

# Technical data

Pump name (\*See Product description)EVM45 9-0F5/3

|          |            |                                     |           |
|----------|------------|-------------------------------------|-----------|
| Customer | Date       | 2024-06-13                          | Company   |
| Contact  | Item no.   |                                     | Issued by |
| Phone    | Project    |                                     | Phone     |
| E-mail   | Project ID | Project redenumit 2024-06-13 20:42: | E-mail    |

## Requested data

|   |                           |                |                                   |        |
|---|---------------------------|----------------|-----------------------------------|--------|
| 1 | Pump type                 | VERTICAL PUMPS | Fluid                             | Water  |
| 2 | Number of pumps / Reserve | 1 / 0          | Liquid temperature °C             | 20     |
| 3 | Flow m <sup>3</sup> /h    |                | Kin. viscosity mm <sup>2</sup> /s | 1.005  |
| 4 | Head m                    |                | Vapour pressure bar               | 0.0234 |
| 5 | Geodetic head m           |                | PH value                          |        |
| 6 | Inlet pressure (pin) bar  | 0              | Density kg/m <sup>3</sup>         | 998.3  |
| 7 | Available system NPSH     |                | Solids Weight %                   | 0      |
| 8 | Ambient temperature °C    | 20             |                                   |        |

## Pump

|    |                           |  |                                      |                             |       |
|----|---------------------------|--|--------------------------------------|-----------------------------|-------|
| 9  | Pump name                 | (*See Product description)EVM45 9-0F5/37 | Frequency Hz                         | 50                          |       |
| 10 | Design                    | VERTICAL PUMPS                           | Installation type                    | STANDARD                    |       |
| 11 | Manufacturer              | EBARA                                    | Impeller Diameter                    | Max. mm                     | -     |
| 12 | Speed rpm                 | 2960                                     |                                      | Designed mm                 |       |
| 13 | No. of Stage              | 9  |                                      | Min. mm                     | -     |
| 14 | Connection Suction side   |  | Flow                                 | Operating m <sup>3</sup> /h |       |
| 15 | Connection Discharge side |  |                                      | Max- m <sup>3</sup> /h      | 60    |
| 16 | Max Working Pressure bar  | 25                                       |                                      | Min- m <sup>3</sup> /h      | 21    |
| 17 | Shut-off head bar         | 23.82                                    | Head                                 | Operating m                 |       |
| 18 | Total weight kg           | See the table of "Dimensions".           |                                      | - (Qmax.) m                 | 139.4 |
| 19 | Shaft power kW            |  |                                      | - (Qmin.) m                 | 233.5 |
| 20 |                           |  | Max. Shaft Power at max. impeller kW | 32.76                       |       |
| 21 | Required pump NPSH m      |  | Efficiency %                         |                             |       |

## Materials

|    |                     |          |  |  |
|----|---------------------|----------|--|--|
| 22 | Impeller            | AISI 304 |  |  |
| 23 | Intermediate casing | AISI 304 |  |  |
| 24 | Bottom casing       | ASTMCF8  |  |  |
| 25 | Shaft               | AISI 316 |  |  |
| 26 |                     |          |  |  |
| 27 |                     |          |  |  |

## Motor

|    |                      |                                     |                    |     |
|----|----------------------|-------------------------------------|--------------------|-----|
| 28 | Manufacturer         | ATB                                 | Insulation class   | F   |
| 29 | Type                 | TEFC_EVM45 9-0F5/37_400_Three Phase | Phases             | 3~  |
| 30 | Specific design      | IE3 / 50 Hz / Pole pairs 1          | Frame size         | 200 |
| 31 | Rated power kW       | 37                                  | Weight kg          | 260 |
| 32 | Number of poles      | 2                                   | Electric voltage V | 400 |
| 33 | Speed rpm            | 2950                                | Electric current A | 64  |
| 34 | Degree of protection | IP 55                               |                    |     |
| 35 |                      |                                     |                    |     |

## Remarks

# Performance curve

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## Requested data

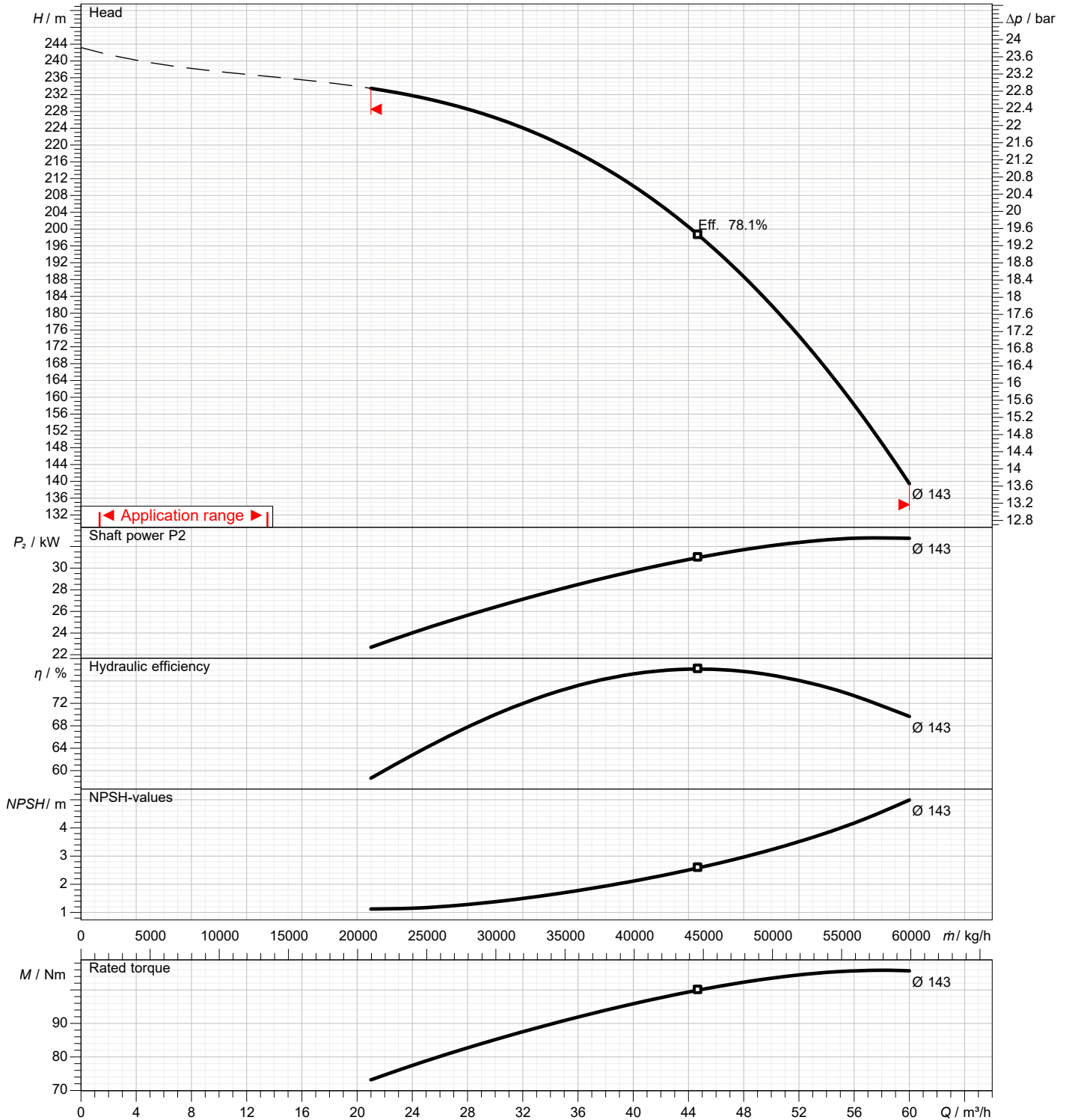
|   |               |                   |  |
|---|---------------|-------------------|--|
| 1 | Flow          | m <sup>3</sup> /h |  |
| 2 | Head          | m                 |  |
| 3 | Geodetic head | m                 |  |

## Pump

|                |                   |  |                            |     |      |
|----------------|-------------------|--|----------------------------|-----|------|
| Operating flow | m <sup>3</sup> /h |  | Impeller Diameter Designed | mm  |      |
| Operating head | m                 |  | Frequency                  | Hz  | 50   |
|                |                   |  | Speed                      | rpm | 2960 |

Test standard: ISO 9906:2012 - Grade3B

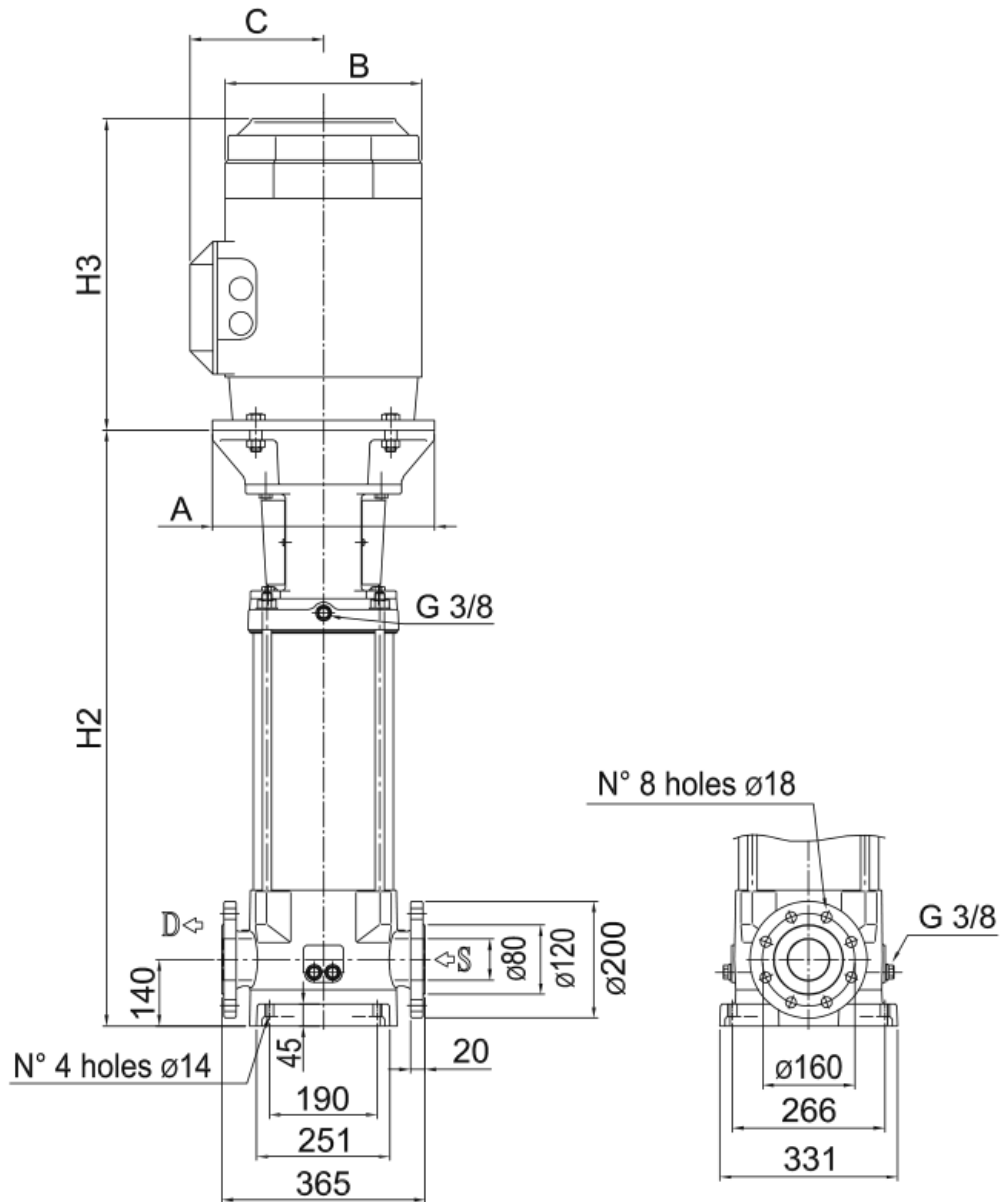
Water; 20°C; 998.3kg/m<sup>3</sup>; 1mm<sup>2</sup>/s



# Dimensions

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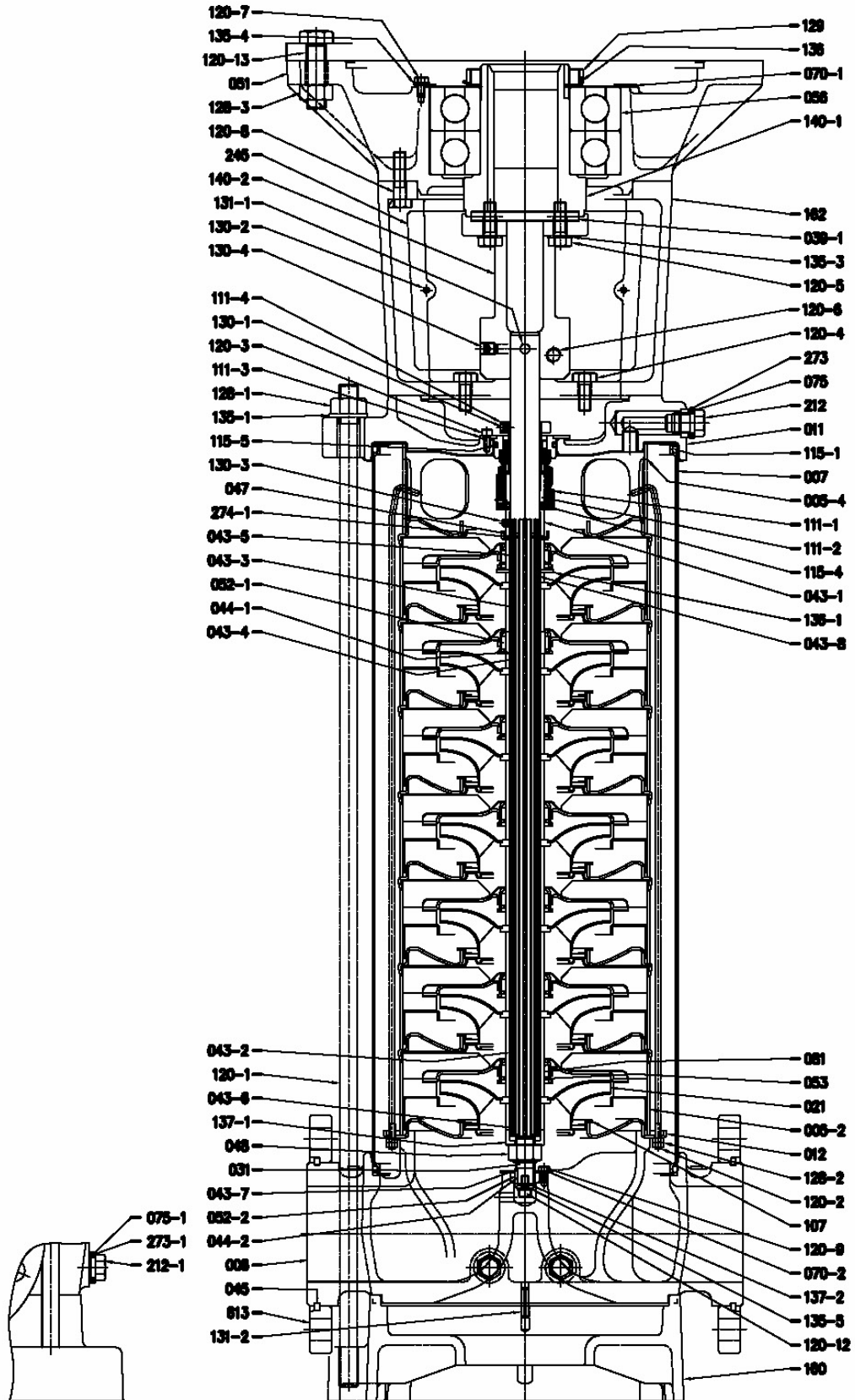
| Dimensions in |            | mm     |  |  |  |  |  |  |
|---------------|------------|--------|--|--|--|--|--|--|
| 1             | A          | 400    |  |  |  |  |  |  |
| 2             | B          | 382    |  |  |  |  |  |  |
| 3             | C          | 295    |  |  |  |  |  |  |
| 4             | H2         | 1269   |  |  |  |  |  |  |
| 5             | H3         | 680    |  |  |  |  |  |  |
| 6             | Weight P&M | 418 kg |  |  |  |  |  |  |
| 7             |            |        |  |  |  |  |  |  |
| 8             |            |        |  |  |  |  |  |  |
| 9             |            |        |  |  |  |  |  |  |
| 10            |            |        |  |  |  |  |  |  |
| 11            |            |        |  |  |  |  |  |  |
| 12            |            |        |  |  |  |  |  |  |
| 13            |            |        |  |  |  |  |  |  |
| 14            |            |        |  |  |  |  |  |  |
| 15            |            |        |  |  |  |  |  |  |

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# Construction

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# Construction

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|          |            |                                       |           |
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| N°     | PART NAME                       | MATERIAL   |  | DIMENSIONS  | STANDARD   | Q.TY             |
|--------|---------------------------------|--|--|---|--|------------------|
|        |                                 | EVM  | EVML   |   |  |                  |
| 005-2  | Intermediate casing             | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 005-4  | Discharge casing                | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 006    | Bottom casing                   | EN 1.4308 (ASTM CF8)   | EN 1.4408 (ASTM CF8M)                        |   |  | 1                |
| 007    | Outer casing                    | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 011    | Casing cover                    | Cast iron +<br>EN 1.4301 (AISI 304)  | Cast iron +<br>EN 1.4401 (AISI 316)          |   |  | [1]              |
| 012    | Suction cover                   | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 021    | Impeller                        | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 031    | Shaft                           | EN 1.4401 (AISI 316)   |  |   |  | 1                |
| 039-1  | Key                             | Carbon steel   |  | 12x8x90   | UNI 6604   | [1]              |
| 043-1  | Shaft sleeve (mechanical seal)  | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 043-2  | Shaft sleeve (intermediate)     | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 043-3  | Shaft sleeve (bearing)          | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 043-4  | Shaft sleeve (adjustment)       | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 043-5  | Shaft sleeve (last stage)       | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 043-6  | Shaft sleeve (adjustment)       | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 043-7  | Shaft sleeve                    | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 043-8  | Shaft sleeve (discharge-lower)  | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 044-1  | Shaft sleeve bearing            | Tungsten carbide   |  |   |  | [1]              |
| 044-2  | Bearing sleeve (bottom bearing) | Tungsten carbide   |  |   |  | 1                |
| 045    | Flange holder                   | EN 1.402 (AISI 420)  |  |   |  | 4                |
| 047    | Ring holder                     | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 048    | Impeller nut                    | A2-70 UNI 7323<br>with inox insert   | A4-70 UNI 7323<br>with inox insert           | M16   |  | 1                |
| 051    | Motor adapter                   | Cast iron EN-GJL-200-EN 1561   |  |   |  | [1]              |
| 052-1  | Bearing                         | Tungsten carbide   |  |   |  | [1]              |
| 052-2  | Bearing                         | Tungsten carbide   |  |   |  | 1                |
| 053    | Bush holder                     | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | [1]              |
| 056    | Ball bearing                    | EN 1.4301 (AISI 304)   |  |   |  | [1]              |
| 070-1  | Ring for bearing                | EN 1.4301 (AISI 304)   |  |   |  | [1]              |
| 070-2  | Ring for bearing                | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 075    | O-Ring (plug)                   | EPDM   | FPM  |   |  | 1                |
| 075-1  | O-Ring (plug)                   | EPDM   | FPM  |   |  | 4                |
| 081    | Bush                            | PTFE   |  |   |  | [1]              |
| 107    | Liner ring                      | PTFE /EN 1.4401 (AISI316)  |  |   |  | [1]              |
| 111-1  | Mechanical seal                 | Silicon carbide /Carbon/FPM  |  |   |  | 1                |
| 111-2  | Mechanical seal cartridge       | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 111-3  | Mechanical seal seat            | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 111-4  | Seal holder                     | Brass OT 58 UNI 5705   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 115-1  | O-Ring (outer casing)           | EPDM   | FPM  | D.240.66x5.34   |  | 2                |
| 115-4  | O-Ring (cartridge sleeve)       | EPDM   | FPM  | D.24.99x3.53  |  | 1                |
| 115-5  | O-Ring (seal cover)             | EPDM   | FPM  | D.44.04x3.53  |  | 1                |
| 120-1  | Tie Rod                         | Zincate steel 6.8 strenght class ISO 898/1   |  |   |  | 4                |
| 120-2  | Tie Rod                         | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 2                |
| 120-3  | Screw                           | A2-70 UNI 7323   |  | M5x10   | UNI 5931   | 4                |
| 120-4  | Screw                           | Zincate steel 8.8 strenght class ISO 898/1   |  | M10x25  | UNI 5739   | [1]              |
| 120-5  | Screw for coupling              | EVM45 1-0 and 1-1<br>EVM45 3 to 10   | Zincate steel 8.8 strenght class ISO 898/1   | M8x20<br>M10x30                                       | UNI 5931<br>UNI 5739   | [1]              |
| 120-6  | Screw for coupling              | EVM45 1 to 2<br>EVM45 3 to 10  | Zincate steel 8.8 strenght class ISO 898/1   | M8x20<br>M12x30                                       | UNI 5931<br>UNI 5739   | 2                |
| 120-7  | Screw                           | EVM45 2 -0 and 2-2<br>EVM45 3 to 10  | Zincate steel 8.8 strenght class ISO 898/1   | M6X10<br>M12x25<br>M10x30                             | UNI 5739<br>UNI 5739<br>UNI 5739                                     | [1]              |
| 120-8  | Screw                           | EVM45 2 -0 and 2-2<br>EVM45 3 to 10  | Zincate steel 8.8 strenght class ISO 898/1   | M12x25<br>M10x30                                      | UNI 5739<br>UNI 5739   | [1]              |
| 120-9  | Screw                           | EVML<br>EVM  | EN 1.4301 (AISI 304)<br>EN 1.4401 (AISI 316) | M5x8  | UNI 5737<br>UNI 5739   | 4                |
| 120-12 | Screw                           | EVM45 1-0, 1-1<br>EVM45 2-0, 2-2<br>EVM45 3-0, 10-0, 10-2<br>EVM45 9-0, 10-0, 10-2<br>EVM45 3-0 to 9-2 | EN 1.4301 (AISI 304)<br>EN 1.4401 (AISI 316) | M6x20<br>M8x20<br>M12x30<br>M6x10<br>M16x55<br>M16x65 | UNI 5931<br>UNI 5739<br>UNI 5739<br>UNI 5739<br>UNI 5737<br>UNI 5739 | 1<br>1<br>4<br>4 |
| 128-1  | Nut for tie rod                 | Zincate steel  |  | M16   | UNI 5588   | 4                |
| 128-2  | Nut                             | Carbon steel   | EN 1.4401 (AISI 316)                         | M5  | UNI 5588   | 4                |
| 128-3  | Nut                             | Zincate steel  |  | M16   | UNI 5588   | [1]              |
| 129    | Lock nut                        | Carbon steel   |  | M7x2  |  | [1]              |
| 130-1  | Set screw                       | A2-70 UNI 7323   |  | M6x8  | UNI 5923   | 3                |
| 130-2  | Screw for coupling guard        | A2-70 UNI 7323   |  | M5x6  | UNI 7687   | 4                |
| 130-3  | Set screw                       | A2-70 UNI 7323   |  | M6x6  | UNI 5923   | 1                |
| 130-4  | Set screw                       | Carbon steel   |  | M10x10  | UNI 5923   | 1                |
| 131-1  | Pin for shaft                   | Carbon steel   |  |   |  | 1                |
| 131-2  | Elastic pin                     | Zincate steel  |  | 6x25  | UNI 6873   | 1                |
| 135-1  | Washer                          | Zincate steel  |  | 17x30x3   | UNI 6592   | 4                |
| 135-3  | Washer                          | Zincate steel  |  | 10.5x17.5x2.2   | UNI 1751   | [1]              |
| 135-4  | Washer                          | Plated carbon steel  |  | 6,4   | UNI 1751   | [1]              |
| 135-5  | Washer                          | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 136    | Bearing washer                  | Carbon steel   |  |   |  | [1]              |
| 136-1  | Stopper ring                    | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 137-1  | Impeller spacer                 | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 137-2  | Shaft spacer                    | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 140-1  | Motor coupling                  | Carbon steel   |  |   |  | [1]              |
| 140-2  | Coupling (pump side)            | Carbon steel   |  |   |  | [1]              |
| 160    | Base                            | Cast iron EN-GJL-200 EN1561  |  |   |  | 1                |
| 162    | Mator bracket                   | Cast iron EN-GJL-200 EN1561  |  |   |  | 1                |
| 212    | Plug                            | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 4                |
| 212-1  | Plug                            | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 245    | Coupling guard                  | EN 1.4301 (AISI 304)   |  |   |  | 2                |
| 273    | Plug washer                     | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 1                |
| 273-1  | Plug washer                     | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         |   |  | 4                |
| 274-1  | C-type snap ring                | EN 1.4301 (AISI 304)   | EN 1.4401 (AISI 316)                         | D.26  | UNI 7435   | 1                |
| 613    | Flange                          | Carbon steel   |  |   |  | 2                |

[1] See table on CONSTRUCTION 3

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|          |            |                                       |           |
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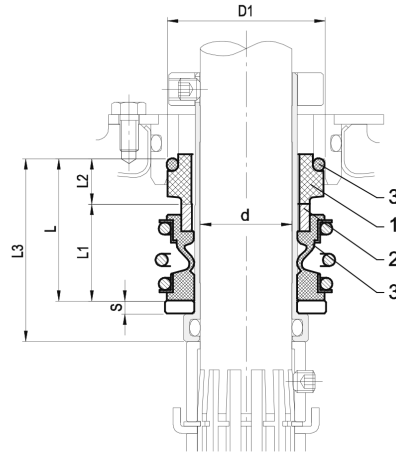
| Pump Type<br>EVM(.) | Quantity for model |     |     |       |       |       |       |       |       |     |       |     |     |       |     |     |       |       |       |       |       |     |       |       |     |     |       |       |     |       |       |
|---------------------|--------------------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-------|-----|-----|-------|-----|-----|-------|-------|-------|-------|-------|-----|-------|-------|-----|-----|-------|-------|-----|-------|-------|
|                     | 005-2              | 011 | 021 | 021-1 | 039-1 | 043-2 | 043-3 | 043-4 | 044-1 | 051 | 052-1 | 053 | 056 | 070-1 | 081 | 107 | 120-4 | 120-5 | 120-7 | 120-8 | 128-3 | 129 | 135-3 | 135-4 | 136 | 140 | 140-1 | 140-2 | 150 | 274-2 | 274-3 |
| 45 7-2F5/30         | 7                  | 1   | 5   | 2     | 1     | 5     | 1     | 1     | 1     | 1   | 1     | 7   | 1   | 1     | 6   | 7   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 7-0F5/30         | 7                  | 1   | 7   | /     | 1     | 5     | 1     | 1     | 1     | 1   | 1     | 7   | 1   | 1     | 6   | 7   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 8-2F5/30         | 8                  | 1   | 6   | 2     | 1     | 6     | 1     | 1     | 1     | 1   | 1     | 8   | 1   | 1     | 7   | 8   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 8-0F5/30         | 8                  | 1   | 8   | /     | 1     | 6     | 1     | 1     | 1     | 1   | 1     | 8   | 1   | 1     | 7   | 8   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 9-2F5/30         | 9                  | 1   | 7   | 2     | 1     | 7     | 1     | 1     | 1     | 1   | 1     | 9   | 1   | 1     | 8   | 9   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 9-0F5/37         | 9                  | 1   | 9   | /     | 1     | 7     | 1     | 1     | 1     | 1   | 1     | 9   | 1   | 1     | 8   | 9   | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 10-2F5/37        | 10                 | 1   | 8   | 2     | 1     | 8     | 1     | 1     | 1     | 1   | 1     | 10  | 1   | 1     | 9   | 10  | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |
| 45 10-0F5/37        | 10                 | 1   | 10  | /     | 1     | 8     | 1     | 1     | 1     | 1   | 1     | 10  | 1   | 1     | 9   | 10  | 4     | 4     | 3     | 4     | 4     | 1   | 4     | 3     | 1   | /   | 1     | 1     | /   | /     | /     |

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| Size [mm] | Max operating pressure [bar] | d [mm] | D1 [mm] | L [mm] | L1 [mm] | L2 [mm] | L3 [mm] | S [mm] | Material               |                    |          |
|-----------|------------------------------|--------|---------|--------|---------|---------|---------|--------|------------------------|--------------------|----------|
|           |                              |        |         |        |         |         |         |        | 1 Stationary Seal Ring | 2 Rotary Seal Ring | 3 Rubber |
| 25        | 25                           | 25     | 43      | 39     | 26.5    | 12.5    | 50      | 3.5    | Carbon graphite        | Silicon carbide    | FPM      |