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# Selecting a DX-pump

## General

Always choose the smallest possible pump. This will keep the start and stop frequency to a minimum, and reduce the risk of the pump running dry.

An oversized pump will only result in problems such as pressure shocks in the water system and disturbances in the electrical system.

## DX 3 and 4

These are pumps best suited for private houses and agriculture with modest water requirements. Choose your pump from the table on page 3. The normal size of the tank should be approximately 60 litres for a membrane tank, and 150 litres for a hydro pneumatic tank. Normally there is no reason to choose a bigger pump than showed on the table, unless the customer requests a larger pump for excessive needs in the future.

In fact you can choose a smaller pump if:

A: It is more than 30 meters of water above the pump.

Example: The table on page 3 shows a DX 4-20. The pump is supposed to be installed at 60 meters depth, and the water surface is 10 meters below ground level. The correct pump for this application will be the DX 4-15.

B: The pump is serving a summer house or a small household with only 1 or 2 people.

Example: The table shows a DX 4-15. The DX 3-20 would be a better choice for this task.

## DX 7- 15

The range of DX 7 -15 pumps covers applications within water supply, agriculture, industry and irrigation. It is not necessary to install these pumps for normal households. The size of the pump depends upon the in-flow to the well or according to the customer's specifications. Connect the pump to a pressure tank of at least 300 litres or a membrane tank of 180 litres or more.

If the pump is intended for irrigation purposes, the simplest and best way is to connect the pump directly to the sprinklers, and start/stop the pump manually.

If it is required that the pump should start automatically when a tap has been opened, a pressure switch and a membrane tank of 20 – 60 litres has to be installed.

## The table on the next page

Decide at which depth the pump has to be installed. Add 10 meters for every Bar (kg/cm<sup>2</sup>) of desired pressure in the pressure tank. Example: We need 80 head, meters (50m+3bar) and 20 l/min. appropriate pump is DX 3-40 or DX 4-20. An ordinary sprinkler for the garden will provide a flow of approximately 15 l/min. Check according to the pump-curve on performance chart. The pump must not be allowed to work constantly near either end of the pump-curve.

## Important:

Adjust the pressure switch to make the pump run continuously while working. High start and stop frequency must be avoided. If there is any risk of emptying the well, an EMS dry run protection should be installed.



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|          | Pump-model | Capacity. Liters per minute at a depth of: |     |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----------|------------|--|-----|------|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|          |            | 10   | 20  | 30   | 40  | 50  | 60   | 70   | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 210 | 220 |
| 3"       | DX 2-15    | 42   | 36  | 27   | 12  |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 2-23    |  | 41  | 36   | 31  | 25  | 15   |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 2-30    |  |     | 40   | 37  | 32  | 27   | 21   | 14  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4"       | DX 3-13    | 28   | 23  | 17   | 14  |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 3-20    |  | 26  | 24   | 20  | 16  | 14   |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 3-30    |  | 28  | 25   | 22  | 21  | 18   | 16   | 14  | 10  |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 3-40    |  |     |      |     |     | 25   | 22   | 20  | 19  | 17  | 15  | 14  | 11  | 6   |     |     |     |     |     |     |     |     |
|          | DX 3-60    |  |     |      |     |     |      |      | 26  | 25  | 23  | 22  | 21  | 19  | 17  | 16  | 15  | 14  | 13  | 11  | 7   |     |     |
|          | DX 4-10    | 42   | 33  | 30   | 17  |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 4-15    |  | 38  | 36   | 30  | 25  | 18   |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 4-20    |  |     | 40   | 36  | 33  | 28   | 25   | 18  | 10  |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 4-30    |  |     |      | 41  | 38  | 36   | 33   | 31  | 28  | 25  | 27  | 19  | 14  |     |     |     |     |     |     |     |     |     |
|          | DX 4-46    |  |     |      |     | 41  | 40   | 38   | 37  | 36  | 35  | 34  | 32  | 31  | 28  | 26  | 24  | 22  | 21  | 17  | 15  | 10  |     |
|          | DX 7-7     | 92   | 62  |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 7-11    |  | 85  | 65   | 30  |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 7-15    |  | 93  | 84   | 68  | 45  |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 7-21    |  |     | 92   | 85  | 75  | 64   | 47   | 22  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 7-28    |  |     |      | 92  | 86  | 80   | 70   | 60  | 50  | 35  |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 7-45    |  |     |      |     | 94  |      | 90   | 86  | 81  | 76  | 72  | 67  | 60  | 53  | 45  | 35  | 25  |     |     |     |     |     |
|          | DX 8-7     | 130  | 92  |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 8-10    |  | 120 |      | 95  | 70  | 40   |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 8-13    |  |     |      | 115 | 100 | 85   | 60   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 8-19    |  |     |      |     | 127 | 116  | 105  | 96  | 84  | 68  | 55  |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 8-24    |  |     |      |     |     |      | 120  | 115 | 108 | 95  | 88  | 75  | 60  | 45  |     |     |     |     |     |     |     |     |
|          | DX 8-32    |  |     |      |     |     |      |      | 130 | 125 | 118 | 115 | 107 | 100 | 95  | 85  | 75  | 65  | 55  | 40  |     |     |     |
|          | DX 10-4    | 190  | 125 |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 10-6    |  | 170 | 125  | 40  |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 10-8    |  |     | 160  | 123 | 65  |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 10-12   |  |     |      | 171 | 150 | 123  | 88   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|          | DX 10-17   |  |     |      |     |     | 165  | 152  | 133 | 113 | 88  | 50  |     |     |     |     |     |     |     |     |     |     |     |
| DX 10-24 |            |  |     |      |     |     | 181  | 172  | 162 | 150 | 136 | 124 | 108 | 90  | 67  | 40  |     |     |     |     |     |     |     |
| DX 15-6  | 330        | 230  | 125 |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 15-9  | 360        | 300  | 240 | 175  |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 15-12 |            | 330  | 275 | 230  | 160 | 112 |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 15-17 |            | 360  | 330 | 300  | 262 | 225 | 187  | 145  | 87  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 15-23 |            |  | 360 | 337  | 312 | 287 | 260  | 230  | 200 | 170 | 137 | 100 |     |     |     |     |     |     |     |     |     |     |     |
| DX 25-6  |            |  | 350 | 300  | 230 | 75  |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 28-8  |            |  |     |      | 340 | 275 | 175  |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 25-12 |            |  |     |      |     | 350 | 320  | 280  | 250 | 165 | 85  |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 25-15 |            |  |     |      |     |     |      | 360  | 325 | 300 | 260 | 210 | 175 | 125 | 60  |     |     |     |     |     |     |     |     |
| DX 25-23 |            |  |     |      |     |     |      |      |     | 375 | 360 | 340 | 325 | 310 | 280 | 240 | 225 | 190 | 175 |     |     |     |     |
| DX 25-30 |            |  |     |      |     |     |      |      |     |     |     |     | 360 | 350 | 335 | 325 | 310 | 190 | 275 | 250 |     |     |     |
| DX 36-3  |            | 480  | 360 |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 36-4  |            | 530  | 460 | 360  | 500 |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 36-6  |            |  |     | 500  | 440 | 370 | 260  | 240  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 36-8  |            |  |     |      | 525 | 460 | 420  | 360  | 320 | 210 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 36-10 |            |  |     |      |     | 520 | 500  | 460  | 410 | 370 | 310 | 230 | 150 |     |     |     |     |     |     |     |     |     |     |
| DX 36-16 |            |  |     |      |     |     |      |      | 550 | 530 | 500 | 470 | 450 | 420 | 400 | 370 | 330 | 300 | 250 | 210 | 150 |     |     |
| DX 36-20 |            |  |     |      |     |     |      |      |     | 560 | 550 | 530 | 510 | 490 | 470 | 470 | 430 | 410 | 390 | 370 | 340 | 310 |     |
| DX 48-3  |            | 700  | 575 | 450  |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 48-4  |            |  | 650 | 600  | 425 |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 48-5  |            |  | 725 | 625  | 575 | 425 |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 48-6  |            |  |     |      | 720 | 650 | 600  | 450  | 300 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 48-10 |            |  |     |      |     | 730 | 700  | 650  | 620 | 575 | 510 | 450 | 375 |     |     |     |     |     |     |     |     |     |     |
| DX 48-12 |            |  |     |      |     |     | 740  | 720  | 680 | 650 | 620 | 575 | 525 | 480 | 420 | 320 |     |     |     |     |     |     |     |
| DX 48-15 |            |  |     |      |     |     |      |      | 730 | 720 | 700 | 660 | 630 | 600 | 575 | 530 | 490 | 450 | 400 | 325 |     |     |     |
| DX 48-18 |            |  |     |      |     |     |      |      |     |     | 730 | 710 | 690 | 670 | 650 | 625 | 600 | 580 | 550 | 520 | 475 | 430 |     |
| DX 66-3  |            | 800  | 670 |      |     |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 66-4  |            | 950  | 800 | 530  | 200 |     |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 66-6  |            | 1050                                       | 860 | 730  | 550 | 200 |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 66-7  |            |  | 950 | 860  | 700 | 530 | 300  |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 66-9  |            |  |     | 1030 | 930 | 850 | 730  | 620  | 530 | 410 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| DX 66-11 |            |  |     |      |     | 950 | 900  | 840  | 750 | 700 | 630 | 500 | 410 | 260 |     |     |     |     |     |     |     |     |     |
| DX 66-14 |            |  |     |      |     |     | 1000 | 950  | 900 | 850 | 800 | 710 | 660 | 610 | 550 | 460 | 350 | 250 |     |     |     |     |     |
| DX 66-16 |            |  |     |      |     |     |      | 1010 | 950 | 930 | 870 | 850 | 800 | 750 | 700 | 650 | 580 | 540 | 460 | 400 | 300 |     |     |

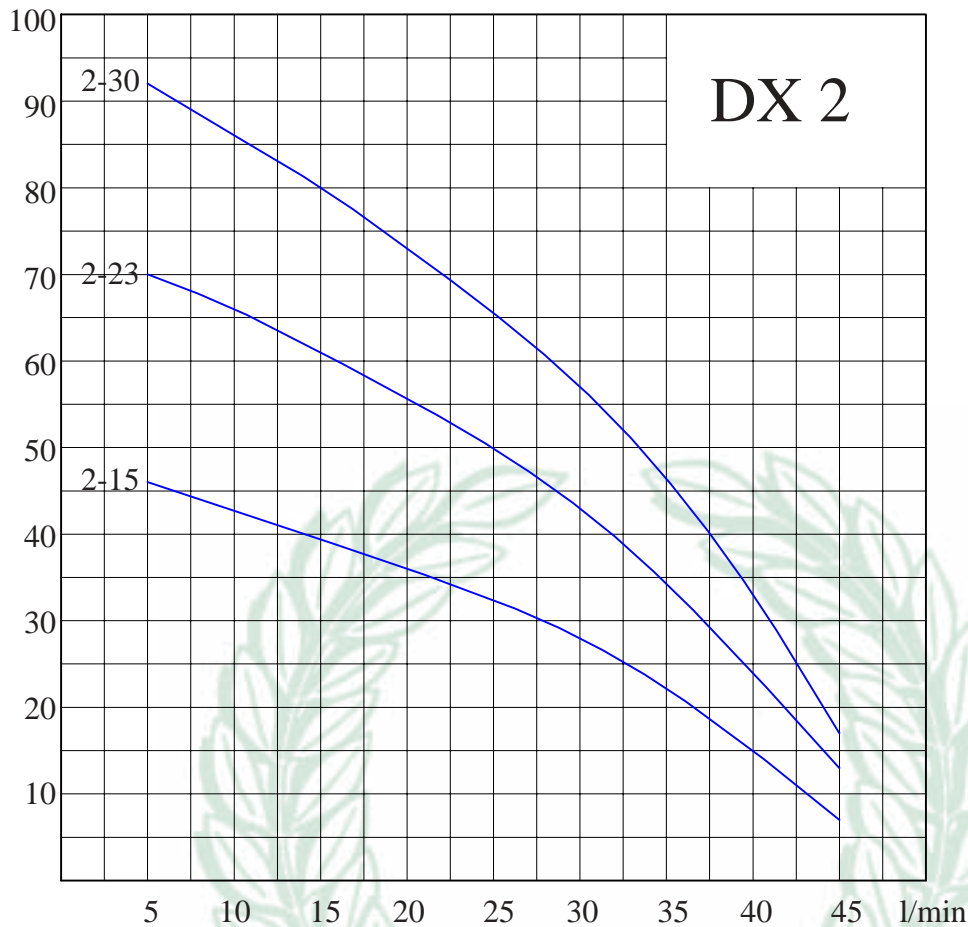


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# Submersible pump DX 2

Head, meters



EMS 3" submersible pump has a motor that runs at "normal" revs. This will lead to less damage if there is a possibility of sand entering the pump. This motor will suffer less damage than a motor that runs at "high" revs.

## Technical specifications

| Pump-model | Motor kW | Nom.Amps at/230V |         | 400V N. amps | Hmax head | Qmax L/min | Length mm | Weight kg |
|------------|----------|------------------|---------|--------------|-----------|------------|-----------|-----------|
|            |          | M. phase         | 3-phase |              |           |            |           |           |
| 2-15       | 0,37     | 3.8              | 3.5     | 2.0          | 46        | 45         | 957       | 9,3       |
| 2-23       | 0,55     | 4.4              | 3.7     | 2.1          | 70        | 45         | 1177      | 10,8      |
| 2-30*      | 0,75     | 5.9              | 4.4     | 2.5          | 92        | 45         | 1416      | 12,4      |

\*Pump with Tesla 0,75 kW motor has a nominal amp of 4.2

## Materials

Pump: Stainless steel, Aisi 304  
 Impeller/diffusor: Noryl/Polyacetal  
 Pump ends: Brass

## Motor data

Voltage: 3x230V  
 1x230V  
 Insulation class: IP58  
 Max voltage diff.: +/- 5%.  
 Max start/stop freq.: 20 / hour

## Other data

Min. well dia: 75mm  
 Connection: 1"  
 Max water temp.: 30°C

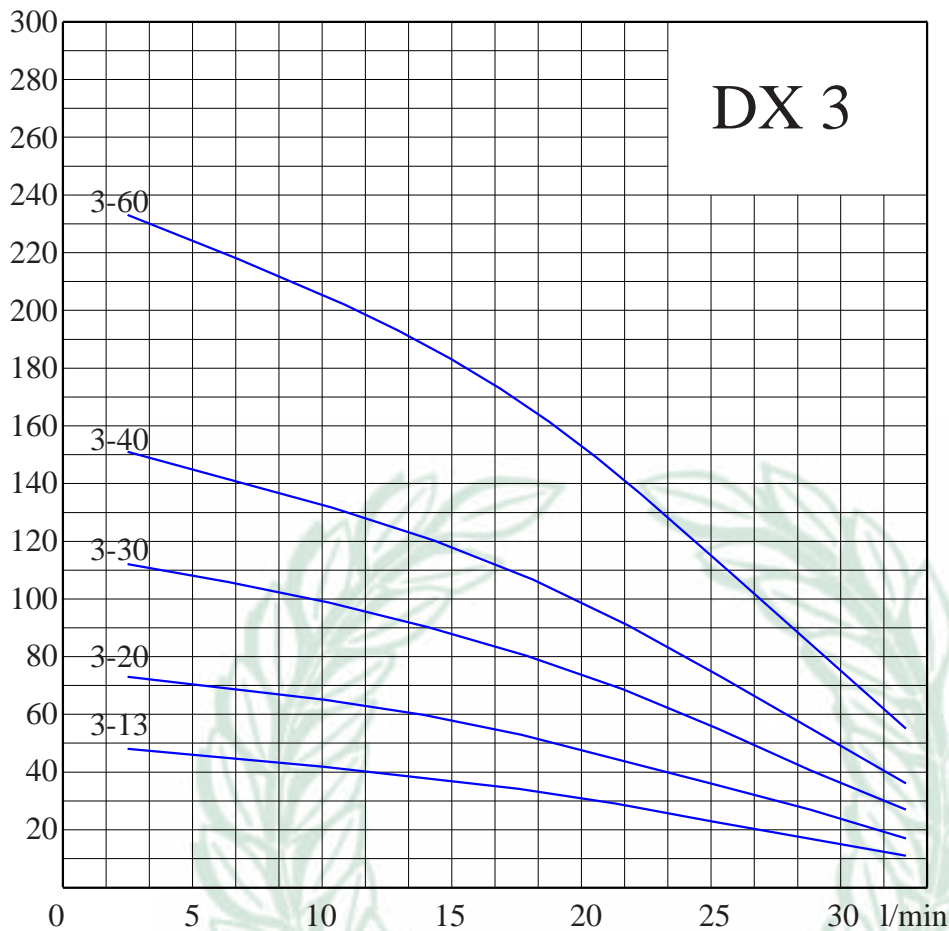


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# Submersible pump DX 3

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom. Amps at |        |      | Hmax head | Qmax L/min | Length mm | Weight kg |
|------------|----------|--------------|--------|------|-----------|------------|-----------|-----------|
|            |          | 1x230V       | 3x230V | 400V |           |            |           |           |
| 3-13       | 0,37     | 4,2          | 1,9    | 1,1  | 48        | 30         | 710       | 10,1      |
| 3-20       | 0,37     | 4,2          | 1,9    | 1,1  | 73        | 30         | 768       | 10,8      |
| 3-30       | 0,55     | 6,3          | 2,8    | 1,6  | 112       | 30         | 967       | 13,3      |
| 3-40       | 0,75     | 7,6          | 3,7    | 2,1  | 151       | 30         | 1170      | 16,0      |
| 3-60       | 1,10     | 9,6          | 5,2    | 3,0  | 233       | 30         | 1613      | 20,5      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | +/- 5%.                    |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusers | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

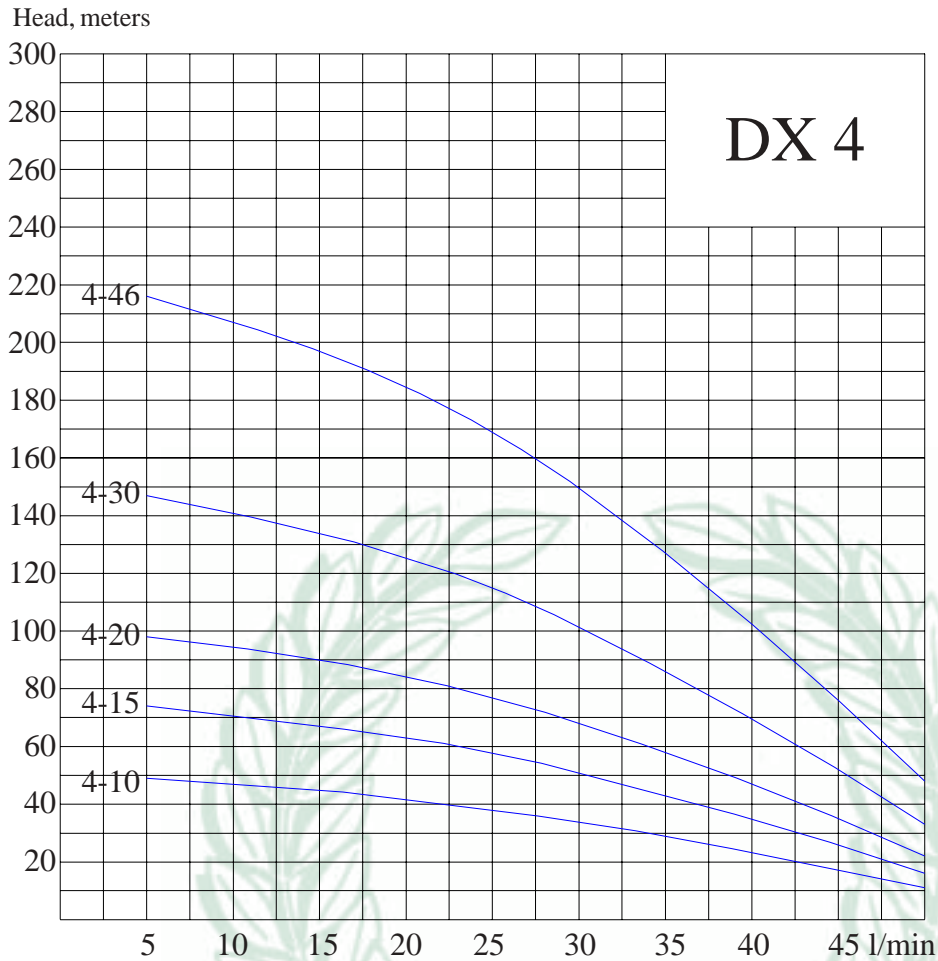
|                 |        |
|-----------------|--------|
| Min. well dia . | 104mm  |
| Connection      | 1 1/4" |
| Max water temp. | 30°C   |



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# Submersible pump DX 4



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |       |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|-------------|-------|------|-------------|------------|-----------|-----------|
|            |          | 1x230V      | 3x230 | 400V |             |            |           |           |
| 4-10       | 0,37     | 4,2         | 1,9   | 1,1  | 49          | 45         | 638       | 9,6       |
| 4-15       | 0,55     | 6,3         | 2,8   | 1,6  | 74          | 45         | 757       | 11,4      |
| 4-20       | 0,75     | 7,6         | 3,7   | 2,1  | 98          | 45         | 880       | 13,6      |
| 4-30       | 1,10     | 9,6         | 5,2   | 3,0  | 147         | 45         | 1108      | 16,4      |
| 4-46       | 1,50     | ---         | 6,9   | 4,0  | 216         | 45         | 1407      | 20,0      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | +/- 5%.                    |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

|                 |        |
|-----------------|--------|
| Min. well dia . | 104mm  |
| Connection      | 1 1/4" |
| Max water temp. | 30°C   |

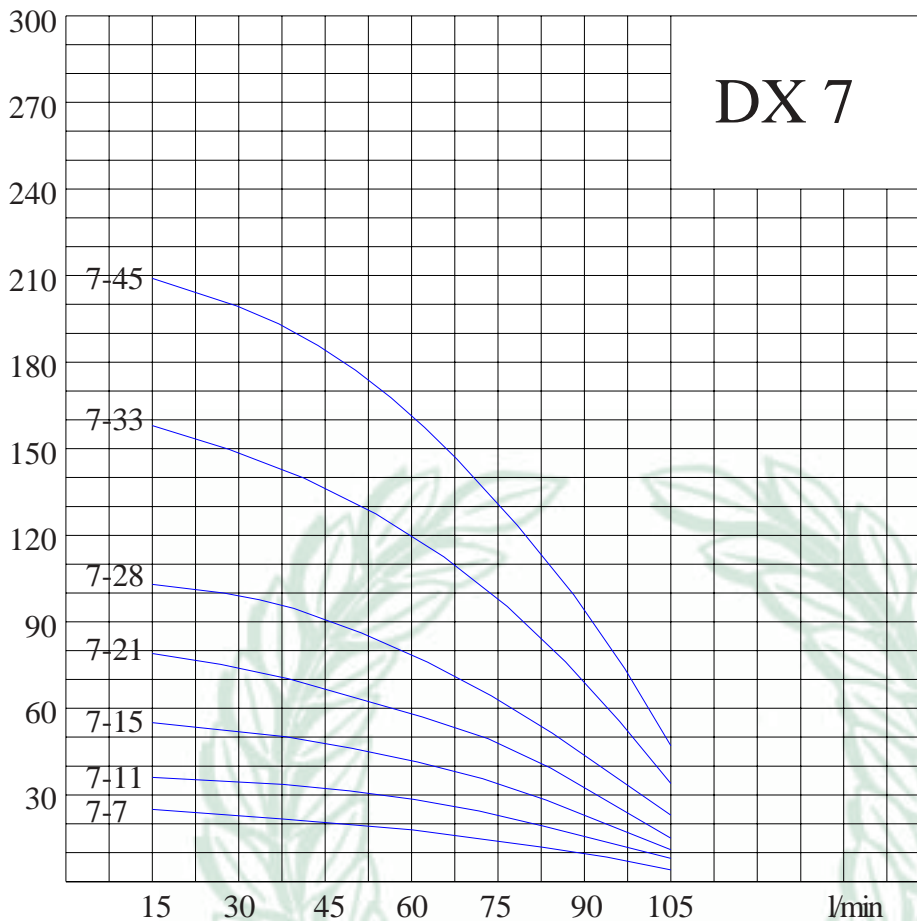


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# Submersible pump DX 7

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |        |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|-------------|--------|------|-------------|------------|-----------|-----------|
|            |          | 1x230V      | 3x230V | 400V |             |            |           |           |
| 7-7        | 0,37     | 4,0         | 1,9    | 1,1  | 25          | 100        | 563       | 9,5       |
| 7-11       | 0,55     | 4,8         | 2,8    | 1,6  | 36          | 100        | 637       | 11,0      |
| 7-15       | 0,75     | 6,1         | 3,7    | 2,1  | 55          | 100        | 750       | 13,0      |
| 7-21       | 1,10     | 9,6         | 5,2    | 3,0  | 79          | 100        | 888       | 15,2      |
| 7-28       | 1,50     | ---         | 6,9    | 4,0  | 103         | 100        | 1027      | 17,5      |
| 7-33       | 2,20     | ---         | 10,2   | 5,9  | 158         | 100        | 1310      | 21,4      |
| 7-45       | 2,20     | ---         | 10,2   | 5,9  | 209         | 100        | 1622      | 26,4      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | +/- 5%.                    |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

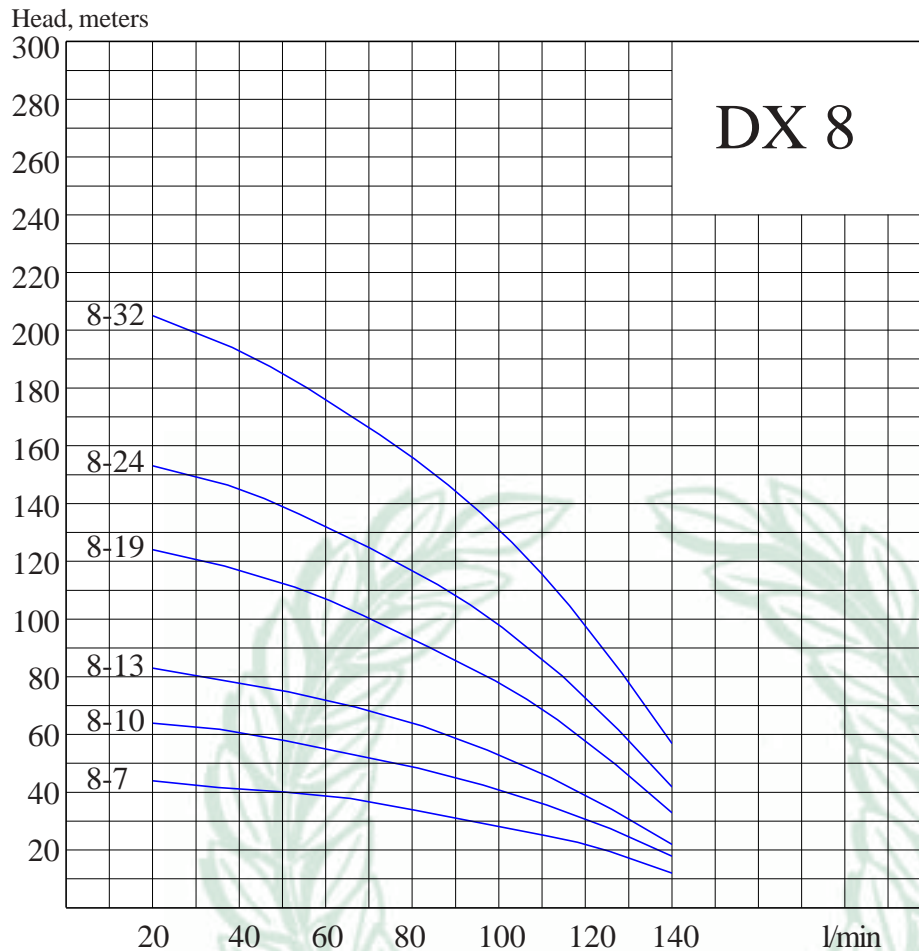
|                 |        |
|-----------------|--------|
| Min. well dia . | 104mm  |
| Connection      | 1 1/4" |
| Max water temp. | 30°C   |



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# Submersible pump DX 8



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |       |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|-------------|-------|------|-------------|------------|-----------|-----------|
|            |          | 1x230V      | 3x230 | 400V |             |            |           |           |
| 8-7        | 0,75     | 4,0         | 3,7   | 2,1  | 44          | 140        | 908       | 9,8       |
| 8-10       | 1,10     | 9,6         | 5,2   | 3,0  | 58          | 140        | 1070      | 15,8      |
| 8-13       | 1,50     | ---         | 6,9   | 4,0  | 83          | 140        | 1309      | 18,9      |
| 8-19       | 2,20     | ---         | 10,2  | 5,9  | 124         | 140        | 1705      | 22,9      |
| 8-24       | 3,00     | ---         | 12,6  | 7,8  | 153         | 140        | 1987      | 28,2      |
| 8-32       | 4,00     | ---         | 17,1  | 10,0 | 205         | 140        | 2568      | 40,1      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | +/- 5%.                    |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia . | 104mm |
| Connection      | 2"    |
| Max water temp. | 30°C  |

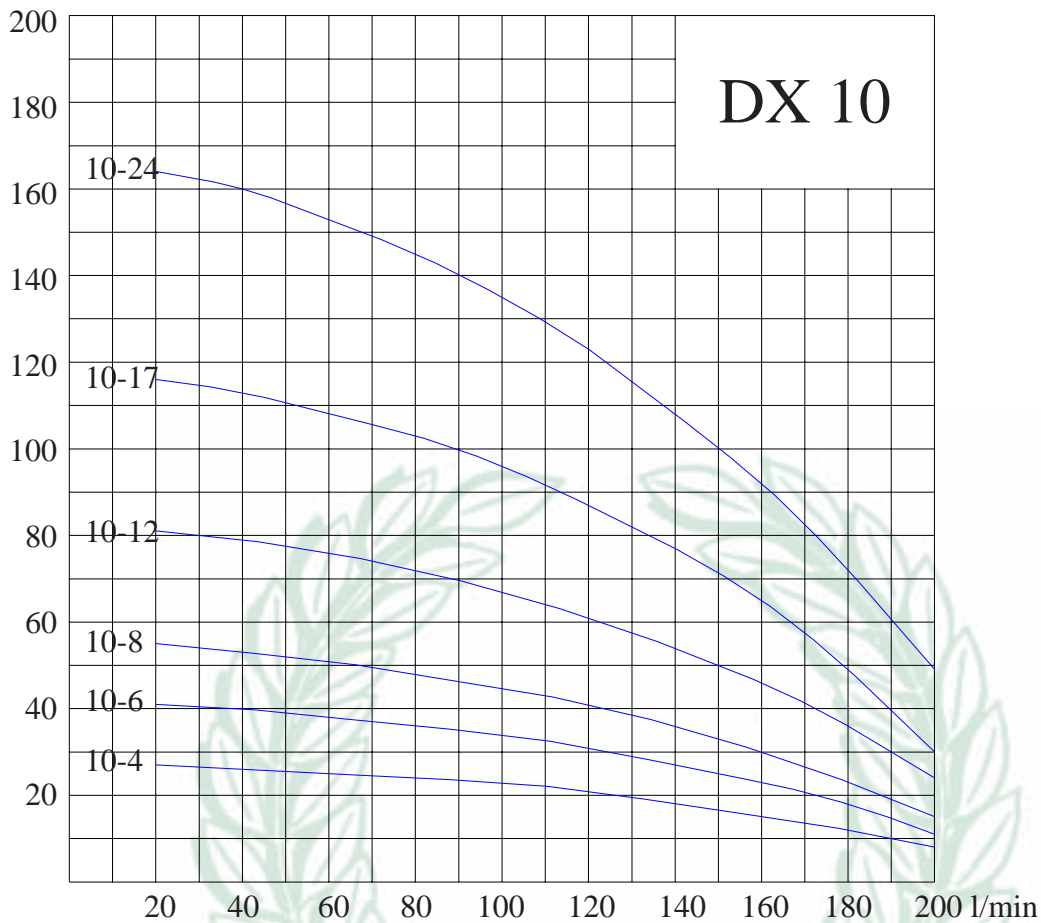


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# Submersible pump DX 10

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |        |      | Hmax meters | Qmax L/m | Lenght mm | Weight kg |
|------------|----------|-------------|--------|------|-------------|----------|-----------|-----------|
|            |          | 1x230V      | 3x230V | 400V |             |          |           |           |
| 10-4       | 0,75     | 7,6         | 4,0    | 2,1  | 27          | 200      | 720       | 12,4      |
| 10-6       | 1,10     | 9,6         | 5,2    | 3,0  | 41          | 200      | 858       | 14,5      |
| 10-8       | 1,50     | ---         | 6,9    | 4,0  | 54          | 200      | 987       | 16,6      |
| 10-12      | 2,20     | ---         | 10,2   | 5,9  | 81          | 200      | 1230      | 19,8      |
| 10-17      | 3,00     | ---         | 12,6   | 7,8  | 115         | 200      | 1562      | 24,5      |
| 10-24      | 4,00     | ---         | 17,1   | 10,0 | 163         | 200      | 2148      | 36,3      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | +/- 5%.                    |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia . | 104mm |
| Connection      | 2"    |
| Max water temp. | 30°C  |

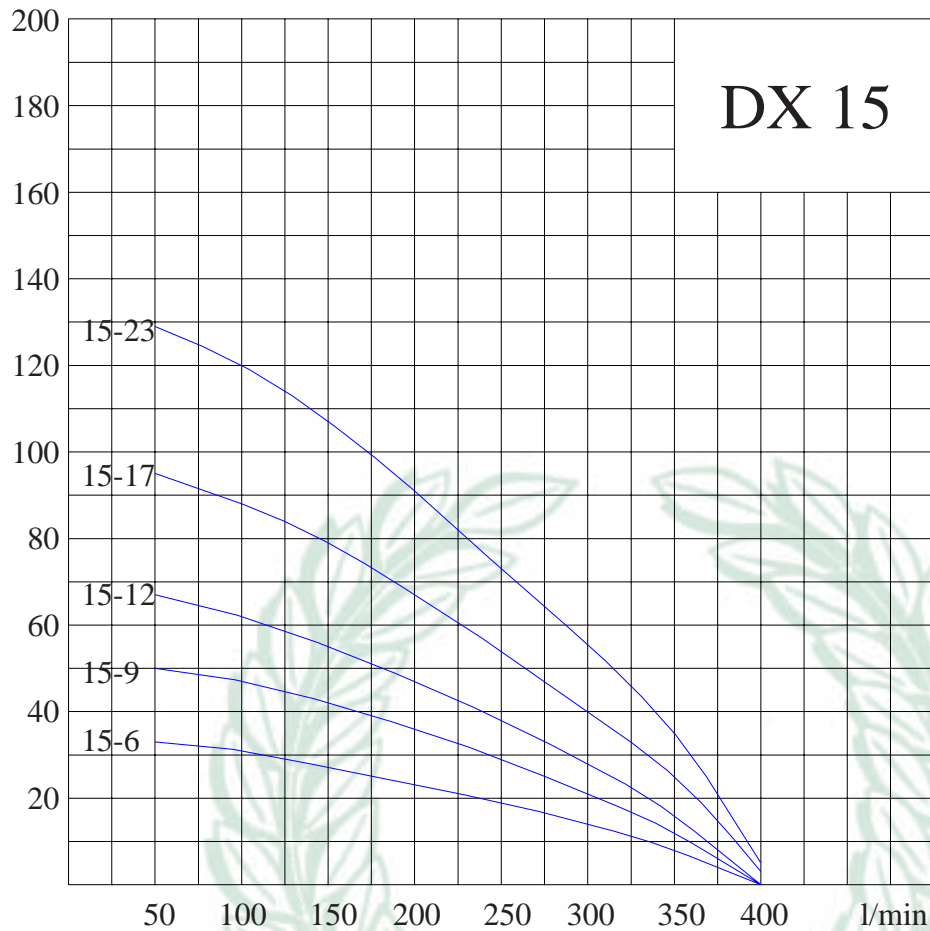


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# Submersible pump DX 15

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|-------------|------|-------------|------------|-----------|-----------|
|            |          | 3x230V      | 400V |             |            |           |           |
| 15-6       | 1,50     | 6,9         | 4,0  | 33          | 400        | 1047      | 16,1      |
| 15-9       | 2,20     | 10,2        | 5,9  | 50          | 400        | 1310      | 20,5      |
| 15-12      | 3,00     | 12,6        | 7,8  | 67          | 400        | 1607      | 26,0      |
| 15-17      | 4,00     | 17,1        | 10,0 | 95          | 400        | 2228      | 39,3      |
| 15-23      | 5,50     | 23,7        | 13,7 | 129         | 400        | 2877      | 50,9      |

## Motor data

|                      |                            |
|----------------------|----------------------------|
| Voltage              | 1x230V<br>3x230V<br>3x400V |
| Insulation class     | IP58                       |
| Max voltage diff.    | + / - 5%.                  |
| Max start/stop freq. | 20 / hour                  |

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia.  | 104mm |
| Connection      | 2"    |
| Max water temp. | 30°C  |



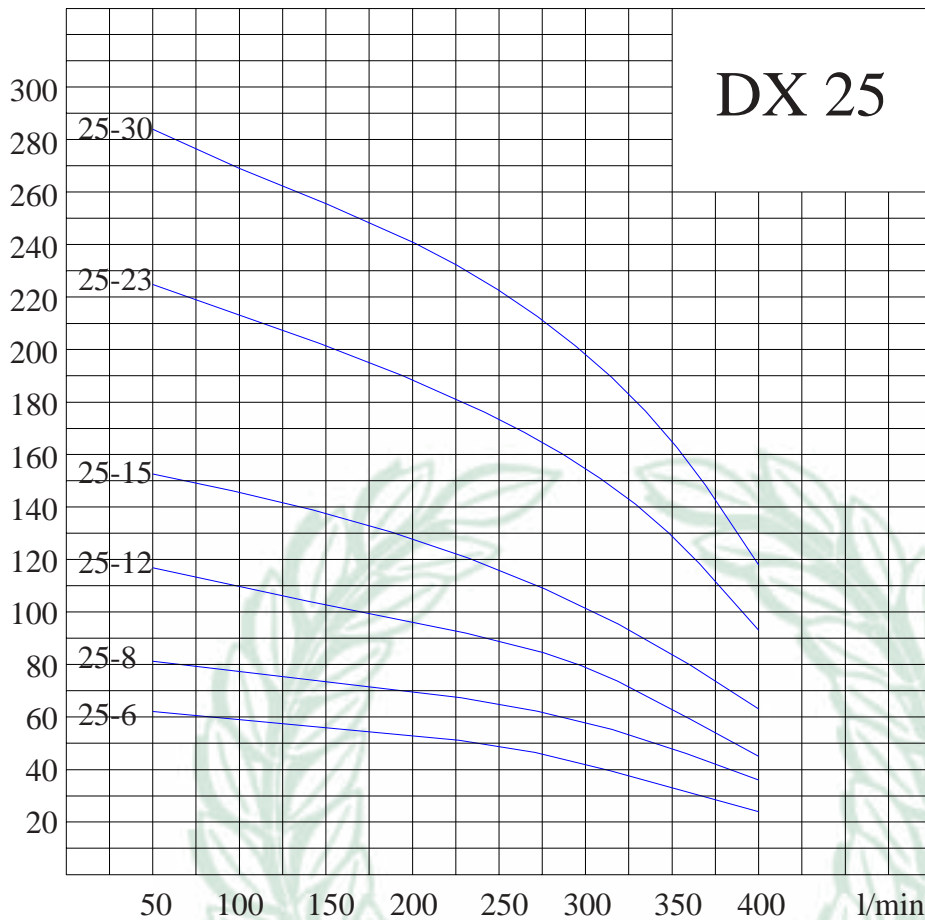
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# Submersible pump DX 25

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom. Amps at |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|--------------|------|-------------|------------|-----------|-----------|
|            |          | 3x230V       | 400V |             |            |           |           |
| 25-6       | 3,0      | 12,6         | 7,8  | 65          | 400        | 1082      | 30,3      |
| 25-8       | 4,0      | 17,1         | 9,3  | 86          | 400        | 1316      | 52,9      |
| 25-12      | 5,5      | 23,7         | 12,5 | 124         | 400        | 1504      | 58,6      |
| 25-15      | 7,5      | 28,2         | 16,0 | 159         | 400        | 1656      | 64,3      |
| 25-23      | 11,0     | 40,4         | 23,3 | 236         | 400        | 2031      | 74,2      |
| 25-30      | 15,0     | 36,4         | 31,3 | 300         | 400        | 2421      | 84,9      |

## Motor data

|                      |                  |
|----------------------|------------------|
| Voltage              | 3x230V<br>3x400V |
| Insulation class     | IP58             |
| Max voltage diff.    | +/- 5%.          |
| Max start/stop freq. | 20 / hour        |

All motors are available as both DOL and Wye/Delta connection

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Lexan 141R                |
| Pump ends           | Stainless steel, Aisi 304 |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia.  | 152mm |
| Connection      | 3"    |
| Max water temp. | 30°C  |

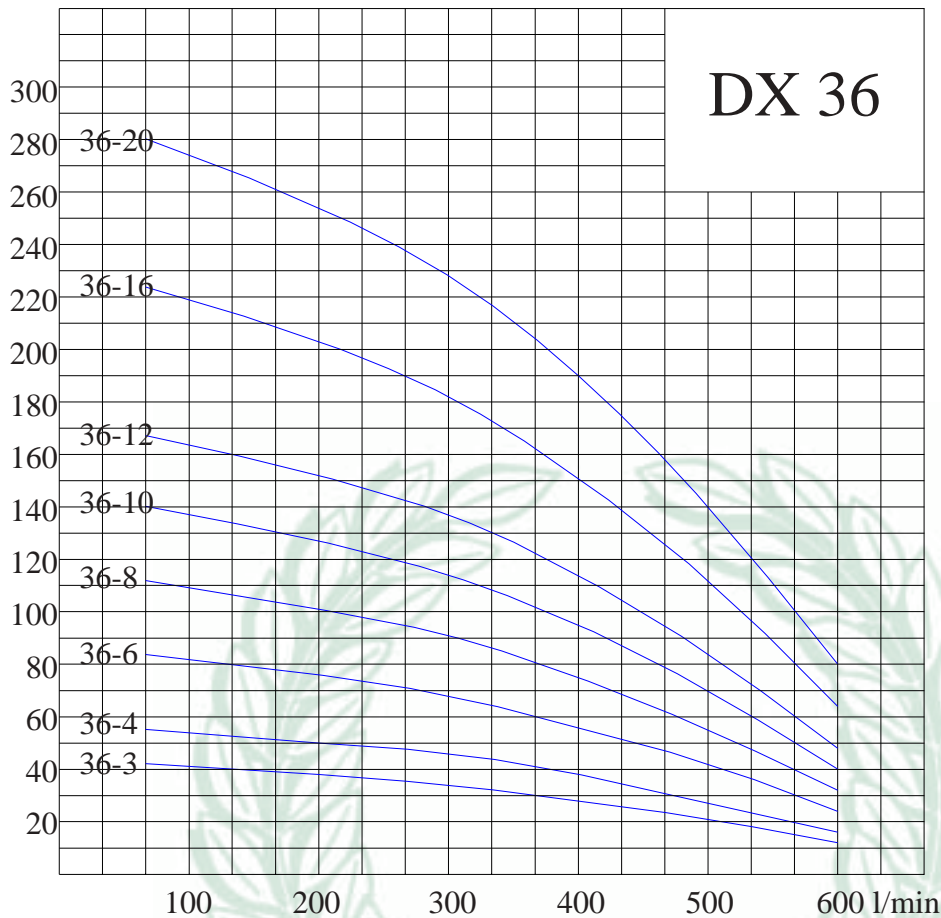


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# Submersible pump DX 36

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom. Amps at |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|--------------|------|-------------|------------|-----------|-----------|
|            |          | 3x230V       | 400V |             |            |           |           |
| 36-3       | 3,0      | 12,6         | 7,8  | 44          | 600        | 1012      | 29,2      |
| 36-4       | 4,0      | 17,1         | 9,3  | 58          | 600        | 1231      | 51,5      |
| 36-6       | 5,5      | 23,7         | 12,5 | 87          | 600        | 1379      | 56,7      |
| 36-8       | 7,5      | 28,2         | 16,0 | 117         | 600        | 1526      | 62,4      |
| 36-10      | 9,3      | 36,4         | 20,7 | 146         | 600        | 1668      | 66,3      |
| 36-12      | 11,0     | 40,4         | 23,3 | 174         | 600        | 1816      | 71,3      |
| 36-16      | 15,0     | 54,2         | 31,3 | 233         | 600        | 2111      | 80,3      |
| 36-20      | 18,5     | 66,7         | 38,5 | 292         | 600        | 2456      | 90,4      |

## Motor data

|                      |                  |
|----------------------|------------------|
| Voltage              | 3x230V<br>3x400V |
| Insulation class     | IP58             |
| Max voltage diff.    | +/- 5%.          |
| Max start/stop freq. | 20 / hour        |

All motors are available as both DOL and Wye/Delta connection

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Noryl                     |
| Pumpends            | Brass                     |

## Other data

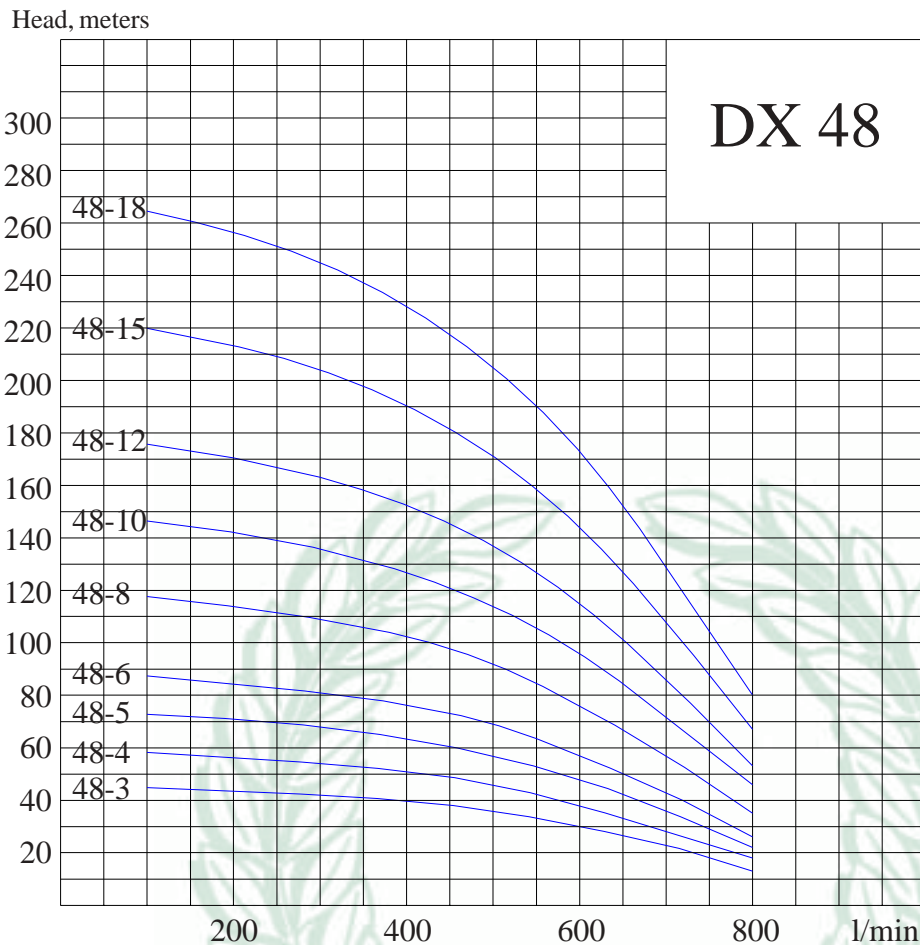
|                 |       |
|-----------------|-------|
| Min. well dia.  | 152mm |
| Connection      | 3"    |
| Max water temp. | 30°C  |



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# Submersible pump DX 48



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |      | Hmax meters | Qmax L/min | Lenght mm | Weight kg |
|------------|----------|-------------|------|-------------|------------|-----------|-----------|
|            |          | 3x230V      | 400V |             |            |           |           |
| 48-3       | 4,0      | 16,1        | 9,3  | 46          | 800        | 1181      | 50,8      |
| 48-4       | 5,5      | 21,7        | 12,5 | 60          | 800        | 1274      | 55,1      |
| 48-5       | 7,5      | 27,7        | 16,0 | 74          | 800        | 1366      | 61,0      |
| 48-6       | 9,3      | 36,0        | 20,7 | 90          | 800        | 1458      | 64,0      |
| 48-8       | 11,0     | 40,4        | 23,3 | 121         | 800        | 1611      | 68,9      |
| 48-10      | 15,0     | 54,2        | 31,3 | 150         | 800        | 1796      | 76,2      |
| 48-12      | 18,5     | 66,7        | 38,5 | 180         | 800        | 1986      | 84,3      |
| 48-15      | 22,0     | 78,5        | 45,3 | 225         | 800        | 2231      | 92,6      |
| 48-18      | 30,0     | 107,0       | 63,5 | 271         | 800        | 2591      | 110,3     |

## Motor data

|                      |                  |
|----------------------|------------------|
| Voltage              | 3x230V<br>3x400V |
| Insulation class     | IP58             |
| Max voltage diff.    | + / - 5%.        |
| Max start/stop freq. | 20 / hour        |

All motors are available as both DOL and Wye/Delta connection

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Noryl                     |
| Pumpends            | Brass                     |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia.  | 152mm |
| Connection      | 3"    |
| Max water temp. | 30°C  |

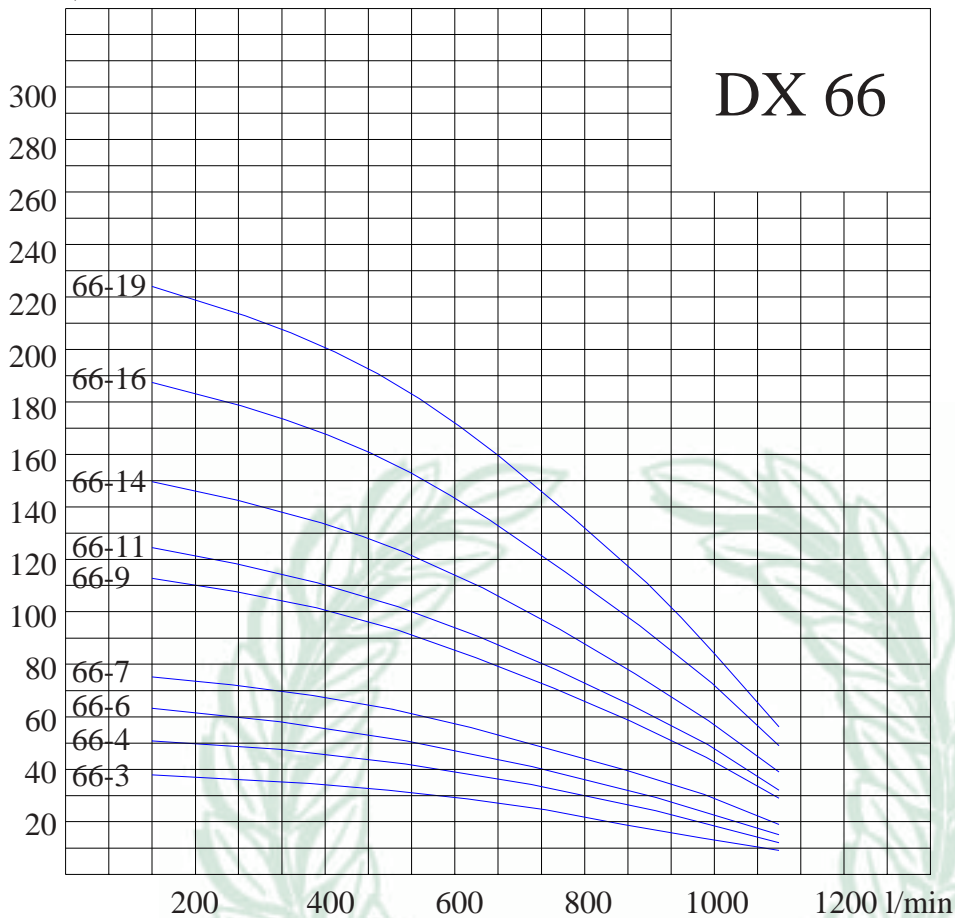


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# Submersible pump DX 66

Head, meters



## Technical specifications

| Pump-model | Motor kW | Nom.Amps at |      | Hmax meters | Qmax L/m | Lenght mm | Weight kg |
|------------|----------|-------------|------|-------------|----------|-----------|-----------|
|            |          | 3x230V      | 400V |             |          |           |           |
| 66-3       | 5,5      | 21,7        | 12,5 | 39          | 1100     | 1214      | 54,4      |
| 66-4       | 7,5      | 27,7        | 16,0 | 52          | 1100     | 1306      | 59,2      |
| 66-6       | 9,3      | 36,0        | 20,7 | 65          | 1100     | 1491      | 64,0      |
| 66-7       | 11,0     | 40,4        | 23,3 | 78          | 1100     | 1551      | 68,1      |
| 66-9       | 15,0     | 54,2        | 31,3 | 117         | 1100     | 1736      | 75,5      |
| 66-11      | 18,5     | 66,7        | 38,5 | 130         | 1100     | 1921      | 83,5      |
| 66-14      | 22,0     | 78,5        | 45,3 | 156         | 1100     | 2171      | 91,9      |
| 66-16      | 30,0     | 107,0       | 63,5 | 195         | 1100     | 2421      | 107,9     |
| 66-19      | 30,0     | 107,0       | 63,5 | 233         | 1100     | 2591      | 111,1     |

## Motor data

|                      |                  |
|----------------------|------------------|
| Voltage              | 3x230V<br>3x400V |
| Insulation class     | IP58             |
| Max voltage diff.    | + / - 5%.        |
| Max start/stop freq. | 20 / hour        |

All motors are available as both DOL and Wye/Delta connection

## Materials

|                     |                           |
|---------------------|---------------------------|
| Pump body           | Stainless steel, Aisi 304 |
| Impellers/diffusors | Noryl                     |
| Pumpends            | Brass                     |

## Other data

|                 |       |
|-----------------|-------|
| Min. well dia.  | 152mm |
| Connection      | 3"    |
| Max water temp. | 30°C  |



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# Cable selection

## Generally

The power supply cable for submersible pumps must be approved for drinking sources. It has to withstand the submersible environment and also be the correct size in order to stay within the cable's temperature limits.

The cable must be able to deliver the correct voltage to the motor at the end of the cable. The table below guarantees at least 95% of the delivered voltage at In while obtaining acceptable starting voltage and cable temperature.

Correct cable dimension at maximum length for 4" DX Pumps.

Only for the use of CU wire cables, 50 Hz and insulation approved for max 70° C

| Motor |      | 1 x 220V           |                    |                  |                  | 3 x 220V           |                    |                  |                  | 3 x 380V DOL       |                    |                  |                  |
|-------|------|--------------------|--------------------|------------------|------------------|--------------------|--------------------|------------------|------------------|--------------------|--------------------|------------------|------------------|
| kW    | Hk   | 1,5mm <sup>2</sup> | 2,5mm <sup>2</sup> | 4mm <sup>2</sup> | 6mm <sup>2</sup> | 1,5mm <sup>2</sup> | 2,5mm <sup>2</sup> | 4mm <sup>2</sup> | 6mm <sup>2</sup> | 1,5mm <sup>2</sup> | 2,5mm <sup>2</sup> | 4mm <sup>2</sup> | 6mm <sup>2</sup> |
| 0,37  | 0,5  | 120                | 210                | 330              | 500              | 300                | 510                | 820              | 1230             | 930                | 1550               | 2460             | 3670             |
| 0,55  | 0,75 | 80                 | 140                | 230              | 350              | 200                | 350                | 550              | 830              | 630                | 1050               | 1670             | 2500             |
| 0,75  | 1,0  | 60                 | 110                | 180              | 270              | 160                | 270                | 430              | 650              | 490                | 820                | 1300             | 1950             |
| 1,1   | 1,5  | 40                 | 70                 | 120              | 190              | 110                | 190                | 300              | 450              | 340                | 570                | 910              | 1360             |
| 1,5   | 2,0  | ---                | ---                | ---              | ---              | 80                 | 140                | 230              | 340              | 260                | 430                | 700              | 1040             |
| 2,2   | 3,0  | ---                | ---                | ---              | ---              | 50                 | 90                 | 150              | 230              | 170                | 290                | 460              | 700              |
| 3,0   | 4,0  | ---                | ---                | ---              | ---              | 40                 | 70                 | 110              | 170              | 120                | 210                | 340              | 510              |
| 4,0   | 5,5  | ---                | ---                | ---              | ---              | 30                 | 50                 | 80               | 120              | 90                 | 150                | 250              | 370              |
| 5,5   | 7,5  | ---                | ---                | ---              | ---              | ---                | 30                 | 60               | 90               | 70                 | 110                | 190              | 280              |
| 7,5   | 10   | ---                | ---                | ---              | ---              | ---                | ---                | 40               | 60               | 50                 | 80                 | 130              | 200              |

Correct cable dimension at maximum length for 6" DX Pumps.

Only for the use of CU wire cables, 50 Hz and insulation approved for max 70° C

| Motor |     | 3 x 220V DOL     |                  |                   |                   |                   |                   | 3 x 380V DOL     |                  |                   |                   |                   |                   |
|-------|-----|------------------|------------------|-------------------|-------------------|-------------------|-------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| kW    | Hk  | 4mm <sup>2</sup> | 6mm <sup>2</sup> | 10mm <sup>2</sup> | 16mm <sup>2</sup> | 25mm <sup>2</sup> | 35mm <sup>2</sup> | 4mm <sup>2</sup> | 6mm <sup>2</sup> | 10mm <sup>2</sup> | 16mm <sup>2</sup> | 25mm <sup>2</sup> | 35mm <sup>2</sup> |
| 3,0   | 4,0 | 110              | 170              | 280               | 440               | 670               | 920               | 340              | 510              | 840               | 1230              | 2030              | 2770              |
| 4,0   | 5,5 | 80               | 120              | 200               | 320               | 490               | 670               | 250              | 370              | 610               | 920               | 1480              | 2020              |
| 5,5   | 7,5 | 60               | 90               | 150               | 240               | 380               | 520               | 190              | 280              | 470               | 690               | 1140              | 1560              |
| 7,5   | 10  | 40               | 70               | 110               | 170               | 270               | 370               | 130              | 200              | 330               | 530               | 810               | 1110              |
| 11    | 15  | ---              | 40               | 80                | 120               | 190               | 270               | 90               | 140              | 240               | 360               | 590               | 810               |
| 15    | 20  | ---              | ---              | 60                | 90                | 150               | 200               | 70               | 110              | 180               | 270               | 450               | 620               |
| 18,5  | 25  | ---              | ---              | ---               | 70                | 110               | 160               | ---              | 80               | 140               | 210               | 350               | 490               |
| 22    | 30  | ---              | ---              | ---               | 60                | 100               | 130               | ---              | ---              | 120               | 180               | 300               | 410               |
| 30    | 40  | ---              | ---              | ---               | ---               | ---               | ---               | ---              | ---              | ---               | 130               | 220               | 310               |
| 37    | 50  | ---              | ---              | ---               | ---               | ---               | ---               | ---              | ---              | ---               | 110               | 180               | 240               |
| 45    | 60  | ---              | ---              | ---               | ---               | ---               | ---               | ---              | ---              | ---               | ---               | 150               | 200               |

Please call the nearest EMS office for a cableselection advice.



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# Install. instructions DX

With a correctly installed pump, water delivery will remain reliable and safe for a long period. Most application faults are caused by external interruptions. The most common faults are:

- A - Application has no motor protection.
- B - Pump has run with water containing sand.
- C - Pump has run with water containing salt or other abrasive substances.
- D - Pump starts too often. Usually this is caused by wrong air pressure in the pressure tank.

This often causes unnecessary repair costs.

## Please follow instructions carefully

### Delivery

The pump is shipped in a special transport package to minimize the risk of damage during transportation. Avoid subjecting the pump package to bending stresses as this can damage the pump. The sticker inside the container is intended to be attached to the circuit breaker or “start box”.

### Mounting depth

The well should be tested for water delivery and must not contain sand. The pump should be installed about 5 meters above the well bottom. In an open well at least 0.5 meters above bottom. Use the wells testing result to check that the actual pump can't empty the well. Water surface must be at least one meter above the pump's inlet.

If there is any risk that the pump might run dry, a level control unit should be added to the application.

### Installation

When installing couplings and pipes, be sure that the pump is held at its proper points. Avoid bending forces to damage to the pump. Tape power supply cable and if necessary, level indicator cables to the plastic pipe. Attach the first prevent tape just above the pump and second and third tapes below and above the cable connection. Further on there should be a piece of tape every third meter. Create some slack in the PSC in order to prevent damage as the plastic pipe stretches. A 6cm cable slack placed between each piece of tape is recommended. Secure the pump with an inox wire if not attached to a galvanized iron pipe.

**Important:** Let the PEM pipe hold the pump not the wire. The stainless wire is only meant to secure the pump. Be sure to use PEM couplings of the highest quality.

### Check valve

All pumps with 1 1/4" connection have a built in check valve.

Always mount an extra check valve down by the pump.

Continued on next page



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## Electrical connections

Always let an authorized electrician do the electrical connections in accordance with the current local regulations. Check that the electrical data on the motor name plate matches with the electric power supply. It is also important to check cable, termination kit and connection boxes for faults. Be sure to choose the correct cable size.

See the table on the next page.

Three phase pumps must be provided with a CE approved and quick tripping motor-protection. Trip time with cold motor-protection must be less than 10 seconds. Preset the motor-protection to 0,9 times the motors full current. See the motor name plate or contact the supplier for correct values. While running the motor, adjust the value of the motor-protection downwards until the motor-protection trips. Then increase this value by 5 %. This will achieve maximum protection of the motor. Mono phase pumps have built in motor-protection inside the starting device.

## Electrical danger

Electrical pumps in conjunction with water can be dangerous and extra care must be taken to avoid personal. Be sure that the pump has a proper ground connection. A missing/poor protective ground connection can have lethal consequences.

**Always disconnect the power supply before coming into contact with the pump.**

Correct connections are shown on the schematic form inside the starting device on monophas pumps.

## Choosing cable size

It is very important to choose the correct cable size.

See table on page 15.

## Starting the pump first time

Check the direction of the rotation movement on all three phase pumps. Monophas pumps always rotate in the correct direction.

When pump installation is complete start the pump as follows.

A: Restrict the pumps output to approximately 1/3 of full capacity.

B: Start the pump and measure water flow for a period.

C: Change the direction of rotation by swapping two phases.

D: Retart the pump and check water flow over the same period.

E: Compare the results. The largest waterflow indicates the correct rotational direction of the pump.

If any contamination should be seen in the water, let the water flow at full capacity until it is pure.



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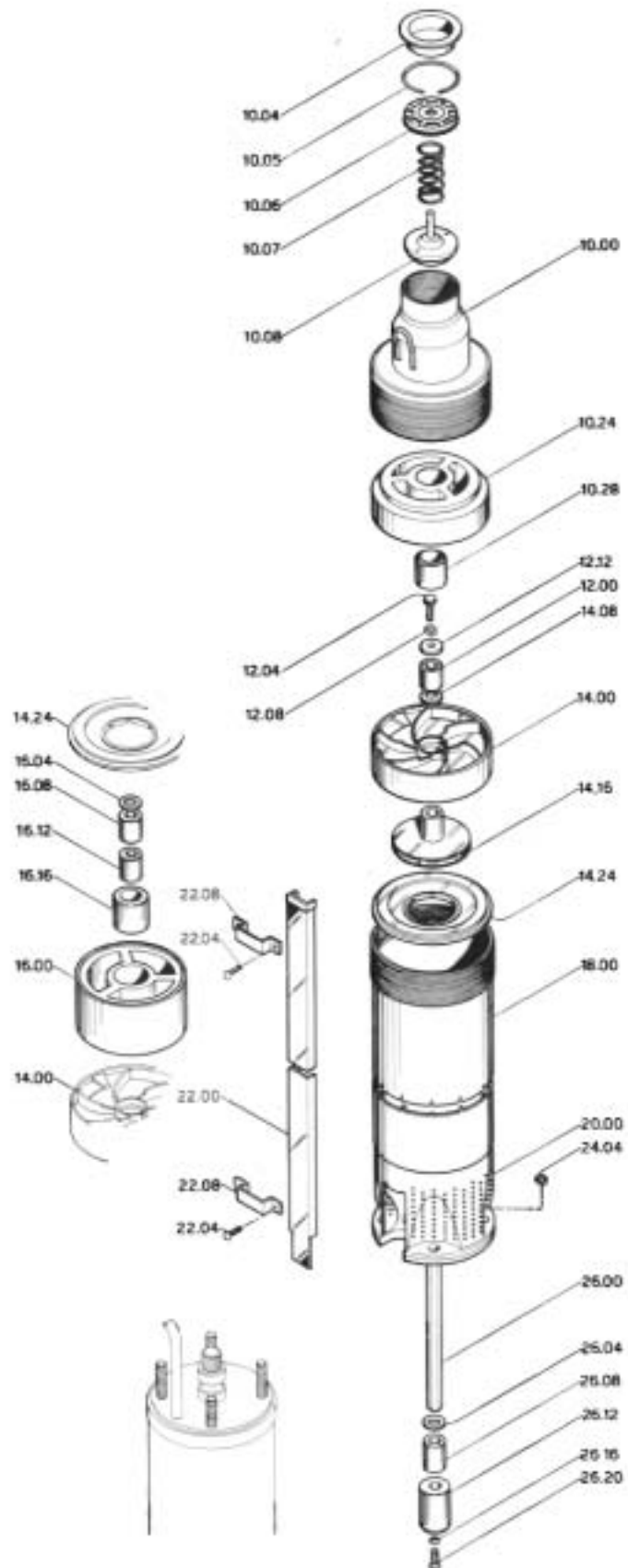
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# Spareparts DX 4 to 7

**Important:**

The washer 14.08 is not between all impellers. Be sure to note and replace these washers where they belong when pump is reassembled.



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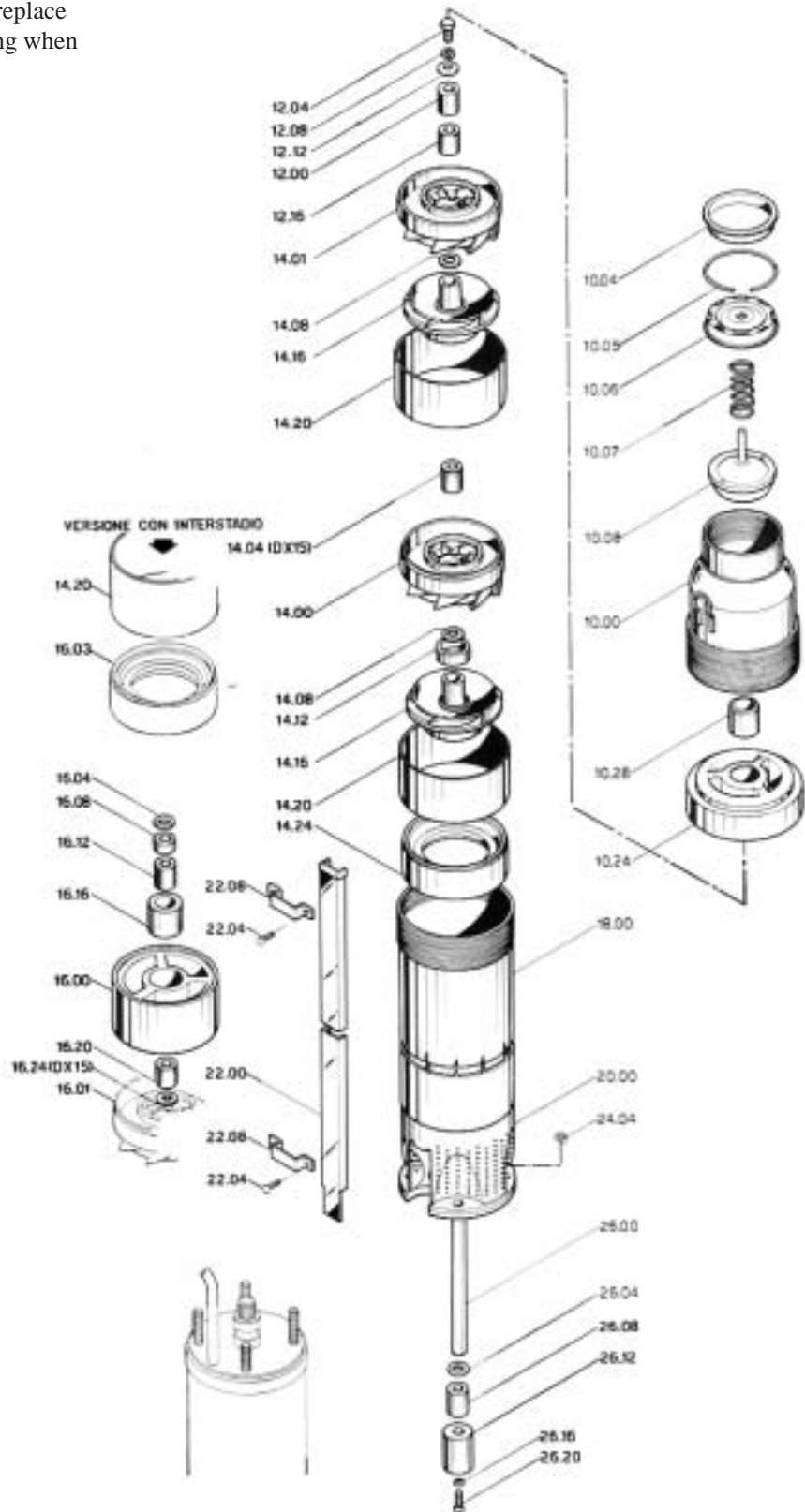
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# Spareparts DX 8 to 15

**Important:**

The washer 14.08 is not between all impellers. Be sure to note and replace these washers where they belong when pump is reassembled.



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# Franklin Termination Kit

--- Avoid subjecting the termination kit to moisture during installation ---

## Installation of Franklin Termination Kit

- A: Thread the strain relief gland (2 og 3) and the clear plastic tube (1) over the cable.
- B: Terminate the four cores color by color. It is important to use pliers meant for cable connectors(4) to ensure the correct pressure on each splice. Make all the core splices as short as possible.  
After the assembly, the clear plastic tube (1) must cover the entire splice.
- C: Clean the outer insulation of the cable (5) with sandpaper.
- D: Slide the clear plastic tube (1) onto the brass connector (6) and tighten it firmly.
- E: Let the cable rest with splice vertically while the hardening process goes on.

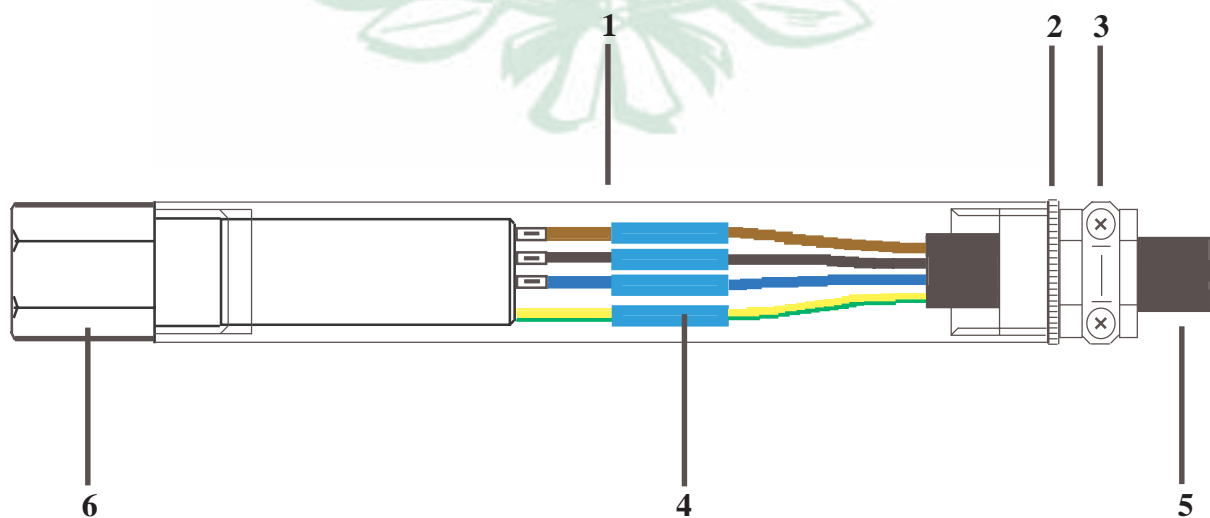
## Casting

- A: After all the above steps are followed, start making the epoxy.
- B: Take the bottle with the smallest amount and pour the entire contents into the other bottle.
- C: Mix the entire contents of the two bottles until the color is even and starting to become warm. Use the wooden stick supplied. Do not shake the bottle to mix contents.
- D: Fill the clear plastic tube (1) with the epoxy mixture. Release any airbubbles by carefully moving the cable around.
- E: Assemble the strain relief gland (3) and tighten the clamp while placing the cable in the center.

In an ambient temperature of 15 - 30° C the epoxy mix will harden in about 10 minutes. However, it should be left unmoved for 45 minutes to complete the hardening process of the epoxy mixture. During this process the termination kit should be protected against cold wind and draughts.

At ambient temperatures below 15° C the two bottles should be kept at room temperature for at least 30 minutes before mixing.

If over 30° C ambient temperature, the termination kit should be cooled down with a damp rag.



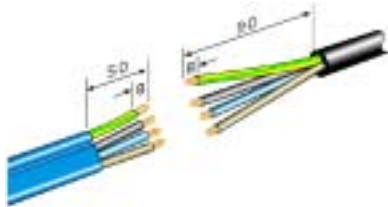
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# Crimp splice instructions

## MAIN RULES

Always clean the cable by roughing it with sandpaper where the crimp material is meant to seal. Start crimping from the centre of the heat shrink sleeve and work your way towards the ends.



1. Remove the outer insulation as shown on the figure above.

## TOOLS

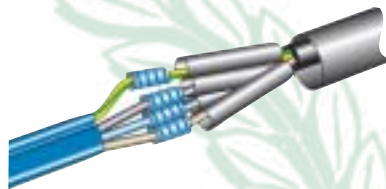
Use a Gasburner with a small flame or a heating gun and a good quality pliers meant for crimp connectors.



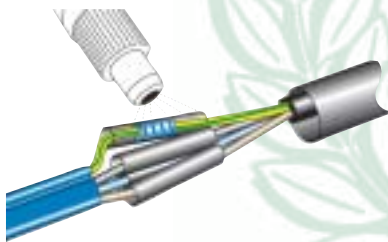
2. Attach and press the crimp connectors to the cores of the rubber cable.



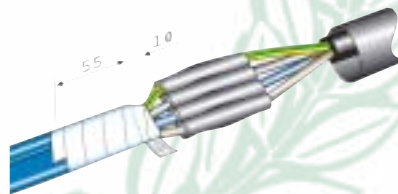
3. Slide the outer heat shrink sleeve onto the cable and the four smaller sleeves onto each core.



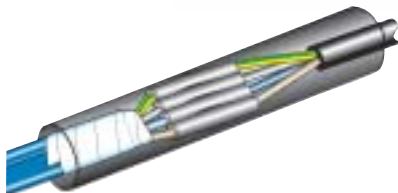
4. Then press all four crimp connectors to the cores of the "flat", blue cable.



5. Center all the small crimp sleeves over the crimp connectors, and start heating from the center of each sleeve.



6. Mark out a distance of 55 mm to the outer insulation of the "flat", blue cable and wind the adhesive tape supplied as shown on figure above.



7. Slide the outer heat shrink sleeve over the splice to the adhesive tape.



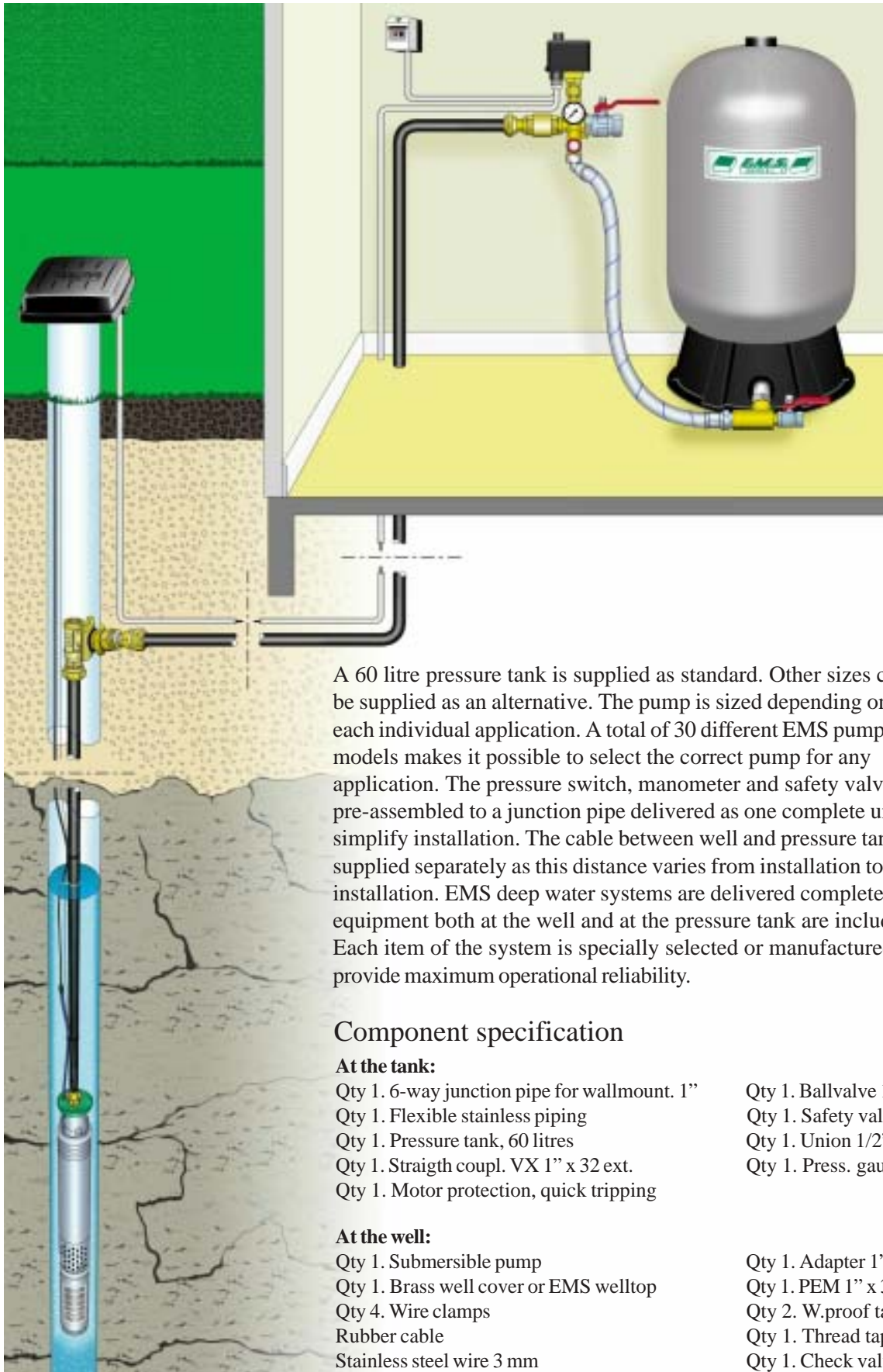
8. Shrink the outer sleeve starting at the center and work your way towards the ends.



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# Submersible pump system



A 60 litre pressure tank is supplied as standard. Other sizes can be supplied as an alternative. The pump is sized depending on each individual application. A total of 30 different EMS pump models makes it possible to select the correct pump for any application. The pressure switch, manometer and safety valve is pre-assembled to a junction pipe delivered as one complete unit to simplify installation. The cable between well and pressure tank is supplied separately as this distance varies from installation to installation. EMS deep water systems are delivered complete. All equipment both at the well and at the pressure tank are included. Each item of the system is specially selected or manufactured to provide maximum operational reliability.

## Component specification

### At the tank:

Qty 1. 6-way junction pipe for wallmount. 1"  
 Qty 1. Flexible stainless piping  
 Qty 1. Pressure tank, 60 litres  
 Qty 1. Straight coupl. VX 1" x 32 ext.  
 Qty 1. Motor protection, quick tripping

Qty 1. Ballvalve 1"  
 Qty 1. Safety valve  
 Qty 1. Union 1/2" M/F  
 Qty 1. Press. gauge

### At the well:

Qty 1. Submersible pump  
 Qty 1. Brass well cover or EMS welltop  
 Qty 4. Wire clamps  
 Rubber cable  
 Stainless steel wire 3 mm

Qty 1. Adapter 1"EMS  
 Qty 1. PEM 1" x 32 M.  
 Qty 2. W.proof tape  
 Qty 1. Thread tape  
 Qty 1. Check valve unit



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# Installation instr. 1" adapter

## Tools

Qty. 1 Assembly hook made of a round steel rod (1).

Qty. 1 Lifting handle made of 1" steel tube (2).

## Installation instructions

**1** Saw a hole in the mantle tube at frost protected depth.

Sizes should be: 1"=46mm, 1 1/4"=54mm og 1 1/2"=74mm.

It is important to use the correct size of hole-saw to prevent surface water from entering the well.

**2** Dismantle the adapter and attach fixed item (A) to the assembly hook.

Make sure that the assembly hook is large enough to prevent it or the adapter from falling into the well.

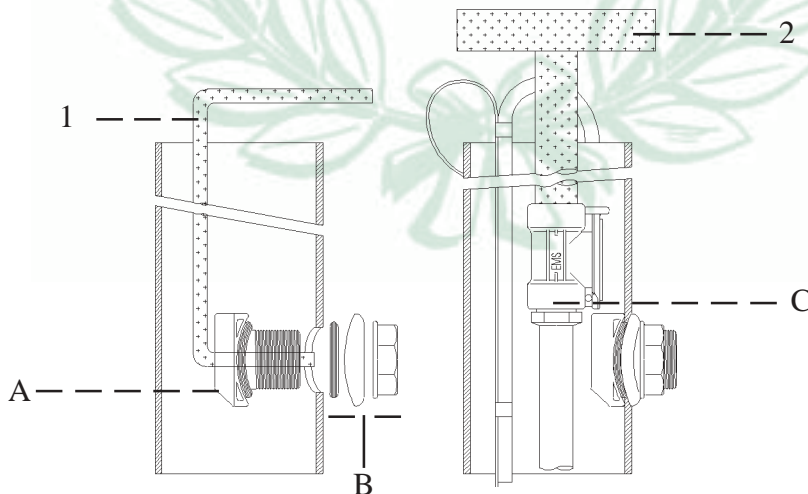
**3** Assemble the gasket, washer and nut (B).

**4** Connect the PEM-pipe from the pump to the lower connection on the movable piece of the adapter (C).

**5** Attach the lifting handle to the upper connection on the movable piece of the adapter (C).

The pump can now be assembled and disassembled without removing the pipe between the pump and the well.

Important: The pump should be held by the PEM-pipe, not the wire.



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# Submersible pump UPI

## Technical description

The EMS submersible multi-stage high head pump is perfect for open well pumping in domestic applications, fountains, irrigation and hydropneumatic sets.

A submersible pump is more efficient than a suction pump. The UPI can deal with twice the number of garden sprinklers than a Jet pump can do with the same power consumption.

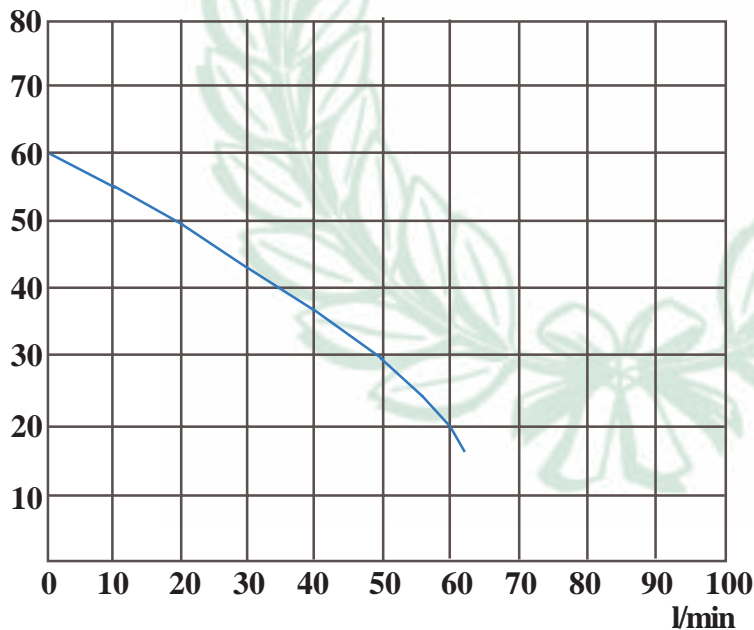
The UPI is easy to install and to start up because it is already in the water. As the UPI is delivered with 20 meters of rubber cable and a built in motor protection, it only needs a plug and attachment to an ordinary grounded electrical outlet to get started. Used as a hydropneumatic set, it can be connected to an existing pressure tank or any new pressure tank model.

If the risk of dry run is present, choose the model with float switch, as this shuts down the pump when the water level reaches a specific level.

The UPI is totally maintenance-free and requires no service.



## Head, meters



## Materials

|            |                 |
|------------|-----------------|
| Pump body: | Stainless steel |
| Shaft:     | Stainless steel |
| Impellers: | Stainless steel |
| Diffusors: | Noryl           |
| O-rings:   | Rubber          |

## Technical specification

|                         |                                 |
|-------------------------|---------------------------------|
| Pump type               | Multistage-<br>Centrifugal pump |
| Insulations class       | B                               |
| Encapsulation           | IP 68                           |
| Max watertemp           | 40°C                            |
| Max depth               | 20 m                            |
| Connection              | 1"                              |
| Maximum starts pr. hour | 40                              |

| Pump-model              | Motor kW | Nom. Amps at/230V |         | Hmax mvp | Qmax L/min | Lenght mm | Diameter mm | Weight kg |
|-------------------------|----------|-------------------|---------|----------|------------|-----------|-------------|-----------|
|                         |          | M.phase           | 3-phase |          |            |           |             |           |
| 1200<br>1207w/fl.switch | 1100     | 5,0               | ---     | 60       | 60         | 600       | 123         | 13,3      |
|                         | 1100     | 5,0               | ---     | 60       | 60         | 600       | 123         | 13,6      |



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# Installation Instructions UPI

With a correctly installed pump, water delivery will remain reliable and safe for a long period. Most application faults are caused by external interruptions. The most common faults are:

- A - Electrical causes such as damaged cable or plug
- B - Water contains sand, grit or other abrasive material.
- C - The pump is damaged by frost.
- D - The pump has worked in water containing salt or other corrosive substances.

This often leads to unnecessary repair costs.

Read the following instructions carefully.

## Delivery

Check the pump for damage caused during transportation.

## Installation

EMS submersible multi-stage high head pump is intended for hydropneumatic sets or watering pump for use in open water sources f.ex. dug wells, lakes, rivers, streams etc. The pump is best installed hanging from a stainless steel wire at least 30 cm from the bottom. In open wells the pump has to be installed in a way that prevents the pump from touching the well walls, as this will cause wear and tear to the pump. In drilled wells, the pump must be protected from grinding against the well walls. Maximum installation depth is 20 meters. Ensure to protect the pump against frost as only a brief period of frost is enough to damage the pump.

**Important! Never let the pump hang from the power supply cable or the pipe.**

## Electrical danger

Pumps are often located in cramped and damp locations. Take extra care when dealing with electrical systems because of the electrical danger. **Always disconnect the power supply before touching an electrical pump.** Have an authorised electrician check that the motor protection and grounding is without faults. Monophase pumps should be connected to a standard grounded electrical outlet. If an extension cord is used, make sure that also this is provided with a satisfactory protective ground.

**Touching a pump which does not have a proper protective ground, can be lethal.**

## Electrical connections

Monophase 230 Volts pumps are fitted with an grounded plug prepared for connection to a standard grounded electrical outlet. Make sure that voltage from the outlet corresponds to voltage on the nameplate. There are security motor protectors inserted into the windings to prevent the motor from surpassing the fixed temperature limit.

**Important: If changing the rubber cable becomes necessary make sure that the waterproof seal is still waterproof afterwards. Changing the cable should only be done by qualified personnel.**

## Trouble shooting

Before sending the pump in for service, pull the plug out of the grounded electrical outlet and check the following:

- That the grounded outlet is live.
- That the impeller has no contamination clogging the inlet.
- That nothing prevents the movement of the Floatswitch.

## Repair

All repair during the warranty period must be done by a EMS-approved service workshop.



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# Selecting a Jetpump

## Jet 50

This pump is suited for small summer houses with a single tap.

As a watering pump, it is able to supply one or two ordinary garden sprinklers.

## Jet 100

This is the most common pump for private houses and small farms without animals.

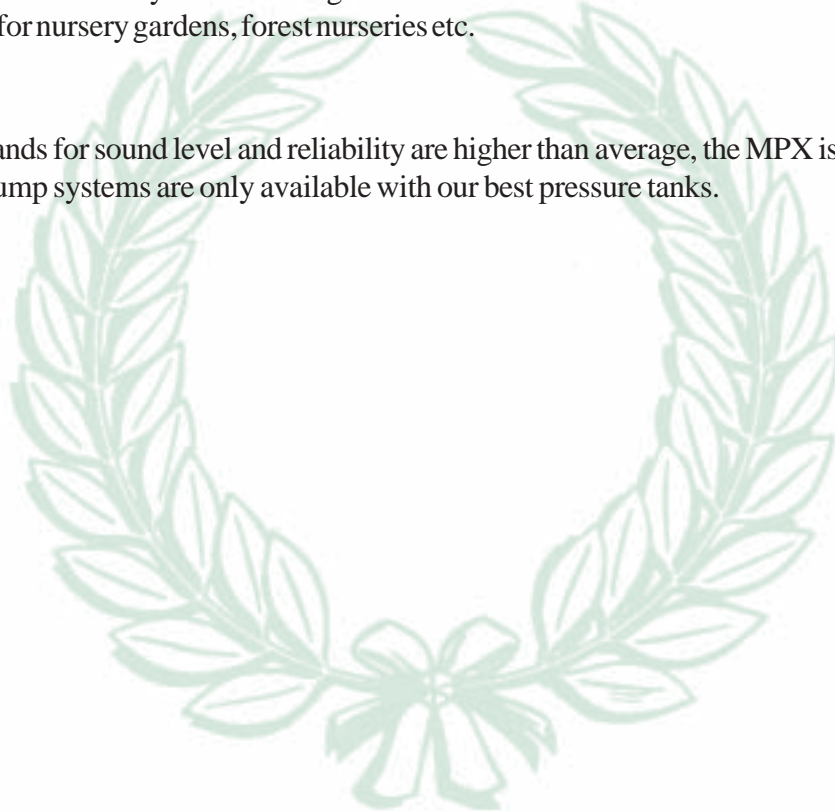
As a watering pump, it is able to supply between two and three ordinary garden sprinklers.

## Jet 150 - 315

These pumps are intended for use in agriculture and larger applications. If you have any doubts about which pump to choose you are welcome to contact one of our experts. The most dominating of these pumps is the Jet 210. It is very common in agriculture with domestic animals. It is also suited as a watering pump for nursery gardens, forest nurseries etc.

## MPX

Where the demands for sound level and reliability are higher than average, the MPX is a natural first choice. MPX Pump systems are only available with our best pressure tanks.



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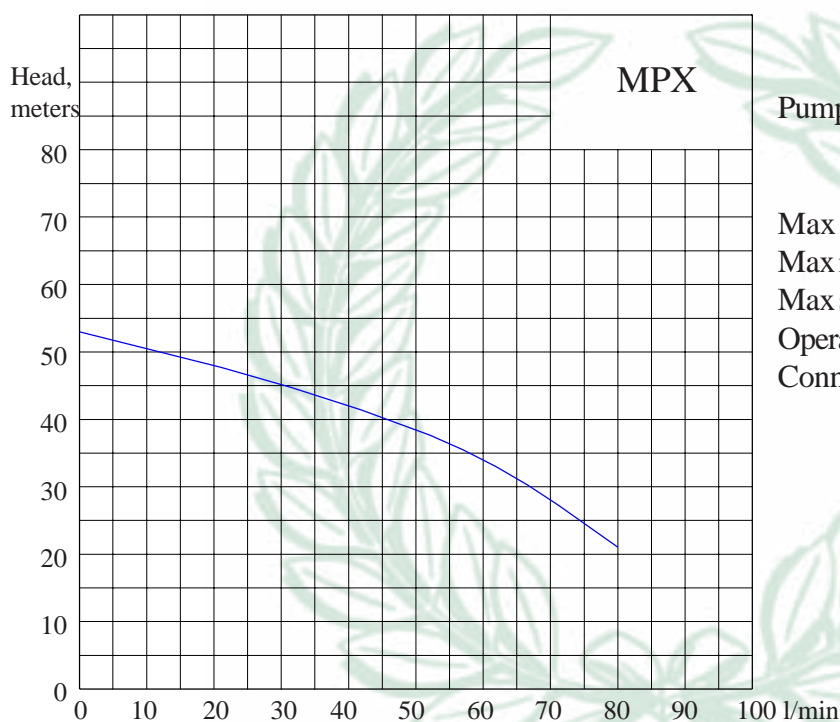
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# The silent pump MPX

## Technical description

The MPX is a high quality pump from EMS. This pump is used when you want a self-priming pump that runs more silent than an ordinary jet pump. As the MPX is made for continuous operation, it is suited both as a water-delivery or a watering pump. The pump is self priming which means that it evacuates air from the suction pipe. This simplifies the starting of the pump after installation which means that it is also suitable for long suction pipe applications. The pump is entirely maintenance-free and is, under normal operating conditions, a very long-lasting product. The MPX pump is supplied with cable and plug ready to be connected to a standard grounded electrical outlet.



**Pump type:** Centrifugal pump with internal ejector  
**Max water temperature:** 40°C.  
**Max input pressure:** 6 Bar  
**Max suction depth:** 9 meters  
**Operation:** Continuous  
**Connection pressure side:** 1"

| Pump model  |        | 120M | 120M/20 | 120/60 |
|-------------|--------|------|---------|--------|
| Hmax        | mvp    | 52   | 52      | 52     |
| Qmax        | l/min  | 80   | 80      | 80     |
| Suct. depth | meters | 9    | 9       | 9      |
| Height      | mm     | 215  | 575     | 695    |
| Lenght      | mm     | 410  | 500     | 600    |
| Width       | mm     | 175  | 260     | 380    |
| Weight      | kg     | 11   | 17      | 24     |
| Voltage     | V      | 230  | 230     | 230    |
| Phase       |        | 1    | 1       | 1      |
| Current     | A      | 6,1  | 6,1     | 6,1    |
| Power       | W      | 1260 | 1260    | 1260   |



**Materials**  
**Pump body:** Inox  
**Motor housing:** Aluminium  
**Shaft:** Stainless steel  
**Impellers:** Noryl  
**Shaft seal:** Carbon/Ceramik  
**O-rings:** Rubber



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# Stainless Steel Jet Pump MPI

## Technical description

JET pumps is mainly used as pressure tank system pumps for private houses and summer houses. The stainless steel construction is intended for locations with aggressive water. This also makes the pump suited at locations where the pump is unused for long periods, for example summer houses which are only inhabited for short periods of time. As the Jet pump is made for continuous operation it is suited both as a water delivery- or a watering pump. The pump is self-priming which means that it evacuates air from the suction pipe. This simplifies starting the pump after installation which means that it is also suitable for long suction pipe applications. The pump is entirely maintenance-free and under normal operation conditions a very long-lasting product. Monophase models are supplied with cable and plug ready to be connected to a standard grounded electrical outlet.



## Technical specifications

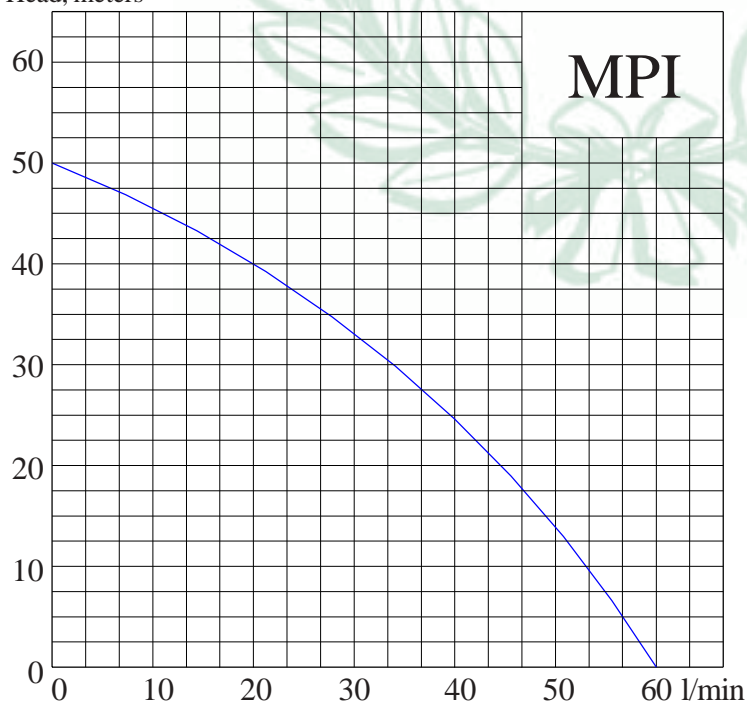
|                      |                              |
|----------------------|------------------------------|
| Pump type:           | Selfpriming centrifugal pump |
| Hmax:                | 50 Head, meters              |
| Qmax:                | 60L/min                      |
| Max input pressure:  | 6 Bar                        |
| Max suction depth:   | 9 meters                     |
| Max watertemperatur: | 50°C                         |
| Operation:           | Continuous                   |
| Connections:         | 1"                           |

## Electrical specifications

|                   |   |       |
|-------------------|---|-------|
| Voltage           | V | 230   |
| Current           | A | 5.0   |
| Power             | W | 1050  |
| Insulation class: |   | F     |
| Encapsulation:    |   | IP X4 |

## Capacity

Head, meters



## Measurements

|        |    |     |
|--------|----|-----|
| Height | mm | 200 |
| Length | mm | 360 |
| Width  | mm | 175 |
| Weight | kg | 12  |

## Materials

|               |                 |
|---------------|-----------------|
| Pumpbody:     | Stainless steel |
| Motorhousing: | Aluminium       |
| Shaft:        | Stainless steel |
| Impeller:     | Noryl           |
| Shaft seal:   | Carbon/Ceramic  |
| O-rings:      | Rubber          |



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# Maxi Jet Booster sets

## Technical description

Maxi Jet Booster sets are complete pump systems, which are available in different sizes for all needs. From the smallest pump system intended for small summer houses and up to larger pump systems suited for farms with domestic animals. Booster sets like these are intended for applications where the water is fetched from open sources such as dug wells, lakes, rivers etc. The Maxi Jet pump system is based on the self-priming EMS Jet pump, which are constructed for continuous operation and therefor suited as an irrigation pump as well. If automatic start of an irrigation system is required, these sets can be installed. The Maxi Jet Booster sets are supplied tested and ready for use in a single packing complete with high quality pressure switch, pressure gauge, brass 3 way connector, water tank and flexible tube. Monophase models are supplied with cable and plug ready to be connected to a standard grounded electrical outlet.



## Capacity

See pumpcurves for:  
Maxi Jet 50, 100 og 150.

## Technical specifications

|                           |  |
|---------------------------|--|
| Pump type:                | Centrifugal pump with internal ejektor |
| Max water temperature:    | 40°C.                                  |
| Max input pressure:       | 6 Bar                                  |
| Max suction depth:        | 9 meters                               |
| Operation:                | Continuous                             |
| Connection pressure side: | 1"                                     |
| Connection suction side:  |  |
| Jet 50-100                | 1 1/4"                                 |
| Jet 150-315               | 1 1/2"                                 |
| Insulation class:         | F                                      |
| Encapsulation:            | IP X4                                  |

## Materials

|                |                 |
|----------------|-----------------|
| Pump body:     | Cast iron       |
| Motor housing: | Aluminium       |
| Shaft:         | Stainless steel |
| Impellers:     |                 |
| Jet 50 -200    | Noryl           |
| Jet 210-315    | Brass           |
| Diffusor:      | Noryl.          |
| Shaft seal:    | Carbon/Ceramik  |
| O-rings:       | Rubber          |

The Jet 150 and 200 differ from the picture above.

| Pump model |       | 50M | 100M | 100T    | 150M | 150T    | 200T    | 210T    | 215T    | 310T    | 315T    |
|------------|-------|-----|------|---------|------|---------|---------|---------|---------|---------|---------|
| Hmax       | m     | 40  | 50   | 50      | 60   | 60      | 60      | 60      | 50      | 75      | 60      |
| Qmax       | L/min | 40  | 50   | 50      | 70   | 70      | 100     | 100     | 160     | 100     | 160     |
| Height     | mm    | 210 | 210  | 185     | 240  | 240     | 240     | 230     | 230     | 230     | 230     |
| Lenght     | mm    | 425 | 425  | 410     | 596  | 596     | 596     | 500     | 500     | 500     | 500     |
| Width      | mm    | 185 | 185  | 180     | 220  | 220     | 220     | 220     | 220     | 220     | 220     |
| Weight     | kg    | 16  | 16   | 16      | 28   | 28      | 28      | 27      | 27      | 27      | 27      |
| Voltage    | V     | 230 | 230  | 230/400 | 230  | 230/400 | 230/400 | 230/400 | 230/400 | 230/400 | 230/400 |
| Phase      |       | 1   | 1    | 3       | 1    | 3       | 3       | 3       | 3       | 3       | 3       |
| Current    | A     | 2.9 | 5.0  | 3.5/2.0 | 8.0  | 6.0/3.0 | 7.0/4.0 | 7.0/4.0 | 7.0/4.0 | 9.2/5.0 | 9.2/5.0 |
| Power      | W     | 600 | 1050 | 1050    | 1800 | 1800    | 2000    | 2000    | 2000    | 2800    | 2800    |



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# Maxi Jet automatic pump

## Technical description

The Maxi Jet automatic pump is normally mounted where you have the pressure tank and just need a new pump. Each automatic pump are supplied tested and ready for use in a single packing complete with a pressure switch and a pressure gauge, which makes it easy to replace the “old” pump. Based on the reliable and safe operating JET pump this pump is suited both as a hydropneumatic pump set and as a watering pump. Maxi Jet automatic pump is designed for continuous operation. The pump is self-priming (even evacuates air) which simplifies the start up after installation and makes it suitable for long suction pipe applications. The pump is entirely maintenance-free and is, under normal operational conditions a very long-lasting product. Maxi Jet automatic pump are supplied with cable and plug ready to be connected to a standard grounded electrical outlet.



The Maxi Jet 150/0M differ from the picture. See the Maxi Jet 150 for details on this pump.

## Capacity

See pump curves under Maxi Jet 50, 100 og 150.

## Technical specifications

|                           |  |
|---------------------------|--|
| Pump type:                | Centrifugal pump with internal ejektor |
| Max watertemperature:     | 40°C                                   |
| Max input pressure:       | 6 Bar                                  |
| Connection suction side:  | 1”<br>1 1/2” on the 150/0M             |
| Connection pressure side: | 1”                                     |
| Max suction depth:        | 9 meters                               |
| Operation:                | Continuous                             |
| Voltage:                  | 3 x 230V, 3-phase                      |
| Insulation class:         | F                                      |
| Encapsulation:            | IP X4                                  |

## Materials

|                |                 |
|----------------|-----------------|
| Pump body:     | Cast iron       |
| Motor housing: | Aluminium       |
| Shaft:         | Stainless steel |
| Impellers:     |                 |
| Jet 100        | Noryl           |
| Jet 210-315    | Brass           |
| Diffusor:      | Noryl           |
| Shaft seal:    | Carbon/Ceramik  |
| O-rings:       | Rubber          |

| Pump model |        | 50/0M | 100/0M | 150/0M |
|------------|--------|-------|--------|--------|
| Hmax       | meters | 40    | 50     | 60     |
| Qmax       | L/min  | 40    | 50     | 70     |
| Height     | mm     | 210   | 210    | 240    |
| Lenght     | mm     | 425   | 425    | 596    |
| Width      | mm     | 185   | 185    | 220    |
| Weight     | kg     | 16    | 16     | 28     |
| Voltage    | V      | 230   | 230    | 230    |
| Phase      |        | 1     | 1      | 1      |
| Current    | A      | 2.9   | 5.0    | 8.0    |
| Power      | W      | 600   | 1050   | 1800   |



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# Maxi Jet 50-315

## Technical description

The Maxi Jet Pump is mainly used in hydropneumatic pump systems for private houses, summer houses and agriculture. It is also well suited as a watering pump, as it is made for continuous operation. The pump is self-priming (even evacuates air) which simplifies the start up after installation and makes it suitable for long suction pipe applications. The pump is entirely maintenance-free and is, under normal operational conditions a very long-lasting product. Mono phase models are supplied with cable and plug ready to be connected to a standard grounded electrical outlet.

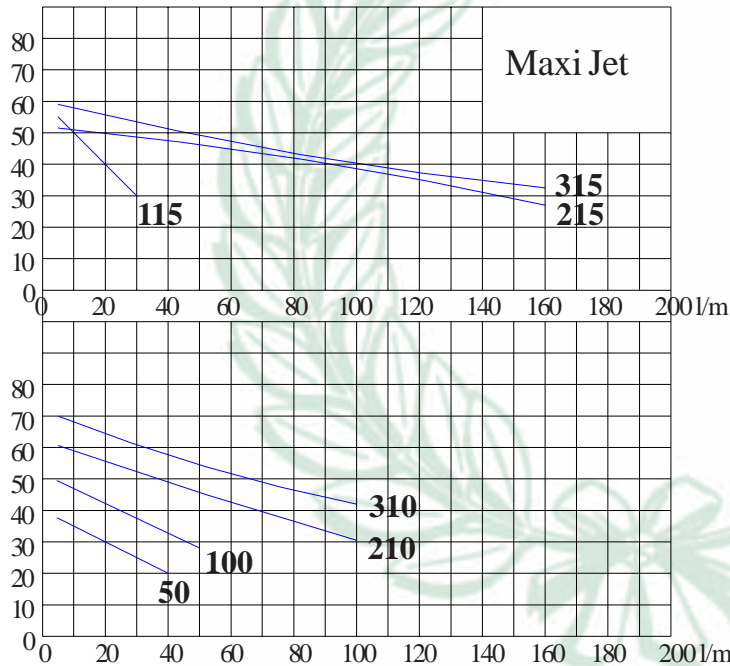


## Technical specifications

|                           |  |
|---------------------------|--|
| Pump type:                | Centrifugal pump with internal ejector |
| Max watertemperature:     | 40°C                                   |
| Max input pressure:       | 6Bar                                   |
| Max suction depth:        | 9 meters                               |
| Operation:                | Continuous                             |
| Connection pressure side: | 1"                                     |
| Connection suction side:  | Jet 50-100 1"<br>Jet 150-315 1 1/2"    |
| Insulation class:         | F                                      |
| Encapsulation:            | IPX4                                   |

## Capacity

Head, meters



## Materials

|                |                 |
|----------------|-----------------|
| Pump body:     | Cast iron       |
| Motor housing: | Aluminium       |
| Shaft:         | Stainless steel |
| Impellers:     |                 |
| Jet 50 -200    | Noryl           |
| Jet 210-315    | Brass           |
| Diffusor:      | Noryl.          |
| Shaft seal:    | Carbon/Ceramik  |
| O-rings:       | Rubber          |

The Jet 150 and 200 differ from the picture above.

| Pump model |       | 100M | 100T    | 150M | 150T    | 200T    | 210T    | 215T    | 310T    | 315T    |
|------------|-------|------|---------|------|---------|---------|---------|---------|---------|---------|
| Hmax       | m     | 50   | 50      | 60   | 60      | 60      | 60      | 50      | 75      | 60      |
| Qmax       | L/min | 50   | 50      | 70   | 70      | 100     | 100     | 160     | 100     | 160     |
| Height     | mm    | 210  | 185     | 240  | 240     | 240     | 230     | 230     | 230     | 230     |
| Lenght     | mm    | 425  | 410     | 596  | 596     | 596     | 500     | 500     | 500     | 500     |
| Width      | mm    | 185  | 180     | 220  | 220     | 220     | 220     | 220     | 220     | 220     |
| Weight     | kg    | 16   | 16      | 28   | 28      | 28      | 27      | 27      | 27      | 27      |
| Voltage    | V     | 230  | 230/400 | 230  | 230/400 | 230/400 | 230/400 | 230/400 | 230/400 | 230/400 |
| Phase      |       | 1    | 3       | 1    | 3       | 3       | 3       | 3       | 3       | 3       |
| Current    | A     | 5.0  | 3.5/2.0 | 8.0  | 6.0/3.0 | 7.0/4.0 | 7.0/4.0 | 7.0/4.0 | 9.2/5.0 | 9.2/5.0 |
| Power      | W     | 1050 | 1050    | 1800 | 1800    | 2000    | 2000    | 2000    | 2800    | 2800    |



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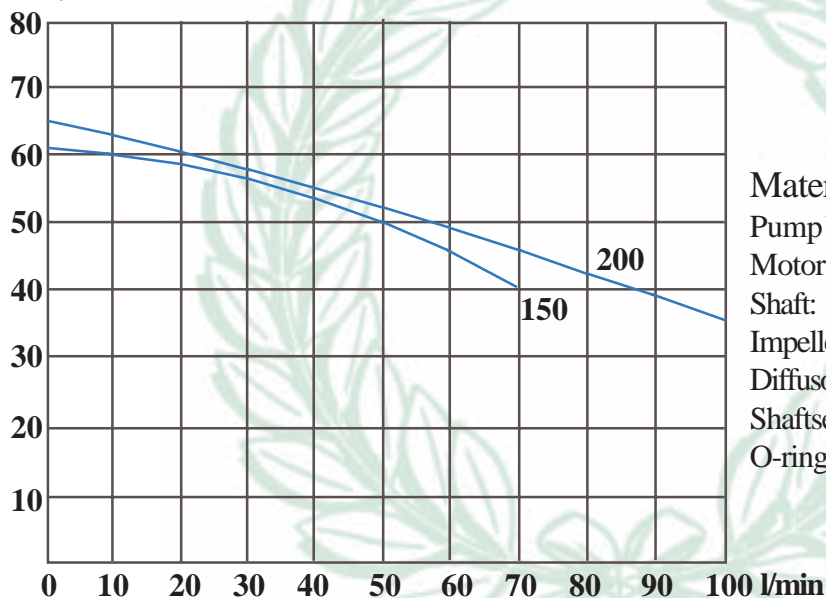
# Maxi Jet 150 - 200

## Technical description

These Maxi Jet Pumps is mainly used in hydropneumatic pump systems for private houses, summer houses and agriculture. It is also well suited as a watering pump as it is made for continuous operation. The pump is self-priming (even evacuates air) which simplifies the start up after installation and makes it suitable for long suction pipe applications. The pump is entirely maintenance-free and is, under normal operational conditions a very long-lasting product. Monophase models are supplied with cable and plug ready to be connected to a standard grounded electrical outlet.



## Capacity head, meters



## Materials

Pump body: Cast iron  
 Motor housing: Aluminium  
 Shaft: Stainless steel  
 Impellers: Noryl  
 Diffusor: Noryl  
 Shaft seal: Carbon/Ceramik  
 O-rings: Rubber

## Technical specifications

Pump type: Centrifugal pump with external ejector  
 Max watertemperature: 40°C.  
 Max input pressure: 6 Bar  
 Max suction depth: 9 meters\*  
 Operation: Continuous  
 Connection pressure side: 1"  
 Connection suction side: 1 1/2"  
 Insulation class: F  
 Encapsulation: IP X4

| Pump model |       | 150M | 150T    | 200T    |
|------------|-------|------|---------|---------|
| Hmax       | m     | 60   | 60      | 60      |
| Qmax       | L/min | 70   | 70      | 100     |
| Height     | mm    | 240  | 240     | 240     |
| Lenght     | mm    | 596  | 596     | 596     |
| Width      | mm    | 220  | 220     | 220     |
| Weight     | kg    | 28   | 28      | 28      |
| Voltage    | V     | 230  | 230/400 | 230/400 |
| Phase      |       | 1    | 3       | 3       |
| Current    | A     | 8.0  | 6.0/3.0 | 7.0/4.0 |
| Power      | W     | 1800 | 1800    | 2000    |

\*Suct. depth when used as a ejectorpump: Approximatly 50 meters with the existing ejector in the well



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# Combination Jet pump -PEM pipe

Table show combinations of JET pumps - PEM pipes for different suction levels and waterflow. Please contact our experts if you need any support regarding sizing which is not found in the table below.

| Pump model                   | Capacity<br>Liters/min.      | Maximum pipe length at different<br>suction depth levels |     |     |     |     |      | PEL-pipe<br>Diameter |
|------------------------------|------------------------------|--|-----|-----|-----|-----|------|----------------------|
|                              |                              | 1  | 2   | 3   | 4   | 5   | 6 m. |                      |
| Maxi Jet 50                  | 30                           | 100  | 80  | 55  | 35  | 15  | -    | 32 x 26              |
|                              | 30                           | 345  | 280 | 220 | 160 | 95  | 30   | 40 x 32              |
| Maxi Jet 85                  | 40                           | 55   | 40  | 25  | 10  | -   | -    | 32 x 26              |
|                              | 40                           | 185  | 150 | 115 | 80  | 40  | 5    | 40 x 32              |
|                              | 40                           | 600  | 480 | 390 | 285 | 180 | 75   | 50 x 40              |
| Maxi Jet 100<br>JET MPI 100  | 50                           | 25   | 15  | 5   | -   | -   | -    | 32 x 26              |
|                              | 50                           | 120  | 95  | 70  | 45  | 20  | -    | 40 x 32              |
|                              | 50                           | 400  | 330 | 255 | 180 | 110 | 40   | 50 x 40              |
| Maxi Jet 150<br>MPX 120      | 60                           | 80   | 60  | 40  | 25  | 5   | -    | 40 x 32              |
|                              | 60                           | 280  | 230 | 180 | 125 | 75  | 15   | 50 x 40              |
|                              | 60                           | 970  | 800 | 635 | 470 | 300 | 135  | 63 x 51              |
| Maxi Jet 210<br>Maxi Jet 310 | 70                           | 55   | 40  | 25  | 10  | -   | -    | 40 x 32              |
|                              | 70                           | 200  | 160 | 85  | 45  | 5   | -    | 50 x 40              |
|                              | 70                           | 670  | 555 | 440 | 320 | 200 | 85   | 63 x 50              |
|                              | 80                           | 35   | 25  | 15  | -   | -   | -    | 40 x 32              |
|                              | 80                           | 150  | 120 | 90  | 60  | 30  | -    | 50 x 40              |
|                              | 80                           | 515  | 425 | 330 | 240 | 150 | 60   | 63 x 51              |
|                              | 100                          | 10   | 5   | -   | -   | -   | -    | 40 x 32              |
|                              | 100                          | 90   | 70  | 50  | 30  | 10  | -    | 50 x 40              |
|                              | 100                          | 340  | 280 | 220 | 155 | 95  | 30   | 63 x 51              |
|                              | Maxi Jet 215<br>Maxi Jet 315 | 120  | 60  | 45  | 30  | 15  | -    | -                    |
| 120                          |                              | 230  | 190 | 140 | 100 | 60  | 15   | 63 x 51              |
| 120                          |                              | 635  | 525 | 415 | 300 | 190 | 80   | 75 x 61              |
| 150                          |                              | 30   | 20  | 10  | -   | -   | -    | 50 x 40              |
| 150                          |                              | 150  | 120 | 90  | 60  | 30  | -    | 63 x 51              |
| 150                          |                              | 400  | 325 | 255 | 185 | 110 | 40   | 75 x 61              |

Example: We want maximum 50 liters per minute. Distance between the pump and the foot valve is 70 meters and the level difference is 3 meters. Correct pump choice is the Maxi Jet 100 and a suction pipe 40 x 32.



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# Installation instructions MAXI JET

With a correctly installed pump, water delivery will remain reliable and safe for a long period. Most application faults are caused by external interruptions. The most common faults are:

- A - The installation is not equipped with a motor protection (only for 3-phase pumps)
- B - The pump has worked against a closed valve or faulty/incorrectly adjusted pressure switch.
- C - The pump has been damaged as a result of freezing.
- D - The fan cover has been damaged during transportation and causes the motor to stall.

This often causes unnecessary repair costs.

## Please follow the instructions carefully

### Delivery

Make sure the pump has not been damaged during transportation. Turn the motorshaft by using a screw-driver through the centerhole on the fan cover. The shaft should rotate easily. Adjust the fan cover if needed.

### Installation

The pump is intended for permanent installation. Make sure it is installed in a frost-free area. Even a short period of frost can be sufficient to damage the pump. The installation location should be clean, dry and well-ventilated.

### Electrical danger

Pumps are often located in cramped and damp locations. Take extra care when dealing with electrical systems because of the electrical danger. **Always disconnect the power supply before touching the electrical pump.** Have an authorised electrician check that the motor protection and grounding is without faults. Monophase pumps should be connected to a standard grounded electrical outlet. If an extension cord is used, make sure that also this is provided with a satisfactory protective ground.

**Touching a pump which does not have a proper protective ground, can be lethal.**

### Electrical connections

The electrical connections for three phase pumps must be carried out by an authorised electrician in accordance with local regulations. The pumps must be provided with CE approved motor protection. Adjust the setting of the motor protection in accordance with instructions on the motor nameplate. Monophase pumps are supplied with a cable and plug ready to be connected to a standard grounded electrical outlet and are also equipped with a built-in protective temperature limit device.

### Direction of rotation

Monophase pumps always rotate in the correct direction. Make sure the three phase pump rotates in a clock wise direction (the pump seen from the motor end).

### Suction pipe

If a pump needs to be replaced and the new pump has the same or lower capacity than the "old" pump the existing suction pipe can normally be used. If a larger pump or a new suction pipe has to be installed, it is of great importance that the suction pipe has sufficient size. Always contact the pump supplier if there is any doubt regarding the size of the suction pipe.



## Foot valve

A foot valve should always be installed. In dug wells, it should be located at least 30 cm from bottom of the well and in drilled wells the foot valve should be located approximately 11 meters under the level of the pump. This will prevent the pump from running dry if the discharged amount of water is more than the amount of water flowing into the well. Always use a foot valve with at least the same size as the suction pipe. A quality valve in metal is recommended.

## Connection of pipes

The suction pipe is connected to the outlet on the end of the pump (furthest away from the motor) and the pressure pipe is connected to the outlet on top (closest to the motor). Before the pressure pipe is connected, the pump and preferably the entire suction pipe should be filled with water. It is of the greatest importance that all connections are fully watertight, as a leakage on the suction side will jeopardise operational reliability. A leakage on the pressure side could pose a risk of water damage.

## Starting up

- A: Fill the pump and suction pipe with water.
- B: Fully close the tap on the outlet and start the pump.
- C: Open the tap slightly. The pump works best if the pressure on the outlet is approx. 0.5 - 1bar(kgcm<sup>2</sup>). The pump will now remove the remaining air in the suction pipe. Let the pump work as long as air is coming out. When the airflow stops the pump should be stopped and refilled with water. The start is then repeated.

### A tip:

In systems where it is difficult to fill the suction pipe with water, it can take a long time to remove all air. This is normal and does not indicate a fault. The pump has a far less capability to pump air than water. Restart can be made easier if it is possible for you to hold your hand over the pressure outlet so that you can still feel air coming out. You will notice immediately when the air flow stops and it is time to re-fill with water.

## Service and maintenance

The pump is maintenance-free and requires no regular service.

## General advice

A correctly sized pump system will usually work without problems for many years. The pump, pressure piping, tank and pressure switch setting must all be selected carefully in order to achieve problem-free operation. Please watch that the pump is not starting and stopping too often or that the difference in pressure between switching on and off is too big. Consult your professional adviser for the correct sizing and setting. See also the PRESSURE SWITCH and PRESSURE TANK SYSTEM sides for further information. The JET pump works most efficiently against an amount of back pressure. If the pump is used to fill an open reservoir or other installations without a natural back pressure, a valve should be installed on the pressure side. The valve should be adjusted to make the pump work against 1 - 2 Bar under normal working conditions. The pump is intended for clean water use. Salt/brackish water or water containing sand or other impurities will shorten the life of the pump. The warranty covers material faults but not faults caused by the environment.

## Discoloured water

In some rare cases the water pumped first thing in the morning can be discoloured. This is usually caused by a mineral in the water which is precipitated as a result of the influence caused by the pumps ejector. A suitable action is changing to an other pump type - for example CPG or CPI.



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## Pressure switch

Adjust the pressure switch in accordance with the instructions given below. If possible there should be a difference between starting- and stopping pressure of 1 - 3 Bar (kg/cm<sup>2</sup>) and the larger the pump is the larger difference. High frequency starting and stopping causes wear to the installation. The stop pressure should always be at least 1.0 Bar under the maximum pressure of the pumps capability. If the stop pressure is set too close to the maximum pressure of the pump, there is a risk of over-heating the pump if it is not able to reach the stopping pressure. Appropriate start and stop pressure will depend upon the prevailing conditions on each specific system although the start should be set to around 2 Bar. The pre-charged air pressure in the tank must always be altered when adjusting the start pressure of the pump. See under PRESSURE SWITCHES.

**NOTE: Always disconnect the power supply before coming into contact with the electrical pump.**

**Important:** If the pump is supposed to be used for watering - the pressure switch should be adjusted to make the pump run continuously during watering. In this way unnecessary wear and tear is avoided.

There are two brands of pressure switches on automatic pumps from EMS. Adjust them as follows:

**Square D:** By turning the nut holding the large spring clockwise both the starting and the stopping pressure are increased. By turning the nut holding the little spring clockwise the difference between starting and stopping pressure are increased.

**Strögermatic:** By turning the nut in the middle of the switch clockwise both the starting and the stopping pressure are increased. By turning the little screw (at the top near the middle) clockwise the difference between starting and stopping pressure are increased.

## Hydro pneumatic tank - Membrane tank

If the pump is connected to a hydro pneumatic tank, the air amount in the tank must be checked at regular intervals.

Before the pressure is measured in a membrane tank, the power supply to the pump must be shut off and a tap opened. The correct pressure in an empty membrane tank is 0.9 x the starting pressure of the pump. Too little air in a hydro pneumatic tank or too low precharged air pressure in a membrane tank will cause the pump to start immediately or almost immediately after a tap has been opened.

## Non automatic pump

If the pump is supposed to be used, for example for watering, normally a pump without a tank and pressure switch should be used. The best and cheapest method for watering is a manual start of the pump. These pumps are however prepared for automatic use. There are two plugged outlets (1/4") on the left side of the pump body. In these two outlets a pressure switch and a manometer can be installed.

## Service

**Important:** The pump is very easy to dismantle for service. All service can easily be done at the pump location.

**Dismantling:** Disconnect the electrical power supply. The suction and pressure pipes do not need to be removed. Loosen the bolts holding the pump body. The motor and pump unit can now be lifted away. The impeller is either screwed or tread onto the shaft. If the impeller is held in place by a self locking nut on the outside, the impeller is surely treaded onto the shaft. However if the nut is a part of the impeller, it is screwed directly onto the shaft and can easily be unscrewed. The shaft seal will be found behind the impeller.

**Re-assembly:** When the pump has been cleaned and any possible faulty parts changed, the pump can be re-assembled in the opposite order to the above. Check the condition of the O-ring and make sure the O-ring area is clean. Damp the gaskets with water to assist assembly.  
**NEVER USE OIL OR GREASE!**



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## Troubleshooting

- Error:** The pump is not delivering water  
**Preparation:**  
Fill the pump and suction pipe with water  
Check all the connections on the suction side
- Error:** Low pressure  
The pump is rotating in the wrong direction (only applies on three phase pumps)  
Pump wheel and/or ejector are clogged with sand or similar material
- Error:** Low capacity  
The suction pipe is under sized  
Suction height is too big  
Impeller and/or ejector are clogged
- Error:** **The motor protection trips and the motor does not start**  
Electrical fault. Contact an electrician
- Error:** **The pump has started without any waterflow.**  
Leakage on the suction or pressure side.
- Error:** Air in the water  
Leakage on the suction side  
Water level has sunk below the foot valve
- Error:** Banging sound in the pump  
The suction height is too big or the suction pipe under sized.  
Foot valve or suction pipe is clogged with contaminates.
- Error:** The pump starts and stops continuously when a tap has been opened  
Fault in the pressure switch or the pressure tank. See page 36.
- Error:** The pressure switch goes on and off several times with each start and stop  
The pressure switch is installed too far from the tank. Install a small tank near the pressure switch or move the pressure switch to the tank.
- Error:** The pump stops during operation and starts again after 10 - 20 minutes  
The cooling fan is blocked.  
Cooling is too poor  
Voltage at the pump is too low
- NOTE:** If the pump is rotating in the right direction, the pump wheel and ejector are clean, the pump is filled with water and still no water is pumped, the fault is not caused by the pump but something else in the installation.



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# Spare parts Jet 50 - 110

Sparepart numbers in the drawing points at the last two numbers in the list of articles below. One particular partnumber can fit more than one pump model.

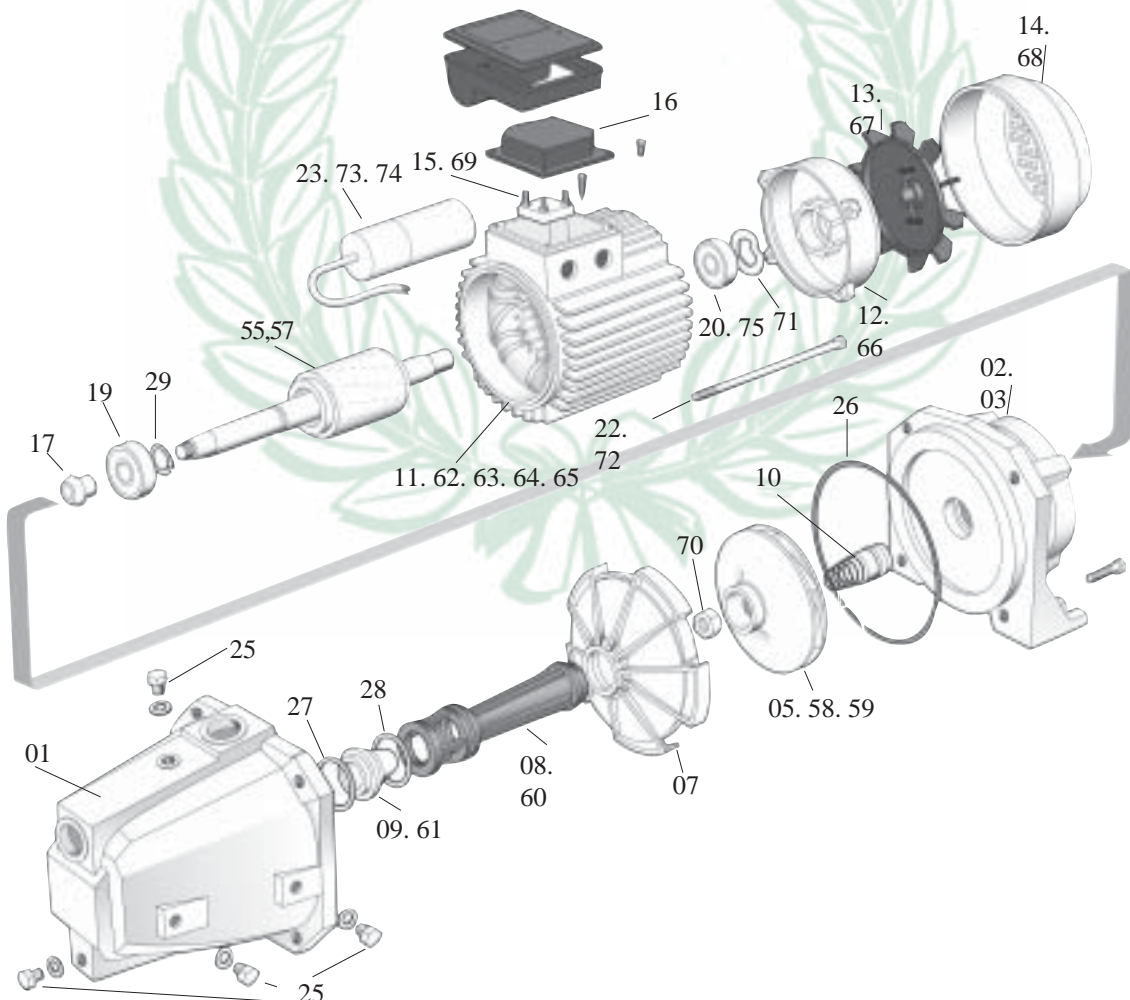
Z2301 Pump body  
 Z2302 Motor bracket Jet 50  
 Z2303 Motor bracket Jet 80-100  
 Z2305 Impeller Jet 50  
 Z2307 Difusor  
 Z2308 Ejektor Jet 50-80  
 Z2309 Ejektor nozzle Jet 50-80  
 Z2310 Shaft seal  
 Z2311 Stator Jet 50M  
 Z2312 Motor housing Jet 50  
 Z2313 Fan Jet 50  
 Z2314 Fan cover Jet 50  
 Z2315 Termination block Jet 50-100M  
 Z2316 Electrical cover Jet 100T  
 Z2317 Splash guard  
 Z2319 Ball bearing pump side  
 Z2320 Ball bearing motor side Jet 50  
 Z2322 Pin bolt Jet 50

Z2323 Condenser Jet 50M  
 Z2324 Stator foot  
 Z2325 Emptying plug  
 Z2326 O-ring pump body  
 Z2327 O-ring ejektor  
 Z2328 O-ring ejektor  
 Z2329 Lock ring  
 Z2355 Rotor Jet 80M  
 Z2357 Rotor 55mm Jet 100T  
 Z2358 Impeller Jet 80  
 Z2359 Impeller Jet 100  
 Z2360 Ejektor Jet 100  
 Z2361 Ejektor nozzle Jet 100  
 Z2362 Stator Jet 80M  
 Z2363 Stator Jet 100M  
 Z2364 Stator 58mm Jet 100T  
 Z2365 Stator 55mm Jet 100T  
 Z2366 Motor housing Jet 80-100

Z2367 Fan Jet 80-100  
 Z2368 Fan cover Jet 80-100  
 Z2369 Termination block Jet 100T  
 Z2370 Nut for impeller Jet 80-100  
 Z2371 Spring washer Jet 80-100  
 Z2372 Pin bolt Jet 80-100  
 Z2373 Condenser Jet 80M  
 Z2374 Kondenser Jet 100M  
 Z2375 Ball bearing motor side Jet 80-100

## Complete Kits

Z2335 Worn out kit Jet 50  
 Z2336 Worn out kit Jet 80  
 Z2337 Worn out kit Jet 100  
 Z2340 Frost kit Jet 50  
 Z2341 Frost kit Jet 80  
 Z2342 Frost kit Jet 100



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# Spare parts Jet 150 og 200

Sparepart numbers in the drawing points at the last two numbers in the list of articles below. One particular partnumber can fit more than one pump model.

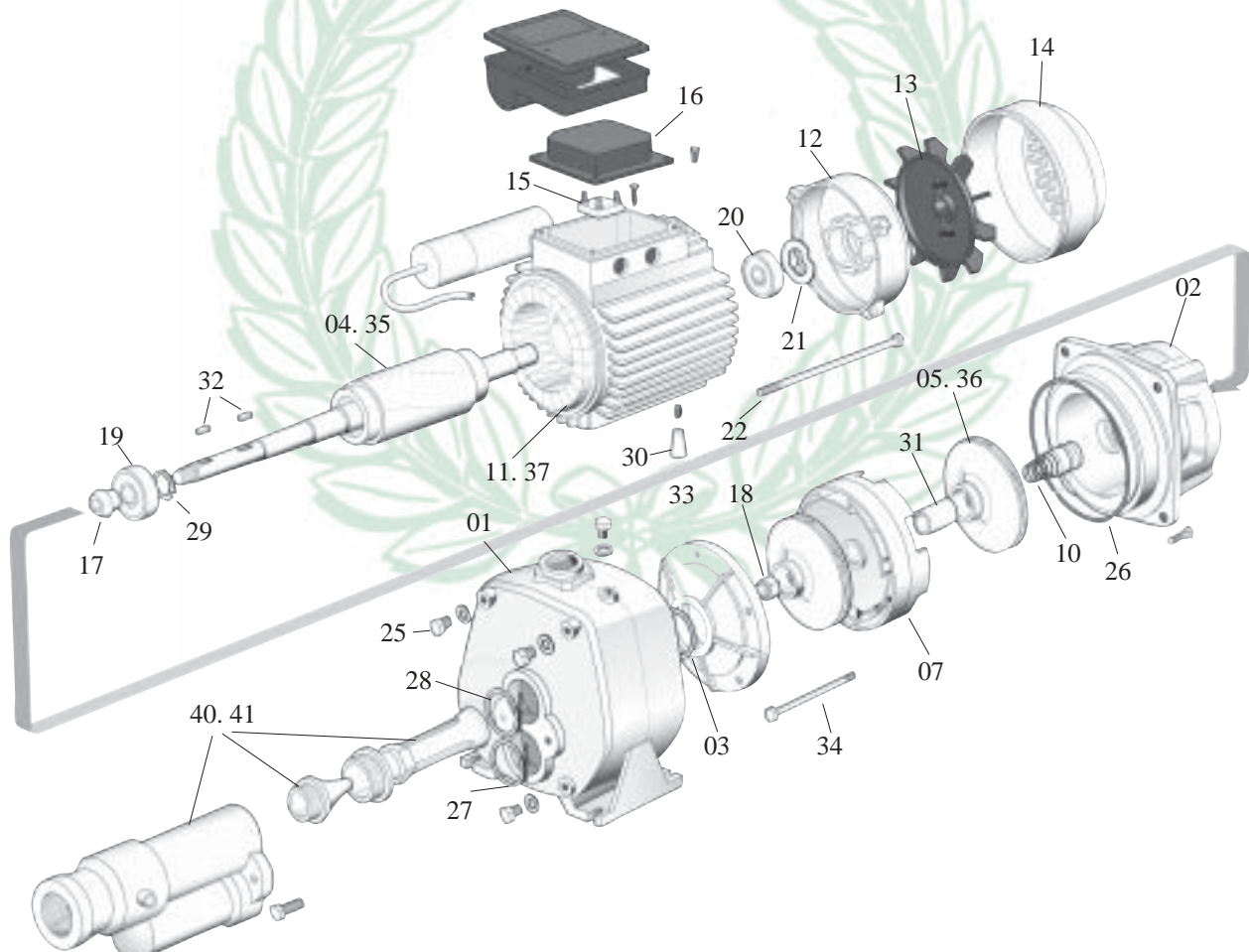
Z2401 Pump body  
 Z2402 Motor bracket  
 Z2403 O-ring 49mm  
 Z2404 Rotor Jet 150T  
 Z2405 Impeller Jet 150  
 Z2407 Difusor  
 Z2410 Shaft seal  
 Z2411 Stator Jet 150T  
 Z2412 Motor housing  
 Z2413 Fan  
 Z2414 Fan cover  
 Z2415 Termination block  
 Z2416 Termination block  
 Z2417 Splash guard

Z2418 Nut for impeller  
 Z2419 Ball bearing pump side  
 Z2420 Ball bearing motor side  
 Z2421 Spring washer  
 Z2422 Pin bolt  
 Z2425 Emptying/filling plug  
 Z2426 O-ring pump body  
 Z2427 Ejektor gasket small  
 Z2428 Ejektor gasket large  
 Z2429 Lock ring  
 Z2430 Stator foot  
 Z2431 Distance casing  
 Z2432 Guide  
 Z2433 Difusor cover

Z2434 Pin bolt difusor  
 Z2435 Rotor Jet 200T  
 Z2436 Impeller Jet 200  
 Z2437 Stator Jet 200T  
 Z2440 Ejektor kpl Jet 150  
 Z2441 Ejektor kpl Jet 200

## Complete Kits

Z2445 Worn out kit Jet 150  
 Z2446 Worn out kit Jet 200  
 Z2450 Frost kit Jet 150  
 Z2451 Frost kit Jet 200



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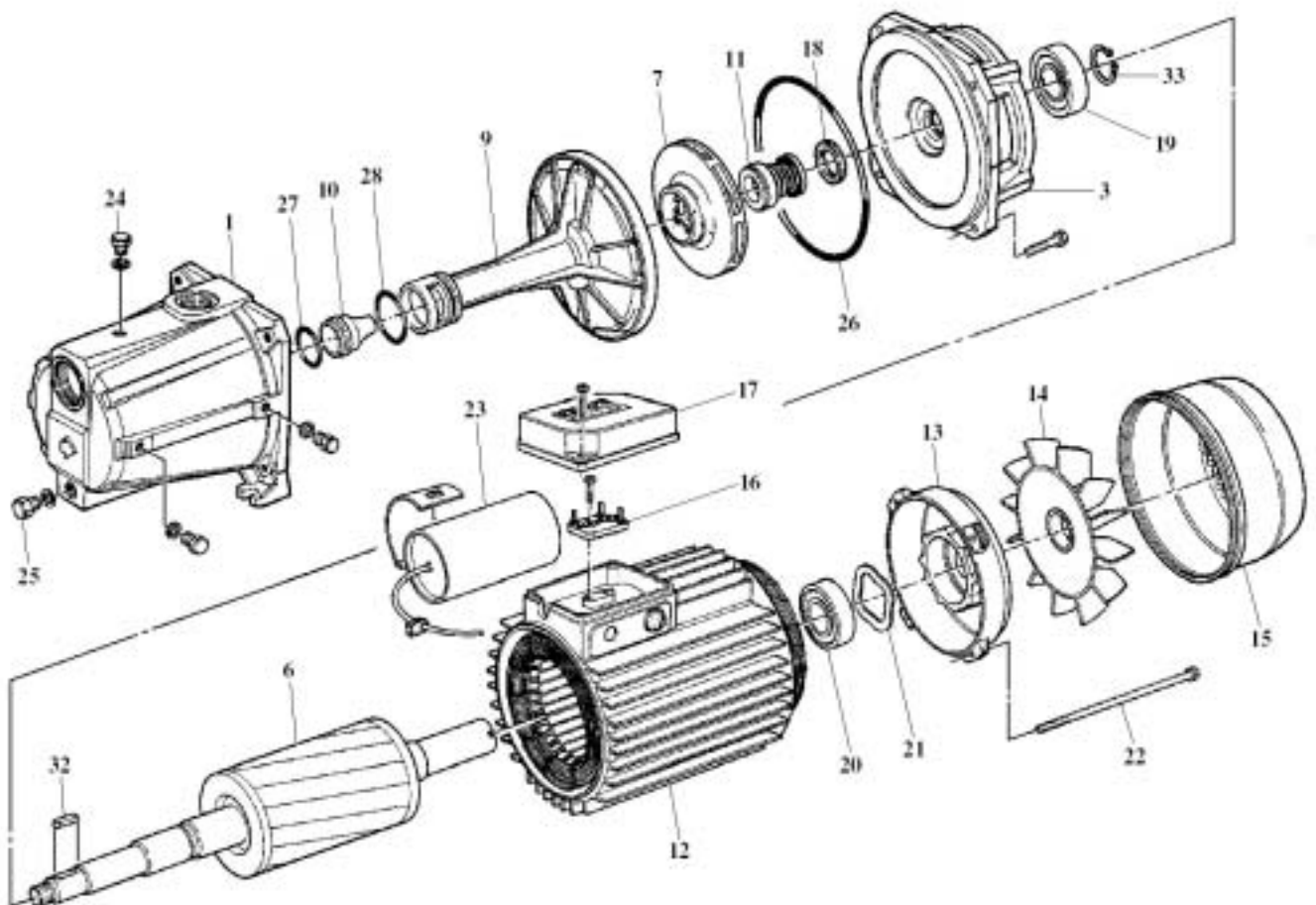
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# Spare parts Jet 210 - 315

Part number Z22--

- 1 Pump body
- 3 Motor bracket
- 6 Rotor
- 7 Impeller
- 9 Difusor,ejektor
- 10 Ejektor nozzle
- 11 Shaft seal
- 12 Stator
- 13 Motor housing
- 14 Fan
- 15 Fan cover
- 16 Termination block
- 17 Termination block
- 18 Splash guard
- 19 Ball bearing pump side
- 20 Ball bearing motor side
- 21 Spring washer
- 22 Pin bolt
- 23 Condenser
- 24 Filling plug
- 25 Emptying plug
- 27 O-ring ejektor nozzle
- 28 O-ring Ejektor
- 32 Guide



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# Spare parts MPI

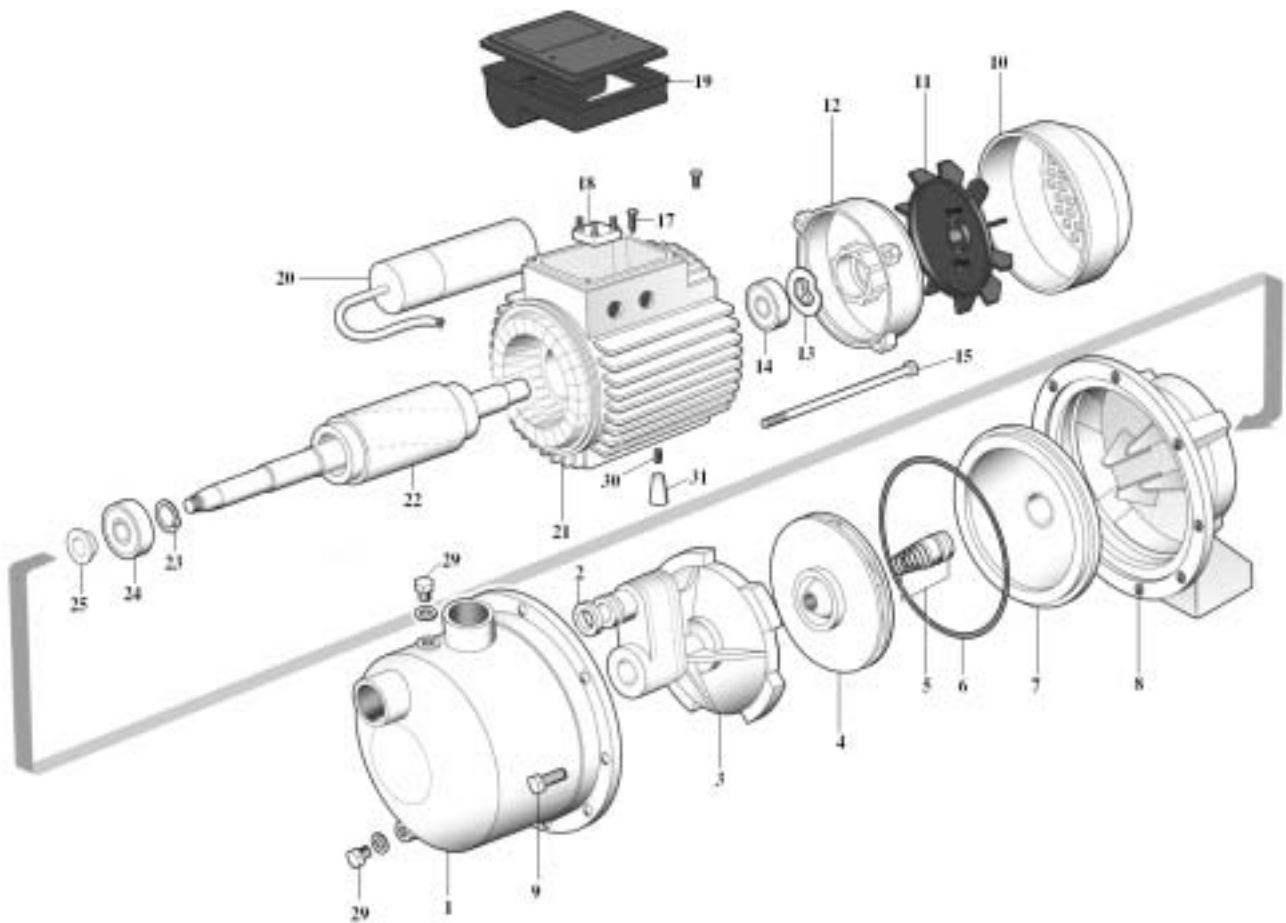
## Part number Z11--

- 1 Pump body
- 2 O-ring
- 3 Difusor/ejektor
- 4 Impeller
- 5 Shaft seal
- 6 O-ring pump body
- 7 Stainless steel washer
- 8 Motor bracket
- 9 Bolt pump body
- 10 Fan cover
- 11 Fan
- 12 Motor housing
- 13 Spring washer
- 14 Ball bearing motor side
- 15 Motor bolt
- 16 Cable seal
- 17 Earthing terminal
- 18 Termination block
- 19 Electrical box mono phase
- 20 Condenser
- 21 Stator
- 22 Rotor
- 23 Lock washer
- 24 Ball bearing pump side
- 25 Splash guard
- 29 Termination block
- Emptying plug/Filling plug



## Complete Kits

- Z 1140 Worn out kit MPI
- Z 1141 Frost kit MPI



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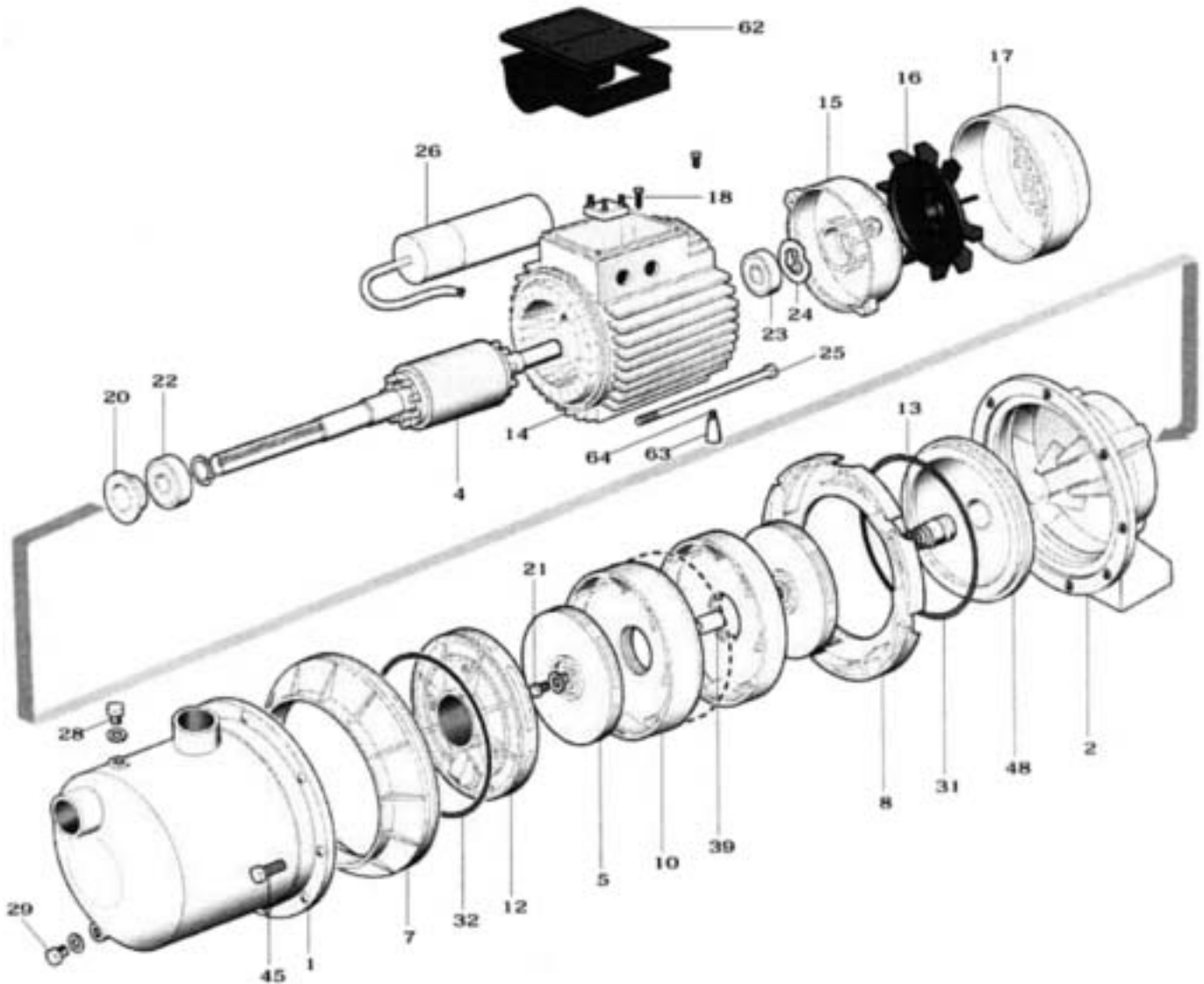
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# Spare parts MPX 120

Part number Z11--

|    |                          |    |                             |
|----|--------------------------|----|-----------------------------|
| 1  | Pump body                | 23 | Ball bearing motor side     |
| 2  | Motor bracket            | 24 | Spring washer               |
| 4  | Rotor                    | 25 | Motor bolt                  |
| 5  | Impeller                 | 26 | Condenser                   |
| 7  | Adapter                  | 28 | Filling plug                |
| 8  | Difusor ring             | 29 | Emptying plug               |
| 10 | Welded difusor           | 31 | O-ring pump body            |
| 12 | Primer kit               | 32 | O-ring adapter              |
| 13 | Shaft seal               | 39 | Distance hub for impellers  |
| 14 | Stator                   | 45 | Bolt pump body              |
| 15 | Rear motor cover         | 48 | Holder for shaft seal       |
| 16 | Fan                      | 62 | Connection box              |
| 17 | Fan cover                | 63 | Stator foot                 |
| 18 | Termination block        | 64 | Spring bolt for stator foot |
| 19 | Connection box (3-phase) |    |                             |
| 20 | Splash guard             |    |                             |
| 21 | Lock.screw for impeller  |    |                             |
| 22 | Ball bearing pump side   |    |                             |



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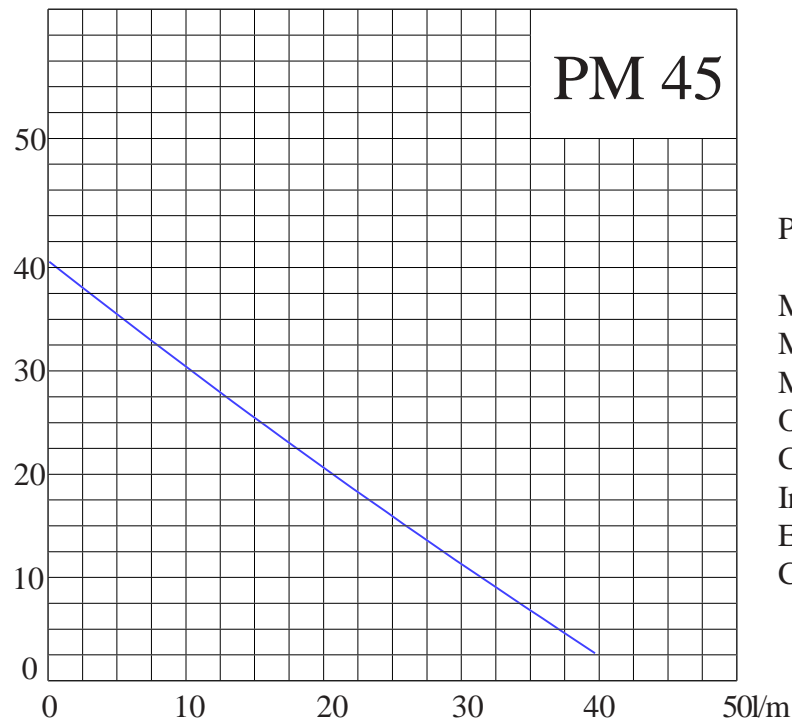
# Periferalpumpe PM 45

## Technical description

A small multifunction peripheral pump with bronze pump body. This type of pump has no internal ejector and operates silently. It is used for small appliances where modest water-/pressure requirements are demanded.



mvp



|                           |                  |
|---------------------------|------------------|
| Pump type:                | Centrifugal pump |
| Max input pressure:       | 6 Bar            |
| Max suction depth:        | 9 meters         |
| Max water temperature:    | 40°C.            |
| Operation:                | Continuous       |
| Connection pressure side: | 1"               |
| Insulation class:         | F                |
| Encapsulation:            | IP X4            |
| Connections:              | 1"               |

| Pump model | PM 45 |
|------------|-------|
| Qmax l/m   | 35    |
| Hmax mvp   | 35    |
| Height mm  | 155   |
| Length mm  | 265   |
| Width mm   | 125   |
| Weight kg  | 5.7   |
| Voltage V  | 230   |
| Phase      | 1     |
| Current A  | 5,5   |
| Power W    | 370   |

## Materials

|                |                 |
|----------------|-----------------|
| Pump body:     | Bronze          |
| Motor housing: | Aluminium       |
| Shaft:         | Stainless steel |
| Impeller:      | Brass           |
| Shaft seal:    | Carbon/Ceramic  |
| O-rings:       | Rubber          |



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# Centrifugal pump CPG

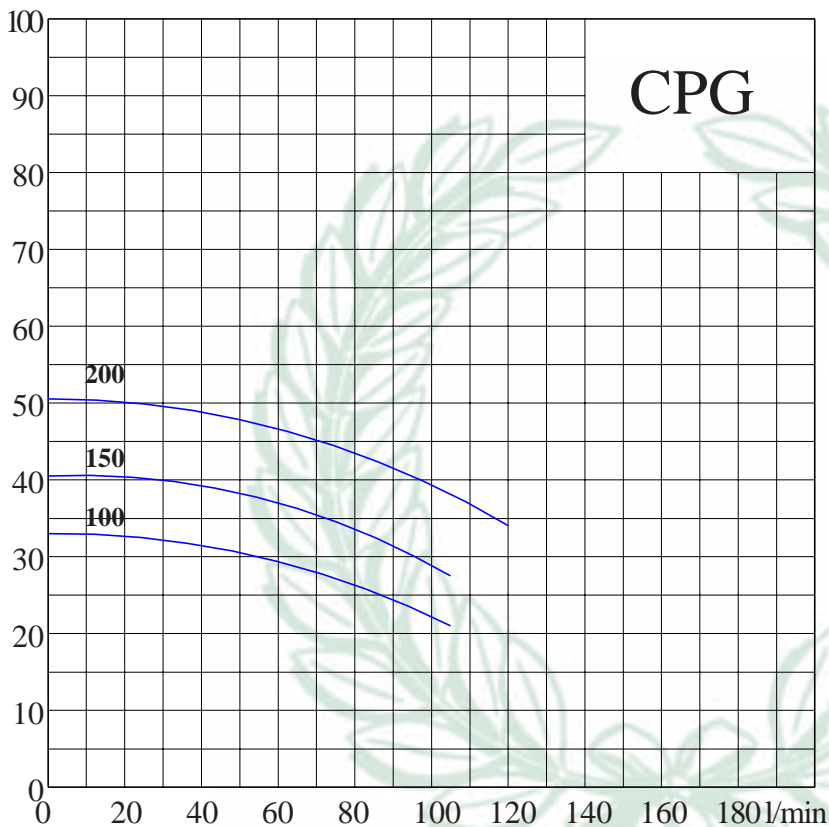
## Technical description

Centrifugal pump for hydropneumatic systems, watering and circulation. This pump type has no internal ejector and operates more silently than a JET pump.

The CPG is often used as a pressure booster in private houses and can solve problems with poor pressure in a very simple way.



Head, meters



## Technical specifications

Pump type: Centrifugal pump  
 Max. input pressure: 6 Bar  
 Max. suction height: 6 meter  
 Max water temp.: 50°C  
 Operation: Continuous  
 Insulation class: F  
 Encapsulation: IP X4  
 Connections: 1"

## Materials

Pump body: Cast iron  
 Stator: Aluminium  
 Shaft: Stainless steel  
 Impeller:  
 CPG 100 Noryl  
 CPG 150 - 200 Brass  
 Shaft seal: Carbon/Ceramic  
 O-rings: Rubber

| Pump model |     | 100M | 100T    | 150T    | 200T    |
|------------|-----|------|---------|---------|---------|
| Hmax       | l/m | 30   | 30      | 40      | 50      |
| Qmax       | mvp | 110  | 110     | 120     | 130     |
| Height     | mm  | 250  | 250     | 285     | 285     |
| Lenght     | mm  | 300  | 300     | 350     | 350     |
| Width      | mm  | 185  | 185     | 225     | 225     |
| Weight     | kg  | 14   | 14      | 22      | 23      |
| Voltage    | V   | 230  | 230/400 | 230/400 | 230/400 |
| Phase      |     | 1    | 3       | 3       | 3       |
| Current    | A   | 5,5  | 3,9/2,2 | 6,0/3,4 | 6,7/3,9 |
| Power      | W   | 1050 | 1050    | 1800    | 2000    |



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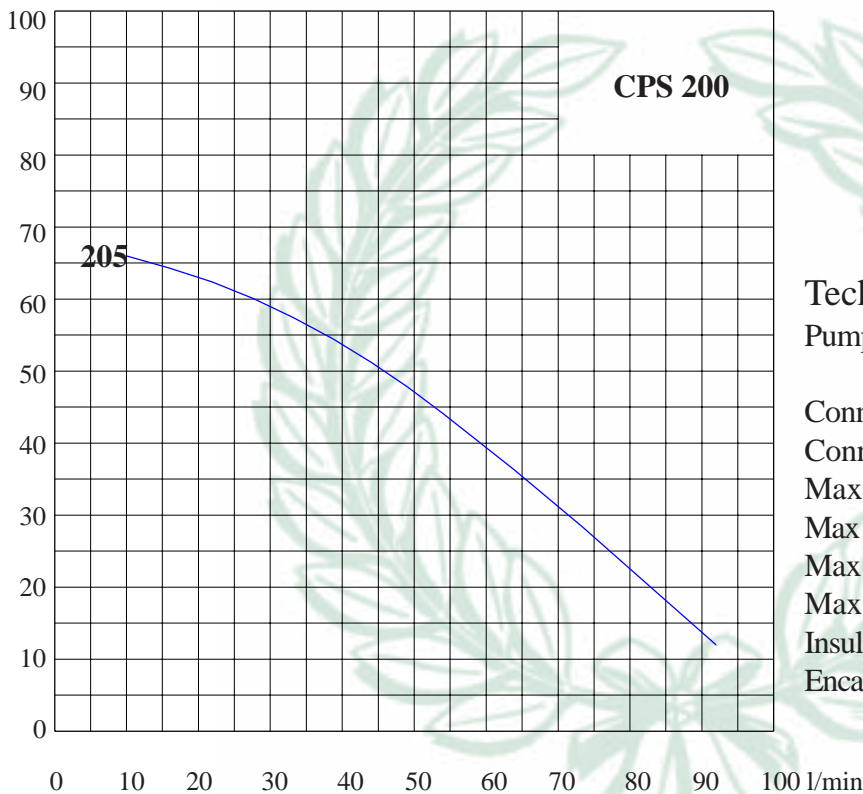
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# Centrifugal pump CPS 200

## Technical description

CPS is a vertical multistage centrifugal pump for pressure boosting, water delivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPS pumps are used in installations where high pressure combined with high waterflow is required at the same time. These Pumps are made for continuous operation and is totally maintenance-free. In many installations two or more of these pumps are installed together to combine pump capacity with the required amount of water. The reliability is considerably increased when pumps are connected in this way, and at the same time it is possible to f. ex. repair or to do a service to one of the pumps without shutting down the hole installation. Input- and pressure connections can be turned independent of each other.



## Technical specifications

Pump type Multistage Centrifugal pump  
 Conn. suction side 1 1/2"  
 Conn. press. side 1 1/4"  
 Max cap. 90 l/min  
 Max suction height 6 m  
 Max watertemp. 40°C  
 Max oper. temp 40°C  
 Insulation class F  
 Encapsulation IP 44

## Materials

Pump body Stainless steel  
 Motor bracket Cast iron  
 Foot Cast iron  
 Shaft Stainless steel  
 Shaft seal Carbon/Ceramic  
 Difusor Noryl.  
 Impellers Stainless steel

| Model CPS | Motor W | Current 1x/3x230 V | Hmax head | Height mm | Weight kg | Max work. pressure |
|-----------|---------|--------------------|-----------|-----------|-----------|--------------------|
| 205 M     | 1400    | 6.3 A              | 67        | 441       | 16        | 6 bar              |
| 205 T     | 1400    | 4.5 A              | 67        | 441       | 16        | 6 bar              |



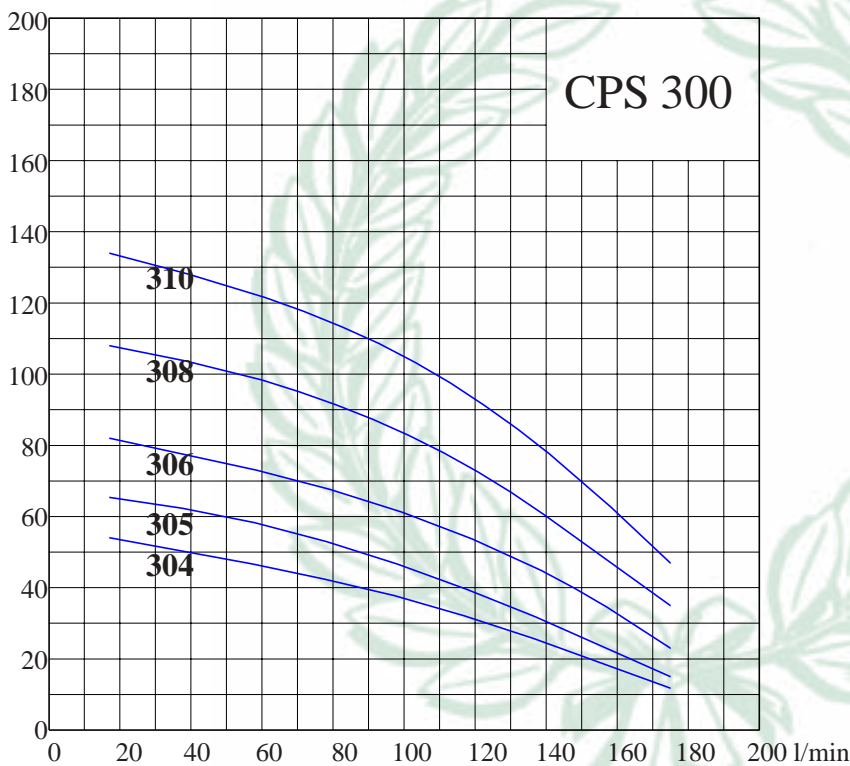
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# Centrifugal pump CPS 300

## Technical description

CPS is a vertical multistage centrifugal pump for pressure boosting, water delivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPS pumps are used in installations where high pressure combined with high waterflow is required at the same time. These Pumps are made for continuous operation and is totally maintenance-free. In many installations two or more of these pumps are installed together to combine pump capacity with the required amount of water. The reliability is considerably increased when pumps are connected in this way, and at the same time it is possible to f. ex. repair or to do a service to one of the pumps without shutting down the hole installation. Input- and pressure connections can be turned independent of each other.



## Technical specifications

|                   |                                |
|-------------------|--------------------------------|
| Pump type:        | Multistage<br>Centrifugal pump |
| Conn. suct. side  | 1 1/2"                         |
| Conn. press. side | 1 1/4"                         |
| Max capacity      | 180 l/min                      |
| Max suct. height  | 6 m                            |
| Max watertemp.    | 40°C                           |
| Max surr. temp.   | 40°C                           |
| Insulation class  | F                              |
| Encapsulation     | IP 44                          |

| Model<br>CPS | Motor<br>W | Current<br>3x230 / 400 V | Hmax<br>head, m | Height<br>mm | Weight<br>kg | Max work.<br>pressure. |
|--------------|------------|--------------------------|-----------------|--------------|--------------|------------------------|
| 304T         | 1800       | 5,2 / 3,0 A              | 54              | 462          | 20           | 6 bar                  |
| 305T         | 2200       | 6,9 / 4,0 A              | 65              | 487          | 20           | 6 bar                  |
| 306T         | 2700       | 8,5 / 4,9 A              | 82              | 539          | 23           | 10 bar                 |
| 308T         | 3500       | 11,9 / 6,9 A             | 108             | 650          | 32           | 15 bar                 |
| 310T         | 4900       | 13,8 / 8,0 A             | 134             | 707          | 38           | 15 bar                 |

## Materials

|               |                 |
|---------------|-----------------|
| Pump body     | Stainless steel |
| Motor bracket | Cast iron       |
| Foot          | Cast iron       |
| Shaft         | Stainless steel |
| Shaft seal    | Carbon/Ceramic  |
| Difusor       | Noryl           |
| Impellers     | Stainless steel |



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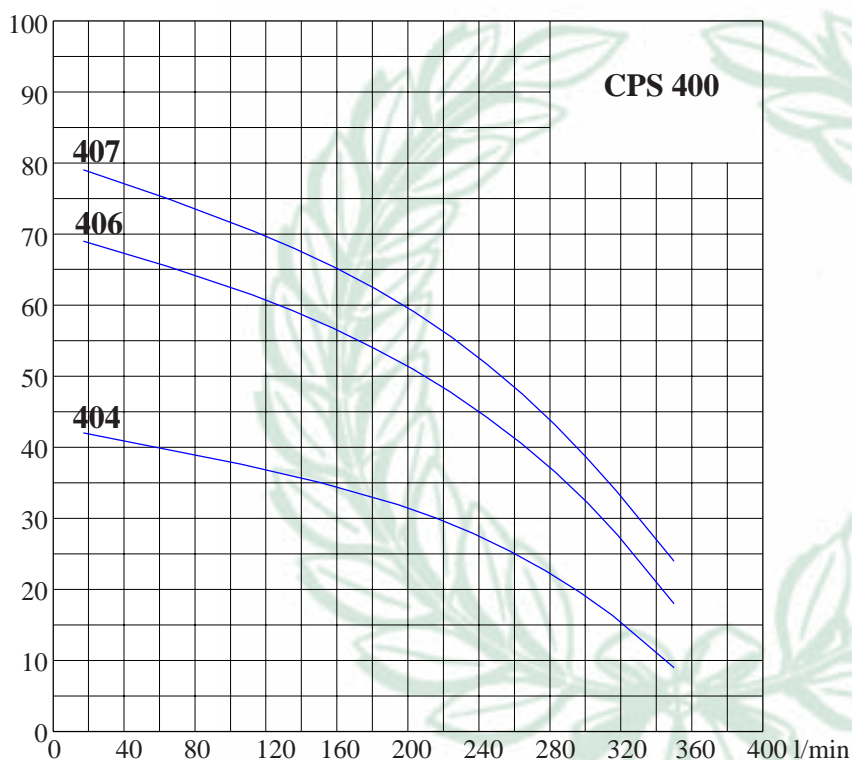
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# Centrifugal pump CPS 400

## Technical description

CPS is a vertical multistage centrifugal pump for pressure boosting, water delivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPS pumps are used in installations where high pressure combined with high waterflow is required at the same time. These Pumps are made for continuous operation and is totally maintenance-free. In many installations two or more of these pumps are installed together to combine pump capacity with the required amount of water. The reliability is considerably increased when pumps are connected in this way, and at the same time it is possible to f. ex. repair or to do a service to one of the pumps without shutting down the hole installation. Input- and pressure connections can be turned independent of each other.



## Technical specifications

|                   |                             |
|-------------------|-----------------------------|
| Pump type:        | Multistage Centrifugal pump |
| Conn. suct. side  | 1 1/2"                      |
| Conn. press. side | 1 1/4"                      |
| Max capacity      | 350 l/min                   |
| Max suct. height  | 6 m                         |
| Max watertemp.    | 40°C                        |
| Max surr. temp.   | 40°C                        |
| Insulation class  | F                           |
| Encapsulation     | IP 44                       |

| Modell CPS | Motor W | Current 3x230 / 400 V | Hmax head, m | Height mm | Weight kg | Max work. pressure. |
|------------|---------|-----------------------|--------------|-----------|-----------|---------------------|
| 404        | 2200    | 8,5 / 5.5 A           | 42           | 550       | 24        | 6 bar               |
| 406        | 3000    | 14,0 / 7.5 A          | 69           | 690       | 32        | 10 bar              |
| 407        | 4000    | 15,5 / 9.0 A          | 79           | 820       | 37        | 10 bar              |

## Materials

|               |                 |
|---------------|-----------------|
| Pump body     | Stainless steel |
| Motor bracket | Cast iron       |
| Foot          | Cast iron       |
| Shaft         | Stainless steel |
| Shaft seal    | Carbon/Ceramic  |
| Difusor       | Noryl           |
| Impellers     | Stainless steel |



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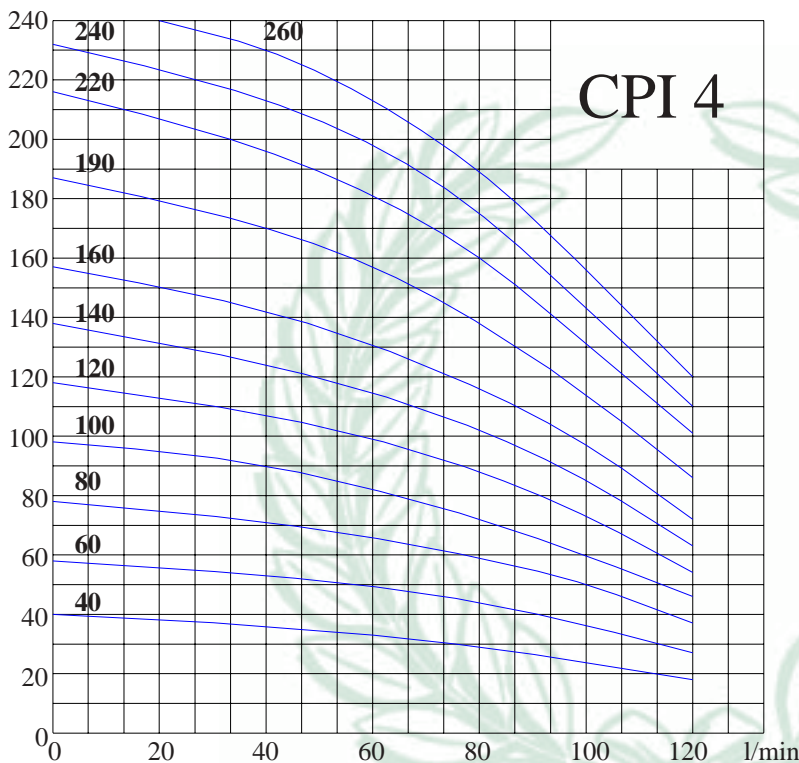
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# Centrifugal pump CPI 4

## Technical description

CPI is a vertical multistage centrifugal pump for pressure boosting, water delivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPS pumps are used in installations where high pressure combined with high waterflow is required at the same time. These pumps are very well sized and together with advanced and rational production it makes a long-lasting as well. All CPI Pumps are made for continuous operation and entirely maintenance-free. There are no oil or other elements inside the CPI that can reduce the water quality and the pump itself is water lubricated.



Replaces:

GRUNDFOS CR 4 and  
DP PUMPS DPL 4

## Technical specifications

|                  |                             |
|------------------|-----------------------------|
| Pump type        | Multistage Centrifugal pump |
| Connections      | See dimension table         |
| Max capacity     | 120 l/min                   |
| Max suct. height | 6 m                         |
| Max water temp.  | 120°C                       |
| Max surr. temp   | 40°C                        |
| Max input press. | 10 bar                      |
| Max work. press. | 16 bar                      |
| Insulation class | F                           |
| Encapsulation    | IP 54                       |

| Model CPI | Motor kW | Current 3x230 / 400 V | Hmax head, m | Height mm | Weight kg |
|-----------|----------|-----------------------|--------------|-----------|-----------|
| 4-40T     | 0.75     | 3.5 / 2.0 A           | 36           | 533       | 23        |
| 4-60T     | 1.1      | 4.5 / 2.6 A           | 53           | 587       | 26        |
| 4-80T     | 1.5      | 6.1 / 3.6 A           | 71           | 688       | 33        |
| 4-100T    | 2.2      | 8.8 / 5.0 A           | 90           | 742       | 36        |
| 4-120T    | 2.2      | 8,8 / 5.0 A           | 107          | 796       | 37        |
| 4-140T    | 3.0      | 10.9 / 6.3 A          | 124          | 904       | 41        |
| 4-160T    | 3.0      | 10.9 / 6.3 A          | 142          | 958       | 43        |
| 4-190T    | 4.0      | 13.8 / 8.0 A          | 170          | 1084      | 61        |
| 4-220T    | 4.0      | 13.8 / 8.0 A          | 196          | 1165      | 63        |
| 4-240T    | 5.5      | 21.5 / 12.4 A         | 213          | 1298      | 87        |
| 4-260T    | 5.5      | 21.5 / 12.4 A         | 230          | 1350      | 89        |

## Materials

|               |                  |
|---------------|------------------|
| Pump body     | Stainless steel  |
| Motor bracket | Cast iron        |
| Foot          | Cast iron        |
| Shaft         | Stainless steel  |
| Shaft seal    | Carbon / Ceramic |
| Difusor       | Stainless steel  |
| Impellers     | Stainless steel  |



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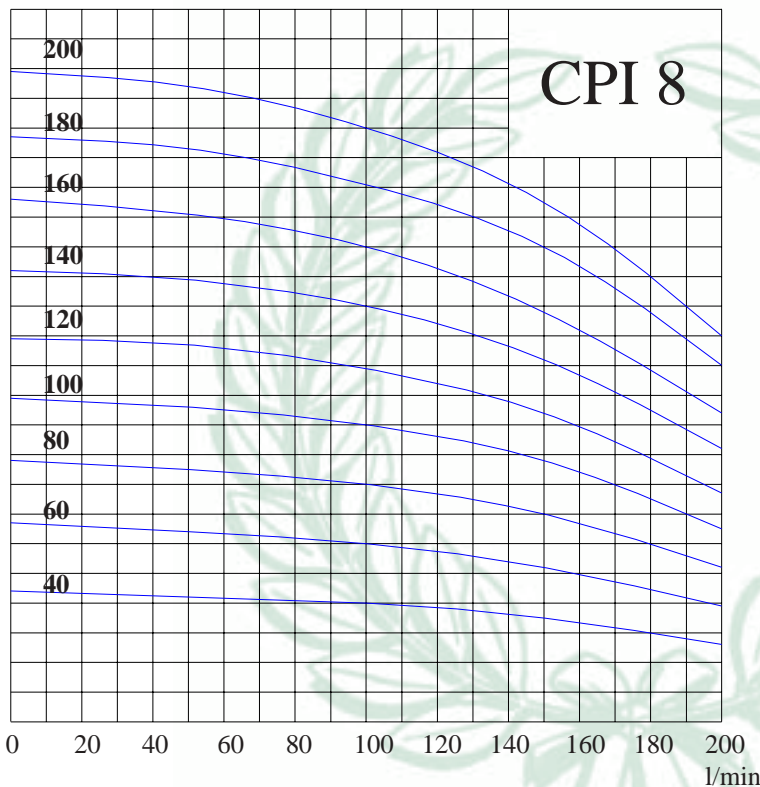
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# Centrifugal pump CPI 8

## Tecnical description

CPI is a vertical multistage centrifugal pump for pressure boosting, waterdelivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPS pumps are used in installations where high pressure combined with high waterflow is required at the same time. These pumps are very well sized and together with advanced and rational production it makes a long-lasting as well. All CPI Pumps are made for continous operation and entirely maintenance-free. There are no oil or other elements inside the CPI that can reduce the water quality and the pump it self is water lubricated.



Replaces:  
GRUNDFOS CR 8 and  
DP PUMPS DPL 10

## Technical specifications

|                  |                                |
|------------------|--------------------------------|
| Pump type        | Multistage<br>Centrifugal pump |
| Connections      | See dimencion table            |
| Max capacity     | 200l/min                       |
| Max suct. height | 6 m                            |
| Max water temp.  | 120°C                          |
| Max surr. temp   | 40°C                           |
| Max input press. | 10 bar                         |
| Max work. press. | 16 bar                         |
| Insulation class | F                              |
| Encapsulation    | IP 54                          |

| Model<br>CPI | Motor<br>kW | Current<br>3x230 / 3x400 V | Hmax<br>head, m | Height<br>mm | Weight<br>kg |
|--------------|-------------|----------------------------|-----------------|--------------|--------------|
| 8-40T        | 1.5         | 6,1 / 3.4 A                | 42              | 685          | 40           |
| 8-60T        | 2.2         | 9,2 / 5.1 A                | 64              | 745          | 43           |
| 8-80T        | 3.0         | 11,4 / 6.8 A               | 85              | 860          | 51           |
| 8-100T       | 4.0         | 16,2 / 9.7 A               | 106             | 940          | 52           |
| 8-120T       | 4.0         | 16,2 / 9.7 A               | 127             | 1000         | 56           |
| 8-140T       | 5.5         | 20,7 / 12.4A               | 149             | 1130         | 85           |
| 8-160T       | 5.5         | 20,7 / 12.4A               | 171             | 1190         | 86           |
| 8-180T       | 7.5         | 28.0 / 16.4A               | 193             | 1250         | 90           |
| 8-200T       | 7.5         | 28.0 / 16.4A               | 214             | 1310         | 91           |

## Materials

|               |                  |
|---------------|------------------|
| Pump body     | Stainless steel  |
| Motor bracket | Cast iron        |
| Foot          | Cast iron        |
| Shaft         | Stainless steel  |
| Shaft seal    | Carbon / Ceramic |
| Difusor       | Stainless steel  |
| Impellers     | Stainless steel  |



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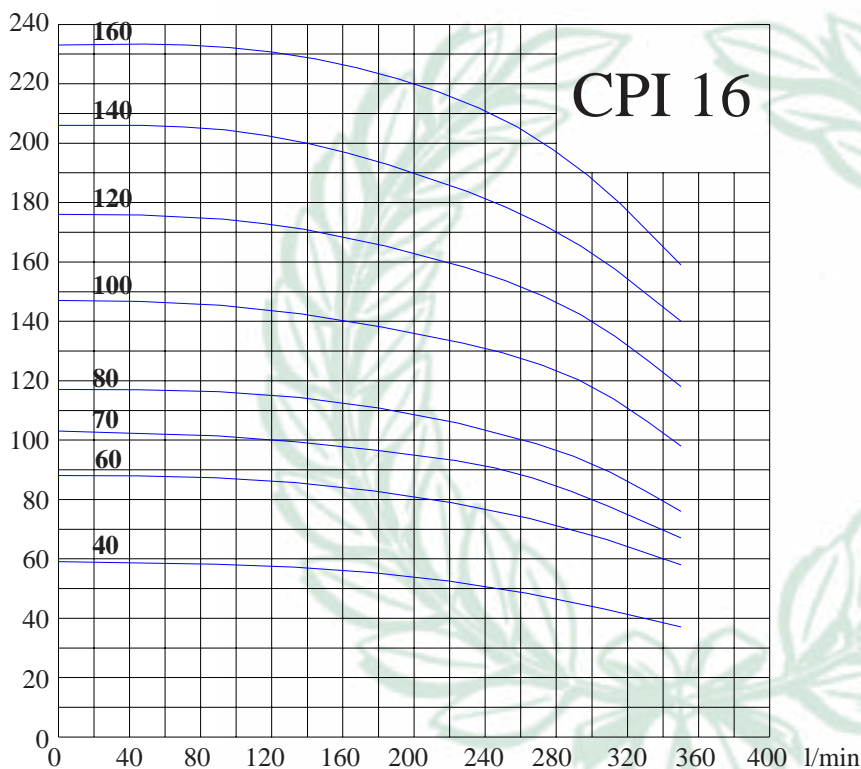
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# Centrifugal pump CPI 16

## Technical description

CPI is a vertical multistage centrifugal pump for pressure boosting, water delivery, watering and circulation of clean, cold water. The centrifugal pump is an economic and efficient pump with low noise emissions. The CPI pumps are used in installations where high pressure combined with high waterflow is required at the same time. These pumps are very well sized and together with advanced and rational production it makes a long-lasting as well. All CPI Pumps are made for continuous operation and entirely maintenance-free. There are no oil or other elements inside the CPI that can reduce the water quality and the pump itself is water lubricated.



Replaces:  
GRUNDFOS CR 16 and  
DP PUMPS DPL 18

## Technical specifications

|                  |                             |
|------------------|-----------------------------|
| Pump type        | Multistage Centrifugal pump |
| Connections      | See dimension table         |
| Max capacity     | 350 l/min                   |
| Max suct. height | 6 m                         |
| Max water temp.  | 120°C                       |
| Max surr. temp   | 40°C                        |
| Max input press. | 10 bar                      |
| Max work. press. | 16 bar                      |
| Insulation class | F                           |
| Encapsulation    | IP 54                       |

## Materials

|               |                  |
|---------------|------------------|
| Pump body     | Stainless steel  |
| Motor bracket | Cast iron        |
| Foot          | Cast iron        |
| Shaft         | Stainless steel  |
| Shaft seal    | Carbon / Ceramic |
| Difusor       | Stainless steel  |
| Impellers     | Stainless steel  |

| Model<br>CPI | Motor<br>kW | Current<br>3x230V / 400V | Hmax<br>head, m | Height<br>mm | Weight<br>kg |
|--------------|-------------|--------------------------|-----------------|--------------|--------------|
| 16-40T       | 4.0         | 16.8 / 9.7 A             | 58              | 844          | 59           |
| 16-60T       | 5.5         | 21.5 / 12.4 A            | 87              | 1005         | 84           |
| 16-70T       | 7.5         | 28.0 / 16.4 A            | 101             | 1050         | 90           |
| 16-80T       | 7.5         | 28.0 / 16.4 A            | 116             | 1095         | 92           |
| 16-100T      | 11.0        | 40.0 / 23.5 A            | 145             | 1325         | 136          |
| 16-120T      | 11.0        | 40.0 / 23.5 A            | 174             | 1425         | 140          |
| 16-140T      | 15.0        | 50.0 / 29.0 A            | 204             | 1505         | 181          |
| 16-160T      | 15.0        | 50.0 / 29.0 A            | 232             | 1595         | 185          |

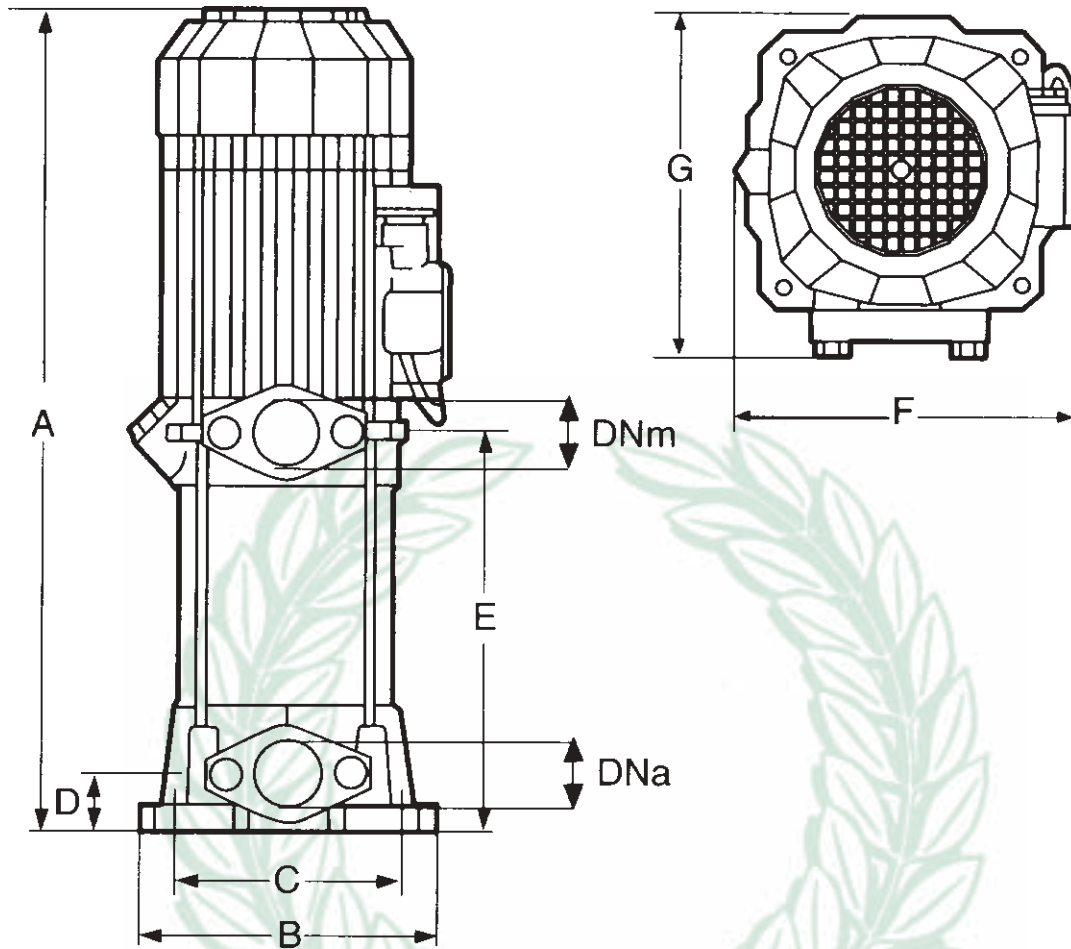


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# Overall dimensions CPS



|          | A   | B   | C   | D  | E   | F   | G   | DNa | MNm |
|----------|-----|-----|-----|----|-----|-----|-----|-----|-----|
| CPS 203T | 398 | 170 | 125 | 42 | 182 | 180 | 204 | 32  | 32  |
| CPS 204T | 422 | 170 | 125 | 42 | 205 | 180 | 204 | 32  | 32  |
| CPS 205T | 441 | 170 | 125 | 42 | 225 | 180 | 204 | 32  | 32  |
| CPS 303T | 437 | 183 | 133 | 38 | 200 | 200 | 215 | 40  | 32  |
| CPS 304T | 462 | 183 | 133 | 38 | 225 | 200 | 215 | 40  | 32  |
| CPS 305T | 487 | 183 | 133 | 38 | 250 | 200 | 215 | 40  | 32  |
| CPS 306T | 539 | 183 | 133 | 38 | 275 | 200 | 215 | 40  | 32  |
| CPS 308T | 650 | 183 | 133 | 38 | 322 | 264 | 220 | 40  | 32  |
| CPS 403T | 483 | 183 | 133 | 38 | 245 | 200 | 215 | 40  | 32  |
| CPS 403M | 512 | 183 | 133 | 38 | 245 | 200 | 215 | 40  | 32  |
| CPS 404T | 550 | 183 | 133 | 38 | 285 | 200 | 215 | 40  | 32  |
| CPS 406T | 690 | 183 | 133 | 38 | 362 | 264 | 220 | 40  | 32  |



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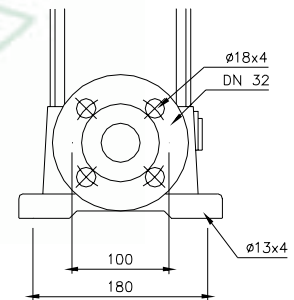
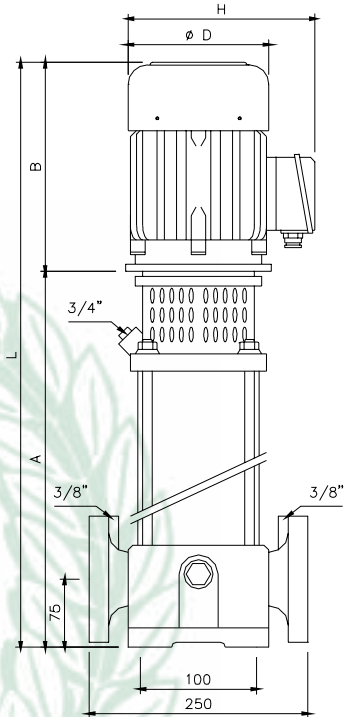
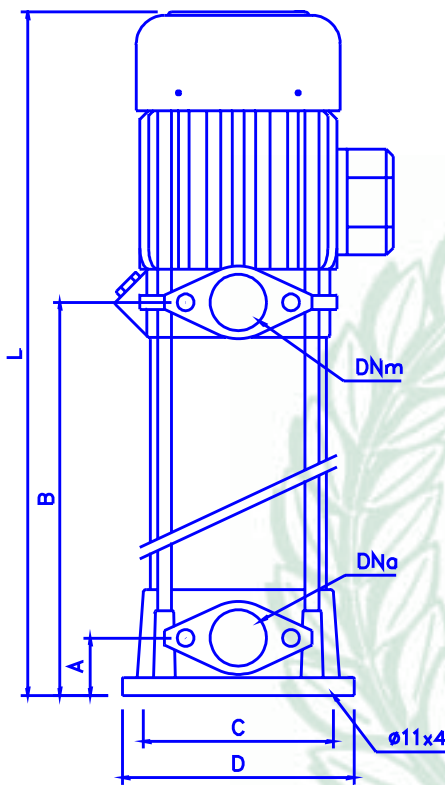
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# Dimensions CPI / CPS

CPS 2-400

CPI 4 oval

CPI 4 DN32



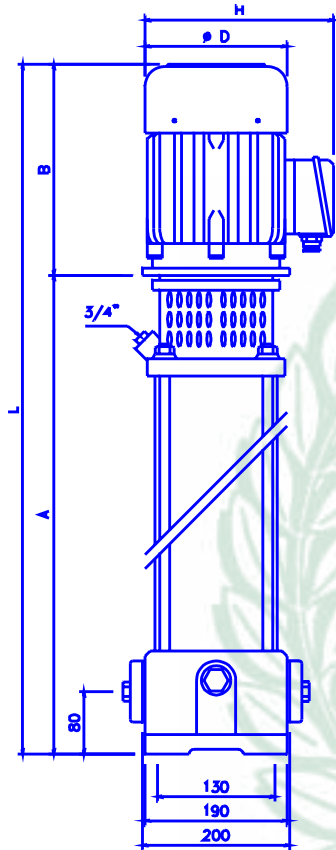
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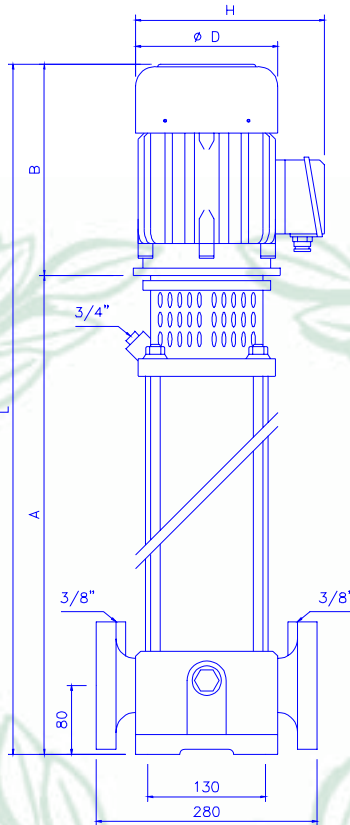
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# Dimensions CPI

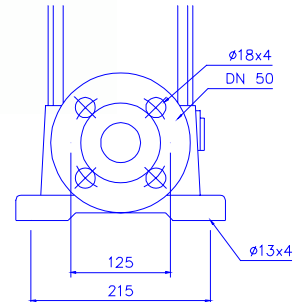
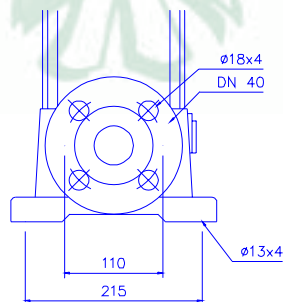
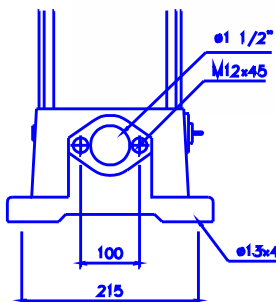
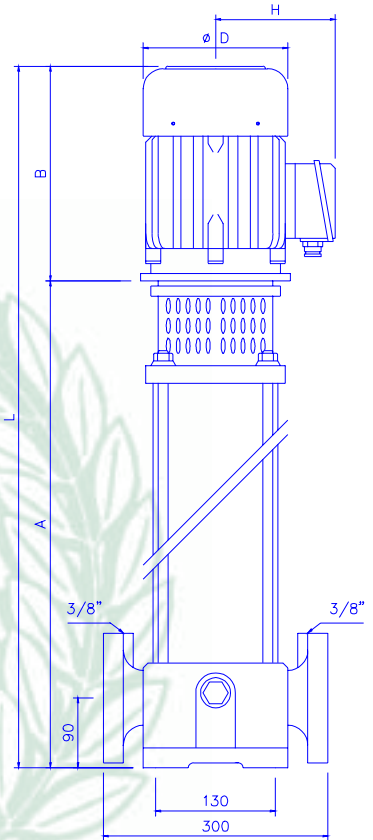
CPI 8 oval



CPI 8 DN40



CPI 16



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# Dimension table CPI / CPS

| Model      | L    | B   | A    | D   | H   | C   | DNm    | DNa    |
|------------|------|-----|------|-----|-----|-----|--------|--------|
| CPS 205    | 441  | 225 | 42   | 170 | 204 | 125 | 1 1/4" | 1 1/2" |
| CPS 304    | 462  | 225 | 38   | 183 | 215 | 133 | 1 1/4" | 1 1/2" |
| CPS 305    | 487  | 250 | 38   | 183 | 215 | 133 | 1 1/4" | 1 1/2" |
| CPS 306    | 539  | 275 | 38   | 183 | 215 | 133 | 1 1/4" | 1 1/2" |
| CPS 308    | 650  | 322 | 38   | 183 | 220 | 133 | 1 1/4" | 1 1/2" |
| CPS 310    | 707  | 373 | 38   | 183 | 220 | 133 | 1 1/4" | 1 1/2" |
| CPS 404    | 550  | 285 | 38   | 183 | 215 | 133 | 1 1/4" | 1 1/2" |
| CPS 406    | 690  | 362 | 38   | 183 | 220 | 133 | 1 1/4" | 1 1/2" |
| CPS 407    | 820  | 421 | 38   | 183 | 220 | 133 | 1 1/4" | 1 1/2" |
| CPI 4-40   | 533  | 237 | 296  | 160 | 131 |     |        |        |
| CPI 4-60   | 587  | 237 | 350  | 160 | 131 |     |        |        |
| CPI 4-80   | 688  | 265 | 423  | 185 | 130 |     |        |        |
| CPI 4-100  | 742  | 265 | 477  | 185 | 130 |     |        |        |
| CPI 4-120  | 796  | 265 | 531  | 185 | 130 |     |        |        |
| CPI 4-140  | 904  | 315 | 589  | 200 | 140 |     |        |        |
| CPI 4-160  | 958  | 315 | 643  | 200 | 140 |     |        |        |
| CPI 4-190  | 749  | 335 | 749  | 200 | 140 |     |        |        |
| CPI 4-220  | 830  | 335 | 830  | 200 | 140 |     |        |        |
| CPI 4-240  | 911  | 385 | 911  | 260 | 185 |     |        |        |
| CPI 4-260  | 965  | 385 | 965  | 260 | 185 |     |        |        |
| CPI 8-40   | 685  | 265 | 420  | 185 | 130 |     |        |        |
| CPI 8-60   | 745  | 265 | 480  | 185 | 130 |     |        |        |
| CPI 8-80   | 860  | 315 | 545  | 200 | 140 |     |        |        |
| CPI 8-100  | 940  | 335 | 605  | 200 | 140 |     |        |        |
| CPI 8-120  | 1000 | 335 | 665  | 200 | 140 |     |        |        |
| CPI 8-140  | 1130 | 385 | 745  | 260 | 185 |     |        |        |
| CPI 8-160  | 1190 | 385 | 805  | 260 | 185 |     |        |        |
| CPI 8-180  | 1250 | 385 | 865  | 260 | 185 |     |        |        |
| CPI 8-200  | 1310 | 385 | 925  | 260 | 185 |     |        |        |
| CPI 16-40  | 844  | 335 | 509  | 200 | 140 |     |        |        |
| CPI 16-60  | 1005 | 385 | 620  | 260 | 185 |     |        |        |
| CPI 16-70  | 1050 | 385 | 665  | 260 | 185 |     |        |        |
| CPI 16-80  | 1095 | 385 | 710  | 260 | 185 |     |        |        |
| CPI 16-100 | 1325 | 495 | 830  | 260 | 185 |     |        |        |
| CPI 16-120 | 1425 | 495 | 920  | 260 | 185 |     |        |        |
| CPI 16-140 | 1505 | 495 | 1010 | 310 | 230 |     |        |        |
| CPI 16-160 | 1595 | 495 | 1100 | 310 | 230 |     |        |        |



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# Installation instruction Centrifugal pumps

With a correctly installed pump, water delivery will remain reliable and safe for a long period. Most application faults are caused by external interruptions. The most common faults are:

- A - The installation is not equipped with a motor protection (only for 3-phase pumps)
  - B - The pump has worked against a closed valve or faulty/incorrectly adjusted pressure switch.
  - C - The pump has been damaged as a result of freezing.
  - D - The fan cover has been damaged during transportation and causes the motor to stall.
- This often causes unnecessary repair costs.

**Please follow the instructions carefully**

## Delivery

Make sure the pump has not been damaged during transportation. Turn the motorshaft by using a screw-driver through the centerhole on the fan cover. The shaft should rotate easily. Adjust the fan cover if needed.

## Installation

The pump is intended for permanent installation. Make sure it is installed in a frost-free area. Even a short period of frost can be sufficient to damage the pump. The installation location should be clean, dry and well-ventilated.

## Electrical danger

Pumps are often located in cramped and damp locations. Take extra care when dealing with electrical systems because of the electrical danger. **Always disconnect the power supply before touching the electrical pump.** Have an authorised electrician check that the motor protection and grounding is without faults. Monophase pumps should be connected to a standard grounded electrical outlet. If an extension cord is used, make sure that also this is provided with a satisfactory protective ground. **Touching a pump which does not have a proper protective ground, can be lethal.**

## Electrical connections

The electrical connections for three phase pumps must be carried out by an authorised electrician in accordance with local regulations. The pumps must be provided with CE approved motor protection. Adjust the setting of the motor protection in accordance with instructions on the motor nameplate. Monophase pumps are supplied with a cable and plug ready to be connected to a standard grounded electrical outlet and are also equipped with a built-in protective temperature limit device.

## Direction of rotation

Monophase pumps always rotate in the correct direction. Make sure the three phase pump rotates in a clock wise direction (the pump seen from the motor end).

Page 1

continues next page



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# Installation instruction Centrifugal pumps

Continuation...

## Suction pipe

If a pump needs to be replaced and the new pump has the same or lower capacity than the “old” pump the existing suction pipe can normally be used. If a larger pump or a new suction pipe has to be installed, it is of great importance that the suction pipe has sufficient size. Always contact the pump supplier if there is any doubt regarding the size of the suction pipe.

## Foot valve

A foot valve should always be installed. In dug wells it should be located at least 30 cm from bottom of the well and in drilled wells the foot valve should be located approximately 11 meters under the level of the pump. This will prevent the pump from running dry if the water removed is more than water flowing into the well. Always use a foot valve with at least the same dimensions as the suction pipe. A quality valve in metal is recommended.



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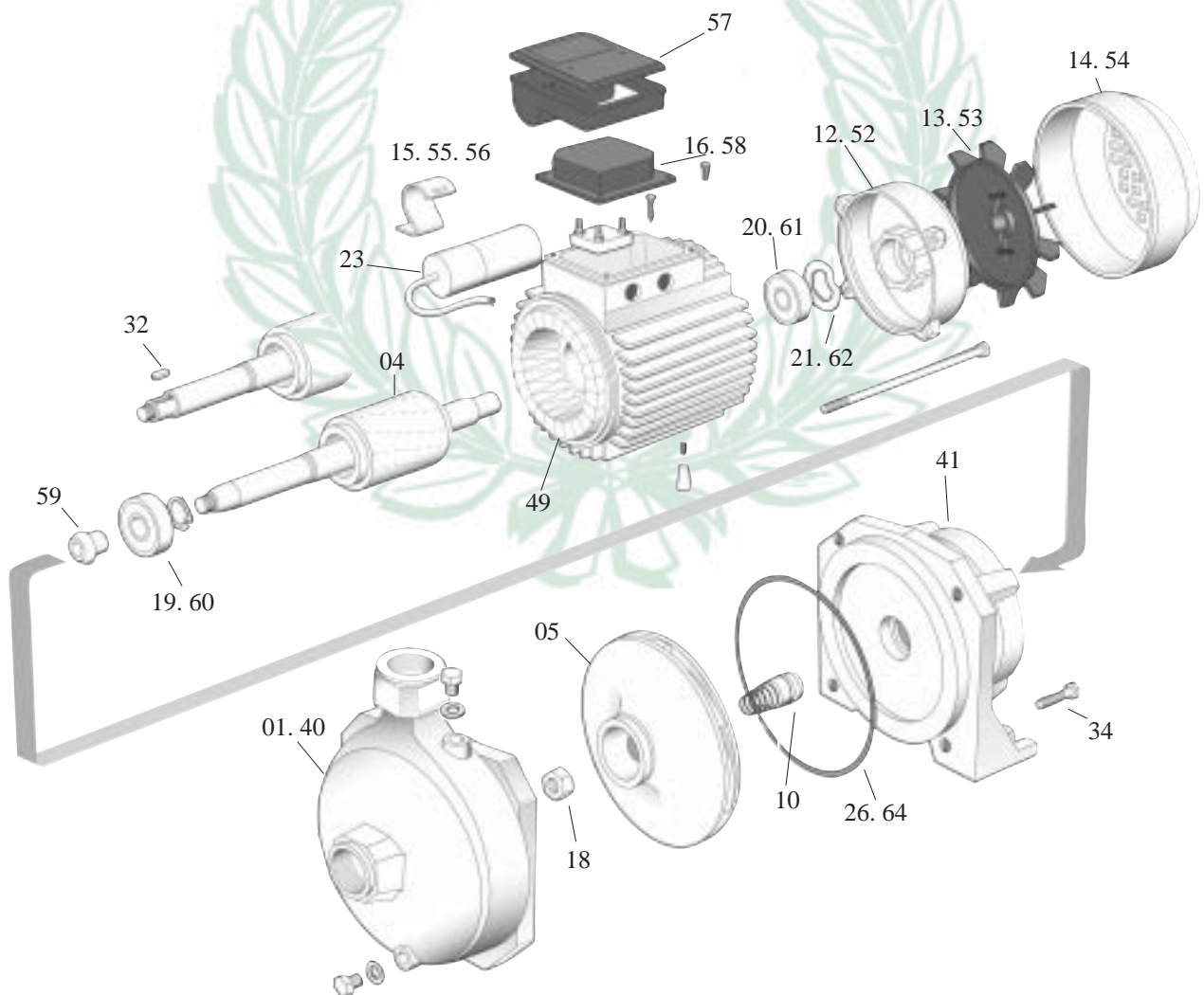
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# Spare parts CPG

Sparepart numbers in the drawing points at the last two numbers in the list of articles below. One particular partnumber can fit more than one pump model.

|       |                                |       |                                |
|-------|--------------------------------|-------|--------------------------------|
| Z1901 | Pump body CPG 100              | Z1940 | Pump body CPG 150-200          |
| Z1904 | Rotor CPG 100M                 | Z1941 | Motor bracket CPG 150-200      |
| Z1905 | Impeller CPG 100               | Z1948 | Shaft seal CPG 150-200         |
| Z1910 | Shaft seal CPG 100             | Z1949 | Stator CPG 100T                |
| Z1912 | Motor housing CPG 100          | Z1952 | Motor housing CPG 150-200      |
| Z1913 | Fan CPG 100                    | Z1953 | Fan CPG 150-200                |
| Z1914 | Fan cover CPG 100              | Z1954 | Fan cover CPG 150-200          |
| Z1915 | Termination block CPG 100M     | Z1955 | Termination block CPG 100T     |
| Z1916 | Electrical cover CPG 100M      | Z1956 | Termination block CPG 150-200  |
| Z1918 | Nut for pump wheel CPG 150-200 | Z1957 | Electrical cover CPG 100M      |
| Z1919 | Ballbearing pumpside CPG 100   | Z1958 | Electrical cover CPG 150-200   |
| Z1920 | Ballbearing pump side CPG 100  | Z1959 | Splash guard CPG 150-200       |
| Z1921 | Spring washer CPG 100          | Z1960 | Ballbearing pump side 150-200  |
| Z1923 | Condenser CPG 100M             | Z1961 | Ballbearing motor side CPG 100 |
| Z1926 | O-ring pump body CPG 100       | Z1962 | Spring washer CPG 150-200      |
| Z1932 | Guide CPG 150-200              | Z1964 | O-ring pump body CPG 150-200   |
| Z1934 | Bolt pump body CPG 100         |       |                                |



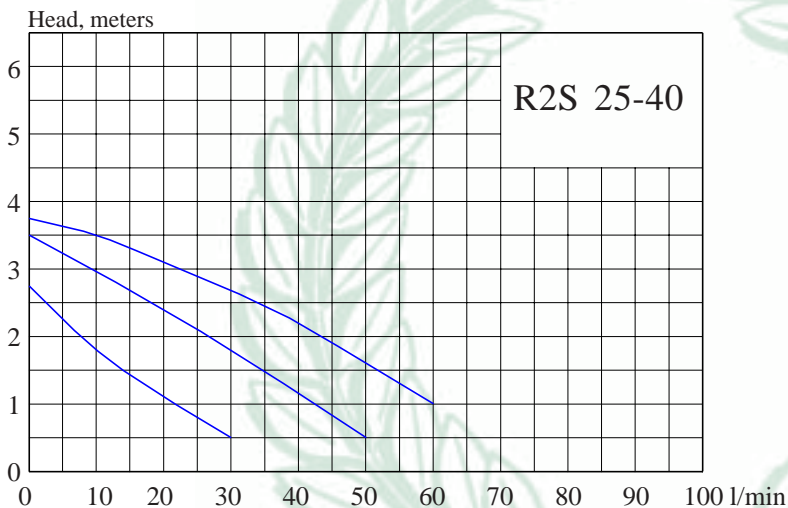
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# Cirkulation pump R2S

## Technical description

The EMS circulation pump is intended for circulation of warm and cold liquids. This is a liquid operational circulation pump for central heating-, cooling- and climate installations. The pump has three speed operation. See diagram for capacity.



Electrical data R2S 25-40  
 Voltage 230V  
 Power 73/47/33W  
 Current 0.33/0.23/0.16A  
 Insulation class F

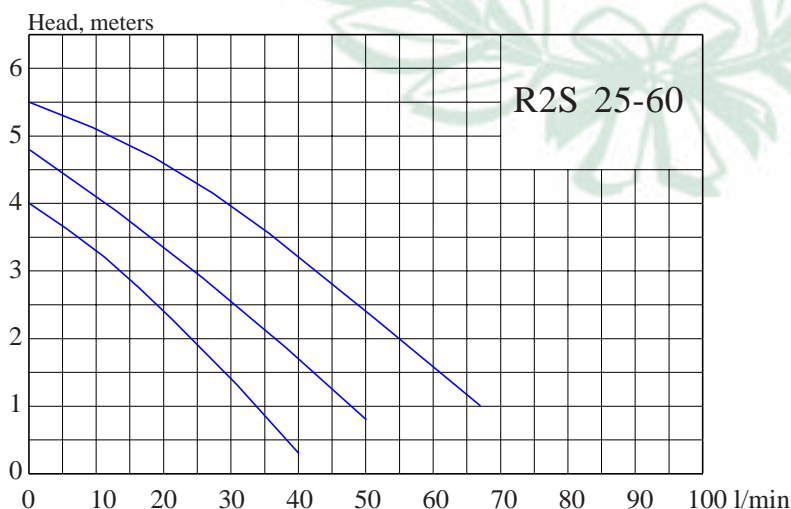
Electrical data R2S 25-60  
 Voltage 230V  
 Power 110/96/77W  
 Current 0.5/0.44/0.37A  
 Insulation class F

### Materials

Pump body Cast iron  
 Impeller Noryl  
 Shaft Stainless steel  
 Stator Aluminium

### Technical specifications

Water temp. 10 to 110°C  
 Max pressure 10 Bar  
 Min pressure 0.2 Bar  
 Connection 1 1/4"  
 Lengths 130/180mm



**Attention!**

**Always install the pump with the motor shaft horizontally position.**



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# Expansion tank for heating systems

## Technical description

The Expansion tank for closed heating systems is constructed to compensate the dilation of the water volume. Water and air are kept separate by a membrane. This means no contact between the water and the walls inside the tank, and prevents the tank from corroding from the inside. All tanks in the range 12-40 liters are delivered without legs and are meant to be installed in a wall mounting kit or a collector. The range of tanks from 60-150 liters are delivered with legs. All tanks are CE-marked and precharged.



Wall mounting kit



Safety valve 1.5 bar for heating installations

| Size | Height | Diameter | Connection. |
|------|--------|----------|-------------|
| 8    | 330    | 200      | 3/4"        |
| 12   | 300    | 270      | 3/4"        |
| 18   | 420    | 270      | 3/4"        |
| 25   | 450    | 290      | 3/4"        |
| 40   | 560    | 320      | 1"          |
| 60   | 690    | 380      | 1"          |
| 80   | 680    | 450      | 1"          |
| 100  | 760    | 450      | 1"          |
| 150  | 785    | 550      | 1"          |

## Technical data

|                 |         |
|-----------------|---------|
| Max water temp. | 90° C   |
| Max pressure    | 5 bar   |
| Precharge       | 1.5 bar |

## Materials

|                   |            |
|-------------------|------------|
| Tank              | Steel      |
| Membrane          | SBR        |
| Surface treatment | Powder lac |



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# EMS domestic sewage pumpset



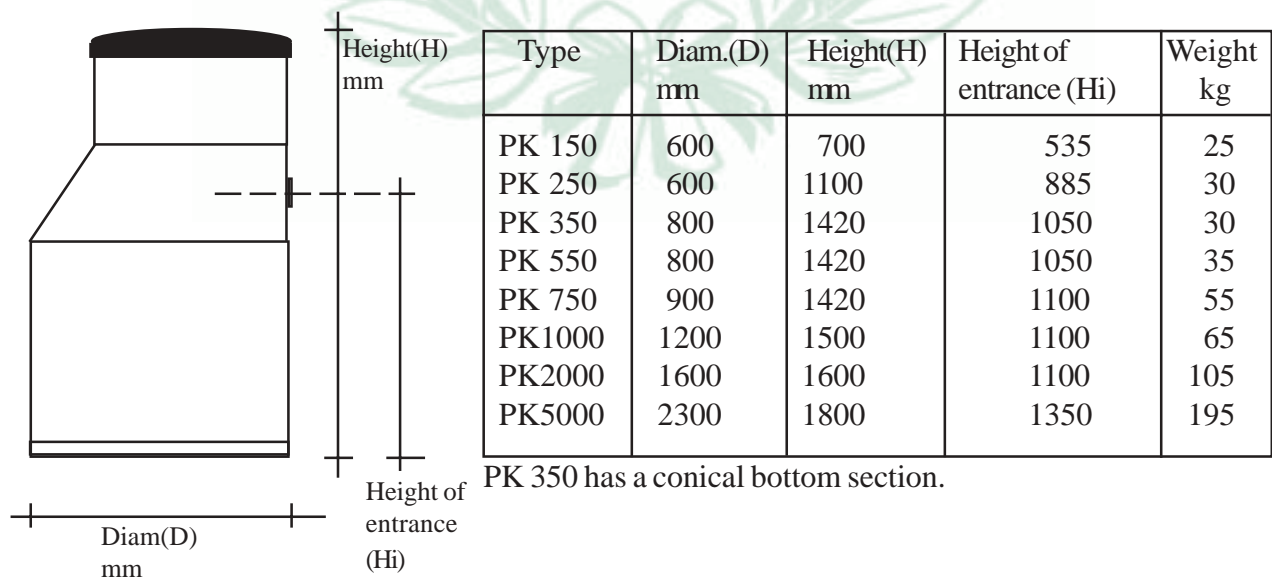
EMS domestic sewage tanks are produced in fiber glass armed polyester (GRP) and satisfy the material demands in NS 3162 .

These sewage tanks are delivered complete with an automatic coupling foot, ball fitted check valve and guiding tubes.

Pump and level control is sized depending on each individual installation.

Recommended strike capacity:

| Nr. of persons connected | Strike capacity each time | Pump-capacity |
|--------------------------|---------------------------|---------------|
| 5 persons                | 200-300 l                 | 1-3 l/sek     |
| 10 persons               | 400-600 l                 | 2-3 l/sek     |



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# Drainage pump DP 60

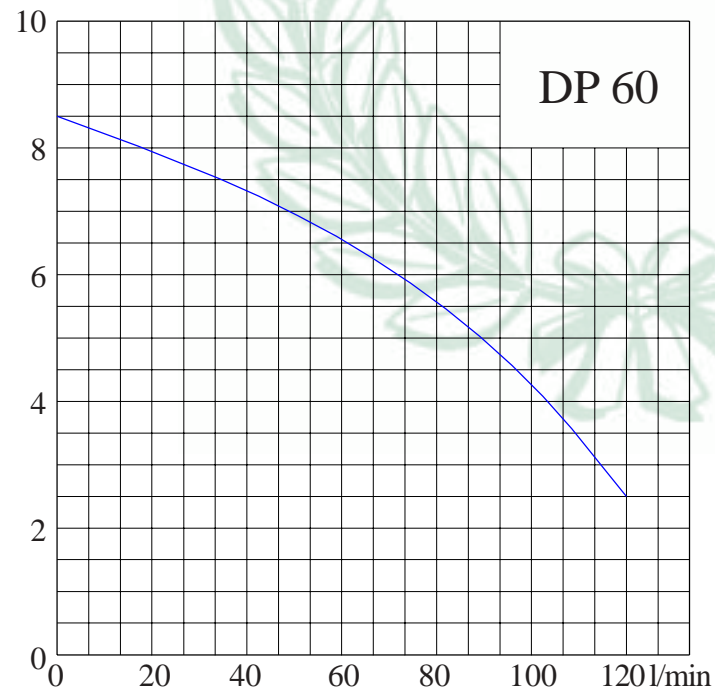
## Technical description

Submersible drainage pumps deliver large amounts of water at a low pressure. The DP 60 is ideal for drainage of basements etc. The pump is best installed in a pump pit with a diameter of 400 mm or more. The pump is intended for clean and lightly contaminated water. Solid particles up to 10 mm can pass through the pump. This pump is not intended for water containing corrosive or abrasive particles. DP 60 is delivered with 10 metres of rubber cable and is totally maintenance-free.



## Capacity

Head, meters



## Technical specifications

|             |            |
|-------------|------------|
| Height mm   | 250        |
| Diameter mm | 150        |
| Weight Kg   | 4.2        |
| Connection  | 1"         |
| Voltage V   | 230 V      |
| Current A   | 1.6 Ampère |
| Power W     | 400        |

## General data

|                |             |
|----------------|-------------|
| Pump type      | Centrifugal |
| Impeller       | Open type   |
| Max work.depth | 10 m        |
| Max watertemp. | 40°C        |



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# Drainage pump GLI

## Technical description

Submersible drainage pumps submit large amounts of water at a low pressure. For emptying of basements etc. the pump should be placed in a pump pit with a diameter of 500 mm or more. The pump is intended for clean and light contaminated water. Solid particles up to 10 mm can pass through the pump. This pump is not intended for water containing corrosive or abrasive particles.

The construction which are made exclusively of stainless steel makes the EMS drainage pump can stand tough operational conditions for a long period. The GLI range is delivered with 10 metres of rubber cable and is totally maintenance free.

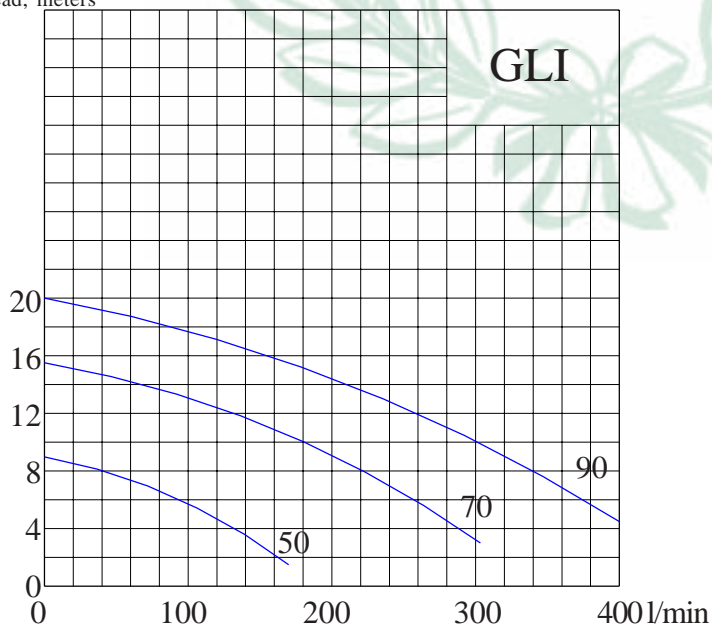


## Technical specifications

| Pump model        |    | GLI50  | GLI70  | GLI90  |
|-------------------|----|--------|--------|--------|
| Height:           | mm | 260    | 352    | 377    |
| Diameter:         | mm | 165    | 210    | 210    |
| Weight:           | kg | 5.9    | 12.7   | 13.5   |
| Connection:       |    | 1 1/4" | 1 1/2" | 1 1/2" |
| Max work.depth: m |    | 5      | 10     | 10     |
| Voltage:          | V  | 230    | 230    | 3x230  |
| Current:          | A  | 1.9    | 6.2    | 6.8    |
| Power :           | W  | 400    | 1200   | 1750   |

## Capacity

Head, meters



## Technical data

|                   |  |
|-------------------|--|
| Pump type:        | Submersible centrifugal pump           |
| Max watertemp.:   | 50°C                                   |
| Shaft seal:       | Double with oil chambers between seals |
| Insulation class: | B                                      |
| Encapsulation:    | IP68                                   |
| Motor protection: | Built-in on mono phase models          |
| Operation:        | Continuous                             |
| Lenght of cable:  | 10 meters                              |

## Materials

|                |                 |
|----------------|-----------------|
| Pump body:     | Stainless steel |
| Motor housing: | Stainless steel |
| Shaft:         | Stainless steel |
| Impeller:      | Stainless steel |
| O-rings:       | Rubber          |



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# Construction pump GLG

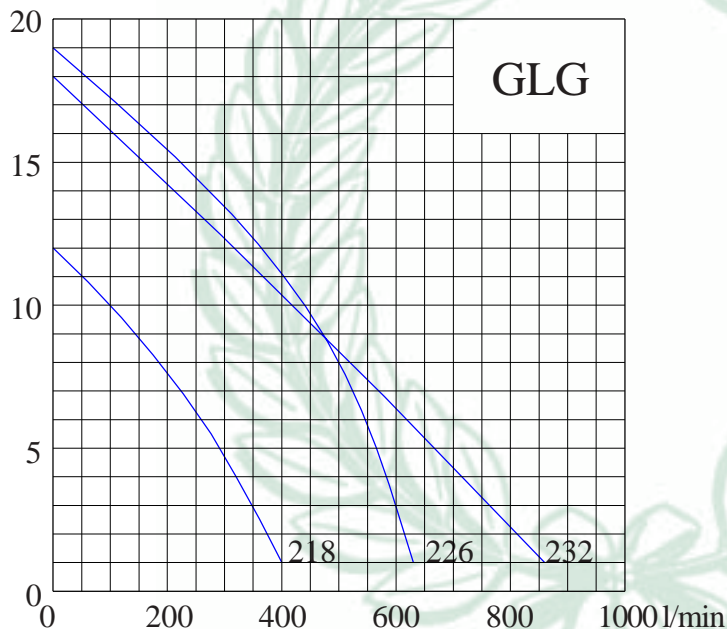


Submersible drainage pump for water containing sand and small amounts of contaminates.

Monophase models are delivered with a float switch.

## Capacity

Head, meters



## Electrical data

Insulation class: F  
 Encapsulation: IP 68  
 Motor protection: Built-in on monophase models  
 Operation: Continuous  
 Cable length: 10 meters

## General data

Pump type: Centrifugal  
 Impeller type: Open  
 Max water temp.: 40°C  
 Max work. depth: 10 meters

## Materials

Pump body: Cast iron  
 Motor housing: Cast iron  
 Shaft: Stainless steel  
 Impeller: Cast iron  
 O-rings: Nitril rubber

## Technical specifications

| Pumpmodell            |    | GLG210 | GLG217 | GLG226  | GLG232  |
|-----------------------|----|--------|--------|---------|---------|
| Height:               | mm | 250    | 330    | 475     | 475     |
| Diameter:             | mm | 150    | 175    | 250     | 250     |
| Weight:               | kg | 9.5    | 16     | 29      | 32      |
| Connection:           |    | 1 1/4" | 1 1/2" | 2"      | 2"      |
| Types of shaft seals: |    | 1*     | 1*     | 2+3*    | 2+3*    |
| Voltage:              | V  | 230    | 230    | 230/400 | 230/400 |
| Current:              | A  | 2.5    | 5.2    | 6.3/3.6 | 9.0/5.2 |
| Power:                | W  | 400    | 1050   | 1900    | 2800    |

## \*Shaft seal types:

- 1 Ceramic/Graphite
- 2 Carbon/Ceramic
- 3 Nitiril radial seal



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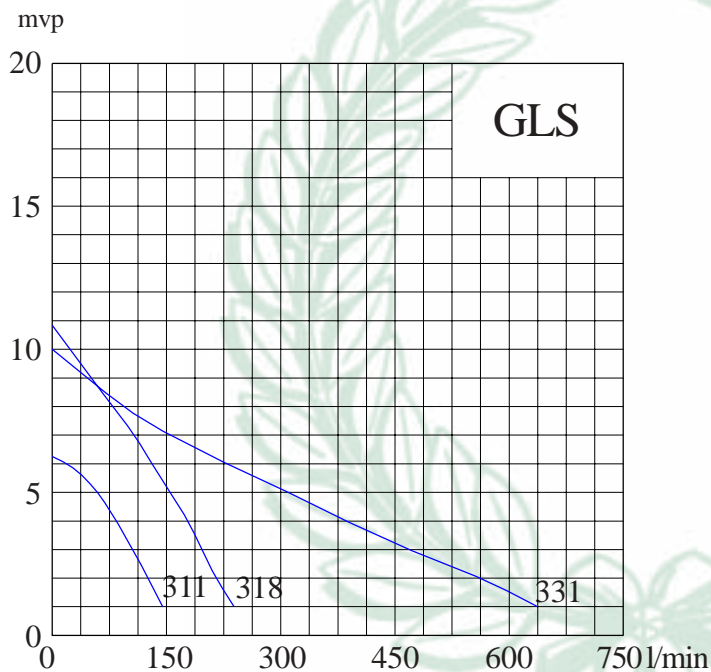
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# Sewage pump GLS

Submersible drainage pump for sewer water or similar.



## Capacity



## Electrical data

Insulation class: F  
 Encapsulation: IP 68  
 Motor protection: Built-in on mono phase pumps  
 Operation: Continuous  
 Cable length: 10 meters

## General data

Pump type: Centrifugal  
 Impeller type: Open vortex  
 Max water temp.: 40°C  
 Max work. depth: 10 m

## Materials

Pump body: Cast iron  
 Motor housing: Cast iron  
 Shaft: Stainless steel  
 Impeller: Cast iron  
 O-rings: Nitril rubber

## Tekniske spesifikasjoner

| Pump model      | GLS 311 | GLS 318 | GLS 331 |
|-----------------|---------|---------|---------|
| Høyde: mm       | 250     | 340     | 500     |
| Diameter: mm    | 150     | 175     | 250     |
| Vekt: kg        | 9       | 15      | 30      |
| Tilslutning:    | 1 1/4"  | 1 1/2"  | 2"      |
| Faste part.: mm | 15      | 31      | 45      |
| Akseltetninger: | 1*      | 1*      | 2+3*    |
| Spenning: V     | 230     | 230     | 230/400 |
| Strøm: A        | 2.5     | 5.2     | 6.3/3.6 |
| Effekt: W       | 400     | 1050    | 1900    |

## \*Types of shaft seals:

- 1 Ceramic/Graphite.
- 2 Carbon/Ceramic
- 3 Nitril radial seal



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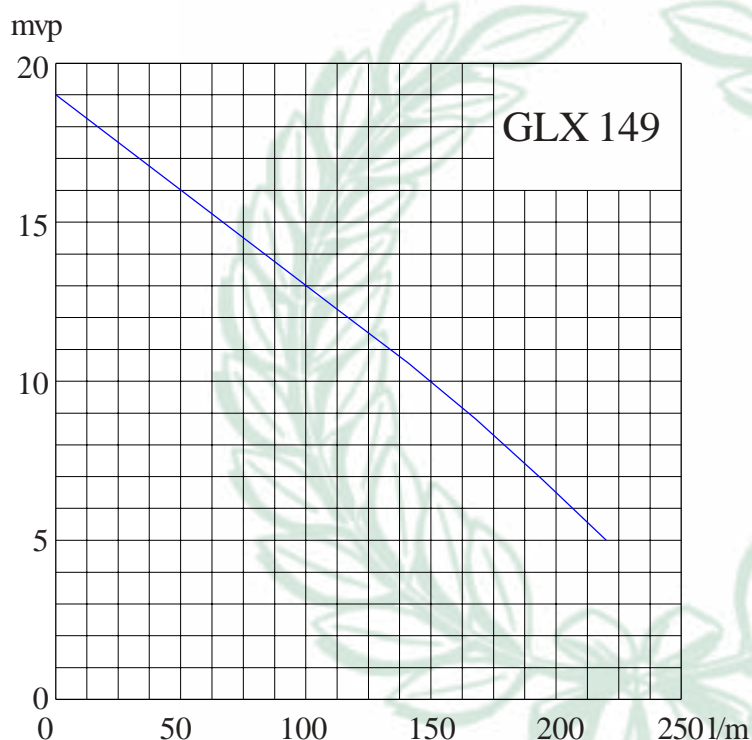
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# Grinder pump GLX 149

## Technical description

The grinder pump is intended for pumping heavy sewage from places without a natural slope to main sewer installations. With a maximum capacity of 250 liters per minute, the pump is ideally suited for removing the sewer from a private house or a small group of divided estates.

The pump fine-grains the heavy sewage and gives a relatively high pressure. This means that a normal PEM 40x32 and upwards can be used as a drainpipe. Sizing of the pipes can be done according to normal considerations regarding head, meters and length of the pipes.



## Technical specifications

|                   |                              |
|-------------------|------------------------------|
| Pump type:        | Submersible centrifugal pump |
| Impeller:         | Open with grinder            |
| Max water temp:   | 60°C                         |
| Max water depth:  | 10 m                         |
| Allowed Ph-value: | 6-11                         |
| Insulation:       | F                            |
| Encapsulation:    | IP 68                        |
| Operation:        | Continuous                   |
| Cable length:     | 10 meters                    |

## Materials

|                |                          |
|----------------|--------------------------|
| Pump body:     | Cast iron G25            |
| Motor housing: | Cast iron G25            |
| Shaft:         | Stainless steel AISI 420 |
| Impeller:      | Cast iron G25            |
| O-rings:       | Nitril rubber            |

## \*Shaft seals

- 1 Ceramic/Graphite
- 2 Ceramic/Graphite
- 3 Nitril radial seal

| Pumpmodell     | GLX 149M | GLX 149T | GLX 149T 400V |
|----------------|----------|----------|---------------|
| Høyde mm       | 375      | 375      | 375           |
| Diameter mm    | 220      | 220      | 220           |
| Vekt kg        | 21.5     | 21.5     | 21.5          |
| Tilkobling     | 1 1/4"   | 1 1/4"   | 1 1/4"        |
| Akseltetninger | 2+3*     | 2+3*     | 2+3*          |
| Spenning V     | 230      | 3x230    | 3x400         |
| Strøm A        | 6.5      | 4.2      | 2.5           |
| Effekt W       | 1100     | 1100     | 1100          |



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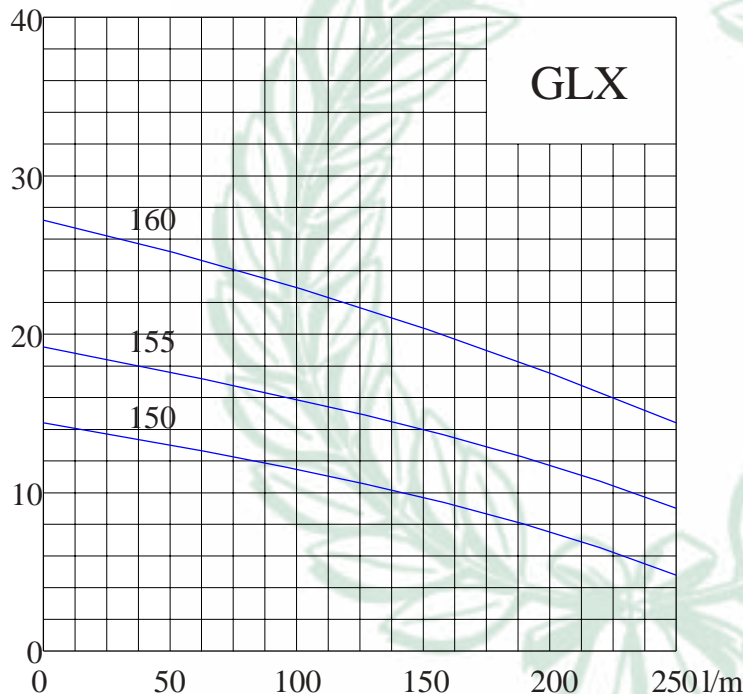
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# Sewage grinder pump GLX

The grinder pump is intended for pumping heavy sewage from places without a natural slope to main sewer installations. With a maximum capacity of 250 liters per minute, the pump is ideally suited for removing the sewer from a private house or a small group of divided estates. The pump fine-grains the heavy sewage and gives a relatively high pressure. This means that a normal PEM 40x32 and upwards can be used as a drainpipe. Sizing of the pipes can be done according to normal considerations regarding head, meters and length of the pipes.



Capacity  
Head, meters



## Technical specifications

Pump type: Submersible centrifugal pump  
 Impeller: Open with grinder  
 Max water temp: 60°C  
 Max water depth: 10 m  
 Allowed Ph-value: 6-11  
 Insulation: F  
 Encapsulation: IP 68  
 Operation: Continuous  
 Cable length: 10 meters

## Materials

Pump body: Cast iron  
 Motor housing: Cast iron  
 Shaft: Stainless steel  
 AISI 420  
 Impeller: Cast iron  
 O-rings: Nitril rubber  
 Shaft seals, double:  
 Upper : Ceramic/Graphite  
 Lower : Carbon/Silicone

| Pumpmodell |    | GLX 150M | GLX 150T | GLX 155T | GLX 160T |
|------------|----|----------|----------|----------|----------|
| Voltage:   | V  | 230      | 230/400  | 230/400  | 230/400  |
| Current:   | A  | 13.6     | 6.6/4.0  | 8.3/5.5  | 12.0/7.5 |
| Power:     | W  | 1500     | 1500     | 1900     | 2800     |
| Weight:    | kg | 36       | 36       | 38       | 40       |
| Height:    | mm | 490      | 490      | 490      | 490      |
| Diameter   | mm | 210      | 210      | 210      | 210      |
| Connection |    | 1 1/4"   | 1 1/4"   | 1 1/4"   | 1 1/4"   |



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# Sewage pump GLS 337

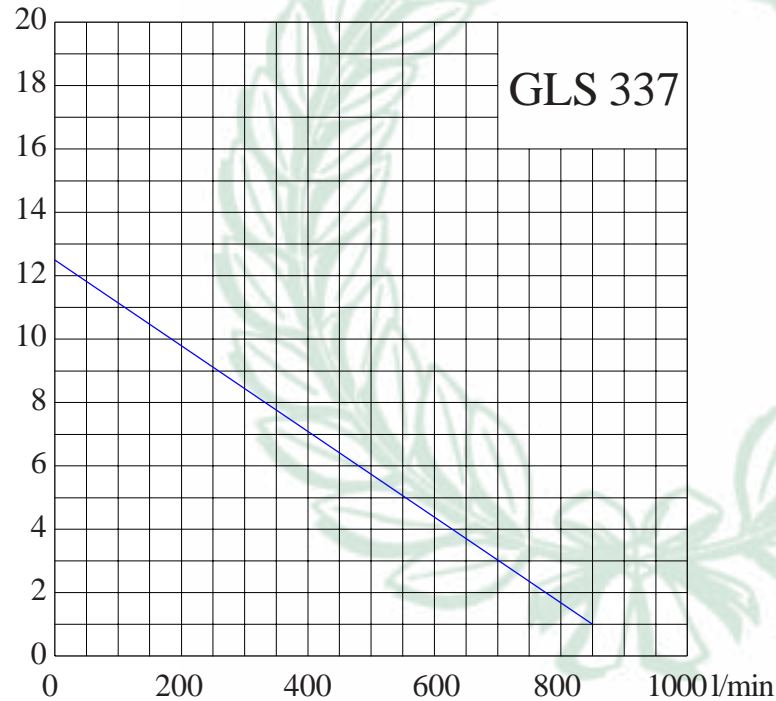
The robust sewage pump is for mounting as shown in the picture or on an even surface. The pump is delivered with 10 meters electrical power cable and is totally maintenance-free.

The GLS 337 is in stock. Larger models can be delivered in approximately 6 weeks.



## Capacity

Head, meters



## Technical specifications

|                  |             |
|------------------|-------------|
| Pump type:       | Submersible |
| Impeller type:   | Open vortex |
| Solid part.:     | 55 mm       |
| Max watertemp.:  | 40°C        |
| Max work. depth: | 10 m        |
| Height:          | 540 mm      |
| Length:          | 700 mm      |
| Width:           | 240 mm      |
| Weight:          | 60 kg       |
| Connection:      | 2 1/2"      |
| Guide tubes:     | 1 1/4"      |

## Electrical data

|                   |            |
|-------------------|------------|
| Voltage:          | 230/400 V  |
| Current:          | 9.0/5.2 A  |
| Power:            | 2800 W     |
| Insulation class: | F          |
| Encapsulation:    | IP 68      |
| Operation:        | Continuous |
| Cable length:     | 10 meters  |

## Materials

|                   |                    |
|-------------------|--------------------|
| Pump body:        | Cast iron          |
| Motor housing:    | Cast iron          |
| Shaft:            | Satinless steel    |
| Impeller:         | Cast iron          |
| O-rings:          | Nitril rubber      |
| Upper shaft seal: | Carbon/Ceramic     |
| Lower shaft seal: | Nitril radial seal |



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# Equipment drainage pumps

## Automatic coupling foot

An automatic coupling foot is used where an easy way to lift the pump is required ie. for service in fixed installations such as septic tanks and domestic sewage pump sets. The automatic coupling foot is installed at the bottom and galvanized tubes work as a guide to connect the two pieces.



## Check valve with ball

This is used where the water in the pressure pipe otherwise would go back to the tank and possibly start the pump again. When the valve is open it provides free flow through the hole diameter which prevents solid particles to get stuck. This valve is delivered in several dimensions from 1" til 3" with flange.



## Float switch

These are delivered with both open and closed contacts intended for filling or emptying ponds, cisternes or septic tanks. If the float switch is ment to control a pump it is recomended that its connected via the motor starter. The sewage type float switch has no sharp edges to prevent ie. paper to get stuck to it.



## Technical data

| Model             | "Kari" switch       | Std. switch GL 90   |
|-------------------|---------------------|---------------------|
| Switching element | Microswitch         | Microswitch         |
| Voltage           | 6...250 V AC        | 6...250 V AC        |
| Ampère            | 6A AC1, 3A AC3      | 10A AC1, 4A AC3     |
| Switches NO/NC    | blue-black/blue-br. | black-blue/black-br |
| Temperature       | 0-55°C +            | 0-40°C +            |
| Cabel lenght      | 10m                 | 3m                  |

## Counter weight for float switch

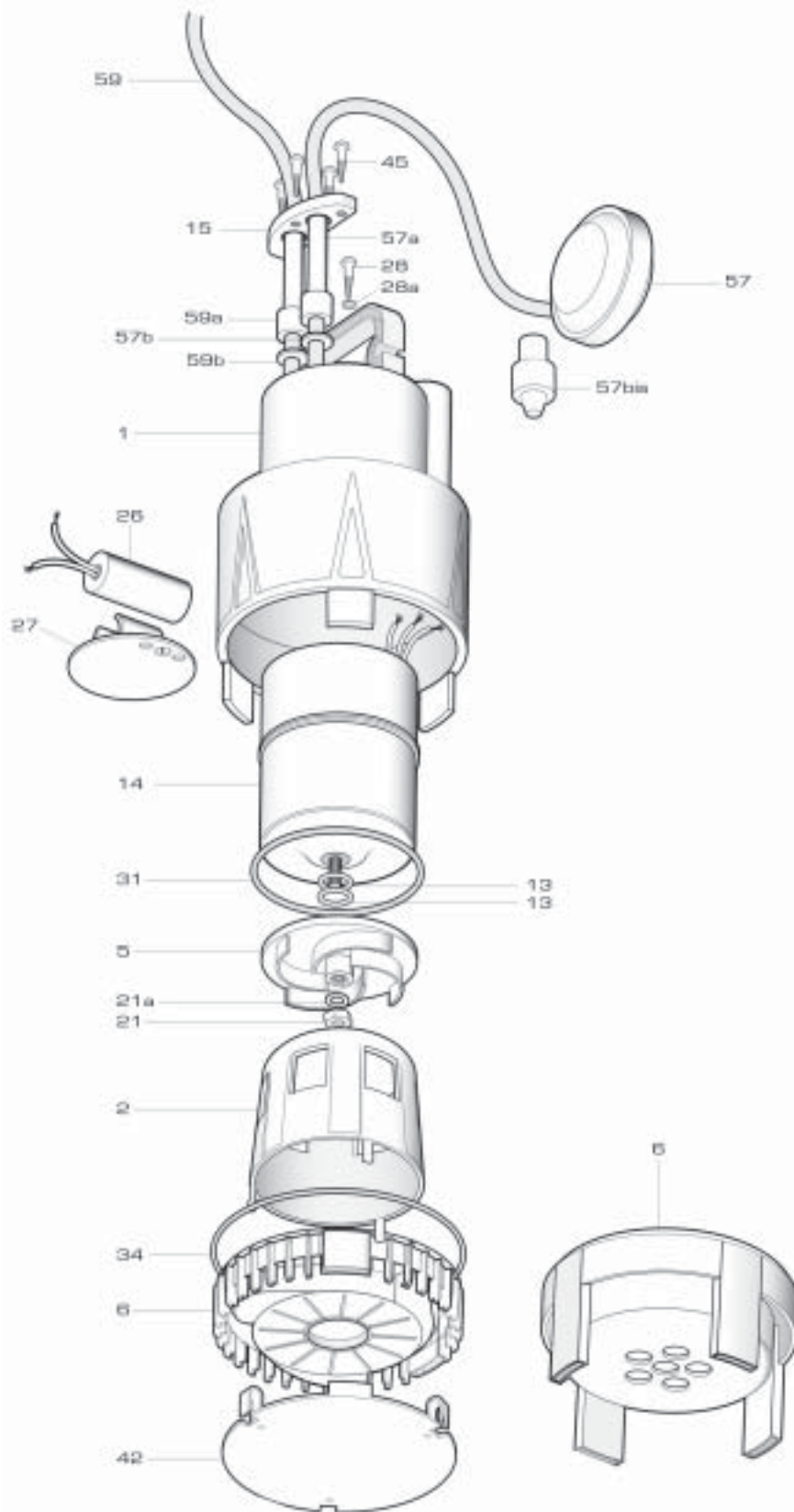
This is used in tanks and cisterns where the float switch cable is impossible to attach in a way that makes the float switch work correctly. The weight prevents the float switch from working improperly which would disturb the correct start/ stop level.



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# Spare parts DP 60



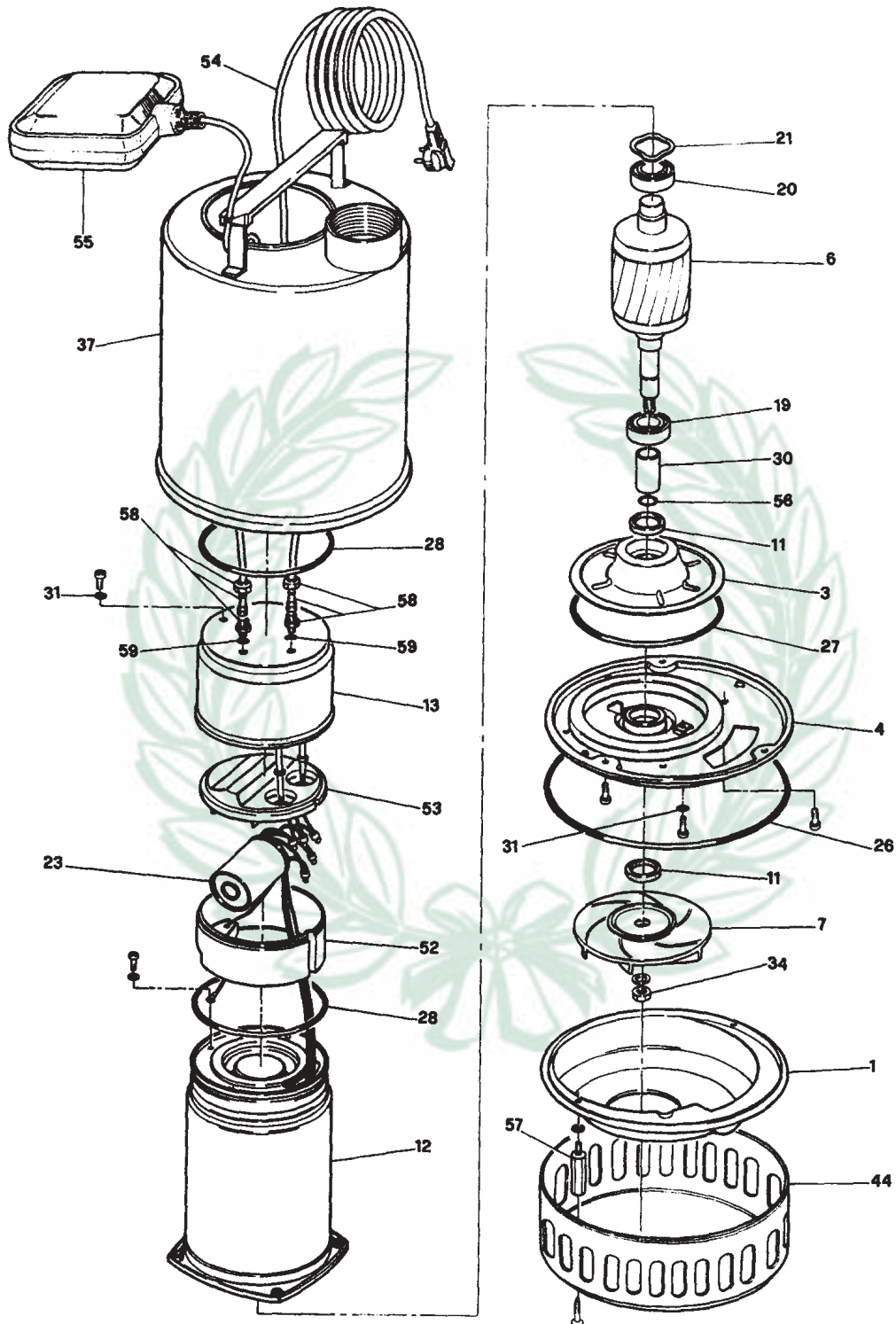
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# Spare parts GLI

Partnr: Z26XX



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# Install. instr. Drainage pumps

## Area of application

The construction pump is developed for usage at buildings and construction work where the water contains sand. Sand is always abrasive which implies that the pump wheel and pump body are exposed for wear and tear.

This is considered as normal.

The sewage pumps are developed for pumping water with a contamination degree similar to the one found in the second and third chamber in a three-chamber sewage tank. This pump has no grinding effect and can not be used for long fibre contamination. The grinder pump is intended for pumping heavy sewage from places without natural slope to main sewer installations.

## Installation

The pump contains unarmful oil. Make sure the working area of the float switch is clear. If the pump is operated manually, the float switch must be preset in an upward position. Never let the pump run dry. Stop it manually or control it by a levelcontroller. The pump needs to be put in an upright position or hung some distance above the bottom.

**Important:** Never let the pump hang from the electric power cable.

## Electrical connection

Monophase models connect to a normal grounded electrical outlet. Check that the electrical data on the motor nameplate matches with the electric power supply. The pump is delivered all set to go. The monophase models are equipped with built-in motor-protection which automatically stops the pump if blocked by contaminates or other materials.

The electrical connections for three-phase pumps must be carried out by an authorized electrician and connected to an approved motor-protection. Make sure the pump rotates in the right direction and is electrically correctly connected according to installation voltage.

**This must be carried out before the pump is sunk into the medium if the medium is sewage.**

## Service

If the water contains sand or other abrasive particles the pump wheel is exposed to a normal wear and tear. Changing the pump wheel is considered to be normal maintenance, except this pump is totally maintenance-free. If any signs of oil should be seen on the water surface which is suspected to come from the pump, it is recommended that the pump is taken in for service.

## Troubleshoot

Before sending the pump in for service, pull the plug out of the grounded electrical outlet and check the following:

- The grounded electrical outlet is live.
- The pumpwheel has no contamination clogging the inlet.
- Nothing prevents the movement of the float switch.

## Repair

All repair during the warranty period must be done by a service workshop approved by EMS.

**Important:** **The pump is equipped with a cable/plug that if damaged, should be changed by one of our service partners. Some special tools are needed for this repair.**

## Electrical danger

Pumps are often located in cramped and damp locations. Take extra care when dealing with electrical systems because of the electrical danger. **Always disconnect the power supply before touching the electrical pump.** Have an authorised electrician check that the motor protection and grounding is without faults. Monophase pumps should be connected to a standard grounded electrical outlet. If an extension cord is used, make sure that also this is provided with a satisfactory protective ground.

**Touching a pump which does not have a proper protective ground, can be lethal.**

**Important:** **If the risk of damage of any kind is present or if the pump does not start as intended, the pump installation has to be secured by an alarm or other safety equipment as protection at high levels. One pump alone can not be seen as full protection against flooding.**



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# Water tanks - butyl membrane

## Technical description

The membrane water tank can best be described as a steel container with a replaceable butyl membrane. The water and air is totally separated. This construction gives many advantages:

- More water can be tapped before the pump has to start
- Circulation prevents kalk and other impurities to concentrate inside the tank
- Compact installation - A 60 litre membrane tank replaces a 150 litre hydropneumatic set
- Long life - The water is not in contact with the steel



## Technical specifications

Max water temp.: 50° C  
 Max work. pressure: 6.0 Bar  
 Pre charge: 2.0 Bar

## Materials

Outer container: Steel  
 Surface treatment: Epoxy  
 Membrane: Butyl  
 Connection flange: Stainless steel

### Free-standing

|               |    |      |      |
|---------------|----|------|------|
| Volume Litres |    | 8    | 24   |
| Height        | mm | 300  | 350  |
| Diameter      | mm | 200  | 365  |
| Weight        | kg | 3    | 5    |
| Connection    |    | 3/4" | 3/4" |

### Horizontal

| Volume     | Litres | 20  | 60  | 100 | 200    |
|------------|--------|-----|-----|-----|--------|
| Height     | mm     | 270 | 410 | 470 | 570    |
| Diameter   | mm     | 255 | 380 | 450 | 550    |
| Lenght     | mm     | 510 | 640 | 770 | 1090   |
| Weight     | kg     | 7   | 16  | 24  | 46     |
| Connection |        | 1"  | 1"  | 1"  | 1 1/2" |

### Vertical

| Volume     | Litres | 60  | 100 | 200    | 300    |
|------------|--------|-----|-----|--------|--------|
| Height     | mm     | 850 | 935 | 1320   | 1410   |
| Diameter   | mm     | 380 | 450 | 550    | 630    |
| Weight     | kg     | 16  | 24  | 46     | 57     |
| Connection |        | 1"  | 1"  | 1 1/2" | 1 1/2" |



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# Diaphragm tank EMS

## Technical description

The proven single diaphragm tank differs from the regular hydropneumatic tank by being built up as two separate domes. In one of the domes the water is stored and the other is pre-charged with air. This makes it possible to get more water out of the tank before the pump needs to start, which means that a smaller tank can be chosen. Normally a 150 litres regular hydropneumatic tank can be replaced by a 50 litres membrane tank. The water dome has a polypropylene liner to keep the water from any contact with the steel, which prevents corrosion and discoloured water.

The membrane tank is maintenance-free but the air pressure needs to be checked twice a year. The pre-charged air pressure should be set at the pumps starting pressure x 0,9. When checked, the pump has to be shut off and the water tapped from the tank.



## Technical specifications

|                     |         |
|---------------------|---------|
| Max watertemp.:     | 90° C   |
| Max work. pressure: | 10 Bar  |
| Pre-charge          | 1.9 Bar |
| Test pressure       | 15 Bar  |

## Materials

|                    |  |
|--------------------|--|
| Outer container    | Steel  |
| Surface treatment: | Epoxy primer coat +<br>2-component paint finnish |
| Diaphragm:         | Butyl  |

## Horizontal

| Volume     | Litres | 20   | 60   | 80   |
|------------|--------|------|------|------|
| Lenght     | mm     | 400  | 500  | 700  |
| Diameter   | mm     | 260  | 380  | 390  |
| Height     | mm     | 290  | 425  | 425  |
| Weight     | kg     | 5.44 | 12.7 | 17.3 |
| Connection |        | 1"   | 1"   | 1"   |

## Free standing

| Volume     | Litres | 60   | 80   |
|------------|--------|------|------|
| Lenght     | mm     | 500  | 700  |
| Diameter   | mm     | 380  | 380  |
| Weight     | kg     | 11.3 | 15.9 |
| Connection |        | 1"   | 1"   |



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# Diaphragm tank EMS Vertical

## Technical description

The efficient and cost-effective vertical diaphragm tanks from EMS are produced by one of the industry's leading brands. With its design with a patented controlled action double diaphragm assembly that completely contain drawdown water. This tank differs from the regular hydropneumatic tank by being built up as two separate domes. In one of the domes the water is stored and the other is pre-charged with air. This makes it possible to get more water out of the tank before the pump needs to start, which means that a smaller tank can be chosen. Normally a 150 litres regular hydropneumatic tank can be replaced by a 50 litres diaphragm tank. The water dome has a polypropylene liner to keep the water from any contact with the steel, which prevents corrosion and discoloured water.



The membrane tank is maintenance-free but the air pressure needs to be checked twice a year. The pre-charged air pressure should be set at the pumps starting pressure x 0,9. When checked, the pump has to be shut off and the water tapped from the tank.

## Technical specifications

| Size      | Height or Length | Diameter | Connection | Weight kg |
|-----------|------------------|----------|------------|-----------|
| 20l Hor.  | 400              | 260      | 1"         | 5.4       |
| 60l Hor.  | 500              | 380      | 1"         | 12.7      |
| 60l Vert  | 559              | 406      | 1"         | 12.7      |
| 100l Vert | 873              | 406      | 1"         | 18.6      |
| 170l Vert | 921              | 534      | 1"         | 30.4      |
| 310l Vert | 1575             | 533      | 1"         | 44.9      |
| 450l Vert | 1505             | 660      | 1"         | 69.5      |

## Technical specifications

|                     |                                       |
|---------------------|---------------------------------------|
| Max watertemp.:     | 90° C                                 |
| Max work. pressure: | 10 Bar 60-310 l<br>12.5 Bar 450 l     |
| Pre-charge          | 1.9 Bar 60-100 l<br>2.6 Bar 170-450 l |
| Test pressure       | 15 Bar                                |

## Materials

|                    |   |
|--------------------|---|
| Outer container    | Steel   |
| Surface treatment: | Epoxy primer coat +<br>2-component paint finish |
| Diaphragm:         | Butyl   |



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# Membrane tank Well Mate

## Technical description

The fibreglass membrane tank is the best developed type of tank. In spite of several advantages the price for this tank is considerably lower than a normal hot galvanized hydropneumatic tank.



## Technical specifications

| Volume     | Litres | 60  | 75  | 120  | 180    | 330    | 450    |
|------------|--------|-----|-----|------|--------|--------|--------|
| Height     | mm     | 695 | 820 | 1130 | 1050   | 1790   | 1840   |
| Diameter   | mm     | 410 | 410 | 410  | 550    | 550    | 620    |
| Weight     | kg     | 7   | 8   | 13   | 19     | 41     | 42     |
| Connection |        | 1"  | 1"  | 1"   | 1 1/4" | 1 1/4" | 1 1/4" |

Max watertemp: 50° C  
 Max work.pressure: 8.0 Bar  
 Testing pressure: 11 Bar

## Materials

Outer container: One-piece casted polyethylene (HDPE), with fibreglass coating.  
 Membrane: PEU Membrane



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# Inst. instruction EMS fiberglass membrane tank

## Construction.

EMS fiberglass membrane tank consist of a casted one-pieze polyetenform(HPDE) covered by armed fiberglass. Inside the tank there is a membrane made of PEU material.

This construction is extremely durable and is not significantly under influence of outer factors. It is totally free of metallparts which makes it unexposive to corrosion.

The airbag is prepressurised with air. This increases the capacity of the tank compared to traditional hydropneumatic tank which means that significantly more water out of a EMS fiberglass membrane tank than a regular hydropneumatic tank before the the pump has to start. The airbag has the same size as the polyethylene form and rest against the outerwall of the tank when the tank is empty. The construction with air in the airbag and water in robust outerform increases the life of the tank significantly. The membrane is not exposed to the same stress as it gets when the water is inside the membrane. As a part of the production every tank is pressure tested before it delivers.

As a link in the production line all tanks are material- and pressure tested before delivery.

## Installation.

Place the tank on an even surface in a frost free area. Have in mind that the tank should be easy to access for inspection and possibly refilling of air sometimes during the year. The tank do not nessesarily have to be placed near the pump. The pressure switch should always be placed as near the tank as possible.

## Airpressure

At delivery the tank is prepressurised with air. A air ventil of the same type as on a car wheel is placed on top of the tank. At the time of installation the airpressure should be adjusted.

The airpressure should be 0,9 times the starting pressure of the pump

Example: The pump starts at 2.0 Bar. The airpressure when the tank is empty should be 1.8 Bar.

Important: The pressure should be measured when there is no water in the tank. Shut off the pump and open a tap and let the water out before the airpressure is measured.

## Sand and other contaminations

If the tank is installed at a new well the well has to be pumped until the water is pure before the tank is installed. If there is any risk of sand or sharp particles in the water a simple sand filter has to be installed in front of the tank.

If it is suspected that sand has entered the tank it is nessesary to let all the water and air out of the tank and clean the tank properly.



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# Inst. instr. Hydro pressure tank

The hydro pressure tank is precompressed with air in a separate room. There is a membrane between the water and the air that prevents the air from disappearing in the water. This increase the capacity of the tank compared to a traditional hydro pneumatic tank. It is because of this possible to get significantly more water out of a hydro pressure tank than a hydro pneumatic tank before the pump has to start.

## Installation

Place the tank on an even surface in a frost free area. Have in mind that the tank should be easy to access for inspection and possibly refilling of air sometimes during the year. The tank do not necessarily have to be placed near the pump. The pressure switch should always be placed as near the tank as possible.

## Airpressure

At delivery the tank is prepressurised with air. A air vent of the same type as on a car wheel is placed on top of the tank. At the time of installation the airpressure should be adjusted. The pressure should be 0.3 Bar ( $3 \text{ hg/cm}^2$ ) below the starting pressure of the pump.

Example: The pump starts at 2.0 Bar. The airpressure when the tank is empty should be 1.7 Bar.

Important: The pressure should be measured when there is no water in the tank. Shut off the pump and open a tap and let the water out before the airpressure is measured.

## Maintenance

The airpressure in the tank should be checked twice a year.

## Trouble shooting

- |         |  |
|---------|--|
| Error:  | The airpressure in the tank is decreasing.   |
| Action: | 1: Use a little soap water to check if the air valve is leaking.<br>2: Check and if necessary retighten the 6 bolts around the tank flange                                   |
| Error:  | The pump starts too often or as soon as a tap is opened.   |
| Action: | Adjust the airpressure (See text above)  |
| Error:  | Water is coming out of the air valve when opened   |
| Action: | The membrane needs to be replaced  |
| Error:  | The pump (pounds like a hammer) starts and stops several times at each expected start/stop.  |
| Action: | The pressure switch is installed to far from the tank. Reinstall the pressure switch closer to the tank or install a little pressure tank extra close to the pressure switch |



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# Hot Galvanized Hydro Pneumatic Tank

## Technical description

The hot galvanized hydro pneumatic tank is the most common pressure tank for private houses, agriculture and industry. The tank is without membrane or other components which needs to be replaced. On the other hand it requires more space than a similar membrane tank. If there is enough space and the water consumption normal the hydro pneumatic tank is a safe and reliable alternative. The inside of the tank is covered with Teflon which also increases the life of the tank even further. Teflon has a harder and more slippery surface than many of the other plastic materials used as surface treatment. This is the reason a Teflon treated tank has considerably better qualities than a regular plastic treated tank. The tank can also be delivered in stainless steel with the same dimensions.



## Technical specifications

Material: FE 410 UNI  
 SA approval nr.: 94-880351  
 Man hole: 150 x 100 mm  
 Surface treatment  
 inside and outside: Galvanized  
 Inside: Teflon, PTFE

## Connections

Top: 1 qty. 1"  
 Bottom: 1 qty. 1 1/4"  
 Sides: 2 qty. 1 1/4"  
 Front: 2 qty. 1/2"  
 Extra equipment: Level glass 500 mm.

|                |       |       |       |
|----------------|-------|-------|-------|
| Volume litres  | 150   | 300   | 500   |
| Height mm      | 1180  | 1430  | 1700  |
| Diameter       | 450   | 550   | 550   |
| Work. pressure | 5 bar | 8 bar | 8 bar |

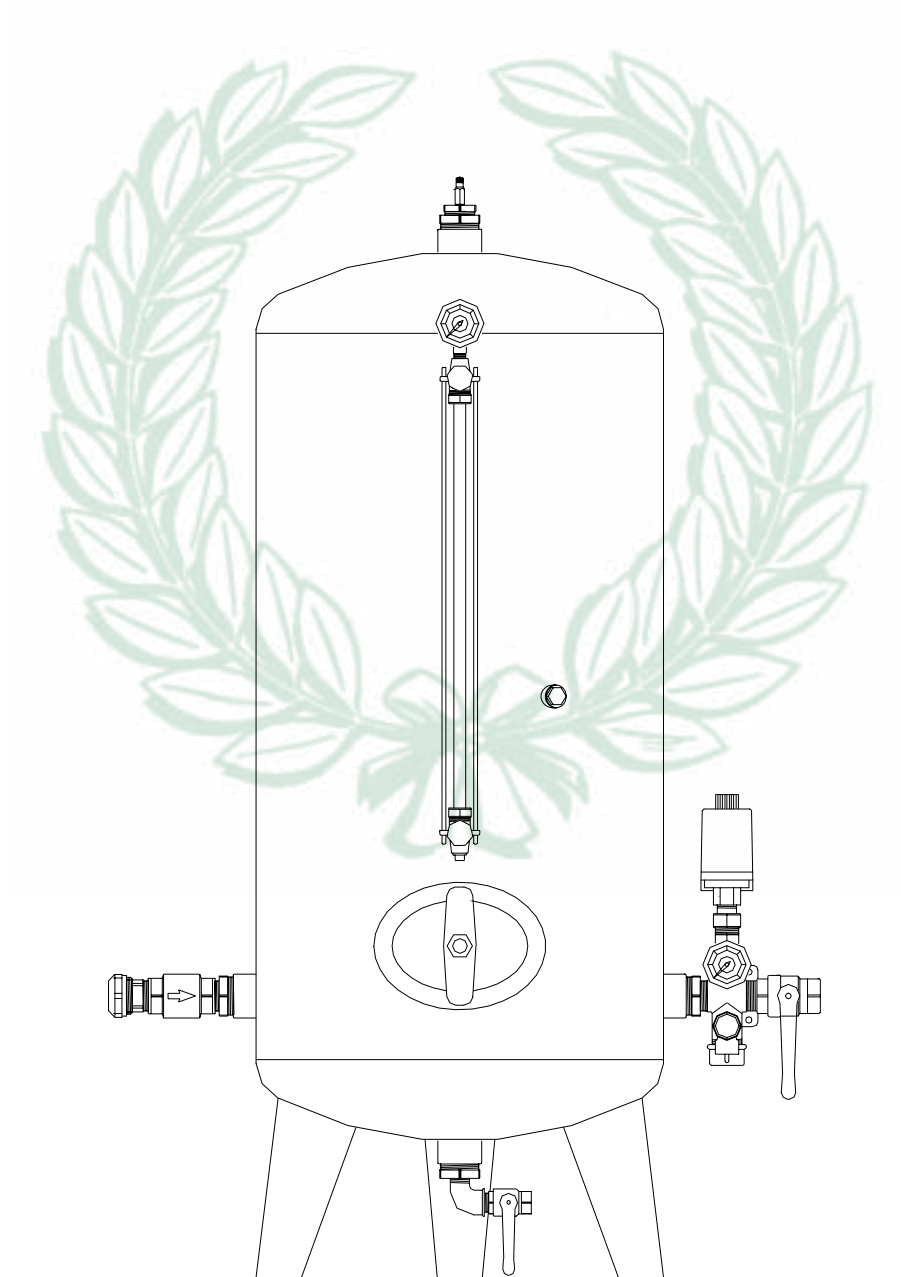


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# Installation of Hydro Pneumatic Tank

Place the tank on an even surface in a frost free area. Have in mind that the tank should be easy to access for inspection and possibly refilling of air sometimes during the year. The tank do not nessesarily have to be placed near the pump.



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# Mechanical filter

## Clear blue water

There is many reasons for the need to filter the water in our taps. Old pipes, polluted rain, humus, particles, chlorine or diecoloured water can be treated with EMS filter holder in combination with one of our filters.



## Technical specifications

The pieze that holds the filter and the nut-ring is made of plastic or brass and has either 3/4" or 1" internal thread connection.

Plastic handles pressure up to 7 bar and brass up to maximum 10 bar.

The filter holder and filters are made in two different lenghts 10" and 20".

It is possible to install the filter holders in several configurations directly on the pipes or hung in special wall mounting brackets. EMS also deliver complete filter packages containing two filter holders, wall mounting brackets, one washable- and 3 cotton filters, tools and brass parts.



Wall mounting bracket  
for filter holder.



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# Filter cartridges

## Area of application

Washable filter consist of a fine mesh polyester net which takes away particles down to 60 micron and is suited where the removal of ie. sand, coarse particles and rust.

## Maintenance

Wash every third month if required

## Specifications

Made of toxic free materials intended for drinking water  
Max work. temperature: 45°C  
Filtering ability: Medium  
Reinforcement: Polypropylen  
Filtre ends: Polypropylen  
O-rings: ETP



## Area of application

Washable filter consist of a fine mesh polyester net which takes away particles down to 60 micron and is suited where the removal of ie. sand, coarse particles and rust.

## Maintenance

Wash every third month if required

## Specifications

Made of toxic free materials intended for drinking water  
Max work. temperature: 45°C  
Filtering ability: Medium  
Reinforcement: Polypropylen  
Filtre ends: Polypropylen  
Seals: PVC



## Area of application

The cotton filtre is a socalled "throw-away" filtre. It is made of a twisted cotton thread which takes away particles down to 10 micron, and is suited where the removal of ie. fine sand, fine particles and rust from the water

## Maintenance

Maintenance-free - Changed when needed

## Specifications

Made of toxic free materials intended for drinking water  
Max work. temperature: 45°C  
Filtering ability: Medium  
Reinforcement: Polypropylen  
Filtre ends: Polypropylen  
O-rings: ETP



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# Filter cartridges

## Area of application

The carbon filtre is a so-called "throw-away" filtre. It is made of a container filled with active carbon-granulate which takes away particles down to 25 micron. The carbon filtre is suited where the removal of for example smell, bad taste, sulfur and other organic elements from the water

## Specifications

Made of toxic free materials intended for drinking water  
Max work. temperature: 45°C  
Filtering ability: Fine  
Reinforcement: Polypropylen  
Filtre ends: Polypropylen  
O-rings: ETP



## Maintenance

Maintenance-free - Changed when needed

## Area of application

The Polyfosfate filtre is a so-called "throw-away" filtre. It is made of a container filled with polyfosfate crystals which dissolves lime. This prevents the build up of a lime layer.

## Specifications

Made of toxic free materials intended for drinking water  
Max work. temperature: 45°C  
Filtering ability: Fine  
Reinforcement: Polypropylen  
Filtre ends: Polypropylen  
O-rings: ETP



## Maintenance

Maintenance-free - Changed when needed



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# Contact Protection KM 11

## Area of application

Contact protection KM 11 is used where a risk free operation of the start/stop of a pump and at the same time protection against short-circuits and overload is required.

The KM 11 is made of a quality contactor and motor protection built together inside a connection box which have the start/stop and «reset» button in the front.

The KM 11 is available in many different sizes and is chosen in accordance with the current requirement of the pump

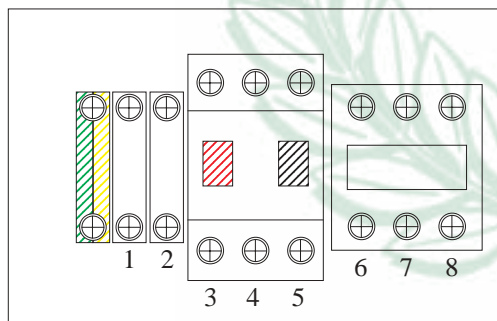


## Electrical specifications KM 11:

Submitted Voltage: 230V AC. (Can also be delivered with 400 V coil)

Main Contacts: 3-pole NO.

Secondary Contacts: 1 pc. NO og 1 pc. NC



1-2 Can be connected to an outer switch, for example a pressureswitch or level guard.

3 L1 Input phase.

4 L2 Input phase.

5 L3 Input phase.

6 U output motor.

7 V output motor.

8 W output motor.



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# Level Guard KM 22

## Area of application

The level guard KM 22 is partly used as a run dry protection and as a level control in cisterns, watering ponds, septic tanks etc.

The KM 22 can be used with three phase pumps with existing motor protection and for monophase pumps. The function of this guard is based on electrodes that detects the water level. In this manner the regulation can be done with high accuracy and even in small cramped areas for example in a drilled well.

When the level guard is used as a run dry protection the pump can be started when the water level reaches the upper electrode and be operative until the water level goes below the lower electrode. The pump can start again when the water level rises to the upper electrode. When the level guard is used for filling for example watering ponds it has the oposite function.

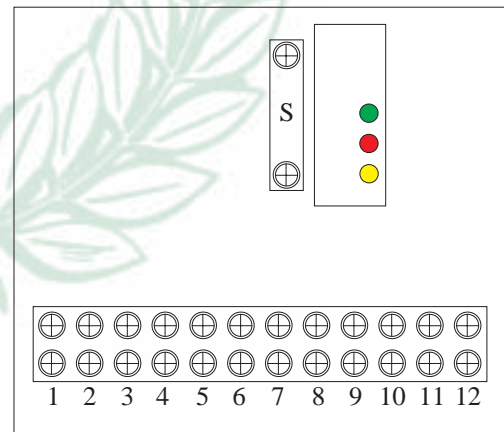


## Electrical specifications KM 22:

|                         |                     |
|-------------------------|---------------------|
| Input Voltage:          | 230/400V AC.        |
| Printboard Voltage:     | 24V AC,             |
| Electrode voltage:      | Max 24V AC,         |
| Delta U <sub>in</sub> : | -20% 10%            |
| Consumption:            | 3VA (230V/13mA)     |
| Contact function:       | 1-pole alternating. |
| Switching:              | 2500VA (250V/10A)   |
| Sensivity:              | 5-100 kohm          |

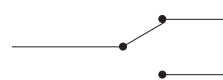
The printboard voltage is isolated by a transformer.

The use of alternating voltage to the electrodes prevents oxydation and increases the reliability.



## Signal lights on the relé:

|         |                             |
|---------|-----------------------------|
| Yellow: | Operation voltage           |
| Green:  | Water level high or sinking |
| Red:    | Water level low or rising   |
| S:      | Fuse 400 mA                 |

- 1 Input phase/zero conductor
- 2 Input phase
- 7
- 8 
- 9
- 10 Upper electrode
- 11 Lower electrode
- 12 Earthing



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# Pump Guard KM33

## Generally

This pump guard has the same function as the KM 22 but are delivered with contactor and motor protection suited to the motor size of the pump.

## Area of application:

The pump guard is partly used as a dryrun protection and as a level control in cisterns, watering ponds, septic tanks etc. The function of this guard is based on electrodes that detects the water level. In this manner the regulation can be done with high accuracy and even in small cramped areas for example in a drilled well.



When the level guard is used as a dryrun protection the pump can be started when the water level reaches the upper electrode and be operative until the water level goes below the lower electrode. The pump can start again when the water level rises to the upper electrode.

When the level guard is used for filling for example watering ponds it has the opposite function.

## Important:

If the risk of damage of any kind is present or if the pump does not start as intended, the pump installation has to be secured by an alarm or other safety equipment as protection at high levels. One pump alone can not be seen as full protection against flooding.

## Electrical specifications KM 33:

Input voltage: 230/400V AC.

Printboard voltage: 24V AC,

Electrode voltage: Max 24V AC,

Delta Uin: -20% 10%

Consumption: 3VA (230V/13mA)

Sensitivity: 5-100 kohm

The printboard voltage is isolated by a transformer.

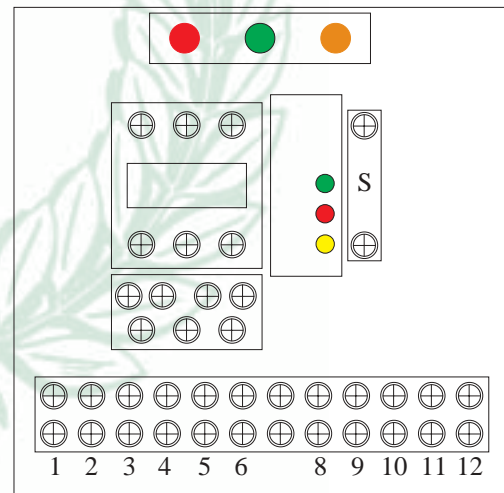
The use of alternating voltage to the electrodes prevents oxydation and increases the reliability.

## Signal lights on the relé:

Yellow: Operation voltage

Green: Water level high or sinking

Red: Water level low or rising



- 1 L1 Input phase
- 2 L2 Input phase
- 3 L3 Input phase
- 4 T1 Motor
- 5 T2 Motor
- 6 T3 Motor
- 8 Outer switch f.ex. pressure switch
- 9 Outer switch f.ex. pressure switch
- 10 Upper electrode
- 11 Lower electrode
- 12 Earthing (Needed connection)
- S Fuse 400mA



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# Level Guard KM 44

## Area of application

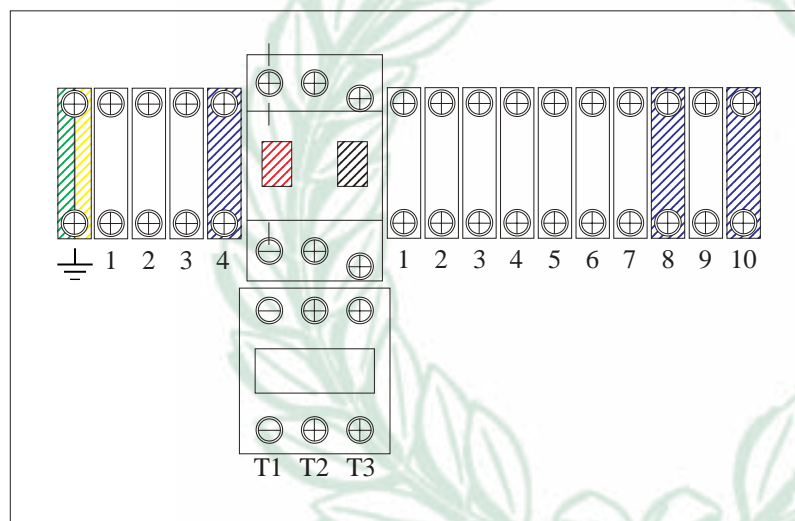
The level guard KM 44 is used as a level guard in sewer pump-tanks or where it is required to control the level by the help of float switches.

The function of the level guard is built around three float switches breaking the circuit at lower, upper and alarm level.

This makes it possible to regulate the level with high accuracy.

There are no float switches delivered with the level guard.

The KM 44 is equipped with outlet for external alarm.



⏏ Earthing

- 1 L1 Input phase
- 2 L2 Input phase
- 3 L3 Input phase
- 4 N Input zero conductor

T1 Output for the pump

T2 Output for the pump

T3 Output for the pump

- 1 NO lower float switch
- 2 NO lower float switch
- 3 NO upper float switch
- 4 NO upper float switch
- 5 NO float switch for alarm
- 6 NO float switch for alarm
- 7 Output operation - phase
- 8 Output operation - zero conductor
- 9 Output alarm - phase
- 10 Output alarm - zero conductor

## Electrical specifications KM 44

Operation voltage: 230/400V AC.

## Signal lights

Yellow: Pump operating

Red: Water level high or motor protection tripped.



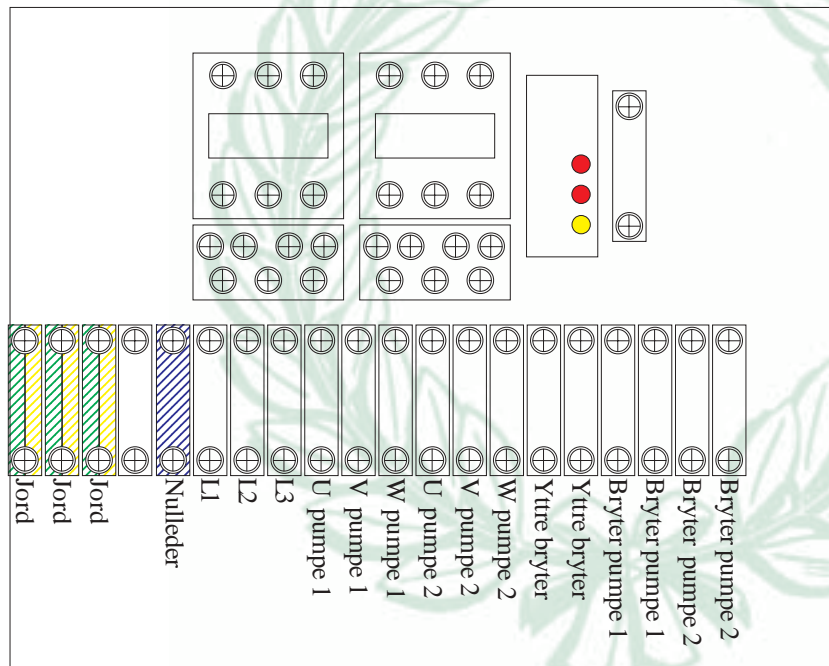
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# Alternating control KM 55

## Area of application

The alternating control KM 55 is used in installations with two pumps where reliability and/or constant operation is required. The pumps operate one at the time and if one of the pumps should stop the other pump is taking over the operation. The pump that stopped can now be taken out for service without shutting down the hole installation. This is also an ideal configuration if the need of more capacity than one pump alone can handle is required. F. ex. If pump number one by some reason is not capable of the task it is ment for the other pump would start automatically until conditions are normal again. The alternating control is chosen according to the current consumption of the pumps.



## Electrical specifications KM 55

Operating voltage: 230V/400V AC.

## Signal lights

Yellow :High level or error  
 Red :Alarm  
 Green #1 :Pump #1 operating  
 Green #2 :Pump #2 operating



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# Y/D Starter

## Generally

The Y/D start is used for pumps with high starting currents which causes voltage drops to the net or to reduce mechanical strain to the installation that sudden starts causes.

The Motor is started in two steps. This means that the motor is started as Wye connection and automatically reconnected as Delta connection (usually 10 - 15 sek) . Starting currents and strains are reduced and the reason this method is very common.



## Electrical specifications

Operating voltage      230V/400V AC.

## Signal lights

Green                    :Pumpe in operation  
Red                      :Motor protection tripped  
Yellow                  :Shows the status of each phase



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# Heating Cable

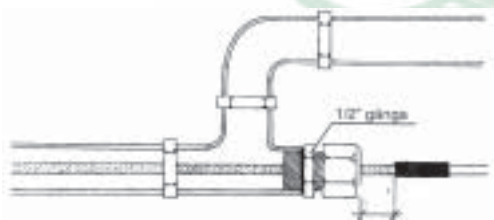
## Frost protection of waterpipes



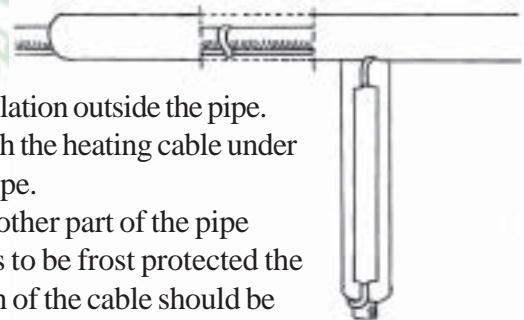
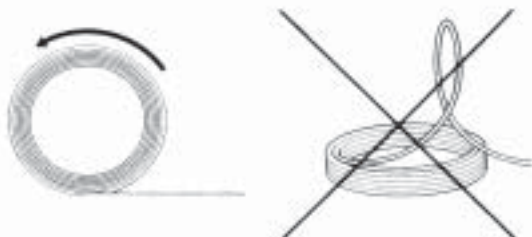
The cable is delivered preassembled in permanent lengths which can not be cut. (see table below). The heating cable should always be installed with a earthfault breaker in front by a authorized electrician. Most efficiency is achived if the cable is installed inside the pipe by the help of a T-pipe and the included seal. It is also possible to install the heating cable outside the pipe by using aluminium tape. Insulate the pipe according to the current norm.

| Technical spesifications |          |         |         |                |                       |
|--------------------------|----------|---------|---------|----------------|-----------------------|
| Art. nr.                 | Length M | Power W | Ohm / m | Resistance Ohm | Insulation-resistance |
| A1850                    | 3        | 23      | 770     | 2185-2530      | > 10 M. ohm           |
| A1852                    | 4        | 30      | 440     | 1675-1940      |                       |
| A1854                    | 6        | 44      | 200     | 1142-1323      |                       |
| A1856                    | 8        | 60      | 110     | 838-970        |                       |
| A1858                    | 10       | 75      | 70      | 670-776        |                       |
| A1860                    | 15       | 110     | 32      | 457-529        |                       |
| A1862                    | 20       | 150     | 17,6    | 335-388        |                       |
| A1863                    | 25       | 190     | 11,1    | 265-306        |                       |
| A1864                    | 30       | 225     | 7,85    | 223-259        |                       |
| A1865                    | 35       | 260     | 5,82    | 193-224        |                       |
| A1866                    | 40       | 300     | 4,4     | 168-194        |                       |
| A1867                    | 45       | 340     | 3,45    | 148-171        |                       |
| A1868                    | 50       | 375     | 2,8     | 134-155        |                       |
| A1872                    | 80       | 600     | 1,1     | 84-97          |                       |

Installation inside the



Roll the cable like this:



Installation outside the pipe. Attach the heating cable under the pipe. If an other part of the pipe needs to be frost protected the return of the cable should be attached outside the insulation. Be sure the part of the heating cable installed outside the insulation is well ventilated and mechanically protected.



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# Self-regulating heating cable



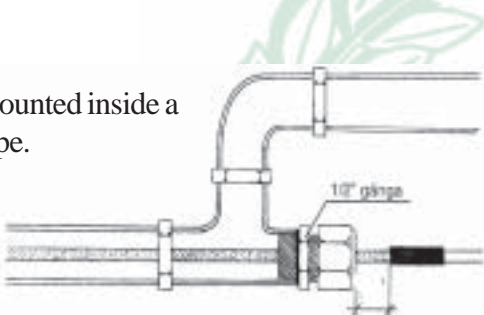
**Generally**

Self-regulating heating cable intended for frost protection of water and drain pipes which can be installed both out- and inside of the pipes. The heating cable is self-regulating which makes it possible to cut the exact required cable length. This cable restrict the power by it self according to the ambient temperature which makes it an economic frost protection. Always install the heating cable with a earthfault breaker in front and let an authorized electrician do the installation.

The heating cable is easy to install. It only needs to be rolled out in the required length, cut, mount and crimp the end-coupling. Attach the cable to the pipe that need frost protection and then connect it. No cold end is nessesary.

The cable must be installed by an authorized electrician. This cable do not contain any PVC.

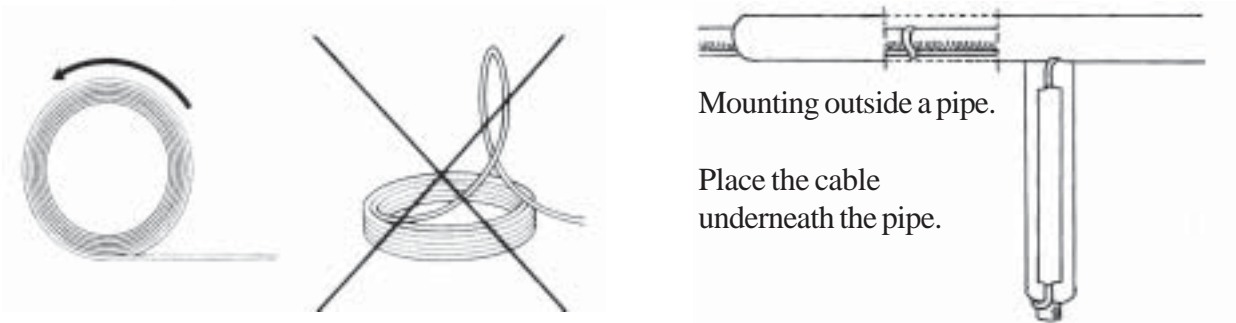
Mounted inside a pipe.



|                                   |       |
|-----------------------------------|-------|
| Voltage                           | 230 V |
| Maximum inst. lenght at 10A fuse: |       |
| Installation out side the pipe    | 100 m |
| Installation inside the pipe      | 60 m  |

Dimensioning: This heating cable is able to frost protect a 32mm plastic pipe covered with 20 mm insulation down to an ambient temperature of  $-30^{\circ}\text{C}$  when mounted inside the pipe. If mounted outside it can frost protect a 32mm plastic pipe or kobber pipe covered with 20mm insulation down to maximum ambient temperature of  $-20^{\circ}\text{C}$ . If required the power can be increased by mounting the heating cable double or increase the insulation thickness.

The cable is rolled out like this:



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# Mount. Kit for selfreg. heating cable

## Content

- 2 Qty. 3mm black crimping tubes
- 1 Qty. 3 mm yellow/green crimp tube
- 2 Qty. 9 mm black crimping tubes
- 1 Qty. crimp tube end
- 1 Qty. nameplate for heating cable

## Finnishing the cable end

1. Dismantle the blue outer insulation 20 mm (Fig. 1).
2. Pull back the braided earth screen. Make sure there is no contact between the two conductors. Slide one of the two 9mm crimping tubes and use a heating gun to make it crimp (Fig. 2). Use a flat plier to squeeze together the part of the crimp material sticking outside the cable until the glue is forced out.
3. Pull back the braided earth screen over the crimped cable end. Use a round of tape to keep the braided earth screen together. Roughen the blue outer insulation by using a piece of sandpaper. Slide on the included crimp tube end until it stops and crimp from the end until the glue is coming out between the crimp tube end and the blue outer insulation (Fig. 3).



Fig. 1



Fig. 2



Fig. 3

## Fixing the cable towards the cold end

1. Dismantle the blue outer insulation 110 mm (Fig. 4).
2. Open the braided earth screen and twist it together on one side of the heating cable (Fig. 5).
3. Dismantle the inner insulation and let 100 mm's of the black core material appear (Fig. 6).
4. Make two small cuts at the end of the cable from the middle towards the conductors (Fig. 7).
5. Pull the conductors through the sides and all the way down to the edge of the inner insulation. If needed use two flat pliers for this. Remove the core material between the two conductors (Fig. 8).  
It is no problem if some of the core material should still be left on the conductors.
6. Slide on the two 3 mm crimping tubes on to the conductors and the yellow/green crimping tube on to the braided earth screen. Use a heating gun to crimp this materials (Fig. 9).
7. Slide on the last 9 mm crimp tube outside the two black conductors and crimp it. Use a flat plier to squeeze the crimp tube together between the two connectors (Fig. 10). Measure the insulation resistance to min. 10 Mohm. The cable is now ready for connection.



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



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# Electronic thermostat

## Area of application

The electronic thermostat are delivered with external sensor.

The sensor are delivered with 3 m cable which can be extended up to 50 m by the help of regular flexible cord of minimum 1,5 square millimeters.

The thermostat is easy to install since both the lid and the sensor clamps can be separated from the base plate. The temp adjust wheel can be moved inside the box, and the hole covered if required. The thermostat has two options: It can either switch on as the temperature drops or as the temperature rises.

The switching difference is adjustable from 1 - 10 °C

On the thermostat front cover there is two LED indications (Yellow) which indicates operation and (Red) which indicates if there is a short circuit, or the cable is broken. Inside the thermostat there is a switch which chooses the temperatur area (-15 to + 40 or +40 to + 95).



## Technical specifications

|                         |   |
|-------------------------|---|
| Operating voltage:      | 230 V 50/60 Hz  |
| Power consumption:      | 1,5 VA  |
| Ambient temperature:    | -10....+55°C  |
| Max switch handling:    | 10 A/250 V  |
| Relé:                   | 1 pole alternating (potencial free)                               |
| Relé indication:        | Yellow LED  |
| Switching difference:   | 1 - 10°C  |
| Electric life time:     | 1x10E5  |
| Mechanical life time:   | 1x10E6  |
| Electrical connections: | Screw terminals max 2,5mm <sup>2</sup>                            |
| Temperature adjusting:  | Wheel   |
| Sensor:                 | 25°C~1 kohm(~8 ohm/°C)<br>16090 PVC Cable<br>16150 Silicone cable |
| Encapsulation:          | Ral 7035 PVC  |
| Insulation class:       | IP 54   |
| Package:                | Thermostat with incl. sensor                                      |
| Mounting:               | Wall mount  |



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# Ground fault sw. 2 pole 25 A

## Generally

The ground fault switch is preventing the possibility of lethal voltages on exposed parts in a installation by breaking the circuit when this occur. This should be installed in all new installations with exposed parts such as grounded installations.

The ground fault switch has a manual reset and a test button.



## Technical data

|                       |       |
|-----------------------|-------|
| Operating voltage:    | 220 V |
| Ground fault current: | 30 mA |
| Current handling:     | 25 A  |



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# Pressure switch

## Generally

Follow the instructions below to adjust the pressure switch. If possible there should be a difference between starting and stopping pressure of 1 - 3 Bar (kg/cm<sup>2</sup>). The larger pump the larger difference. Close starts and stops strains the installation. The stopping pressure should always be at least 1 Bar below the maximum pressure of the pump. If the stopping pressure is too close to the maximum pressure of the pump, there is a risk of overheating. This occurs if the pump for some reason would not manage to reach the stopping pressure.

There are several brands of pressure switches. Almost all of them have two adjusting screws. For example: One larger marked "P". By turning this screw clockwise both the starting and stopping pressure is increased.

A smaller screw marked "- + -". By turning this screw clockwise the difference between starting and stopping pressure is increased.

There are four brands of pressure switches on automatic pumps from EMS. Adjust them as follows:

**Stögermatic:** By turning the nut in the middle of the switch clockwise both the starting and the stopping pressure are increased.

By turning the little screw (at the top near the middle) clockwise the difference between starting and stopping pressure are increased.

**Telemecanique:** By turning the wheel in the middle of the switch clockwise both the starting and stopping pressure are increased.

By turning the plastic nut below the wheel clockwise the starting pressure is increased.

**Square D:** By turning the nut holding the large spring clockwise both the starting and the stopping pressure are increased.

By turning the nut holding the little spring clockwise the difference between starting and stopping pressure are increased.

**Condor:** By turning one or both the two nuts at the top clockwise both the starting and the stopping pressure are increased.

By turning the nut which is found a little below the two others clockwise the difference between starting and stopping pressure are increased.

**ATTENTION:** Always break the electrical power before opening the pressure switch.

**Important:** If the pump is used for watering the pressure switch has to be adjusted to make the pump operate continuously during the watering. This will prevent unnecessary wear and tear.



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# Installation instruction KM 11

## Technical description

KM 11 standard motor starter with automatic restart after voltage loss.

If the motor protection has tripped because of to high current flow, the pump can not start until the motor protection has manually been reset.

## Installation

Always let an authorized electrician install the motor starter. Make sure the adjustment of the motor protection never exceeds the nominal current written on motor nameplate as  $I_N$ . For a cold motor the tripping time must be less than 10 seconds. Preset the motor protection adjustment to 0.9 times the nominal current of the motor. The motor protection then has to be slowly adjusted downwards. When motor protection trips the ampère reading should be increased by 5%. This is the absolute safest setting.

Electrical connections should be done as follows

### Connecting

|                         |   |   |
|-------------------------|---|---|
| Input phase L1          | - | On the contactor connection L1 (1)        |
| Input phase L2          | - | On the contactor connection L2 (3)        |
| Input phase L3          | - | On the contactor connection L3 (5)        |
| To pump output phase L1 | - | On the motor protection connection T1 (2) |
| To pump output phase L2 | - | On the motor protection connection T2 (4) |
| To pump output phase L3 | - | On the motor protection connection T3 (6) |
| Connection 8            | - | Pressure switch                           |
| Connection 9            | - | Pressure switch                           |

Connect all earth wires to the earth marked terminal at the bottom of the encapsulation.

### Important

One of the closed contacts of the pressure switch (NC) is normally connected to connection 8 and 9. If the pressure switch is installed before the motor protection the connection 8 and 9 has to be connected together.

### Electrical danger

Pumps are often located in cramped and damp locations. Take extra care when dealing with electrical systems because of the electrical danger. **Always disconnect the power supply before touching the electrical pump.** Have an authorised electrician check that the motor protection and grounding is without faults. Monophase pumps should be connected to a standard grounded electrical outlet. If an extension cord is used, make sure that also this is provided with a satisfactory protective ground.

**Touching a pump which does not have a proper protective ground, can be lethal.**



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# Installation instruction KM 22

## Technical description

The level guard is mainly used for two missions. Partly to prevent deepwater pumps from running dry in wells with very low water feeding. The KM 22 is also used for level control in open wells, ponds and different containers.

Mono phase pumps up to 6 A can be directly connected through the level guard. Three phase pumps are controlled by running the contactor coil via the level guard.

When the level guard is used as a dryrun protection or to empty containers the pump is stopped when the water level reaches the lower electrode. It starts as soon as the water level rises and reaches the upper electrode.

If the level guard is used for filling the pump starts when the water level reaches the lower electrode and stops as soon as the water level rises and reaches the upper electrode.

## Installation

The level guard installation must be carried out by an authorized electrician in accordance to local regulations. Connections must be preformed as shown on the schematic form on base plate.

Install the two electrodes at each sepcific level. They are connected by using an regular electrical wire, for example FK 1.5 mm<sup>2</sup> to terminal 6 and 7. If there is no deepwater pump with a grounded chassis in the well, or no other grounded equipment, a third electrode has to be connected to the ground terminal. This electrode has to be installed below the lower electrode.

## Signal lights on the relé

|                    |  |
|--------------------|--|
| Upper green light: | Water avaiable in the well, normal condition.                    |
| Redlight:          | Pump stoppped - the water level has sunk to the lower electrode. |
| Lower green light: | Operating voltage to relé - ok.                                  |

**ATTENTION:** If the level guard is used for filling the red light indicates that the pump is operating.

## Important:

If the risk of damage of any kind is present or if the pump does not start as intended, the pump installation has to be secured by an alarm or other safety equipment as protection at high levels. One pump alone can not be seen as full protection against flooding.



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# Installation instruction KM 33

## Technical description

The KM 33 is a combination of motorstarter and level guard. It is mainly used for two missions. Partly to prevent deepwater pumps from running dry in wells with very low water feeding.. The KM 33 is also used for level control in open wells, ponds and different containers. One possible example of usage is automatic control of the filling of containers etc.

When the level guard is used as a run dry protection or to empty containers, the pump is stopped when the water level reaches the lower electrode. It starts as soon as the water level rises, and reaches the upper electrode.

If the level guard is used for filling, the pump starts when the water level reaches the lower electrode and stops as soon as the water level rises and reaches the upper electrode.

## Installation

The level guard installation must be carried out by an authorized electrician in accordance with local regulations. Connections must be preformed as shown on the schematic form on the base plate. Install the two electrodes at each sepcific level. They are connected by using an regular electrical wire for example FK 1.5 mm<sup>2</sup> to terminal 6 and 7. If there is no deepwater pump with grounded chassis in the well or no other grounded equipment present, a third electrode has to be connected to the ground terminal. This electrode has to be installed below the lower electrode

**Important:**     **If the level guard is used for filling, the following reconnection has to be done:**  
                      **The wire between the relè socket terminal # 3 and the motor protection # 95,**  
                      **has to be removed.**  
                      **A new wire has to be connected between the relè socket terminal # 4 and motor**  
                      **protection #95.**

## Signal lights on the relé

|                    |   |
|--------------------|---|
| Upper green light: | Water available in the well, normal condition.                  |
| Redlight:          | Pump stopped - the water level has sunk to the lower electrode. |
| Lower green light: | Operating voltage to relé - ok.                                 |

**ATTENTION:**     If the level guard is used for filling, the red light indicates that the pump is operating.

## Important:

If the risk of damage of any kind is present or if the pump does not start as intended, the pump installation has to be secured by an alarm or other safety equipment as protection at high levels. One pump alone can not be seen as full protection against flooding.



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# Ball valve

## Technical description

The ball valve is a full flow through valve which is suited for pneumatic and hydraulic installations as it is resistant to the following medias:

Hot water, steam, petrol, oil, kerosene and pressurized air.

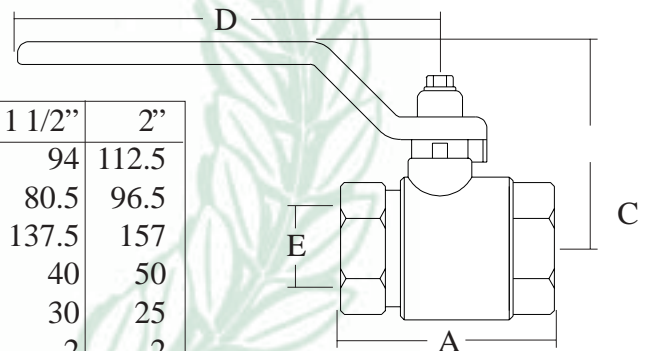
Max. working temperature: 180° C

Min. working temperature: -30° C



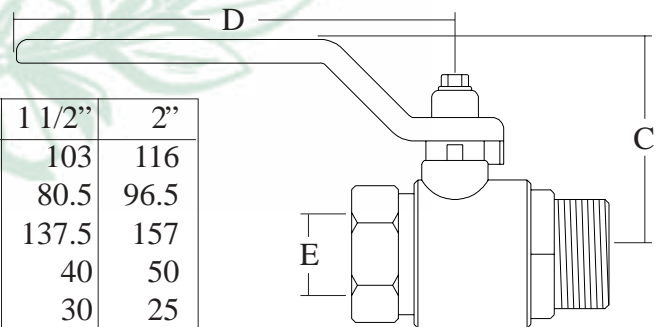
### Kulventil F/F

| Dim.           | 3/8" | 1/2" | 3/4" | 1"  | 1 1/4" | 1 1/2" | 2"    |
|----------------|------|------|------|-----|--------|--------|-------|
| Amm            | 44.4 | 50.5 | 57.5 | 70  | 80.5   | 94     | 112.5 |
| C mm           | 37   | 41   | 55   | 59  | 74.5   | 80.5   | 96.5  |
| Dmm            | 80   | 80   | 113  | 113 | 137.5  | 137.5  | 157   |
| Emm            | 10   | 15   | 20   | 25  | 32     | 40     | 50    |
| Max press. Bar | 50   | 50   | 40   | 40  | 30     | 30     | 25    |
| Pc./kart.      | 12   | 12   | 8    | 8   | 4      | 2      | 2     |



### Kulventil F/M

| Dim.           | 3/8" | 1/2" | 3/4" | 1"  | 1 1/4" | 1 1/2" | 2"   |
|----------------|------|------|------|-----|--------|--------|------|
| Amm            | 54.4 | 59   | 65   | 77  | 90     | 103    | 116  |
| C mm           | 37   | 41   | 55   | 59  | 74.5   | 80.5   | 96.5 |
| Dmm            | 80   | 80   | 113  | 113 | 137.5  | 137.5  | 157  |
| Emm            | 10   | 15   | 20   | 25  | 32     | 40     | 50   |
| Max press. Bar | 50   | 50   | 40   | 40  | 30     | 30     | 25   |
| Pc./kart.      | 12   | 12   | 8    | 8   | 4      | 2      | 2    |



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# Brass parts

## Straight nipple



|       |              |
|-------|--------------|
| A4001 | 1/4"         |
| A4002 | 3/8"         |
| A4003 | 1/2"         |
| A4004 | 3/4"         |
| A4005 | 1"           |
| A4006 | 1 1/4"       |
| A4007 | 1 1/2"       |
| A4008 | 2"           |
| A4010 | 3"           |
| A4024 | 1/2x1/4"     |
| A4025 | 1/2x3/8"     |
| A4029 | 1x1/2"       |
| A4030 | 1x3/4"       |
| A4033 | 1 1/4x1"     |
| A4036 | 1 1/2x1"     |
| A4037 | 1 1/2x1 1/4" |
| A4040 | 2x1"         |
| A4041 | 2x1 1/4"     |
| A4042 | 2x1 1/2"     |
| A4045 | 3x2 1/2"     |

## Elbow M/F



|       |        |
|-------|--------|
| A4221 | 3/8"   |
| A4222 | 1/2"   |
| A4223 | 3/4"   |
| A4224 | 1"     |
| A4225 | 1 1/4" |
| A4226 | 1 1/2" |

## Elbow



|       |        |
|-------|--------|
| A4202 | 3/8"   |
| A4203 | 1/2"   |
| A4204 | 3/4"   |
| A4205 | 1"     |
| A4206 | 1 1/4" |
| A4207 | 1 1/2" |
| A4208 | 2"     |

## Ball valve F/F



|       |        |
|-------|--------|
| A0150 | 3/8"   |
| A0151 | 1/2"   |
| A0152 | 3/4"   |
| A0153 | 1"     |
| A0154 | 1 1/4" |
| A0155 | 1 1/2" |

## Ball valve M/F



|       |        |
|-------|--------|
| A0160 | 3/8"   |
| A0161 | 1/2"   |
| A0162 | 3/4"   |
| A0163 | 1"     |
| A0164 | 1 1/4" |
| A0165 | 1 1/2" |

## Reduction nipple



|       |              |
|-------|--------------|
| A4104 | 1/2x1/4"     |
| A4109 | 3/4x1/2"     |
| A4113 | 1x1/2"       |
| A4114 | 1x3/4"       |
| A4115 | 1 1/4x1/2"   |
| A4116 | 1 1/4x3/4"   |
| A4117 | 1 1/4x1"     |
| A4120 | 1 1/2x1"     |
| A4121 | 1 1/2x1 1/4" |
| A4124 | 2x1"         |
| A4125 | 2x1 1/4"     |
| A4126 | 2x1 1/2"     |
| A4132 | 3x2"         |
| A4133 | 3x2 1/2"     |

## Plug



|       |      |
|-------|------|
| A4281 | 3/8" |
| A4282 | 1/2" |
| A4283 | 3/4" |
| A4284 | 1"   |

## Cap



|       |      |
|-------|------|
| A4301 | 3/8" |
| A4302 | 1/2" |
| A4304 | 3/4" |
| A4305 | 1"   |

## Nipple muff



|       |              |
|-------|--------------|
| A4332 | 1x1/2"       |
| A4333 | 1x3/4"       |
| A4336 | 1 1/4x1"     |
| A4337 | 1 1/2x1"     |
| A4338 | 1 1/2x1 1/4" |

## Check valve EUROPA



|       |        |
|-------|--------|
| A0110 | 1/2"   |
| A0111 | 3/4"   |
| A0112 | 1"     |
| A0113 | 1 1/4" |
| A0114 | 1 1/2" |
| A0115 | 2"     |

## T-pipe



|       |        |
|-------|--------|
| A4261 | 3/8"   |
| A4262 | 1/2"   |
| A4263 | 3/4"   |
| A4264 | 1"     |
| A4265 | 1 1/4" |
| A4266 | 1 1/2" |
| A4267 | 2"     |

## Muff



|       |        |
|-------|--------|
| A4241 | 3/8"   |
| A4242 | 1/2"   |
| A4243 | 3/4"   |
| A4244 | 1"     |
| A4245 | 1 1/4" |
| A4246 | 1 1/2" |
| A4247 | 2"     |

## PEM Coupling EMS



|       |           |
|-------|-----------|
| A4600 | 1"x32     |
| A4610 | 1 1/4"x32 |

NB! Brass parts are not dezink. free



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# Accessories

## 6-way ramific. wallm.

A1425 1"



## 6-way ramific. tankm.

A1416 1"



## Sandspear

A1664 1 1/4"  
A1665 1 1/2"



## Straight pipe 1" M/M

A1495 1"



## T-pipe for pump boosters

A1400 3-way. 3/4"  
A1405 3-way. 1"  
A1410 5-way. 1"



## Unions for circ. pumps

A4450 union brass  
A4456 w/cut-off 1"  
A4452 w/cut-off 22mm CU  
A4454 w/cut-off 28mm CU



## Safety valves

A1330 1/2" ext. x 6 kg  
A1332 1/2" ext. x 9 kg



## Ball tap

A0195 1/2"  
A0196 3/4"



## Mini valves F/F

A0185 1/4"  
A0186 3/8"  
A0187 1/2"



## 3-way DX for H.C. or drainage

A1401 3-way DX  
S0125 3-way DX compl.



## Mini valves M/F

A0190 1/4"  
A0191 3/8"  
A0192 1/2"

## Drainage tap

A0199 1/2"



## EMS Press. gauge/Footpum

A1320 Pressuregauge  
A1325 Foot pumpe



## Pressure gauge EMS

A1300 0 - 6 bar, Down  
A1302 0 -10 bar, Down  
A1310 0 - 6 bar, Behind



## Sand filtre

Stops particles over 0,4mm  
A9112 1"



## Frost protection valve

A1340 For conn. to 32PEM



## Tape

A1695 Thread tape  
A1690 Waterp. tape



## Equipment for Jet pumps

P0010 Carrying rack  
Z9010 Foot for Jet pump



## Straight union w/casing

A4391 1/2" M/F  
A4393 1" M/F



## Three Bond locking fluid

A1698 1110B 250 gr.  
A1699W 1110 W 50 gr.  
A1699S 1388 S 50 gr.  
A1700W 1344 W 250 gr.  
A1700S 1388 S 250gr.



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# Misc. equipment/accessories

## Adapter

|       |           |
|-------|-----------|
| A1650 | 1" EMS    |
| A1651 | 1" Bronze |
| A1652 | 1 1/4"    |
| A1654 | 2"        |



## Brass well cover

|       |               |
|-------|---------------|
| A1630 | 140 mm 1"     |
| A1631 | 196 mm 1"     |
| A1633 | 140 mm 1 1/4" |
| A1634 | 196 mm 1 1/4" |



## Hole saw for adapter

|       |              |
|-------|--------------|
| A1610 | 46 mm compl. |
| A0191 | Saw 46 mm    |
| A0192 | Centerdrill  |



## Brass well cover complete

|       |                |
|-------|----------------|
| S1630 | 140 mm, PEM 32 |
| S1631 | 196 mm, PEM 32 |
| S1633 | 140 mm, PEM 40 |
| S1634 | 196 mm, PEM 40 |



## Well hat of plast. 5"/6"

A1645



## Carrying iron Galvanized

|       |             |
|-------|-------------|
| A1620 | Galv. 32 mm |
| A1621 | Galv. 40 mm |



## Well hat of alu. w/el. box

|       |             |
|-------|-------------|
| A1645 | 110 -140 mm |
| A1646 | 160 -196 mm |



## Splice connectors

|       |                 |
|-------|-----------------|
| E0160 | Plug            |
| E0161 | Plug-connection |



## Motor-protection, fast tripping w/start and stop in box

|       |              |
|-------|--------------|
| B0106 | 1,0 - 1,6 A  |
| B0108 | 1,6 - 2,5 A  |
| B0110 | 2,5 - 4,0 A  |
| B0112 | 4,0 - 6,3 A  |
| B0114 | 6,0 - 10,0 A |
| B0116 | 10 - 16,0 A  |
| B0118 | 16 - 20,0 A  |



## Pressure switches

|       |                                    |
|-------|------------------------------------|
| B0126 | Stögermatic, monop.<br>0 - 4,5 bar |
| B0122 | Telemec. 3 -phase<br>0 - 6 bar     |
| B0123 | Telemec. 3-phase<br>0 - 12 bar     |



## Motor-protection switch

|       |              |
|-------|--------------|
| Z8108 | 1,6 - 2,5 A  |
| Z8110 | 2,5 - 4,0 A  |
| Z8112 | 4,0 - 6,3 A  |
| Z8114 | 6,0 - 10,0 A |
| Z8116 | 9,0 - 14,0 A |
| Z8118 | 13 - 18,0 A  |
| Z8120 | 17 - 23,0 A  |



B0124

B0125 Square D

Condor  
(Not sold as a single unit)



## El. Junction box

E 0150 Waterproof



## Flat hose

|       |            |
|-------|------------|
| A2055 | 38 mm dia. |
| A2056 | 50 mm dia. |



## Strain relief

|       |         |
|-------|---------|
| Z8925 | PG 13,6 |
| Z89.. | PG 16   |



## Hose connector ext.

|       |          |
|-------|----------|
| A0295 | 38x11/4" |
| A0296 | 50x11/2" |



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# VX Brass parts

## Union 020

| Art. nr. | Size | Price | Qty. pack. |
|----------|------|-------|------------|
| A3122    | 20   |       | 12 qty.    |
| A3123    | 25   |       | 10 qty.    |
| A3124    | 32   |       | 8 qty.     |
| A3125    | 40   |       | 4 qty.     |



## T-pipe 030

| Art. nr. | Size | Price | Qty. pack. |
|----------|------|-------|------------|
| A3162    | 20   |       | 6 qty.     |
| A3163    | 25   |       | 6 qty.     |
| A3164    | 32   |       | 4 qty.     |
| A3165    | 40   |       | 4 qty.     |



## Tip union w/outs. threads 015

|       |             |  |         |
|-------|-------------|--|---------|
| A3102 | 1/2" x 20   |  | 20 qty. |
| A3103 | 3/4" x 25   |  | 15 qty. |
| A3104 | 1" x 32     |  | 12 qty. |
| A3105 | 1 1/4" x 40 |  | 6 qty.  |



## T-pipe w/ins. threads 035

|       |              |  |         |
|-------|--------------|--|---------|
| A3172 | 20x1/2"x20   |  | 20 qty. |
| A3173 | 25x3/4"x25   |  | 15 qty. |
| A3174 | 32x1"x32     |  | 12 qty. |
| A3175 | 40x1 1/4"x40 |  | 6 qty.  |



## Tip union w/ins. threads 010

|       |             |  |         |
|-------|-------------|--|---------|
| A3112 | 1/2" x 20   |  | 20 qty. |
| A3113 | 3/4" x 25   |  | 15 qty. |
| A3114 | 1" x 32     |  | 12 qty. |
| A3115 | 1 1/4" x 40 |  | 6 qty.  |



## Elbow w/outs. threads 040

|       |             |  |         |
|-------|-------------|--|---------|
| A3132 | 1/2" x 20   |  | 15 qty. |
| A3133 | 3/4" x 25   |  | 12 qty. |
| A3134 | 1" x 32     |  | 8 qty.  |
| A3135 | 1 1/4" x 40 |  | 6 qty.  |



## Elbow 050

|       |    |  |         |
|-------|----|--|---------|
| A3152 | 20 |  | 15 qty. |
| A3153 | 25 |  | 12 qty. |
| A3154 | 32 |  | 8 qty.  |
| A3155 | 40 |  | 6 qty.  |



## Elbow w/ ins. threads 045

|       |             |  |         |
|-------|-------------|--|---------|
| A3142 | 1/2" x 20   |  | 15 qty. |
| A3143 | 3/4" x 25   |  | 12 qty. |
| A3144 | 1" x 32     |  | 8 qty.  |
| A3145 | 1 1/4" x 40 |  | 6 qty.  |



## Union, long type 025

|       |    |  |        |
|-------|----|--|--------|
| A3184 | 32 |  | 6 qty. |
| A3185 | 40 |  | 4 qty. |



## Wall mount w/ins. threads 048

|       |           |  |         |
|-------|-----------|--|---------|
| A3192 | 20 x 1/2" |  | 15 qty. |
| A3193 | 25 x 3/4" |  | 12 qty. |
| A3194 | 32 x 1"   |  | 8 qty.  |



## Support casing

|       |    |
|-------|----|
| A3202 | 20 |
| A3203 | 25 |
| A3204 | 32 |
| A3205 | 40 |



## O-ring + squeeze ring

|       |    |
|-------|----|
| A3212 | 20 |
| A3213 | 25 |
| A3214 | 32 |
| A3215 | 40 |



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# Cables and wires

## Rubber cable NMHVR

| Art. nr | Type                    | Price pr. m. |
|---------|-------------------------|--------------|
| A1800   | 4 x 1,5 mm <sup>2</sup> |              |
| A1801   | 4 x 2,5 mm <sup>2</sup> |              |
| A1802   | 4 x 4 mm <sup>2</sup>   |              |
| A1803   | 4 x 6 mm <sup>2</sup>   |              |
| A1804   | 4 x 10 mm <sup>2</sup>  |              |
| A1805   | 4 x 16 mm <sup>2</sup>  |              |
| A1816   | 3 x 2,5 mm <sup>2</sup> |              |



## Armed cable PFSP

| Art. nr | Type                           | Price pr. m. |
|---------|--------------------------------|--------------|
| A1820   | 3 x 2,5 mm <sup>2</sup> +earth |              |
| A1821   | 4 x 4 mm <sup>2</sup> +earth   |              |



## Rubber cable NMHVR 500 or 1000 meters drum

| Art. nr | Type                    | Price pr. m. |
|---------|-------------------------|--------------|
| S1800   | 4 x 1,5 mm <sup>2</sup> |              |
| S1801   | 4 x 2,5 mm <sup>2</sup> |              |
| S1802   | 4 x 4 mm <sup>2</sup>   |              |
| S1816   | 3 x 2,5 mm <sup>2</sup> |              |



## Multistrand wire RK

| Art. nr | Type                         | Price pr. m. |
|---------|------------------------------|--------------|
| A1841   | RK 1,5 mm <sup>2</sup> BLUE  |              |
| A1842   | RK 1,5 mm <sup>2</sup> BLACK |              |



## Rubber cable ready in lengths with FRANKLIN Termination Kit 4 x 1,5 mm

| Art. nr | Lenght | Price pr. m. |
|---------|--------|--------------|
| A1902   | 10 m   |              |
| A1904   | 20 m   |              |
| A1906   | 30 m   |              |
| A1908   | 40 m   |              |
| A1910   | 50 m   |              |
| A1912   | 60 m   |              |
| A1914   | 70 m   |              |
| A1816   | 80 m   |              |
| A1918   | 90 m   |              |
| A1920   | 100 m  |              |



## Rubber cable ready in lengths with FRANKLIN Termination Kit 4 x 2,5 mm

| Art. nr | Lenght | Price pr. m. |
|---------|--------|--------------|
| A1932   | 10 m   |              |
| A1934   | 20 m   |              |
| A1936   | 30 m   |              |
| A1938   | 40 m   |              |
| A1940   | 50 m   |              |
| A1942   | 60 m   |              |
| A1944   | 70 m   |              |
| A1846   | 80 m   |              |
| A1948   | 90 m   |              |
| A1950   | 100 m  |              |



**NB! Other cable types can be provided quickly please call for price and time of delivery!**



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# Leijon manual pump

## Area of application

The Leijon manual pump is a manual pump for those places where no electricity is available, but surely there are water under the ground. The pump is suited for a little summer house, and can pump water from maximum 33 meters depth. The pump is totally made of aluminium and almost totally corrosion-free. Additional to the pump, extension pipe packages of 3 meters lengths. The pipes are made of plastic approved for drinking water, and the pull rods of stainless steel. The length each part combined with low weight makes it easy for two persons to install the pump and pipes. The pump cylinder is placed at frost protected depth, which means that the pump can stand nordic winters. With a minimum of moving parts, this pump are practically not exposed to wear and tear at all.



## Technical specifications

|   |  |
|---|--|
| Weight for pump excl.pipes and pull rods: | 15 kg  |
| Surface treatment:                        | Two layers of 2-component Alcro lac.   |
| Pump cylinder:                            | Brass, 70 mm dia.  |
| Weight of pump cylinder:                  | 3 kg   |
| Plastic pipes:                            | Approved by ISO 9002<br>42 mm dia. with 1 1/4" pipe threads<br>0,7 kg pr. meters |
| Pull rod:                                 | 8 mm dia. stainless steel<br>M 8 threads<br>1 kg pr. meters                      |



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# Nostalgic pump

## Area of application

The EMS nostalgic pump is suited for dug wells or other open water sources.

With the nostalgic look, this pump is often used to decorate the garden or make the summer house look better.

Water can be fetched from maximum 6 meters depth with this pump.



## Technical specifications

The pump is delivered complete with pump cylinder and 1 1/4" galvanized pipe.

Length of pipe/pumpcylinder under the ground: 1170 mm

Length pump top: 1060 mm



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# Inst. Instruction for Leijon man. pump

## Necessary tools:

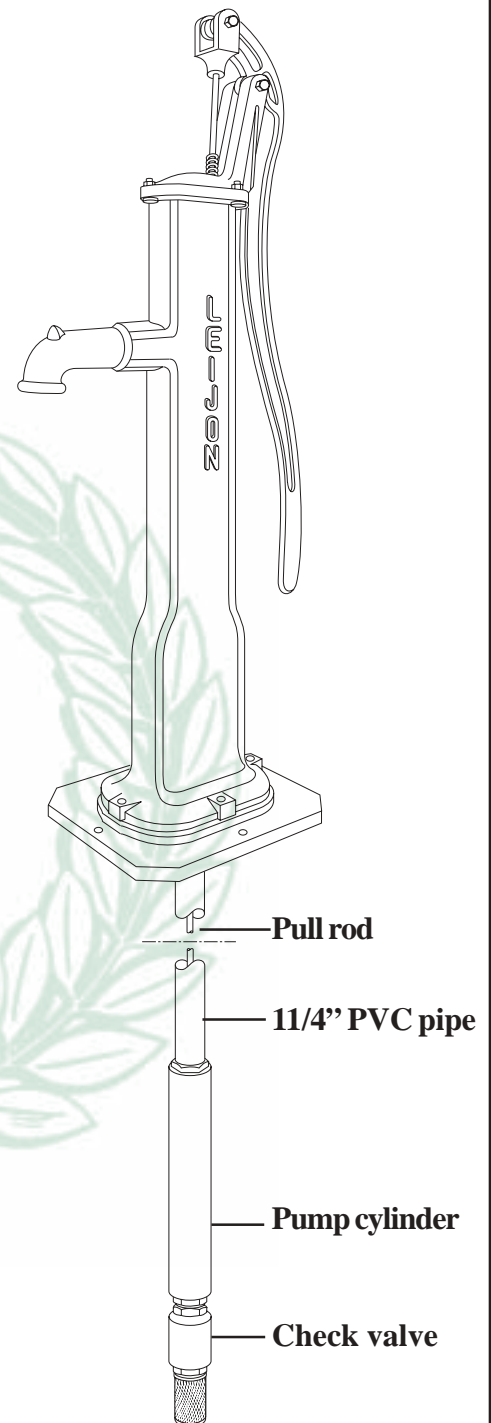
2 pc. Pipe wrenches  
Hack saw  
Threading tool 1/2" Withwort

1pc. 11/4" Check valve is screwed onto the pump cylinder by using the connection nipple. Afterwards, pull rods and PVC pipes are connected as the pipe is lowered. At the top pipe a hole has to be drilled (2-3mm Dia.) approx. 1-2m below the ground level.

Tread the short rod through the pump, and connect it to the handle. To manage this, the rod has to be cut and given threads at the installation spot.

The cylinder piston must have a clearance of approx. 5 cm when the handle is in the lowest position. This means that the rod has to be cut approx. 1 cm above the top of the pump, and then threaded. Install the washer and spring, before the rod-bearing is screwed onto the handle.

**NB!** Make sure not to get any filings into the pump while making the threads - cover the internal of the pump with a rag or similar.



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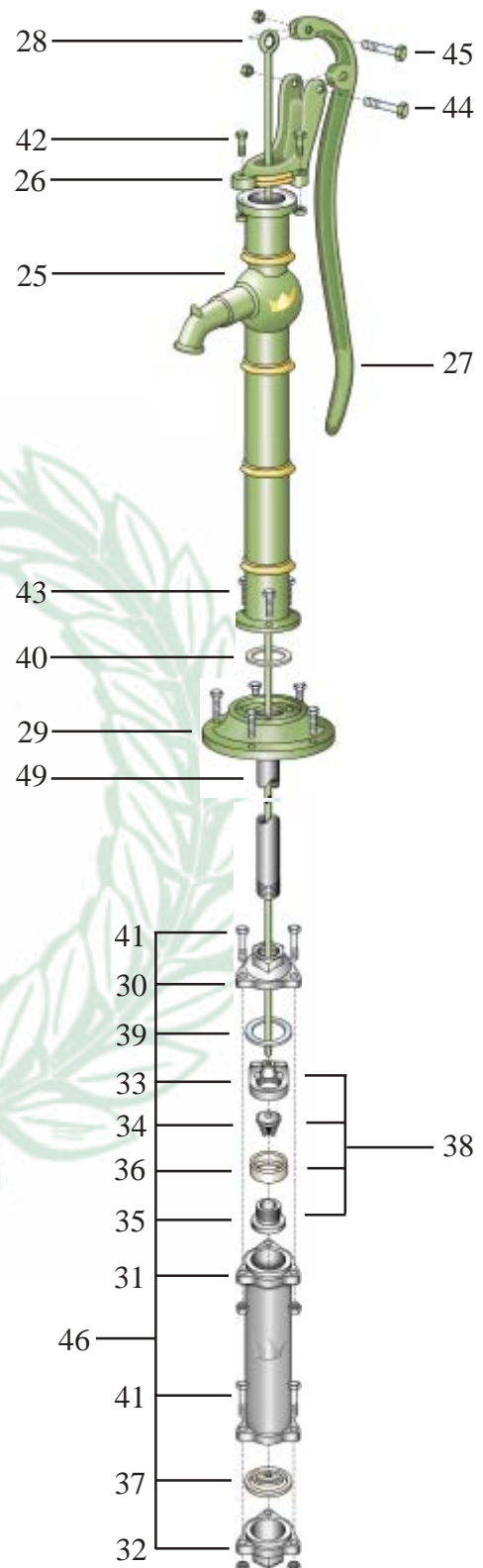
# Spare parts for Nostalgic pump

## Over view Art. nr:

|                         |       |
|-------------------------|-------|
| Pump rack               | Z9325 |
| Pump head               | Z9326 |
| Pull rod                | Z9357 |
| Piston rod              | Z9328 |
| Foot plate              | Z9329 |
| Cylinder cover          | Z9330 |
| Cylinder without piston | Z9331 |
| Cylinder bottom         | Z9332 |
| Upper part piston       | Z9333 |
| Valve for piston        | Z9334 |
| Lower part for piston   | Z9335 |
| Leather collar          | Z9336 |
| Leather valve flap      | Z9337 |
| Gasket cylinder cover   | Z9339 |
| Gasket foot plate       | Z9340 |
| Bolt cylinder           | Z9341 |
| Bolt pump head          | Z9342 |
| Bolt foot plate         | Z9343 |
| Bolt pull rod           | Z9344 |
| Bolt piston rod         | Z9345 |
| Galvanized pipe         | Z9349 |

## Complete Kits

|                        |       |
|------------------------|-------|
| Complete piston        | Z9338 |
| Cpl. cylinder / piston | Z9346 |
| Gasket Kit             | Z9347 |



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# How to select PEM-pipe

Pressure loss (head, meters) per 100 m PEM-pipe at different water flows:

| Water flow:<br>L/Min. | PEM-pipe: |       |       |       |
|-----------------------|-----------|-------|-------|-------|
|                       | 32x26     | 40x32 | 50x40 | 63x50 |
| 10                    | 0.6       | 0.2   | 0.1   | -     |
| 20                    | 2.2       | 0.8   | 0.3   | -     |
| 30                    | 4.5       | 1.8   | 0.6   | 0.2   |
| 40                    | 7.0       | 2.8   | 1.0   | 0.4   |
| 50                    | 13.0      | 4.2   | 1.5   | 0.5   |
| 60                    | 15.0      | 5.8   | 2.0   | 0.7   |
| 70                    | 18.0      | 7.5   | 2.5   | 0.9   |
| 80                    |           | 9.2   | 3.4   | 1.1   |
| 90                    |           | 12.0  | 4.2   | 1.4   |
| 100                   |           | 14.0  | 5.0   | 1.8   |
| 150                   |           | 25.0  | 10.0  | 3.6   |
| 200                   |           |       | 17.0  | 6.0   |
| 250                   |           |       |       | 9.0   |
| 300                   |           |       |       | 12.0  |
| 350                   |           |       |       | 16.0  |
| 400                   |           |       |       | 19.0  |

Ie.:

A 100 meter suction pipe 40x32 to a pump delivering 40 liters per minute, gives a pressure loss similar to 2.8 meters suction depth.

If a similar pipe is used as pressure pipe, the pressure loss will be 0.28 Bar (kg/cm<sup>2</sup>)

Please take a look also at the diagram on the next page.



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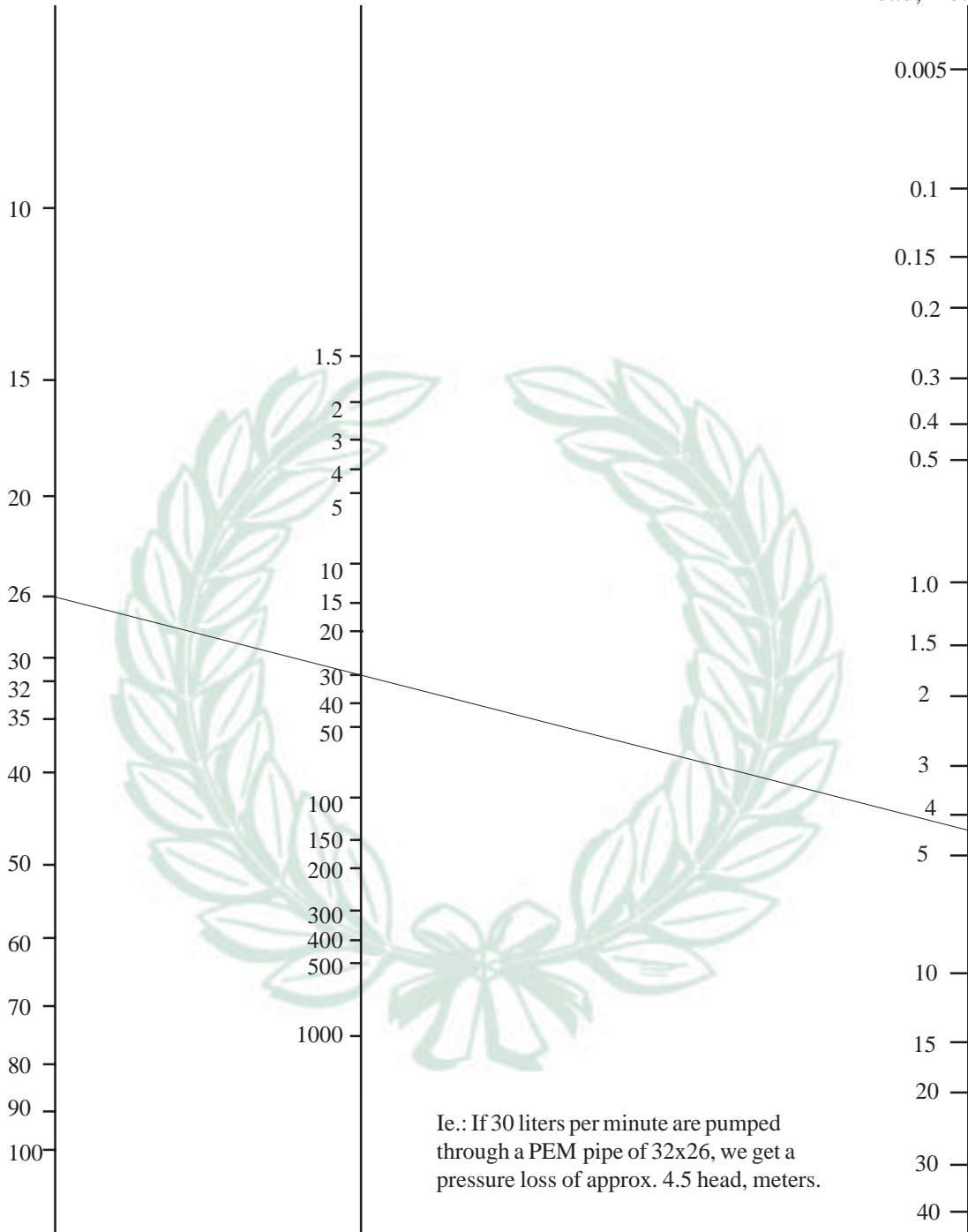
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# How to select PEM-pipe

Pipe inner-diameter. mm.

Volume. L/ min.

Pressure loss per. 100 m PEM. Head, meters



I.e.: If 30 liters per minute are pumped through a PEM pipe of 32x26, we get a pressure loss of approx. 4.5 head, meters.



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# Warranty handling

## Most important:

After the warranty handling is closed, both You and Your customer have to be satisfied. Together we have to find the cause to prevent the same from happening again.

## **Our warranty goes far beyond normal for the business.**

We will not let go of any warranty cases until both our distributor and his customer is satisfied. We are always flexible, and will try to find the best solution. There is still one thing that is not negotiable: Always contact us before the pump is delivered to a service shop not approved by EMS. We do not take any responsibility for the repair costs in these cases.

If a EMS pump fails before the warranty period is over, it will always be replaced immediately. The problem for the customer must be limited as much as possible. It is usually enough with just one phone call to get a new pump. By having a very low warranty frequency - this is the best and cheapest method for all parts.

## Following up

Every pump failure is carefully followed up. There are two main reasons for this:

- 1: To avoid the new pump from failing.  
Four of five returned pumps is either ok, or the cause is outside the pump. In the fifth case a new pump is bound to fail, unless we carefully follow up each case.
- 2: Product development.  
By finding the weaknesses of our pumps, we are able to improve the construction and avoid breakdowns in the future.

## Who is paying?

Regardless of the cause to these breakdowns, EMS is responsible for all material and freight costs during the warranty handling. In those cases where the fault is outside the pump, or there is nothing wrong with the pump, we pay for the test, service and handling. We do not take responsibility for the costs, if a customer returns the same pump several times and the cause to the breakdown is not a pump failure. If the problem appears to be a warranty, because of material failure or some other failure in the pump, we will cover costs replacing the pump. Warranty problems are negative for all parts, but we will always try to solve them as positive as possible. Hopefully our customers are able to do the same. Sometimes it actually happens that one of our distributors, sends us an invoice for work costs that are totally unreasonable. Several years in the business has taught us the cost of replacing a pump.

## Our goals

The intention with our warranty handling and our hole business, is to build a limited net of well-informed distributors. Our distributors shall have access to a complete range of high quality pumps. Our prices shall always be competitive. This requires high demands for both us and our distributors.



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