Actuators

**N023080**

**N037120**

Multi position airless cylinder set

Simple solution ready for operation

Highly dynamic electro-magnetic direct drive with integrated bearings position sensors and temperature monitoring

High dynamic and position repeatability

Long working life

Simple programming by using the MPAC – configurator software

**Technical data**

**Version**

Multiposition cylinder set with guide unit
NP01-..x.../MR

Multiposition cylinder set without guide unit
NP01-..x.../M

**Logic supply**

Light duty: 24 or 48 V d.c.
Heavy duty: 24, 48 or 72 V d.c.

**Force**

Light duty: 44N max.
Heavy duty: 100N max.

**Velocity**

2.5 ms

**Acceleration**

Light duty: 131 ft/s² (40 m/s²)
Heavy duty: 180 ft/s² (55 m/s²)

**Strokes**

See page 2

**Repeatability**

±0.0039 (±0.1 mm)

**Max. stator temperature**

149°F (65°C)

**Protection rating**

IP67

**Materials**

Stator/slider: chromium steel, POM

Guide block, driver, mounting plate: aluminium anodized

Linear ball bearing: stainless steel

Guide rod: steel inductive hardened

Wiper: nitrile rubber

**Standard strokes**

<table>
<thead>
<tr>
<th>Model</th>
<th>2.0 (050)</th>
<th>3.94 (100)</th>
<th>4.33 (110)</th>
<th>5.51 (140)</th>
<th>6.30 (160)</th>
<th>7.87 (200)</th>
<th>10.24 (260)</th>
<th>10.63 (270)</th>
<th>12.60 (320)</th>
<th>13.39 (340)</th>
<th>14.17 (360)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light duty with guide</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Heavy duty with guide</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Light duty without guide</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Heavy duty without guide</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
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</table>

**Options selector**

<table>
<thead>
<tr>
<th>Size</th>
<th>Substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light duty</td>
<td>23080</td>
</tr>
<tr>
<td>Heavy duty</td>
<td>37120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td>With guide</td>
<td>IR</td>
</tr>
<tr>
<td>Without guide</td>
<td>II</td>
</tr>
</tbody>
</table>

**Ordering information**

To order a light duty multi position airless cylinder set with guide, 200 mm stroke and 4 m connection cable between motor and controller quote: **N023080/IR/200/S4**
Warning
These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under ‘Technical Data’.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.
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Multi position airless cylinder set

Mountings and accessories

<table>
<thead>
<tr>
<th>Flange mounting</th>
<th>Foot mounting</th>
<th>Adaptor plate (combination pick and place)</th>
<th>Assembly kit for magnetic spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airless cylinder</td>
<td>Airless cylinder with guide unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metallic M23 round connector IP67</td>
<td>Magnetic spring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Actuator Part number Part number Part number Part number

Light duty NPF01-23 x 50 QA/0302/2T M/P73677 QM/023080/22
Heavy duty NPF01-37 x 100 QA/0302/21 - GM/023080/22

Electrical data

Servo controller NE1100-MP

- Number of motor channels: 1
- Max. current output per phase: 5 A
- Logic supply: 24 V d.c.
- Power consumption logic: 10 W
- Motor supply: 72 V d.c.
- Digital inputs: 8
- Digital outputs: 8
- Interface: RS-232C
- Interface optional: Fieldbus
- Width: 13" (330 mm)
- Height: 2.8" (70 mm)
- Depth: 7.0" (179 mm)
- Weight: 5.5 lb (2.5 kg)
- Case: IP40
- Storage temperature: -13° ... 158°F (-25 ... 70°C)
- Operating temperature: 32° ... 122°F (0 ... 50°C)
- Max. case temperature: 149°F (65°C)

Power supply NS01-72/30

- Output power: 300 W
- Input voltage: 93 ... 123 / 187 ... 264 V a.c.
- Input frequency: 47 ... 63 Hz
- Input current full load 230: 3.3 A
- Input current full load 115V: 5.4 A
- Inrush current max. 230V: 70 A
- Internal fuse: 6.3 AT
- Output voltage range: 72 ... 76 V d.c.
- Output current: 4 A d.c.
- Hold-up time full load: 30 ms
- Overvoltage protection: 140% U out
- Operating temperature range: 13° ... 158°F (-25 ... 70°C)
- Power reduction above 50°C: 2% / °C
- Storage temperature range: 13° ... 185°F (-25 ... 85°C)
- Humidity (not bateaued): 95% rel. H max.
- Switching frequency: 67 kHz typ.
- Efficiency: >85%
- Output voltage indicator: LED
- Isolation input-output: 3,000 V a.c. (1 minute)
- Isolation input-case: 2,000 V a.c. (1 minute)
- Isolation output-case: 500 V a.c. (1 minute)
- Safety class (IEC 536): Class 1
- Safety standard meets: IEC 950
- CE certificate for SELV
- Conducted EMI according to EN60950
- Electromagnetic susceptibility: EN61000-4-4 10 kV
- Case: Steel / IP20
- Mounting: DIN-rail TS35

Order online

www.norgren.com/info/US-ACT-106
To calculate a move time for payloads added to the actuator:

1) On the horizontal axis, find the stroke length of the desired move.
2) Move up vertically to intersect with the curve for the desired added payload.
3) Move horizontally to the left and read the total move time from the vertical axis.

Moving mass in x-x or y-y configuration

<table>
<thead>
<tr>
<th>Airless cylinder (with guide)</th>
<th>Maximum stroke inch (mm)</th>
<th>Moving mass lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP01-23x80/50x110-MR</td>
<td>2.0 (50)</td>
<td>1.1 (0.503)</td>
</tr>
<tr>
<td>NP01-23x80/80x140-MR</td>
<td>4.0 (100)</td>
<td>1.3 (0.603)</td>
</tr>
<tr>
<td>NP01-23x80/20x270-MR</td>
<td>7.9 (200)</td>
<td>1.8 (0.819)</td>
</tr>
<tr>
<td>NP01-23x80/280x340-MR</td>
<td>12.5 (320)</td>
<td>2.2 (1.020)</td>
</tr>
<tr>
<td>NP01-37x120/20x100-MR</td>
<td>2.0 (50)</td>
<td>2.3 (1.060)</td>
</tr>
<tr>
<td>NP01-37x120/80x160-MR</td>
<td>4.0 (100)</td>
<td>2.64 (1.290)</td>
</tr>
<tr>
<td>NP01-37x120/180x260-MR</td>
<td>7.9 (200)</td>
<td>3.7 (1.699)</td>
</tr>
<tr>
<td>NP01-37x120/280x360-MR</td>
<td>12.5 (320)</td>
<td>4.7 (2.114)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Airless cylinder (without guide)</th>
<th>Maximum stroke inch (mm)</th>
<th>Moving mass lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP01-23x80/50x110-M</td>
<td>4.3 (110)</td>
<td>0.3 (0.135)</td>
</tr>
<tr>
<td>NP01-23x80/80x140-M</td>
<td>5.5 (140)</td>
<td>0.4 (0.171)</td>
</tr>
<tr>
<td>NP01-23x80/20x270-M</td>
<td>10.6 (270)</td>
<td>0.6 (0.271)</td>
</tr>
<tr>
<td>NP01-23x80/280x340-M</td>
<td>13.4 (340)</td>
<td>0.7 (0.330)</td>
</tr>
<tr>
<td>NP01-37x120/20x100-M</td>
<td>4.0 (100)</td>
<td>1.0 (0.460)</td>
</tr>
<tr>
<td>NP01-37x120/80x160-M</td>
<td>6.3 (160)</td>
<td>1.3 (0.600)</td>
</tr>
<tr>
<td>NP01-37x120/180x260-M</td>
<td>10.2 (260)</td>
<td>1.8 (0.829)</td>
</tr>
<tr>
<td>NP01-37x120/280x360-M</td>
<td>14.2 (360)</td>
<td>2.3 (1.064)</td>
</tr>
</tbody>
</table>

Attention: It is important to add the gravity force for mounting in y-y configuration.
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**N037120**

**Multi position airless cylinder set**

Airless cylinder (without guide) NP01-23x80/.../M

<table>
<thead>
<tr>
<th>Airless cylinder without guide</th>
<th>Maximum stroke inch (mm)</th>
<th>LS</th>
<th>ZP</th>
<th>lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP01-23x80/50x110-M</td>
<td>4.3 (110)</td>
<td>7.48 (190)</td>
<td>1.97 (50)</td>
<td>14 oz (0.400)</td>
</tr>
<tr>
<td>NP01-23x80/80x140-M</td>
<td>5.5 (140)</td>
<td>10.63 (270)</td>
<td>4.53 (115)</td>
<td>15.4 oz (0.436)</td>
</tr>
<tr>
<td>NP01-23x80/210x270-M</td>
<td>10.6 (270)</td>
<td>13.78 (350)</td>
<td>5.12 (130)</td>
<td>12.0 oz (0.536)</td>
</tr>
<tr>
<td>NP01-23x80/300x340-M</td>
<td>13.4 (340)</td>
<td>16.54 (420)</td>
<td>6.50 (165)</td>
<td>1.3 oz (0.595)</td>
</tr>
<tr>
<td>NP01-37x120/200x100-M</td>
<td>4.0 (100)</td>
<td>8.45 (210)</td>
<td>2.36 (60)</td>
<td>2.7 (0.200)</td>
</tr>
<tr>
<td>NP01-37x120/280x160-M</td>
<td>6.3 (160)</td>
<td>11.81 (300)</td>
<td>3.54 (90)</td>
<td>3.0 (1.340)</td>
</tr>
<tr>
<td>NP01-37x120/180x260-M</td>
<td>10.2 (260)</td>
<td>15.55 (395)</td>
<td>5.31 (135)</td>
<td>3.5 (1.569)</td>
</tr>
<tr>
<td>NP01-37x120/280x360-M</td>
<td>14.2 (360)</td>
<td>19.69 (500)</td>
<td>7.48 (190)</td>
<td>4.0 (1.804)</td>
</tr>
</tbody>
</table>

Airless cylinder (without guide) NP01-37x120/.../M

Stator
Slider
Length of cable
Metallic M23 round connector IP67
Maximum load capacity is dependent on the outstroke of a horizontally installed guide unit. In the case of short stroke operation, the load capacity figures taken from the diagram must be multiplied by the correction factor (diagram 2). In the curves of load capacity (diagram 1), the short stroke corrections have already been taken into account for an outstroke > 60 mm.

The total deflection of guide rods will be determined by the addition of that due to own weight (diagram 3) and that due to load capacity (diagram 4).

In the case of shock load applications, the figures given in the diagrams above must be reduced by a factor of 2.

### Airless Cylinder (with Guide) NP01-23x80/.../MR

<table>
<thead>
<tr>
<th>Maximum Stroke</th>
<th>Inch (mm)</th>
<th>lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP01-23x80/50x110-MR</td>
<td>2.0 (50)</td>
<td>3.0 (1.341)</td>
</tr>
<tr>
<td>NP01-23x80/80x140-MR</td>
<td>4.0 (100)</td>
<td>3.0 (1.438)</td>
</tr>
<tr>
<td>NP01-23x80/210x270-MR</td>
<td>8.0 (200)</td>
<td>4.0 (1.657)</td>
</tr>
<tr>
<td>NP01-23x80/280x340-MR</td>
<td>12.5 (320)</td>
<td>4.1 (1.858)</td>
</tr>
</tbody>
</table>
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Airless cylinder (with guide) NP01-37x120/.../MR

Dimensions in inches (mm)

Maximum load capacity is dependent on the outstroke of a horizontally installed guide unit. In the case of short stroke operation, the load capacity figures taken from the diagram must be multiplied by the correction factor (diagram 2). In the curves of load capacity (diagram 1), the short stroke corrections have already been taken into account for an outstroke > 60 mm.

Maximum load capacity depending on outstroke

- **Diagram 1:** Load capacity
- **Diagram 2:** Correction factor
- **Diagram 3:** Deflection caused by own weight
- **Diagram 4:** Deflection caused by a load of 10 N

The total deflection of guide rods will be determined by the addition of that due to own weight (diagram 3) and that due to load capacity (diagram 4).

Reduction of load capacity for short-stroke operation

In the case of shock load applications, the figures given in the diagrams above must be reduced by a factor of 2.
Power supply
NS01-72/300

Multi position servo controller with software
NE1100-MP
**N023080**
**N037120**

Multi position airless cylinder set

Dimensions in inches (mm)

Optional flange mounting for airless cylinder without guide unit

NPF01-23x50

Optional adaptor plate for multi position airless cylinder set with guide

NPF01-37x100

Optional adaptor plate for multi position airless cylinder set with guide

M/P73677

Actuators

ACT-112
Optional assembly kit for magnetic spring

QM/023080/22

Optional magnetic spring

<table>
<thead>
<tr>
<th>Model</th>
<th>Stroke inch (mm)</th>
<th>Force</th>
<th>L</th>
<th>L1</th>
<th>SP</th>
<th>lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP01-20x50/10N</td>
<td>2.17 (55)</td>
<td>10 N</td>
<td>2.96 (60)</td>
<td>5.12 (130)</td>
<td>1.38 (35)</td>
<td>0.35 (0.16)</td>
</tr>
<tr>
<td>NP01-20x50/20N</td>
<td>2.17 (55)</td>
<td>20 N</td>
<td>2.96 (60)</td>
<td>5.12 (130)</td>
<td>1.38 (35)</td>
<td>0.35 (0.16)</td>
</tr>
<tr>
<td>NP01-20x140/10N</td>
<td>5.31 (135)</td>
<td>10 N</td>
<td>5.51 (140)</td>
<td>8.27 (210)</td>
<td>1.38 (35)</td>
<td>0.75 (0.34)</td>
</tr>
<tr>
<td>NP01-20x140/20N</td>
<td>5.31 (135)</td>
<td>20 N</td>
<td>5.51 (140)</td>
<td>8.27 (210)</td>
<td>1.38 (35)</td>
<td>0.75 (0.34)</td>
</tr>
<tr>
<td>NP01-20x220/10N</td>
<td>8.46 (215)</td>
<td>10 N</td>
<td>8.66 (220)</td>
<td>11.41 (290)</td>
<td>1.38 (35)</td>
<td>1.12 (0.51)</td>
</tr>
<tr>
<td>NP01-20x220/20N</td>
<td>8.46 (215)</td>
<td>20 N</td>
<td>8.66 (220)</td>
<td>11.41 (290)</td>
<td>1.38 (35)</td>
<td>1.12 (0.51)</td>
</tr>
</tbody>
</table>

Optional foot mounting style C for airless cylinder with guide unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø AB</th>
<th>AH</th>
<th>AO</th>
<th>AT</th>
<th>AU</th>
<th>E</th>
<th>TR</th>
<th>lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QA/8032/21</td>
<td>0.26 (6.6)</td>
<td>1.06 (27)</td>
<td>0.24 (6)</td>
<td>0.16 (4)</td>
<td>0.63 (16)</td>
<td>1.42 (36)</td>
<td>0.87 (22)</td>
<td>0.07 (0.03)</td>
</tr>
</tbody>
</table>