

## 4. Type 'HM' Heavy Duty Slurry Pump Range

### 4.2 Type HM (hard metal) Slurry Pumps

#### 4.2.1 Product Description

#### 4.2.2 Technical Information

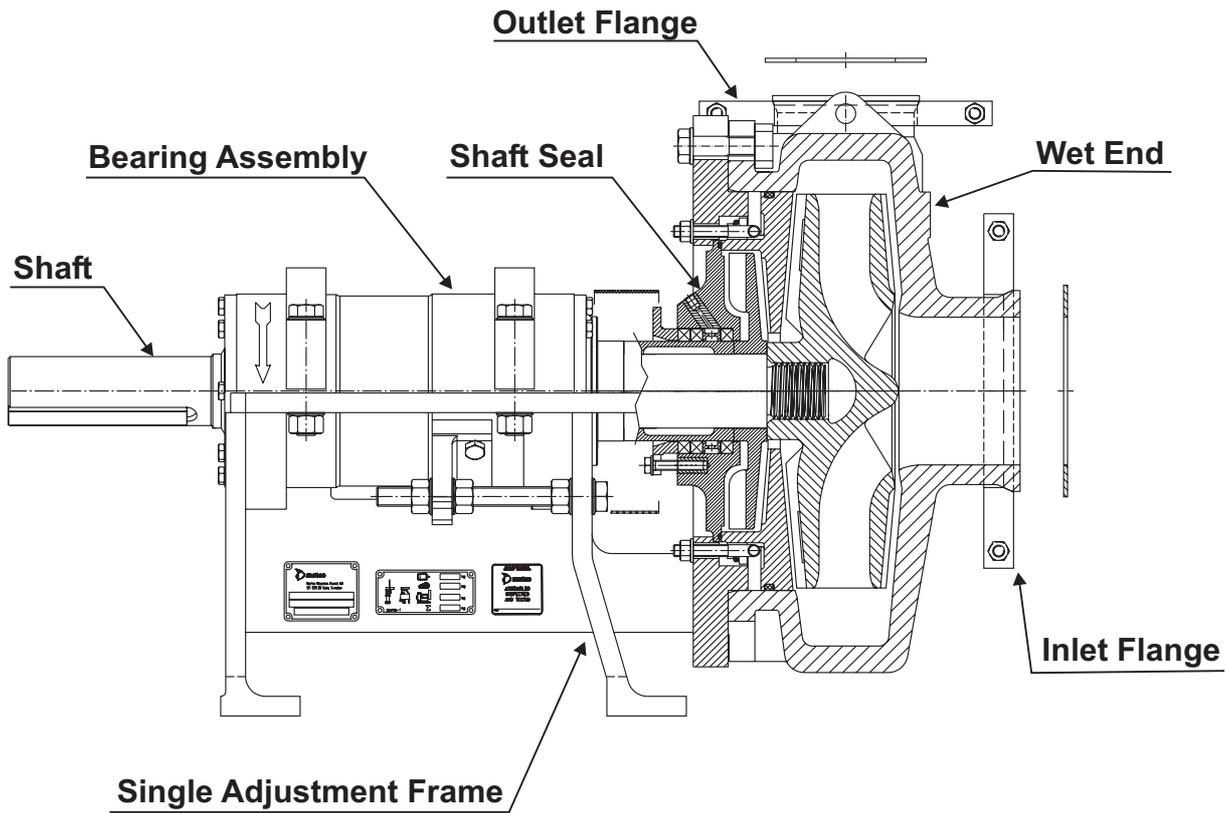
#### 4.2.3 General Arrangement

#### 4.2.4 Tombstone Charts

#### 4.2.5 Performance Curves

#### 4.2.6 Spare Parts





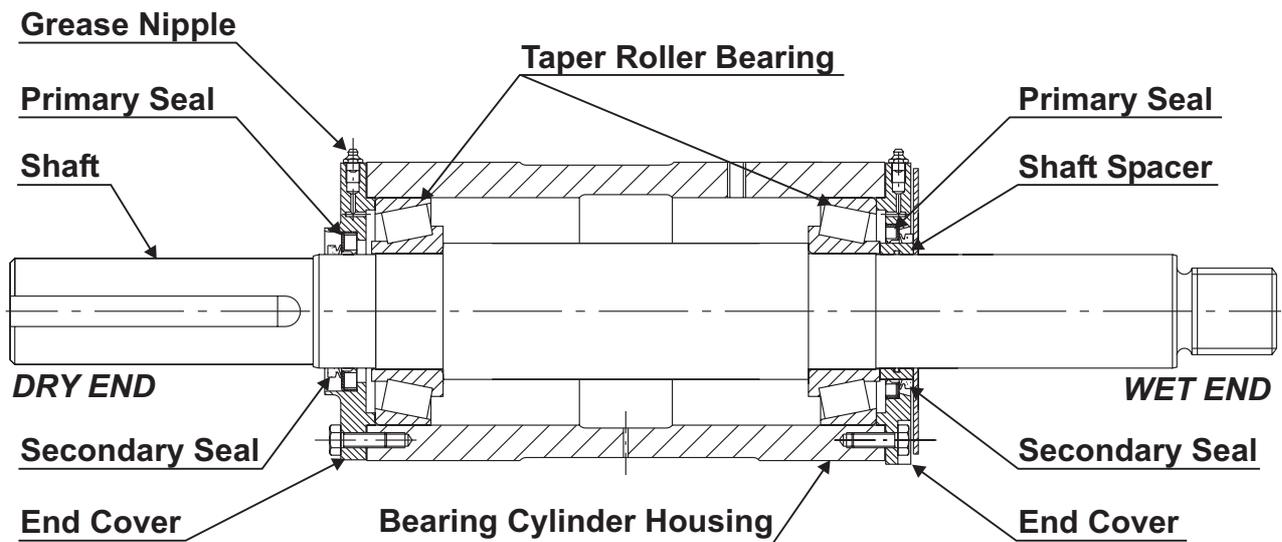
Typical cross sectional view of an HM pump with single adjustment frame

### 4.2.1 Product description

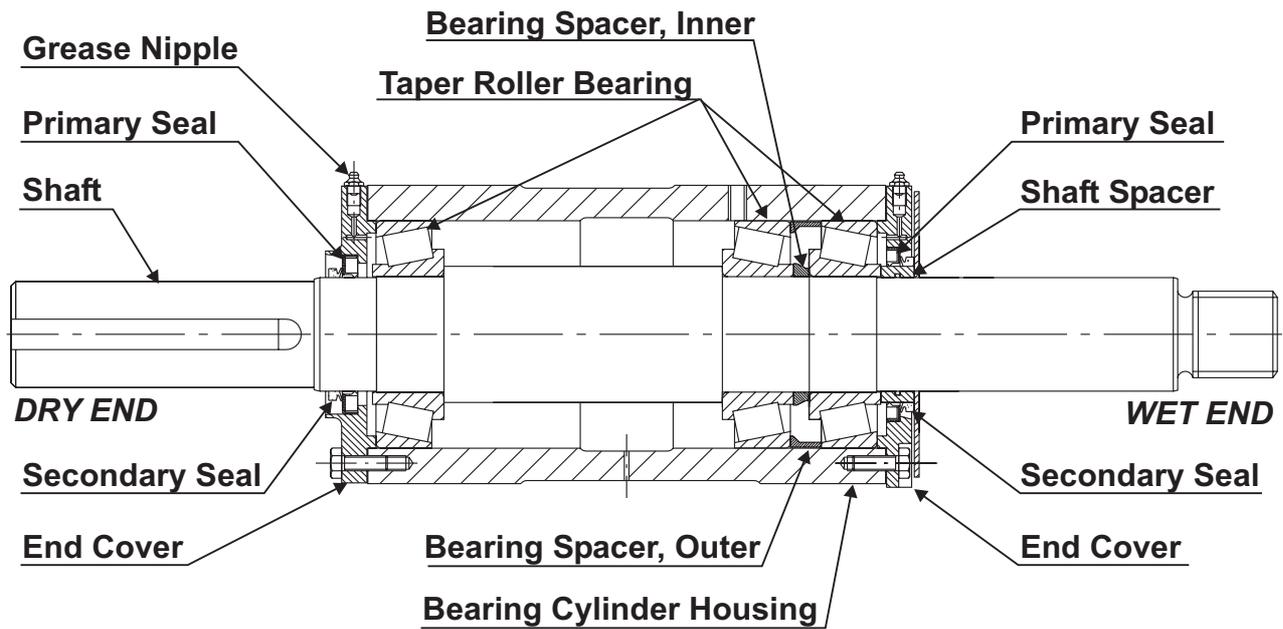
#### Details of design features:

- **Bearing Assembly**

The robust steel shaft is carried in grease lubricated oversized adjustable taper roller bearings in a self-contained cartridge assembly. The cartridge, itself, is housed in a heavy duty bearing frame and is easily replaced with a minimum of down-time.

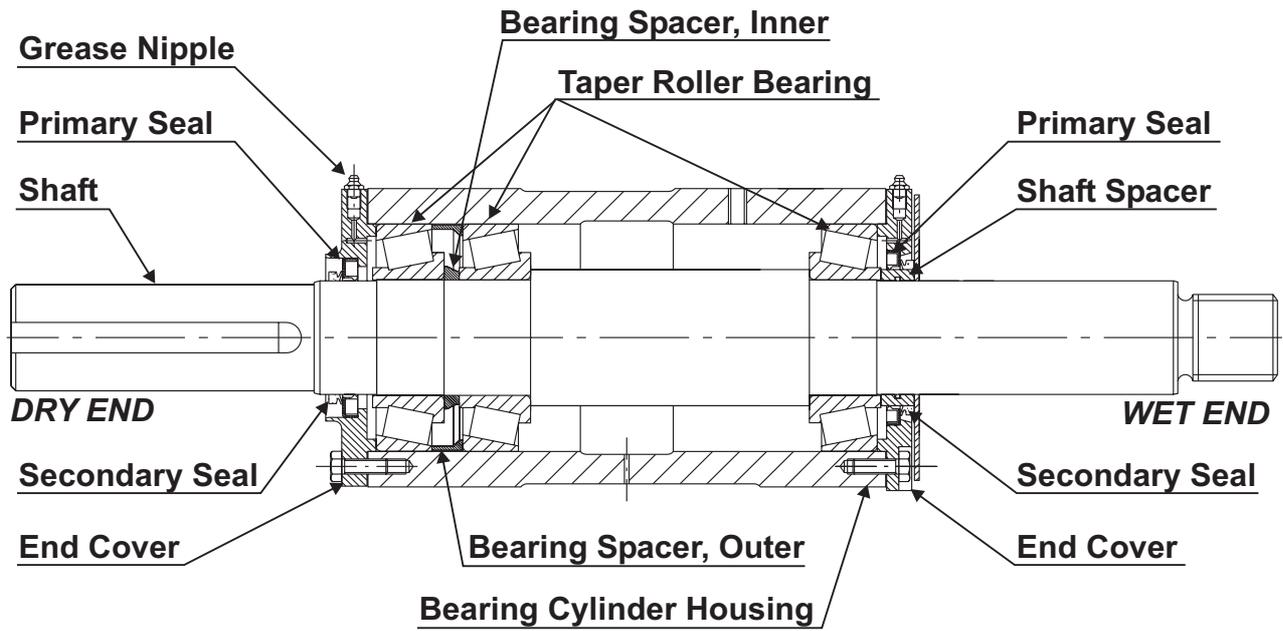


**Standard Bearing Assembly**  
Used on all standard pump applications.



**Double Wet End Bearing Assembly  
used on shafts with high radial loads**

Typically, high radial loads are created when pumps are used on installations with high head and low flow applications.

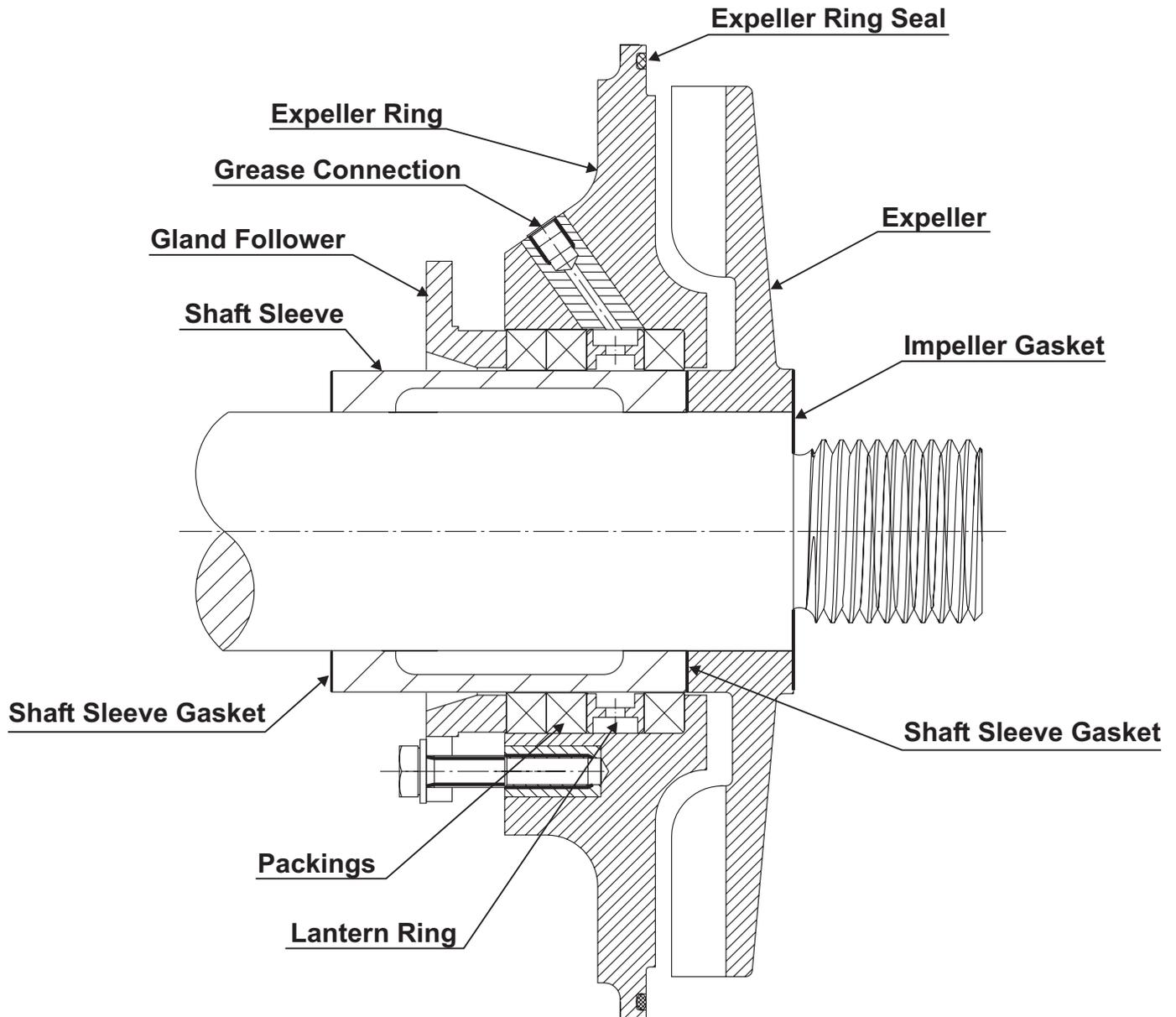


**Double Dry End Bearing Assembly  
used on shafts with high axial loads**

Typically, high axial loads are created when pumps are used in multi-stage (series pumping) applications.

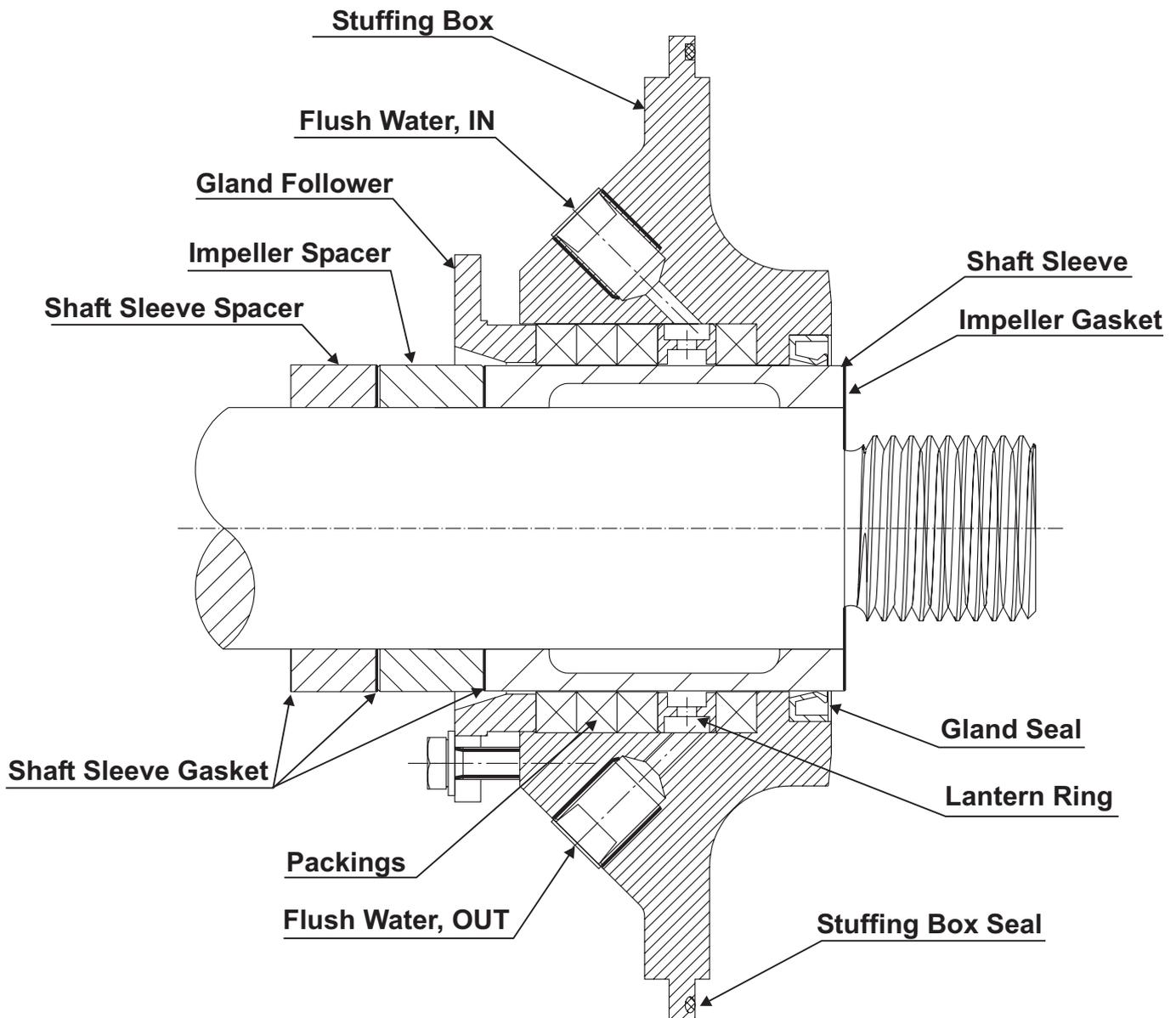
● **Shaft Seals**

The standard pump has a primary high performance dry hydrodynamic expeller which seals the shaft when the pump is running. A secondary, grease lubricated, packed gland seal prevents leakage when the pump is not running. The expeller is not used on flushed seal assemblies.



**Standard Expeller Shaft Seal**





**“Low Flow” Shaft Seal Assembly**

Typically, a “low flow” gland seal is used to minimise dilution of the slurry being pumped.

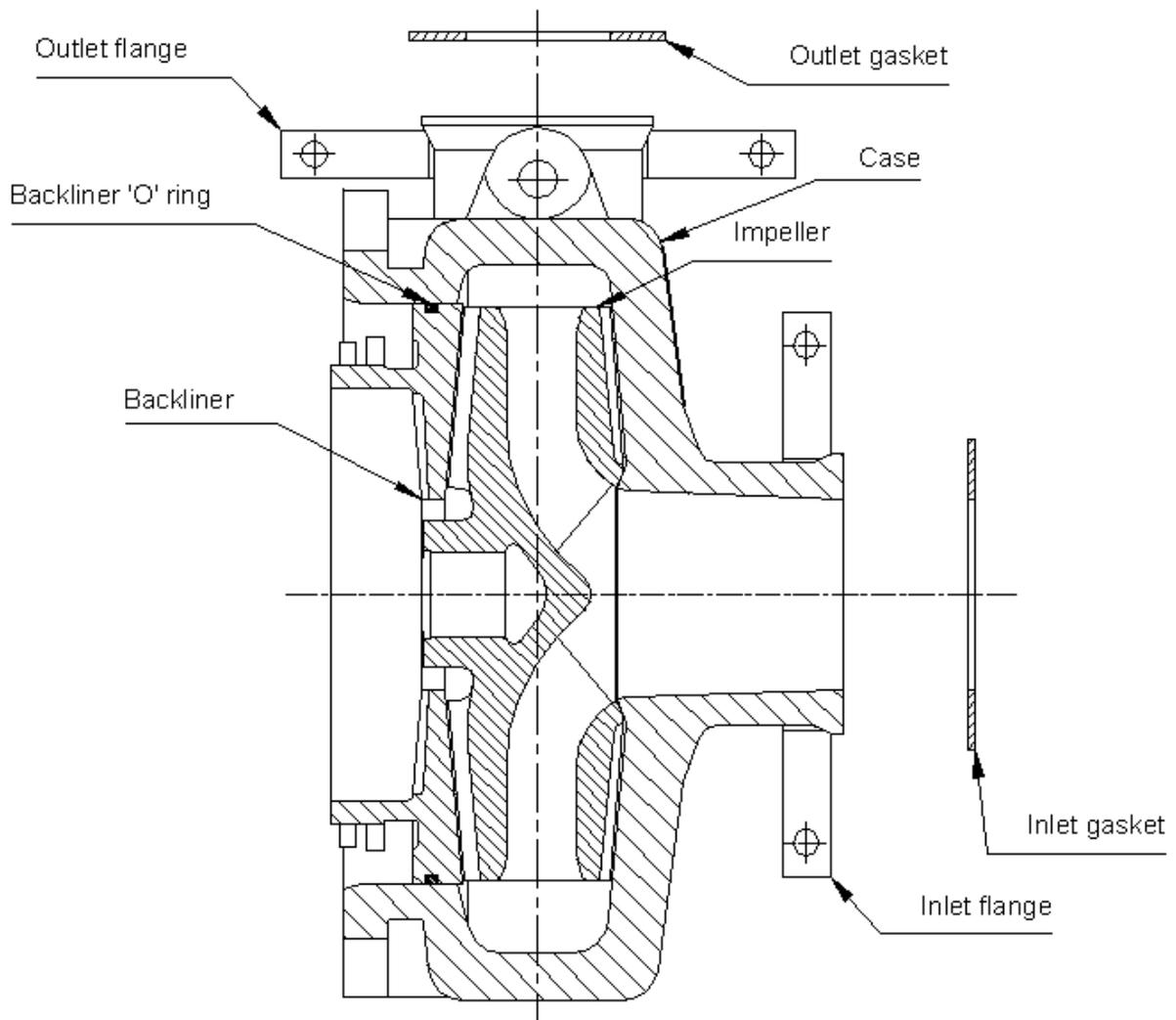
Various options of mechanical seals are available. You are advised to consult with the Pump Technical Support Group on mechanical seal selection.

## Wet end

The materials used are the very best available, providing both excellent wear properties and corrosion resistance.

The wet end comprises:

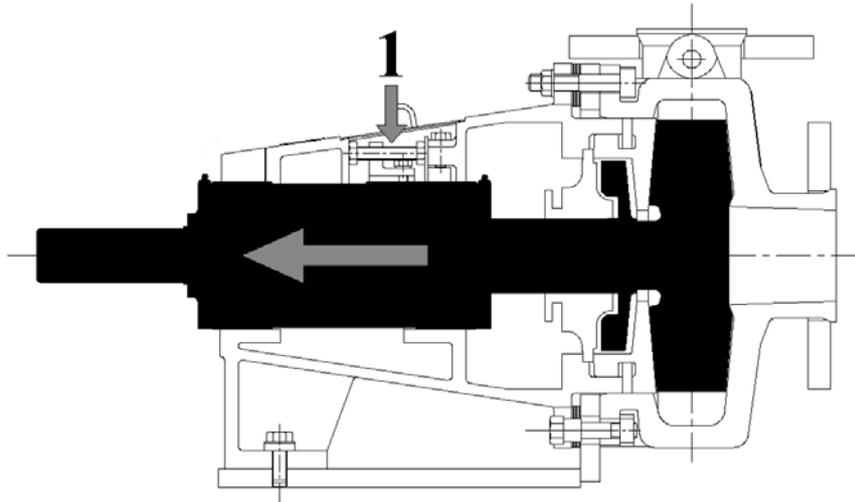
Back liner, Casing (full volute) and Impeller are all available in **MetaChrome**, a wear resistance high chrome iron with a minimum hardness of 600 BHN, which can be used at pH values down to 2.5. It is the standard material for most hard metal pump ranges.



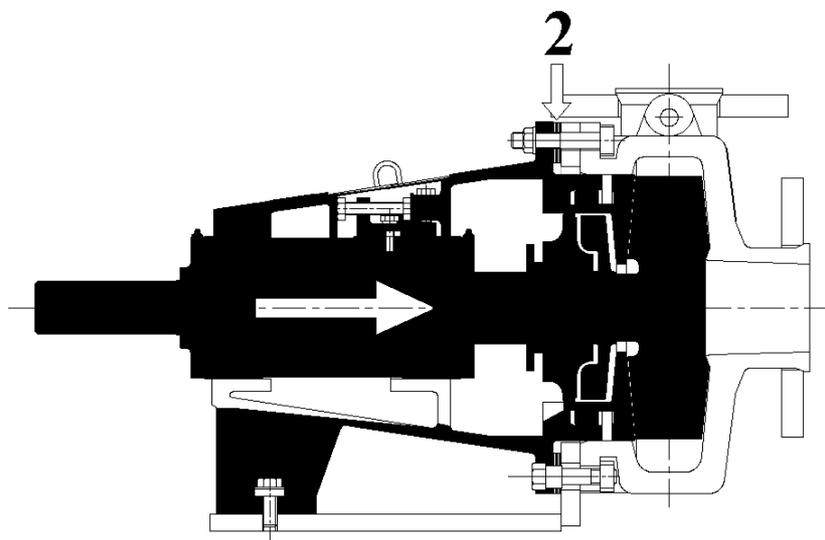
**Typical cross sectional view of an HM Pump Wet End**

**● Double adjustment**

The total impeller wear clearance adjustment is a patented external double adjustment feature. The procedure of closing the back and front impeller clearances permits continuous performance of the pump throughout the normal wear life of all components. This simple operation is illustrated in the two steps shown below and can be performed on an installed pump without disassembly.

**Step 1  
ADJUST IMPELLER BACK-SIDE CLEARANCE.**

Impeller back clearance and centrifugal seal adjustment is achieved by adjusting the screw on the bearing cylinder housing. The bearing cylinder housing, shaft and impeller move back in order to close the impeller back clearance.

**Step 2  
ADJUST IMPELLER FRONT-SIDE  
CLEARANCE.**

Impeller front clearance is made by removal of casing half-shims and retightening casing bolts. This also acts as a visual wear indicator. The entire power frame moves forward to close the impeller front-side clearance.

- **Hydraulics**

The compact arrangement is of end suction design, with a thick sectioned, one piece, hard metal volute casing providing smooth, high efficiency, hydraulic flow and minimum radial loading. Carefully matched to the casings, the large diameter, high aspect ratio, impellers are solids handling with back and front pump-out vanes generating minimum turbulence, low NPSH and extended wear life.

- **Frame and base**

The frame supports the bearing cartridge assembly, shaft seal and overhead motor mounting (if fitted). The base supports the frame and wet end assembly.

All parts can be identified in the sectional view drawing at the front of Section 4.2.

- **Motor mounting**

There are several options of motor mountings, these are:

Over head, Reverse over head, Side (left or right) and Direct in line.

Illustrations of the various types of motor mounts can be found in Section 4.2.3 - Dimensional Drawings of Pumps.

- **Inlet and outlet connections**

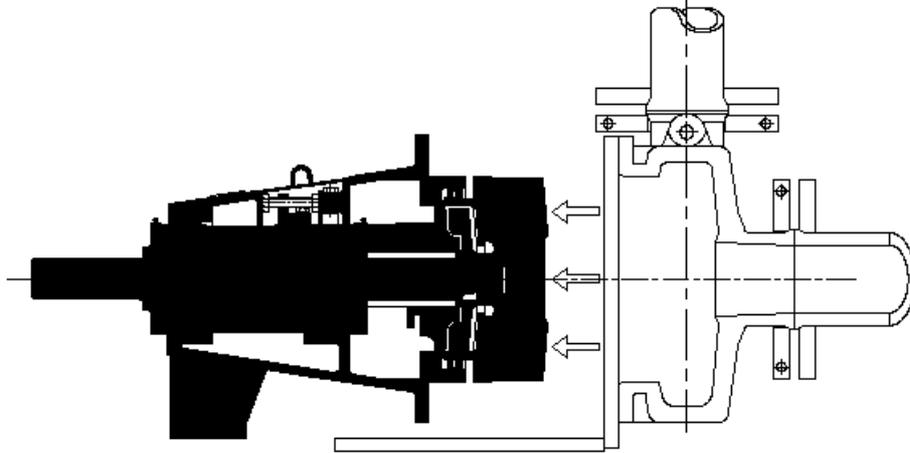
Inlet and outlet connections are loose two-piece flanges and can be provided in either DIN or ANSI standards, to suit customer requirements. Available outlet positions are detailed at Section 4.2.2 - Technical data - CASING/LINER DATA.

- **Ease of maintenance**

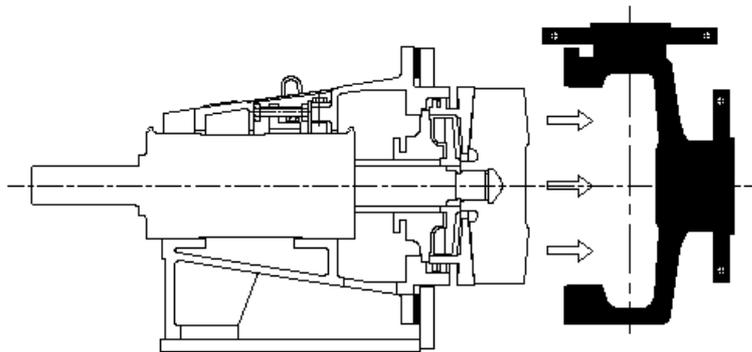
The casing arrangement makes maintenance extremely simple. The back pull-out feature provides ready access to the rotating assembly without disturbing inlet and outlet connections. Alternatively, the front pull-out feature requires the casing to be removed and the rotating assembly can be withdrawn through the bearing frame.

**Back Pull-out Design (Double adjustment frame only)**

For normal routine inspection or repair, the bearing frame and rotating element can be removed as a unit. Impeller and gland seal component renewal can be carried out rapidly.

**Front Pull-out Design**

For casing only renewal, or if back pull-out is not convenient, the front pull-out feature can be used after pipework removal.

**● Summary of options****Motor mountings:**

Over head, Reverse over head, Side (left or right) and Direct in line

**Shaft seals:**

Expeller, Full/Low flow packed gland, Mechanical

**Bearing assemblies:**

Standard, Double wet end, Double dry end

**Flanged connections and outlet positions:**

Flanges to DIN or ANSI standards.

See Section 4.2.2 - Technical Data -CASING/LINERS DATA for available outlet positions

4.2.2 HM Technical information - KEY DIMENSIONS

| PUMP SIZE                                    | HM50         | HM75         | HM100       | HM150        | HM200       | HM250         | HM300       |
|--|--------------|--------------|-------------|--------------|-------------|---------------|-------------|
| <b>INLET DIAMETER</b> (mm)                   | 50           | 75           | 100         | 150          | 200         | 250           | 300         |
| <b>OUTLET DIAMETER</b> (mm)                  | 32           | 50           | 75          | 100          | 150         | 200           | 250         |
| <b>STUFFING BOX (EXPELLER TYPE)</b>          |              |              |             |              |             |               |             |
| EXPELLER DIAMETER (mm)                       | 175          | 175          | 210         | 280          | 346         | 418           | 580         |
| <b>INSIDE DIAMETER</b>                       | 78.3         | 78.3         | 105         | 127          | 143         | 162           | 180         |
| <b>DEPTH</b>                                 | 44           | 44           | 42.5        | 51           | 55          | 62.8          | 64          |
| <b>PACKING SIZE</b> (mm x mm)                | 9.5          | 9.5          | 11          | 13           | 14          | 16            | 16          |
| <b>NUMBER OF RINGS</b>                       | 4            | 4            | 4           | 4            | 4           | 4             | 4           |
| <b>WIDTH OF LANTERN RING</b>                 | 8.5mm        | 8.5mm        | 10mm        | 12mm         | 13mm        | 16mm          | 16mm        |
| <b>GREASE NIPPLE CONNECTION</b>              | 1/8"         | 1/8"         | 1/8"        | 1/8"         | 1/8"        | 1/8"          | 1/8"        |
| <b>STUFFING BOX (WATER FLUSH GLAND TYPE)</b> |              |              |             |              |             |               |             |
| <b>INSIDE DIAMETER</b> (mm)                  | 78.3         | 78.3         | 105         | 127          | 143         | 162           | 180         |
| <b>DEPTH</b> (mm)                            | 56           | 56           | 65          | 77           | 83          | 96            | 111.4       |
| <b>PACKING SIZE</b> (mm x mm)                | 9.5          | 9.5          | 11          | 13           | 14          | 16            | 16          |
| <b>NUMBER OF RINGS</b>                       | 5            | 5            | 5           | 5            | 5           | 5             | 5           |
| <b>WIDTH OF LANTERN RING</b>                 | 8.5mm        | 8.5mm        | 10mm        | 12mm         | 13mm        | 16mm          | 16mm        |
| <b>WATER FLUSH CONNECTION</b>                | ½"           | ½"           | ½"          | ½"           | ½"          | ½"            | ½"          |
| <b>GLAND FLOW:</b>                           |              |              |             |              |             |               |             |
| LOW FLOW (L/MIN)                             | 3            | 3            | 6.5         | 9            | 11.5        | 13.5          | 16          |
| FULL FLOW (L/MIN)                            | 13           | 13           | 18.5        | 23           | 28          | 32            | 36          |
| <b>SHAFT:</b>                                |              |              |             |              |             |               |             |
| IMPELLER OVER HANG (mm)                      | 240          | 248          | 278         | 322          | 398         | 452           | 523         |
| <b>IMPELLER THREAD SIZE</b>                  | 1¼" 7 T.P.I. | 1¼" 7 T.P.I. | 1¾ 5 T.P.I. | 2¼" 4 T.P.I. | 2½ 4 T.P.I. | 3" 3.5 T.P.I. | 4" 3 T.P.I. |

| PUMP SIZE  | HM50             | HM75             | HM100            | HM150            | HM200            | HM250             | HM300             |
|--|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|
| <b>DIAMETER BETWEEN BEARINGS</b>                     | 70               | 70               | 85               | 90               | 130              | 130               | 160               |
| <b>DISTANCE BETWEEN BEARINGS CENTERS</b>             | 206              | 206              | 244.5            | 286              | 339.5            | 408               | 370               |
| <b>DIAMETER UNDER SHAFT SLEEVE</b>                   | 47.55            | 47.55            | 63.00            | 75.00            | 95.00            | 111.70            | 120.00            |
| <b>DIAMETER AT DRIVE END</b>                         | 49.95 –<br>49.90 | 49.95 –<br>49.90 | 60.00 –<br>59.97 | 70.00 –<br>69.97 | 80.00 –<br>79.95 | 100.00 -<br>99.95 | 100.00 -<br>99.78 |
| <b>DRIVE END TOLERANCE</b>                           | ±0.05            | ±0.05            | ±0.05            | ±0.05            | ±0.05            | ±0.05             | ±0.05             |
| <b>DRIVE KEY SIZE.</b>                               | 14 X 9mm         | 14 X 9mm         | 18 X 11mm        | 20 X 12mm        | 22 X 14mm        | 28 X 16mm         | 28 X 16mm         |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| DISTANCE TO ALLOW FOR BACK PULL OUT FEATURE (mm)     | 158              | 164              | 176              | 203              | 308              | 357               | 370               |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| <b><u>BEARING TYPE:</u></b>                          |                  |                  |                  |                  |                  |                   |                   |
| <b>IMPELLER END</b>                                  | TAPER ROLLER      | TAPER ROLLER      |
| <b>DRIVE END</b>                                     | TAPER ROLLER      | TAPER ROLLER      |
| <b>THRUST</b>  | NOT FITTED        | NOT FITTED        |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| <b><u>BEARING REFERENCE:</u></b>                     | <i>TIMKEN</i>    | <i>TIMKEN</i>    | <i>TIMKEN</i>    | <i>TIMKEN</i>    | <i>TIMKEN</i>    | <i>TIMKEN</i>     | <i>TIMKEN</i>     |
| <b>IMPELLER END</b>                                  | 4595/4535        | 4595/4535        | HM212047         | 748S/742         | 861/854          | 938/932           | HH228349          |
| <b>DRIVE END</b>                                     | 4595/4535        | 4595/4535        | HM212047         | 748S/742         | 861/854          | 938/932           | HH228349          |
| <b>THRUST</b>  | NOT FITTED        | NOT FITTED        |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| <b>BACK PULL OUT FEATURE</b>                         | YES              | YES              | YES              | YES              | YES              | YES               | YES               |
| <b>FRONT PULL OUT FEATURE</b><br>(WITH CASE REMOVED) | YES              | YES              | YES              | YES              | YES              | YES               | YES               |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| <b>IMPELLER RELEASE MECHANISM</b>                    | NO               | NO               | NO               | YES              | YES              | YES               | YES               |
| <br>   |                  |                  |                  |                  |                  |                   |                   |
| BEARING ASSEMBLY LUBRICATION                         | Grease           | Grease           | Grease           | Grease           | Grease           | Grease            | Grease            |

| <b>PUMP SIZE</b>   | <b>HM50</b> | <b>HM75</b> | <b>HM100</b> | <b>HM150</b> | <b>HM200</b> | <b>HM250</b> | <b>HM300</b> |
|--|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| NORMAL MAX OPERATING SPEED (RPM)   | 3000        | 3000        | 2600         | 1800         | 1400         | 1200         | 1000         |
| <b>BACK LINER</b><br>HARD METAL  | YES         | YES         | YES          | YES          | YES          | YES          | YES          |
| <b>SLIDE BASE</b>  | NO          | NO          | NO           | OPTIONAL     | OPTIONAL     | OPTIONAL     | OPTIONAL     |
| <b>WEIGHTS: (KG)</b>   |             |             |              |              |              |              |              |
| <b>BACK PULL OUT</b> (EXCLUDING DRIVE,<br>GUARD, MOTOR AND MOUNTING PLATE) | 137         | 148.5       | 238          | 470          | 902          | 1426         | 2025         |
| <b>BEARING/SHAFT ASSEMBLY</b>  | 31          | 31          | 44           | 80           | 144          | 244          | 330          |
| <b>HARD METAL CASE</b>   | 28          | 48.5        | 77           | 132          | 318          | 612          | 887          |

**4.2.2 HM Technical information - IMPELLER DATA**

| PUMP SIZE                               | HM50       | HM75       | HM100      | HM150      | HM200      | HM250      | HM300      |
|---|------------|------------|------------|------------|------------|------------|------------|
| <b>FRAME SIZE</b>                       | 250        | 250        | 300        | 400        | 500        | 600        | 750        |
| <b>STANDARD PUMP IMPELLER MATERIAL:</b> |            |            |            |            |            |            |            |
| SEMI OPEN                               | METACHROME |            |            |            |            |            |            |
| CLOSED                                  |            | METACHROME | METACHROME | METACHROME | METACHROME | METACHROME | METACHROME |
| INDUCED FLOW                            | METACHROME |
| <b>OTHER MATERIAL OPTIONS</b>           |            |            |            |            |            |            |            |
| SEMI OPEN                               | YES        |            |            |            |            |            |            |
| CLOSED                                  |            | YES        | YES        | YES        | YES        | YES        | YES        |
| INDUCED FLOW                            | YES        |
| <b>NUMBER OF VANES</b>                  |            |            |            |            |            |            |            |
| SEMI OPEN                               | 4          |            |            |            |            |            |            |
| CLOSED                                  |            | 4          | 5          | 5          | 5          | 5          | 5          |
| INDUCED FLOW                            | 9          | 9          | 9          | 9          | 9          | 9          | 9          |
| <b>MAIN VANE DIAMETER (mm)</b>          | 240        | 250        | 300        | 400        | 500        | 600        | 905        |
| <b>SHROUD DIAMETER (mm)</b>             | 250        | 250        | 300        | 400        | 500        | 600        | 905        |
| <b>DIAMETER OF IMPELLER EYE (mm)</b>    | N/A        | 81         | 112        | 162        | 200        | 264        | 345        |
| <b>CLOSED IMPELLER ONLY</b>             |            |            |            |            |            |            |            |
| DISTANCE BETWEEN SHROUDS                | N/A        | 27         | 36         | 51         | 75         | 95         | 105        |
| BACK PUMP OUT VANES                     | N/A        | YES        | YES        | YES        | YES        | YES        | YES        |
| FRONT PUMP OUT VANES                    | N/A        | YES        | YES        | YES        | YES        | YES        | YES        |

| PUMP SIZE                                    | HM50  | HM75  | HM100 | HM150 | HM200 | HM250 | HM300  |
|--|-------|-------|-------|-------|-------|-------|--------|
| <b>MOMENT OF INERTIA (kg. m<sup>2</sup>)</b> |       |       |       |       |       |       |        |
| SEMI OPEN                                    | 0.069 |       |       |       |       |       |        |
| CLOSED                                       | —     | 0.108 | 0.242 | 0.904 | 4.490 | 9.00  | 18.225 |
| INDUCED FLOW                                 | 0.046 | 0.046 | 0.170 | 0.612 | ?     | 6.05  | ?      |
| <b>MAX. PASS SPHERE THROUGH IMPELLER</b>     |       |       |       |       |       |       |        |
| SEMI OPEN                                    | 20    |       |       |       |       |       |        |
| CLOSED                                       |       | 28    | 36    | 50    | 76    | 95    | 105    |
| INDUCED FLOW                                 | 34    | 34    | 31    | 37    | ?     | ?     | ?      |
| <b>MAX PASS SPHERE AT CUT WATER</b>          |       |       |       |       |       |       |        |
| SEMI OPEN                                    | 35    |       |       |       |       |       |        |
| CLOSED                                       |       | 17    | 20    | 26    | 39    | 60    | 79     |
| INDUCED FLOW                                 | 35    | 17    | 20    | 26    | 39    | 60    | 79     |

4.2.2 HM Technical information - CASING DATA

| PUMP SIZE                          | HM50       | HM75       | HM100      | HM150      | HM200      | HM250      | HM300      |
|------------------------------------|------------|------------|------------|------------|------------|------------|------------|
| FRAME SIZE                         | 250        | 250        | 300        | 400        | 500        | 600        | 750        |
| <b>Inlet Diameter</b> (mm)         | 50         | 75         | 100        | 150        | 200        | 250        | 300        |
| <b>Outlet Diameter</b> (mm)        | 32         | 50         | 75         | 100        | 150        | 200        | 250        |
| <b>Inlet flange<br/>DIN/ANSI</b>   | 50/2"      | 80/3"      | 100/4"     | 150/6"     | 200/8"     | 250/10"    | 300/12"    |
| <b>Outlet flange<br/>DIN/ANSI</b>  | 32/1 ¼"    | 50/2"      | 80/3"      | 100/4"     | 150/6"     | 200/8"     | 250/10"    |
| <b>Outlet Position</b>             |            |            |            |            |            |            |            |
| Top vertical                       | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Top horizontal                     | ✓          | ✓          | ✓          | ✓          | ✓          |            |            |
| Bottom horizontal                  | ✓          | ✓          | ✓          | ✓          | ✓          |            |            |
| Side 45°                           | ✓          | ✓          | ✓          | ✓          | ✓          |            |            |
| Top 45°                            | ✓          | ✓          | ✓          | ✓          | ✓          |            |            |
| Bottom 45°                         | ✓          | ✓          | ✓          | ✓          | ✓          |            |            |
| Bottom vertical                    | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Side 36° and 72°                   |            |            |            |            |            | ✓          | ✓          |
| Top and bottom 36° and 72°         |            |            |            |            |            | ✓          | ✓          |
| <b>STANDARD MATERIAL</b>           | MetaChrome |
| <b>Other Material options</b>      | Yes        |
| <b>CASING MIN THICKNESS</b>        | 16         | 20         | 24         | 27         | 35         | 40         | 40         |
| <b>Max. working pressure</b> (bar) | 18.6       | 18.6       | 15.9       | 15.6       | 15.6       | 15.6       | 15.6       |
| <b>Maximum test pressure</b> (bar) | 28         | 28         | 24         | 23         | 23.5       | 23.5       | 23.5       |

**PUMP SIZE IN RELATION TO LARGEST GUARD WEIGHTS FOR LARGEST MOTOR SIZE CURRENTLY DRAWN.**

| MOUNTING POSITION ►<br>FRAME SIZE ▼ | SIDE MOUNTED |            | OVERHEAD |            | REVERSE OVERHEAD |            | DIRECT INLINE |            |
|-------------------------------------|--------------|------------|----------|------------|------------------|------------|---------------|------------|
|                                     | Weight       | Motor size | Weight   | Motor size | Weight           | Motor size | Weight        | Motor size |
| FRAME 250                           | 40kg         | 225        | 23kg     | 180        | 32.6kg           | 280        | 18kg          | 280        |
| FRAME 300                           | 40kg         | 355        | 26kg     | 225        | 35kg             | 315        | 16.5kg        | 315        |
| FRAME 400                           | 71kg         | 355        | 37kg     | 250        | 70kg             | 355        | 20kg          | 315        |
| FRAME 500                           | 115kg        | 355        | 55.4kg   | 280        | 66.2kg           | 355        | 41kg          | 355        |
| FRAME 600                           | 115kg        | 355        | 57kg     | 355        | 85kg             | 280        | 69.8kg        | 355        |
| FRAME 750                           | 125.4kg      | 355        | 96.5kg   | 355        | ?                |            | ?             |            |
|                                     |              |            |          |            |                  |            |               |            |
|                                     |              |            |          |            |                  |            |               |            |

**MOTOR PLATE / SUPPORT WEIGHTS:  
(HEAVIEST)**

|           | SIDE MOUNTED | OVERHEAD | REVERSE OVERHEAD | DIRECT COUPLED |
|-----------|--------------|----------|------------------|----------------|
| FRAME 250 | 18           | 32       | 91               | 103            |
| FRAME 300 | 15           | 66       | 96               | 121            |
| FRAME 400 | 71           | 81       | 74               | 285            |
| FRAME 500 | 41           | 134      | 174              | 299            |
| FRAME 600 | 50           | 101      | 166              | 270            |
| FRAME 750 | 40           | 269      |                  |                |
|           |              |          |                  |                |
|           |              |          |                  |                |

**Moments of Inertia (kg / m<sup>2</sup>)**

This is for the shaft / expeller grease retainers, impeller and expeller basically all moving parts in the bare shaft pump.

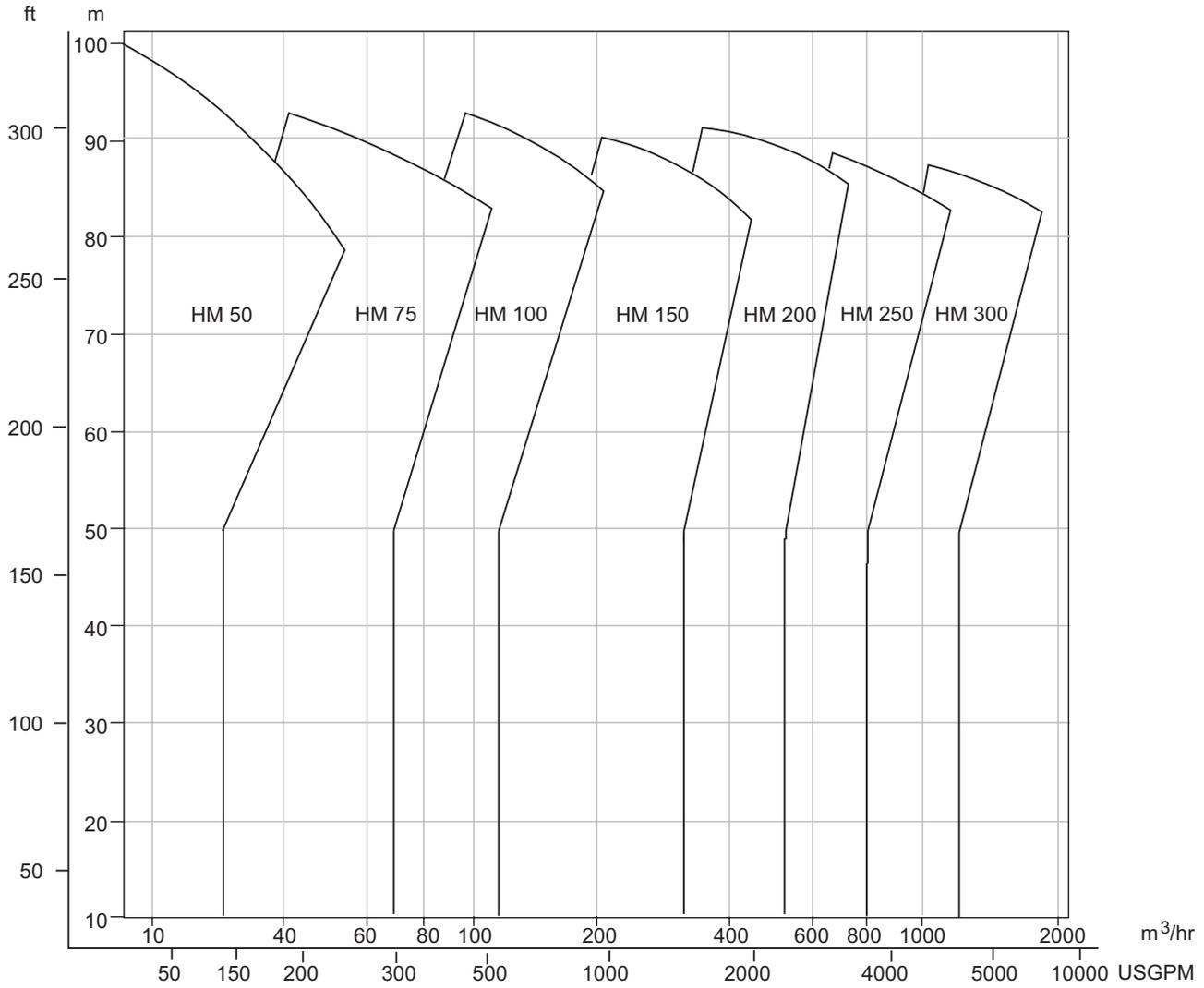
|     | HM    |        |
|-----|-------|--------|
|     | OPEN  | CLOSED |
| 50  | 0.101 |        |
| 75  | —     | 0.143  |
| 100 | —     | 0.778  |
| 150 | —     | 1.010  |
| 200 | —     | 5.08   |
| 250 | —     | 10.3   |
| 300 | —     | 21     |

**4.2.3 General arrangement**

| <u>Drawing No.</u> |          |            | <u>Drawing No.</u> |          |            |
|--------------------|----------|------------|--------------------|----------|------------|
| HM50               | 201-311B | 99-W40 Ed4 | HM200              | 205-311C | 00-W01 Ed5 |
|                    | 201-312B | 99-W40 Ed4 |                    | 205-312B | 99-W40 Ed4 |
|                    | 201-321B | 99-W40 Ed4 |                    | 205-321B | 99-W40 Ed4 |
|                    | 201-331B | 99-W40 Ed4 |                    | 205-331B | 99-W40 Ed4 |
|                    | 201-341B | 99-W40 Ed4 |                    | 205-341B | 99-W40 Ed4 |
| HM75               | 202-311C | 00-W30 Ed5 | HM250              | 206-311B | 99-W40 Ed4 |
|                    | 202-312B | 99-W40 Ed4 |                    | 206-312B | 99-W40 Ed4 |
|                    | 202-321B | 99-W40 Ed4 |                    | 206-321B | 99-W40 Ed4 |
|                    | 202-331B | 99-W40 Ed4 |                    | 206-331B | 99-W40 Ed4 |
|                    | 202-341B | 99-W40 Ed4 |                    | 206-341C | 00-W30 Ed5 |
| HM100              | 203-311B | 99-W40 Ed4 | HM300              | 207-311  | 01-W35 Ed1 |
|                    | 203-312B | 99-W40 Ed4 |                    | 207-312  | 01-W35 Ed1 |
|                    | 203-321B | 99-W40 Ed4 |                    |          |            |
|                    | 203-331B | 99-W40 Ed4 |                    |          |            |
|                    | 203-341B | 99-W40 Ed4 |                    |          |            |
| HM150              | 204-311B | 99-W40 Ed4 |                    |          |            |
|                    | 204-312B | 99-W40 Ed4 |                    |          |            |
|                    | 204-321B | 99-W40 Ed4 |                    |          |            |
|                    | 204-331B | 99-W40 Ed4 |                    |          |            |
|                    | 204-341B | 99-W40 Ed4 |                    |          |            |



4.2.4. Tombstone charts



**4.2.5 Performance curves**Curve No.

|          |                |             |
|----------|----------------|-------------|
| HM50 O4  | 11AAAAHCHCO4   | Ed 4        |
| HM50 W9  | 11AAAAHCHCW9   | 01-W05 Ed 1 |
| HM75 C4  | 12AAAAHCHCC4   | Ed 3        |
| HM75 W9  | 12AAAAHCHCW9   | 01-W05 Ed 1 |
| HM100 C5 | 13AAAAHCHCC5   | 99-W36 Ed 3 |
| HM100 W9 | 13AAAAHCHCW9   | Edition 1   |
| HM150 C5 | 14AAAAHCHCC5   | 01-W36 Ed 3 |
| HM150 W9 | 14AAAAHCHCW9   | 01-W19 Ed 2 |
| HM200 C5 | 15AAAAHCHCC5   | 99-W36 Ed 3 |
| HM200 W9 | 15AAAAHCHCW9si | 04-W15 Ed 2 |
| HM250 C5 | 16AAAAHCHCC5   | Edition 3   |
| HM250 W9 | 16AAAAHCHCW9   | Edition 2   |
| HM300 C5 | 17AAAAHCHCO5   | 01-W36 Ed 6 |
| HM350 C5 | 18AAAAHCHCC5   | Edition 2   |

US-versions

|          |              |             |
|----------|--------------|-------------|
| HM50 O4  | 11AAAAHCHCO4 | Ed 4        |
| HM50 W9  | 11AAAAHCHCW9 | 01-W05 Ed 1 |
| HM75 C4  | 12AAAAHCHCC4 | Ed 3        |
| HM75 W9  | 12AAAAHCHCW9 | 01-W05 Ed 1 |
| HM100 C5 | 13AAAAHCHCC5 | 99-W36 Ed 3 |
| HM100 W9 | 13AAAAHCHCW9 | Edition 1   |
| HM150 C5 | 14AAAAHCHCC5 | 01-W36 Ed 3 |
| HM150 W9 | 14AAAAHCHCW9 | 01-W19 Ed 2 |
| HM200 C5 | 15AAAAHCHCC5 | 99-W36 Ed 3 |
| HM200 W9 | 15AAAAHCHCW9 | 04-W15 Ed 2 |
| HM250 C5 | 16AAAAHCHCC5 | Edition 3   |
| HM250 W9 | 16AAAAHCHCW9 | Edition     |
| HM300 C5 | 17AAAAHCHCO5 | 01-W36 Ed 6 |
| HM350 C5 | 18AAAAHCHCC5 | Edition 2   |

**4.2.6 Spare Parts Double adjustment**

|                 |  |   |
|-----------------|--|---|
| HM50 Frame 250  | SA 502233<br>SA 50223302<br>SA 50223303<br>SA 50223306<br>SA 50223307<br>SA 50223308 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |
| HM75 Frame 250  | SA 502234<br>SA 50223402<br>SA 50223403<br>SA 50223406<br>SA 50223407<br>SA 50223408 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |
| HM100 Frame 300 | SA 502239<br>SA 50223902<br>SA 50223903<br>SA 50223906<br>SA 50223907<br>SA 50223908 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |
| HM150 Frame 400 | SA 502244<br>SA 50224402<br>SA 50224403<br>SA 50224406<br>SA 50224407<br>SA 50224408 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |
| HM200 Frame 500 | SA 502249<br>SA 50224902<br>SA 50224903<br>SA 50224906<br>SA 50224907<br>SA 50224908 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |
| HM250 Frame 600 | SA 502255<br>SA 50225502<br>SA 50225503<br>SA 50225506<br>SA 50225507<br>SA 50225508 | Full Flow<br>Low Flow<br>Expeller<br>ANSI Flanges Full Flow<br>ANSI Flanges Low Flow<br>ANSI Expeller |

**4.2.7 Spare Parts Single Adjustmen**

|       |            |            |           |       |
|-------|------------|------------|-----------|-------|
| HM50  | FHC-S      | SA501296   | PDWC1x222 |       |
|       | LHC-S      | SA50129602 | PDWC1x212 |       |
|       | EHC-S      | SA50129603 | PDWC1x412 |       |
|       | FHC-S ANSI | SA50129604 | PDWC1x224 |       |
|       | LHC-S ANSI | SA50129605 | PDWC1x214 |       |
|       | EHC-S ANSI | SA50129606 | PDWC1x414 |       |
| HM75  | FHC-S      | SA501297   | PDWC2x222 |       |
|       | LHC-S      | SA50129702 | PDWC2x212 |       |
|       | EHC-S      | SA50129703 | PDWC2x412 |       |
|       | FHC-S ANSI | SA50129704 | PDWC2x224 |       |
|       | LHC-S ANSI | SA50129705 | PDWC2x214 |       |
|       | EHC-S ANSI | SA50129706 | PDWC2x414 |       |
| HM100 | FHC-S      | SA501235   | PDWC3x222 |       |
|       | LHC-S      | SA50123502 | PDWC3x212 |       |
|       | EHC-S      | SA50123503 | PDWC3x412 |       |
|       | FHC-S ANSI | SA50123504 | PDWC3x224 |       |
|       | LHC-S ANSI | SA50123505 | PDWC3x214 |       |
|       | EHC-S ANSI | SA50123506 | PDWC3x414 |       |
| HM150 | FHC-S      | SA501237   | PDWC4x222 |       |
|       | LHC-S      | SA50123702 | PDWC4x212 |       |
|       | EHC-S      | SA50123703 | PDWC4x412 |       |
|       | FHC-S ANSI | SA50123704 | PDWC4x224 |       |
|       | LHC-S ANSI | SA50123705 | PDWC4x214 |       |
|       | EHC-S ANSI | SA50123706 | PDWC4x414 |       |
| HM200 | FHC-S      | SA501241   | PDWC5x222 |       |
|       | LHC-S      | SA50124102 | PDWC5x212 |       |
|       | EHC-S      | SA50124103 | PDWC5x412 |       |
|       | FHC-S ANSI | SA50124104 | PDWC5x224 |       |
|       | LHC-S ANSI | SA50124105 | PDWC5x214 |       |
|       | EHC-S ANSI | SA50124106 | PDWC5x414 |       |
| HM250 | FHC-S      | SA501394   | PDWC6x222 | Rev C |
|       | LHC-S      | SA50139402 | PDWC6x212 | Rev C |
|       | EHC-S      | SA50139403 | PDWC6x412 | Rev C |
|       | FHC-S ANSI | SA50139404 | PDWC6x224 | Rev B |
|       | LHC-S ANSI | SA50139405 | PDWC6x214 | Rev B |
|       | EHC-S ANSI | SA50139406 | PDWC6x414 | Rev B |
| HM300 | FHC-S      | SA501398   | PDWC7x222 |       |
|       | LHC-S      | SA50139802 | PDWC7x212 |       |
|       | EHC-S      | SA50139803 | PDWC7x412 |       |
|       | FHC-S ANSI | SA50139804 | PDWC7x224 |       |
|       | LHC-S ANSI | SA50139805 | PDWC7x214 |       |
|       | EHC-S ANSI | SA50139806 | PDWC7x414 |       |