



A Polyhydron Group Company

# RADIAL PISTON PUMP 1R

ENGINEERING

1

Ref. No. P04890

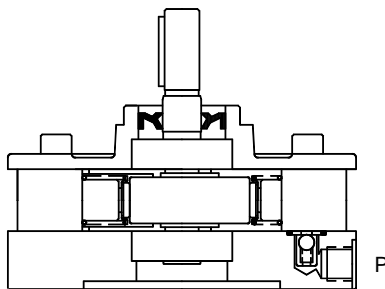
Release 08/2011

## Description

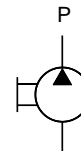
Radial piston arrangement, with 3, 5 or 7 pumping elements.  
Oil immersed face mounting. Valve controlled. Fixed delivery.  
Bi-directional rotation of shaft. With extension shaft for through  
drive. Available with extension bracket assembly for coupling a  
low pressure pump having standard flange.



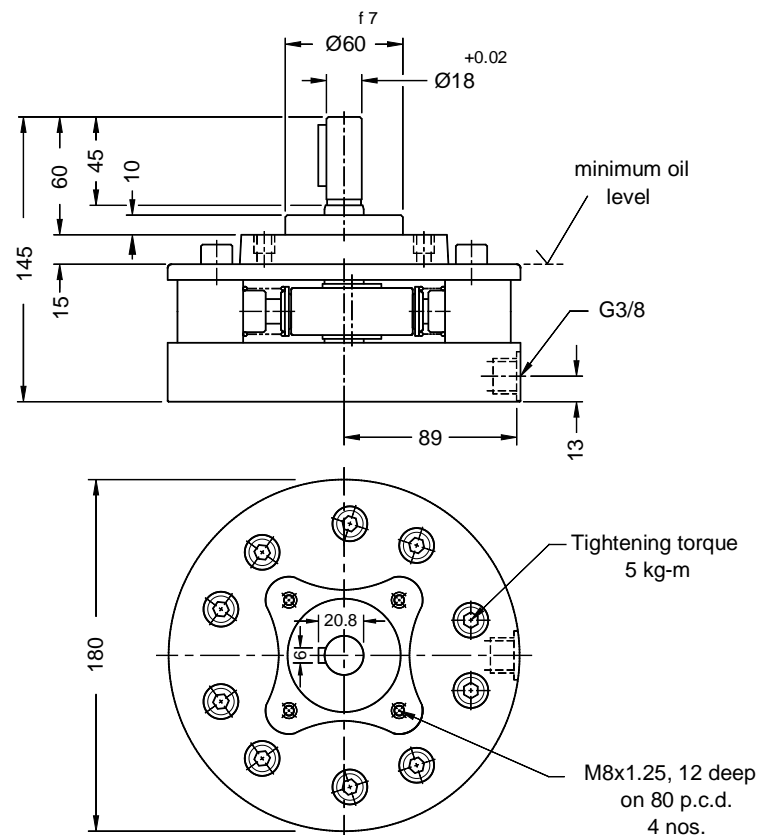
## Section



## Hydraulic Symbol



## Unit dimension



**Polyhydron Pvt. Ltd.**

78-80, Machhe Industrial Estate,  
Machhe. Belgaum - 590 014. INDIA.

Phone : +91-(0)831-2411001

Fax : +91-(0)831-2411002

E-mail : polyhydron@gmail.com

Website : www.polyhydron.com





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# RADIAL PISTON PUMP 1R

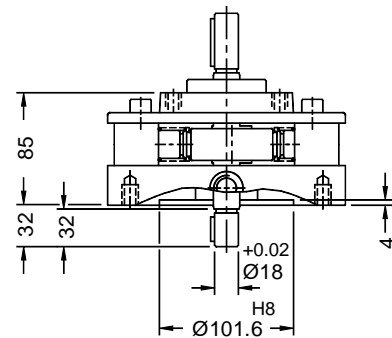
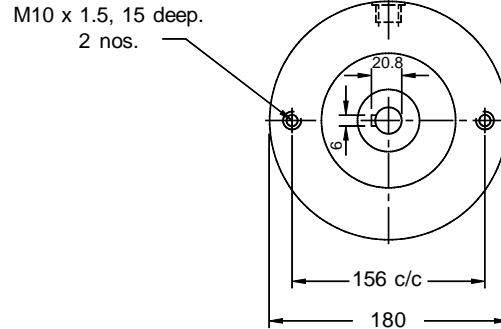
ENGINEERING

3

Ref. No. P04890

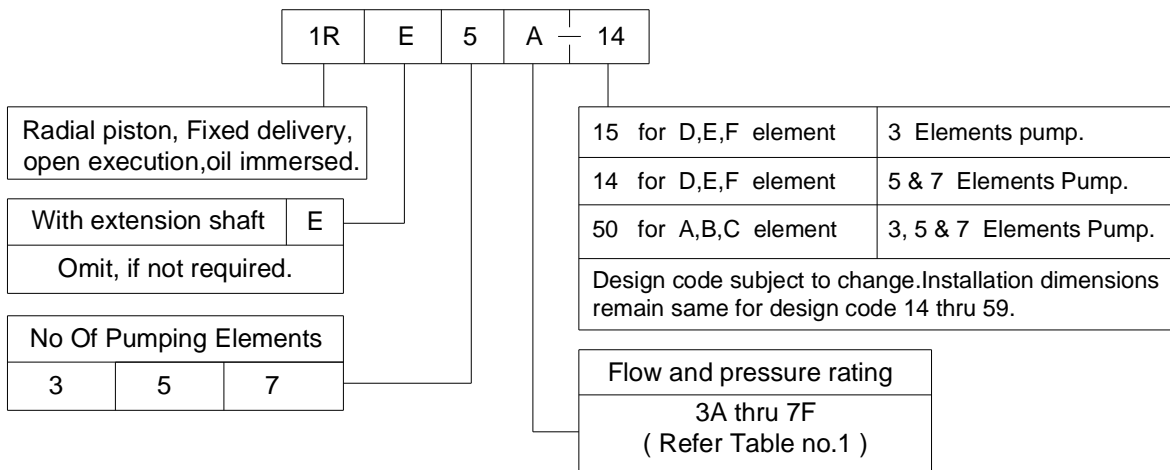
## Accessories

**Extension shaft** (For through drive)  
Dimensions



Note :  
Torque limitation - The sum of torque used for the piston pump and torque used at extended shaft end should not exceed 75 Nm ( 11kW @ 1450 rpm )

## Ordering code



For 3 Pumping Element Pump without Extension Shaft please Ref : P04931

Note : For Bell housing refer sheet no. P09035.  
For Extension bracket sheet no. P09090.



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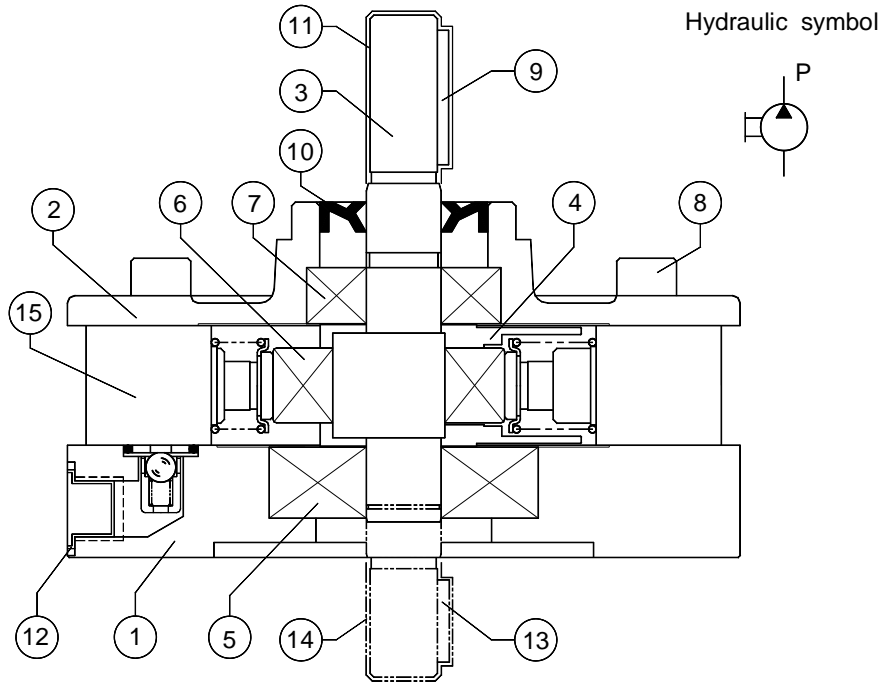
# RADIAL PISTON PUMP 1R

SERVICE

4

Ref. No. P04890

## Sectional view and Part list



| Sl.No. | Description   | 1RE3  |                |      | 1R5 / 1R7   | 1RE5 / 1RE7 | Size           | Qty.  |
|--------|---|---|----------------|------|-------------|-------------|----------------|-------|
|        |   | Part No.  | Size           | Qty. | Part No.    | Size        |                |       |
| 1      | Valve plate   | 11205   |                | 1    | 11208/11211 |             |                | 1     |
| 2      | Cover plate   | 11225   |                | 1    | 11227/11229 |             |                | 1     |
| 3      | Shaft   | 11243   |                | 1    | 11242       | 11243       |                | 1     |
| 4      | Balancing Plate                                       | 11251   |                | 2    | 11252       |             |                | 2     |
| 5      | Bottom Bearing  | 11261   | 6304           | 2    | 11264       |             | 6404           | 1     |
| 6      | Centre Bearing.                                       | 11262   | 3206           | 1    | 11265       |             | NUP 2206       | 1     |
| 7      | Top Bearing.  | --  | --             | --   | 11266       |             | NJ 304ECP      | 1     |
| 8      | Cap screw   | 11271   | M10 x 55 L     | 6    | 11271       |             | M10 x 55 L     | 10/14 |
| 9      | Shaft Key   | 11293   | 6 x 6 x 36     | 1    | 11293       |             | 6 x 6 x 36     | 1     |
| * 10   | Rotary Shaft Seal                                     | 11277   | Dou. Lip 47    | 1    | 11277       |             | Dou. Lip 47    | 1     |
| 11     | Plastic cap   | 11283   | 1R (Shaft)     | 1    | 11283       |             | 1R (Shaft)     | 1     |
| 12     | Rubber Port Plug                                      | 00012   | G 3/8 Plug Cap | 1    | 00012       |             | G 3/8 Plug Cap | 1     |
| 13     | Shaft Key   | 11294   | 6 x 6 x 22     | 1    | --          | 11294       | 6 x 6 x 22     | 1     |
| 14     | Plastic cap   | 11284   | 1RE (Shaft)    | 1    | --          | 11284       | 1RE (Shaft)    | 1     |
| Sl.No. | Description   | Product   |                | Qty. |             |             |                |       |
|        |   |   |                | 1RE3 | 1R*5 / 7    |             |                |       |
| 15     | Pump element assly.<br>(Refer Data Sheet No. D 11100) | 1R-A-01 / 1R-B-01 / 1R-C-01<br>1R-D-01 / 1R-E-01 / 1R-F-01. |                | 3    | 5 / 7       |             |                |       |

Note : Specified part numbers are available as spares.

\* Recommended seal kit.

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A Polyhydron Group Company

# RADIAL PISTON PUMP 1RC

ENGINEERING

1

Ref. No. P04892

Release 06/2006

## Description

Radial piston arrangement, with 3, 5 or 7 pumping elements. Oil immersed or external mounting type.

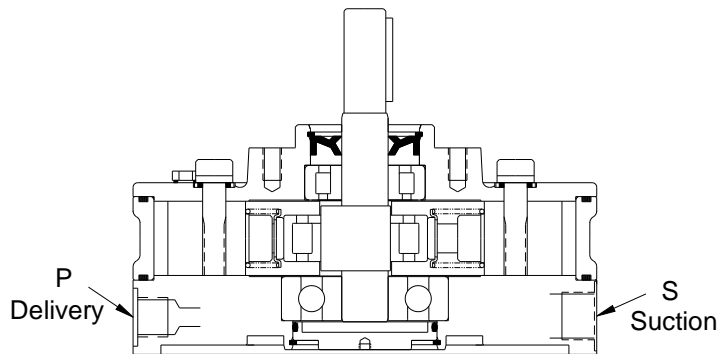
Face mounting, Valve controlled, Fixed delivery.

Bi-directional rotation of shaft. Available with extension shaft for through drive.

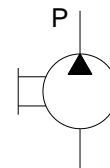
With extension bracket assembly for coupling a low pressure pump having standard flange.



## Section

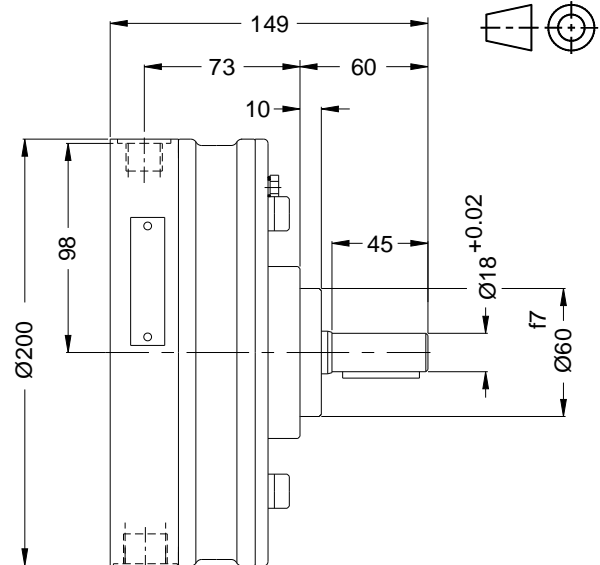
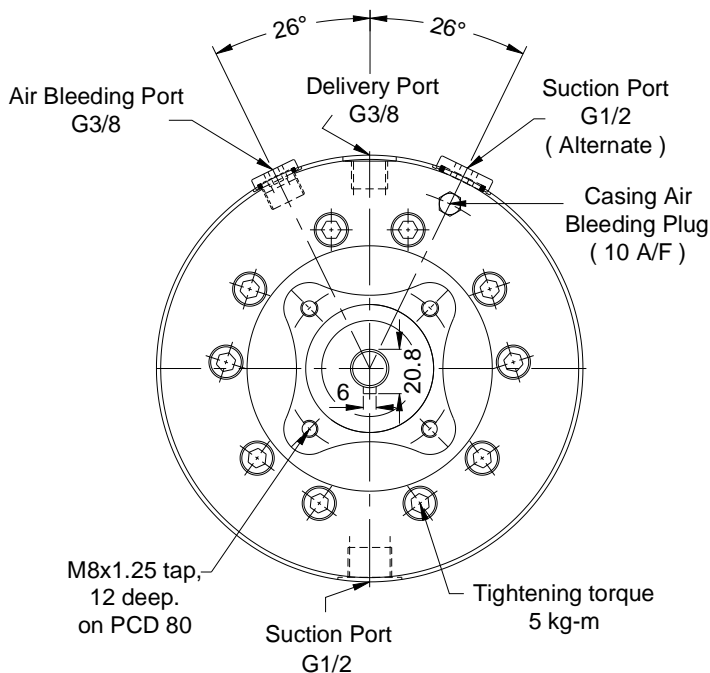


Hydraulic Symbol



## Unit Dimensions

Dimensions in mm.



**Polyhydron Pvt. Ltd.**

78-80, Machhe Industrial Estate, Machhe  
Belgaum - 590 014. INDIA.

**Phone** : +91-(0)831-2411001

**Fax** : +91-(0)831-2411002

**E-mail** : polyhydron@gmail.com

**Website** : www.polyhydron.com

P04892



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# RADIAL PISTON PUMP 1RC

ENGINEERING

2

Ref. No. P04892

## Technical Specifications

|                                     |   |
|-------------------------------------|---|
| Designation .....                   | 1RC basic radial piston pump group  |
| Design .....                        | Radial piston, valve controlled   |
| No. of pistons .....                | 3,5 or 7 ; depending upon the flow requirement  |
| Mounting .....                      | Face mounting   |
| Direction of rotation .....         | 1RC ..... Can be run in either direction<br>1RCE ..... Depends upon the direction of rotation of pump attached.   |
| Connection .....                    | Suction ..... G 1/2 female. Suction head — The oil level can be max. 300 mm below the suction port of the pump. Suction pipe size — 16 o. d. x 2 th. (as far as possible use straight pipe)<br>Delivery ..... G 3/8 female. |
| Suction pressure .....              | 0.02 to 3 bar positive.   |
| Speed range .....                   | 300 to 2000 rpm.  |
| Hydraulic medium .....              | Mineral oil   |
| Viscosity range .....               | 10 to 100 cSt.  |
| Temperature range .....             | -10 °C to +80 °C.<br>(Do not exceed viscosity limits at extreme temperatures for efficient running of the pump)   |
| Fluid cleanliness requirement ..... | As per ISO Code 16/13   |
| Performance .....                   | Refer Table No. 1   |
| Mass .....                          | 14 kg.  |

Table No. 1

| Code No. | Geometrical displacement CC / REV | Rated output at 1450 rpm. (l / min) | Operating pressure bar | Input power requirement (@ 1450 rpm) |      |         |     |         |     |         |     |         |     |         |     |         |     |         |     |         |     |         |     |         |     |
|----------|-----------------------------------|-------------------------------------|------------------------|--------------------------------------|------|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|
|          |                                   |                                     |                        | 50 bar                               |      | 100 bar |     | 150 bar |     | 200 bar |     | 250 bar |     | 300 bar |     | 350 bar |     | 400 bar |     | 450 bar |     | 500 bar |     | 550 bar |     |
|          |                                   |                                     |                        | KW                                   | Hp   | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  | KW      | Hp  |
| 3A       | 1.21                              | 1.5                                 | 550                    | 0.17                                 | 0.23 | 0.3     | 0.5 | 0.5     | 0.7 | 0.7     | 0.9 | 0.9     | 1.2 | 1       | 1.4 | 1.2     | 1.6 | 1.4     | 1.8 | 1.6     | 2.1 | 1.7     | 2.3 | 1.9     | 2.5 |
| 5A       | 2.01                              | 2.6                                 | 550                    | 0.29                                 | 0.38 | 0.6     | 0.8 | 0.9     | 1.2 | 1.2     | 1.5 | 1.4     | 1.9 | 1.7     | 2.3 | 2       | 2.7 | 2.3     | 3.1 | 2.6     | 3.5 | 2.9     | 3.8 | 3.2     | 4.2 |
| 7A       | 2.81                              | 3.7                                 | 550                    | 0.4                                  | 0.54 | 0.8     | 1.1 | 1.2     | 1.6 | 1.6     | 2.2 | 2       | 2.7 | 2.4     | 3.2 | 2.8     | 3.8 | 3.2     | 4.3 | 3.6     | 4.8 | 4       | 5.4 | 4.4     | 5.9 |
| 3B       | 1.88                              | 2.5                                 | 450                    | 0.27                                 | 0.36 | 0.5     | 0.7 | 0.8     | 1.1 | 1.1     | 1.4 | 1.3     | 1.8 | 1.6     | 2.2 | 1.9     | 2.5 | 2.1     | 2.9 | 2.4     | 3.2 |         |     |         |     |
| 5B       | 3.14                              | 4.2                                 | 450                    | 0.45                                 | 0.6  | 0.9     | 1.2 | 1.3     | 1.8 | 1.8     | 2.4 | 2.2     | 3   | 2.7     | 3.6 | 3.1     | 4.2 | 3.6     | 4.8 | 4       | 5.4 |         |     |         |     |
| 7B       | 4.4                               | 5.8                                 | 450                    | 0.63                                 | 0.84 | 1.3     | 1.7 | 1.9     | 2.5 | 2.5     | 3.4 | 3.1     | 4.2 | 3.8     | 5   | 4.4     | 5.9 | 5       | 6.7 | 5.6     | 7.5 |         |     |         |     |
| 3C       | 2.71                              | 3.7                                 | 350                    | 0.39                                 | 0.52 | 0.8     | 1   | 1.2     | 1.6 | 1.5     | 2.1 | 1.9     | 2.6 | 2.3     | 3.1 | 2.7     | 3.6 |         |     |         |     |         |     |         |     |
| 5C       | 4.52                              | 6.2                                 | 350                    | 0.64                                 | 0.86 | 1.3     | 1.7 | 1.9     | 2.6 | 2.6     | 3.5 | 3.2     | 4.3 | 3.9     | 5.2 | 4.5     | 6   |         |     |         |     |         |     |         |     |
| 7C       | 6.33                              | 8.6                                 | 350                    | 0.9                                  | 1.21 | 1.8     | 2.4 | 2.7     | 3.6 | 3.6     | 4.8 | 4.5     | 6   | 5.4     | 7.2 | 6.3     | 8.5 |         |     |         |     |         |     |         |     |
| 3D       | 3.19                              | 4.3                                 | 300                    | 0.45                                 | 0.61 | 0.9     | 1.2 | 1.4     | 1.8 | 1.8     | 2.4 | 2.3     | 3   | 2.7     | 3.6 |         |     |         |     |         |     |         |     |         |     |
| 5D       | 5.31                              | 7.2                                 | 300                    | 0.76                                 | 1.01 | 1.5     | 2   | 2.3     | 3   | 3       | 4.1 | 3.8     | 5.1 | 4.5     | 6.1 |         |     |         |     |         |     |         |     |         |     |
| 7D       | 7.43                              | 10                                  | 300                    | 1.06                                 | 1.42 | 2.1     | 2.8 | 3.2     | 4.3 | 4.2     | 5.7 | 5.3     | 7.1 | 6.3     | 8.5 |         |     |         |     |         |     |         |     |         |     |
| 3E       | 3.69                              | 5                                   | 250                    | 0.53                                 | 0.7  | 1       | 1.4 | 1.6     | 2.1 | 2.1     | 2.8 | 2.6     | 3.5 |         |     |         |     |         |     |         |     |         |     |         |     |
| 5E       | 6.16                              | 8.4                                 | 250                    | 0.88                                 | 1.17 | 1.8     | 2.4 | 2.6     | 3.5 | 3.5     | 4.7 | 4.4     | 5.9 |         |     |         |     |         |     |         |     |         |     |         |     |
| 7E       | 8.62                              | 11.7                                | 250                    | 1.23                                 | 1.64 | 2.5     | 3.3 | 3.7     | 4.9 | 4.9     | 6.6 | 6.1     | 8.2 |         |     |         |     |         |     |         |     |         |     |         |     |
| 3F       | 4.24                              | 5.8                                 | 200                    | 0.6                                  | 0.81 | 1.2     | 1.6 | 1.8     | 2.4 | 2.4     | 3.2 |         |     |         |     |         |     |         |     |         |     |         |     |         |     |
| 5F       | 7.07                              | 9.7                                 | 200                    | 1                                    | 1.35 | 2       | 2.7 | 3       | 4   | 4       | 5.4 |         |     |         |     |         |     |         |     |         |     |         |     |         |     |
| 7F       | 9.9                               | 13.6                                | 200                    | 1.11                                 | 1.89 | 2.8     | 3.8 | 4.2     | 5.7 | 5.6     | 7.5 |         |     |         |     |         |     |         |     |         |     |         |     |         |     |

Note : The first digit in the code No. indicates No. of pumping elements in the pump. The second letter indicates flow and pressure rating of the pumping elements.

Code No. 7D for example, indicates a pump with 7 pumping elements having rated flow of 10 l / min and operating pressure upto 300 bar.



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# RADIAL PISTON PUMP 1RC

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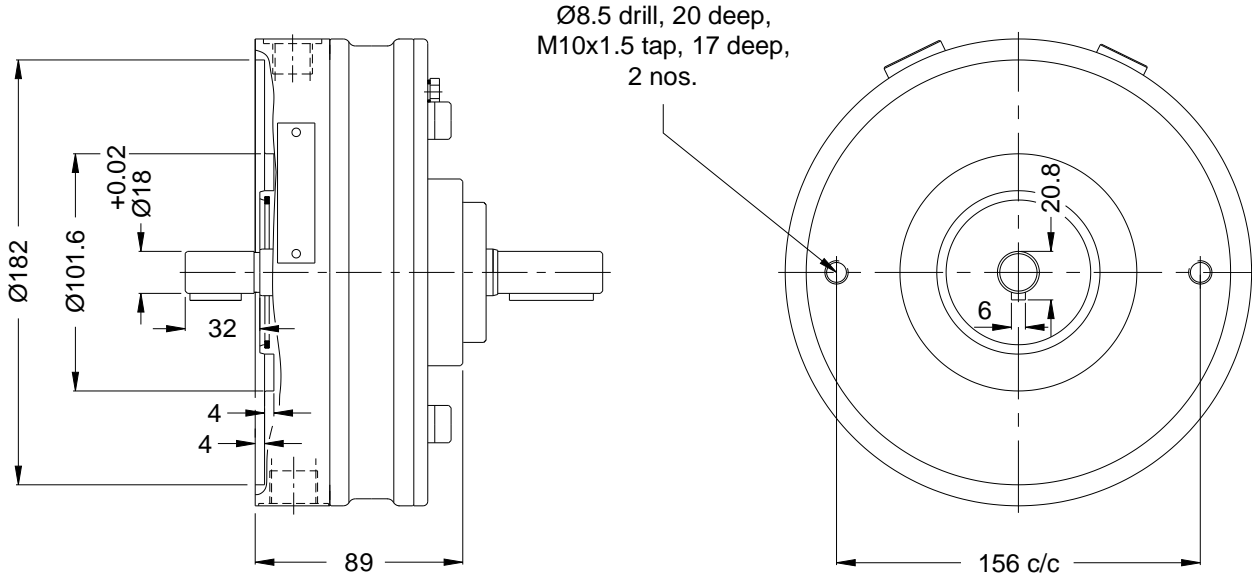
3

Ref. No. P04892

## Accessories

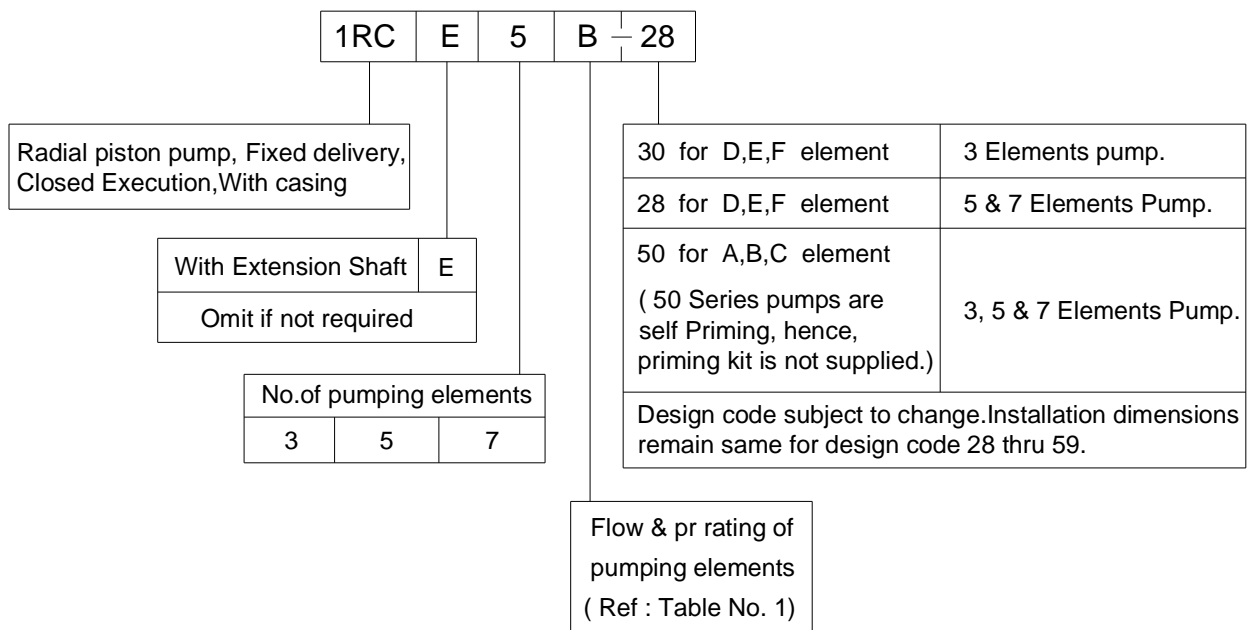
### Extension shaft ( for through drive)

Dimensions



Note : Torque limitation - The sum of torque used for the piston pump and torque used at extended shaft end should not exceed 75 Nm (11 kw at 1450 r.p.m.)

## Ordering Code



Note : For Bell housing refer sheet no. P09035.  
For Extension bracket sheet no. P09090.



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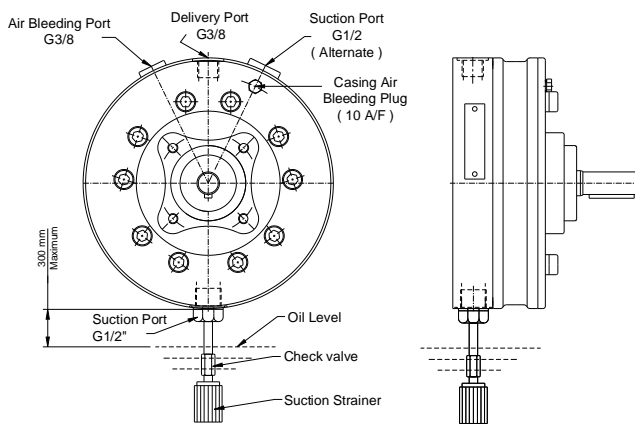
# RADIAL PISTON PUMP 1RC

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Ref. No. P04892

## Priming Procedure for closed Execution Pump

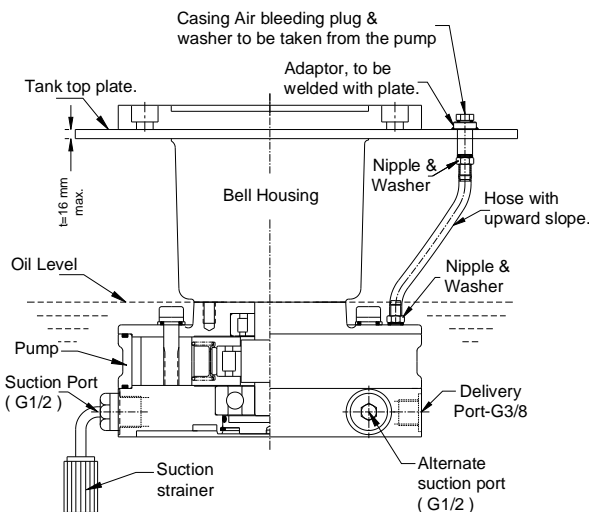


### Case I : When the pump suction port height exceeds 300 mm above oil level.

- 1) During assembly / installation provide a check valve with almost nil cracking pressure on the suction pipe. ( Refer check valve model codes given below).
- 2) Fill up the casing with oil (Use Alternate Suction port - G1/2" BSP & ensure it to be air tight after filling).
- 3) Connect a Hose pipe of suitable size to the air bleeding port - G 3/8 BSP.
- 4) Now, switch on the motor & wait for some time till you get full / uninterrupted flow.
- 5) As soon as you get the uninterrupted flow, switch off the motor & plug the Air Bleeding port.
- 6) Now, run the pump for short period at no load.
- 7) Adjust the system main pressure relief valve to a required value and start using the system.

### Case II: When the pump suction port height is less than 300 mm above oil level.

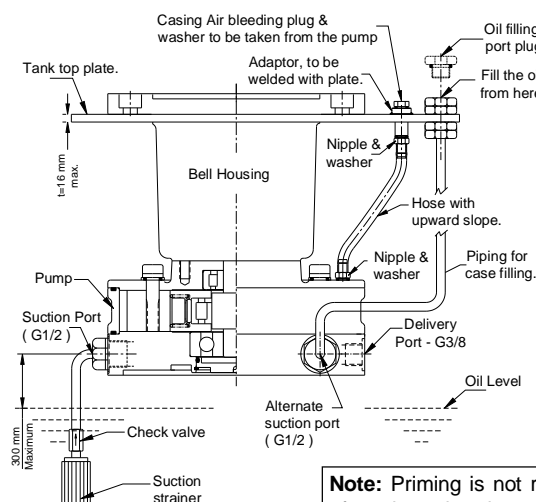
- 1) The pump need not have a check valve as mentioned above.
- 2) During commissioning the Air bleeding port should be kept open to tank by connecting a hose pipe.
- 3) Now, repeat the steps 4 to 7 of case -I.



### Case I: When the casing pump is immersed in oil.

- 1) Make the connection for air bleeding as shown in fig. using the kit provided with the pump.
- 2) Loosen the Casing air bleeding plug completely.
- 3) Wait for some time for the oil to fill the pump casing.
- 4) The plug may now be retighten.
- 5) Now run the pump for short period at no load.
- 6) Adjust the main pressure relief valve of the system at required value and start using the system.

***This procedure is required for Element D,E,F only. 50 series Pumps with element A,B,C are Self priming, hence, it is not supplied.***



### Case II: When the oil level is below the suction port (i.e up to a distance of 300mm. Maximum).

- 1) Make the connection for air bleeding as shown in fig. using the kit provided with the pump.
- 2) Fit a check valve with almost nil cracking pressure at the bottom of the suction pipe. (Refer check valve model codes given below).
- 3) Now fill the pump casing with oil. This can be done by providing a pipe connection to alternate suction port as shown.
- 4) Now loosen the casing air bleeding plug completely & fill the casing till oil is seen coming out of casing air bleeding port.
- 5) Tighten the casing air bleeding plug once the casing is filled. Also, plug the oil filling port & ensure it to be air tight.
- 6) Now run the pump at no load for some time.
- 7) Adjust the main pressure relief valve of the system at required value and start using the system.

**Note:** Priming is not required to be done every time you start the pump after short durations (a day or two) of non-operation.

### Check valve model codes (To be ordered separately)

### Suction pipe specification

- 1) 1R-series :— 16 O.D.x 2 mm thick (Preferably straight) for Single row pump.
- 2) 2R-series :— 25 O.D.x 2 mm thick (Preferably straight) for Double row pump.
- 3) 11R-series :— 25 O.D.x 2 mm thick (Preferably straight) for Single row pump.
- 4) 12R-series :— 30 O.D.x 2 mm thick (Preferably straight) for Double row pump.

- 1) 1R-series :— C10T0-03
- 2) 2R-series :— C15T0-04
- 3) 11R-series :— C20T0-03
- 4) 12R-series :— C20T0-03





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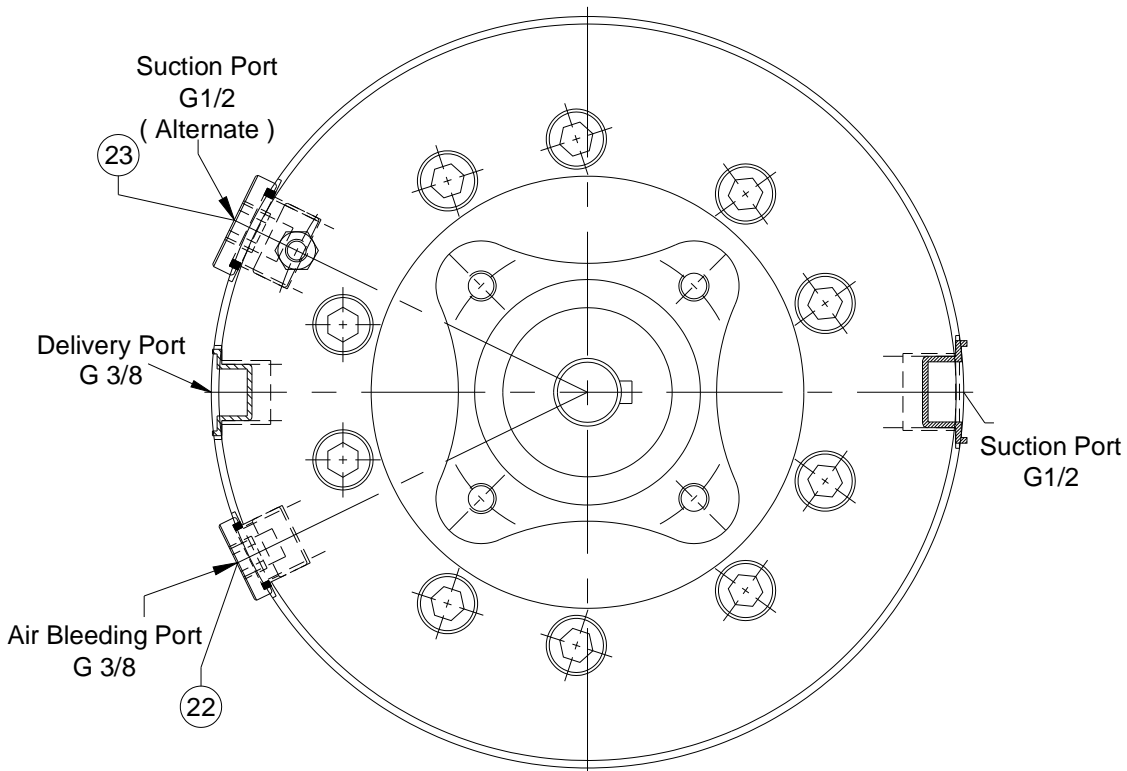
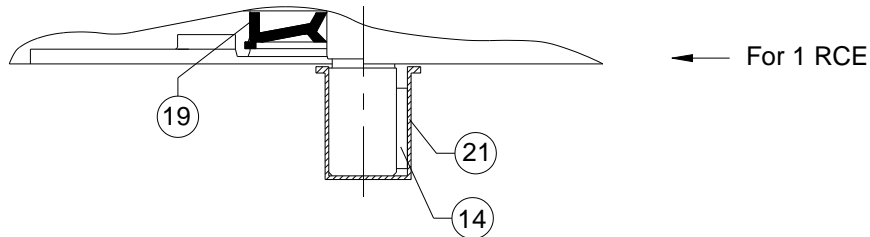
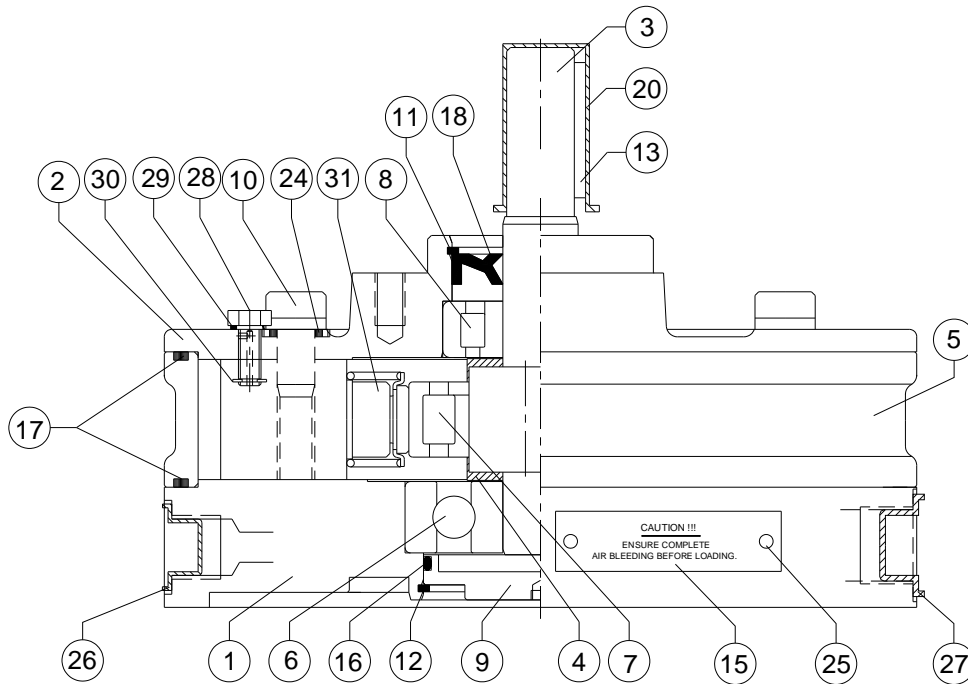
# RADIAL PISTON PUMP 1RC

SERVICE

5

Ref. No. P04892

## Sectional view and Part list





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# RADIAL PISTON PUMP 1RC

SERVICE

6

Ref. No. P04892

| Sl.No. | Description       | 1RC3  |       | Size           | Qty. | 1RC 5 / 7   |             | Size           | Qty.  |
|--------|-------------------|-------|-------|----------------|------|-------------|-------------|----------------|-------|
|        |                   | 1RC3  | 1RCE3 |                |      | 1RC 5 / 7   | 1RCE 5 / 7  |                |       |
| 1      | Valve plate       | 11204 |       |                | 1    | 11209/11212 | 11209/11212 |                | 1     |
| 2      | Cover plate       | 11224 |       |                | 1    | 11228/11230 | 11228/11230 |                | 1     |
| 3      | Shaft             | 11242 | 11243 |                | 1    | 11242       | 11243       |                | 1     |
| 4      | Balancing Plate   | 11251 |       |                | 2    | 11252       |             |                | 2     |
| 5      | Casing Ring       | 11232 |       |                | 1    | 11232       |             |                | 1     |
| 6      | Bottom Bearing    | 11261 |       | KOYO 6404      | 1    | 11264       |             | 6404           | 1     |
| 7      | Centre Bearing.   | 11262 |       | NUP 2206       | 1    | 11265       |             | NUP 2206       | 1     |
| 8      | Top Bearing.      | 11266 |       | NJ 304 ECP     | 1    | 11266       |             | NJ 304 ECP     | 1     |
| 9      | End cap           | 11255 | ---   | Ø62            | 1    | 11256       | ---         | Ø62            | 1     |
| 10     | Cap screw         | 11271 |       | M10x55 L       | 6    | 11271       |             | M10x55 L       | 10/14 |
| 11     | Circlip           | 11285 |       | Ø47 (Type B)   | 3    | 11285       |             | Ø47 (Type B)   | 1     |
| 12     | Circlip           | ---   |       | ---            | 1    | 11286       |             | Ø62 (Type B)   | 1     |
| 13     | Shaft Key         | 11293 |       | 6x6x36         | 1    | 11293       |             | 6x6x36         | 1     |
| 14     | Shaft Key         | ---   | 11294 | 6x6x36         | 1    | ---         | 11294       | 6x6x22         | 1     |
| 15     | Label ( Caution)  | 11282 |       |                | 1    | 11282       |             |                | 1     |
| 16     | O' Ring           | 11287 | ---   | 54x4           | 1    | 11288       | ---         | 54x4           | 1     |
| 17     | O' Ring           | 11290 |       | 189x3          | 2    | 11290       |             | 189x3          | 2     |
| * 18   | Rotary Shaft Seal | 11278 |       | Dou. Lip 47    | 1    | 11278       |             | Dou. Lip 47    | 1     |
| * 19   | Rotary Shaft Seal | ---   | 11278 | Dou. Lip 47    | 1    | ---         | 11279       | Dou. Lip 62    | 1     |
| 20     | Plastic cap       | 11283 |       | 1R             | 1    | 11283       |             | 1R             | 1     |
| 21     | Plastic cap       | ---   | 11284 | 1R             | 1    | ---         | 11284       | 1RE(Shaft)     | 1     |
| 22     | Elastomeric Plug  | 00203 |       | G 3/8          | 1    | 00203       |             | G 3/8          | 1     |
| 23     | Elastomeric Plug  | 00204 |       | G 1/2          | 1    | 00204       |             | G 1/2          | 1     |
| 24     | Bonded Seal       | 00160 |       | G 1/8          | 6    | 00160       |             | G 1/8          | 10/14 |
| 25     | Rivet             | 00001 |       | Ø2, 4.5 L      | 2    | 00001       |             | Ø2, 4.5 L      | 2     |
| 26     | Rubber Port Plug  | 00012 |       | G 3/8 Plug Cap | 1    | 00012       |             | G 3/8 Plug Cap | 1     |
| 27     | Rubber Port Plug  | 00013 |       | G 1/2 Plug Cap | 1    | 00013       |             | G 1/2 Plug Cap | 1     |
| 28     | Hex Plug          | 11299 |       | M6x16          | 1    | 11299       |             | M6x16          | 1     |
| 29     | Copper washer     | 11297 |       | Ø6.5xØ9.5x1    | 1    | 11297       |             | Ø6.5xØ9.5x1    | 1     |
| 30     | External Circlip  | 00065 |       | Dia. 4 Nom.    | 1    | 00065       |             | Dia. 4 Nom.    | 1     |

| Sl.No. | Description   | Product  | Qty.  |         |
|--------|---|--|-------|---------|
| 31     | Pump element assly.<br>(Refer Data Sheet<br>No. D11100) | 1R-A-01 / 1R-B-01 / 1R-C-01<br>1R-D-01 / 1R-E-01 / 1R-F-01 | 1RC*3 | 1RC*5/7 |
|        |   |  | 3     | 5 / 7   |

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