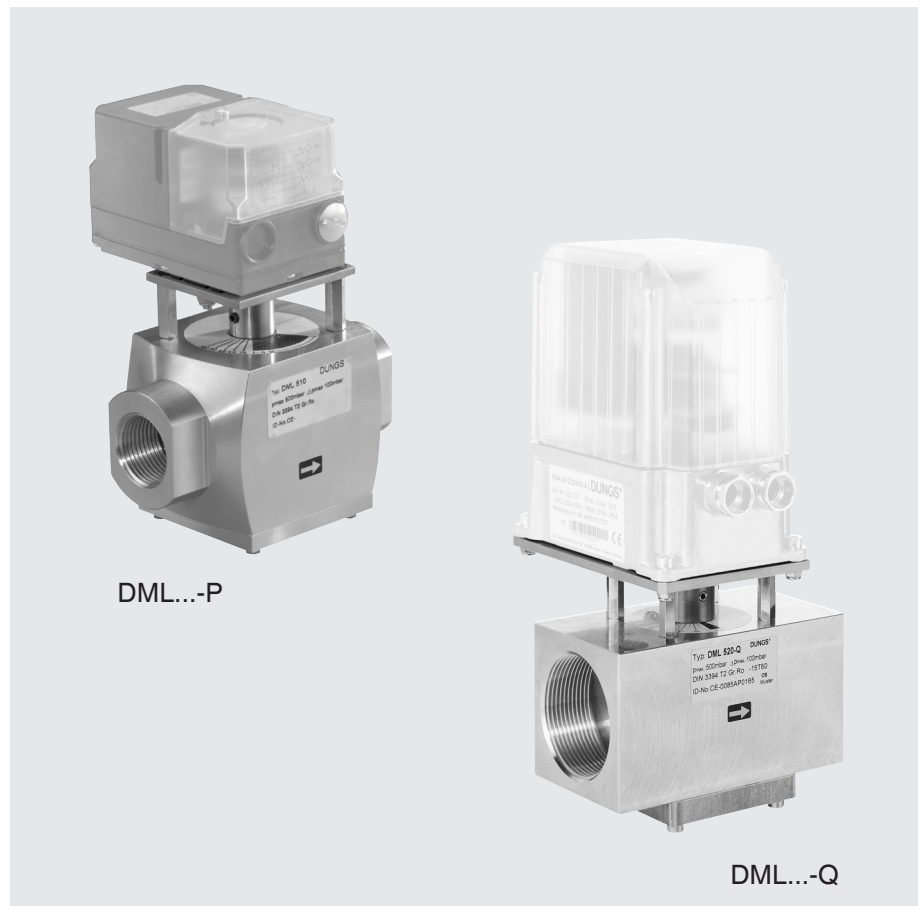


# Linear flow control

## DML Nominal diameter Rp 1 - Rp 2

11.12

**DUNGS®**  
Combustion Controls



### Technical description

The Dungs DML is an actuator without zero shutoff and complies with DIN 3394.

The motor restrictor is available in two thread sizes.

- Housing 520/515 Rp2
- Housing 510/507 Rp1
- Max. operating pressure: 500 mbar (50 kPa)
- Max. differential pressure: 100 mbar (10 kPa)
- Group R<sub>0</sub> as per DIN 3394, Sheet 2
- Application-specific selection of controller cylinder
- Standard actuators:  
DMA... P..., DMA... Q..., DMA... A...

Further drives are available on request.

### Application

The DUNGS linear flow control DML... is used for controlling the supply to gas burners and equipment. The wide control range is obtainable by selecting the controller cylinder and adjustable main volume restrictor.

The motor restrictor is suitable for gases of gas families 1, 2, 3 and other neutral gaseous media.

Free of non-ferrous metals, suitable for gases up to max. 0.1 vol.% H<sub>2</sub>S, dry.

### Approvals

EC type test approval as per EC Gas Appliance Directive:

DML CE-0085 AP0165

Approvals in other important gas consuming countries.

**DML** Actuator without zero shutoff for controlling tasks with linearised volume flow setting angle characteristic.  
Main volume restrictor for DML 520...515...510.

## Specifications

|                                         |                                                                         |                           |         |         |
|-----------------------------------------|-------------------------------------------------------------------------|---------------------------|---------|---------|
| Tube thread as per ISO 7/1              | DML 507                                                                 | DML 510                   | DML 515 | DML 520 |
|                                         | Rp 1                                                                    | Rp 1                      | Rp 2    | Rp 2    |
| Max. operating pressure                 | 500 mbar (50 kPa)                                                       |                           |         |         |
| Max. differential pressure              | 100 mbar (10 kPa)                                                       |                           |         |         |
| Actuator                                | Actuator as per DIN 3394, Sheet 2, Group R <sub>0</sub>                 |                           |         |         |
| Gap volume flow in closed position (0°) | < 2 % from max. volume flow                                             |                           |         |         |
| Torque                                  | Max. 150 Ncm                                                            |                           |         |         |
| Actuator angle                          | Max. 80° for DML 520 and DML 515<br>Approx. 45° for DML 510 and DML 507 |                           |         |         |
| Main volume restrictor                  | For DML 520, DML 515, DML 510, not for DML 507                          |                           |         |         |
| Materials of gas-conveying parts        | Housing:<br>Shaft:<br>Seals                                             | Aluminium<br>Steel<br>NBR |         |         |
| Ambient temperature                     | -15° C to +60° C                                                        |                           |         |         |
| Installation position                   | Any; refer to specifications of actuator drive                          |                           |         |         |

## Functional description

The DUNGS linear flow control is an automatic actuator operated with auxiliary power.

The electric-motor-driven actuator defines the position of the controller cylinder.

The presetting is defined by adjusting the switching cams of the actuator drive and the main volume restrictor.

DML 510, 515 and 520 can be adjusted to the application using the **main volume restrictor**. The actuator angle range remains constant by reducing

the opening of the controller cylinder. If the operating voltage (auxiliary power) is interrupted, the actuator remains in its current position.

**For specifications of actuator drives, refer to data sheet 11.20**

## Equipment selection

To design the DML, the values listed below must be known:

1. Max. volume flow  $V_{\max}$ .
2. Pressure loss  $\Delta p$  at maximum volume flow from volume flow pressure differential diagram.
3. Minimum volume flow  $V_{\min}$ .

The controller cylinder is specified from the flow diagram.

Check whether the requested maximum volume flow can be reached in the controller cylinder position OPEN (80° and/or 45°) with the available pressure loss and/or which pressure loss  $\Delta p_{\max}$  is requested.

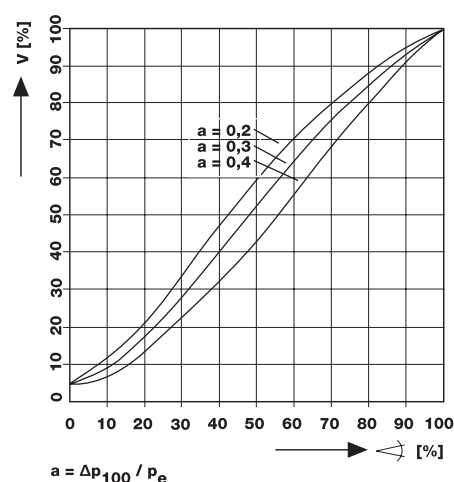
The inlet pressure  $p_1$  upstream of the motor restrictor shall be  $3 \times \Delta p_{\max}$ .

The inlet pressure  $p_1$  is defined by the upstream actuators (pressure controller, valves).

In smaller volume flows, the pressure loss is reduced in upstream equipment and the  $\Delta p$  available for the controller cylinder is increased.

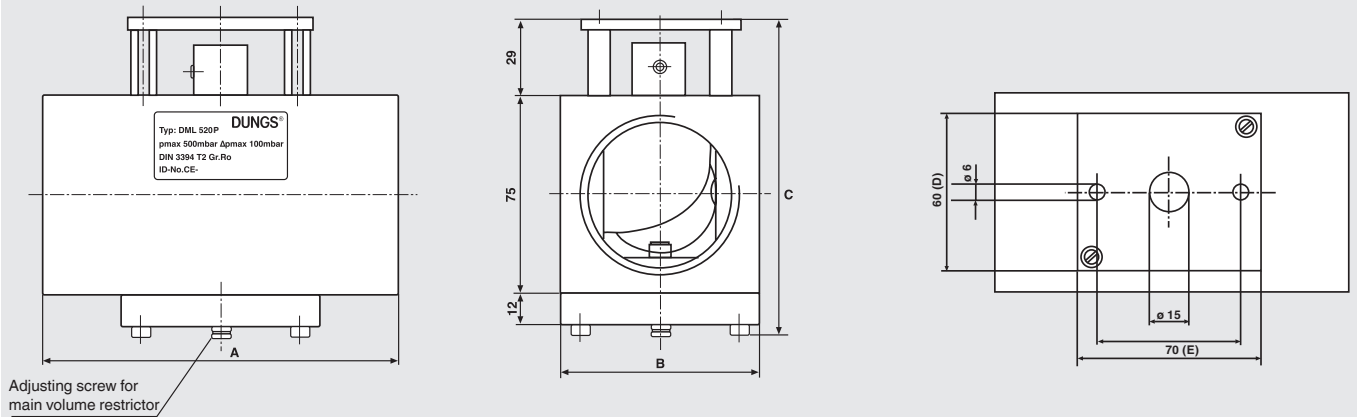
Select the controller cylinder with the largest pressure loss  $\Delta p_{\max}$  ( $\Delta p > 10$  mbar) for a good controller response.

## Controller curve

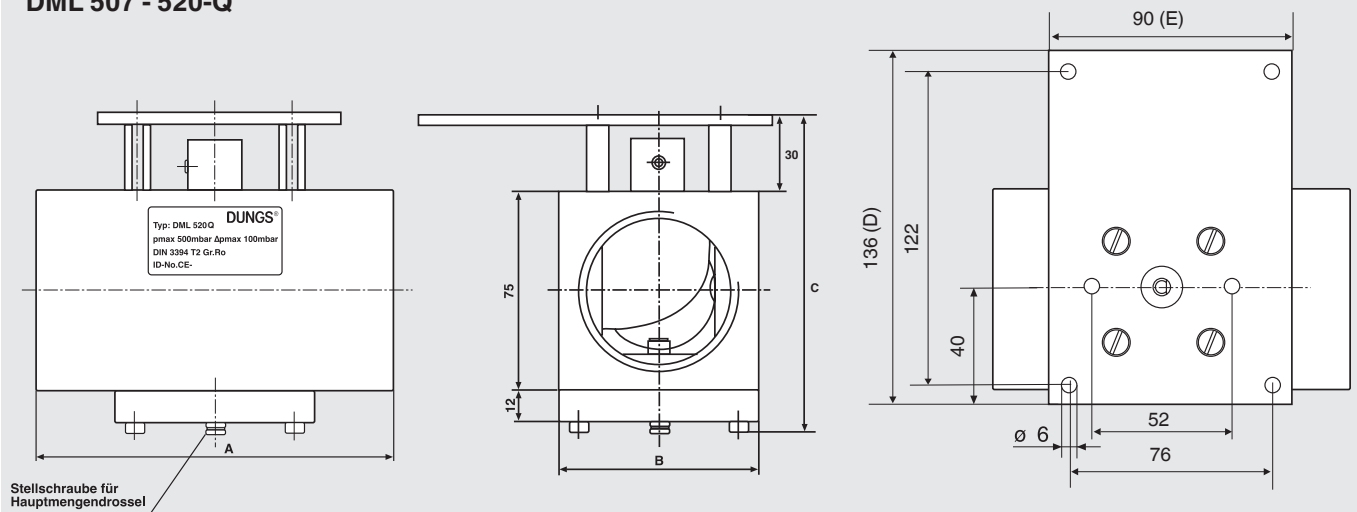


## Dimensions [mm]

### DML 507 - 520-P



### DML 507 - 520-Q



| Type      | Order No. | p <sub>max.</sub><br>[mbar] | Rp   | Dimensions [mm] |    | C   | D   | E  | Weight<br>[kg] |
|-----------|-----------|-----------------------------|------|-----------------|----|-----|-----|----|----------------|
|           |           |                             |      | A               | B  |     |     |    |                |
| DML 507-P | 226 835   | 500                         | Rp 1 | 134             | 75 | 120 | 60  | 70 | 1,4            |
| DML 510-P | 226 834   | 500                         | Rp 1 | 134             | 75 | 120 | 60  | 70 | 1,4            |
| DML 515-P | 226 836   | 500                         | Rp 2 | 134             | 75 | 120 | 60  | 70 | 1,2            |
| DML 520-P | 226 667   | 500                         | Rp 2 | 134             | 75 | 120 | 60  | 70 | 1,2            |
| DML 507-Q | 264 095   | 500                         | Rp 1 | 134             | 75 | 120 | 136 | 90 | 1,4            |
| DML 510-Q | 264 094   | 500                         | Rp 1 | 134             | 75 | 120 | 136 | 90 | 1,4            |
| DML 515-Q | 264 093   | 500                         | Rp 2 | 134             | 75 | 120 | 136 | 90 | 1,2            |
| DML 520-Q | 264 092   | 500                         | Rp 2 | 134             | 75 | 120 | 136 | 90 | 1,2            |

| Actuators<br>Type    | Degree of<br>protection | Height | Ø <sub>Shaft</sub><br>[mm] | Mounting on DML                       | Comment                       | Order No. |
|----------------------|-------------------------|--------|----------------------------|---------------------------------------|-------------------------------|-----------|
| DMA 40 P 230/02 3    | IP 40                   | 66     | 8                          | 2 holes at a distance of<br>52 mm     | on mounting plate<br>DML...-P | 226 240   |
| DMA 40 P 230/02 4    | IP 40                   | 114    | 8                          |                                       |                               | 238 810   |
| DMA 30 P 230/03 0    | IP 40                   | 114    | 8                          |                                       |                               | 226 239   |
| DMA 30 Q 230/10 3    | IP 54                   | 149    | 10                         | 4 holes at a distance of<br>76/122 mm | on mounting plate<br>DML...-Q | 252 723   |
| DMA 30 Q 230/10 0    | IP 54                   | 149    | 10                         |                                       |                               | 252 721   |
| DMA 30 A 230/10 3 LR | IP 65                   | 124    | 10                         | 2 holes at a distance of<br>52 mm     | on mounting plate<br>DML...-Q | 255 039   |
| DMA 30 A 115/10 3 LR | IP 65                   | 124    | 10                         |                                       |                               | 255 041   |
| DMA 30 A 24/10 3 LR  | IP 65                   | 124    | 10                         |                                       |                               | 255 482   |
| DMA 30 A 230/10 0 LR | IP 65                   | 124    | 10                         |                                       |                               | 255 042   |
| DMA 30 A 115/10 0 LR | IP 65                   | 124    | 10                         |                                       |                               | 255 044   |

## Linear flow control

DML

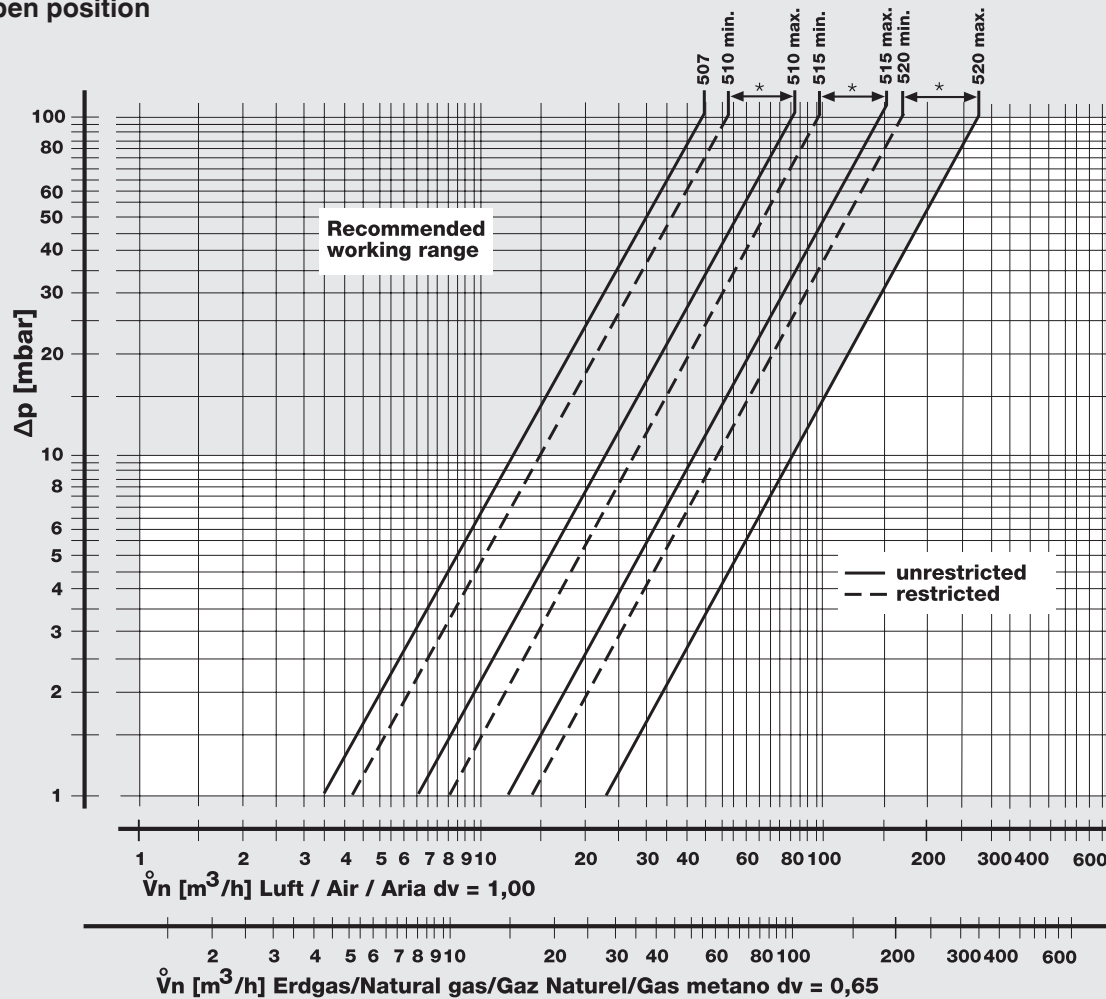
Nominal diameter Rp 1 - Rp 2

**DUNGS®**  
Combustion Controls

### Flow diagram

DML 507-520

$V_{\max}$  = open position



\*Setting range of  
main volume restrictor

We reserve the right to make any changes in the interest of technical progress.

**Head Offices and Factory**  
Karl Dungs GmbH & Co. KG  
Siemensstraße 6-10  
D-73660 Urbach, Germany  
Telephone +49 (0)7181-804-0  
Fax +49 (0)7181-804-166

**Postal address**  
Karl Dungs GmbH & Co. KG  
Postfach 12 29  
D-73602 Schorndorf, Germany  
e-mail [info@dungs.com](mailto:info@dungs.com)  
Internet [www.dungs.com](http://www.dungs.com)