

# DADCO®

## Gestamp Specific Selected Products



**PED**  
2014/68/EU  
COMPLIANT

# DADCO®

The global leader in nitrogen gas spring technology

DADCO produces top quality products at competitive prices and provides a superior level of customer service. Founded in 1958, DADCO is the highest volume producer of gas springs for press tools. DADCO's products are widely approved and used in global operations for many industries including metal stamping, automotive and plastic injection molding.

## Gestamp Specific Products

DADCO offers a specific sub-set of our comprehensive product line to match the Gestamp global standards specification. These products are outlined on this page with details provided later in this catalog.

## Nitrogen Gas Springs

Refer to the table below to select the gas spring needed based on model number, force or diameter.

| DADCO Model | Force   | Diameter | Page |
|-------------|---------|----------|------|
| C.045       | 0,45 kN | ø12      | 3    |
| C.090       | 0,9 kN  | ø19      | 4    |
| C.180       | 2,0 kN  | ø25      | 5    |
| U.0175      | 1,7 kN  | ø19      | 6    |
| U.0400      | 3,5 kN  | ø32      | 7    |
| U.0600      | 5 kN    | ø38      | 8    |
| U.0800      | 7,5 kN  | ø44,5    | 9    |
| U.1000      | 10 kN   | ø50      | 10   |
| U.1600      | 15 kN   | ø63      | 11   |
| U.2600      | 24 kN   | ø75      | 12   |
| U.4600      | 42 kN   | ø95      | 13   |
| U.6600      | 66 kN   | ø120     | 14   |
| U.9600      | 95 kN   | ø150     | 15   |
| 90.10.00170 | 1,5 kN  | ø32      | 16   |
| 90.10.00500 | 5 kN    | ø44,5    | 17   |
| 90.10.00750 | 7,5 kN  | ø50      | 18   |
| 90.10.01500 | 15 kN   | ø75      | 19   |
| 90.10.03000 | 30 kN   | ø95      | 20   |
| 90.10.05000 | 50 kN   | ø120     | 21   |
| 90.10.07500 | 75 kN   | ø150     | 22   |
| 90.10.10000 | 100 kN  | ø195     | 23   |

Mount options for the above models are found on pages 24-25. DADCO's complete product line is available at our website, [www.dadco.net](http://www.dadco.net).

## Plated Cylinder with Secondary Wiper

DADCO's offers additional protection against caustic fluid with the Plated Cylinder with Secondary Wiper option for the nitrogen gas springs. These cylinders may be ordered with the simple addition of a Q in the part number. Refer to page 26 for more information.

## Linked Components

Piping gas springs together permits the monitoring, control, and adjustment of force from outside the die. DADCO offers a wide selection of hoses, fittings, control panels and equipment to simplify the piping process. The Linked Systems Components are found on pages 29-32. For training and technical assistance contact DADCO.



## Die Storage Solutions

DADCO's offers two die storage solution products: 90.10 DS Die Storage Nitrogen Gas Springs are installed into the die from the design and are not removed during operation and the TEC Die Storage Blocks that are placed into an already existing die during storage. These solutions are found on pages 32-33.

## Guide Retainer Sets (GRS)

DADCO's Guide Retainer Sets (GRS) replace common pins, bushing and spools to provide guidance and retention in the die. The GRS Series is offered in four rod diameters with multiple mount options and customized lengths. These products are found on pages 34-37.

## Customized System for Delay Return Operation

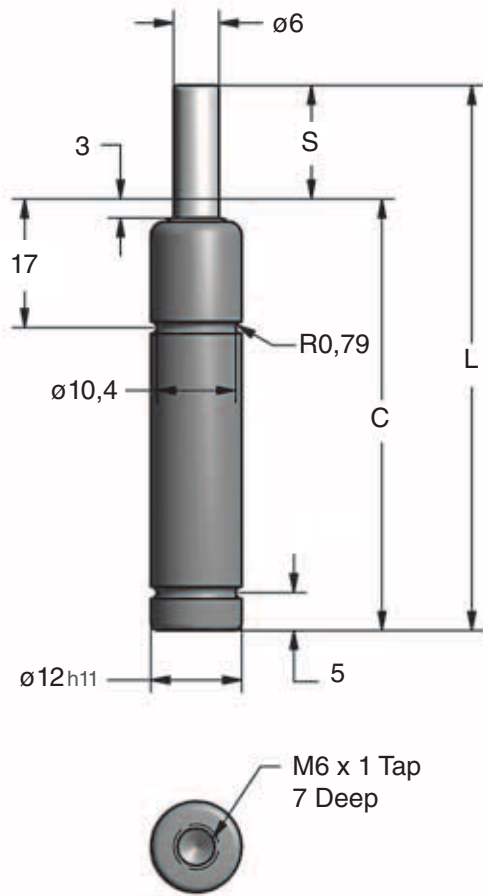
The Delay Return System (DRS) is custom designed based on the application requirements. A DRS is used when the cylinders need to remain retracted for a few moments during operation to prevent the deformation of the formed part. Specifications and requirements are found on pages 38-39.

## Warranty

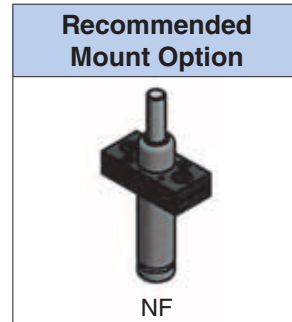
DADCO warrants its nitrogen gas springs to be free from defects in workmanship or materials for a period of one year from date of manufacture.

## CAD Templates On-line

DADCO's entire product line is available on-line in solid models and 2D CAD formats. For more information, visit our website, [www.dadco.net](http://www.dadco.net), or contact DADCO.



| Part No.  | S mm | C   | L ±0,4 |
|-----------|------|-----|--------|
| C.045.010 | 10   | 52  | 62     |
| C.045.015 | 15   | 57  | 72     |
| C.045.025 | 25   | 67  | 92     |
| C.045.050 | 50   | 92  | 142    |
| C.045.080 | 80   | 125 | 205    |



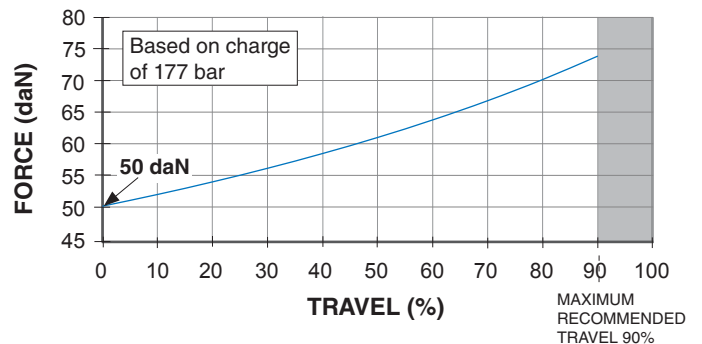
Refer to page 24 for mount information.

Force Charts

| Color       | Initial daN | Final daN | Pressure bar |
|-------------|-------------|-----------|--------------|
| Yellow - YW | 50          | 74        | 177          |
| Red - RD    | 37          | 55        | 132          |
| Blue - BU   | 25          | 37        | 88           |
| Green - GR  | 12          | 18        | 44           |
| Black - BK  | See Chart   |           |              |

On-Contact Force

| bar | daN |
|-----|-----|
| 177 | 50  |
| 150 | 42  |
| 125 | 35  |
| 100 | 28  |
| 75  | 21  |
| 50  | 14  |
| 35  | 10  |
| 18  | 5   |



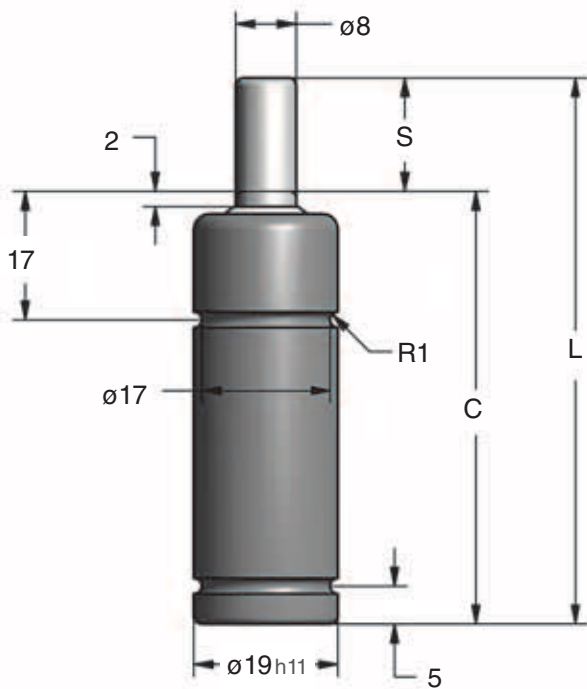
Ordering Example:

**C.045.025. BK.150**

Part Number: \_\_\_\_\_  
Includes Series (C), Model and Stroke Length.

Charging Pressure: \_\_\_\_\_  
18-177 bar. YW, RD, BU, GR or BK.  
When not specified, default is BK.150 bar.

Mounts ordered with cylinder will be attached at the factory.



| Part No.  | S<br>mm | C   | L<br>±0,4 |
|-----------|---------|-----|-----------|
| C.090.010 | 10      | 52  | 62        |
| C.090.015 | 15      | 57  | 72        |
| C.090.025 | 25      | 67  | 92        |
| C.090.050 | 50      | 92  | 142       |
| C.090.080 | 80      | 125 | 205       |
| C.090.125 | 125     | 170 | 295       |



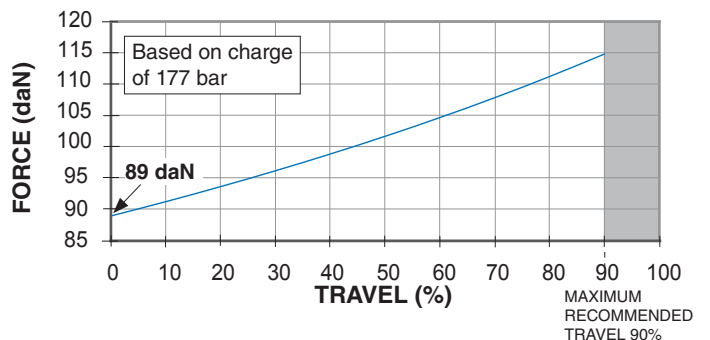
Refer to page 24 for mount information.

**Force Charts**

| Color       | Initial<br>daN | Final<br>daN | Pressure<br>bar |
|-------------|----------------|--------------|-----------------|
| Yellow - YW | 89             | 114          | 177             |
| Red - RD    | 66             | 85           | 132             |
| Blue - BU   | 44             | 57           | 88              |
| Green - GR  | 22             | 28           | 44              |
| Purple - PR | 9              | 12           | 18              |
| Orange - OR | 5              | 6            | 9               |
| Black - BK  | See Chart      |              |                 |

**On-Contact Force**

| bar | daN |
|-----|-----|
| 177 | 89  |
| 150 | 75  |
| 125 | 63  |
| 100 | 50  |
| 75  | 38  |
| 50  | 25  |
| 35  | 17  |



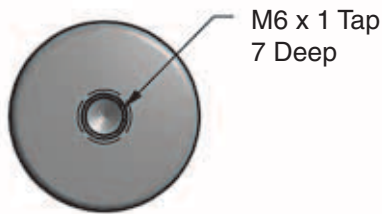
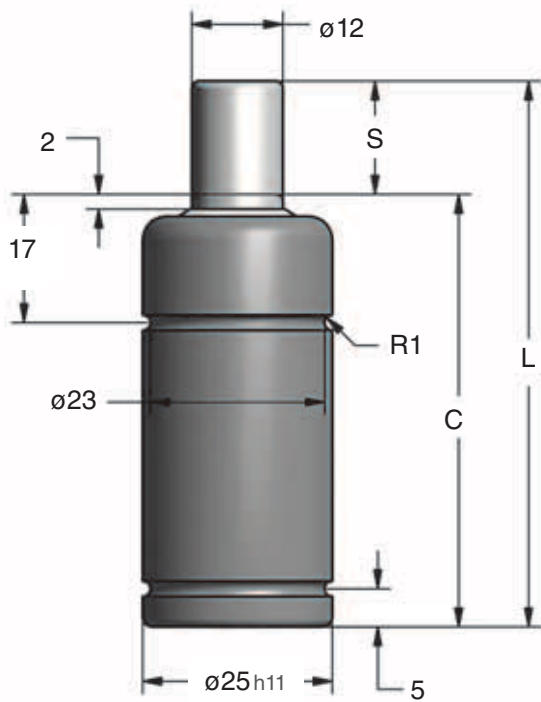
**Ordering Example:**

**C.090.025. BK.150**

**Part Number:** \_\_\_\_\_  
Includes Series (C), Model and Stroke Length.

**Charging Pressure:**  
35-177 bar. YW, RD, BU, GR or BK.  
When not specified, default is BK.150 bar.

Mounts ordered with cylinder will be attached at the factory.



| Part No.  | S mm | C   | L ±0,4 |
|-----------|------|-----|--------|
| C.180.010 | 10   | 52  | 62     |
| C.180.015 | 15   | 57  | 72     |
| C.180.025 | 25   | 67  | 92     |
| C.180.050 | 50   | 92  | 142    |
| C.180.080 | 80   | 125 | 205    |
| C.180.125 | 125  | 170 | 295    |



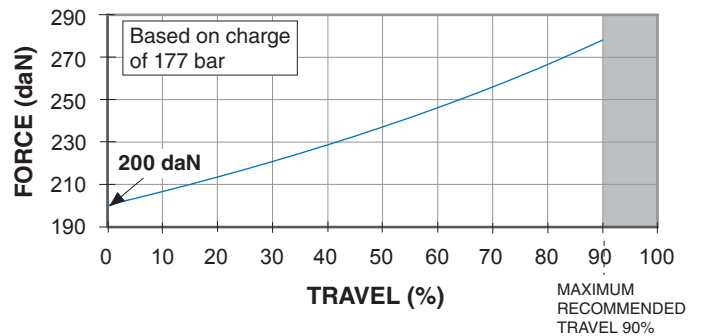
Refer to page 24 for mount information.

### Force Charts

On-Contact Force

| Color       | Initial daN | Final daN | Pressure bar |
|-------------|-------------|-----------|--------------|
| Yellow - YW | 200         | 272       | 177          |
| Red - RD    | 149         | 204       | 132          |
| Blue - BU   | 100         | 136       | 88           |
| Green - GR  | 50          | 68        | 44           |
| Black - BK  | See Chart   |           |              |

| bar | daN |
|-----|-----|
| 177 | 200 |
| 150 | 170 |
| 125 | 141 |
| 100 | 113 |
| 75  | 85  |
| 50  | 57  |
| 35  | 39  |



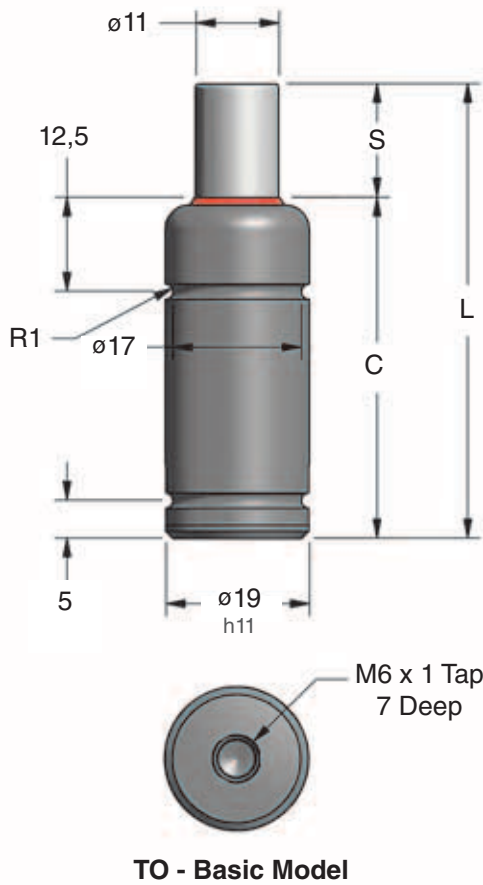
### Ordering Example:

**C.180.025. BK.150**

Part Number: \_\_\_\_\_  
Includes Series (C), Model and Stroke Length.

Charging Pressure: \_\_\_\_\_  
35-177 bar. YW, RD, BU, GR or BK.  
When not specified, default is BK.150 bar.

Mounts ordered with cylinder will be attached at the factory.



| Part No.   | S<br>mm | C   | L<br>±0,4 |
|------------|---------|-----|-----------|
| U.0175.010 | 10      | 40  | 50        |
| U.0175.025 | 25      | 55  | 80        |
| U.0175.050 | 50      | 80  | 130       |
| U.0175.080 | 80      | 115 | 195       |
| U.0175.125 | 125     | 160 | 285       |

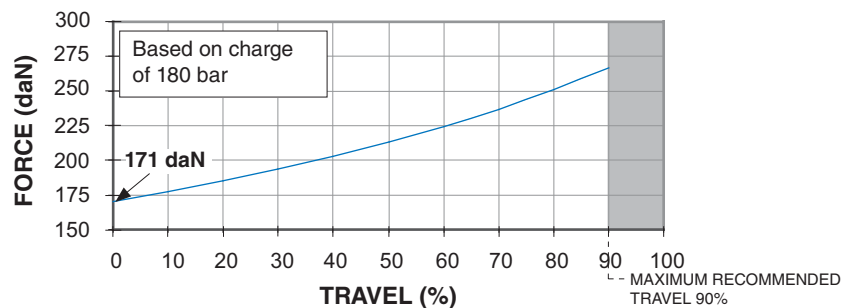


Refer to page 24 for  
mount information.

Force Charts

On-Contact Force

| bar | daN |
|-----|-----|
| 180 | 171 |
| 150 | 143 |
| 125 | 119 |
| 100 | 95  |
| 75  | 71  |
| 50  | 48  |
| 25  | 24  |
| 20  | 19  |



Ordering Example:

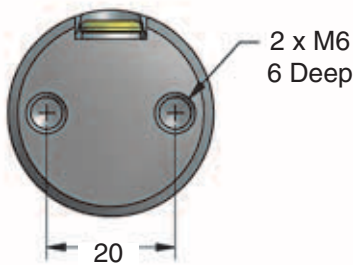
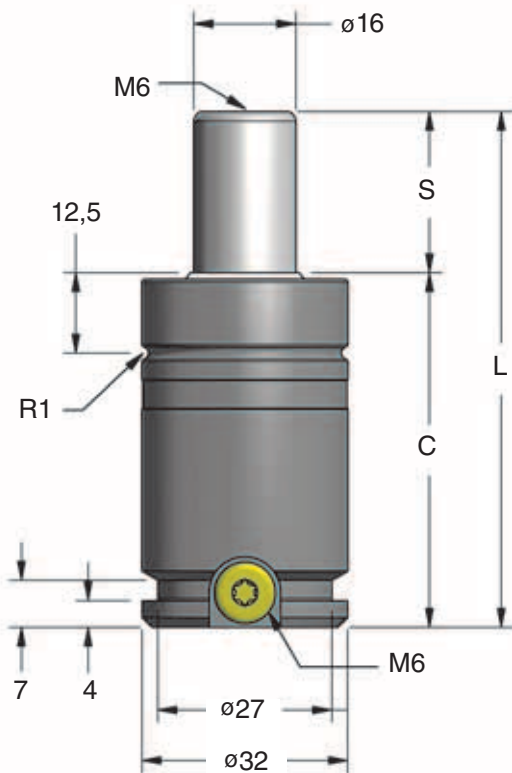
**U.0175.025. TO. C. 180**

**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-180 bar. When not specified, default is 180 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



TO - Basic Model

| Part No.   | S mm | C    | L $\pm 0,25$ |
|------------|------|------|--------------|
| U.0400.013 | 12,5 | 42,5 | 55           |
| U.0400.025 | 25   | 55   | 80           |
| U.0400.038 | 37,5 | 67,5 | 105          |
| U.0400.050 | 50   | 80   | 130          |
| U.0400.080 | 80   | 110  | 190          |
| U.0400.100 | 100  | 130  | 230          |
| U.0400.125 | 125  | 155  | 280          |

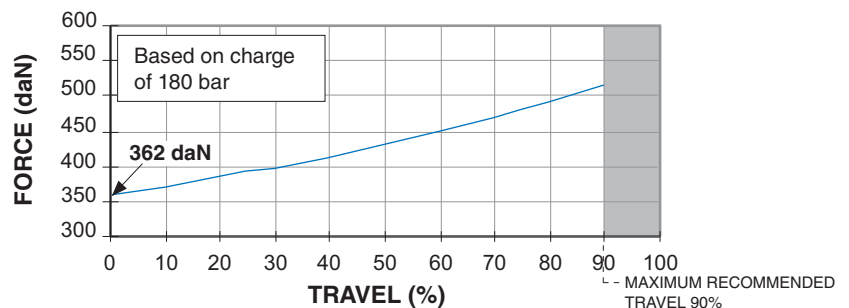


Refer to pages 24-25 for mount information.

### Force Charts

#### On-Contact Force

| bar | daN |
|-----|-----|
| 180 | 362 |
| 150 | 302 |
| 125 | 251 |
| 100 | 201 |
| 75  | 151 |
| 50  | 101 |
| 25  | 50  |
| 20  | 40  |



### Ordering Example:

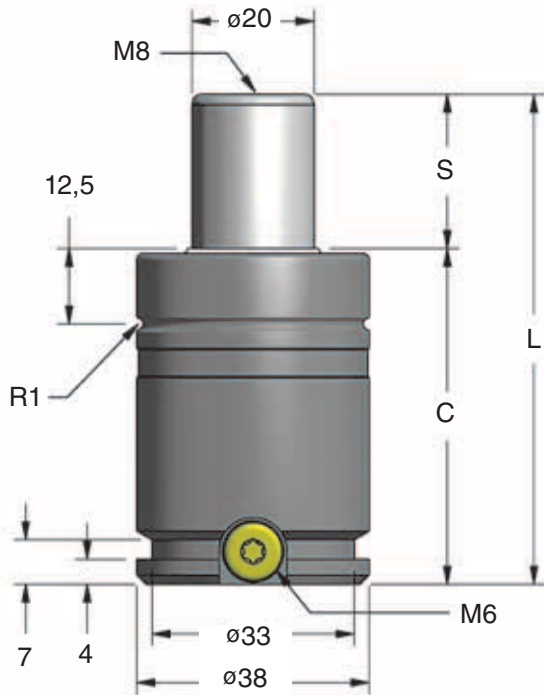
**U.0400.025. TO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

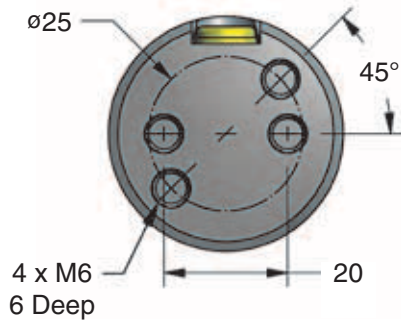
**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-180 bar. When not specified, default is 180 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.   | S<br>mm | C    | L<br>±0,25 |
|------------|---------|------|------------|
| U.0600.013 | 12,5    | 42,5 | 55         |
| U.0600.025 | 25      | 55   | 80         |
| U.0600.038 | 37,5    | 67,5 | 105        |
| U.0600.050 | 50      | 80   | 130        |
| U.0600.080 | 80      | 110  | 190        |
| U.0600.100 | 100     | 130  | 230        |
| U.0600.125 | 125     | 155  | 280        |



TO - Basic Model

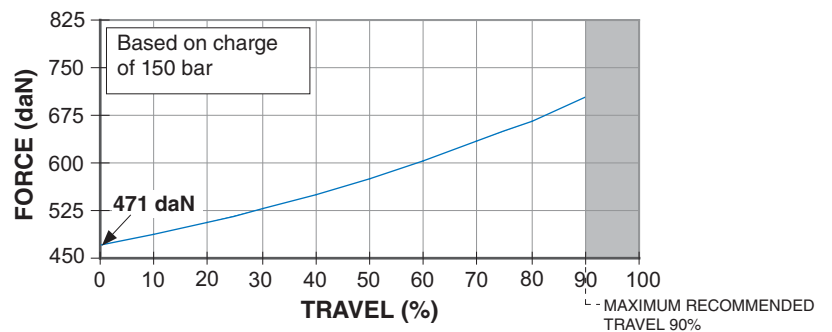


Refer to pages 24-25 for mount information.

Force Charts

On-Contact Force

| bar | daN |
|-----|-----|
| 150 | 471 |
| 125 | 393 |
| 100 | 314 |
| 75  | 236 |
| 50  | 157 |
| 25  | 79  |
| 20  | 63  |



Ordering Example:

**U.0600.025. TO. C. 150**

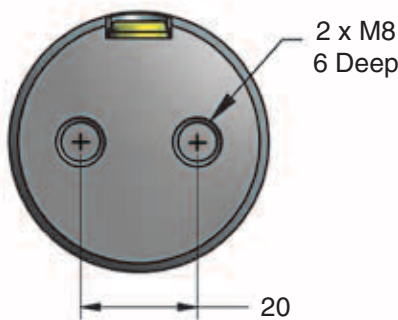
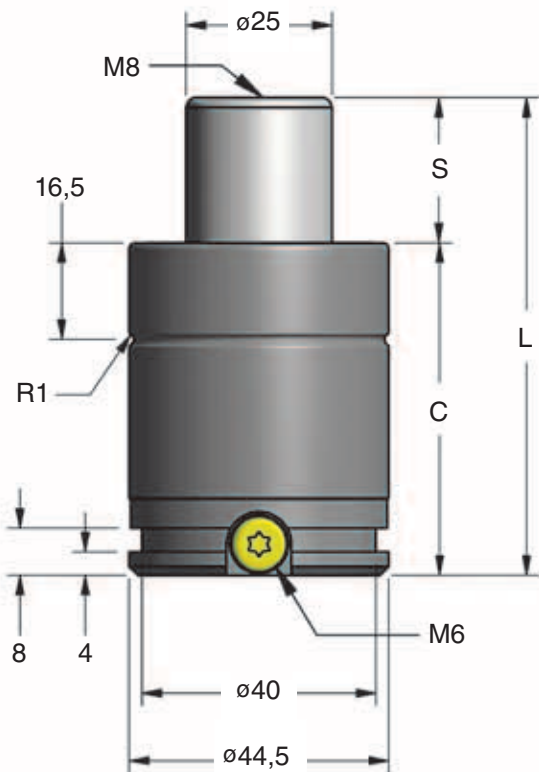
**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.





TO - Basic Model

| Part No.   | S mm | C    | L $\pm 0,25$ |
|------------|------|------|--------------|
| U.0800.013 | 12,5 | 44,5 | 57           |
| U.0800.025 | 24,8 | 56,8 | 81,6         |
| U.0800.038 | 37,5 | 69,5 | 107          |
| U.0800.050 | 50   | 82   | 132          |
| U.0800.080 | 80   | 112  | 192          |
| U.0800.100 | 100  | 132  | 232          |
| U.0800.125 | 125  | 157  | 282          |

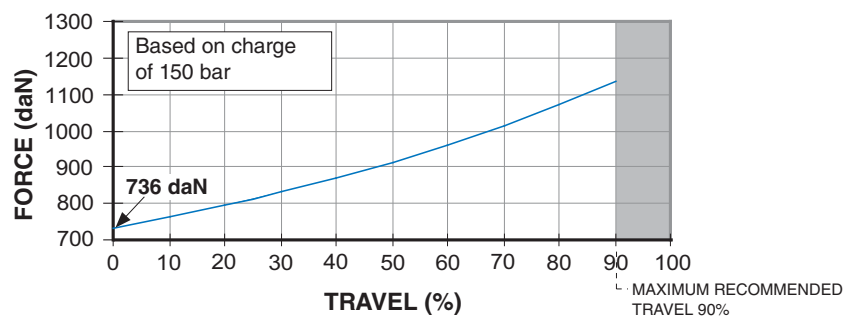


Refer to pages 24-25 for mount information.

### Force Charts

#### On-Contact Force

| bar | daN |
|-----|-----|
| 150 | 736 |
| 125 | 614 |
| 100 | 491 |
| 75  | 368 |
| 50  | 245 |
| 25  | 123 |
| 20  | 98  |



### Ordering Example:

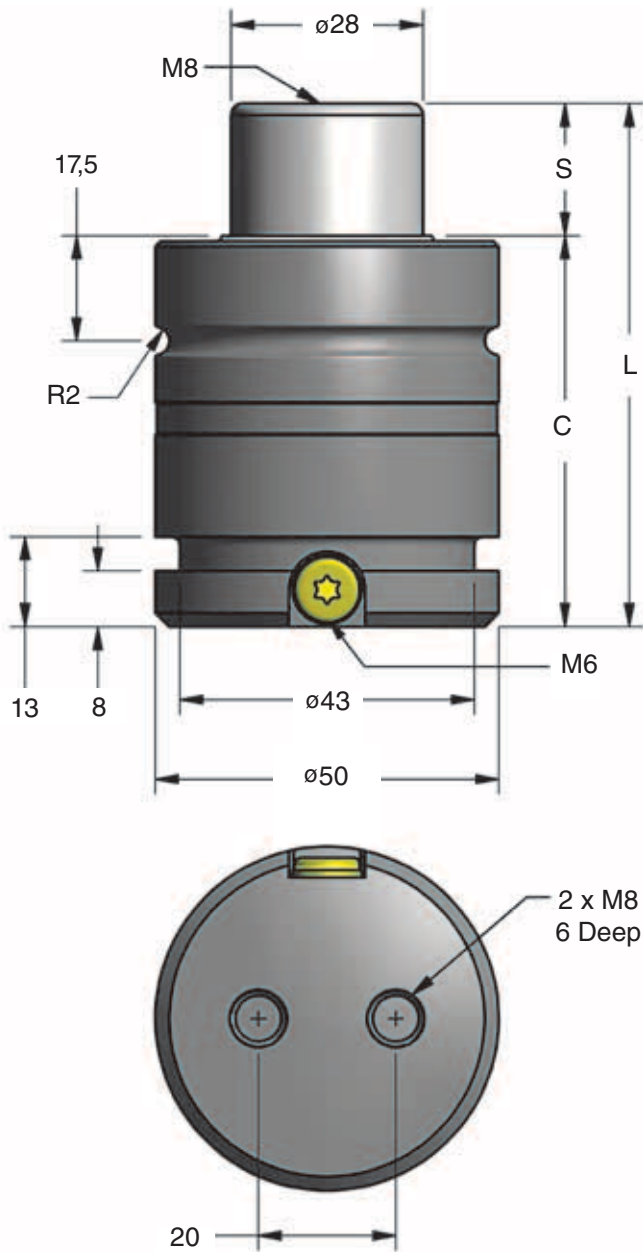
**U.0800.025. TO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



**TO - Basic Model**

| Part No.   | S<br>mm | C    | L<br>$\pm 0,25$ |
|------------|---------|------|-----------------|
| U.1000.016 | 16      | 54   | 70              |
| U.1000.025 | 25      | 63   | 88              |
| U.1000.038 | 37,5    | 75,5 | 113             |
| U.1000.050 | 50      | 88   | 138             |
| U.1000.080 | 80      | 118  | 198             |
| U.1000.100 | 100     | 138  | 238             |
| U.1000.125 | 125     | 163  | 288             |

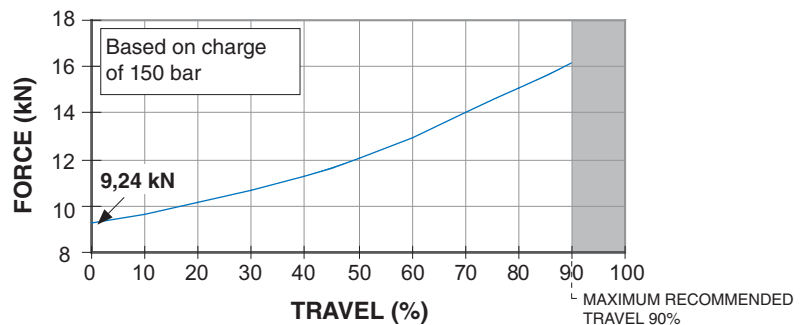


Refer to pages 24-25 for mount information.

**Force Charts**

**On-Contact Force**

| bar | kN   |
|-----|------|
| 150 | 9,24 |
| 125 | 7,70 |
| 100 | 6,16 |
| 75  | 4,62 |
| 50  | 3,08 |
| 25  | 1,54 |
| 20  | 1,23 |



**Ordering Example:**

**U.1000.025. TO. C. 150**

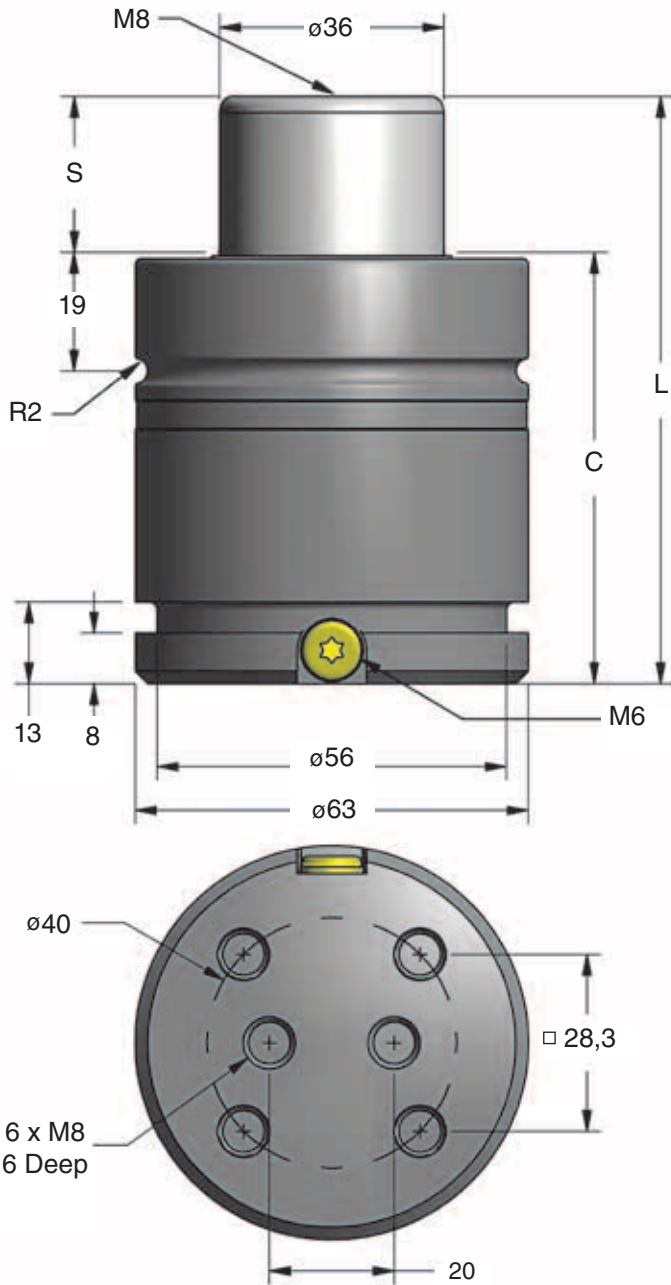
**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. *When not specified, default is TO.* Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. *When not specified, default is 150 bar.*

**Operating System:** C = Self-contained, F = Open Flow Fitting. *When not specified, default is C.*

# U.1600 – 15 kN



| Part No.   | S mm | C    | L ±0,25 |
|------------|------|------|---------|
| U.1600.016 | 16   | 60   | 76      |
| U.1600.025 | 25   | 69   | 94      |
| U.1600.038 | 37,5 | 81,5 | 119     |
| U.1600.050 | 50   | 94   | 144     |
| U.1600.080 | 80   | 124  | 204     |
| U.1600.100 | 100  | 144  | 244     |
| U.1600.125 | 125  | 169  | 294     |

**Recommended Mount Options**

|      |       |
|------|-------|
|      |       |
| B212 | B21   |
|      |       |
| B325 | B319V |

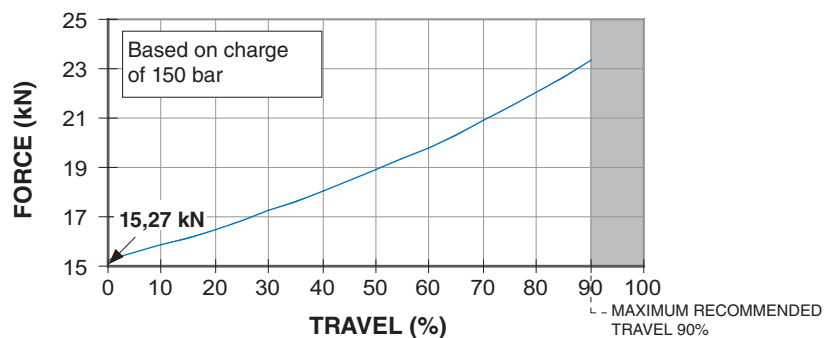
Refer to pages 24-25 for mount information.

**AO - Basic Model**

## Force Charts

### On-Contact Force

| bar | kN    |
|-----|-------|
| 150 | 15,27 |
| 125 | 12,72 |
| 100 | 10,18 |
| 75  | 7,63  |
| 50  | 5,09  |
| 25  | 2,54  |
| 20  | 2,04  |



## Ordering Example:

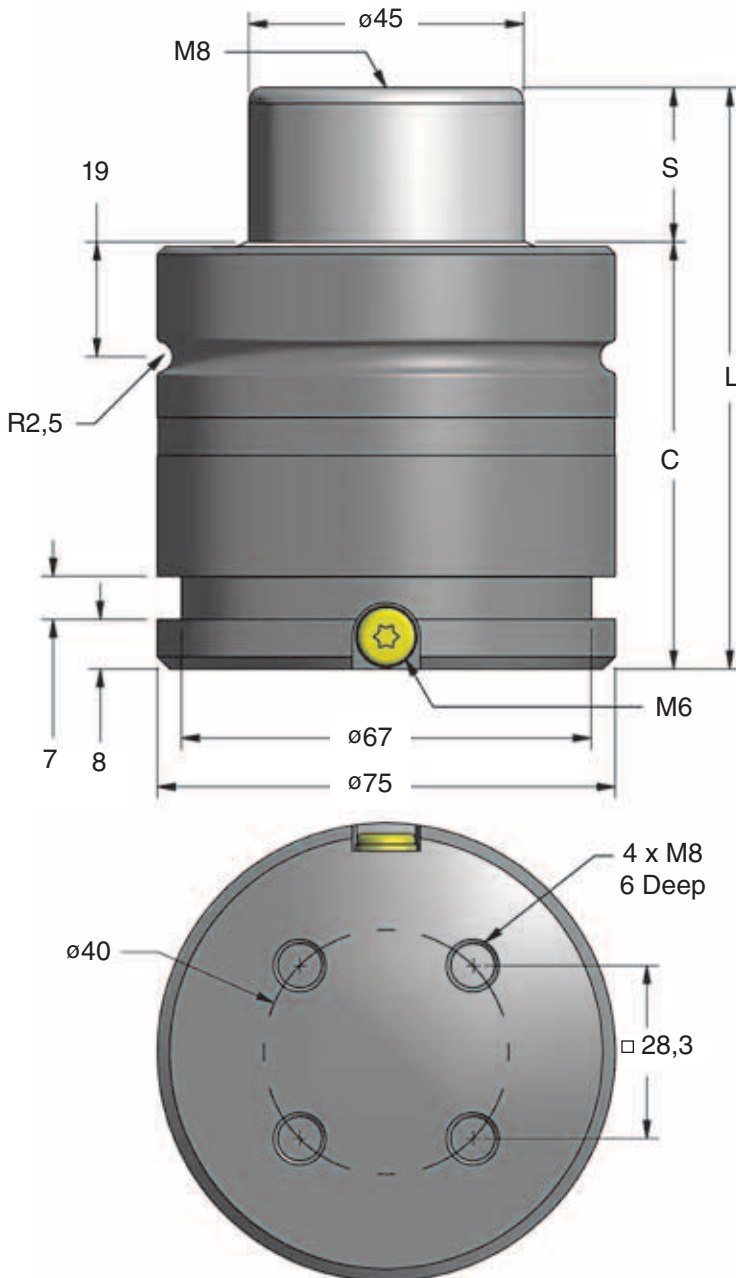
**U.1600.025. AO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** AO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.   | S<br>mm | C    | L<br>$\pm 0,25$ |
|------------|---------|------|-----------------|
| U.2600.016 | 16      | 61   | 77              |
| U.2600.025 | 25      | 70   | 95              |
| U.2600.038 | 37,5    | 82,5 | 120             |
| U.2600.050 | 50      | 95   | 145             |
| U.2600.080 | 80      | 125  | 205             |
| U.2600.100 | 100     | 145  | 245             |
| U.2600.125 | 125     | 170  | 295             |



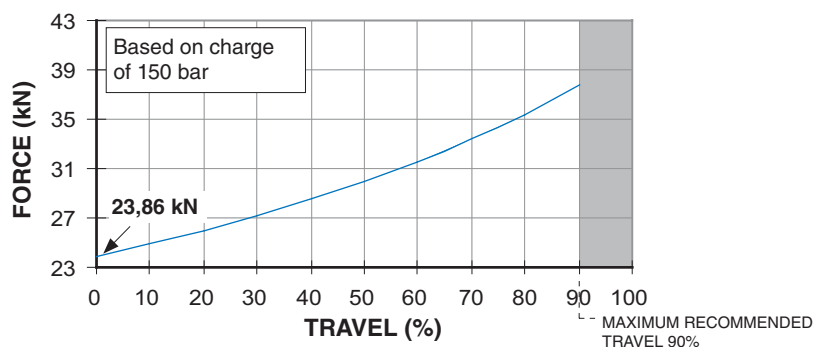
Refer to pages 24-25 for mount information.

TO - Basic Model

Force Charts

On-Contact Force

| bar | kN    |
|-----|-------|
| 150 | 23,86 |
| 125 | 19,88 |
| 100 | 15,90 |
| 75  | 11,93 |
| 50  | 7,95  |
| 25  | 3,98  |
| 20  | 3,18  |



Ordering Example:

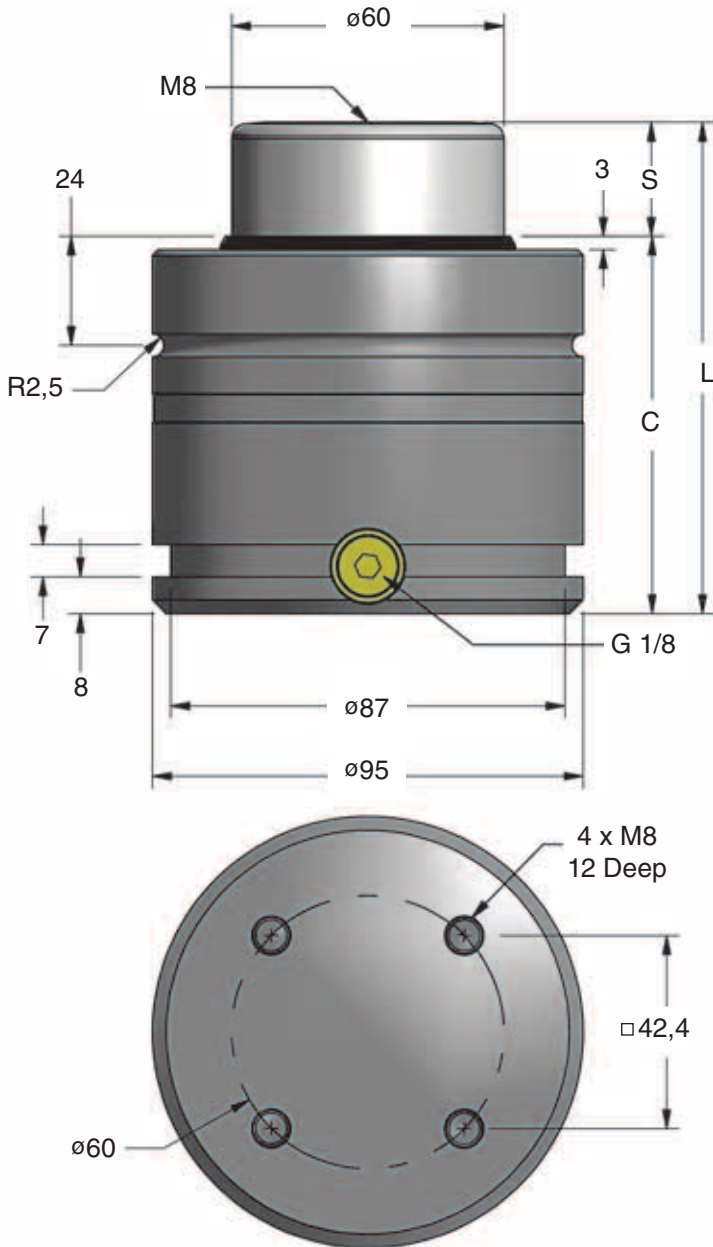
**U.2600.025. TO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.   | S mm | C    | L $\pm 0,25$ |
|------------|------|------|--------------|
| U.4600.016 | 16   | 74   | 90           |
| U.4600.025 | 25   | 83   | 108          |
| U.4600.038 | 37,5 | 95,5 | 133          |
| U.4600.050 | 50   | 108  | 158          |
| U.4600.080 | 80   | 138  | 218          |
| U.4600.100 | 100  | 158  | 258          |
| U.4600.125 | 125  | 183  | 308          |



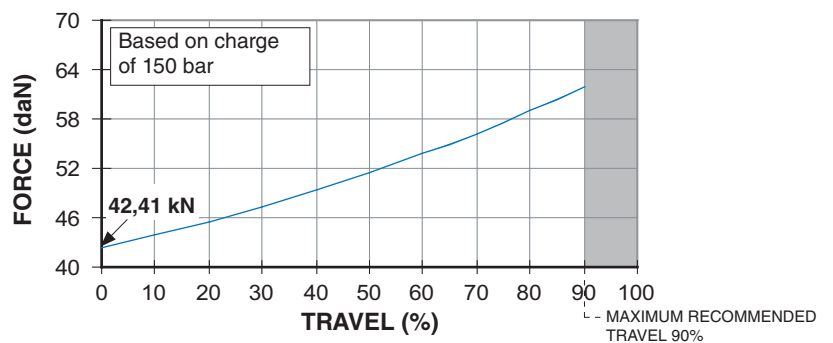
Refer to pages 24-25 for mount information.

TO - Basic Model

### Force Charts

#### On-Contact Force

| bar | kN    |
|-----|-------|
| 150 | 42,41 |
| 125 | 35,34 |
| 100 | 28,27 |
| 75  | 21,21 |
| 50  | 14,14 |
| 25  | 7,07  |
| 20  | 5,65  |



### Ordering Example:

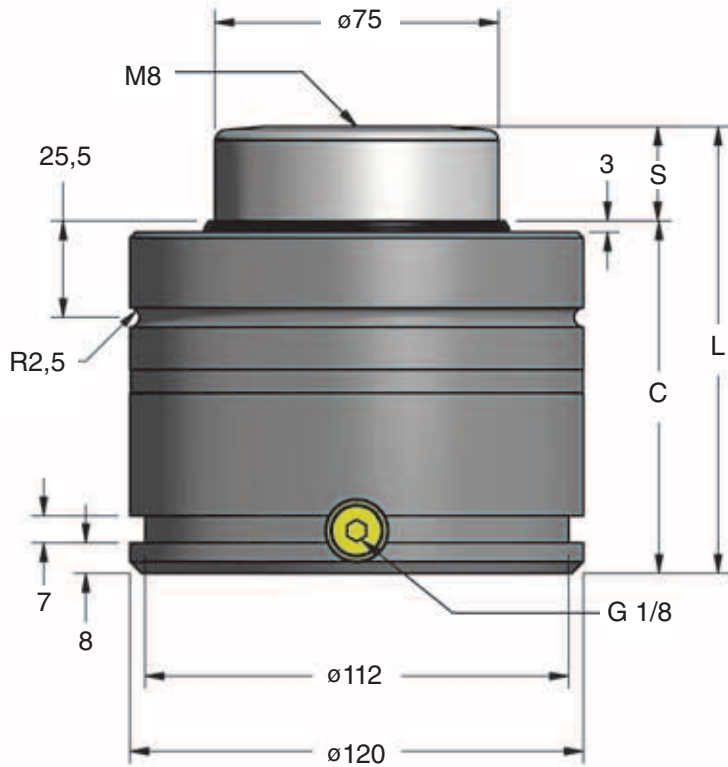
**U.4600.025. TO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

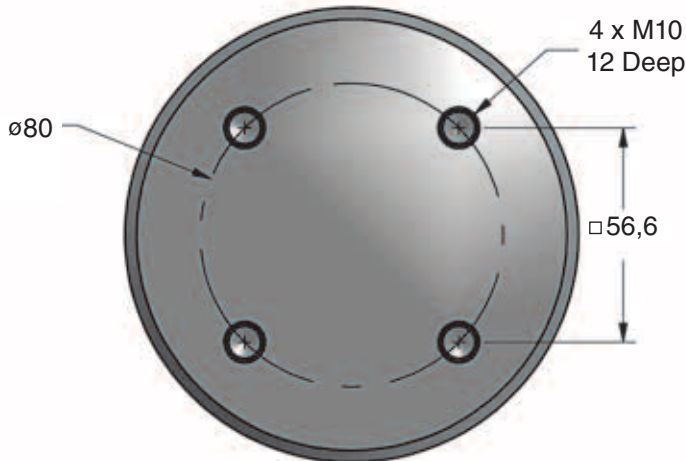
**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.   | S<br>mm | C     | L<br>$\pm 0,25$ |
|------------|---------|-------|-----------------|
| U.6600.025 | 25      | 93    | 118             |
| U.6600.038 | 37,5    | 105,5 | 143             |
| U.6600.050 | 50      | 118   | 168             |
| U.6600.080 | 80      | 148   | 228             |
| U.6600.100 | 100     | 168   | 268             |
| U.6600.125 | 125     | 193   | 318             |



TO - Basic Model

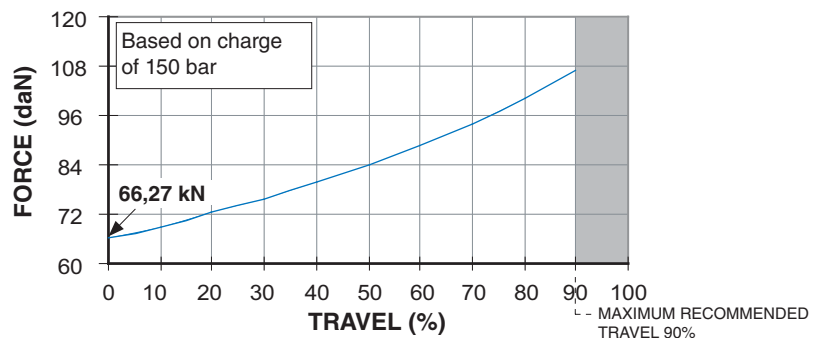


Refer to pages 24-25 for mount information.

Force Charts

On-Contact Force

| bar | kN    |
|-----|-------|
| 150 | 66,27 |
| 125 | 55,22 |
| 100 | 44,18 |
| 75  | 33,13 |
| 50  | 22,09 |
| 25  | 11,04 |
| 20  | 8,84  |



Ordering Example:

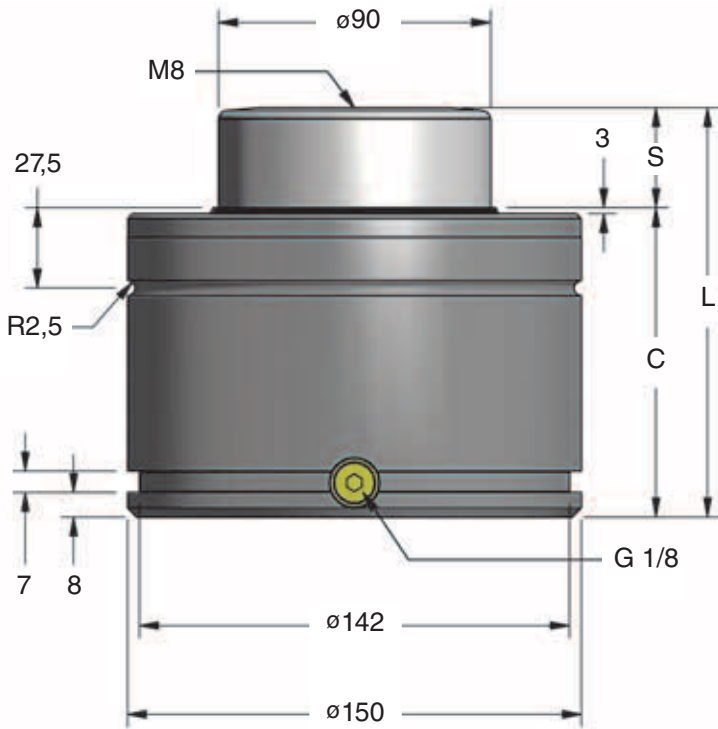
**U.6600.025. TO. C. 150**

**Part Number:** Includes Series (U), Model and Stroke Length.

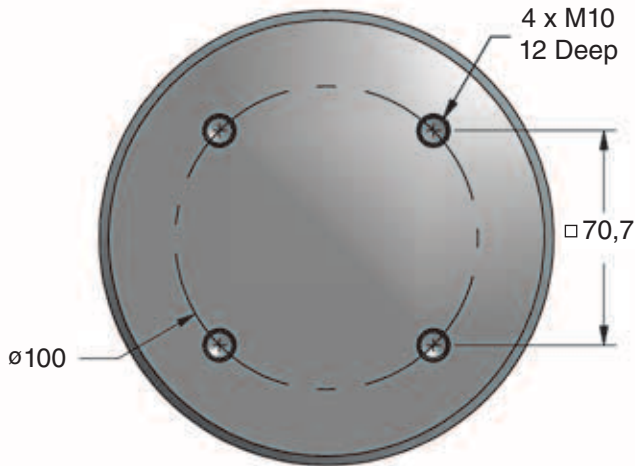
**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.   | S mm | C     | L ±0,25 |
|------------|------|-------|---------|
| U.9600.063 | 62,5 | 140,5 | 203     |
| U.9600.080 | 80   | 158   | 238     |
| U.9600.100 | 100  | 178   | 278     |
| U.9600.125 | 125  | 203   | 328     |



### Recommended Mount Options



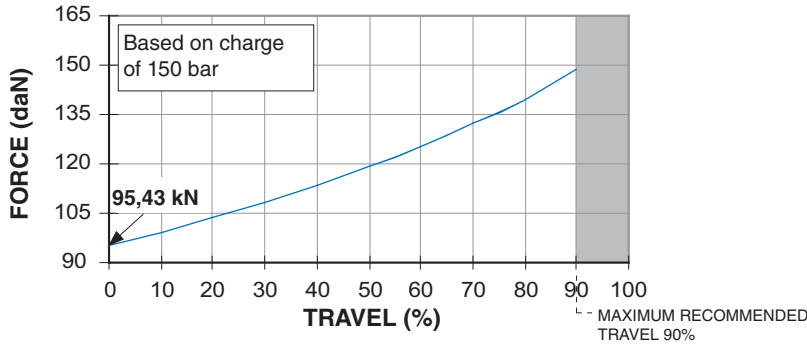
Refer to pages 24-25 for mount information.

TO - Basic Model

### Force Charts

#### On-Contact Force

| bar | kN    |
|-----|-------|
| 150 | 95,43 |
| 125 | 79,52 |
| 100 | 63,62 |
| 75  | 47,71 |
| 50  | 31,81 |
| 25  | 15,90 |
| 20  | 12,72 |



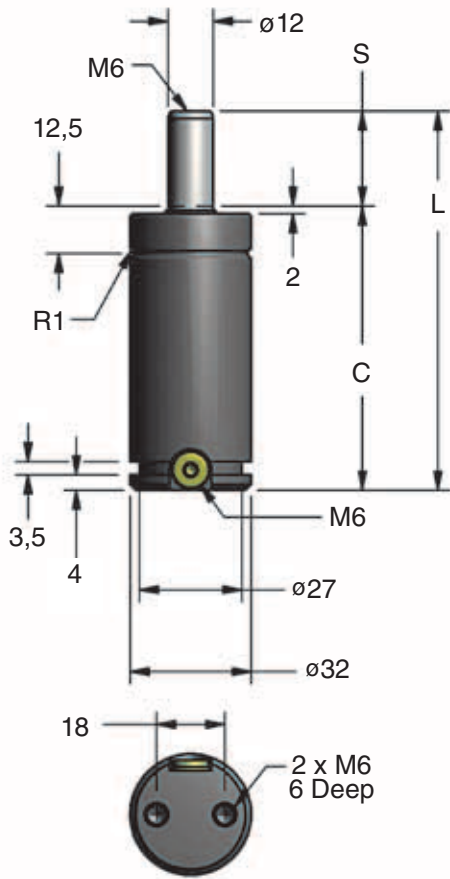
**Ordering Example:** U.9600.025. TO. C. 150

**Part Number:** Includes Series (U), Model and Stroke Length.

**Mount Option:** TO = Basic Model. *When not specified, default is TO.* Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. *When not specified, default is 150 bar.*

**Operating System:** C = Self-contained, F = Open Flow Fitting. *When not specified, default is C.*



TO – Basic Model

| Part No.        | S<br>mm | C    | L<br>±0,25 |
|-----------------|---------|------|------------|
| 90.10.00170.013 | 12,7    | 62,7 | 75,4       |
| 90.10.00170.025 | 25      | 75   | 100        |
| 90.10.00170.050 | 50      | 100  | 150        |
| 90.10.00170.080 | 80      | 130  | 210        |
| 90.10.00170.125 | 125     | 175  | 300        |

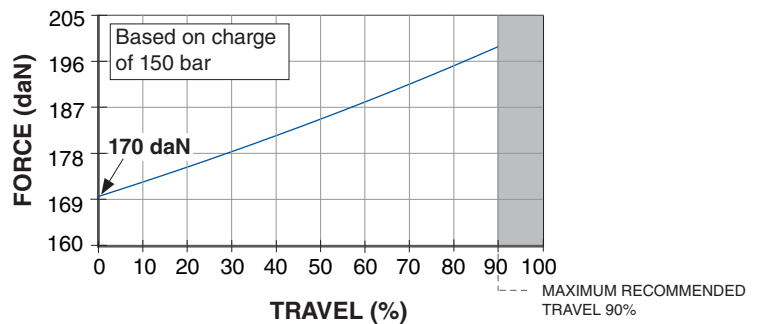


Refer to pages 24-25 for mount information.

Force Charts

On-Contact Force

| bar | daN |
|-----|-----|
| 150 | 170 |
| 125 | 141 |
| 100 | 113 |
| 75  | 85  |
| 50  | 57  |
| 25  | 40  |
| 20  | 23  |



Ordering Example:

90.10.00170.025. TO. C. 150

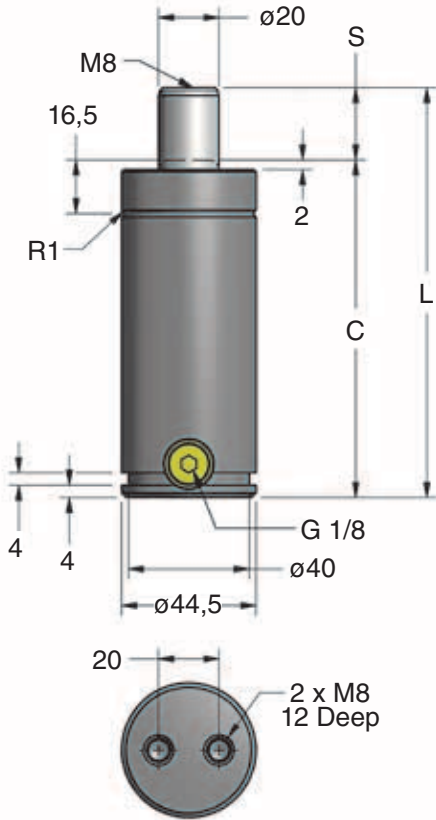
**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.





TO – Basic Model

| Part No.        | S mm | C   | L ±0,25 |
|-----------------|------|-----|---------|
| 90.10.00500.025 | 25   | 110 | 135     |
| 90.10.00500.050 | 50   | 135 | 185     |
| 90.10.00500.080 | 80   | 165 | 245     |
| 90.10.00500.125 | 125  | 210 | 335     |

**Recommended Mount Options**

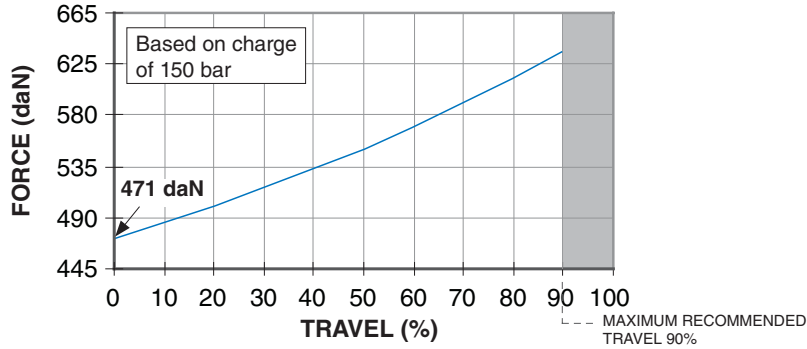
|   |  |
|---|--|
| <br>B312 | <br>B21    |
| <br>B25 | <br>B319V |

Refer to pages 24-25 for mount information.

**Force Charts**

**On-Contact Force**

| bar | daN |
|-----|-----|
| 150 | 471 |
| 125 | 393 |
| 100 | 314 |
| 75  | 236 |
| 50  | 157 |
| 25  | 79  |
| 20  | 63  |



**Ordering Example:**

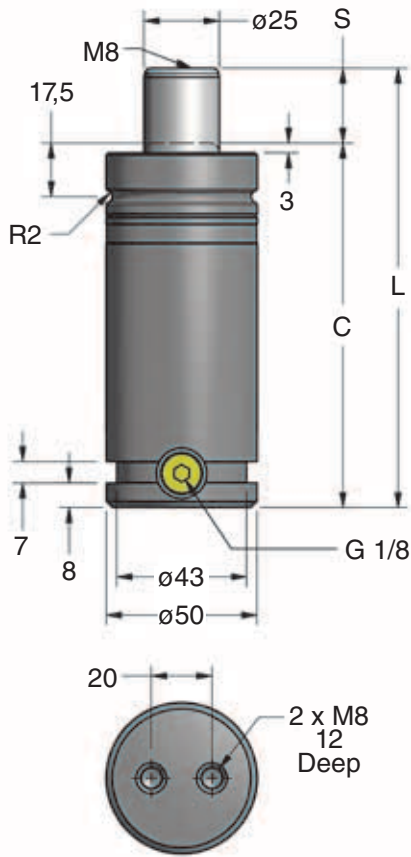
**90.10.00500.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



TO – Basic Model

| Part No.        | S<br>mm | C   | L<br>±0,25 |
|-----------------|---------|-----|------------|
| 90.10.00750.025 | 25      | 120 | 145        |
| 90.10.00750.050 | 50      | 145 | 195        |
| 90.10.00750.080 | 80      | 175 | 255        |
| 90.10.00750.125 | 125     | 220 | 345        |
| 90.10.00750.160 | 160     | 255 | 415        |

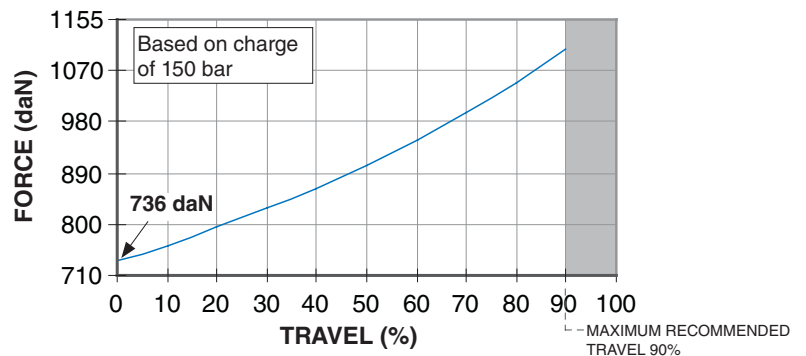


Refer to pages 24-25 for mount information.

Force Charts

**On-Contact Force**

| bar | daN |
|-----|-----|
| 150 | 736 |
| 125 | 614 |
| 100 | 491 |
| 75  | 368 |
| 50  | 245 |
| 25  | 123 |
| 20  | 98  |



Ordering Example:

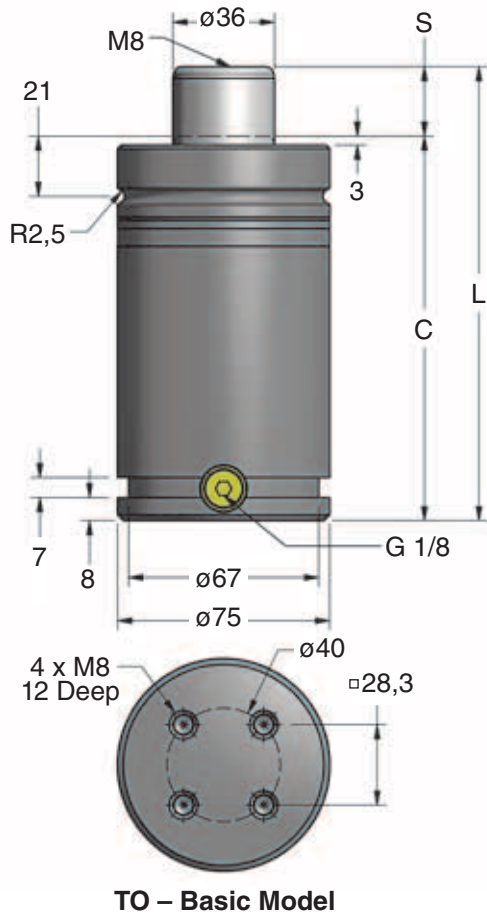
**90.10.00750.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. *When not specified, default is TO.* Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. *When not specified, default is 150 bar.*

**Operating System:** C = Self-contained, F = Open Flow Fitting. *When not specified, default is C.*



| Part No.        | S<br>mm | C   | L<br>$\pm 0,25$ |
|-----------------|---------|-----|-----------------|
| 90.10.01500.025 | 25      | 135 | 160             |
| 90.10.01500.050 | 50      | 160 | 210             |
| 90.10.01500.080 | 80      | 190 | 270             |
| 90.10.01500.125 | 125     | 235 | 360             |
| 90.10.01500.200 | 200     | 310 | 510             |

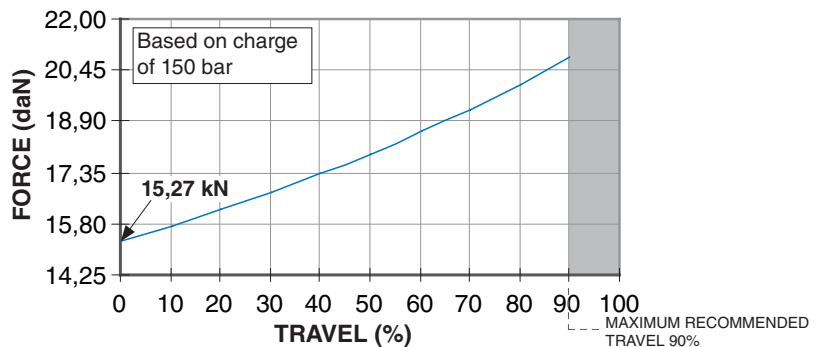


Refer to pages 24-25 for mount information.

Force Charts

**On-Contact Force**

| bar | kN    |
|-----|-------|
| 150 | 15,27 |
| 125 | 12,72 |
| 100 | 10,18 |
| 75  | 7,63  |
| 50  | 5,09  |
| 25  | 2,54  |
| 20  | 2,04  |



Ordering Example:

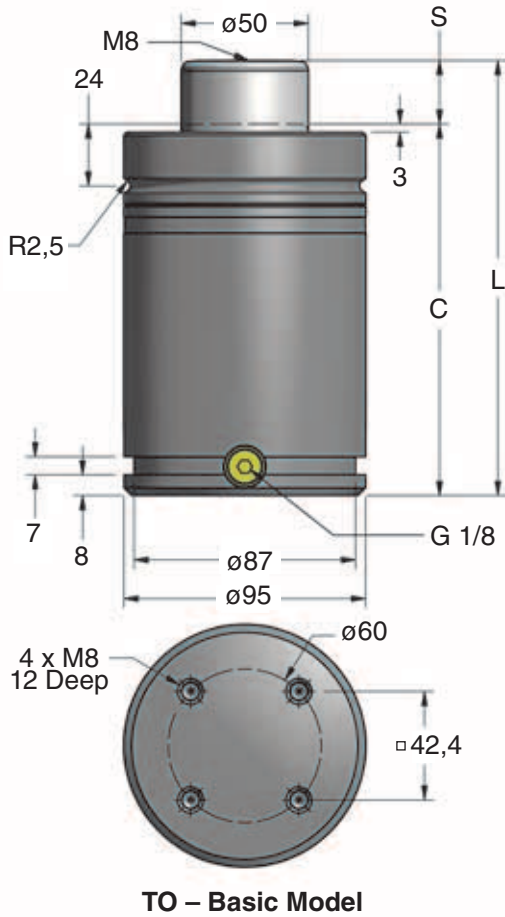
**90.10.01500.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



| Part No.        | S mm | C   | L $\pm 0,25$ |
|-----------------|------|-----|--------------|
| 90.10.03000.025 | 25   | 145 | 170          |
| 90.10.03000.050 | 50   | 170 | 220          |
| 90.10.03000.080 | 80   | 200 | 280          |
| 90.10.03000.125 | 125  | 245 | 370          |
| 90.10.03000.200 | 200  | 320 | 520          |

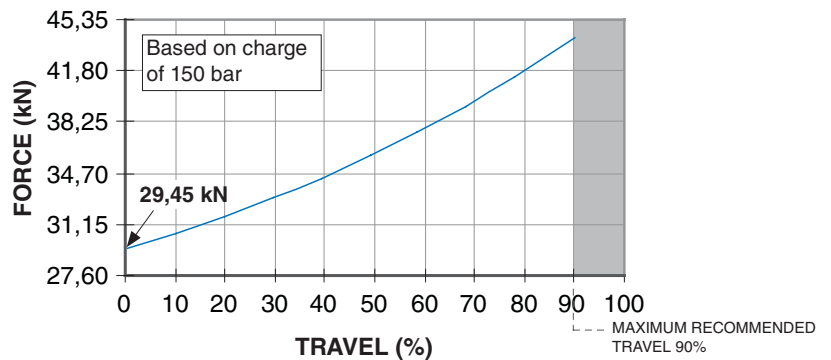


Refer to pages 24-25 for mount information.

Force Charts

**On-Contact Force**

| bar | kN    |
|-----|-------|
| 150 | 29,45 |
| 125 | 24,54 |
| 100 | 19,63 |
| 75  | 14,73 |
| 50  | 9,82  |
| 25  | 4,91  |
| 20  | 3,93  |



Ordering Example:

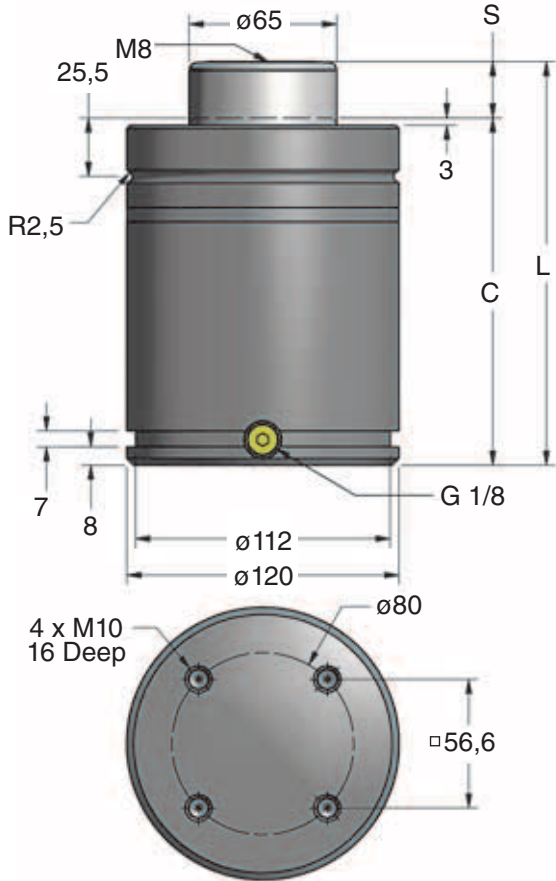
90.10.03000.025. TO. C. 150

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



TO – Basic Model

| Part No.        | S mm | C   | L ±0,25 |
|-----------------|------|-----|---------|
| 90.10.05000.025 | 25   | 165 | 190     |
| 90.10.05000.050 | 50   | 190 | 240     |
| 90.10.05000.080 | 80   | 220 | 300     |
| 90.10.05000.125 | 125  | 265 | 390     |
| 90.10.05000.200 | 200  | 340 | 540     |

**Recommended Mount Options**

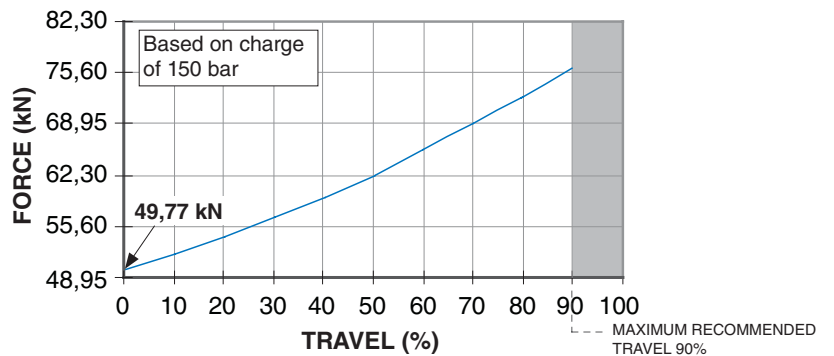
|   |  |
|---|--|
| <br>B12  | <br>B21    |
| <br>B25 | <br>B319V |

Refer to pages 24-25 for mount information.

**Force Charts**

**On-Contact Force**

| bar | kN    |
|-----|-------|
| 150 | 49,77 |
| 125 | 41,48 |
| 100 | 33,18 |
| 75  | 24,89 |
| 50  | 16,59 |
| 25  | 8,30  |
| 20  | 6,64  |



**Ordering Example:**

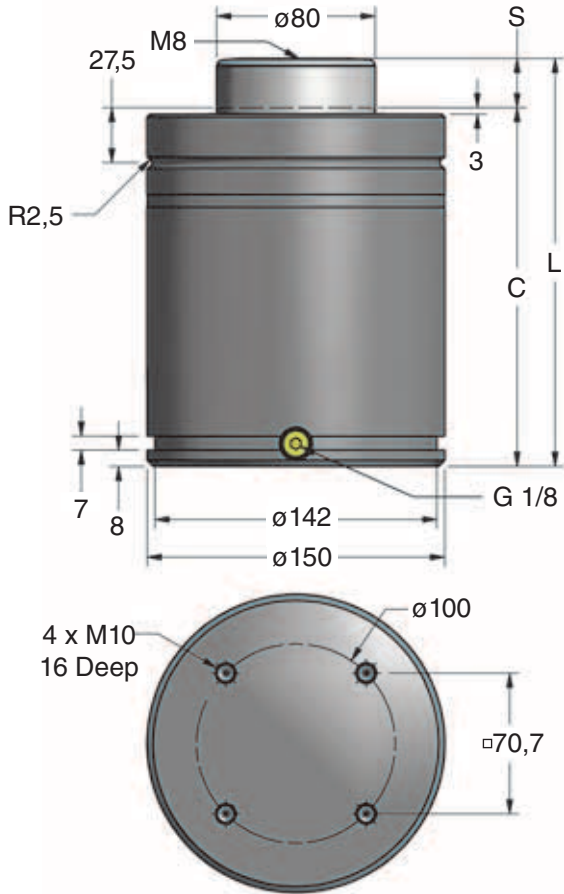
**90.10.05000.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



TO – Basic Model

| Part No.        | S<br>mm | C   | L<br>$\pm 0,25$ |
|-----------------|---------|-----|-----------------|
| 90.10.07500.025 | 25      | 180 | 205             |
| 90.10.07500.050 | 50      | 205 | 255             |
| 90.10.07500.080 | 80      | 235 | 315             |
| 90.10.07500.125 | 125     | 280 | 405             |
| 90.10.07500.200 | 200     | 355 | 555             |

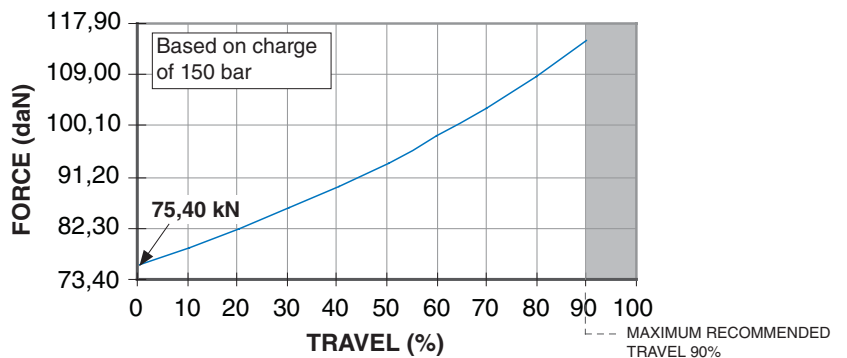


Refer to pages 24-25 for mount information.

Force Charts

**On-Contact Force**

| bar | kN    |
|-----|-------|
| 150 | 75,40 |
| 125 | 62,83 |
| 100 | 50,27 |
| 75  | 37,70 |
| 50  | 25,13 |
| 25  | 12,57 |
| 20  | 10,05 |



Ordering Example:

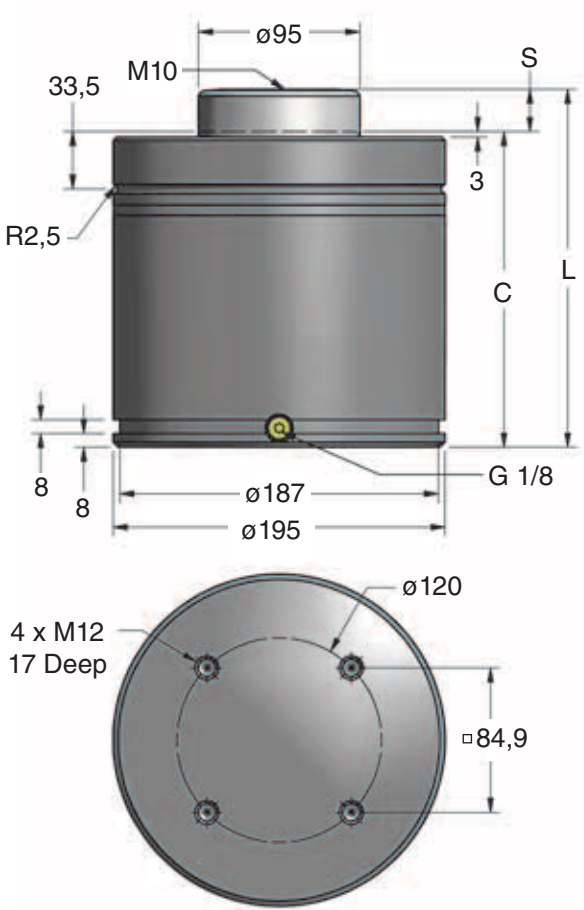
90.10.07500.025. TO. C. 150

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.



TO – Basic Model

| Part No.        | S mm | C   | L ±0,25 |
|-----------------|------|-----|---------|
| 90.10.10000.050 | 50   | 210 | 260     |
| 90.10.10000.080 | 80   | 240 | 320     |
| 90.10.10000.125 | 125  | 285 | 410     |

**Recommended Mount Options**



B12



B21



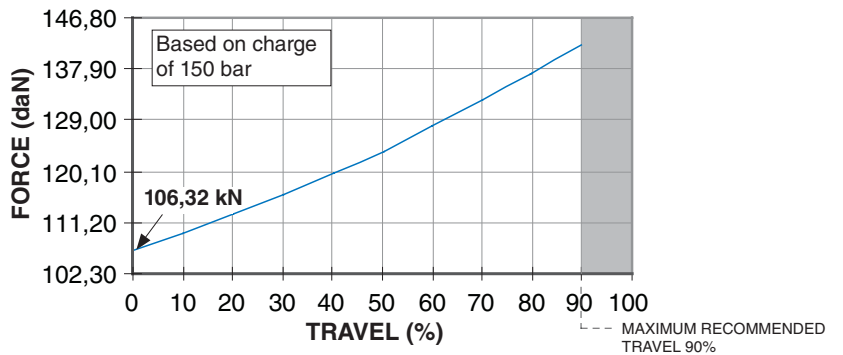
B25

Refer to pages 24-25 for mount information.

**Force Charts**

**On-Contact Force**

| bar | kN     |
|-----|--------|
| 150 | 106,32 |
| 125 | 88,60  |
| 100 | 70,88  |
| 75  | 53,16  |
| 50  | 35,44  |
| 25  | 17,72  |
| 20  | 14,18  |



**Ordering Example:** 90.10.10000.025. TO. C. 150

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar. When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C.

**C.045 Mount Option**

**C.090 / U.0175 Mount Option**

**C.180 Mount Option**

**NF** **C45-NF**

**Narrow Flange**

**VFA** **C90-VFA**

| Model | C.090 | U.0175 |
|-------|-------|--------|
| A     | 21,5  | 17     |

**Narrow Flange**

**VFA** **C180-VFA**

**Narrow Flange**

**Mount Options**

**B21** **90.21.**

| Can Diameter | ø32     | ø38   | ø44,5 | ø50   | ø63  | ø75   | ø95   | ø120  | ø150  | ø195  |
|--------------|---------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| Part No.     | C250-RF | 00300 | 00500 | 00750 | 1600 | 01500 | 03000 | 05000 | 07500 | 10000 |
| A            | 60      | 68    | 86    | 95    | 105  | 122   | 150   | 175   | 220   | 290   |
| B            | 50      | 56    | 70,7  | 80    | 85   | 104   | 130   | 155   | 195   | 240,4 |
| E            | 35,4    | 39,6  | 50    | 56,5  | 60   | 73,5  | 92    | 109,5 | 138   | 170   |
| F            | M6      | M6    | M8    | M8    | M10  | M10   | M12   | M12   | M16   | M16   |
| G            | 9       | 9     | 13    | 13    | 16   | 16    | 18    | 21    | 27    | 27    |
| H            | 17      | 17    | 23    | 24    | 27   | 29    | 33    | 36    | 41    | 47    |

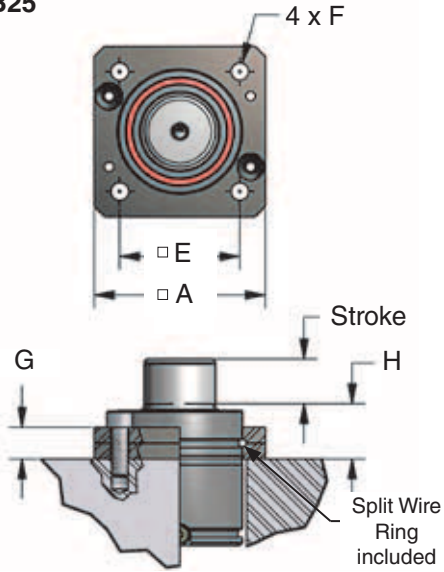
SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS



# Mount Options

## Gestamp Specific Selected Products

### B25

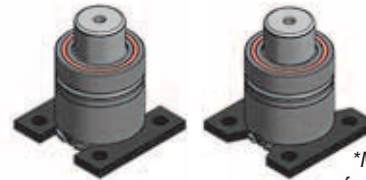
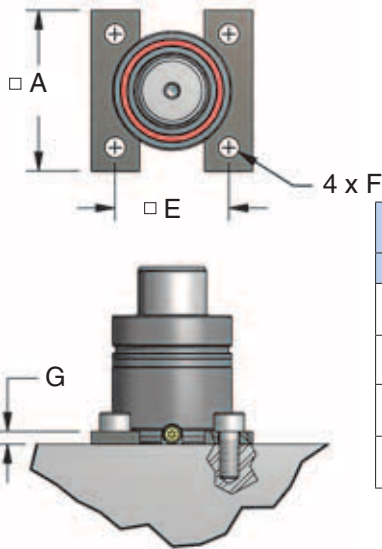


90.25.\_\_\_\_ /  
90.325.1600

| Can Diameter | ø32  | ø38   | ø44,5 | ø50   | ø63  | ø75   | ø95   | ø120  | ø150  | ø195  |
|--------------|------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| Part No.     | 0400 | 00300 | 00500 | 00750 | 1600 | 01500 | 03000 | 05000 | 07500 | 10000 |
| A            | 45   | 52    | 64    | 70    | 80   | 90    | 110   | 130   | 162   | 210   |
| E            | 35   | 40    | 50    | 56,5  | 64   | 73,5  | 92    | 109,5 | 138   | 170   |
| F            | M6   | M6    | M8    | M8    | M10  | M10   | M12   | M12   | M16   | M16   |
| G            | 9    | 9     | 13    | 13    | 16   | 16    | 18    | 21    | 27    | 27    |
| H            | 17   | 17    | 23    | 24    | 27   | 29    | 33    | 36    | 41    | 47    |

SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

### B12 / B312 / B212

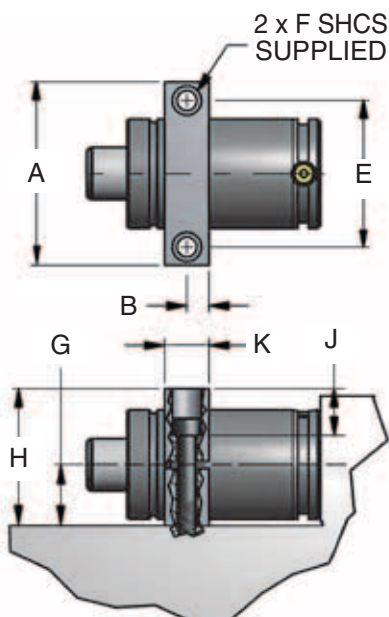


90.12.\_\_\_\_ /  
90.312.00300 /  
90.312.00500  
90.212.1600

\*Mounts are angled for access to the port.

| Can Diameter | ø32   | ø38    | ø44,5  | ø50   | ø63  | ø75   | ø95   | ø120  | ø150  | ø195  |
|--------------|-------|--------|--------|-------|------|-------|-------|-------|-------|-------|
| Part No.     | 0400* | 00300* | 00500* | 00750 | 1600 | 01500 | 03000 | 05000 | 07500 | 10000 |
| A            | 50    | 55     | 70     | 75    | 100  | 100   | 120   | 140   | 190   | 210   |
| E            | 35    | 40     | 50     | 56,5  | 73,5 | 73,5  | 92    | 109,5 | 138   | 170   |
| F            | M6    | M6     | M8     | M8    | M10  | M10   | M12   | M12   | M16   | M16   |
| G            | 7     | 7      | 7      | 12    | 12   | 12    | 12    | 12    | 12    | 13    |

### B319V



90.319V.\_\_\_\_

| Can Diameter | ø32     | ø38     | ø44,5   | ø50      | ø63      | ø75      | ø95       | ø120      | ø150      |
|--------------|---------|---------|---------|----------|----------|----------|-----------|-----------|-----------|
| Part No.     | 0400    | 0600    | 0800    | 1000     | 1600     | 2600     | 4600      | 6600      | 9600      |
| A            | 68      | 74      | 80      | 90       | 108      | 125      | 140       | 170       | 200       |
| B            | 10      | 10      | 10      | 15       | 15       | 15       | 15        | 15        | 15        |
| E            | 50      | 54      | 60      | 68       | 84       | 100      | 115       | 145       | 175       |
| F            | M8 x 50 | M8 x 50 | M8 x 50 | M10 x 60 | M10 x 70 | M12 x 80 | M12 x 100 | M12 x 100 | M12 x 120 |
| G            | 20,9    | 23,9    | 27,5    | 30       | 36,5     | 42       | 52,5      | 65        | 80        |
| H            | 48      | 54      | 60      | 70       | 82       | 94       | 115       | 140       | 170       |
| K            | 20      | 20      | 20      | 30       | 30       | 30       | 30        | 30        | 30        |
| J            | 10      | 16      | 22      | 25       | 27       | 32       | 33        | 58        | 68        |

SLIDE MOUNT INTO DESIRED LOCATION AND SECURE USING THE TWO SHCS PROVIDED

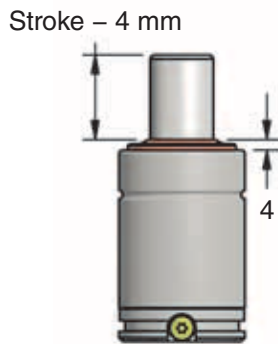
For extreme conditions, DADCO offers gas springs with both a special plated finish and a secondary wiper installed. See below for details on the wiper caps and ordering information. For more information on a particular DADCO gas spring series, refer to the relevant product catalog. For high temperature applications, contact DADCO.

**Advantages:**

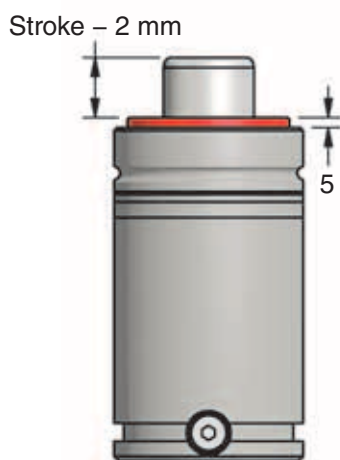
- Plated rod and can for extreme condition performance
- Secondary wiper for protection against external contamination
- Extra corrosion resistance in harsh environments
- Easy to order: Add "Q" to the DADCO part number



**Plated Cylinders  
with Secondary Wipers**



**Models:**  
90.10.00500  
U.0400 - U.2600

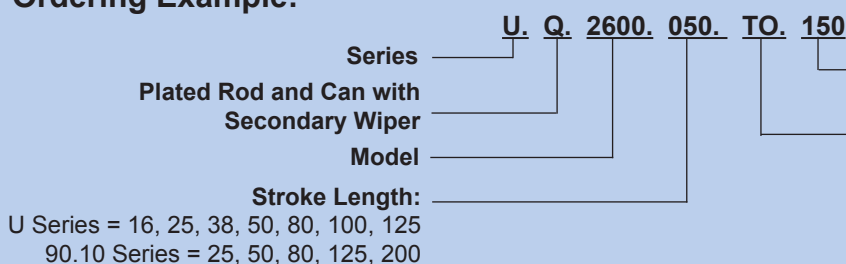


**Models:**  
U.4600 - U.9600  
90.10.00750 - 90.10.10000

*NOTE: To calculate usable stroke length, subtract the value provided in the appropriate drawing. For dimensions refer to the individual gas spring model page.*

| Series                                      | Plated Cylinder + Secondary Wiper Part No. |
|---|--|
| U Series<br>(U.0400 - U.9600)               | U.Q.0400._____                             |
|   | U.Q.0600._____                             |
|   | U.Q.0800._____                             |
|   | U.Q.1000._____                             |
|   | U.Q.1600._____                             |
|   | U.Q.2600._____                             |
|   | U.Q.4600._____                             |
|   | U.Q.6600._____                             |
| 90.10 Series<br>(90.10.00500 - 90.10.10000) | 90.10.Q.00500._____                        |
|   | 90.10.Q.00750._____                        |
|   | 90.10.Q.01500._____                        |
|   | 90.10.Q.03000._____                        |
|   | 90.10.Q.05000._____                        |
|   | 90.10.Q.07500._____                        |
| 90.10.Q.10000._____                         |  |

**Ordering Example:**



**Charging Pressure:** 15-150 bar. *When not specified, default is 150 bar.*

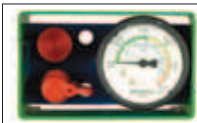
**Mount Option:** TO = Basic Model. *When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory. Refer to pages 24-25 for mount options.*

# Linked System Components

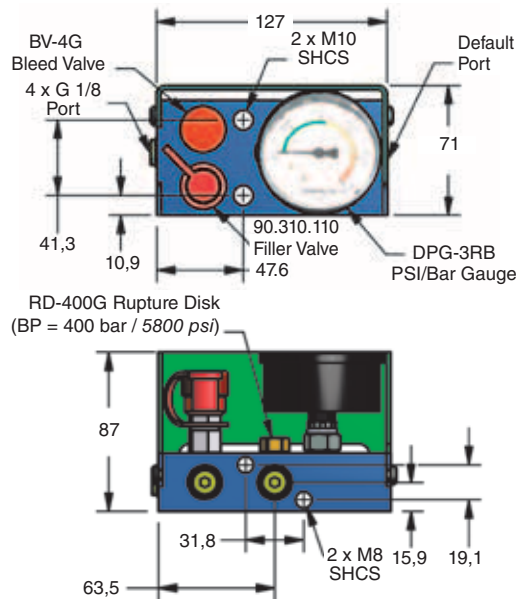
## Convertible Control Panel



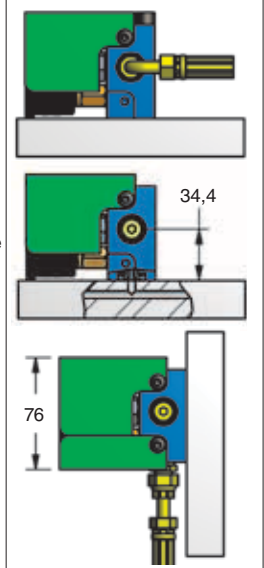
The DADCO Convertible Control Panel is used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. The panel consists of four G 1/8 BSPP ports, a high pressure 63 mm diameter gauge, a quick disconnect fill valve, a bleed valve and a rupture disk to prevent overpressurization. For maximum versatility, the panel is available with a variety of fitting connections.



Shown with optional bottom guard.



### Mounting Options



### Ordering Example:

**90.406. P 1 N**

**Common Control Panel**  
**Gauge Style**  
 PSI/Bar Gauge (DPG-3RB) = P, Bar/MPa Gauge (DPG-3RM) = A, when not specified, default is P  
**Guard**  
 Top Guard = 1, Top and Bottom Guards = 2  
 When not specified, default is 1.

**Fitting Connection**  
 N = No Fitting Supplied,  
 S = ORFS Fitting,  
 L = MINILink® Fitting  
 When not specified, default is N.

## Hose

### MINIFLEX®

#### 90.700 (Y-700) Hose

- + Offers the smallest possible bend radius available for flexible hose
- + Compatible with Mini style fittings
- Cannot be linked with a surge tank



### DADCOFLEX®

#### 90.500 (Y-500) Hose

- + Higher working pressure without sacrificing bend radius or flow rate
- + Compatible with ORFS style fittings
- + Can be linked with a surge tank



| Part No.       | OD | ID | Working Pressure | Burst Pressure | Bend Radius | Crimp Die                               |
|----------------|----|----|------------------|----------------|-------------|---|
| 90.700 (Y-700) | 5  | 2  | 500 bar          | 1890 bar       | 6.4         | Mini-Crimp 90.710.8<br>No Ring Required |
| 90.500 (Y-500) | 11 | 5  | 345 bar          | 1380 bar       | 38          | 80C-P03 Gray Die<br>82C-R01 Ring        |

## Hose Assembly

A DADCO hose assembly consists of a length of hose with a hose adapter on each end. DADCO offers a pneumatically operated crimping unit and crimp dies used to make your own hose assemblies; contact DADCO for more information.

### Hose Assembly Ordering Example:

**90.500. S843. S854. 600. I**

**Hose Type**  
(700 or 500)

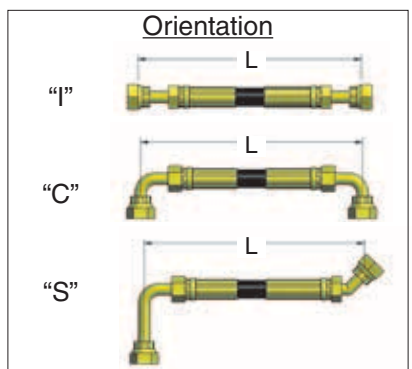
**Hose Adapters**

| Sealing Type | Example |
|--------------|---------|
| ORFS         | S943    |
| Mini         | L943    |

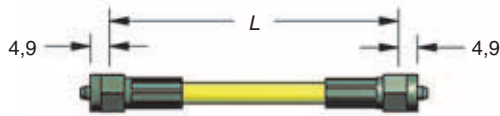
**Orientation**  
 Hose adapter orientation: I, C or S

**Length of Hose Assembly (L) in mm**  
 Distance between sealing faces

*S type used with 90.500 and L type is used with 90.700.*



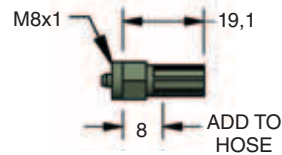
**MINIFLEX® Hose System with 90.700 (Y-700) Hose**



Minimum recommended distance  
between sealing faces (L) = 75

**90.700.L943.L943.\_\_\_\_\_I**  
L (mm)  
Hose Assembly

„SS“ = Stainless Steel Option Available



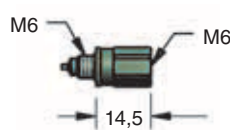
**90.601.943** „SS“  
(L-943)  
Permanent Hose Adapter

**MINILink® Fittings**

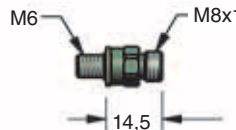
**Micro Series (C.045 – C.180) and small  
Ultra Force® Series (U.0175) Port Adapters**



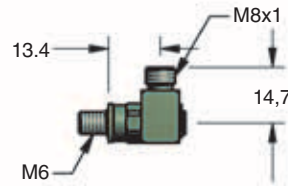
**90.607.122**  
(L-122)  
Micro Service Fitting



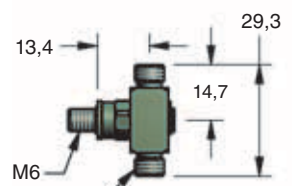
**90.607.038**  
(L-38)  
Micro Port Adapter  
Extension



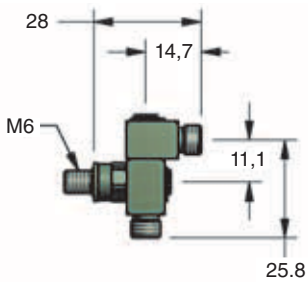
**90.607.120** „SS“  
(L-120)  
Straight Port  
Adapter



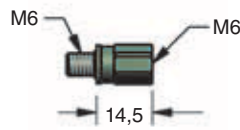
**90.607.220** „SS“  
(L-220)  
90° Port Adapter



**90.607.429** „SS“  
(L-429)  
Branch Tee Port  
Adapter



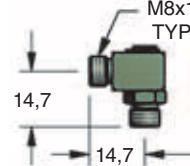
**90.607.428**  
(L-428)  
Run Tee Port  
Adapter



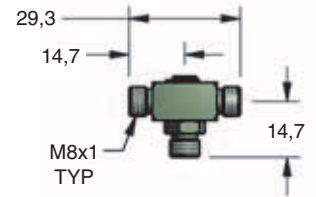
**90.607.035**  
(L-35)  
Port Adapter  
Extension



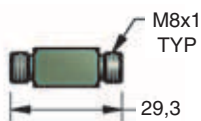
**90.505.116**  
(S-116)  
Reducer  
M6 → 9/16-18



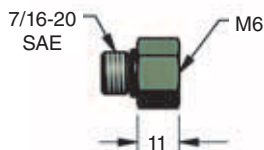
**90.607.201**  
(L-201)  
Elbow



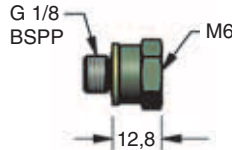
**90.607.401**  
(L-401)  
Union Tee



**90.606.303**  
(L-303)  
Union

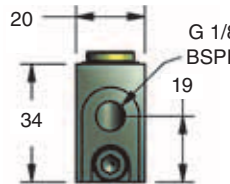
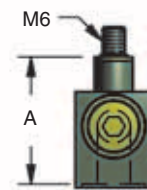


**90.607.055**  
(L-55)  
Reducer  
7/16-20 → M6



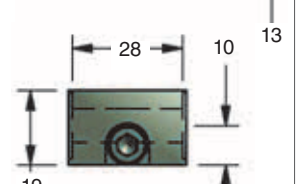
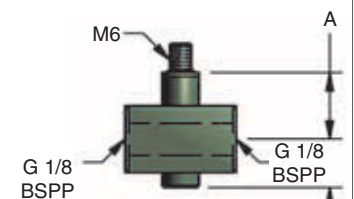
**90.607.065**  
(L-65)  
Reducer  
G 1/8 → M6

**M6 → G 1/8 Port Adapters**



**90.607.116**  
Straight

| Part No. | A  |
|----------|----|
| 116      | 33 |
| 126      | 46 |

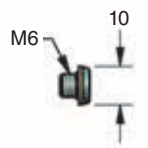


**90.607.439**  
Branch Tee

| Part No. | A  |
|----------|----|
| 439      | 18 |
| 449      | 31 |



**90.607.115**  
(L-115)  
Reducer  
G 1/8 → M8x1



**90.607.110**  
(L-110)  
Port Plug

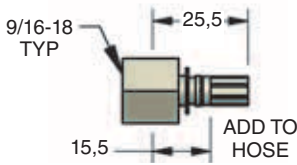


**90.605.109**  
(L-109)  
Fitting Plug

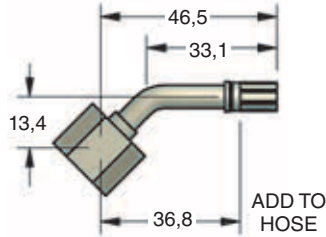
**Components: ORFS Hose Adapters**

**Crimped Hose Adapters for 90.700 (Y-700)**

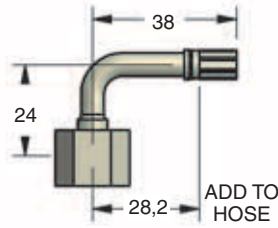
H Value = 75



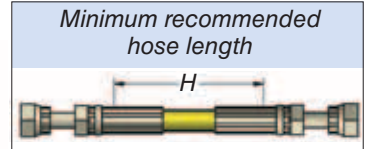
**90.504.943** .SS  
(S-943)  
Straight Swivel



**90.504.954**  
(S-954)  
45° Swivel



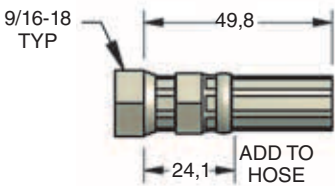
**90.504.959**  
(S-959)  
90° Swivel



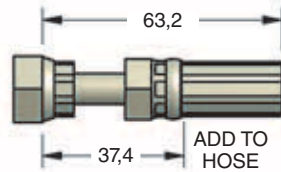
.SS = Stainless Steel Option Available

**Crimped Hose Adapters for 90.500 (Y-500)**

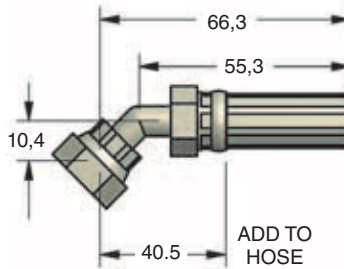
H Value = 80



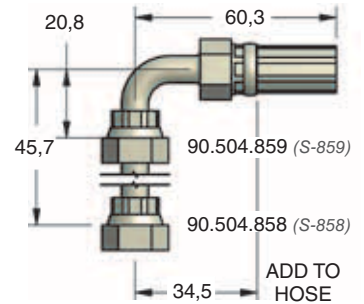
**90.504.843** .SS  
(S-843)  
Compact Swivel



**90.504.851**  
(S-851)  
Retractable Swivel

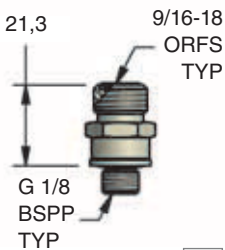


**90.504.854**  
(S-854)  
45° Female Face Seal

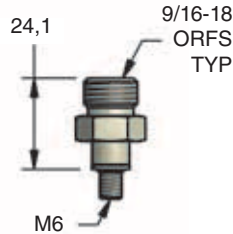


**90.504.859** (S-859) Short Neck  
**90.504.858** (S-858) Long Neck

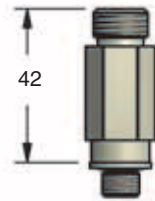
**Port Adapters**



**90.505.115** .SS  
(S-115)  
Straight



**90.505.116**  
(S-116)  
M6 → 9/16-18

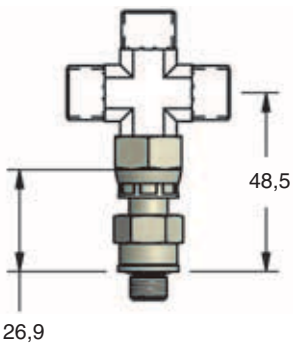


**90.505.117**  
(S-117)  
Extended Straight

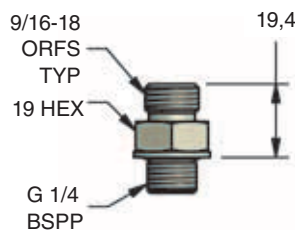
DADCO's O-Ring Face Seal (ORFS) Fittings have elastomeric seals at every joint.



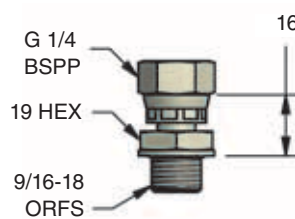
.SS = Stainless Steel Option Available



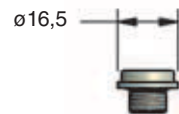
**90.505.121**  
(S-121)  
Swivel Straight



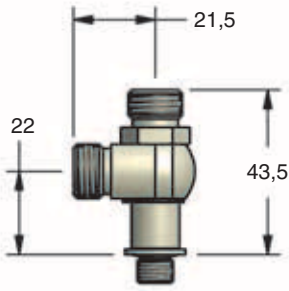
**90.505.122**  
(S-122)  
Straight



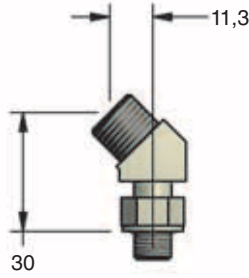
**90.505.123**  
(S-123)  
Swivel Straight



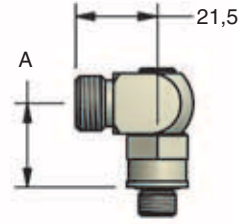
**90.505.110**  
(G-109)  
Flush Plug



**90.505.438**  
(S-438)  
Run Tee

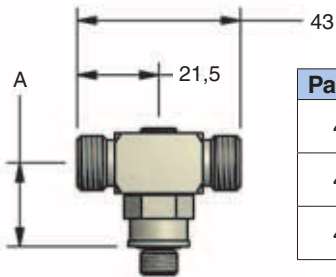


**90.505.330**  
(S-330)  
45° Elbow



**90.506.230**  
(S-230)  
90°

| Part No.              | A  |
|-----------------------|----|
| 230 <small>SS</small> | 22 |
| 240                   | 36 |
| 250                   | 43 |



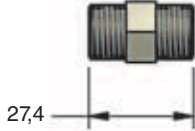
**90.506.439**  
(S-439)  
Branch Tee

| Part No.              | A  |
|-----------------------|----|
| 439 <small>SS</small> | 22 |
| 449                   | 36 |
| 459                   | 43 |

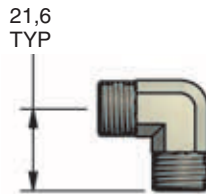
**Fittings**



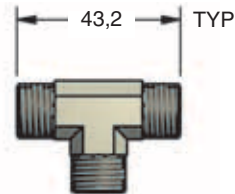
**90.506.112**  
(S-112)  
Tube End Cap



**90.506.303**  
(S-303)  
Union



**90.506.201**  
(S-201)  
Elbow

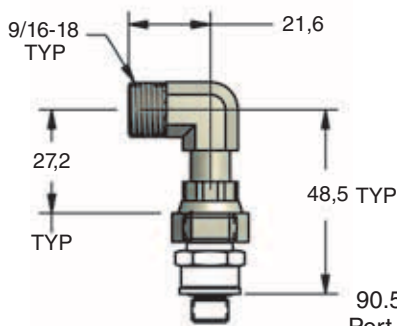


**90.506.401**  
(S-401)  
Tee



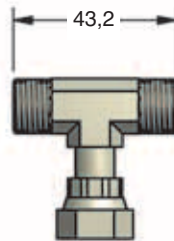
**90.506.501**  
(S-501)  
Cross

**Standard Swivel Nut Fittings**

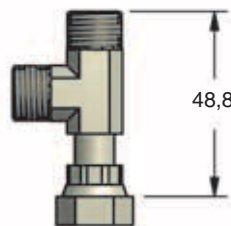


**90.506.221**  
(S-221)  
90° Elbow

90.505.115  
Port Adapter  
Shown



**90.506.433**  
(S-433)  
Branch Tee



**90.506.432**  
(S-432)  
Run Tee

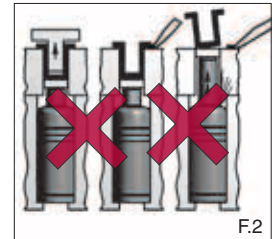
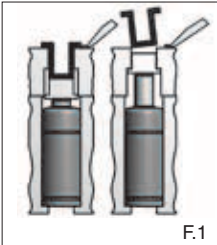
**CAUTION**  
DO NOT attempt maintenance on spring until internal pressure is exhausted.

| Operating Specifications                    |              |
|---|--------------|
| Charging Medium:                            | Nitrogen Gas |
| C.045 – C.180 Charging Pressure:            | 35 – 177 bar |
| U.0175 – U.0400 Charging Pressure:          | 15 – 180 bar |
| U.0600 – U.9600 / 90.10.00170 – 90.10.10000 |              |
| Charging Pressure:                          | 15 – 150 bar |
| Operating Temperature:                      | 4°C – 71°C   |
| Maximum Speed:                              | 1.6 m/sec    |

### Installation Requirements

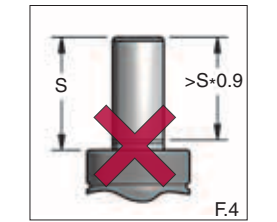
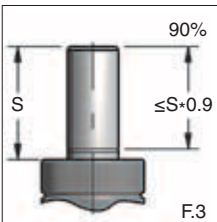
#### Avoid Sudden Release

- Jammed parts are very dangerous. If parts are jamming, determine the root cause and repair it before production continues. Sudden release may cause gas to exhaust. Slightly preloading the gas spring (F.1) prevents spring damage and sudden release (F.2).



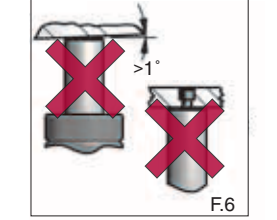
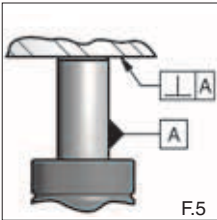
#### Provide Stroke Reserve

- DADCO U Series gas springs will permit travel of the full nominal stroke; however, at least a 10% stroke reserve is recommended to achieve optimal performance and safety (F.3 and F.4).



#### Avoid Side Loading

- A misaligned press or die can cause side loading that increases wear on the bearing, seal, and piston rod (F.6). Therefore, avoid side loading when possible (F.5).

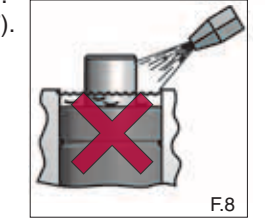
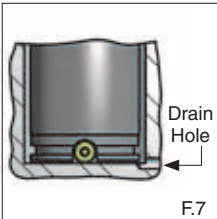


#### Rod End Thread

- The end of the piston rod has a construction thread intended for assembly and disassembly purposes only, and should never be used to mount or secure the gas spring (F.6). Die vibration and/or misalignment will damage the spring.

#### Protect From Fluids

- Direct contact with certain die lubricants and cleaners should be avoided (F.8). Protect gas springs by providing adequate drainage in gas spring pockets (F.7).

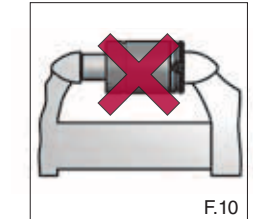
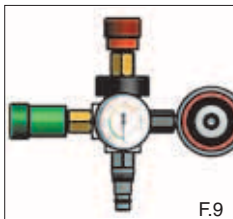


#### Discharging Self-Contained Gas Spring

- Use a Valve Bleed Tool (90.360.4) to discharge a gas spring. The DADCO Pressure Analyzer (90.315.5), permits discharging as well as charging and gauging of the pressure in the U.0400 - U.20000 gas springs (except C.045-C.180 and the U.0175 (F.9). For information on completely exhausting the gas spring refer to the Maintenance Instructions.

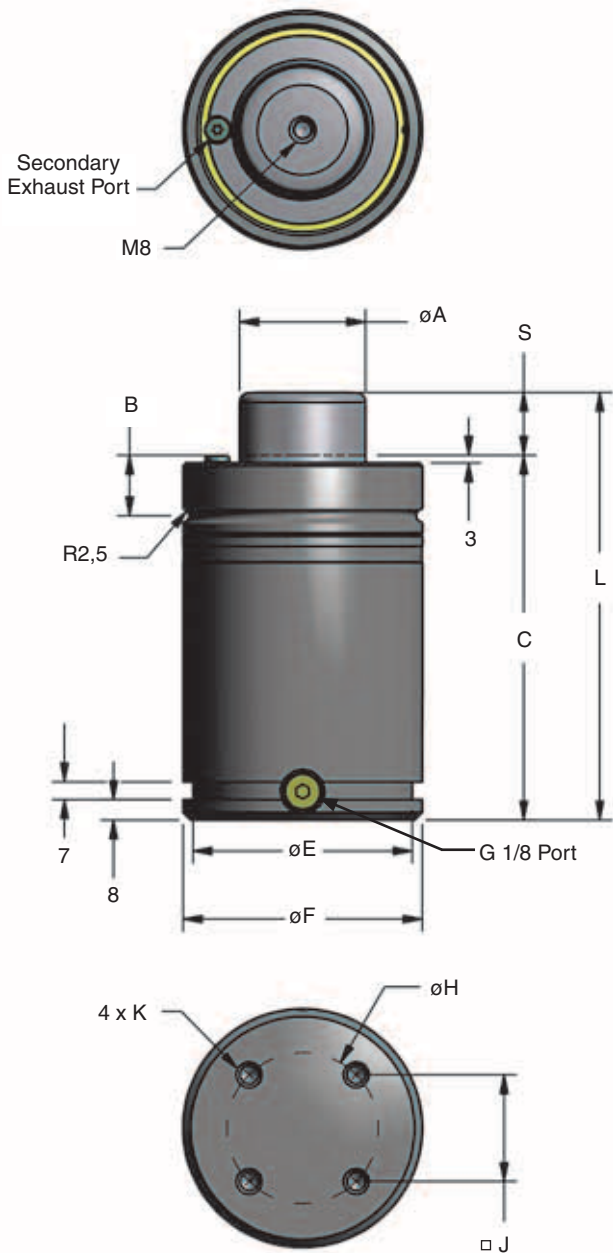
#### Recharging and Repair (Self-Contained Gas Spring)

- Contact DADCO for information on how to charge C.045-C.180 and U.0175 gas springs.
- Hold the spring vertically at all times during filling. Never compress the gas spring in a vice or clamp outside of the die or application as damage to the gas spring can result (F.10).
- Never fill a gas spring unless the rod is in the fully extended position (F.12). Thread the T-handle (90.320.1, 90.320.2 or 90.320.10) into the rod end and depress the valve stem with the Valve Bleed Tool (90.360.4) or Port Servicing Tool (90.320.8). Pull the rod cartridge assembly up until it is seated firmly against the retaining ring (F.11). Remove the T-handle from the rod and charge the gas spring to the desired pressure.
- Refer to the table below for the appropriate Repair Kit to get complete step-by-step instructions on how to repair the gas spring.



|                   |                    |                    |                    |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>Model</b>      | <b>U.0400</b>      | <b>U.0600</b>      | <b>U.0800</b>      | <b>U.1000</b>      | <b>U.1600</b>      | <b>U.2600</b>      |
| <b>Kit Number</b> | 90.108.00400       | 90.108.00600       | 90.108.00800       | 90.108.01000       | 90.108.01600       | 90.108.02600       |
| <b>Model</b>      | <b>U.4600</b>      | <b>U.6600</b>      | <b>U.9600</b>      | <b>90.10.00170</b> | <b>90.10.00500</b> | <b>90.10.00750</b> |
| <b>Kit Number</b> | 90.108.04600       | 90.108.06600       | 90.108.09600       | 90.201.00170       | 90.201A.00500      | 90.201.00750       |
| <b>Model</b>      | <b>90.10.01500</b> | <b>90.10.03000</b> | <b>90.10.05000</b> | <b>90.10.07500</b> | <b>90.10.10000</b> |                    |
| <b>Kit Number</b> | 90.201.01500       | 90.201.03000       | 90.201.05000       | 90.201.07500       | 90.201.10000       |                    |

90.10DS Springs are designed specifically for die storage applications. The DS models return at a moderated speed, unlike standard gas springs that return at the speed of the ram. After the initial hit, only a small portion of the DS stroke is engaged during each press stroke resulting in reduced operating temperature, minimal wear, and longer spring life.



TO – Basic Model

| Part No.         | S<br>mm | Model |            |       |            |       |            |
|------------------|---------|-------|------------|-------|------------|-------|------------|
|                  |         | 03000 |            | 05000 |            | 07500 |            |
|                  |         | C     | L<br>±0,25 | C     | L<br>±0,25 | C     | L<br>±0,25 |
| 90.10DS.____.050 | 50      | 170   | 220        | 190   | 240        | 205   | 255        |
| 90.10DS.____.080 | 80      | 200   | 280        | 220   | 300        | 235   | 315        |
| 90.10DS.____.125 | 125     | 245   | 370        | 265   | 390        | 280   | 405        |
| 90.10DS.____.200 | 200     | 320   | 520        | 340   | 540        | 355   | 555        |

| Model | 03000        | 05000         | 07500         |
|-------|--------------|---------------|---------------|
| A     | 50           | 65            | 80            |
| B     | 24           | 25,5          | 27,5          |
| E     | 87           | 112           | 142           |
| F     | 95           | 120           | 150           |
| H     | 60           | 80            | 100           |
| J     | 42,4         | 56,6          | 70,7          |
| K     | M8 x 12 Deep | M10 x 16 Deep | M10 x 16 Deep |

| On-Contact Force |     |      |
|------------------|-----|------|
| Model No.        | bar | daN  |
| 90.10DS.03000    | 150 | 2945 |
| 90.10DS.05000    | 150 | 4977 |
| 90.10DS.07500    | 150 | 7540 |

### Ordering Example:

**90.10DS.05000.100. TO. C. 150**

**Part Number:** Includes Series (90.10DS), Model and Stroke Length.

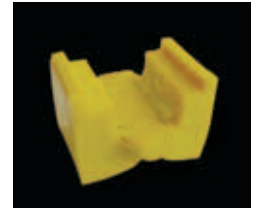
**Charging Pressure:** 15-150 bar. *When not specified, default is 150 bar.*

**Mount Option:** TO=Basic Model. *When not specified, default is TO.* Mounts ordered with cylinder will be attached at the factory. Refer to pages 24-25 for mount options.

**Operating System:** C= Self-contained, F= Open Flow. *When not specified, default is C, self-contained.*



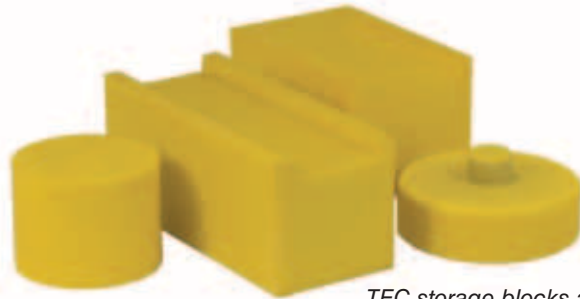
A variety of methods are used to separate dies during storage, including spacers made of wood, steel or urethane. If a typical storage block is inadvertently left in the tool while the press closes, it may cause damage to the die or pose a safety risk from shattering. TEC die storage blocks from DADCO are a safer alternative.



TEC Block After Deformation

TEC die storage blocks:

- Exhibit high energy absorption
- Possess excellent load capability
- Resist brittle fracture in compressive loading
- Are impervious to many types of oil and grease
- Are available in standard and custom sizes
- Are easily machined by the factory or end-user

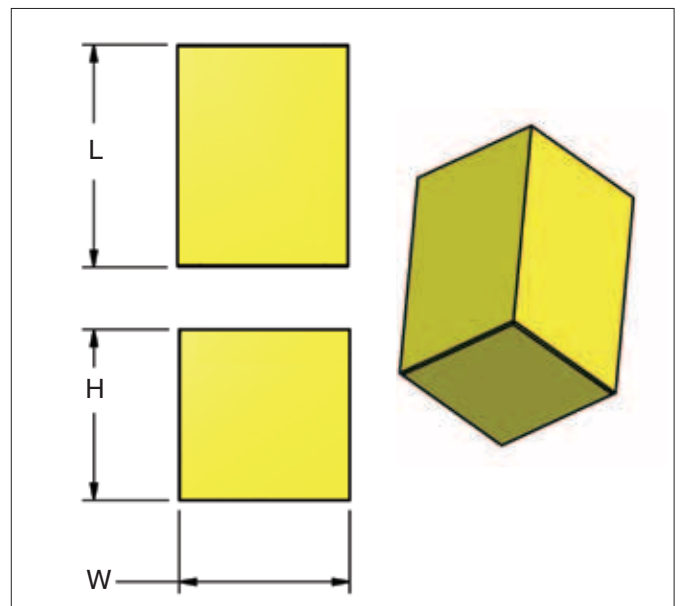
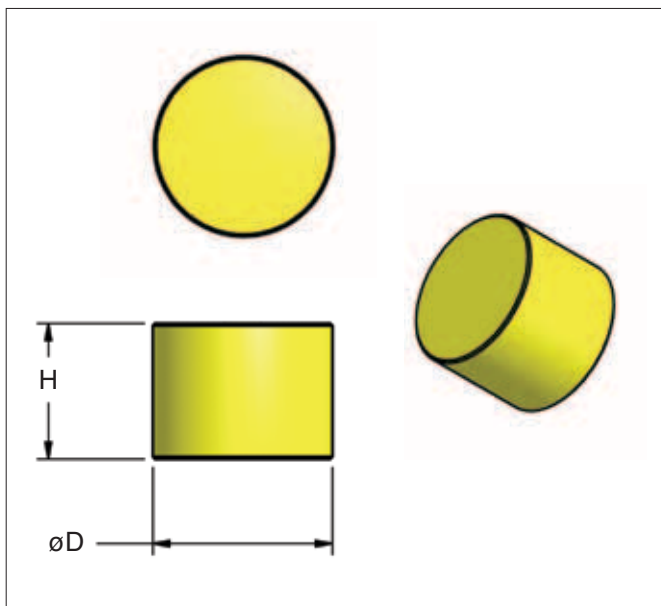


TEC storage blocks are a copolymer material made from a reactive casting process.

Contact DADCO for custom configurations.

### TEC Die Storage Blocks

Compressive Strength = 120 bar



| Round Bar Model |       |                     |
|-----------------|-------|---------------------|
| Model           | øD mm | H <sub>MAX</sub> mm |
| RB              | 65    | 1000                |
| RB              | 79    | 1000                |
| RB              | 100   | 1000                |
| RB              | 110   | 1000                |
| RB              | 150   | 850                 |

| Shaped Bar Model |      |                     |                     |
|------------------|------|---------------------|---------------------|
| Model            | H mm | W <sub>MAX</sub> mm | L <sub>MAX</sub> mm |
| SB               | 30   | 300                 | 800                 |
| SB               | 50   | 300                 | 800                 |
| SB               | 60   | 300                 | 800                 |
| SB               | 80   | 300                 | 600                 |
| SB               | 100  | 300                 | 500                 |

### Ordering Example:

**TR. RB. 65.1000**

Series

Model

RB (Round Bar) or SB (Shaped Bar)

Dimensions

See charts above.

Custom sizes are available.

Contact DADCO for more information.

Designed for use in dies as a replacement for common pins, bushings and spools the Guide Retainer Set (GRS) Series features high quality guided components to ensure exceptionally long service life.

DADCO offers GRS in four models, designated by Guide Rod diameter, to accommodate different load capacities: GRS.25, GRS.30, GRS.36 and GRS. 50 (refer to page 37 for attachment capability information).

### GRS.30

**W2 Mount**

**N3 Mount**

| Guide Pin | A Thread | B Depth |
|-----------|----------|---------|
| M         | M8       | 22      |
| E         | 5/16"-18 | 0,87"   |

L (mm) = S (mm) + 50  
L (inch) = S (inch) + 1,968

### GRS.36

**W2 Mount**

**N3 Mount**

| Guide Pin | A Thread | B Depth |
|-----------|----------|---------|
| M         | M10      | 23      |
| E         | 3/8"-16  | 0,91"   |

L (mm) = S (mm) + 65  
L (inch) = S (inch) + 2,559

**Ordering Example:**

Part Number: GRS.30. M. 0250. W2 Guide Retainer Mount Option: W2 or N3  
 GRS.30 or GRS.36 Stroke Length: 20,0 mm to 150,0 mm (0,75" to 6,00") in increments of 0,1 mm  
 Guide Rod Option

Refer to page 37 for complete ordering example.





### Maximum Attachment Capacity Per Guide Retainer Set

Consider the dynamic load factors on the guide unit fasteners. The guidelines below show attachment limits per GRS based on the press ram velocity. For increased capacity, install additional Guide Retainer Sets.

| Guide Retainer Mount Option:                | FM / W2                     |        |        |        | N3     |        |
|---|-----------------------------|--------|--------|--------|--------|--------|
| Model:                                      | GRS.25                      | GRS.30 | GRS.36 | GRS.50 | GRS.30 | GRS.36 |
| Ram Velocity                                | Metric Attachment Mass (kg) |        |        |        |        |        |
| mm/s  |                             |        |        |        |        |        |
| 250   | 44                          | 58     | 116    | 177    | 44     | 87     |
| 500   | 11                          | 15     | 29     | 44     | 11     | 22     |
| 750   | 4,9                         | 6,4    | 13     | 20     | 4,8    | 9,7    |
| 1000  | 2,8                         | 3,6    | 7,3    | 11     | 2,7    | 5,4    |
| Force (kN)                                  |                             |        |        |        |        |        |
| Static Load Rating<br>(Mechanical Strength) | 10                          | 17     | 28     | 41     | 13     | 21     |

### GRS Stroke Length Recommendations

DADCO offers the Guide Retainer Sets in stroke lengths from 20,0 mm to 150,0 mm in increments of 0,1 mm; DADCO recommends ordering stroke lengths in 5,0 mm increments when possible. Refer to charts below for the appropriate stroke length ordering code based on these suggestions. For more information contact DADCO.

| Stroke Length |            | Stroke Length |            |
|---------------|------------|---------------|------------|
| S             | Order Code | S             | Order Code |
| mm            |            | mm            |            |
| 20,0          | 0200       | 85,0          | 0850       |
| 25,0          | 0250       | 90,0          | 0900       |
| 30,0          | 0300       | 95,0          | 0950       |
| 35,0          | 0350       | 100,0         | 1000       |
| 40,0          | 0400       | 105,0         | 1050       |
| 45,0          | 0450       | 110,0         | 1100       |
| 50,0          | 0500       | 115,0         | 1150       |
| 55,0          | 0550       | 120,0         | 1200       |
| 60,0          | 0600       | 125,0         | 1250       |
| 65,0          | 0650       | 130,0         | 1300       |
| 70,0          | 0700       | 135,0         | 1350       |
| 75,0          | 0750       | 140,0         | 1400       |
| 80,0          | 0800       | 150,0         | 1500       |

### Ordering Example:

**GRS. 36. M. 0250. FM**

**Series:** Guide Retainer Set

**Guide Rod Diameter:** Ø25, Ø30, Ø36 or Ø50

**Guide Rod Option:** M = Metric or E = Imperial

**Guide Retainer Mount Option:**  
FM = Flange Model

W2 = Wide Toe Clamps (Qty. 2) or  
N3 = Narrow Toe Clamps (Qty.3); *GRS.30 and GRS.36 only*

**Stroke Length:**  
20,0 mm to 150,0 mm (0,75" to 6,00");  
specified in 0.1 mm Increments  
*Example: 25,0 mm = 0250 or 1,00" = 0254*

### Replacement Part Ordering Information:



**Guide Rod:** GRS.36.M.0250.RO

**Guide Retainer:** GRS.36 = Flange Mount,  
GRS.36T = Toe Clamp Mount



**Lock Washer:**

**Wide Toe Clamp:**

**Narrow Toe Clamp:**

| GRS.30  | GRS.36   |
|---------|----------|
| UMR08   | UMR10    |
| GRS.WM8 | GRS.WM10 |
| GRS.NM8 | GRS.NM10 |

The Delay Return System (DRS) is used when an application requires the nitrogen gas springs to delay in the compressed state in the die to prevent deformation while the metal parts are shaped.

### Features

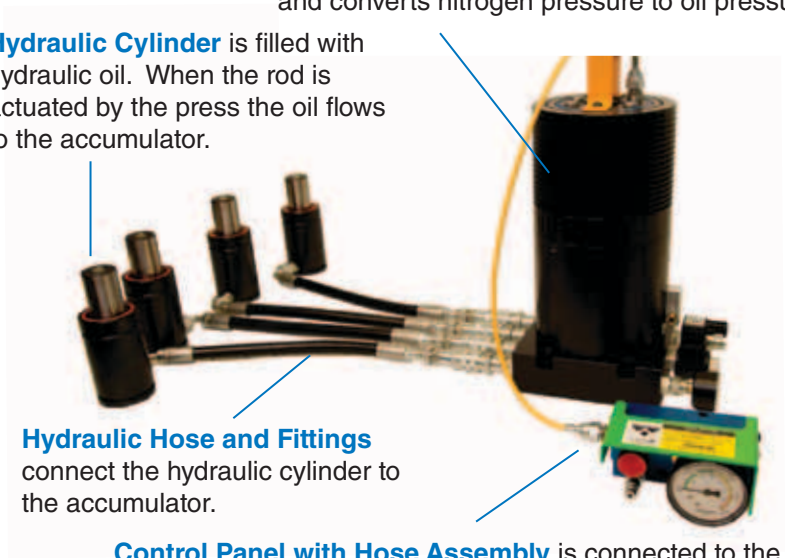
- Patented Technology
- Modular accumulator system
- Reliable leak-free operation
- Controlled travel on return stroke
- No filling or bleeding during installation
- 115 VAC, 230 VAC or 24 VDC operation
- Reliable nitrogen pressure control
- Quick connect hydraulic hose and fittings
- Numerous cylinder options
- Optional fan accessory for cooling
- Optional No Spring-Back accessory

**Accumulator** is nitrogen gas-over-hydraulic and converts nitrogen pressure to oil pressure.

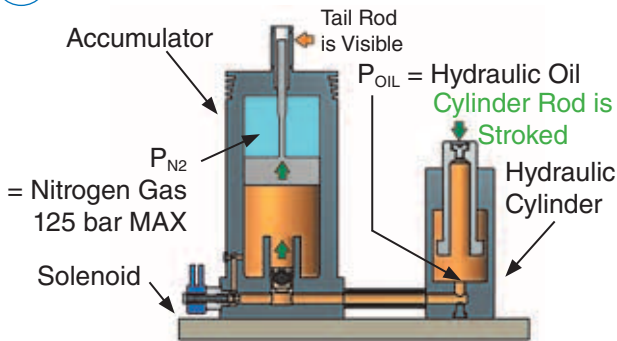
**Hydraulic Cylinder** is filled with hydraulic oil. When the rod is actuated by the press the oil flows to the accumulator.

**Hydraulic Hose and Fittings** connect the hydraulic cylinder to the accumulator.

**Control Panel with Hose Assembly** is connected to the accumulator allowing for filling, draining and monitoring of the nitrogen gas pressure in the system.

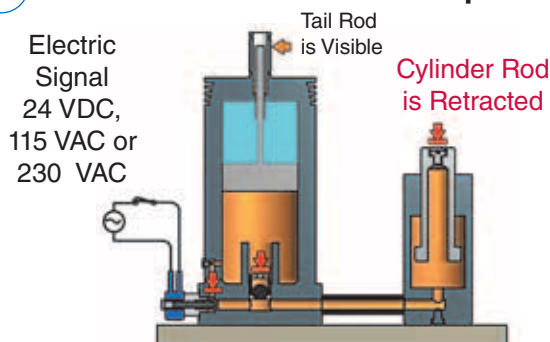


### 1 Down Stroke: Part Forming



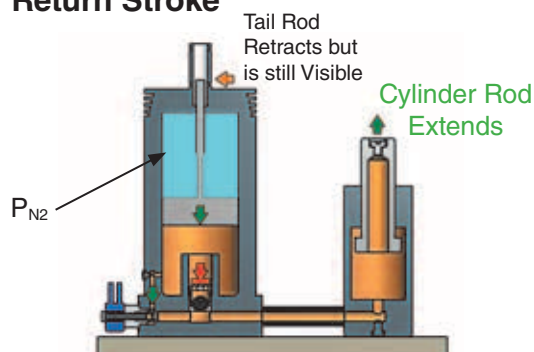
The accumulator is pressurized with nitrogen gas to energize the hydraulic oil to the pressure required for the forming application. The hydraulic cylinder and accumulator have equivalent pressure ( $P_{N_2} = P_{OIL}$ ). During the downstroke of the die, the hydraulic cylinder delivers force like a typical nitrogen gas spring. The oil in the hydraulic cylinder is transferred through the accumulator's main check valve.

### 2 Bottom of Stroke: Part Complete



The solenoid valve is energized before the part is completely formed. The main check valve holds the pressurized oil in the accumulator. The hydraulic cylinder's rod will stay retracted as the press opens. A 1-4% spring-back may occur during the delayed action. An optional No Spring-Back accessory is available.

### 3 Return Stroke



After the part is completed and the ram retracts, the solenoid valve is deactivated allowing the cylinder rod to extend at a controlled rate. During extension, the heat generated by the accumulator dissipates and the tail rod will retract into the indicator tube. An electrical fan or other options may be installed with the accumulator to facilitate cooling.

*Note: Systems with higher tonnage, rapid production rates or long pad travel may require additional cooling components.*

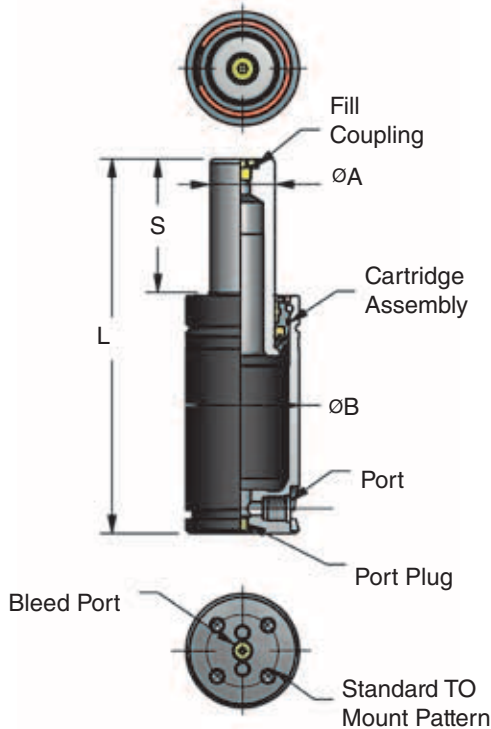
# Delay Return System (DRS) Details

## Gestamp Specific Selected Products

### General Operating Specifications

|                                |              |   |                                  |
|--------------------------------|--------------|---|----------------------------------|
| Charging Medium:               | Nitrogen Gas | Maximum Velocity:   | 1 m/sec                          |
| Maximum Charging Pressure:     | 125 bar      | System Oil:   | ISO viscosity of 32, index of 95 |
| Maximum Operating Temperature: | 63°C         | <i>Specific operating conditions will be assigned per system.</i> |                                  |

#### Hydraulic Cylinders

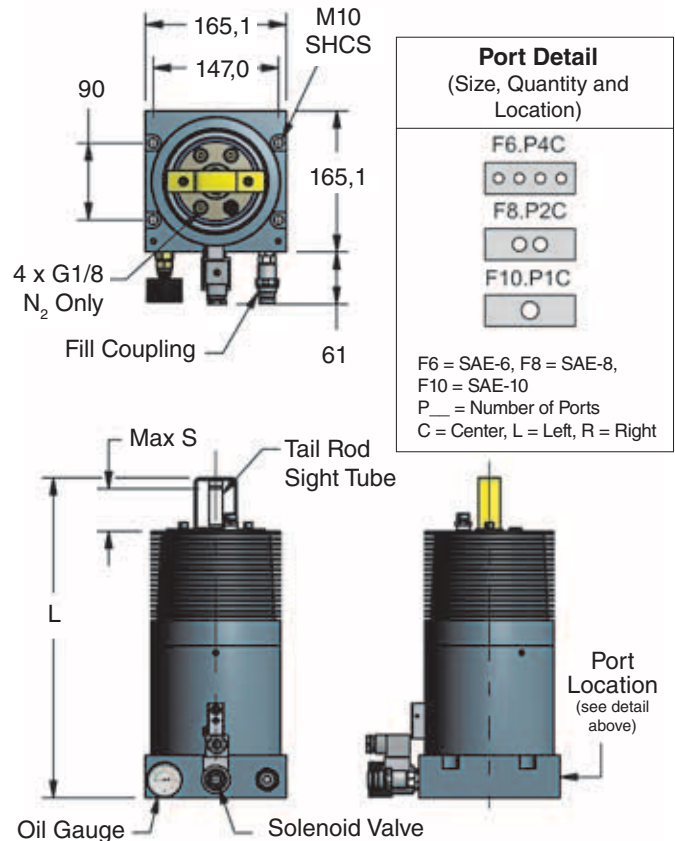


Refer to the UH Series Catalog for cylinder and mount information. Cylinder height may vary for larger port sizes.

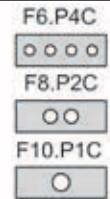
| Model   | ØA | ØB  | S mm | L            | On-Contact Force* kN |
|---------|----|-----|------|--------------|----------------------|
| UD.1000 | 28 | 50  | 025  | (2 x S) + 52 | 7,70                 |
| UD.1600 | 36 | 63  | 038  | (2 x S) + 52 | 12,72                |
|         |    |     | 050  |              |                      |
| UD.2600 | 45 | 75  | 063  | (2 x S) + 59 | 19,88                |
|         |    |     | 075  |              |                      |
| UD.4600 | 60 | 95  | 080  | (2 x S) + 72 | 35,34                |
| UD.6600 | 75 | 120 | 100  | (2 x S) + 87 | 55,22                |
|         |    |     | 125  |              |                      |

\*Maximum Charging Pressure is 125 bar.

#### Accumulators



#### Port Detail (Size, Quantity and Location)



F6 = SAE-6, F8 = SAE-8, F10 = SAE-10  
 P\_\_ = Number of Ports  
 C = Center, L = Left, R = Right

#### Accumulator Example:

AC.50.24.F6.P4C.115  
 Vol. Port Q&L Volt

| Model    | Vol. liter | S mm | L   |
|----------|------------|------|-----|
| AC.50.12 | 0,20       | 25   | 325 |
| AC.50.24 | 0,40       | 50   | 375 |
| AC.50.36 | 0,60       | 75   | 400 |

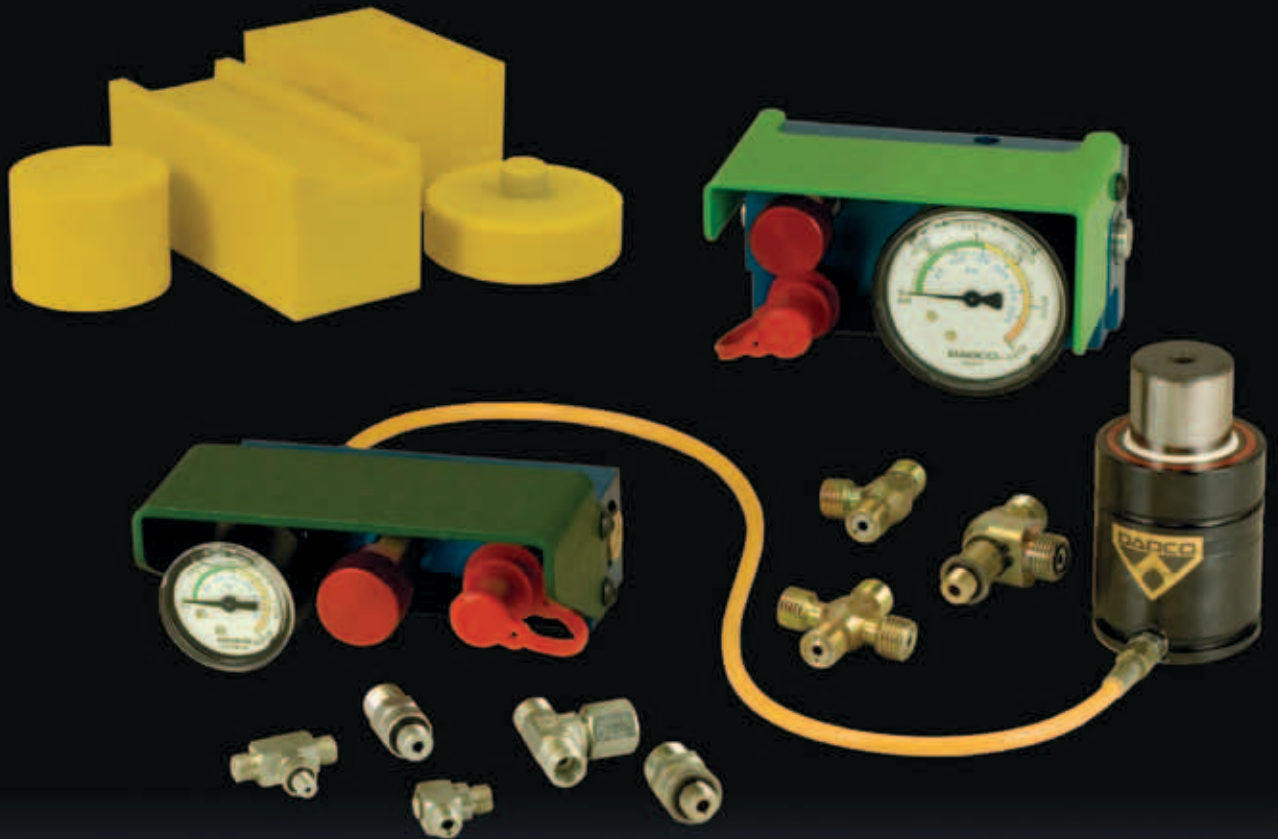
#### Options (available with all models)

| Port | Quantity and Location | Voltage |
|------|-----------------------|---------|
| F6   | P4C                   | 24 VDC  |
| F8   | P2C                   | 115 VAC |
| F10  | P1C                   | 230 VAC |

### Custom System Requirements

Each DRS is designed based on customer requirements and is factory tested to ensure proper operation prior to shipment. To request a quote for a system, details about the tonnage, travel and production rate of the application are required. Contact DADCO Engineering for a proposal.

|                                 |   |
|---------------------------------|---|
| <b>Tonnage</b>                  | Estimate tonnage required for the holding force on-contact. If particular cylinder sizes are known, provide the quantity, model, stroke and pressure. Advise of any special requirements.   |
| <b>Travel</b>                   | Actual pad travel is required. The travel is used to determine the volume of the system, system pressure and maximum operating speed of the system. Provide information about potential spring-back issues.   |
| <b>Production Rate Estimate</b> | <p><b>PR = Production Rate in Parts per Minute</b> The DRS can be designed to meet a wide range of production rates. Additional cooling features may be required depending on the system requirements. Use the formulas to the right to determine the maximum acceptable rate of production.</p> <p><b>Metric</b></p> $PR = \frac{400,000 \times A}{(S \times F)}$ <p>F = On-Contact Force (kN)<br/>                 S = Pad Stroke (mm)<br/>                 A = Number of Accumulators Required</p> <p><i>Formula based on system with active cooling option.</i></p> |



# DADCO®

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