	1	M22-19
18	Screw	2	M22-20
19	Bolt	8	M66-21
20	Drive assembly	1	M38A-B□
21	Pinion housing	1	M38A-H3S
22	Bolt (not illustrated)	6	M66-28
23	Bearing (pinion hsg.)	1	M38A-29
24	Displacement insert	1	M66-30
25	Spring pin	1	M66-31
26	Circlip (insert)	1	M66-32
27	Washer (barrel)	1	M66-33

28	Inlet reducer	1	M66-40
29	Outlet adaptor	1	M66-41

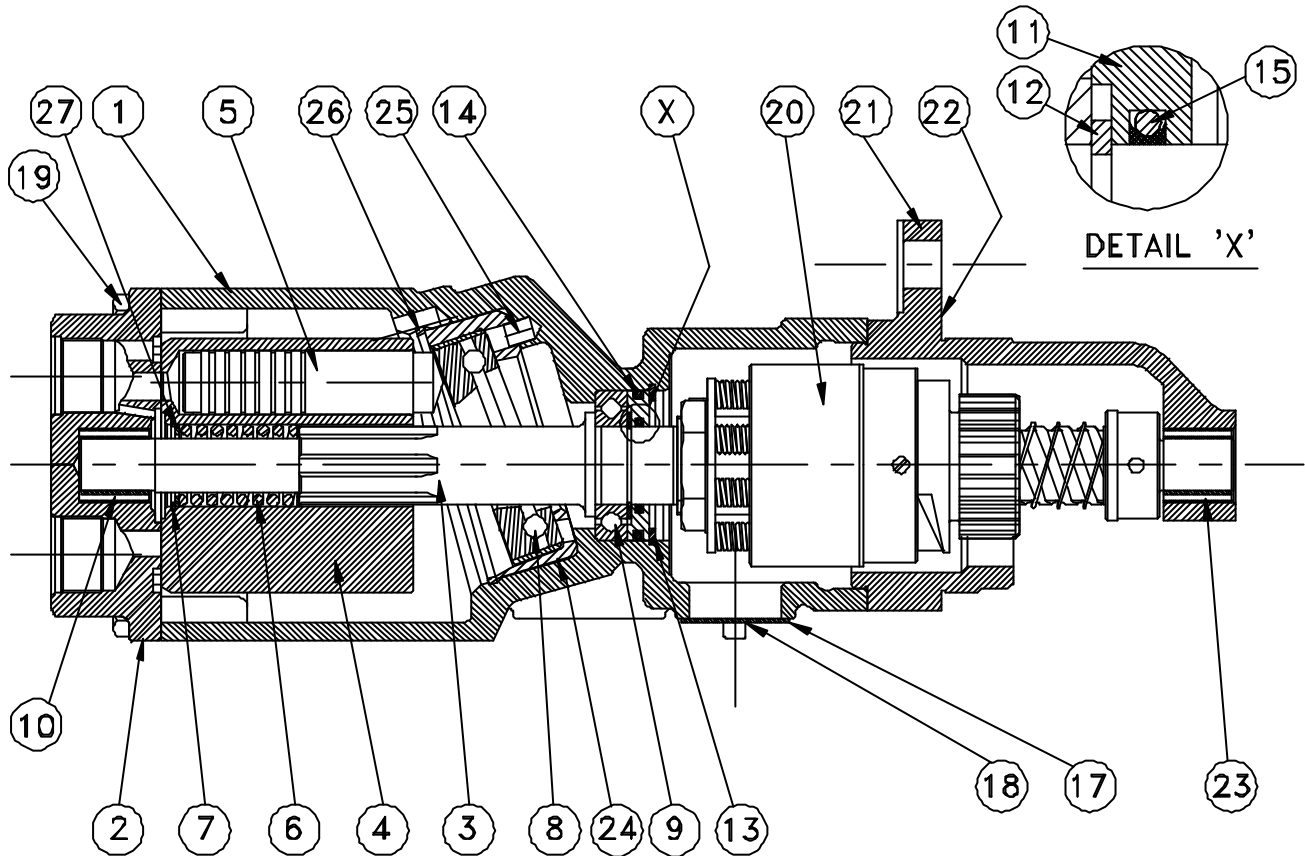
Optional port adaptors not shown

See ordering code on section 12

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### 8.7 M66A MOTOR PARTS LIST



Item	Description	Qty	Part no.
1	Motor housing	1	M66-01
2	Port plate	1	M66-02
3	Shaft	1	M38A-03
4	Barrel	1	M66-04
5	Piston	7	M66-05
6	Spring	1	M66-06
7	Circlip (barrel)	1	M66-07
8	Thrust bearing	1	M66-08
9	Centre bearing	1	M66-09
10	Bearing (port plate)	1	M66-10
11	Seal holder	1	M66-11
12	Circlip (bearing)	1	M66-12
13	Circlip (holder)	1	M66-13
14	O-ring (holder)	1	M66-14

Item	Description	Qty	Part no.
15	Shaft seal assembly	1	M66-15/16
17	Nameplate	1	M22-19
18	Screw	2	M22-20
19	Bolt	8	M66-21
20	Drive assembly	1	M38A-B□
21	Pinion housing	1	M38A-H3S
22	Bolt (not illustrated)	6	M66-28
23	Bearing (pinion hsg.)	1	M38A-29
24	Displacement insert	1	M66-30
25	Spring pin	1	M66-31
26	Circlip (insert)	1	M66-32
27	Washer (barrel)	1	M66-33

28	Inlet reducer	1	M66-40
29	Outlet adaptor	1	M66-41

Optional port adaptors not shown

See ordering code on section 12

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