



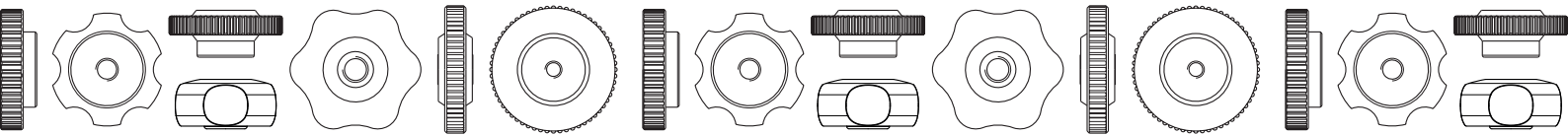
**GROUP - 17**

## PLASTIC AND METAL WASHERS

### BOTECO Plastic and Metal Washers

A section dedicated to Boteco's plastic and metal washers. Elements with a large diameter and small thickness, ideal for use as locking system or for operating in very tight spaces. Or concave and convex washer pairs according to DIN standard.

For detailed information on the specifications of each individual product please consult the technical sheet.



# Q260

## KNURLED WASHER



PF

UL94  
HB



### Materials:

Phenolic resin.

Resistant to oils and greases.

Resistant to high temperatures.

### Surface:

Glossy.

### Colour:

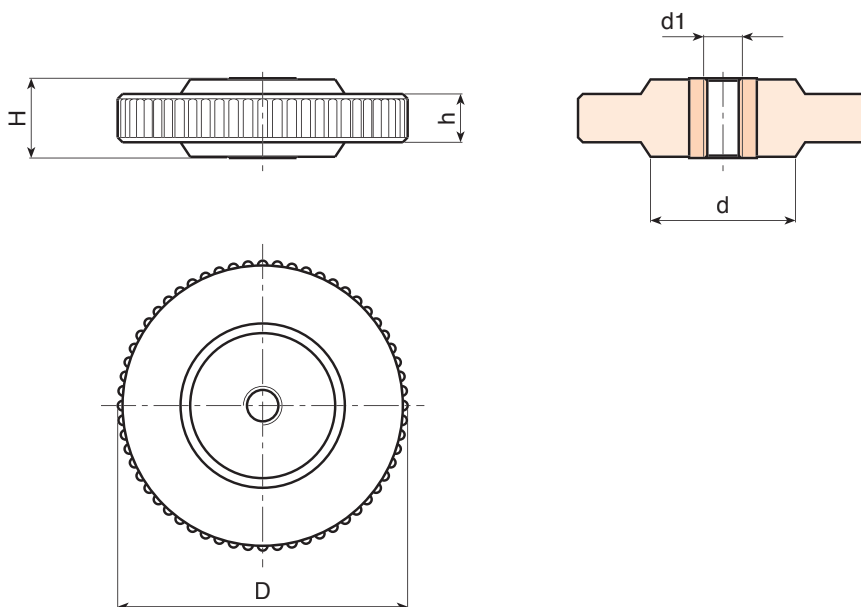
Black (RAL 9011).

### Inserts:

Galvanised steel insert with threaded through hole (thread tolerance 6H).

### Special Requests:

- Upon request and for special quantities inserts can be supplied in different materials.



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| Code        | art.           | D  | H  | d  | h  | d1 <sub>6H</sub> | g  |
|-------------|----------------|----|----|----|----|------------------|----|
| Q26045.0001 | Q26045.BM0601P | 47 | 10 | -  | -  | M6               | 31 |
| Q26045.0003 | Q26045.BM0801P | 47 | 10 | -  | -  | M8               | 32 |
| Q26045.0005 | Q26045.BM1001P | 47 | 10 | -  | -  | M10              | 34 |
| Q26045.0006 | Q26045.BM1201P | 47 | 10 | -  | -  | M12              | 35 |
| Q26045.0007 | Q26045.BM1401P | 47 | 10 | -  | -  | M14              | 38 |
| Q26045.0008 | Q26045.BM1601P | 47 | 10 | -  | -  | M16              | 42 |
| Q26060.0001 | Q26060.BM0801P | 60 | 16 | 30 | 11 | M8               | 62 |
| Q26060.0002 | Q26060.BM1001P | 60 | 16 | 30 | 11 | M10              | 65 |
| Q26060.0003 | Q26060.BM1201P | 60 | 16 | 30 | 11 | M12              | 68 |
| Q26060.0005 | Q26060.BM1401P | 60 | 16 | 30 | 11 | M14              | 70 |
| Q26060.0006 | Q26060.BM1601P | 60 | 16 | 30 | 11 | M16              | 73 |

# Q261

## LOBED WASHER

+135°  
-30°

PA6  
+G.F.

UL94  
HB

RoHS  
COMPLIANT

**Materials:**  
Reinforced polyamide.  
Resistant to oils and greases.

**Surface:**  
Satin.

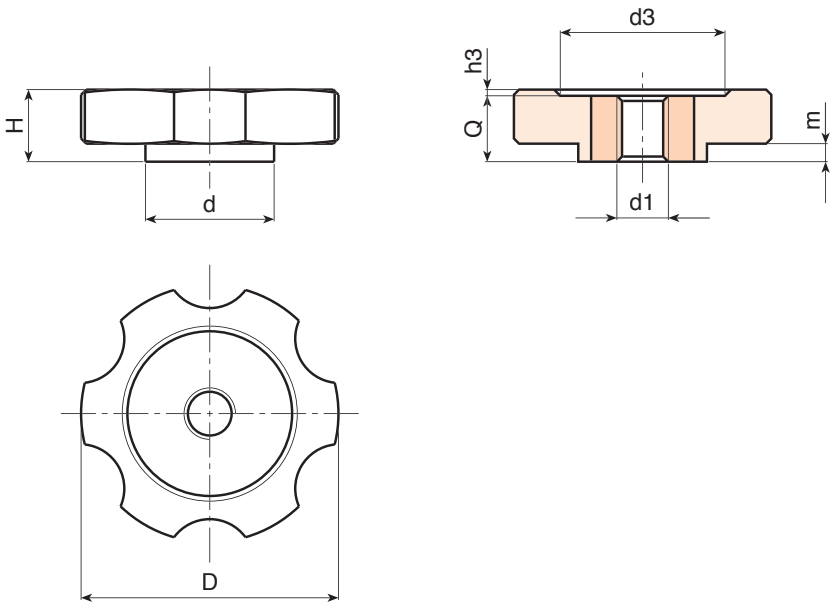
**Colour:**  
Black (RAL 9011).

**Inserts:**  
Galvanised steel insert with threaded through hole (thread tolerance 6H).

- Special Requests:**
- Upon request and for special quantities inserts can be supplied in different materials.
  - Upon request and for special quantities available in the colours indicated in the chart [page ].



17



| Code        | art.           | D    | H  | d  | m   | h3  | d3 | d1 <sub>6H</sub> | Q    |  |
|-------------|----------------|------|----|----|-----|-----|----|------------------|------|---------------------------------------------------------------------------------------|
| Q26140.0003 | Q26140.TM0801P | 40,5 | 12 | 25 | 1,5 | 1,5 | 22 | M8               | 10,5 | 21                                                                                    |
| Q26140.0005 | Q26140.TM1001P | 40,5 | 12 | 25 | 1,5 | 1,5 | 22 | M10              | 10,5 | 22                                                                                    |
| Q26140.0007 | Q26140.TM1201P | 40,5 | 12 | 25 | 1,5 | 1,5 | 22 | M12              | 10,5 | 24                                                                                    |
| Q26150.0001 | Q26150.TM0801P | 50   | 14 | 25 | 3,5 | 1,5 | 32 | M8               | 13   | 31                                                                                    |
| Q26150.0002 | Q26150.TM1001P | 50   | 14 | 25 | 3,5 | 1,5 | 32 | M10              | 13   | 32                                                                                    |
| Q26150.0003 | Q26150.TM1201P | 50   | 14 | 25 | 3,5 | 1,5 | 32 | M12              | 13   | 35                                                                                    |

# Q262

## KNURLED WASHER



### Materials:

Reinforced polyamide.  
Resistant to oils and greases.

### Surface:

Satin.

### Colour:

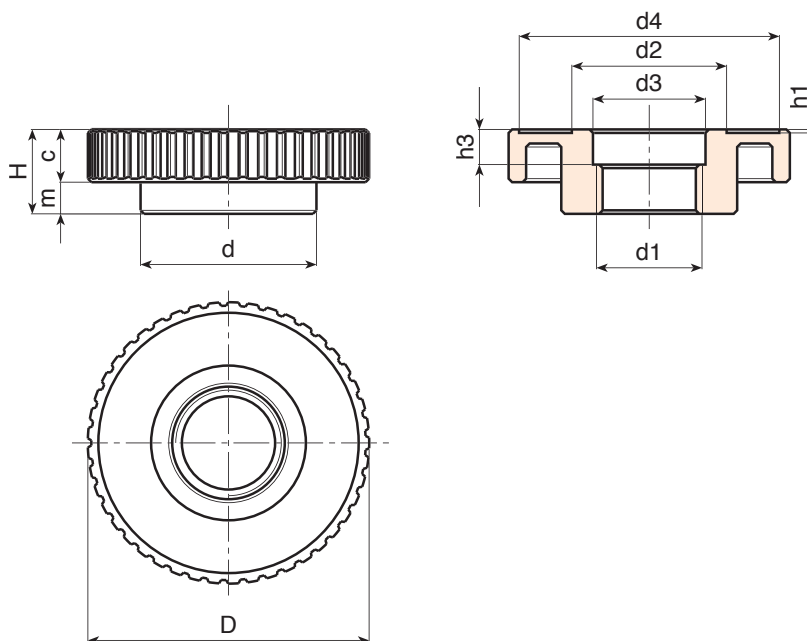
Black (RAL 9011).

### Hole:

Threaded through hole obtained by moulding the plastic  
(tolerance not applicable).

### Special Requests:

- Upon request and for special quantities hole d1 can be supplied to customer's drawing.



| Code        | art.           | D  | H  | d  | c    | m   | h1 | h3 | d2   | d3 | d4 | d1      |    |
|-------------|----------------|----|----|----|------|-----|----|----|------|----|----|---------|----|
| Q26280.0002 | Q26280.TB3001P | 81 | 24 | 50 | 14.5 | 9.5 | 1  | 10 | 43.5 | 32 | 74 | M30x1,5 | 65 |

# Q263

## KNURLED WASHER

+135°  
-30°

PA6  
+G.F.

UL94  
HB

RoHS  
COMPLIANT

**Materials:**  
Reinforced polyamide.  
Resistant to oils and greases.

**Surface:**  
Satin.

**Colour:**  
Black (RAL 9011).

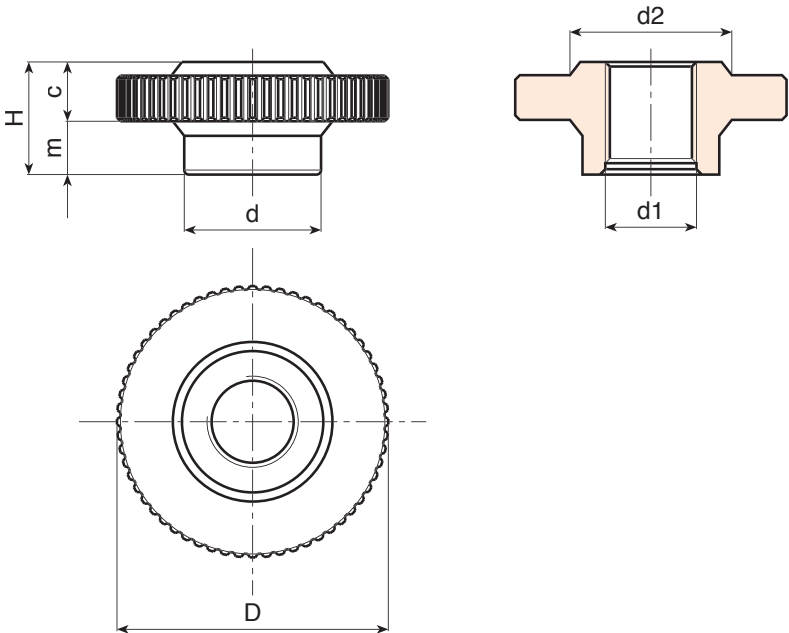
**Hole:**  
Threaded through hole obtained by moulding the plastic  
(tolerance not applicable).

**Special Requests:**

- Upon request and for special quantities hole d1 can be supplied to customer's drawing.



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| Code        | art.           | D  | H  | d  | c  | m  | d2 | d1  | g  |
|-------------|----------------|----|----|----|----|----|----|-----|----|
| Q26360.0002 | Q26360.TM2001P | 60 | 25 | 30 | 12 | 13 | 35 | M20 | 38 |
| Q26360.0003 | Q26360.TM2401P | 60 | 25 | 30 | 12 | 13 | 35 | M24 | 35 |

# Q264

## 6-LOBE WASHER

+135°  
-30°

PA6  
+G.F.

UL94  
HB

RoHS  
COMPLIANT

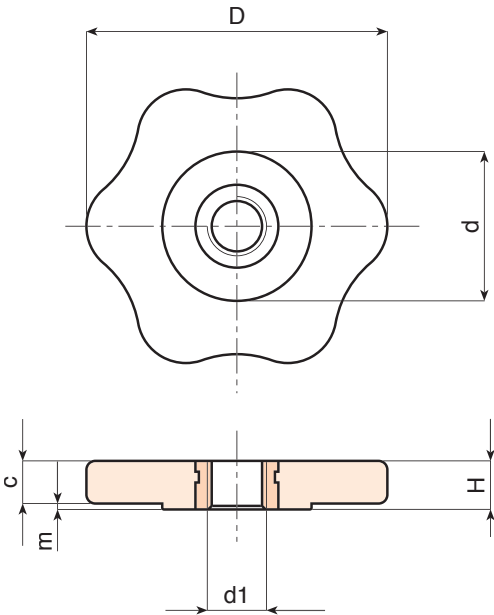
**Materials:**  
Reinforced polyamide.  
Resistant to oils and greases.

**Surface:**  
Satin.

**Colour:**  
Black (RAL 9011).

**Inserts:**  
Brass insert with threaded through hole (thread tolerance 6H).

- Special Requests:**
- Upon request and for special quantities inserts can be supplied in different materials.
  - Upon request and for special quantities available in the colours indicated in the chart [page 959].



| Code        | art.           | D  | H | d  | c | m | d1 <sub>6H</sub> |  |
|-------------|----------------|----|---|----|---|---|------------------|---------------------------------------------------------------------------------------|
| Q26450.0002 | Q26450.TM0601P | 50 | 8 | 25 | 7 | 1 | M6               | 18                                                                                    |
| Q26450.0003 | Q26450.TM0801P | 50 | 8 | 25 | 7 | 1 | M8               | 18                                                                                    |
| Q26450.0005 | Q26450.TM1001P | 50 | 8 | 25 | 7 | 1 | M10              | 20                                                                                    |



# Q283

## 4-LOBE WASHER WITH THREADED THROUGH-HOLE INSERT



PA6  
+G.F.

UL94  
HB



### Materials:

Reinforced polyamide. Resistant to oils and greases.

### Surface finish:

Satin.

### Colour:

Black (RAL 9011).

### Inserts:

#### Version Q283 TM:

Brass insert with threaded through hole (thread tolerance 6H).

#### Version Q283 TQ:

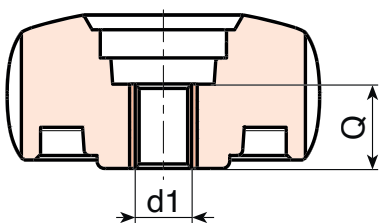
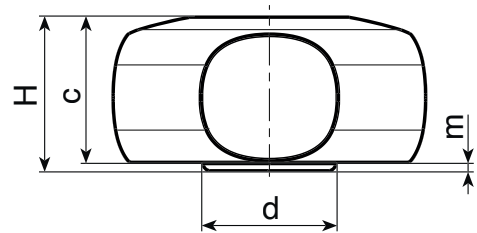
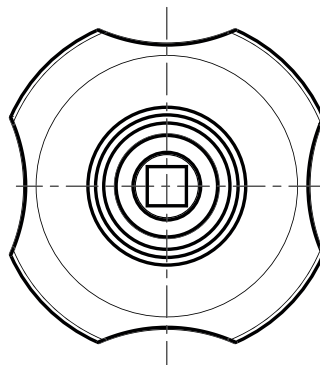
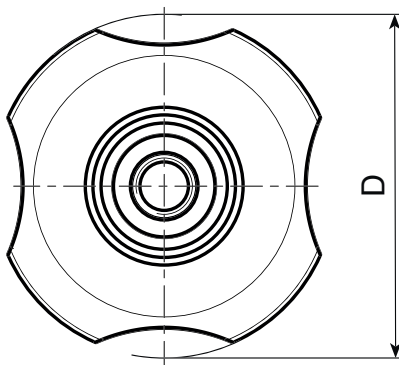
Brass insert with square through bore (bore tolerance H7).

#### Version Q283 TQ-PP:

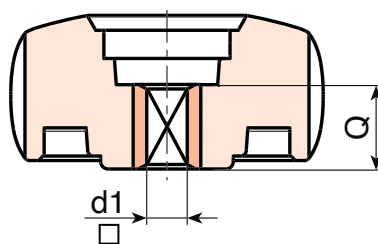
Without insert, with smooth through square hole obtained by moulding the plastic.

### Special requests:

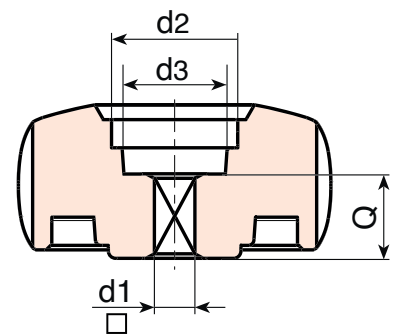
- Upon request and for special quantities inserts can be supplied in different materials.
- Upon request and for special quantities available in the colours indicated in the chart [page 959].



TM



TQ



TQ-PP



## 4-LOBE WASHER WITH THREADED THROUGH-HOLE INSERT



Version Q283 TM: With brass insert and threaded through hole

| Code        | art.           | D    | H  | d    | d2 | d3   | c    | m   | d1 <sub>6H</sub> | Q  | g |
|-------------|----------------|------|----|------|----|------|------|-----|------------------|----|---|
| Q28340.0002 | Q28340.TM0801P | 40.5 | 20 | 17   | 18 | 13   | 19   | 1   | M8               | 15 | - |
| Q28340.0004 | Q28340.TM1001P | 40.5 | 20 | 17   | 18 | 13   | 19   | 1   | M10              | 15 | - |
| Q28350.0001 | Q28350.TM0801P | 49   | 23 | 20   | 20 | 15   | 22   | 1   | M8               | 15 | - |
| Q28360.0001 | Q28360.TM1001P | 59   | 27 | 23   | 22 | 18   | 22,5 | 1,5 | M10              | 15 | - |
| Q28360.0002 | Q28360.TM1201P | 59   | 27 | 23   | 22 | 18   | 22,5 | 1,5 | M12              | 15 | - |
| Q28380.0001 | Q28380.TM1001P | 79   | 26 | 30,5 | 22 | 19,5 | 24   | 2   | M10              | 15 | - |
| Q28380.0002 | Q28380.TM1201P | 79   | 26 | 30,5 | 22 | 19,5 | 24   | 2   | M12              | 15 | - |

Version Q283 TQ: With brass insert and SQUARE hole

| Code        | art.           | D    | H  | d    | d2 | d3 | c    | m   | d1 <sub>H7</sub> | Q  | g |
|-------------|----------------|------|----|------|----|----|------|-----|------------------|----|---|
| Q28340.0005 | Q28340.TQ0601P | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | 6                | 15 | - |
| Q28350.0002 | Q28350.TQ0601P | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 6                | 15 | - |
| Q28350.0004 | Q28350.TQ0701P | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 7                | 15 | - |
| Q28360.0003 | Q28360.TQ0601P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 6                | 15 | - |
| Q28360.0005 | Q28360.TQ0701P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 7                | 15 | - |
| Q28360.0007 | Q28360.TQ0801P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 8                | 15 | - |
| Q28380.0003 | Q28380.TQ0701P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 7                | 15 | - |
| Q28380.0005 | Q28380.TQ0801P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 8                | 15 | - |
| Q28380.0007 | Q28380.TQ0901P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 9                | 15 | - |
| Q28380.0009 | Q28380.TQ1001P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 10               | 15 | - |

Version Q283 TQ-PP: With SQUARE hole in the plastic

| Code        | art.            | D    | H  | d    | d2 | d3 | c    | m   | d1 <sub>±0,1</sub> | Q  | g |
|-------------|-----------------|------|----|------|----|----|------|-----|--------------------|----|---|
| Q28340.0006 | Q28340.TQ0601PP | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | 6                  | 15 | - |
| Q28350.0003 | Q28350.TQ0601PP | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 6                  | 15 | - |
| Q28350.0005 | Q28350.TQ0701PP | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 7                  | 15 | - |
| Q28360.0004 | Q28360.TQ0601PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 6                  | 15 | - |
| Q28360.0006 | Q28360.TQ0701PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 7                  | 15 | - |
| Q28360.0008 | Q28360.TQ0801PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 8                  | 15 | - |
| Q28380.0004 | Q28380.TQ0701PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 7                  | 15 | - |
| Q28380.0006 | Q28380.TQ0801PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 8                  | 15 | - |
| Q28380.0008 | Q28380.TQ0901PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 9                  | 15 | - |
| Q28380.0010 | Q28380.TQ1001PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 10                 | 15 | - |

# Q284

## 4-LOBE WASHER WITH THROUGH-HOLE INSERT AND CENTRAL CAP



PA6  
+G.F.

UL94  
HB

RoHS  
COMPLIANT

### Materials:

Reinforced polyamide. Resistant to oils and greases.

### Surface finish:

Satin.

### Colour:

Black (RAL 9011).

### Central cap:

Grey polyamide (RAL 7035). 13).

### Alternative cap colours:

|        |                     |
|--------|---------------------|
| Orange | (RAL 2004 code 02). |
| Blue   | (RAL 5015 code 07). |
| Yellow | (RAL 1021 code 10). |
| Green  | (RAL 6024 code 17). |
| Red    | (RAL 3000 code 16). |
| Black  | (RAL 9011 code 01). |

### Inserts:

#### Version Q284 TM:

Brass insert with threaded through hole (thread tolerance 6H).

#### Version Q284 TQ:

Brass insert with square through bore (bore tolerance H7).

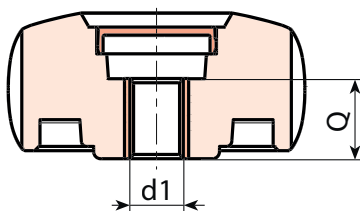
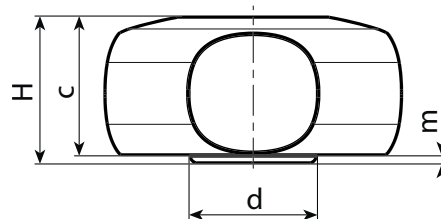
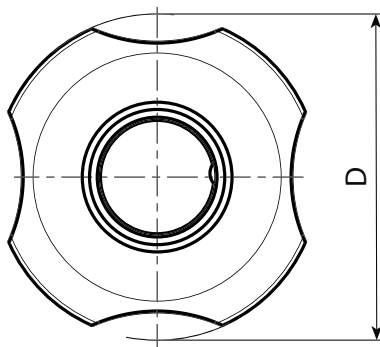
#### Version Q284 TQ-PP:

Without insert, with smooth through square hole obtained by moulding the plastic.

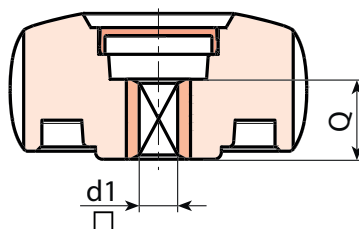


### Special requests:

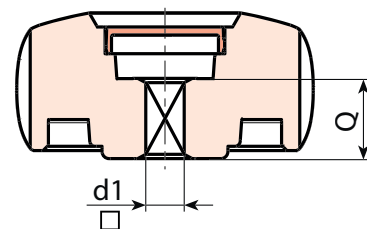
- Upon request and for special quantities inserts can be supplied in different materials.
- Upon request and for special quantities available in the colours indicated in the chart [page 959].



TM



TQ



TQ-PP

# Q284

## 4-LOBE WASHER WITH THROUGH-HOLE INSERT AND CENTRAL CAP



17

Version Q284 TM: With brass insert and threaded through hole

| Code        | art.           | D    | H  | d    | d2 | d3 | c    | m   | d1 <sub>6H</sub> | Q  | g |
|-------------|----------------|------|----|------|----|----|------|-----|------------------|----|---|
| Q28440.0003 | Q28440.TM0801P | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | M8               | 15 | - |
| Q28440.0004 | Q28440.TM1001P | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | M10              | 15 | - |
| Q28450.0001 | Q28450.TM0801P | 49   | 23 | 20   | 20 | 15 | 22   | 1   | M8               | 15 | - |
| Q28460.0001 | Q28460.TM1001P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | M10              | 15 | - |
| Q28460.0002 | Q28460.TM1201P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | M12              | 15 | - |
| Q28480.0001 | Q28480.TM1001P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | M10              | 15 | - |
| Q28480.0002 | Q28480.TM1201P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | M12              | 15 | - |

Version Q284 TQ: With brass insert and SQUARE hole

| Code        | art.           | D    | H  | d    | d2 | d3 | c    | m   | d1 <sub>H7</sub> | Q  | g |
|-------------|----------------|------|----|------|----|----|------|-----|------------------|----|---|
| Q28440.0005 | Q28440.TQ0601P | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | 6                | 15 | - |
| Q28450.0002 | Q28450.TQ0601P | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 6                | 15 | - |
| Q28450.0004 | Q28450.TQ0701P | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 7                | 15 | - |
| Q28460.0003 | Q28460.TQ0601P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 6                | 15 | - |
| Q28460.0005 | Q28460.TQ0701P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 7                | 15 | - |
| Q28460.0007 | Q28460.TQ0801P | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 8                | 15 | - |
| Q28480.0003 | Q28480.TQ0701P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 7                | 15 | - |
| Q28480.0005 | Q28480.TQ0801P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 8                | 15 | - |
| Q28480.0007 | Q28480.TQ0901P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 9                | 15 | - |
| Q28480.0009 | Q28480.TQ1001P | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 10               | 15 | - |

Version Q284 TQ-PP: With SQUARE hole in the plastic

| Code        | art.            | D    | H  | d    | d2 | d3 | c    | m   | d1 <sub>±0,1</sub> | Q  | g |
|-------------|-----------------|------|----|------|----|----|------|-----|--------------------|----|---|
| Q28440.0006 | Q28440.TQ0601PP | 40.5 | 20 | 17   | 18 | 13 | 19   | 1   | 6                  | 15 | - |
| Q28450.0003 | Q28450.TQ0601PP | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 6                  | 15 | - |
| Q28450.0005 | Q28450.TQ0701PP | 49   | 23 | 20   | 20 | 15 | 22   | 1   | 7                  | 15 | - |
| Q28460.0004 | Q28460.TQ0601PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 6                  | 15 | - |
| Q28460.0006 | Q28460.TQ0701PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 7                  | 15 | - |
| Q28460.0008 | Q28460.TQ0801PP | 59   | 27 | 23   | 22 | 18 | 22,5 | 1,5 | 8                  | 15 | - |
| Q28480.0004 | Q28480.TQ0701PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 7                  | 15 | - |
| Q28480.0006 | Q28480.TQ0801PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 8                  | 15 | - |
| Q28480.0008 | Q28480.TQ0901PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 9                  | 15 | - |
| Q28480.0010 | Q28480.TQ1001PP | 79   | 26 | 30,5 | 22 | 20 | 24   | 2   | 10                 | 15 | - |

# W184

## STEEL WASHER WITH SMOOTH BORE

**AVP****Aisi  
303****Materials:****W184:**

Steel with strength class 3.8.

**W184PIN:**

Stainless steel (Aisi 303).

**Surface finish:**

Turned with low roughness.

**Colour:****W184:**

Standard blue zinc plating (galvanic treatment).

**W184 PIN:**

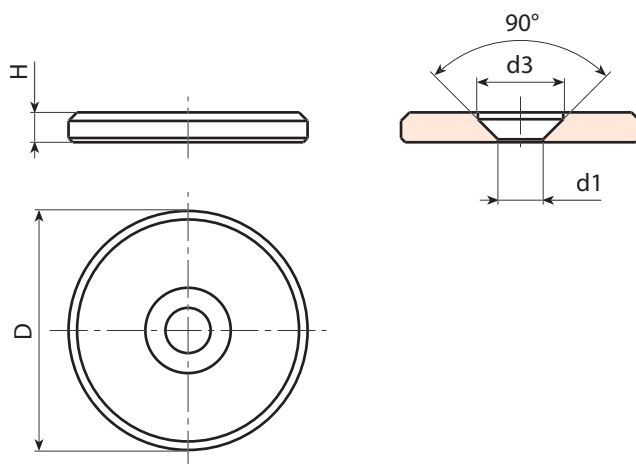
Natural.

**Hole:**

Smooth through bore machined from solid metal (hole tolerance H10).

**Special requests:**

- None.

**Version W184 - nickel-plated steel**

| Code | Art.          | d  | D   | H  | d1 <sub>H10</sub> | g   |
|------|---------------|----|-----|----|-------------------|-----|
| -    | W18416.VP4,5Z | 16 | 3   | 8  | 4,5 x M4          | 4.5 |
| -    | W18420.VP4,5Z | 20 | 3   | 8  | 4,5 x M4          | 7   |
| -    | W18422.VP5,5Z | 22 | 3.5 | 10 | 5,5 x M5          | 10  |
| -    | W18425.VP5,5Z | 25 | 3.5 | 10 | 5,5 x M5          | 13  |
| -    | W18428.VP5,5Z | 28 | 3.5 | 10 | 5,5 x M5          | 16  |
| -    | W18432.VP6,5Z | 32 | 4   | 12 | 6,5 x M6          | 24  |
| -    | W18436.VP6,5Z | 36 | 4   | 12 | 6,5 x M6          | 31  |
| -    | W18440.VP6,5Z | 40 | 5   | 12 | 6,5 x M6          | 48  |

**Version W184 PIN - stainless steel (Aisi 303)****INOX**

| Code | Art.            | d  | D   | H  | d1 <sub>H10</sub> | g   |
|------|-----------------|----|-----|----|-------------------|-----|
| -    | W18416.IP4,5PIN | 16 | 3   | 8  | 4,5 x M4          | 4.5 |
| -    | W18420.IP4,5PIN | 20 | 3   | 8  | 4,5 x M4          | 7   |
| -    | W18422.IP5,5PIN | 22 | 3.5 | 10 | 5,5 x M5          | 10  |
| -    | W18425.IP5,5PIN | 25 | 3.5 | 10 | 5,5 x M5          | 13  |
| -    | W18428.IP5,5PIN | 28 | 3.5 | 10 | 5,5 x M5          | 16  |
| -    | W18432.IP6,5PIN | 32 | 4   | 12 | 6,5 x M6          | 24  |
| -    | W18436.IP6,5PIN | 36 | 4   | 12 | 6,5 x M6          | 31  |
| -    | W18440.IP6,5PIN | 40 | 5   | 12 | 6,5 x M6          | 48  |

# Y319

## DIN 6319 ed. 10/01 - STEEL CONVEX C DESIGN WASHER



### Materials:

**Y319:**  
Case-hardened steel.

**Y319PIN:**  
Stainless steel (Aisi 303).

### Surface finish:

**Y319:**  
Smooth, case-hardened.

**Y319PIN:**  
Natural, untreated.

### Colour:

**Y319:**  
Standard black-oxide treatment.

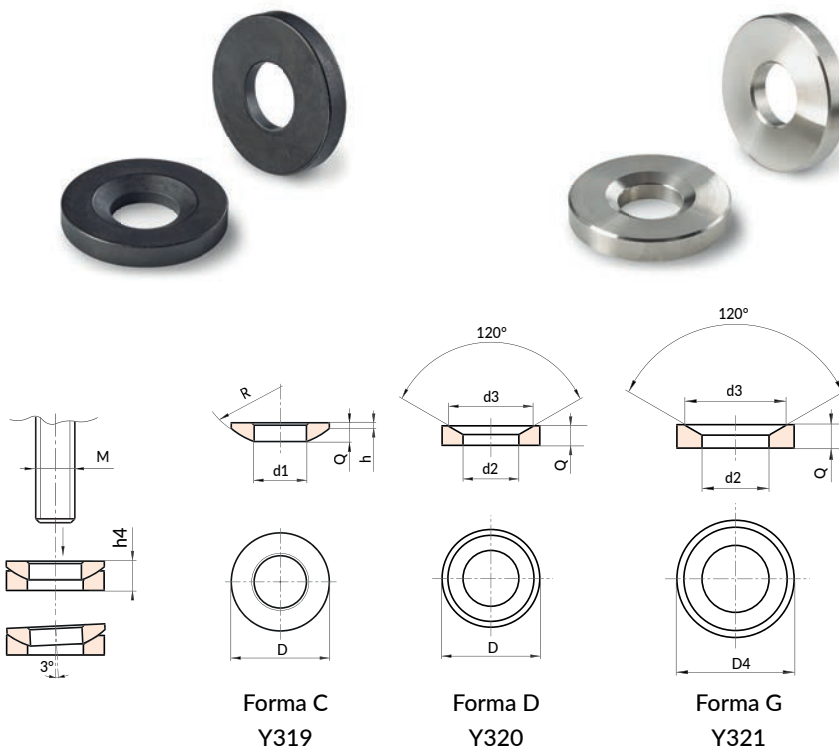
**Y319PIN:**  
Natural.

### Special requests:

- None.

### Notes:

Attention: convex washer Y319 must be used with concave washer Y320 or Y321 (to be ordered separately).



Forma C  
Y319

Forma D  
Y320

Forma G  
Y321

### Version DIN 6319 C Design - black-oxide treated steel convex washer

| Code         | Art.            | D    | R   | h   | d1 <sub>H13</sub> | M   | Q    | Max. permissible static load | kN   | g |
|--------------|-----------------|------|-----|-----|-------------------|-----|------|------------------------------|------|---|
| Y319010.0001 | Y319010.SD05.25 | 10.5 | 7.5 | 0.4 | 5.25              | M05 | 2    | -                            | 0.7  |   |
| Y319012.0002 | Y319012.SD06.4  | 12   | 9   | 0.7 | 6.4               | M06 | 2.3  | 9                            | 1    |   |
| Y319017.0002 | Y319017.SD08.4  | 17   | 12  | 0.6 | 8.4               | M08 | 3.2  | 17                           | 2.8  |   |
| Y319021.0002 | Y319021.SD10.5  | 21   | 15  | 0.8 | 10.5              | M10 | 4    | 26                           | 5    |   |
| Y319024.0002 | Y319024.SD13    | 24   | 17  | 1.1 | 13                | M12 | 4.6  | 38                           | 8    |   |
| Y319028.0001 | Y319028.SD15    | 28   | 22  | 1.2 | 15                | M14 | 5    | 53                           | 11   |   |
| Y319030.0002 | Y319030.SD17    | 30   | 22  | 1.3 | 17                | M16 | 5.3  | 73                           | 13   |   |
| Y319036.0002 | Y319036.SD21    | 36   | 27  | 2   | 21                | M20 | 6.3  | 117                          | 23   |   |
| Y319044.0002 | Y319044.SD25    | 44   | 32  | 2.4 | 25                | M24 | 8.2  | 168                          | 21   |   |
| Y319056.0002 | Y319056.SD31    | 56   | 41  | 3.6 | 31                | M30 | 11.2 | 269                          | 103  |   |
| Y319068.0002 | Y319068.SD37    | 68   | 50  | 4.6 | 37                | M36 | 14   | 394                          | 188  |   |
| Y319078.0002 | Y319078.SD43    | 78   | 58  | 6.5 | 43                | M42 | 17   | 542                          | 316  |   |
| Y319092.0002 | Y319092.SD50    | 92   | 67  | 8   | 50                | M48 | 21   | 714                          | 549  |   |
| Y319103.0001 | Y319103.SD58    | 103  | 79  | 9.5 | 58                | M56 | 23   | -                            | 748  |   |
| Y319120.0001 | Y319120.SD66    | 120  | 93  | 12  | 66                | M64 | 27   | -                            | 1239 |   |



### Version DIN 6319 C Design - stainless steel (Aisi 303) convex washer

| Code         | Art.              | D  | R  | h   | d1 <sub>H13</sub> | M   | Q    | Max. permissible static load | kN  | g |
|--------------|-------------------|----|----|-----|-------------------|-----|------|------------------------------|-----|---|
| Y319012.0001 | Y319012.ID06.4PIN | 12 | 9  | 0.7 | 6.4               | M06 | 2.3  | 6                            | 1   |   |
| Y319017.0001 | Y319017.ID08.4PIN | 17 | 12 | 0.6 | 8.4               | M08 | 3.2  | 12                           | 2.8 |   |
| Y319021.0001 | Y319021.ID10.5PIN | 21 | 15 | 0.8 | 10.5              | M10 | 4    | 16                           | 5   |   |
| Y319024.0001 | Y319024.ID13PIN   | 24 | 17 | 1.1 | 13                | M12 | 4.6  | 24                           | 7   |   |
| Y319030.0001 | Y319030.ID17PIN   | 30 | 22 | 1.3 | 17                | M16 | 5.3  | 45                           | 13  |   |
| Y319036.0001 | Y319036.ID21PIN   | 36 | 27 | 2   | 21                | M20 | 6.3  | 71                           | 24  |   |
| Y319044.0001 | Y319044.ID25PIN   | 44 | 32 | 2.4 | 25                | M24 | 8.2  | 105                          | 44  |   |
| Y319056.0001 | Y319056.ID31PIN   | 56 | 41 | 3.6 | 31                | M30 | 11.2 | 191                          | 106 |   |
| Y319068.0001 | Y319068.ID37PIN   | 68 | 50 | 4.6 | 37                | M36 | 14   | -                            | 194 |   |
| Y319078.0001 | Y319078.ID43PIN   | 78 | 58 | 6.5 | 43                | M42 | 17   | -                            | 311 |   |
| Y319092.0001 | Y319092.ID50PIN   | 92 | 67 | 8   | 50                | M48 | 21   | -                            | 550 |   |

# Y320

## DIN 6319 ed. 10/01 - CONCAVE D DESIGN WASHER



### Materials:

#### Y320:

Case-hardened steel.

#### Y320PIN:

Stainless steel (Aisi 303).

### Surface finish:

#### Y320:

Smooth, case-hardened.

#### Y320PIN:

Natural, untreated.

### Colour:

#### Y320:

Standard black-oxide treatment.

#### Y320PIN:

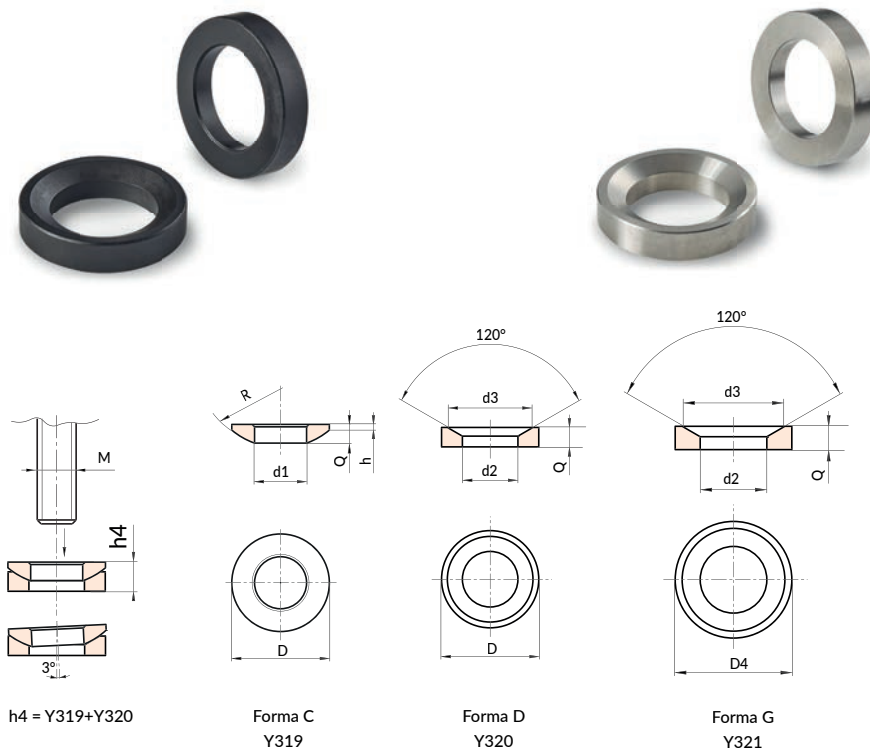
Natural.

### Special requests:

- None.

### Notes:

Attention: concave washer Y320 must be used with convex washer Y319 (to be ordered separately).



### Version DIN 6319 D Design - black-oxide treated steel concave washer

| Code         | Art.           | D    | d3   | h4<br>(Y319+Y320) | d2H13 | M   | Q   | Max.<br>permissible<br>static load<br>kN | g    |
|--------------|----------------|------|------|-------------------|-------|-----|-----|------------------------------------------|------|
| Y320010.0001 | Y320010.SD06   | 10.5 | 9.25 | 3.1               | 6     | M05 | 2.1 | -                                        | 0.8  |
| Y320012.0002 | Y320012.SD07.1 | 12   | 11   | 4                 | 7.1   | M06 | 2.8 | 9                                        | 1.4  |
| Y320017.0002 | Y320017.SD09.6 | 17   | 14.5 | 5.6               | 9.6   | M08 | 3.5 | 17                                       | 3.6  |
| Y320021.0002 | Y320021.SD12   | 21   | 18.5 | 6.3               | 12    | M10 | 4.2 | 26                                       | 6.5  |
| Y320024.0002 | Y320024.SD14.2 | 24   | 20   | 8                 | 14.2  | M12 | 5   | 38                                       | 10   |
| Y320028.0001 | Y320028.SD16.5 | 28   | 24.8 | 8.2               | 16.5  | M14 | 5.6 | 53                                       | 15   |
| Y320030.0002 | Y320030.SD19   | 30   | 26   | 9.3               | 19    | M16 | 6.2 | 73                                       | 18   |
| Y320036.0002 | Y320036.SD23.2 | 36   | 31   | 11.6              | 23.2  | M20 | 7.5 | 117                                      | 30   |
| Y320044.0002 | Y320044.SD28   | 44   | 37   | 15                | 28    | M24 | 9.5 | 168                                      | 61   |
| Y320056.0002 | Y320056.SD35   | 56   | 49   | 18.9              | 35    | M30 | 12  | 269                                      | 124  |
| Y320068.0002 | Y320068.SD42   | 68   | 60   | 23.3              | 42    | M36 | 15  | 394                                      | 232  |
| Y320078.0002 | Y320078.SD49   | 78   | 70   | 28.3              | 49    | M42 | 18  | 542                                      | 360  |
| Y320092.0002 | Y320092.SD56   | 92   | 82   | 35.2              | 56    | M48 | 22  | 714                                      | 633  |
| Y320103.0001 | Y320103.SD65   | 103  | 92   | 39.7              | 65    | M56 | 25  | -                                        | 873  |
| Y320120.0001 | Y320120.SD75   | 120  | 110  | 46.5              | 75    | M64 | 30  | -                                        | 1422 |

### Version DIN 6319 D Design - stainless steel (Aisi 303) concave washer



| Code         | Art.              | D  | d3   | h4<br>(Y319+Y320) | d2H13 | M   | Q   | Max.<br>permissible<br>static load<br>kN | g   |
|--------------|-------------------|----|------|-------------------|-------|-----|-----|------------------------------------------|-----|
| -            | Y320012.SD07.1PIN | 12 | 11   | 4                 | 7.1   | M06 | 2.8 | 6                                        | 1.4 |
| Y320017.0001 | Y320017.ID09.6PIN | 17 | 14.5 | 5.6               | 9.6   | M08 | 3.5 | 12                                       | 3.6 |
| Y320021.0001 | Y320021.ID12PIN   | 21 | 18.5 | 6.3               | 12    | M10 | 4.2 | 16                                       | 6.5 |
| Y320024.0001 | Y320024.ID14.2PIN | 24 | 20   | 8                 | 14.2  | M12 | 5   | 24                                       | 10  |
| Y320030.0001 | Y320030.ID19PIN   | 30 | 26   | 9.3               | 19    | M16 | 6.2 | 45                                       | 18  |
| Y320036.0001 | Y320036.ID23.2PIN | 36 | 31   | 11.6              | 23.2  | M20 | 7.5 | 71                                       | 30  |
| Y320044.0001 | Y320044.ID28PIN   | 44 | 37   | 15                | 28    | M24 | 9.5 | 105                                      | 61  |
| Y320056.0001 | Y320056.ID35PIN   | 56 | 49   | 18.9              | 35    | M30 | 12  | 191                                      | 124 |
| Y320068.0001 | Y320068.ID42PIN   | 68 | 60   | 23.3              | 42    | M36 | 15  | -                                        | 232 |
| Y320078.0001 | Y320078.ID49PIN   | 78 | 70   | 28.3              | 49    | M42 | 18  | -                                        | 360 |
| Y320092.0001 | Y320092.ID56PIN   | 92 | 82   | 35.2              | 56    | M48 | 22  | -                                        | 633 |



### Materials:

#### Y321:

Quenched and tempered steel.

#### Y321PIN:

Stainless steel (Aisi 303).

### Surface finish:

#### Y321:

Heat treated HV 390± 40.

#### Y321PIN:

Natural, untreated.

### Colour:

#### Y321:

Standard black-oxide treatment.

#### Y321PIN:

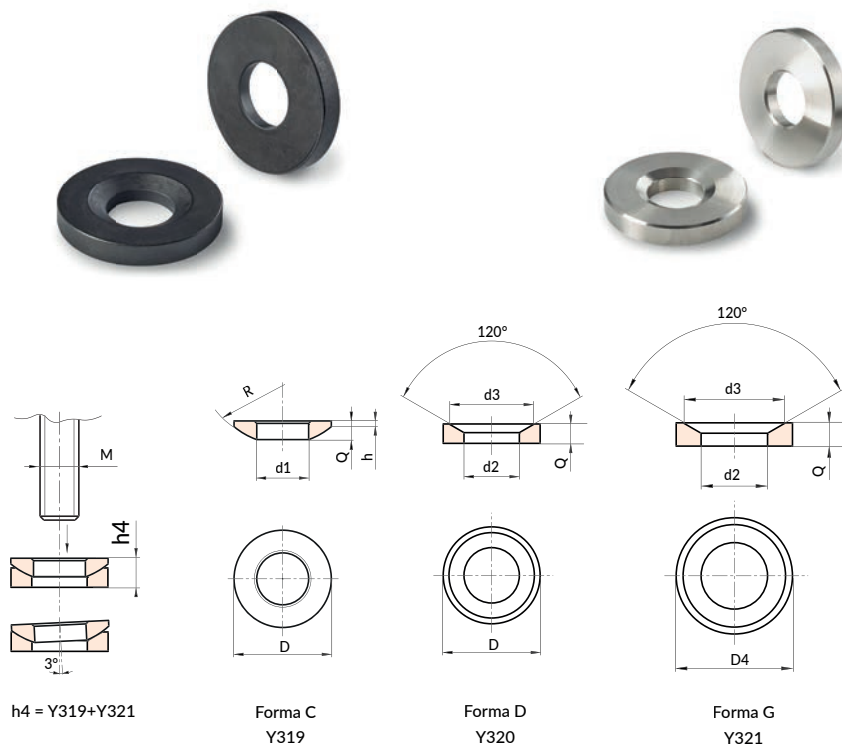
Natural.

### Special requests:

- None.

### Notes:

Attention: concave washer Y321 must be used with convex washer Y319 (to be ordered separately).



h4 = Y319+Y321

Forma C  
Y319

Forma D  
Y320

Forma G  
Y321

### Version DIN 6319 G Design - black-oxide treated steel concave washer

| Code         | Art.           | D  | d3   | h4<br>(Y319+Y321) | d2H13 | M   | Q   | Max.<br>permissible<br>static load<br>kN | g   |
|--------------|----------------|----|------|-------------------|-------|-----|-----|------------------------------------------|-----|
| Y321015.0001 | Y321015.SD06   | 15 | 9.25 | 3.5               | 6     | M05 | 2.5 | -                                        | 3.6 |
| Y321017.0002 | Y321017.SD07.1 | 17 | 11   | 5.2               | 7.1   | M06 | 4   | 9                                        | 3.6 |
| Y321024.0002 | Y321024.SD09.6 | 24 | 14.5 | 6.8               | 9.6   | M08 | 5   | 17                                       | 10  |
| Y321030.0002 | Y321030.SD12   | 30 | 18.5 | 7.1               | 12    | M10 | 5   | 26                                       | 18  |
| Y321036.0002 | Y321036.SD14.2 | 36 | 20   | 9                 | 14.2  | M12 | 6   | 38                                       | 30  |
| Y321040.0001 | Y321040.SD16.5 | 40 | 24.8 | 8.6               | 16.5  | M14 | 6   | 53                                       | 38  |
| Y321044.0002 | Y321044.SD19   | 44 | 26   | 10.1              | 19    | M16 | 7   | 73                                       | 61  |
| Y321050.0002 | Y321050.SD23.2 | 50 | 31   | 12                | 23.2  | M20 | 8   | 117                                      | 124 |
| Y321060.0002 | Y321060.SD28   | 60 | 37   | 15.5              | 28    | M24 | 10  | 168                                      | 232 |
| Y321068.0002 | Y321068.SD35   | 68 | 49   | 18.7              | 35    | M30 | 12  | 269                                      | 360 |
| Y321080.0001 | Y321080.SD42   | 80 | 60   | 20.3              | 42    | M36 | 12  | 394                                      | 633 |

### Version DIN 6319 G Design - stainless steel (Aisi 303) concave washer

INOX

| Code         | Art.              | D  | d3   | h4<br>(Y319+Y321) | d2H13 | M   | Q  | Max.<br>permissible<br>static load<br>kN | g   |
|--------------|-------------------|----|------|-------------------|-------|-----|----|------------------------------------------|-----|
| -            | Y321017.SD07.1PIN | 17 | 11   | 5.2               | 7.1   | M06 | 4  | 6                                        | 3.6 |
| Y321024.0001 | Y321024.ID09.6PIN | 24 | 14.5 | 6.8               | 9.6   | M08 | 5  | 12                                       | 10  |
| Y321030.0001 | Y321030.ID12PIN   | 30 | 18.5 | 7.1               | 12    | M10 | 5  | 16                                       | 18  |
| Y321036.0001 | Y321036.ID14.2PIN | 36 | 20   | 9                 | 14.2  | M12 | 6  | 24                                       | 30  |
| Y321044.0001 | Y321044.ID19PIN   | 44 | 26   | 10.1              | 19    | M16 | 7  | 45                                       | 61  |
| Y321050.0001 | Y321050.ID23.2PIN | 50 | 31   | 12                | 23.2  | M20 | 8  | 71                                       | 124 |
| Y321060.0001 | Y321060.ID28PIN   | 60 | 37   | 15.5              | 28    | M24 | 10 | 105                                      | 232 |
| Y321068.0001 | Y321068.ID35PIN   | 68 | 49   | 18.7              | 35    | M30 | 12 | 191                                      | 360 |



# Y637

## DIN 6372 - C-WASHER



### Materials:

Quenched and tempered steel.

### Surface finish:

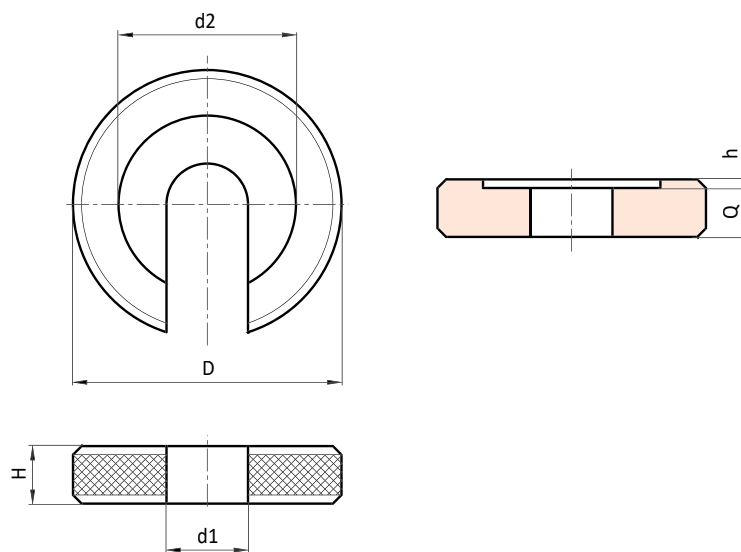
Heat-treated.

### Colour:

Black-oxide treatment.

### Special requests:

- None.



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| Code         | Art.            | D   | H  | h    | d2 | d1   | Q    | g   |
|--------------|-----------------|-----|----|------|----|------|------|-----|
| Y637017.0001 | Y637017.SD05.25 | 17  | 5  | 0.75 | 12 | 5.25 | 4.25 | 6   |
| Y637022.0001 | Y637022.SD06.4  | 22  | 6  | 0.8  | 16 | 6.4  | 5.2  | 12  |
| Y637028.0001 | Y637028.SD08.4  | 28  | 7  | 1    | 21 | 8.4  | 6    | 23  |
| Y637034.0001 | Y637034.SD10.5  | 34  | 8  | 1.2  | 25 | 10.5 | 6.8  | 38  |
| Y637040.0001 | Y637040.SD13    | 40  | 9  | 1.8  | 30 | 13   | 7.2  | 57  |
| Y637048.0001 | Y637048.SD14.5  | 48  | 12 | 1.8  | 33 | 14.5 | 10.2 | 117 |
| Y637056.0001 | Y637056.SD17    | 56  | 12 | 1.8  | 37 | 17   | 10.2 | 146 |
| Y637064.0001 | Y637064.SD21    | 64  | 14 | 2    | 45 | 21   | 12   | 234 |
| Y637075.0001 | Y637075.SD25    | 75  | 16 | 2    | 52 | 25   | 14   | 374 |
| Y637090.0001 | Y637090.SD31    | 90  | 18 | 2    | 65 | 31   | 16   | 720 |
| Y637100.0001 | Y637100.SD37    | 100 | 20 | 2.5  | 75 | 37   | 17.5 | 791 |