

# 04

**tornillería**

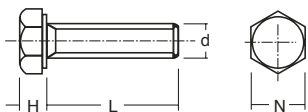


# 04 Tornillería

## Tornillos cabeza hexagonal

04001

TORNILLOS CABEZA HEXAGONAL



DIN 933

ROSCA METRICA  
NORMAL

| L   | d    | 4   | 5   | 6  | 7  | 8    | 10  | 12   | 14 | 16 | 18  | 20  | 22  | 24 | 27 | 30  | 33  | 36 |
|-----|------|-----|-----|----|----|------|-----|------|----|----|-----|-----|-----|----|----|-----|-----|----|
|     | Paso | 0,7 | 0,8 | 1  | 1  | 1,25 | 1,5 | 1,75 | 2  | 2  | 2,5 | 2,5 | 2,5 | 3  | 3  | 3,5 | 3,5 | 4  |
|     | N    | 7   | 8   | 10 | 11 | 13   | 17  | 19   | 22 | 24 | 27  | 30  | 32  | 36 | 41 | 46  | 50  | 55 |
|     | H    | 2,8 | 3,5 | 4  | 5  | 5,5  | 7   | 8    | 9  | 10 | 12  | 13  | 14  | 15 | 17 | 19  | 21  | 23 |
| 10  | ●    | ●   | ●   | ●  | ●  |      |     |      |    |    |     |     |     |    |    |     |     |    |
| 15  | ●    | ●   | ●   | ●  | ●  | ●    |     |      |    |    |     |     |     |    |    |     |     |    |
| 20  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    |    |    |     |     |     |    |    |     |     |    |
| 25  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  |    |     |     |     |    |    |     |     |    |
| 30  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   |     |     |    |    |     |     |    |
| 35  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   |     |    |    |     |     |    |
| 40  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   |    |    |     |     |    |
| 45  | ●    | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  |    |     |     |    |
| 50  |      | ●   | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  |    |     |     |    |
| 55  |      |     | ●   | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  |    |     |     |    |
| 60  |      |     |     | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 65  |      |     |     | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 70  |      |     |     | ●  | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 75  |      |     |     |    | ●  | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 80  |      |     |     |    |    | ●    | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 90  |      |     |     |    |    |      | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |
| 100 |      |     |     |    |    |      | ●   | ●    | ●  | ●  | ●   | ●   | ●   | ●  | ●  | ●   | ●   | ●  |

### Materiales

- 01 Acero 6.8
- 02 Acero 8.8
- 03 Acero 12.9
- 06 A/incox A2
- 07 A/incox A4

| L  | d    | 3   | 4   | 5   | 6   | 8    | 10  | 12   | 16 |
|----|------|-----|-----|-----|-----|------|-----|------|----|
|    | Paso | 0,5 | 0,7 | 0,8 | 1   | 1,25 | 1,5 | 1,75 | 2  |
|    | N    | 5,5 | 7   | 8   | 10  | 13   | 17  | 19   | 24 |
|    | H    | 2   | 2,5 | 3,5 | 4,5 | 6,5  | 7   | 8    | 10 |
| 10 | ●    | ●   |     |     |     |      |     |      |    |
| 15 | ●    | ●   | ●   |     |     |      |     |      | ●  |
| 20 | ●    | ●   | ●   | ●   | ●   | ●    |     |      |    |
| 25 | ●    | ●   | ●   | ●   | ●   | ●    | ●   |      |    |
| 30 | ●    | ●   | ●   | ●   | ●   | ●    | ●   |      | ●  |
| 35 |      |     |     | ●   | ●   |      |     |      |    |
| 40 |      |     | ●   | ●   | ●   | ●    |     |      |    |
| 45 |      |     |     | ●   | ●   |      | ●   |      |    |
| 50 |      |     |     | ●   | ●   | ●    |     |      | ●  |
| 55 |      |     |     |     |     |      |     |      | ●  |
| 60 |      |     |     |     | ●   | ●    |     |      | ●  |

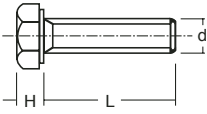
| L  | d    | 4   | 5   | 6   | 8    | 10  | 12   | 16 |
|----|------|-----|-----|-----|------|-----|------|----|
|    | Paso | 0,7 | 0,8 | 1   | 1,25 | 1,5 | 1,75 | 2  |
|    | N    | 7   | 8   | 10  | 13   | 17  | 19   | 24 |
|    | H    | 2,5 | 3,5 | 4,5 | 6,5  | 7   | 8    | 10 |
| 10 | ●    |     |     |     |      |     |      |    |
| 15 | ●    |     |     |     |      |     |      |    |
| 20 | ●    | ●   | ●   | ●   | ●    |     |      |    |
| 25 | ●    | ●   | ●   | ●   | ●    | ●   |      |    |
| 30 | ●    | ●   | ●   | ●   | ●    | ●   | ●    | ●  |
| 35 | ●    | ●   | ●   | ●   | ●    | ●   | ●    | ●  |
| 40 | ●    | ●   | ●   | ●   | ●    | ●   | ●    | ●  |
| 45 |      | ●   | ●   | ●   | ●    | ●   | ●    | ●  |
| 50 |      |     | ●   | ●   | ●    | ●   | ●    | ●  |
| 55 |      |     |     |     | ●    | ●   | ●    | ●  |
| 60 |      |     |     |     | ●    | ●   | ●    | ●  |

### Material

08 Nylon

### Material

05 Latón



**DIN 933**

**ROSCA METRICA  
FINA**

| L   | d    | 8   | 9    | 9    | 10  | 10  | 11  | 11  | 12  | 12  | 12  | 14  | 16  | 18   | 20   | 22  | 24  |     |
|-----|------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|
|     | Paso | 100 | 100  | 125  | 100 | 125 | 100 | 125 | 100 | 125 | 150 | 150 | 150 | 150  | 150  | 150 | 150 | 150 |
|     | N    | 13  | 15   | 15   | 17  | 17  | 18  | 18  | 19  | 19  | 19  | 22  | 24  | 27   | 30   | 32  | 36  | 36  |
|     | H    | 5,3 | 6,25 | 6,25 | 6,4 | 6,4 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 8,8 | 10  | 11,5 | 12,5 | 14  | 15  | 15  |
| 10  | ●    |     | ●    | ●    | ●   |     |     |     |     |     |     |     |     |      |      |     |     |     |
| 15  | ●    |     | ●    | ●    | ●   |     |     |     |     |     |     |     |     |      |      |     |     |     |
| 20  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |      |      |     |     |     |
| 25  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |      |      |     |     |     |
| 30  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |     |
| 35  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |     |
| 40  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 45  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 50  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 55  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 60  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 65  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 70  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 75  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 80  | ●    | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 90  |      |     |      | ●    | ●   |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |
| 100 |      |     |      | ●    | ●   |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●   |

**Material**

02 Acero 8.8

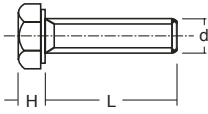
| L   | d    | 10  | 10  | 12  | 12  | 14  | 16  | 18   | 18   | 20   | 20   | 22  | 24  | 27  | 30   |
|-----|------|-----|-----|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|------|
|     | Paso | 100 | 125 | 125 | 150 | 150 | 150 | 150  | 200  | 150  | 200  | 200 | 200 | 200 | 200  |
|     | N    | 17  | 17  | 19  | 19  | 22  | 24  | 27   | 17   | 30   | 30   | 32  | 36  | 41  | 46   |
|     | H    | 6,4 | 6,4 | 7,5 | 7,5 | 8,8 | 10  | 11,5 | 11,5 | 12,5 | 12,5 | 11  | 15  | 17  | 18,7 |
| 20  | ●    | ●   |     |     |     |     |     |      |      |      |      |     |     |     |      |
| 25  | ●    | ●   | ●   | ●   |     |     |     |      |      |      |      |     |     |     |      |
| 30  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 35  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 40  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 45  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 50  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 55  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 60  | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 65  |      |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 70  |      |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 75  |      |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 80  |      |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●    |
| 90  |      |     |     |     |     |     |     |      |      |      |      |     | ●   | ●   | ●    |
| 100 |      |     |     |     |     |     |     |      |      |      |      |     | ●   | ●   | ●    |

**Material**

03 Acero 12.9

### 04001

### TORNILLOS CABEZA HEXAGONAL



**DIN 933**

| L   | d<br>N° hilos<br>N<br>H | 3/16 | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 3/4 | 7/8 | 1" |
|-----|-------------------------|------|-----|------|-----|------|-----|------|-----|-----|-----|----|
|     |                         | 24   | 20  | 18   | 16  | 14   | 12  | 12   | 11  | 10  | 9   | 8  |
| 10  |                         | ●    | ●   | ●    |     |      |     |      |     |     |     |    |
| 15  |                         | ●    | ●   | ●    | ●   |      |     |      |     |     |     |    |
| 20  |                         | ●    | ●   | ●    | ●   |      |     |      |     |     |     |    |
| 25  |                         | ●    | ●   | ●    | ●   | ●    | ●   |      |     |     |     |    |
| 30  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    |     |     |     |    |
| 35  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   |     |     |    |
| 40  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   |     | ●  |
| 45  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 50  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 55  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 60  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 65  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 70  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 75  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 80  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 90  |                         |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 100 |                         |      |     |      | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |

**ROSCA  
WHITWORTH**

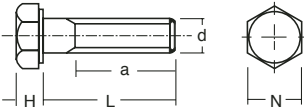
**Materiales**  
02 Acero 8.8  
06 A/inox A2

| L   | d<br>N° hilos<br>N<br>H | 3/16 | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 3/4 | 7/8 | 1" |
|-----|-------------------------|------|-----|------|-----|------|-----|------|-----|-----|-----|----|
|     |                         | 32   | 28  | 24   | 24  | 20   | 20  | 18   | 18  | 16  | 14  | 14 |
| 10  |                         | ●    | ●   | ●    |     |      |     |      |     |     |     |    |
| 15  |                         | ●    | ●   | ●    | ●   |      |     |      |     |     |     |    |
| 20  |                         | ●    | ●   | ●    | ●   |      |     |      |     |     |     |    |
| 25  |                         | ●    | ●   | ●    | ●   | ●    | ●   |      |     |     |     |    |
| 30  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    |     |     |     |    |
| 35  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   |     |     |    |
| 40  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   |     | ●  |
| 45  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 50  |                         | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 55  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 60  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 65  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 70  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 75  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 80  |                         |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 90  |                         |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 100 |                         |      |     |      | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |

**ROSCA SAE**

**Materiales**  
02 Acero 8.8

CONSULTEN OTRAS ROSCAS:  
UNF - UNC - BSF



**DIN 931**

**ROSCA METRICA  
NORMAL**

| d       | 4   | 5   | 6  | 7  | 8    | 10  | 12   | 14 | 16 | 18  | 20  | 22  | 24 | 27 | 30  | 33  | 36 | 39 | 42  | 45  | 48  | 52  |
|---------|-----|-----|----|----|------|-----|------|----|----|-----|-----|-----|----|----|-----|-----|----|----|-----|-----|-----|-----|
| L Paso  | 0,7 | 0,8 | 1  | 1  | 1,25 | 1,5 | 1,75 | 2  | 2  | 2,5 | 2,5 | 2,5 | 3  | 3  | 3,5 | 3,5 | 4  | 4  | 4,5 | 4,5 | 5   | 5   |
| N H     | 7   | 8   | 10 | 11 | 13   | 17  | 19   | 22 | 24 | 27  | 30  | 32  | 36 | 41 | 46  | 50  | 55 | 60 | 65  | 70  | 75  | 80  |
| * (1) H | 2,8 | 3,5 | 4  | 5  | 5,5  | 7   | 8    | 9  | 10 | 12  | 13  | 14  | 15 | 17 | 19  | 21  | 23 | 25 | 26  | 28  | 30  | 33  |
| a * (2) | 14  | 16  | 18 | 20 | 22   | 26  | 30   | 34 | 38 | 42  | 46  | 50  | 54 | 60 | 66  | 72  | 78 | 84 | 90  | 96  | 102 | -   |
| * (3)   |     | 22  | 24 | 26 | 28   | 32  | 36   | 40 | 44 | 48  | 52  | 56  | 60 | 66 | 72  | 78  | 84 | 90 | 96  | 102 | 108 | 116 |

|     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15  |   |   | ● |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20  |   | ● | ● |   | ● |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25  | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 30  | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 35  | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 40  | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |   |   |   |   |   |   |   |
| 45  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   | ● |   |   |   |   |   |   |   |   |   |
| 50  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |   |   |   |   |   |
| 55  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |   |   |   |   |
| 60  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |   |   |   |
| 65  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |
| 70  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |
| 75  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |
| 80  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |   |
| 85  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |   |
| 90  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |   |
| 95  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   | ● |   |   |
| 100 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |
| 105 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |
| 110 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |
| 120 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 130 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 140 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 150 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 160 |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 170 |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 180 |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 190 |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 200 |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 210 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 220 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 230 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 240 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 250 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 260 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 270 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 280 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 290 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 300 |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

- \* (1) Para longitud hasta 125 mm
- (2) Para longitud de 125-200 mm
- (3) Para longitud de más de 200 mm

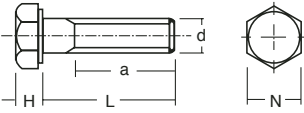
| Materiales |            |
|------------|------------|
| 01         | Acero 6.8  |
| 02         | Acero 8.8  |
| 03         | Acero 12.9 |
| 06         | A/inox A2  |
| 07         | A/inox A4  |

# 04 Tornillería

## Tornillos cabeza hexagonal

### 04001

#### TORNILLOS CABEZA HEXAGONAL



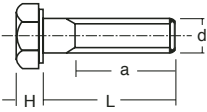
**DIN 931**

**ROSCA  
METRICA FINA**

| L   | d     | 8   | 9    | 9    | 10  | 10  | 11  | 11  | 12  | 12  | 12  | 14  | 16  | 18   | 20   | 22  | 24  |
|-----|-------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|
|     | Paso  | 100 | 100  | 125  | 100 | 125 | 100 | 125 | 100 | 125 | 150 | 150 | 150 | 150  | 150  | 150 | 150 |
|     | N     | 13  | 15   | 15   | 17  | 17  | 18  | 18  | 19  | 19  | 19  | 22  | 24  | 27   | 30   | 32  | 36  |
|     | H     | 5,3 | 6,25 | 6,25 | 6,4 | 6,4 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 8,8 | 10  | 10,5 | 12,5 | 14  | 15  |
|     | * (1) | 22  | 22   | 22   | 26  | 26  | 30  | 30  | 30  | 30  | 30  | 34  | 38  | 42   | 46   | 50  | 54  |
|     | a*(2) | 28  | 28   | 28   | 32  | 32  | 36  | 36  | 36  | 36  | 36  | 40  | 44  | 48   | 56   | 56  | 60  |
|     | * (3) |     |      |      | 45  | 45  | 49  | 49  | 49  | 49  | 49  | 53  | 57  | 61   | 65   | 69  | 73  |
| 25  |       | ●   | ●    | ●    | ●   | ●   |     |     |     |     |     |     |     |      |      |     |     |
| 30  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |     |      |      |     |     |
| 35  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |      |      |     |     |
| 40  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    |     |     |
| 45  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   |     |
| 50  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 55  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 60  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 65  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 70  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 75  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 80  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 85  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 90  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 95  |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 100 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 105 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 110 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 120 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 130 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 140 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 150 |       | ●   | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 160 |       |     |      |      |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 170 |       |     |      |      |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 180 |       |     |      |      |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 190 |       |     |      |      |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 200 |       |     |      |      |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●   | ●   |
| 210 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 220 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 230 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 240 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 250 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 260 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 270 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 280 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 290 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |
| 300 |       |     |      |      |     |     |     |     |     |     |     | ●   | ●   | ●    | ●    | ●   | ●   |

\* (1) Para longitud hasta 125 mm  
 (2) Para longitud de 125-200 mm  
 (3) Para longitud de más de 200 mm

**Material**  
 02 Acero 8.8



### DIN 931

**Material**  
03 Acero 12.9

**ROSCA**  
**METRICA FINA**

| L   | d     | 8   | 10  | 10  | 12  | 12  | 14  | 14  | 16   | 18   | 18   | 20   | 20  | 22  | 22  | 24  | 24  | 27   | 30  |
|-----|-------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-----|------|-----|
|     | Paso  | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150  | 200  | 200  | 150  | 200 | 150 | 200 | 150 | 200 | 200  | 200 |
|     | N     | 13  | 17  | 17  | 19  | 19  | 22  | 24  | 27   | 27   | 30   | 30   | 32  | 32  | 36  | 36  | 41  | 46   |     |
|     | H     | 5,3 | 6,4 | 6,4 | 7,5 | 7,5 | 8,8 | 10  | 11,5 | 11,5 | 12,5 | 12,5 | 14  | 14  | 15  | 15  | 17  | 18,7 |     |
|     | *(1)  | 22  | 26  | 26  | 30  | 30  | 34  | 38  | 42   | 42   | 46   | 46   | 50  | 50  | 54  | 54  | 60  | 66   |     |
|     | a*(2) | 28  | 32  | 32  | 36  | 36  | 40  | 44  | 48   | 48   | 52   | 52   | 56  | 56  | 60  | 60  | 66  | 72   |     |
| 30  |       | ●   | ●   | ●   |     |     |     |     |      |      |      |      |     |     |     |     |     |      |     |
| 35  |       | ●   | ●   | ●   | ●   | ●   |     |     |      |      |      |      |     |     |     |     |     |      |     |
| 40  |       | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   |     |     |     |     |      |     |
| 45  |       | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   |     |     |     |     |      |     |
| 50  |       | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   |      |     |
| 55  |       | ●   |     |     |     |     |     |     | ●    |      |      |      | ●   |     |     |     |     |      |     |
| 60  |       | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   |      |     |
| 70  |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   |      |     |
| 80  |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   |      |     |
| 90  |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 100 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 110 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 120 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 130 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 140 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 150 |       |     | ●   | ●   | ●   | ●   | ●   | ●   | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 160 |       |     |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 170 |       |     |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 180 |       |     |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 190 |       |     |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |
| 200 |       |     |     |     |     |     |     |     | ●    | ●    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●    | ●   |

| L   | d        | 3/16 | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 3/4 | 7/8 | 1" |
|-----|----------|------|-----|------|-----|------|-----|------|-----|-----|-----|----|
|     | Nº Hilos | 24   | 20  | 18   | 16  | 14   | 12  | 12   | 11  | 10  | 9   | 8  |
|     | N        | 8    | 11  | 14   | 17  | 19   | 22  | 22   | 27  | 32  | 36  | 41 |
|     | H        | 3,5  | 5   | 6    | 7   | 8    | 9   | 9    | 11  | 13  | 16  | 18 |
|     | *(1)     | 12   | 15  | 18   | 20  | 22   | 25  | 26   | 28  | 32  | 38  | 40 |
|     | a*(2)    | 15   | 18  | 22   | 25  | 28   | 30  | 32   | 35  | 40  | 50  | 55 |
| 25  |          | ●    | ●   | ●    |     |      |     |      |     |     |     |    |
| 30  |          | ●    | ●   | ●    | ●   | ●    |     |      |     |     |     |    |
| 35  |          | ●    | ●   | ●    | ●   | ●    | ●   |      |     |     |     |    |
| 40  |          | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   |     |     |    |
| 45  |          | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   |     |    |
| 50  |          | ●    | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   |    |
| 55  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 60  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 65  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 70  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 75  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 80  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 85  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 90  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 95  |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 100 |          |      | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 105 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 110 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 120 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 130 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 140 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |
| 150 |          |      |     | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●  |

**ROSCA**  
**WHITWORTH**

**Material**  
02 Acero 8.8

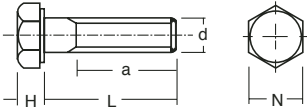
\*(1) Para longitud hasta 125 mm  
\*(2) Para longitud de 125-200 mm

**CONSULTEN OTRAS ROSCAS:**  
**UNF - UNC - BSF**

### 04001

### TORNILLOS CABEZA HEXAGONAL

#### TORNILLO ENTRECARRAS GRANDES PARA ESTRUCTURAS "HV"



**DIN 6914**

| L      | d    | 12  | 16  | 20  | 22  | 24  | 27  |
|--------|------|-----|-----|-----|-----|-----|-----|
|        | Paso | 175 | 200 | 250 | 250 | 300 | 300 |
| N      | 22   | 27  | 32  | 36  | 41  | 46  |     |
| H      | 8    | 10  | 13  | 14  | 15  | 17  |     |
| * (1)  | 21   | 26  | 31  | 32  | 34  | 37  |     |
| a *(2) | 23   | 28  | 33  | 34  | 37  | 39  |     |

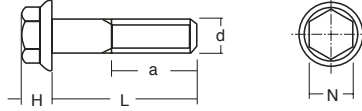
|     |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|
| 35  | ● |   |   |   |   |   |   |
| 40  | ● | ● |   |   |   |   |   |
| 45  | ● | ● | ● | ● |   |   |   |
| 50  | ● | ● | ● | ● |   |   |   |
| 55  | ● | ● | ● | ● |   |   |   |
| 60  | ● | ● | ● | ● | ● |   | ● |
| 65  | ● | ● | ● | ● | ● |   | ● |
| 70  | ● | ● | ● | ● | ● | ● | ● |
| 75  | ● | ● | ● | ● | ● | ● | ● |
| 80  | ● | ● | ● | ● | ● | ● | ● |
| 85  | ● | ● | ● | ● | ● | ● | ● |
| 90  | ● | ● | ● | ● | ● | ● | ● |
| 95  | ● | ● | ● | ● | ● | ● | ● |
| 100 |   | ● | ● | ● | ● | ● | ● |
| 105 |   | ● | ● | ● | ● | ● | ● |
| 110 |   | ● | ● | ● | ● | ● | ● |
| 120 |   | ● | ● | ● | ● | ● | ● |
| 130 |   | ● | ● | ● | ● | ● | ● |
| 140 |   |   | ● | ● | ● | ● | ● |
| 150 |   |   | ● | ● | ● | ● | ● |
| 160 |   |   |   |   | ● | ● | ● |
| 170 |   |   |   |   |   | ● | ● |
| 180 |   |   |   |   |   | ● | ● |
| 190 |   |   |   |   |   | ● | ● |
| 200 |   |   |   |   |   | ● | ● |

- (1) Sobre línea escalonada  
(2) Bajo línea escalonada

**Material**  
Acero 10.9

**LAS TUERCAS Y ARANDELAS PARA MONTAJE CON ESTOS TORNILLOS: VER DIN 6915 Y 6916**

#### TORNILLO CON ARANDELA DE ASIENTO DENTADO INCORPORADA



**DIN 6921**

| L      | d    | 5   | 6   | 8   | 10   | 12   | 14   | 16  |
|--------|------|-----|-----|-----|------|------|------|-----|
|        | Paso | 80  | 100 | 125 | 150  | 175  | 200  | 200 |
| N      | 8    | 10  | 13  | 15  | 16   | 18   | 21   |     |
| H      | 5,4  | 6,6 | 8,1 | 9,2 | 11,5 | 12,8 | 14,4 |     |
| * (1)  | 16   | 18  | 22  | 26  | 30   | 34   | 38   |     |
| a *(2) | 16   | 18  | 22  | 26  | 30   | 40   | 44   |     |

|     |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|
| 12  | ● | ● |   |   |   |   |   |   |
| 16  | ● | ● | ● |   |   |   |   |   |
| 20  | ● | ● |   |   |   |   |   |   |
| 25  | ● | ● | ● | ● |   |   |   |   |
| 30  | ● | ● | ● | ● | ● |   |   |   |
| 35  | ● | ● | ● | ● | ● | ● |   |   |
| 40  | ● | ● | ● | ● | ● | ● | ● |   |
| 45  | ● | ● | ● | ● | ● | ● | ● | ● |
| 50  | ● | ● | ● | ● | ● | ● | ● | ● |
| 55  | ● | ● | ● | ● | ● | ● | ● | ● |
| 60  |   | ● | ● | ● | ● | ● | ● | ● |
| 65  |   | ● | ● | ● | ● | ● | ● | ● |
| 70  |   |   | ● | ● | ● | ● | ● | ● |
| 80  |   |   | ● | ● | ● | ● | ● | ● |
| 90  |   |   |   | ● | ● | ● | ● | ● |
| 100 |   |   |   | ● | ● | ● | ● | ● |
| 110 |   |   |   |   | ● | ● | ● | ● |
| 120 |   |   |   |   | ● | ● | ● | ● |
| 130 |   |   |   |   |   | ● | ● | ● |
| 140 |   |   |   |   |   |   | ● | ● |
| 150 |   |   |   |   |   |   |   | ● |

- (1) Sobre línea escalonada  
(2) Bajo línea escalonada

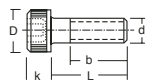
**Material**  
03 Acero 12.9





### 04002

### TORNILLOS CABEZA ALLEN



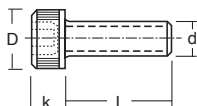
#### MICROTORNILLOS

#### DIN 912

| L  | d           | 1,6  | 2    | 2,5  |
|----|-------------|------|------|------|
|    | Paso        | 0,35 | 0,40 | 0,45 |
| D  | 3           | 3,8  | 4,50 |      |
| K  | 1,6         | 2    | 2,5  |      |
| S  | 1,50        | 1,50 | 2    |      |
| b  | ROSCA TOTAL |      |      |      |
| 4  | ●           | ●    |      |      |
| 5  |             | ●    | ●    |      |
| 6  | ●           | ●    | ●    |      |
| 8  |             | ●    | ●    |      |
| 10 |             | ●    | ●    |      |
| 12 |             | ●    | ●    |      |

#### Material

04 Acero 14.10 UNBRAKO

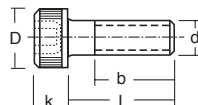


#### DIN 912 ROSCA TOTAL

| L  | d    | 5   | 6  | 8    | 10   | 12   |
|----|------|-----|----|------|------|------|
|    | Paso | 0,8 | 1  | 1,25 | 1,50 | 1,75 |
| D  | 8,5  | 10  | 13 | 16   | 18   |      |
| K  | 5    | 6   | 8  | 10   | 12   |      |
| S  | 4    | 5   | 6  | 8    | 10   |      |
| 30 | ●    |     |    |      |      |      |
| 35 |      | ●   |    |      |      |      |
| 40 | ●    | ●   | ●  |      |      |      |
| 45 | ●    | ●   | ●  | ●    |      |      |
| 50 | ●    | ●   | ●  | ●    |      |      |
| 55 | ●    |     | ●  | ●    |      | ●    |
| 60 |      | ●   | ●  | ●    | ●    | ●    |
| 70 |      | ●   | ●  | ●    | ●    | ●    |
| 80 |      | ●   | ●  | ●    | ●    | ●    |

#### Material

04 Acero 14.10 UNBRAKO



#### DIN 912

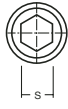
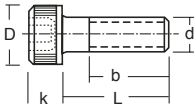
#### ROSCA METRICA FINA

| L   | d    | 8  | 10 | 10   | 12   | 12  | 14  | 16  | 18  | 20  | 22  | 24 |
|-----|------|----|----|------|------|-----|-----|-----|-----|-----|-----|----|
|     | Paso | 1  | 1  | 1,25 | 1,25 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 2  |
| D   | 13   | 16 | 16 | 18   | 18   | 21  | 24  | 27  | 30  | 30  | 30  | 36 |
| K   | 8    | 10 | 10 | 12   | 12   | 14  | 16  | 18  | 20  | 20  | 20  | 24 |
| S   | 6    | 8  | 8  | 10   | 10   | 12  | 14  | 14  | 17  | 17  | 17  | 19 |
| * b | 28   | 32 | 32 | 36   | 36   | 40  | 44  | 48  | 52  | 52  | 52  | 60 |
| 20  | ●    | ●  | ●  |      |      |     |     |     |     |     |     |    |
| 25  | ●    | ●  | ●  | ●    | ●    |     |     |     |     |     |     |    |
| 30  | ●    | ●  | ●  | ●    | ●    | ●   | ●   |     |     |     |     |    |
| 35  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   |     |     |     |    |
| 40  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   |     |     |     |    |
| 45  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   |     |     |     |    |
| 50  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 60  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 70  | ●    | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 80  |      | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 90  |      | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 100 |      | ●  | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 110 |      |    | ●  | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 120 |      |    |    | ●    | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 130 |      |    |    |      | ●    | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 140 |      |    |    |      |      | ●   | ●   | ●   | ●   | ●   | ●   | ●  |
| 150 |      |    |    |      |      |     | ●   | ●   | ●   | ●   | ●   | ●  |

\* Por encima de la línea escalonada, rosca total

#### Material

03 Acero 12.9



### DIN 912

### ROSCA WHITWORTH Y UNC

| L   | d        | 3/16 | 1/4   | 5/16 | 3/8   | 7/16  | 1/2   | 1/2   | 5/8    | 3/4     | 7/8    | 1"     | 1 1/4" |
|-----|----------|------|-------|------|-------|-------|-------|-------|--------|---------|--------|--------|--------|
|     | Nº Hilos | 4,76 | 6,35  | 7,94 | 9,52  | 11,11 | 12,70 | 12,70 | 15,88  | 19,05   | 22,23  | 25,40  |        |
| D   | 5/16     | 3/8  | 15/32 | 9/16 | 21/32 | 3/4   | 3/4   | 15/16 | 1" 1/8 | 1" 5/16 | 1" 1/2 | 1" 7/8 |        |
| K   | 3/16     | 1/4  | 5/16  | 3/8  | 7/16  | 1/2   | 1/2   | 5/8   | 3/4    | 7/8     | 1"     | 1" 1/4 |        |
| S   | 5/32     | 3/16 | 1/4   | 5/16 | 3/8   | 3/8   | 3/8   | 1/2   | 5/8    | 3/4     | 3/4    | 7/8    |        |
| * b | 22       | 25   | 28    | 32   | 35    | 38    | 38    | 45    | 50     | 57      | 63     | 80     |        |

|     |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10  | • | • |   |   |   |   |   |   |   |   |   |   |   |
| 16  | • | • | • |   |   |   |   |   |   |   |   |   |   |
| 20  | • | • | • | • | • | • | • |   |   |   |   |   |   |
| 25  | • | • | • | • | • | • | • | • |   |   |   |   |   |
| 30  | • | • | • | • | • | • | • | • | • |   |   |   |   |
| 35  | • | • | • | • | • | • | • | • | • | • |   |   |   |
| 40  | • | • | • | • | • | • | • | • | • | • | • |   |   |
| 45  | • | • | • | • | • | • | • | • | • | • | • | • |   |
| 50  | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 55  |   | • | • | • | • | • | • | • | • | • | • | • | • |
| 60  |   | • | • | • | • | • | • | • | • | • | • | • | • |
| 70  |   | • | • | • | • | • | • | • | • | • | • | • | • |
| 80  |   |   | • | • | • | • | • | • | • | • | • | • | • |
| 90  |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 100 |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 110 |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 120 |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 130 |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 140 |   |   |   | • | • | • | • | • | • | • | • | • | • |
| 150 |   |   |   | • | • | • | • | • | • | • | • | • | • |

\* Por encima de la línea escalonada, rosca total

### Materiales

- 03 Acero 12.9
- 04 Acero 14.10 UNBRAKO

| L   | d        | 1/4   | 5/16 | 3/8   | 7/16  | 1/2   | 5/8   |
|-----|----------|-------|------|-------|-------|-------|-------|
|     | Nº Hilos | 6,35  | 7,94 | 9,52  | 11,11 | 12,70 | 15,88 |
| D   | 3/8      | 15/32 | 8/16 | 21/32 | 3/4   | 15/16 |       |
| K   | 1/4      | 5/16  | 3/8  | 7/16  | 1/2   | 5/8   |       |
| S   | 3/16     | 1/4   | 5/16 | 3/8   | 3/8   | 1/2   |       |
| * b | 25       | 28    | 32   | 35    | 38    | 45    |       |

### ROSCA SAE

### Material

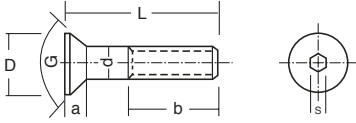
- 03 Acero 12.9

|    |   |   |   |   |   |   |   |
|----|---|---|---|---|---|---|---|
| 10 | • |   |   |   |   |   |   |
| 16 | • | • |   |   |   |   |   |
| 20 | • | • | • | • |   |   |   |
| 25 | • | • | • | • | • |   |   |
| 30 | • | • | • | • | • | • |   |
| 35 | • | • | • | • | • | • |   |
| 40 | • | • | • | • | • | • | • |
| 45 | • | • | • | • | • | • | • |
| 50 | • | • | • | • | • | • | • |
| 55 |   |   |   |   | • |   |   |
| 60 |   |   |   |   | • |   | • |
| 70 |   |   |   |   |   | • | • |
| 80 |   |   |   |   |   |   | • |

\* Por encima de la línea escalonada, rosca total

### 04002

### TORNILLOS CABEZA ALLEN



**DIN 7991**

**ROSCA METRICA NORMAL**

| L | d    | 4   | 5   | 6   | 7   | 8   | 10  | 12  | 14  | 16  | 18  | 20  | 22   | 24  |
|---|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
|   | Paso | 0,7 | 0,8 | 100 | 100 | 125 | 150 | 175 | 200 | 200 | 250 | 250 | 250  | 300 |
|   | D    | 8   | 10  | 12  | 14  | 16  | 20  | 24  | 27  | 30  | 33  | 36  | 36   | 39  |
|   | S    | 2,5 | 3   | 4   | 4   | 5   | 6   | 8   | 10  | 10  | 12  | 12  | 14   | 14  |
|   | a    | 2,3 | 2,8 | 3,3 | 4   | 4,4 | 5,5 | 6,5 | 7   | 7,5 | 8   | 8,5 | 13,1 | 14  |
|   | * b  | 14  | 16  | 18  | 20  | 22  | 26  | 30  | 34  | 38  | 42  | 46  | 50   | 54  |
|   | G    | 90° | 90° | 90° | 90° | 90° | 90° | 90° | 90° | 90° | 90° | 90° | 60°  | 60° |

|     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10  | ● | ● | ● |   | ● |   |   |   |   |   |   |   |   |   |
| 16  | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |
| 20  | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |
| 25  | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |
| 30  | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |
| 35  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |
| 40  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |
| 45  |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |
| 50  |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 55  |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 60  |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 65  |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 70  |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● | ● |
| 80  |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● | ● |
| 90  |   |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ● |
| 100 |   |   |   |   |   |   |   |   |   | ● | ● | ● | ● | ● |
| 120 |   |   |   |   |   |   |   |   |   |   | ● | ● | ● | ● |

\* Por encima de la línea escalonada, rosca total

#### Materiales

03 Acero 12.9      06 A/inox A2  
04 Acero 14.10 UNBRAKO      07 A/inox A4

| L | d        | 1/4  | 5/16 | 3/8   | 7/16  | 1/2  | 1/2  | 5/8    | 3/4   |
|---|----------|------|------|-------|-------|------|------|--------|-------|
|   | Nº Hilos | 20   | 18   | 16    | 14    | 12   | 13   | 11     | 10    |
|   | D        | 1/2  | 5/8  | 3/4   | 13/16 | 7/8  | 7/8  | 1-3/16 | 1-3/8 |
|   | S        | 5/32 | 3/16 | 7/32  | 1/4   | 5/16 | 5/16 | 3/8    | 1/2   |
|   | a        | 5/32 | 3/16 | 15/64 | 15/64 | 1/4  | 1/4  | 21/64  | 25/64 |
|   | * b      | 32   | 32   | 40    | 45    | 50   | 50   | 60     | 80    |

|    |   |   |   |   |   |   |   |   |   |
|----|---|---|---|---|---|---|---|---|---|
| 16 | ● | ● |   |   |   |   |   |   |   |
| 20 | ● | ● | ● |   |   |   |   |   |   |
| 25 | ● | ● | ● | ● | ● | ● | ● |   |   |
| 30 | ● | ● | ● | ● | ● | ● | ● | ● |   |
| 35 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 40 |   | ● | ● | ● | ● | ● | ● | ● | ● |
| 45 |   |   | ● | ● | ● | ● | ● | ● | ● |
| 50 |   |   |   | ● | ● | ● | ● | ● | ● |
| 60 |   |   |   |   | ● | ● | ● | ● | ● |
| 70 |   |   |   |   |   | ● | ● | ● | ● |
| 80 |   |   |   |   |   |   | ● | ● | ● |
| 90 |   |   |   |   |   |   |   | ● | ● |

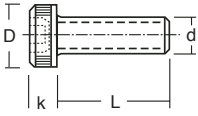
#### ROSCA

**WHITWORTH Y UNC**

#### Materiales

03 Acero 12.9  
04 Acero 14.10 UNBRAKO

\* Por encima de la línea escalonada, rosca total



### DIN 7984 CABEZA REBAJADA (UFK)

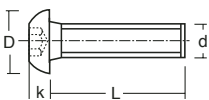
**ROSCA METRICA  
NORMAL**

| L   | d   | 5   | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 20  | 22  | 24  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     | Z   | 0,8 | 100 | 125 | 150 | 175 | 200 | 200 | 250 | 250 | 250 | 300 |
|     | D   | 8,5 | 10  | 13  | 16  | 18  | 21  | 24  | 27  | 30  | 33  | 36  |
|     | K   | 3,5 | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  |
|     | S   | 3   | 4   | 5   | 7   | 8   | 10  | 12  | 12  | 14  | 14  | 17  |
|     | * b | 16  | 18  | 22  | 26  | 30  | 34  | 38  | 42  | 46  | 50  | 54  |
| 10  |     | ●   | ●   |     |     |     |     |     |     |     |     |     |
| 16  |     | ●   | ●   | ●   | ●   |     |     |     |     |     |     |     |
| 20  |     | ●   | ●   | ●   | ●   | ●   |     |     |     |     |     |     |
| 25  |     | ●   | ●   | ●   | ●   | ●   |     |     |     |     |     |     |
| 30  |     | ●   | ●   | ●   | ●   | ●   |     | ●   |     |     |     |     |
| 35  |     |     | ●   | ●   | ●   | ●   |     | ●   |     |     |     |     |
| 40  |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |     |     |
| 45  |     |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |     |
| 50  |     |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
| 60  |     |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
| 70  |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
| 80  |     |     |     |     |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
| 90  |     |     |     |     |     |     |     | ●   | ●   | ●   | ●   | ●   |
| 100 |     |     |     |     |     |     |     |     | ●   | ●   | ●   | ●   |

\* Por encima de la línea escalonada, rosca total

#### Materiales

03 Acero 12.9      06 A/innox A2  
04 Acero 14.10 UNBRAKO



### ISO 7380 (ULS)

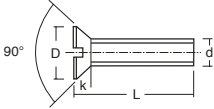
**ROSCA METRICA  
NORMAL**

#### Materiales

03 Acero 12.9  
04 Acero 14.10  
UNBRAKO  
06 A/innox A2

| L  | d | 3    | 4   | 5    | 6    | 8   | 10   | 12  | 16  |
|----|---|------|-----|------|------|-----|------|-----|-----|
|    | Z | 0,5  | 0,7 | 0,8  | 100  | 125 | 150  | 175 | 200 |
|    | D | 5,7  | 7,6 | 9,5  | 10,5 | 14  | 17,5 | 21  | 28  |
|    | K | 1,65 | 2,2 | 2,75 | 3,3  | 4,4 | 5,5  | 6,6 | 8,8 |
|    | S | 2    | 2,5 | 3    | 4    | 5   | 6    | 8   | 10  |
| 5  |   | ●    |     |      |      |     |      |     |     |
| 6  |   |      | ●   |      |      |     |      |     |     |
| 8  |   | ●    | ●   | ●    | ●    |     |      |     |     |
| 10 |   | ●    | ●   | ●    | ●    | ●   | ●    |     |     |
| 12 |   | ●    | ●   | ●    | ●    | ●   | ●    |     |     |
| 16 |   | ●    | ●   | ●    | ●    | ●   | ●    |     |     |
| 20 |   |      | ●   | ●    | ●    | ●   | ●    | ●   |     |
| 25 |   |      | ●   | ●    | ●    | ●   | ●    | ●   | ●   |
| 30 |   |      | ●   | ●    | ●    | ●   | ●    | ●   | ●   |
| 35 |   |      |     | ●    | ●    | ●   | ●    | ●   | ●   |
| 40 |   |      |     | ●    | ●    | ●   | ●    | ●   | ●   |
| 45 |   |      |     |      |      | ●   | ●    | ●   | ●   |
| 50 |   |      |     |      |      |     | ●    | ●   | ●   |
| 60 |   |      |     |      |      |     |      | ●   | ●   |

### 04003 TORNILLOS PARA METALES



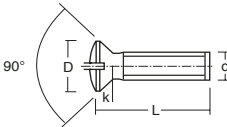
#### DIN 963

| d    | D    | K    | Longitudes |   |   |    |    |    |    |    |    |    |    |    |    |   |
|------|------|------|------------|---|---|----|----|----|----|----|----|----|----|----|----|---|
|      |      |      | 5          | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 | 60 |   |
| M2   | 3,8  | 1,2  | ●          | ● |   |    |    |    |    |    |    |    |    |    |    |   |
| M2,5 | 4,7  | 1,5  |            | ● | ● | ●  | ●  |    |    |    |    |    |    |    |    |   |
| M3   | 5,6  | 1,65 | ●          | ● | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| M4   | 7,5  | 2,2  |            |   | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M5   | 9,2  | 2,5  |            |   | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M6   | 11   | 3    |            |   |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M8   | 14,5 | 4    |            |   |   |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M10  | 18   | 5    |            |   |   |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

- 01 Acero 6.8 zincado
- 05 Latón
- 06 A/inox A2
- 07 A/inox A4

| d   | D    | K    | Longitudes |   |   |    |    |    |    |    |    |    |    |    |
|-----|------|------|------------|---|---|----|----|----|----|----|----|----|----|----|
|     |      |      | 5          | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 40 | 50 | 60 |
| M3  | 5,6  | 1,65 | ●          | ● | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| M4  | 7,5  | 2,2  |            | ● | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| M5  | 9,2  | 2,5  |            |   | ● | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |
| M6  | 11   | 3    | ●          |   |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |
| M8  | 14,5 | 4    |            |   |   |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |
| M10 | 18   | 5    |            |   |   |    |    | ●  | ●  | ●  | ●  | ●  | ●  |    |



#### DIN 964

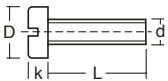
#### Material

- 08 Nylon

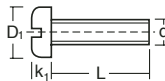
| d  | D    | K    | Longitudes |   |    |    |    |    |    |    |    |    |    |    |
|----|------|------|------------|---|----|----|----|----|----|----|----|----|----|----|
|    |      |      | 6          | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 | 60 |
| M3 | 5,6  | 1,65 | ●          | ● | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| M4 | 7,5  | 2,2  | ●          | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |
| M5 | 9,2  | 2,5  |            | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| M6 | 11   | 3    |            | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| M8 | 14,5 | 4    |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |

#### Materiales

- 06 A/inox A2
- 07 A/inox A4



#### DIN 84



#### DIN 85

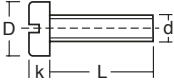
| d    | D   | K   | Longitudes     |                |   |   |   |    |    |    |    |    |    |    |    |    |
|------|-----|-----|----------------|----------------|---|---|---|----|----|----|----|----|----|----|----|----|
|      |     |     | D <sub>1</sub> | K <sub>1</sub> | 5 | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 |
| M2   | 3,8 | 1,3 |                |                | ● | ● | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| M2,5 | 4,5 | 1,6 |                |                |   | ● | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| M3   | 5,5 | 2   | 6              | 1,8            | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| M4   | 7   | 2,6 | 8              | 2,4            | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| M5   | 8,5 | 3,3 | 10             | 3              |   | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| M6   | 10  | 3,9 | 12             | 3,6            |   |   | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |

#### Materiales

- 01 Acero 6.8 zincado
- 06 A/inox A2
- 05 Latón
- 07 A/inox A4

CONSULTAR OTROS RECUBRIMIENTOS

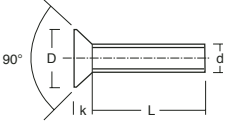




### DIN 84

| d  | D   | K   | Longitudes |   |   |    |    |    |    |    |    |    |    |   |
|----|-----|-----|------------|---|---|----|----|----|----|----|----|----|----|---|
|    |     |     | 5          | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 40 | 50 |   |
| M3 | 5,5 | 2   | ●          | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  |    |    |   |
| M4 | 7   | 2,6 |            | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |   |
| M5 | 8,5 | 3,3 |            |   |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| M6 | 10  | 3,9 | ●          |   |   | ●  |    |    | ●  | ●  | ●  | ●  | ●  | ● |
| M8 | 14  | 5   |            |   |   |    |    |    | ●  | ●  | ●  | ●  | ●  | ● |

**Material**  
08 Nylon

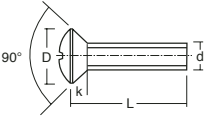


### DIN 965

| d    | D   | K    | Longitudes |   |    |    |    |    |    |    |    |    |    |   |
|------|-----|------|------------|---|----|----|----|----|----|----|----|----|----|---|
|      |     |      | 6          | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 |   |
| M2   | 3,8 | 1,2  | ●          | ● | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| M2,5 | 4,7 | 1,5  | ●          | ● | ●  | ●  | ●  |    |    |    |    |    |    |   |
| M3   | 5,6 | 1,65 | ●          | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |   |
| M4   | 7,5 | 2,2  | ●          | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| M5   | 9,2 | 2,5  |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M6   | 11  | 3    |            |   |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

01 Acero 6.8 zincado 07 A/inox A4  
06 A/inox A2

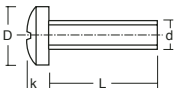


### DIN 966

| d    | D   | K    | Longitudes |   |    |    |    |    |    |    |    |    |    |   |
|------|-----|------|------------|---|----|----|----|----|----|----|----|----|----|---|
|      |     |      | 6          | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 |   |
| M2   | 3,8 | 1,2  | ●          | ● | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| M2,5 | 4,7 | 1,5  | ●          | ● | ●  | ●  | ●  |    |    |    |    |    |    |   |
| M3   | 5,6 | 1,65 | ●          | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |   |
| M4   | 7,5 | 2,2  | ●          | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| M5   | 9,2 | 2,5  |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M6   | 11  | 3    |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

01 Acero 6.8 zincado 07 A/inox A4  
06 A/inox A2



### DIN 7985

| d    | D   | K    | Longitudes |   |    |    |    |    |    |    |    |    |    |   |
|------|-----|------|------------|---|----|----|----|----|----|----|----|----|----|---|
|      |     |      | 6          | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 |   |
| M2   | 3,8 | 1,2  | ●          | ● | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| M2,5 | 4,7 | 1,5  | ●          | ● | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| M3   | 5,6 | 1,65 | ●          | ● | ●  | ●  | ●  | ●  | ●  |    |    |    |    |   |
| M4   | 7,5 | 2,2  | ●          | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| M5   | 9,2 | 2,5  |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| M6   | 11  | 3    |            |   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

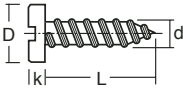
#### Materiales

06 A/inox A2 07 A/inox A4

CONSULTAR OTROS RECURBIMIENTOS

### 04004

### TORNILLOS PARA CHAPA

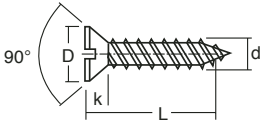


#### DIN 7971

| d   | D    | K    | n°<br>ISO | Longitudes |     |     |    |    |    |    |    |    |    |    |    |    |    |
|-----|------|------|-----------|------------|-----|-----|----|----|----|----|----|----|----|----|----|----|----|
|     |      |      |           | 5          | 6,5 | 9,5 | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 60 | 70 |
| 2,2 | 4,2  | 1,35 | 2         | ●          | ●   | ●   |    |    |    |    |    |    |    |    |    |    |    |
| 2,9 | 5,6  | 1,75 | 4         | ●          | ●   | ●   | ●  | ●  | ●  | ●  |    |    |    |    |    |    |    |
| 3,3 | 6,2  | 2    | 5         |            | ●   | ●   | ●  | ●  | ●  | ●  |    |    |    |    |    |    |    |
| 3,5 | 6,9  | 2,1  | 6         |            | ●   | ●   | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |
| 3,9 | 7,5  | 2,25 | 7         |            |     | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |
| 4,2 | 8,2  | 2,45 | 8         |            |     | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |
| 4,8 | 9,5  | 2,8  | 10        |            |     | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |
| 5,5 | 10,8 | 3,2  | 12        |            |     |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |
| 6,3 | 12,5 | 3,6  | 14        |            |     |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |

#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2

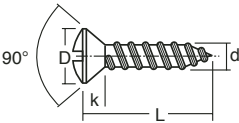


#### DIN 7972

| d   | D    | K   | n°<br>ISO | Longitudes |    |    |    |    |    |    |    |    |    |    |    |   |
|-----|------|-----|-----------|------------|----|----|----|----|----|----|----|----|----|----|----|---|
|     |      |     |           | 9,5        | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 60 | 70 |   |
| 2,2 | 4,3  | 1,3 | 2         | ●          |    |    |    |    |    |    |    |    |    |    |    |   |
| 2,9 | 5,5  | 1,7 | 4         | ●          | ●  | ●  | ●  |    |    |    |    |    |    |    |    |   |
| 3,3 | 6,1  | 1,9 | 5         | ●          | ●  | ●  | ●  |    | ●  |    |    |    |    |    |    |   |
| 3,5 | 6,8  | 2,1 | 6         | ●          | ●  | ●  | ●  |    | ●  | ●  |    |    |    |    |    |   |
| 3,9 | 7,5  | 2,3 | 7         | ●          | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |    |   |
| 4,2 | 8,1  | 2,5 | 8         | ●          | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |   |
| 4,8 | 9,5  | 3   | 10        |            | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| 5,5 | 10,8 | 3,4 | 12        |            |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2



#### DIN 7973

| d   | D    | K   | n°<br>ISO | Longitudes |    |    |    |    |    |    |    |    |    |   |
|-----|------|-----|-----------|------------|----|----|----|----|----|----|----|----|----|---|
|     |      |     |           | 9,5        | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 |   |
| 2,2 | 4,3  | 1,3 | 2         | ●          |    |    |    |    |    |    |    |    |    |   |
| 2,9 | 5,5  | 1,7 | 4         | ●          | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| 3,3 | 6,1  | 1,9 | 5         | ●          | ●  | ●  | ●  | ●  | ●  |    |    |    |    |   |
| 3,5 | 6,8  | 2,1 | 6         |            | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |
| 3,9 | 7,5  | 2,3 | 7         |            | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |
| 4,2 | 8,1  | 2,5 | 8         |            | ●  |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| 4,8 | 9,5  | 3   | 10        |            |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| 5,5 | 10,8 | 3,4 | 12        |            |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

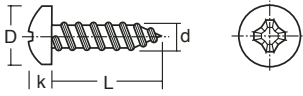
#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2

CONSULTAR OTROS RECUBRIMIENTOS







### DIN 7981

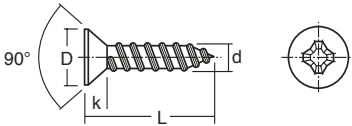
| d   | D    | K   | n° ISO | Longitudes |     |    |    |    |    |    |    |    |    |    |    |   |
|-----|------|-----|--------|------------|-----|----|----|----|----|----|----|----|----|----|----|---|
|     |      |     |        | 6,5        | 9,5 | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 60 |   |
| 2,2 | 4,3  | 1,3 | 2      | ●          | ●   | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| 2,9 | 5,5  | 1,7 | 4      | ●          | ●   | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |   |
| 3,3 | 6,1  | 1,7 | 5      |            |     |    |    |    |    |    | ●  | ●  |    |    |    |   |
| 3,5 | 6,8  | 2,1 | 6      |            | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |
| 3,9 | 7,5  | 2,3 | 7      |            | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |   |
| 4,2 | 8,1  | 2,5 | 8      |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |
| 4,8 | 9,5  | 3   | 10     |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| 5,5 | 10,8 | 3,4 | 12     |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| 6,3 | 12,4 | 3,8 | 14     |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

01 Acero zincado

07 A/inox A4

06 A/inox A2



### DIN 7982

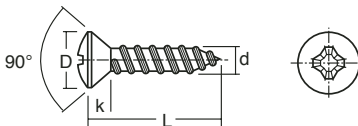
| d   | D    | K   | n° ISO | Longitudes |     |    |    |    |    |    |    |    |    |    |    |   |
|-----|------|-----|--------|------------|-----|----|----|----|----|----|----|----|----|----|----|---|
|     |      |     |        | 6,5        | 9,5 | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 60 |   |
| 2,2 | 4,3  | 1,3 | 2      | ●          | ●   | ●  |    |    |    |    |    |    |    |    |    |   |
| 2,9 | 5,5  | 1,7 | 4      | ●          | ●   | ●  | ●  | ●  |    |    |    |    |    |    |    |   |
| 3,3 | 6,1  | 1,7 | 5      |            |     |    | ●  |    |    |    |    |    |    |    |    |   |
| 3,5 | 6,8  | 2,1 | 6      |            | ●   | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |
| 3,9 | 7,5  | 2,3 | 7      |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |
| 4,2 | 8,1  | 2,5 | 8      |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| 4,8 | 9,5  | 3   | 10     |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| 5,5 | 10,8 | 3,4 | 12     |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● |

#### Materiales

01 Acero zincado

07 A/inox A4

06 A/inox A2



### DIN 7983

| d   | D    | K   | n° ISO | Longitudes |     |    |    |    |    |    |    |    |    |    |   |   |
|-----|------|-----|--------|------------|-----|----|----|----|----|----|----|----|----|----|---|---|
|     |      |     |        | 6,5        | 9,5 | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 |   |   |
| 2,2 | 4,3  | 1,3 | 2      | ●          | ●   |    |    |    |    |    |    |    |    |    |   |   |
| 2,9 | 5,5  | 1,7 | 4      | ●          | ●   | ●  | ●  | ●  |    | ●  |    |    |    |    |   |   |
| 3,3 | 6,1  | 1,7 | 5      |            | ●   | ●  | ●  | ●  |    |    |    |    |    |    |   |   |
| 3,5 | 6,8  | 2,1 | 6      |            |     | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |   |
| 3,9 | 7,5  | 2,3 | 7      |            |     | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |   |   |
| 4,2 | 8,1  | 2,5 | 8      |            |     | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |   |   |
| 4,8 | 9,5  | 3   | 10     |            |     |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● | ● |
| 5,5 | 10,8 | 3,4 | 12     |            |     |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ● | ● |
| 6,3 | 12,4 | 3,8 | 14     |            |     |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ● | ● |

#### Materiales

01 Acero zincado

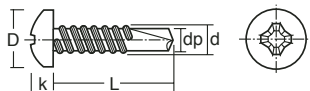
07 A/inox A4

06 A/inox A2

CONSULTAR OTROS RECUBRIMIENTOS

### 04004

#### TORNILLOS PARA CHAPA

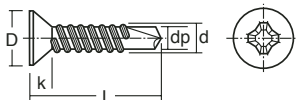


#### DIN 7504-N AUTOTALADRANTE

| d   | D    | K    | n° ISO | Longitudes |    |    |    |    |    |    |    |    |    |    |    |  |
|-----|------|------|--------|------------|----|----|----|----|----|----|----|----|----|----|----|--|
|     |      |      |        | 9,5        | 13 | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 63 | 75 |  |
| 3,5 | 6,9  | 2,6  | 6      | ●          | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |    |  |
| 3,9 | 7,5  | 2,8  | 7      |            | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |  |
| 4,2 | 8,2  | 3,05 | 8      |            | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |    |  |
| 4,8 | 9,5  | 3,55 | 10     |            | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |  |
| 5,5 | 10,8 | 3,95 | 12     |            |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |    |  |
| 6,3 | 12,4 | 4,55 | 14     |            |    |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |  |

#### Materiales

01 Acero 6.8 zincado 06 A/iniox A2

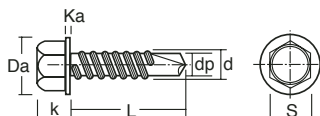


#### DIN 7504-P AUTOTALADRANTE

| d   | D    | K    | n° ISO | Longitudes |    |    |    |    |    |    |  |
|-----|------|------|--------|------------|----|----|----|----|----|----|--|
|     |      |      |        | 13         | 16 | 19 | 25 | 32 | 38 | 50 |  |
| 3,5 | 6,9  | 2,6  | 6      | ●          | ●  | ●  | ●  |    |    |    |  |
| 3,9 | 7,5  | 2,8  | 7      | ●          | ●  | ●  | ●  | ●  | ●  |    |  |
| 4,2 | 8,2  | 3,05 | 8      | ●          | ●  | ●  | ●  | ●  | ●  |    |  |
| 4,8 | 9,5  | 3,55 | 10     | ●          | ●  | ●  | ●  | ●  | ●  | ●  |  |
| 5,5 | 10,8 | 3,95 | 12     |            |    | ●  | ●  | ●  | ●  | ●  |  |
| 6,3 | 12,5 | 4,55 | 14     |            |    | ●  | ●  | ●  | ●  | ●  |  |

#### Materiales

01 Acero 6.8 zincado 06 A/iniox A2



#### DIN 7504-K AUTOTALADRANTE

| d   | S   | K    | Da   | Ka  | Longitudes |    |    |    |    |    |    |    |    |    |  |
|-----|-----|------|------|-----|------------|----|----|----|----|----|----|----|----|----|--|
|     |     |      |      |     | 13         | 16 | 19 | 22 | 25 | 32 | 38 | 45 | 50 | 63 |  |
| 3,5 | 5,5 | 3,40 | 8,3  | 0,6 | ●          | ●  | ●  | ●  | ●  |    |    |    |    |    |  |
| 4,2 | 7   | 4,25 | 8,8  | 0,9 | ●          | ●  | ●  | ●  | ●  | ●  |    |    |    |    |  |
| 4,8 | 8   | 4,45 | 10,5 | 0,9 | ●          | ●  | ●  | ●  | ●  | ●  | ●  |    |    |    |  |
| 5,5 | 8   | 5,45 | 11   | 1   |            |    | ●  | ●  | ●  | ●  | ●  | ●  |    |    |  |
| 6,3 | 10  | 6,45 | 13,2 | 1   |            |    | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |  |

#### Materiales

01 Acero 6.8 zincado 06 A/iniox A2

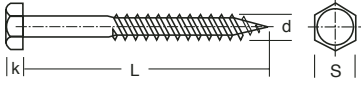
#### ● PARA TODOS LOS CUADROS DIN 7504

| N° ISO | dp mm |
|--------|-------|
| 6      | 2,8   |
| 7      | 3,2   |
| 8      | 3,6   |
| 10     | 4,1   |
| 12     | 4,8   |
| 14     | 5,8   |

CONSULTAR OTROS RECUBRIMIENTOS

### 04005

#### TORNILLOS PARA MADERA Y AGLOMERADO

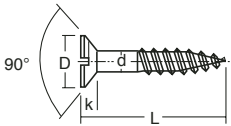


**DIN 571**

| L   | d<br>K<br>S | 5        | 6       | 7       | 8         | 10      | 12      |
|-----|-------------|----------|---------|---------|-----------|---------|---------|
|     |             | 3,5<br>8 | 4<br>10 | 5<br>12 | 5,5<br>13 | 7<br>17 | 8<br>19 |
| 30  |             | ●        | ●       | ●       | ●         |         | ●       |
| 35  |             | ●        | ●       | ●       | ●         | ●       |         |
| 40  |             | ●        | ●       | ●       | ●         | ●       | ●       |
| 45  |             | ●        | ●       | ●       | ●         | ●       | ●       |
| 50  |             | ●        | ●       | ●       | ●         | ●       | ●       |
| 60  |             | ●        | ●       | ●       | ●         | ●       | ●       |
| 70  |             |          | ●       | ●       | ●         | ●       | ●       |
| 80  |             |          | ●       | ●       | ●         | ●       | ●       |
| 90  |             |          | ●       | ●       | ●         | ●       | ●       |
| 100 |             |          | ●       | ●       | ●         | ●       | ●       |
| 110 |             |          | ●       |         | ●         | ●       | ●       |
| 120 |             |          |         | ●       | ●         | ●       | ●       |
| 130 |             |          |         | ●       | ●         | ●       | ●       |
| 140 |             |          |         | ●       | ●         | ●       | ●       |
| 150 |             |          |         | ●       | ●         | ●       | ●       |
| 160 |             |          |         |         | ●         | ●       | ●       |
| 170 |             |          |         |         | ●         | ●       | ●       |
| 180 |             |          |         |         | ●         | ●       | ●       |

#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2

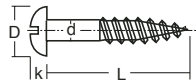


**DIN 97**

| L   | d<br>Nº<br>D<br>K | 2                | 2,5              | 3                 | 3,5               | 4                | 4,5               | 5                | 5,5                | 6             |
|-----|-------------------|------------------|------------------|-------------------|-------------------|------------------|-------------------|------------------|--------------------|---------------|
|     |                   | 14<br>3,8<br>1,2 | 17<br>4,7<br>1,5 | 18<br>5,6<br>1,65 | 19<br>6,5<br>1,93 | 20<br>7,5<br>2,2 | 21<br>8,3<br>2,35 | 22<br>9,2<br>2,5 | 23<br>10,2<br>2,75 | 24<br>11<br>3 |
| 12  |                   | ●                | ●                | ●                 |                   |                  |                   |                  |                    |               |
| 16  |                   | ●                | ●                | ●                 | ●                 | ●                |                   |                  |                    |               |
| 20  |                   | ●                | ●                | ●                 | ●                 | ●                | ●                 |                  |                    |               |
| 25  |                   |                  | ●                | ●                 | ●                 | ●                | ●                 | ●                |                    |               |
| 30  |                   |                  | ●                | ●                 | ●                 | ●                | ●                 | ●                | ●                  |               |
| 35  |                   |                  |                  | ●                 | ●                 | ●                | ●                 | ●                | ●                  | ●             |
| 40  |                   |                  |                  | ●                 | ●                 | ●                | ●                 | ●                | ●                  | ●             |
| 45  |                   |                  |                  | ●                 | ●                 | ●                | ●                 | ●                | ●                  | ●             |
| 50  |                   |                  |                  |                   | ●                 | ●                | ●                 | ●                | ●                  | ●             |
| 60  |                   |                  |                  |                   |                   | ●                | ●                 | ●                | ●                  | ●             |
| 70  |                   |                  |                  |                   |                   |                  | ●                 | ●                | ●                  | ●             |
| 80  |                   |                  |                  |                   |                   |                  |                   | ●                | ●                  | ●             |
| 90  |                   |                  |                  |                   |                   |                  |                   |                  | ●                  | ●             |
| 100 |                   |                  |                  |                   |                   |                  |                   |                  |                    | ●             |

#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2



**DIN 96**

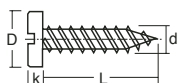
| L   | d<br>Nº<br>D<br>K | 2              | 2,5            | 3              | 3,5            | 4              | 4,5            | 5               | 5,5             | 6               |
|-----|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
|     |                   | 14<br>4<br>1,4 | 17<br>5<br>1,7 | 18<br>6<br>2,1 | 19<br>7<br>2,4 | 20<br>8<br>2,8 | 21<br>9<br>3,5 | 22<br>10<br>3,1 | 23<br>11<br>3,8 | 24<br>12<br>4,2 |
| 12  |                   | ●              | ●              | ●              |                |                |                |                 |                 |                 |
| 16  |                   | ●              | ●              | ●              | ●              | ●              | ●              |                 |                 |                 |
| 20  |                   | ●              | ●              | ●              | ●              | ●              | ●              | ●               |                 |                 |
| 25  |                   |                | ●              | ●              | ●              | ●              | ●              | ●               | ●               |                 |
| 30  |                   |                | ●              | ●              | ●              | ●              | ●              | ●               | ●               | ●               |
| 35  |                   |                |                | ●              | ●              | ●              | ●              | ●               | ●               | ●               |
| 40  |                   |                |                | ●              | ●              | ●              | ●              | ●               | ●               | ●               |
| 45  |                   |                |                | ●              | ●              | ●              | ●              | ●               | ●               | ●               |
| 50  |                   |                |                |                | ●              | ●              | ●              | ●               | ●               | ●               |
| 60  |                   |                |                |                |                | ●              | ●              | ●               | ●               | ●               |
| 70  |                   |                |                |                |                |                | ●              | ●               | ●               | ●               |
| 80  |                   |                |                |                |                |                |                | ●               | ●               | ●               |
| 90  |                   |                |                |                |                |                |                |                 | ●               | ●               |
| 100 |                   |                |                |                |                |                |                |                 |                 | ●               |

#### Materiales

01 Acero zincado      07 A/inox A4  
06 A/inox A2

### 04005

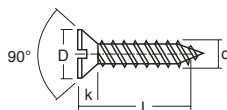
#### TORNILLOS PARA MADERA Y AGLOMERADO



**RA 71**

| L  | d  | 2,5  | 3    | 3,5  | 4    | 4,5  | 5    |
|----|----|------|------|------|------|------|------|
|    | Nº | 17   | 18   | 19   | 20   | 21   | 22   |
|    | D  | 5    | 6    | 7    | 8    | 9    | 10   |
|    | N  | 1,62 | 2,12 | 2,22 | 2,52 | 2,62 | 3,12 |
| 10 |    | ●    | ●    | ●    |      |      |      |
| 13 |    | ●    | ●    | ●    |      |      |      |
| 15 |    | ●    | ●    | ●    | ●    | ●    |      |
| 17 |    | ●    | ●    | ●    | ●    | ●    |      |
| 20 |    | ●    | ●    | ●    | ●    | ●    | ●    |
| 25 |    | ●    | ●    | ●    | ●    | ●    | ●    |
| 30 |    | ●    | ●    | ●    | ●    | ●    | ●    |
| 35 |    |      | ●    | ●    | ●    | ●    | ●    |
| 40 |    |      | ●    | ●    | ●    | ●    | ●    |
| 45 |    |      |      | ●    | ●    | ●    | ●    |
| 50 |    |      |      | ●    | ●    | ●    | ●    |
| 60 |    |      |      |      | ●    | ●    | ●    |
| 70 |    |      |      |      |      |      | ●    |

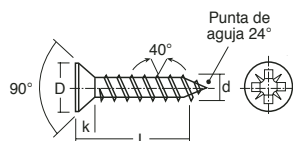
**Material**  
01 Acero zincado



**RA 72**

| L  | d  | 2,5  | 3   | 3,5  | 4    | 4,5  | 5  |
|----|----|------|-----|------|------|------|----|
|    | Nº | 17   | 18  | 19   | 20   | 21   | 22 |
|    | D  | 5    | 6   | 7    | 8    | 9    | 10 |
|    | N  | 1,45 | 1,8 | 2,05 | 20,4 | 2,65 | 3  |
| 10 |    | ●    | ●   | ●    |      |      |    |
| 13 |    | ●    | ●   | ●    |      |      |    |
| 15 |    | ●    | ●   | ●    | ●    | ●    |    |
| 17 |    | ●    | ●   | ●    | ●    | ●    |    |
| 20 |    | ●    | ●   | ●    | ●    | ●    | ●  |
| 25 |    | ●    | ●   | ●    | ●    | ●    | ●  |
| 30 |    | ●    | ●   | ●    | ●    | ●    | ●  |
| 35 |    |      | ●   | ●    | ●    | ●    | ●  |
| 40 |    |      | ●   | ●    | ●    | ●    | ●  |
| 45 |    |      |     | ●    | ●    | ●    | ●  |
| 50 |    |      |     | ●    | ●    | ●    | ●  |
| 60 |    |      |     |      | ●    | ●    | ●  |
| 70 |    |      |     |      |      | ●    | ●  |

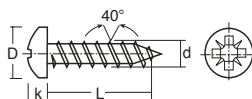
**Material**  
01 Acero zincado



**DIN 7505-A  
POZIDRIV**

| L   | d  | 2,5 | 3   | 3,5 | 4    | 4,5  | 5    | 6    |
|-----|----|-----|-----|-----|------|------|------|------|
|     | Nº | 17  | 18  | 19  | 20   | 21   | 22   | 24   |
|     | D  | 5   | 6   | 7   | 8    | 9    | 10   | 12   |
|     | N  | 1,4 | 1,8 | 2   | 2,35 | 2,55 | 2,85 | 3,35 |
| 10  |    | ●   | ●   | ●   |      |      |      |      |
| 13  |    | ●   | ●   | ●   |      |      |      |      |
| 15  |    | ●   | ●   | ●   | ●    |      |      |      |
| 17  |    | ●   | ●   | ●   | ●    | ●    |      |      |
| 20  |    | ●   | ●   | ●   | ●    | ●    | ●    |      |
| 25  |    | ●   | ●   | ●   | ●    | ●    | ●    |      |
| 30  |    | ●   | ●   | ●   | ●    | ●    | ●    |      |
| 35  |    |     | ●   | ●   | ●    | ●    | ●    |      |
| 40  |    |     | ●   | ●   | ●    | ●    | ●    |      |
| 45  |    |     |     | ●   | ●    | ●    | ●    |      |
| 50  |    |     |     | ●   | ●    | ●    | ●    | ●    |
| 60  |    |     |     |     | ●    | ●    | ●    | ●    |
| 70  |    |     |     |     | ●    | ●    | ●    | ●    |
| 80  |    |     |     |     |      | ●    | ●    | ●    |
| 90  |    |     |     |     |      |      | ●    | ●    |
| 100 |    |     |     |     |      |      |      | ●    |

**Materiales**  
01 Acero zincado 06 A/inox. A2 09 Bicromatizado



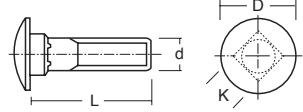
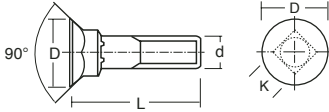
**DIN 7505-B  
POZIDRIV**

| L  | d  | 2,5 | 3    | 3,5  | 4    | 4,5  | 5    |
|----|----|-----|------|------|------|------|------|
|    | Nº | 17  | 18   | 19   | 20   | 21   | 22   |
|    | D  | 5   | 6    | 7    | 8    | 9    | 10   |
|    | N  | 1,8 | 2,22 | 2,52 | 2,82 | 3,25 | 3,65 |
| 10 |    |     | ●    | ●    |      |      |      |
| 13 |    |     |      | ●    |      |      |      |
| 15 |    | ●   | ●    | ●    | ●    |      |      |
| 17 |    |     |      | ●    | ●    |      |      |
| 20 |    | ●   | ●    | ●    | ●    | ●    |      |
| 25 |    |     |      | ●    | ●    | ●    | ●    |
| 30 |    |     |      | ●    | ●    | ●    | ●    |
| 35 |    |     |      | ●    | ●    | ●    | ●    |
| 40 |    |     |      |      | ●    | ●    | ●    |
| 45 |    |     |      | ●    |      | ●    |      |
| 50 |    |     |      |      |      | ●    | ●    |

**Materiales**  
01 Acero zincado  
06 A/inox. A2

CONSULTAR OTROS RECUBRIMIENTOS

## 04006 TORNILLOS DE CARROCERO



## DIN 608

| L  | d<br>Paso<br>D<br>K | 9               | 10               | 11                | 12                 |
|----|---------------------|-----------------|------------------|-------------------|--------------------|
|    |                     | 1,25<br>17<br>8 | 1,5<br>18<br>8,5 | 1,5<br>20<br>10,6 | 1,75<br>25<br>12,7 |
| 30 |                     | ●               | ●                | ●                 | ●                  |
| 35 |                     | ●               | ●                | ●                 | ●                  |
| 40 |                     | ●               | ●                | ●                 | ●                  |
| 45 |                     | ●               | ●                | ●                 | ●                  |
| 50 |                     | ●               | ●                | ●                 | ●                  |
| 60 |                     |                 | ●                | ●                 | ●                  |
| 70 |                     |                 | ●                | ●                 | ●                  |
| 80 |                     |                 | ●                | ●                 | ●                  |

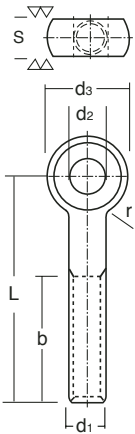
**Material**  
02 Acero 8.8

## DIN 603

| L   | d<br>Paso<br>D<br>K | 5                  | 6                | 7              | 8                 | 10                | 12                 |
|-----|---------------------|--------------------|------------------|----------------|-------------------|-------------------|--------------------|
|     |                     | 0,8<br>13,6<br>5,5 | 1<br>16,6<br>6,5 | 1<br>18<br>6,5 | 1,25<br>21<br>8,6 | 1,5<br>25<br>10,6 | 1,75<br>31<br>12,7 |
| 20  |                     | ●                  | ●                |                | ●                 |                   |                    |
| 25  |                     | ●                  | ●                |                | ●                 |                   | ●                  |
| 30  |                     | ●                  | ●                | ●              | ●                 | ●                 |                    |
| 35  |                     | ●                  |                  |                | ●                 |                   | ●                  |
| 40  |                     | ●                  | ●                | ●              | ●                 | ●                 | ●                  |
| 50  |                     | ●                  | ●                | ●              | ●                 | ●                 | ●                  |
| 60  |                     | ●                  | ●                | ●              | ●                 | ●                 | ●                  |
| 70  |                     | ●                  | ●                | ●              | ●                 | ●                 | ●                  |
| 80  |                     | ●                  | ●                | ●              | ●                 | ●                 | ●                  |
| 90  |                     |                    | ●                | ●              | ●                 | ●                 | ●                  |
| 100 |                     |                    |                  | ●              | ●                 | ●                 | ●                  |
| 110 |                     |                    | ●                |                | ●                 | ●                 | ●                  |
| 120 |                     |                    | ●                |                | ●                 | ●                 | ●                  |
| 130 |                     |                    | ●                |                | ●                 | ●                 | ●                  |
| 140 |                     |                    | ●                |                | ●                 | ●                 | ●                  |
| 150 |                     |                    |                  |                | ●                 | ●                 | ●                  |
| 160 |                     |                    |                  |                | ●                 | ●                 | ●                  |
| 170 |                     |                    |                  |                | ●                 | ●                 | ●                  |
| 180 |                     |                    |                  |                | ●                 | ●                 | ●                  |
| 200 |                     |                    |                  |                | ●                 | ●                 | ●                  |

**Materiales**  
01 Acero zincado  
06 A/innox A2

## 04006 TORNILLOS DE OJO



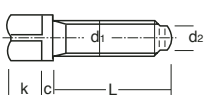
| L   | d1<br>d2<br>d3<br>s<br>b<br>r | M5                        | M6                      | M8                      | M10                       | M12                       | M16                       | M20                       | M24                        |
|-----|-------------------------------|---------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
|     |                               | 5<br>12<br>6<br>14<br>2,5 | 6<br>14<br>7<br>24<br>4 | 8<br>18<br>9<br>28<br>4 | 10<br>20<br>12<br>45<br>4 | 12<br>25<br>14<br>49<br>6 | 16<br>32<br>17<br>57<br>6 | 18<br>40<br>22<br>65<br>6 | 22<br>45<br>25<br>75<br>10 |
| 30  |                               | ●                         | ●                       |                         |                           |                           |                           |                           |                            |
| 40  |                               | ●                         | ●                       |                         |                           |                           |                           |                           |                            |
| 50  |                               | ●                         | ●                       | ●                       | ●                         |                           |                           |                           |                            |
| 60  |                               | ●                         | ●                       | ●                       | ●                         | ●                         |                           |                           |                            |
| 70  |                               |                           | ●                       | ●                       | ●                         | ●                         |                           |                           |                            |
| 75  |                               |                           | ●                       | ●                       | ●                         | ●                         |                           |                           |                            |
| 80  |                               | ●                         | ●                       | ●                       | ●                         | ●                         | ●                         |                           |                            |
| 90  |                               |                           |                         | ●                       | ●                         | ●                         |                           |                           |                            |
| 100 |                               |                           |                         | ●                       | ●                         | ●                         | ●                         |                           |                            |
| 120 |                               |                           |                         | ●                       | ●                         | ●                         | ●                         |                           |                            |
| 130 |                               |                           |                         |                         |                           | ●                         | ●                         |                           |                            |
| 140 |                               |                           |                         |                         |                           |                           | ●                         | ●                         | ●                          |
| 150 |                               |                           |                         |                         |                           | ●                         |                           |                           |                            |
| 160 |                               |                           |                         |                         |                           | ●                         |                           |                           | ●                          |
| 180 |                               |                           |                         |                         |                           |                           | ●                         | ●                         |                            |
| 200 |                               |                           |                         |                         |                           |                           |                           |                           | ●                          |
| 220 |                               |                           |                         |                         |                           |                           |                           |                           | ●                          |

## DIN 444-B

**Materiales**  
03 F114 bonificado  
06 A/innox A2

### 04008

#### TORNILLOS PARA TORRETA



**DIN 480**

#### ROSCA METRICA

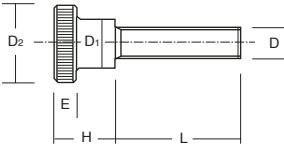
| L  | d1 | M6  | M8 | M10 | M12 | M16 |
|----|----|-----|----|-----|-----|-----|
|    | c  | 2   | 3  | 3   | 4   | 4   |
| d2 | 4  | 5,5 | 7  | 8,5 | 12  |     |
| e  | 8  | 10  | 13 | 17  | 22  |     |
| k  | 6  | 8   | 10 | 12  | 16  |     |
| s  | 6  | 8   | 10 | 13  | 17  |     |
| 20 |    | ●   |    |     |     |     |
| 25 |    |     | ●  | ●   | ●   |     |
| 30 |    | ●   | ●  | ●   | ●   |     |
| 35 |    |     | ●  | ●   | ●   |     |
| 40 |    | ●   | ●  | ●   | ●   |     |
| 45 |    |     | ●  | ●   | ●   |     |
| 50 |    |     | ●  | ●   | ●   |     |
| 60 |    |     |    | ●   | ●   | ●   |
| 70 |    |     |    |     | ●   | ●   |

#### ROSCA WHITWORTH

| L  | d1 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 |
|----|----|------|-----|------|-----|-----|
|    | c  | 2,5  | 3   | 4    | 4   | 5   |
| d2 | 6  | 7    | 8   | 9    | 12  |     |
| e  | 10 | 13   | 16  | 18   | 22  |     |
| k  | 8  | 10   | 12  | 14   | 16  |     |
| s  | 8  | 10   | 12  | 14   | 17  |     |
| 25 |    | ●    |     |      |     |     |
| 30 |    | ●    |     |      |     |     |
| 35 |    | ●    | ●   |      |     |     |
| 40 |    | ●    | ●   | ●    | ●   |     |
| 45 |    |      | ●   | ●    | ●   |     |
| 50 |    |      | ●   | ●    | ●   |     |
| 60 |    |      |     | ●    | ●   | ●   |
| 70 |    |      |     | ●    | ●   | ●   |
| 80 |    |      |     |      | ●   | ●   |

### 04009

#### TORNILLOS MOLETEADOS

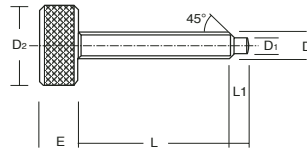


**DIN 464**

| L  | D   | M4   | M5 | M6 | M8 | M10 |
|----|-----|------|----|----|----|-----|
|    | D1  | 8    | 10 | 12 | 16 | 20  |
| D2 | 16  | 20   | 24 | 30 | 36 |     |
| E  | 3,5 | 4    | 5  | 6  | 8  |     |
| H  | 9,5 | 11,5 | 15 | 18 | 23 |     |
| 10 |     | ●    |    |    |    |     |
| 16 |     | ●    |    | ●  |    |     |
| 20 |     |      | ●  | ●  | ●  |     |
| 25 |     |      |    | ●  | ●  | ●   |
| 30 |     |      |    |    | ●  | ●   |
| 40 |     |      |    |    |    | ●   |

#### Material

Acero F114 Pavonado



**DIN 653**

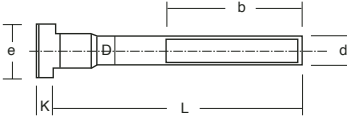
| L  | D   | M6  | M8  | M10 |
|----|-----|-----|-----|-----|
|    | D1  | 4,5 | 6   | 7,5 |
| D2 | 18  | 20  | 25  |     |
| E  | 3,5 | 5   | 5,5 |     |
| H  | 7   | 8   | 10  |     |
| 35 |     | ●   |     |     |
| 45 |     |     | ●   | ●   |
| 50 |     | ●   |     |     |
| 60 |     |     | ●   | ●   |

#### Material

Acero F114 Pavonado

### 04010

### TORNILLOS CABEZA "T"



**DIN 787**



| d x l        | b   | a    | e  | k  |
|--------------|-----|------|----|----|
| M 6 x 25     | 15  |      |    |    |
| M 6 x 40     | 28  | 5,7  | 10 | 4  |
| M 6 x 63     | 40  |      |    |    |
| M 8 x 32     | 22  |      |    |    |
| M 8 x 50     | 35  | 7,7  | 13 | 6  |
| M 8 x 80     | 50  |      |    |    |
| M 10 x 40    | 30  |      |    |    |
| M 10 x 63    | 45  | 9,7  | 15 | 6  |
| M 10 x 100   | 60  |      |    |    |
| * M 12 x 50  | 35  |      |    |    |
| M 12 x 63    | 40  |      |    |    |
| * M 12 x 80  | 55  | 11,7 | 18 | 7  |
| * M 12 x 125 | 75  |      |    |    |
| * M 12 x 200 | 120 |      |    |    |
| * M 12 x 50  | 35  |      |    |    |
| M 12 x 63    | 40  |      |    |    |
| * M 12 x 80  | 55  | 13,7 | 22 | 8  |
| * M 12 x 125 | 75  |      |    |    |
| * M 12 x 200 | 120 |      |    |    |
| M 14 x 63    | 45  |      |    |    |
| M 14 x 100   | 63  |      |    |    |
| M 14 x 160   | 100 | 15,7 | 25 | 9  |
| M 14 x 250   | 150 |      |    |    |
| * M 16 x 63  | 45  |      |    |    |
| M 16 x 80    | 55  |      |    |    |
| * M 16 x 100 | 63  |      |    |    |
| * M 16 x 160 | 100 | 15,7 | 25 | 9  |
| M 16 x 200   | 125 |      |    |    |
| * M 16 x 250 | 150 |      |    |    |
| * M 16 x 63  | 45  |      |    |    |
| M 16 x 80    | 55  |      |    |    |
| * M 16 x 100 | 63  |      |    |    |
| * M 16 x 160 | 100 | 17,7 | 28 | 10 |
| M 16 x 200   | 125 |      |    |    |
| * M 16 x 250 | 150 |      |    |    |
| * M 20 x 80  | 55  |      |    |    |
| M 20 x 100   | 63  |      |    |    |
| * M 20 x 125 | 85  |      |    |    |
| M 20 x 160   | 110 | 19,7 | 32 | 12 |
| * M 20 x 200 | 125 |      |    |    |
| M 20 x 250   | 150 |      |    |    |
| * M 20 x 315 | 190 |      |    |    |

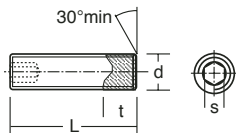
| d x l        | b   | a    | e  | k  |
|--------------|-----|------|----|----|
| * M 20 x 80  | 55  |      |    |    |
| M 20 x 100   | 63  |      |    |    |
| * M 20 x 125 | 85  |      |    |    |
| M 20 x 160   | 110 | 21,7 | 35 | 14 |
| * M 20 x 200 | 125 |      |    |    |
| M 20 x 250   | 150 |      |    |    |
| * M 20 x 315 | 190 |      |    |    |
| * M 24 x 100 | 70  |      |    |    |
| M 24 x 125   | 85  |      |    |    |
| * M 24 x 160 | 110 |      |    |    |
| M 24 x 200   | 125 | 23,7 | 40 | 16 |
| * M 24 x 250 | 150 |      |    |    |
| M 24 x 315   | 200 |      |    |    |
| * M 24 x 400 | 240 |      |    |    |
| * M 24 x 100 | 70  |      |    |    |
| M 24 x 125   | 85  |      |    |    |
| * M 24 x 160 | 110 |      |    |    |
| M 24 x 200   | 125 | 27,7 | 44 | 18 |
| * M 24 x 250 | 150 |      |    |    |
| M 24 x 315   | 200 |      |    |    |
| * M 24 x 400 | 240 |      |    |    |
| M 30 x 125   | 80  |      |    |    |
| M 30 x 160   | 110 |      |    |    |
| M 30 x 200   | 135 |      |    |    |
| M 30 x 250   | 150 | 35,6 | 54 | 22 |
| M 30 x 315   | 200 |      |    |    |
| M 30 x 500   | 300 |      |    |    |
| M 36 x 160   | 100 |      |    |    |
| M 36 x 250   | 175 |      |    |    |
| M 36 x 400   | 250 | 41,6 | 65 | 26 |
| M 36 x 630   | 340 |      |    |    |
| M 42 x 60    | 100 |      |    |    |
| M 42 x 250   | 175 |      |    |    |
| M 42 x 400   | 250 | 47,6 | 75 | 30 |
| M 42 x 500   | 300 |      |    |    |
| M 42 x 600   | 350 |      |    |    |
| M 48 x 200   | 130 |      |    |    |
| M 48 x 250   | 150 |      |    |    |
| M 48 x 315   | 220 |      |    |    |
| M 48 x 400   | 250 | 53,6 | 85 | 34 |
| M 48 x 500   | 300 |      |    |    |
| M 48 x 630   | 350 |      |    |    |

\* Suministrables opcionalmente en acero 12.9

#### Material

De M6 a M12 Acero 10.9 Bonificado  
De M14 a M48 Acero 8.8 Bonificado

### 04011 ESPARRAGOS CON ALOJAMIENTO ALLEN



**DIN 913**  
**PUNTA PLANA**

**Materiales**

- 03** Acero 12.9
- 04** Acero 14.10 UNBRAKO
- 06** A/inox A2

**ROSCA METRICA  
NORMAL**

| L   | d<br>Paso<br>s<br>t | M2<br>0,4<br>0,9<br>1,7 | M2,5<br>0,45<br>1,3<br>2 | M3<br>0,5<br>1,5<br>2 | M4<br>0,7<br>2<br>2,5 | M5<br>0,8<br>2,5<br>3 | M6<br>1<br>3<br>3,5 | M8<br>1,25<br>4<br>5 | M10<br>1,5<br>5<br>6 | M12<br>1,75<br>6<br>8 | (M14)<br>2<br>6<br>9 | M16<br>2<br>8<br>10 | (M18)<br>2,5<br>10<br>11 | M20<br>2,5<br>10<br>12 | (M22)<br>2,5<br>12<br>13,5 | M24<br>3<br>12<br>15 |
|-----|---------------------|-------------------------|--------------------------|-----------------------|-----------------------|-----------------------|---------------------|----------------------|----------------------|-----------------------|----------------------|---------------------|--------------------------|------------------------|----------------------------|----------------------|
| 2   |                     | ●                       |                          |                       |                       |                       |                     |                      |                      |                       |                      |                     |                          |                        |                            |                      |
| 3   |                     | ●                       | ●                        | ●                     | ●                     |                       |                     |                      |                      |                       |                      |                     |                          |                        |                            |                      |
| 4   |                     | ●                       | ●                        | ●                     | ●                     | ●                     |                     |                      |                      |                       |                      |                     |                          |                        |                            |                      |
| 5   |                     | ●                       | ●                        | ●                     | ●                     | ●                     | ●                   |                      |                      |                       |                      |                     |                          |                        |                            |                      |
| 6   |                     | ●                       | ●                        | ●                     | ●                     | ●                     | ●                   | ●                    |                      |                       |                      |                     |                          |                        |                            |                      |
| 8   |                     | ●                       | ●                        | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    |                       |                      |                     |                          |                        |                            |                      |
| 10  |                     | ●                       | ●                        | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     |                      |                     |                          |                        |                            |                      |
| 12  |                     | ●                       | ●                        | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    |                     |                          |                        |                            |                      |
| 16  |                     |                         |                          | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   |                          |                        |                            |                      |
| 20  |                     |                         |                          | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        |                        |                            |                      |
| 25  |                     |                         |                          | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 30  |                     |                         |                          | ●                     | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 35  |                     |                         |                          |                       | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 40  |                     |                         |                          |                       | ●                     | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 45  |                     |                         |                          |                       |                       | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 50  |                     |                         |                          |                       |                       | ●                     | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 55  |                     |                         |                          |                       |                       |                       | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 60  |                     |                         |                          |                       |                       |                       | ●                   | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 70  |                     |                         |                          |                       |                       |                       |                     | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 80  |                     |                         |                          |                       |                       |                       |                     | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 90  |                     |                         |                          |                       |                       |                       |                     | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |
| 100 |                     |                         |                          |                       |                       |                       |                     | ●                    | ●                    | ●                     | ●                    | ●                   | ●                        | ●                      | ●                          | ●                    |

**ROSCA  
METRICA FINA**

**ROSCA  
WITWORTH Y UNC**

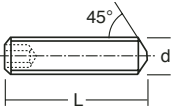
| L  | d<br>Paso<br>s | 8<br>100<br>4 | 10<br>100<br>5 | 10<br>125<br>5 | 12<br>125<br>6 | 12<br>150<br>6 | 14<br>150<br>6 | 16<br>150<br>8 | 20<br>150<br>10 |
|----|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| 10 |                | ●             | ●              | ●              |                |                |                |                |                 |
| 16 |                | ●             | ●              | ●              | ●              | ●              |                |                |                 |
| 20 |                | ●             | ●              | ●              | ●              | ●              | ●              | ●              |                 |
| 25 |                | ●             | ●              | ●              | ●              | ●              | ●              | ●              | ●               |
| 30 |                | ●             | ●              | ●              | ●              | ●              | ●              | ●              | ●               |
| 35 |                | ●             | ●              | ●              | ●              | ●              | ●              | ●              | ●               |
| 40 |                | ●             | ●              | ●              | ●              | ●              | ●              | ●              | ●               |

**Material**

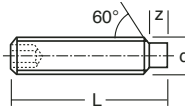
- 02** Acero 12.9

| L     | d<br>Hilos<br>s | 1/4<br>20<br>1/8 | 5/16<br>18<br>5/32 | 3/8<br>16<br>3/16 | 1/2<br>13<br>1/4 | 1/2<br>12<br>1/4 | 5/8<br>11<br>5/16 |
|-------|-----------------|------------------|--------------------|-------------------|------------------|------------------|-------------------|
| 1/4   |                 | ●                |                    |                   |                  |                  |                   |
| 5/16  |                 | ●                | ●                  |                   |                  |                  |                   |
| 3/8   |                 | ●                | ●                  | ●                 | ●                | ●                |                   |
| 1/2   |                 | ●                | ●                  | ●                 | ●                | ●                |                   |
| 5/8   |                 | ●                | ●                  | ●                 | ●                | ●                |                   |
| 3/4   |                 | ●                | ●                  | ●                 | ●                | ●                |                   |
| 7/8   |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 1"    |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 1 1/4 |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 1 1/2 |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 1 3/4 |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 2     |                 | ●                | ●                  | ●                 | ●                | ●                | ●                 |
| 2 1/4 |                 |                  | ●                  | ●                 | ●                | ●                | ●                 |





**DIN 914**  
**PUNTA CONICA**



**DIN 915**  
**CON PIVOTE**

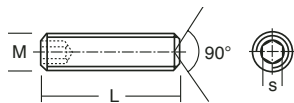
| L   | d    | M2  | M2,5 | M3  | M4  | M5  | M6 | M8   | M10 | M12  | (M14) | M16 | M20 | M24 |
|-----|------|-----|------|-----|-----|-----|----|------|-----|------|-------|-----|-----|-----|
|     | Paso | 0,4 | 0,45 | 0,5 | 0,7 | 0,8 | 1  | 1,25 | 1,5 | 1,75 | 2     | 2   | 2,5 | 3   |
|     | z    | 1   | 1,25 | 1,5 | 2   | 2,5 | 3  | 4    | 5   | 6    | 7     | 8   | 10  | 12  |
|     | s    | 0,9 | 1,3  | 1,5 | 2   | 2,5 | 3  | 4    | 5   | 6    | 6     | 8   | 10  | 12  |
| 2   |      | ●   |      |     |     |     |    |      |     |      |       |     |     |     |
| 3   |      | ●   | ●    | ●   |     |     |    |      |     |      |       |     |     |     |
| 4   |      | ●   | ●    | ●   | ●   |     |    |      |     |      |       |     |     |     |
| 5   |      | ●   | ●    | ●   | ●   | ●   |    |      |     |      |       |     |     |     |
| 6   |      | ●   | ●    | ●   | ●   | ●   | ●  |      |     |      |       |     |     |     |
| 8   |      | ●   | ●    | ●   | ●   | ●   | ●  | ●    |     |      |       |     |     |     |
| 10  |      | ●   | ●    | ●   | ●   | ●   | ●  | ●    | ●   |      |       |     |     |     |
| 12  |      |     | ●    | ●   | ●   | ●   | ●  | ●    | ●   | ●    |       |     |     |     |
| 16  |      |     |      | ●   | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   |     |     |
| 20  |      |     |      | ●   | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   |     |
| 25  |      |     |      | ●   | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 30  |      |     |      | ●   | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 35  |      |     |      |     | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 40  |      |     |      |     | ●   | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 45  |      |     |      |     |     | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 50  |      |     |      |     |     | ●   | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 55  |      |     |      |     |     |     | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 60  |      |     |      |     |     |     | ●  | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 70  |      |     |      |     |     |     |    | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 80  |      |     |      |     |     |     |    | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 90  |      |     |      |     |     |     |    | ●    | ●   | ●    | ●     | ●   | ●   | ●   |
| 100 |      |     |      |     |     |     |    | ●    | ●   | ●    | ●     | ●   | ●   | ●   |

### Materiales

- 03** Acero 12.9
- 04** Acero 14.10 UNBRAKO
- 06** A/inox A2

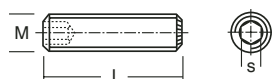
04011

### ESPARRAGOS CON ALOJAMIENTO ALLEN



### DIN 916 CON CHAFLAN AFILADO

| L   | d<br>Paso<br>s | M2<br>0,4<br>0,9 | M2,5<br>0,45<br>1,3 | M3<br>0,5<br>1,5 | M4<br>0,7<br>2 | M5<br>0,8<br>2,5 | M6<br>1<br>3 | M8<br>1,25<br>4 | M10<br>1,5<br>5 | M12<br>1,75<br>6 | (M14)<br>2<br>6 | M16<br>2<br>8 | M20<br>2,5<br>10 | M24<br>3<br>12 |
|-----|----------------|------------------|---------------------|------------------|----------------|------------------|--------------|-----------------|-----------------|------------------|-----------------|---------------|------------------|----------------|
| 2   |                | ●                |                     |                  |                |                  |              |                 |                 |                  |                 |               |                  |                |
| 3   |                | ●                | ●                   | ●                |                |                  |              |                 |                 |                  |                 |               |                  |                |
| 4   |                | ●                | ●                   | ●                | ●              | ●                |              |                 |                 |                  |                 |               |                  |                |
| 5   |                | ●                | ●                   | ●                | ●              | ●                |              |                 |                 |                  |                 |               |                  |                |
| 6   |                | ●                | ●                   | ●                | ●              | ●                | ●            |                 |                 |                  |                 |               |                  |                |
| 8   |                | ●                | ●                   | ●                | ●              | ●                | ●            | ●               |                 |                  |                 |               |                  |                |
| 10  |                | ●                | ●                   | ●                | ●              | ●                | ●            | ●               | ●               | ●                |                 |               |                  |                |
| 12  |                | ●                | ●                   | ●                | ●              | ●                | ●            | ●               | ●               | ●                |                 |               |                  |                |
| 16  |                |                  |                     | ●                | ●              | ●                | ●            | ●               | ●               | ●                | ●               |               |                  |                |
| 20  |                |                  |                     | ●                | ●              | ●                | ●            | ●               | ●               | ●                | ●               | ●             |                  |                |
| 25  |                |                  |                     | ●                | ●              | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 30  |                |                  |                     | ●                | ●              | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 35  |                |                  |                     |                  | ●              | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 40  |                |                  |                     |                  | ●              | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 45  |                |                  |                     |                  |                | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 50  |                |                  |                     |                  |                | ●                | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 55  |                |                  |                     |                  |                |                  | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 60  |                |                  |                     |                  |                |                  | ●            | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 70  |                |                  |                     |                  |                |                  |              | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 80  |                |                  |                     |                  |                |                  |              | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 90  |                |                  |                     |                  |                |                  |              | ●               | ●               | ●                | ●               | ●             | ●                | ●              |
| 100 |                |                  |                     |                  |                |                  |              | ●               | ●               | ●                | ●               | ●             | ●                | ●              |



### DIN 916 M CON CHAFLAN MOLETEADO

#### Material

02 Acero 12.9

| L  | d<br>Paso<br>s | M3<br>0,5<br>1,5 | M4<br>0,7<br>2 | M5<br>0,8<br>2,5 | M6<br>1<br>3 | M8<br>1,25<br>4 | M10<br>1,5<br>5 | M12<br>1,75<br>6 | M16<br>2<br>8 | M20<br>2,5<br>10 | M24<br>3<br>12 |
|----|----------------|------------------|----------------|------------------|--------------|-----------------|-----------------|------------------|---------------|------------------|----------------|
| 3  |                | ●                |                |                  |              |                 |                 |                  |               |                  |                |
| 4  |                | ●                | ●              |                  |              |                 |                 |                  |               |                  |                |
| 5  |                | ●                | ●              | ●                |              |                 |                 |                  |               |                  |                |
| 6  |                | ●                | ●              | ●                | ●            |                 |                 |                  |               |                  |                |
| 8  |                | ●                | ●              | ●                | ●            | ●               |                 |                  |               |                  |                |
| 10 |                | ●                | ●              | ●                | ●            | ●               | ●               |                  |               |                  |                |
| 12 |                | ●                | ●              | ●                | ●            | ●               | ●               | ●                |               |                  |                |
| 16 |                | ●                | ●              | ●                | ●            | ●               | ●               | ●                | ●             |                  |                |
| 20 |                |                  | ●              | ●                | ●            | ●               | ●               | ●                | ●             | ●                |                |
| 25 |                |                  |                | ●                | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 30 |                |                  |                | ●                | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 35 |                |                  |                |                  | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 40 |                |                  |                |                  | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 45 |                |                  |                |                  | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 50 |                |                  |                |                  | ●            | ●               | ●               | ●                | ●             | ●                | ●              |
| 60 |                |                  |                |                  |              | ●               | ●               | ●                | ●             | ●                | ●              |

#### Material

04 Acero 14.10  
UNBRAKO





























































































































