

## 2 Technical data

### 2.1 Operating and storage conditions

**Note:** To comply with CSA standards, the pump must be installed and used indoors, and within the operating conditions specified in Table 1 below.

Table 1 - Operating and storage conditions

|                                               |                     |
|-----------------------------------------------|---------------------|
| Ambient temperature range (operation)         | 13 to 40 °C         |
| Ambient temperature range (storage)           | -30 to 70 °C        |
| Normal surface temperature of the pump-body * | 45 to 65 °C         |
| Maximum humidity (operation)                  | 90% RH              |
| Maximum altitude (operation)                  | 2000 m              |
| Pollution degree                              | 2                   |
| Installation category                         | II                  |
| Noise level at 1 metre                        | 57 dB(A) (at 50 Hz) |

\* At ultimate vacuum, with ambient temperature of 20 °C.

### 2.2 Performance

**Note:** Where total pressures are shown in Table 2 below, measurements were taken using an untrapped total pressure capacitance diaphragm gauge on a header, as specified by Pneurop standards.

Table 2 - Performance data

|                                                                 | E1M18                                                         | E2M18                                                         |
|-----------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Maximum displacement                                            |                                                               |                                                               |
| 50 Hz electrical supply                                         | 20.5 m <sup>3</sup> h <sup>-1</sup>                           | 20.5 m <sup>3</sup> h <sup>-1</sup>                           |
| 60 Hz electrical supply                                         | 25.0 m <sup>3</sup> h <sup>-1</sup>                           | 25.0 m <sup>3</sup> h <sup>-1</sup>                           |
| Maximum pumping speed - Pneurop                                 |                                                               |                                                               |
| 50 Hz electrical supply                                         | 17.0 m <sup>3</sup> h <sup>-1</sup>                           | 17.0 m <sup>3</sup> h <sup>-1</sup>                           |
| 60 Hz electrical supply                                         | 20.4 m <sup>3</sup> h <sup>-1</sup>                           | 20.4 m <sup>3</sup> h <sup>-1</sup>                           |
| Motor rotational speed                                          |                                                               |                                                               |
| 50 Hz electrical supply                                         | 1440 r min <sup>-1</sup>                                      | 1440 r min <sup>-1</sup>                                      |
| 60 Hz electrical supply                                         | 1720 r min <sup>-1</sup>                                      | 1720 r min <sup>-1</sup>                                      |
| Ultimate vacuum                                                 |                                                               |                                                               |
| without gas-ballast (partial pressure)                          | 2 x 10 <sup>-2</sup> mbar<br>2 Pa                             | 1 x 10 <sup>-4</sup> mbar<br>1 x 10 <sup>-2</sup> Pa          |
| without gas-ballast (total pressure)                            | 3 x 10 <sup>-2</sup> mbar<br>3 Pa                             | 1 x 10 <sup>-3</sup> mbar<br>1 x 10 <sup>-1</sup> Pa          |
| with full gas-ballast (partial pressure)                        | 6.5 x 10 <sup>-1</sup> mbar<br>6.5 x 10 <sup>1</sup> Pa       | 5 x 10 <sup>-3</sup> mbar<br>5 x 10 <sup>-1</sup> Pa          |
| Maximum water vapour inlet pressure                             | 50 mbar<br>5 x 10 <sup>3</sup> Pa                             | 20 mbar<br>2 x 10 <sup>3</sup> Pa                             |
| Maximum water vapour pumping rate                               | 0.65 kg h <sup>-1</sup>                                       | 0.3 kg h <sup>-1</sup>                                        |
| Maximum permitted outlet pressure<br>(for full pump throughout) | 0.5 bar gauge<br>1.5 bar absolute<br>1.5 x 10 <sup>5</sup> Pa | 0.5 bar gauge<br>1.5 bar absolute<br>1.5 x 10 <sup>5</sup> Pa |

## 2.3 Mechanical data

Table 3 - Mechanical data

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| Approximate pump mass | 38 kg (E1M18), 41 kg (E2M18)                                                                   |
| Dimensions            | See Figure 2                                                                                   |
| Degree of protection  |                                                                                                |
| Single-phase motors   | IP44                                                                                           |
| Three-phase motors    | IP54                                                                                           |
| Pump inlet port       | NW25 (the flange can be removed from the 1 inch BSP threaded hole)                             |
| Pump outlet port      | 15 mm external diameter nozzle (the nozzle can be removed from the 3/4 inch BSP threaded hole) |

## 2.4 Lubrication data

**Note:** Edwards Material Safety Data Sheets for the oils specified below are available upon request.

Table 4 - Lubrication data

|                                |                             |
|--------------------------------|-----------------------------|
| <b>Hydrocarbon pumps:</b>      |                             |
| Recommended oil*               | Ultragrade 19               |
| Maximum oil capacity           |                             |
| E1M18                          | 1.4 litres                  |
| E2M18                          | 1.05 litres                 |
| <b>PFPE-prepared EM pumps:</b> |                             |
| Recommended oil                | Krytox 1506 or Fomblin 06/6 |
| Maximum oil capacity           |                             |
| E1M18                          | 1.4 litres                  |
| E2M18                          | 1.05 litres                 |

\* To operate the pump when the ambient temperature is outside the range specified in [Section 2.1](#) or to optimise pump performance when you process condensable vapours, you may need a different oil.

## 2.5 Electrical data

Refer to Table 5 and 6. The motor start-up current is drawn for less than one second, so you must use slow-blow fuses to prevent unnecessary fuse failure when the pump starts. Fuses should be to EN60269 Section 2.2. For conformance with CSA standards only CSA certified fuses are to be used. If you use the pump at temperatures lower than 13 °C, the start-up current will be drawn for longer; this may cause the motor thermal overload device to open.

Table 5 - Electrical data: three-phase motors

| Pump Item Number                 | Voltage (V) | Frequency (Hz) | Full load current (A) | Start current (A) | Maximum fuse rating (A) |
|----------------------------------|-------------|----------------|-----------------------|-------------------|-------------------------|
| A343-10-940                      | 200-220     | 50             | 3.3                   | 16.1              | 10                      |
|                                  | 380-415     | 50             | 1.9                   | 10.2              | 6                       |
|                                  | 200-230     | 60             | 2.3                   | 15.9              | 10                      |
|                                  | 460         | 60             | 1.6                   | 10.6              | 6                       |
| A363-10-940                      | 200-220     | 50             | 3.3                   | 16.1              | 10                      |
|                                  | 380-415     | 50             | 1.9                   | 10.2              | 6                       |
|                                  | 200-230     | 60             | 3.4                   | 15.9              | 10                      |
|                                  | 460         | 60             | 1.6                   | 10.6              | 6                       |
| Motor output rating (continuous) |             |                |                       |                   |                         |
| 50 Hz operation                  |             | 0.65 kW        |                       |                   |                         |
| 60 Hz operation                  |             | 0.75 kW        |                       |                   |                         |

Table 6 - Electrical data: single-phase motors

| Pump Item Number                                   | Voltage (V) | Frequency (Hz)     | Full load current (A) | Start current (A) | Maximum fuse rating (A) |
|----------------------------------------------------|-------------|--------------------|-----------------------|-------------------|-------------------------|
| A363-15-903, A343-16-903, A343-15-903              | 220-240     | 50                 | 4.6                   | 33                | 15                      |
|                                                    | 230-240     | 60                 | 5.0                   | 33                | 15                      |
| A343-15-981, A363-15-981                           | 115         | 60                 | 11.0                  | 70                | 40                      |
|                                                    | 230         | 60                 | 5.5                   | 35                | 20                      |
| A343-15-904, A363-15-904                           | 100         | 50                 | 12.0                  | 88                | 30                      |
|                                                    | 100-105     | 60                 | 11.0                  | 88                | 30                      |
|                                                    | 200         | 50                 | 6.0                   | 44                | 15                      |
|                                                    | 200-210     | 60                 | 5.5                   | 44                | 15                      |
| A343-17-984, A363-17-984, A343-25-984, A363-25-984 | 110         | 50                 | 11.0                  | 42                | 30                      |
|                                                    | 115-120     | 60                 | 10.0                  | 38                | 25                      |
|                                                    | 200-240     | 50                 | 5.5                   | 32                | 15                      |
|                                                    | 200-230     | 60                 | 5.0                   | 31                | 15                      |
| A343-15-912, A363-15-912                           | 220-240     | 50                 | 5.0                   | 25                | 13                      |
| A343-15-920, A363-15-920                           | 220         | 50                 | 5.5                   | 35                | 15                      |
|                                                    | 220         | 60                 | 5.0                   | 35                | 15                      |
| Motor output rating (continuous)                   |             |                    |                       |                   |                         |
| 50 Hz operation                                    |             | 0.55 kW or 0.65 kW |                       |                   |                         |
| 60 Hz operation                                    |             | 0.75 kW            |                       |                   |                         |

Figure 2 - Dimensions (mm): key

| Pump Item Number                      | Hz    | Dimensions (mm) |     |     |     |
|---------------------------------------|-------|-----------------|-----|-----|-----|
|                                       |       | A               | B   | C   | D   |
| Single-phase motors                   |       |                 |     |     |     |
| A343-15-912                           | 50    | 518             | -   | 241 | 162 |
| A363-15-912                           | 50    | 520             |     |     |     |
| A343-15-920, A363-15-920              | 50    | 474             | -   | 241 | 162 |
|                                       | 60    | 520             | -   | 241 | 162 |
| A343-15-981                           | 60    | 474             | 518 | 241 | 162 |
| A363-15-981                           | 60    | 520             | 564 | 241 | 162 |
| A343-15-904                           | 50/60 | 474             | 518 | 241 | 162 |
| A363-15-904                           | 50/60 | 520             | 564 | 241 | 162 |
| A363-15-903, A363-17-984              | 50/60 | 550             | -   | 251 | 183 |
| A343-16-903, A343-15-903, A343-17-984 | 50/60 | 504             | -   | 251 | 183 |
| A343-17-984, A363-17-984              | 50/60 | 504             | -   | 251 | 183 |
| Three-phase motors                    |       |                 |     |     |     |
| A343-10-940                           | 50/60 | 474             |     |     | 162 |
| A363-10-940                           | 50/60 | 520             |     |     | 162 |