
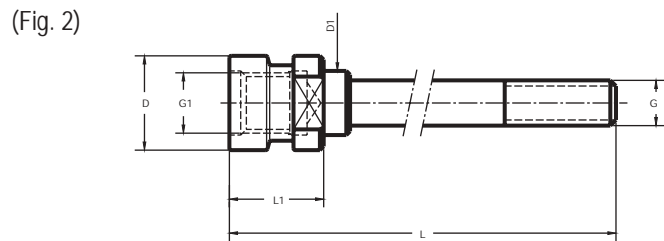
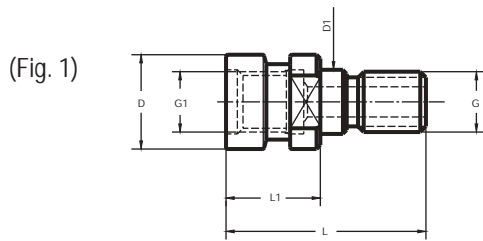




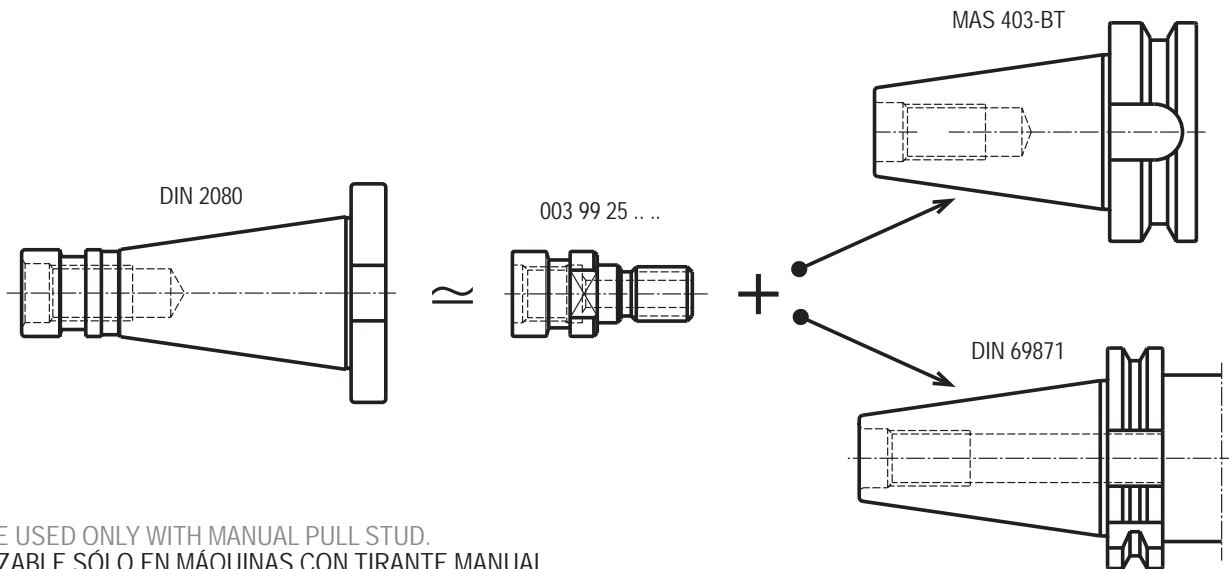
PULL STUDS
TIRANTES

15

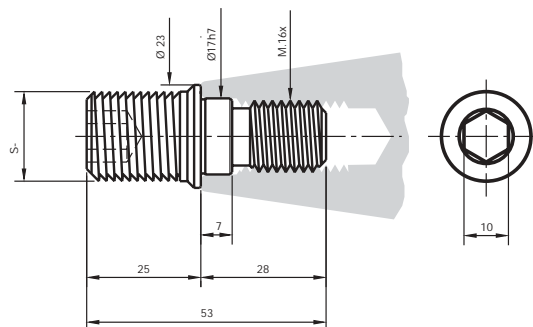
| DESCRIPTION DENOMINACION | Image | Page Pag. | DESCRIPTION DENOMINACION | Image | Page Pag. |
|---|---|--------------|---|---|--------------|
| MAHO OTT PULL STUDS TIRANTES MAHO OTT |  | 15/3 | JIS B 6339 PULL STUDS (a 15°) TIRANTES JIS B 6339 Ángulo 15° |  | 15/7 |
| DECKEL PULL STUDS TIRANTES DEKEL |  | 15/3 | DIN 69872-ISO 7388/2 PULL STUDS (a 15°) TIRANTES DIN 69872-ISO 7388/2 Ángulo 15° |  | 15/8 |
| MAS 403 BT PULL STUDS (a 45°) TIRANTES MAS 403-BT Ángulo 45° |  | 15/4 | DIN 69872 Form B PULL STUDS (a 15°) TIRANTES DIN 69872 Forma B Ángulo 15° |  | 15/8 |
| MAS 403 BT PULL STUDS (a 45°) With coolant through channel TIRANTES MAS 403-BT Ángulo 45° Con orificio para paso de refrigerante |  | 15/5 | ISO 7388/2 PULL STUDS (a 45°) With coolant through channel TIRANTES ISO 7388/2 Ángulo 45° Con orificio para paso de refrigerante |  | 15/9 |
| MAS 403 BT PULL STUDS (a 60°) TIRANTES MAS 403-BT Ángulo 60° |  | 15/5 | ISO 7388/2 PULL STUDS (a 45°) Without coolant through channel/ TIRANTES ISO 7388/2 Ángulo 45° Sin orificio para paso de refrigerante |  | 15/9 |
| MAS 403 BT PULL STUDS (a 90°) TIRANTES MAS 403-BT Ángulo 90° |  | 15/6 | CHIRON ISO 30 PULL STUDS (a45°) TIRANTES CHIRÓN ISO 30 Ángulo 45° |  | 15/10 |



| FIG. | G | G ₁ | L | L ₁ | D | D ₁ | COD. |
|------|------|----------------|-----|----------------|------|----------------|-----------------|
| 1 | M-16 | M-16 | 52 | 25,15 | 25 | 17 | 003 99 25 02 00 |
| 1 | M-24 | M-24 | 65 | 25,20 | 39,3 | 25 | 003 99 25 04 00 |
| 2 | M-12 | M-16 | 111 | 25,15 | 25 | 17 | 003 99 25 02 40 |
| 2 | M-16 | M-16 | 117 | 25,15 | 25 | 17 | 003 99 25 02 50 |

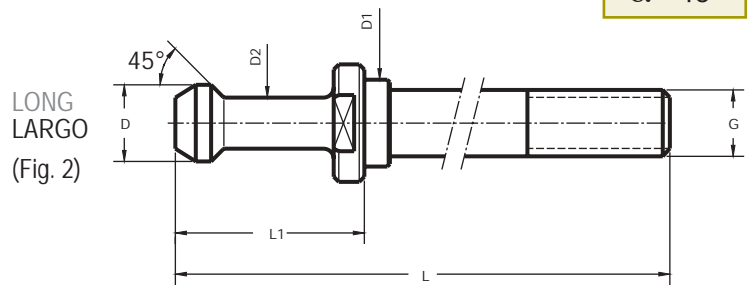
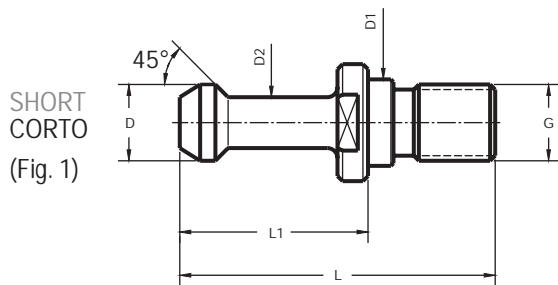


TO BE USED ONLY WITH MANUAL PULL STUD.
UTILIZABLE SÓLO EN MÁQUINAS CON TIRANTE MANUAL.



PULL STUDS NECESSARY TO USE DIN 69871 OR MAS-403 BT SHANKS IN MACHINES WITH DEKEL SYSTEM.
SU EMPLEO HACE POSIBLE LA UTILIZACION DE HERRAMIENTAS CON CONO SEGUN DIN 69871 ó MAS-403 BT EN MAQUINAS DEKEL

$\alpha = 45^\circ$

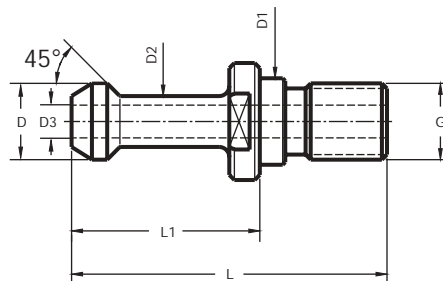


| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|-------|----|------|-----|----------------|----------------|----------------|-----------------|
| 1 | 11 | M-12 | 43 | 23 | 12,5 | 7 | 003 99 14 01 00 |
| 1 | 15 | M-16 | 60 | 35 | 17 | 10 | 003 99 14 02 00 |
| 1 | 23 | M-24 | 85 | 45 | 25 | 17 | 003 99 14 04 00 |
| (*) 1 | 15 | M-16 | 57 | 32,15 | 17 | 10 | 003 99 94 02 00 |
| 2 | 11 | M-10 | 90 | 23 | 12,5 | 7 | 003 99 14 01 30 |
| 2 | 11 | M-12 | 94 | 23 | 12,5 | 7 | 003 99 14 01 40 |
| 2 | 15 | M-12 | 100 | 35 | 17 | 10 | 003 99 14 02 01 |
| 2 | 15 | M-12 | 118 | 35 | 17 | 10 | 003 99 14 02 40 |
| 2 | 15 | M-12 | 178 | 35 | 17 | 10 | 003 99 14 02 41 |
| 2 | 15 | M-16 | 100 | 35 | 17 | 10 | 003 99 14 02 02 |
| 2 | 15 | M-16 | 124 | 35 | 17 | 10 | 003 99 14 02 50 |
| 2 | 19 | M-16 | 110 | 40 | 21 | 14 | 003 99 14 03 02 |
| 2 | 23 | M-20 | 165 | 45 | 25 | 17 | 003 99 14 04 60 |

(*) This pull stud is not according to MAS 403-BT.
(*) Este tirante no cumple la norma MAS 403-BT.

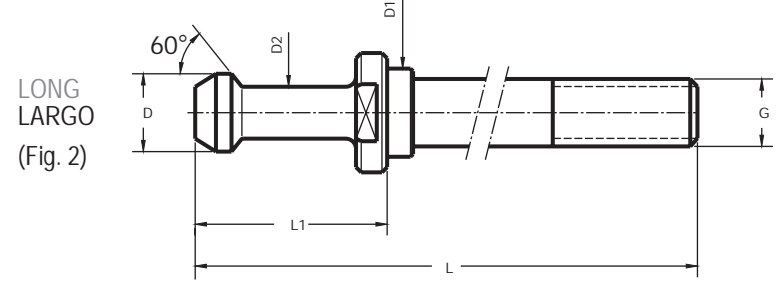
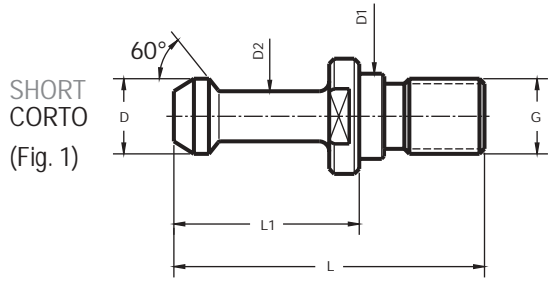
$\alpha = 45^\circ$

With coolant through channel
Con orificio central para paso de refrigerante



| D | G | L | L ₁ | D ₁ | D ₂ | D ₃ | COD. |
|----|------|----|----------------|----------------|----------------|----------------|-----------------|
| 15 | M-16 | 60 | 35 | 17 | 10 | 4 | 003 99 34 02 00 |
| 23 | M-24 | 85 | 45 | 25 | 17 | 8 | 003 99 34 04 00 |

$\alpha = 60^\circ$



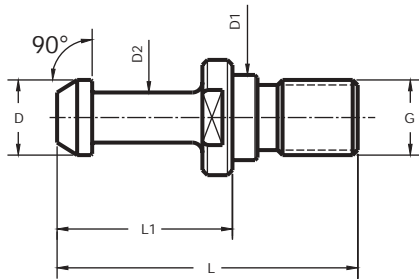
| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|-------|----|------|-----|----------------|----------------|----------------|-----------------|
| 1 | 11 | M-12 | 43 | 23 | 12,5 | 7 | 003 99 15 01 00 |
| 1 | 15 | M-16 | 60 | 35 | 17 | 10 | 003 99 15 02 00 |
| 1 | 19 | M-20 | 70 | 40 | 21 | 14 | 003 99 15 03 00 |
| 1 | 23 | M-24 | 85 | 45 | 25 | 17 | 003 99 15 04 00 |
| (*) 1 | 15 | M-16 | 57 | 32,15 | 17 | 10 | 003 99 95 02 00 |
| 2 | 11 | M-10 | 90 | 23 | 12,5 | 7 | 003 99 15 01 30 |
| 2 | 11 | M-10 | 145 | 23 | 12,5 | 7 | 003 99 15 01 31 |
| 2 | 11 | M-12 | 94 | 23 | 12,5 | 7 | 003 99 15 01 40 |
| 2 | 11 | M-12 | 143 | 23 | 12,5 | 7 | 003 99 15 01 41 |
| 2 | 13 | M-10 | 108 | 28 | 12,5 | 8,5 | 003 99 15 11 30 |
| 2 | 13 | M-12 | 112 | 28 | 12,5 | 8,5 | 003 99 15 11 40 |
| 2 | 15 | M-12 | 100 | 35 | 17 | 10 | 003 99 15 02 01 |
| 2 | 15 | M-12 | 118 | 35 | 17 | 10 | 003 99 15 02 40 |
| 2 | 15 | M-12 | 178 | 35 | 17 | 10 | 003 99 15 02 41 |
| 2 | 15 | M-16 | 100 | 35 | 17 | 10 | 003 99 15 02 02 |
| 2 | 15 | M-16 | 124 | 35 | 17 | 10 | 003 99 15 02 50 |
| 2 | 15 | M-16 | 194 | 35 | 17 | 10 | 003 99 15 02 51 |
| 2 | 23 | M-16 | 160 | 45 | 25 | 17 | 003 99 15 04 50 |
| 2 | 23 | M-20 | 165 | 45 | 25 | 17 | 003 99 15 04 60 |
| 2 | 23 | M-20 | 270 | 45 | 25 | 17 | 003 99 15 04 61 |

(*) This pull studs is not according to MAS 403-BT.

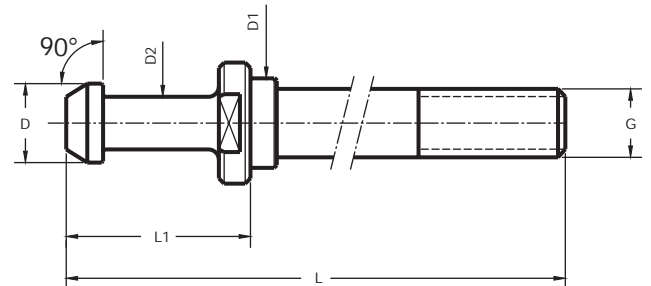
(*) Este tirante no cumple la norma MAS 403-BT.

$\alpha = 90^\circ$

SHORT
CORTO
(Fig. 1)



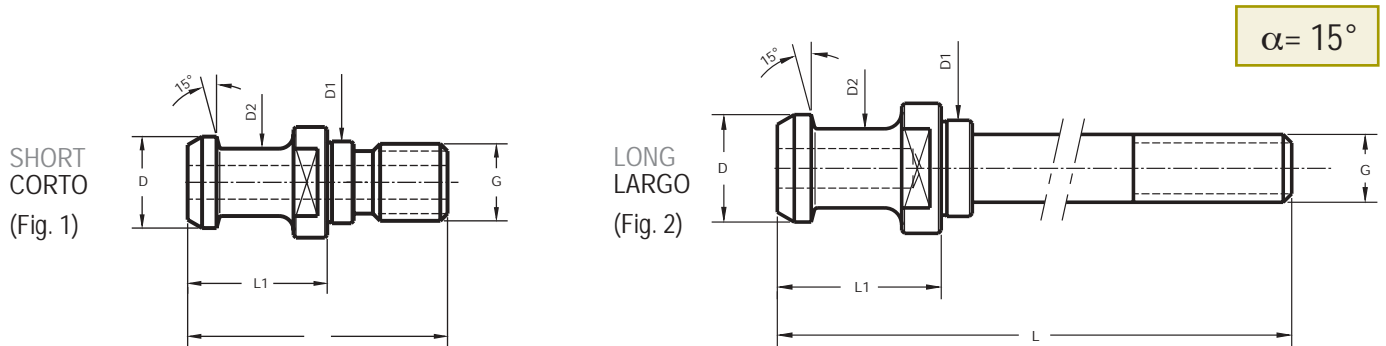
LONG
LARGO
(Fig. 2)



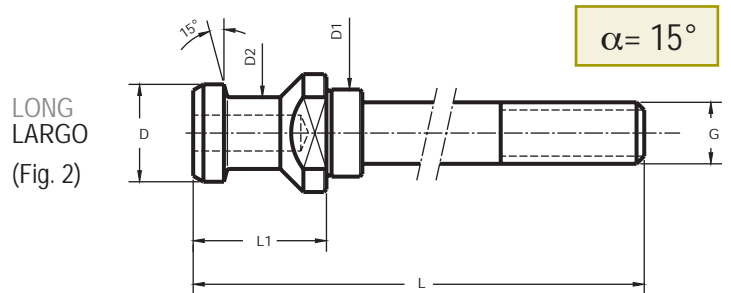
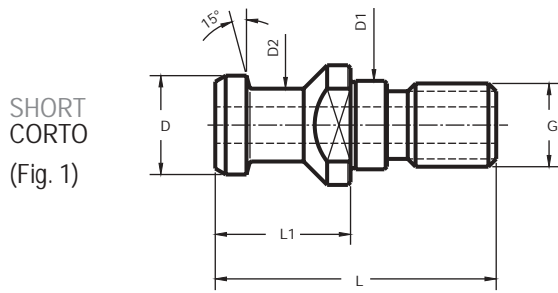
| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|------|----|------|-----|----------------|----------------|----------------|-----------------|
| 1 | 15 | M-16 | 50 | 25 | 17 | 10 | 003 99 18 02 00 |
| *1 | 24 | M-24 | 71 | 31 | 25 | 18 | 003 99 18 04 00 |
| 1 | 15 | M-16 | 60 | 35 | 17 | 10 | 003 99 23 02 00 |
| 1 | 23 | M-24 | 85 | 45 | 25 | 17 | 003 99 23 04 00 |
| 2 | 15 | M-12 | 110 | 26,75 | 17 | 10 | 003 99 11 02 40 |
| 2 | 15 | M-16 | 116 | 26,75 | 17 | 10 | 003 99 11 02 50 |
| 2 | 23 | M-20 | 165 | 45,2 | 25 | 17 | 003 99 11 04 60 |
| 2 | 15 | M-12 | 108 | 25 | 17 | 10 | 003 99 18 02 40 |
| 2 | 15 | M-16 | 114 | 25 | 17 | 10 | 003 99 18 02 50 |
| 2 | 15 | M-12 | 118 | 35 | 17 | 10 | 003 99 23 02 40 |
| 2 | 15 | M-12 | 178 | 35 | 17 | 10 | 003 99 23 02 41 |
| 2 | 15 | M-16 | 124 | 35 | 17 | 10 | 003 99 23 02 50 |
| 2 | 23 | M-20 | 165 | 45 | 25 | 17 | 003 99 23 04 60 |

(*) Pull studs with coolant though channel.

(*) Tirante provisto de agujero central pasante



| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|------|----|------|-----|----------------|----------------|----------------|-----------------|
| 1 | 12 | M-12 | 43 | 23,4 | 12,5 | 8 | 003 99 31 01 00 |
| 1 | 19 | M-16 | 54 | 29 | 17 | 14 | 003 99 31 02 00 |
| 1 | 23 | M-20 | 60 | 30 | 21 | 17 | 003 99 31 03 00 |
| 1 | 28 | M-24 | 74 | 34 | 25 | 21 | 003 99 31 04 00 |
| 2 | 12 | M-10 | 90 | 23,4 | 12,5 | 8 | 003 99 31 01 30 |
| 2 | 12 | M-10 | 145 | 23,4 | 12,5 | 8 | 003 99 31 01 31 |
| 2 | 12 | M-12 | 94 | 23,4 | 12,5 | 8 | 003 99 31 01 40 |
| 2 | 12 | M-12 | 143 | 23,4 | 12,5 | 8 | 003 99 31 01 41 |
| 2 | 19 | M-12 | 94 | 29 | 17 | 14 | 003 99 31 02 01 |
| 2 | 19 | M-12 | 112 | 29 | 17 | 14 | 003 99 31 02 40 |
| 2 | 19 | M-12 | 172 | 29 | 17 | 14 | 003 99 31 02 41 |
| 2 | 19 | M-16 | 94 | 29 | 17 | 14 | 003 99 31 02 02 |
| 2 | 19 | M-16 | 118 | 29 | 17 | 14 | 003 99 31 02 50 |
| 2 | 19 | M-16 | 188 | 29 | 17 | 14 | 003 99 31 02 51 |
| 2 | 28 | M-20 | 154 | 34 | 25 | 21 | 003 99 31 04 60 |
| 2 | 28 | M-20 | 260 | 34 | 25 | 21 | 003 99 31 04 61 |



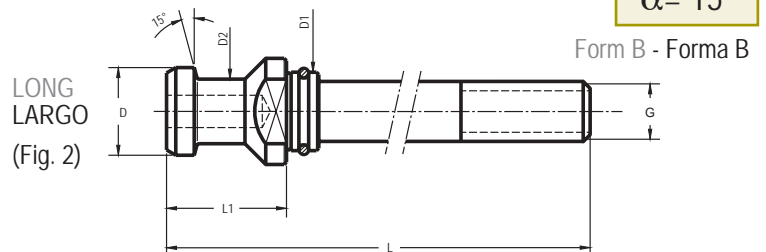
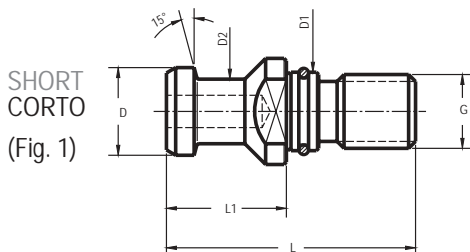
DIN 69872 Form A - ISO 7388/2 Form A
DIN 69872 Forma A - ISO 7388/2 Forma A

DIN 69872 Form A - ISO 7388/2 Form A
DIN 69872 Forma A - ISO 7388/2 Forma A

| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|------|----|------|-----|----------------|----------------|----------------|-----------------|
| *1 | 13 | M-12 | 44 | 24 | 13 | 9 | 003 99 16 01 00 |
| 1 | 19 | M-16 | 54 | 26 | 17 | 14 | 003 99 16 02 00 |
| 1 | 28 | M-24 | 74 | 34 | 25 | 21 | 003 99 16 04 00 |
| 2 | 13 | M-12 | 94 | 24 | 13 | 9 | 003 99 16 01 40 |
| 2 | 19 | M-12 | 92 | 26 | 17 | 14 | 003 99 16 02 01 |
| 2 | 19 | M-12 | 112 | 26 | 17 | 14 | 003 99 16 02 40 |
| 2 | 19 | M-12 | 171 | 26 | 17 | 14 | 003 99 16 02 41 |
| 2 | 19 | M-16 | 93 | 26 | 17 | 14 | 003 99 16 02 02 |
| 2 | 19 | M-16 | 118 | 26 | 17 | 14 | 003 99 16 02 50 |
| 2 | 19 | M-16 | 183 | 26 | 17 | 14 | 003 99 16 02 51 |
| 2 | 23 | M-16 | 100 | 30 | 21 | 17 | 003 99 16 03 02 |
| 2 | 23 | M-16 | 135 | 30 | 21 | 17 | 003 99 16 03 50 |
| 2 | 23 | M-16 | 125 | 30 | 21 | 17 | 003 99 16 03 52 |
| 2 | 28 | M-20 | 154 | 34 | 25 | 21 | 003 99 16 04 60 |

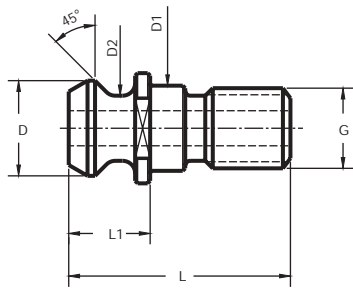
* Without coolant through channel.

* Sin orificio central pasante.



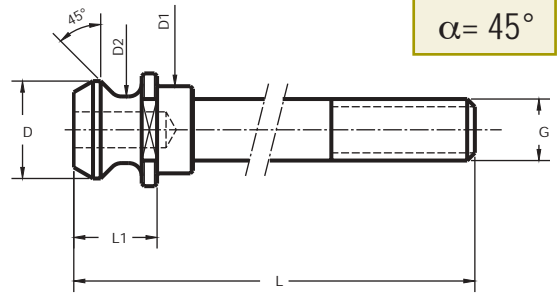
| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. | |
|------|----|------|-----|----------------|----------------|----------------|-----------------|-----------------|
| 1 | 13 | M-12 | 44 | 24 | 13 | 9 | 003 99 26 01 00 | 305 04 01 11 00 |
| 1 | 19 | M-16 | 54 | 26 | 17 | 14 | 003 99 26 02 00 | 305 04 01 41 50 |
| 1 | 23 | M-20 | 65 | 30 | 21 | 17 | 003 99 26 03 00 | 305 04 01 72 00 |
| 1 | 28 | M-24 | 74 | 34 | 25 | 21 | 003 99 26 04 00 | 305 04 02 02 50 |
| 2 | 19 | M-12 | 112 | 26 | 17 | 14 | 003 99 26 02 40 | 305 04 01 41 50 |
| 2 | 19 | M-16 | 118 | 26 | 17 | 14 | 003 99 26 02 50 | 305 04 01 41 50 |

SHORT
CORTO
(Fig. 1)



ISO 7388/2 Form B
ISO 7388/2 Forma B

LONG
LARGO
(Fig. 1)



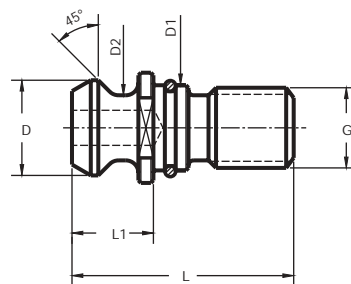
ISO 7388/2 Form B
ISO 7388/2 Forma B

$\alpha = 45^\circ$

| FIG. | D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|------|-------|------|------|----------------|----------------|----------------|-----------------|
| 1 | 13,20 | M-12 | 34 | 11,65 | 13 | 9,15 | 003 99 17 01 00 |
| 1 | 18,80 | M-16 | 44,5 | 16,25 | 17 | 12,80 | 003 99 17 02 00 |
| *1 | 18,80 | M-16 | 44,5 | 19,10 | 17 | 12,80 | 003 99 32 02 00 |
| 1 | 23,90 | M-20 | 56 | 20,80 | 21 | 16,15 | 003 99 17 03 00 |
| 1 | 29 | M-24 | 65,5 | 25,40 | 25 | 19,45 | 003 99 17 04 00 |
| *1 | 29 | M-24 | 65,5 | 25,20 | 25 | 19,45 | 003 99 32 04 00 |
| 2 | 13,20 | M-10 | 80 | 11,65 | 13 | 9,15 | 003 99 17 01 30 |
| 2 | 18,80 | M-12 | 82 | 16,25 | 17 | 12,80 | 003 99 17 02 01 |
| 2 | 18,80 | M-12 | 161 | 16,25 | 17 | 12,80 | 003 99 17 02 41 |
| 2 | 18,80 | M-16 | 83 | 16,25 | 17 | 12,80 | 003 99 17 02 02 |
| 2 | 18,80 | M-16 | 108 | 16,25 | 17 | 12,80 | 003 99 17 02 50 |
| 2 | 18,80 | M-16 | 178 | 19,10 | 17 | 12,80 | 003 99 32 02 51 |
| 2 | 23,90 | M-16 | 90 | 20,80 | 21 | 16,15 | 003 99 17 03 02 |
| 2 | 23,90 | M-16 | 125 | 20,80 | 21 | 16,15 | 003 99 17 03 50 |


* These pull studs are not according to ISO 7388/2 Form B.

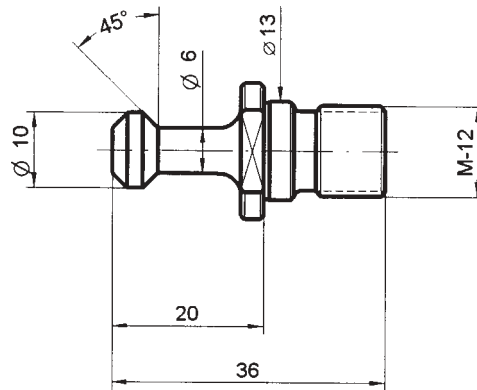
* Estos tirantes no cumplen la norma ISO 7388/2 Forma B.



$\alpha = 45^\circ$

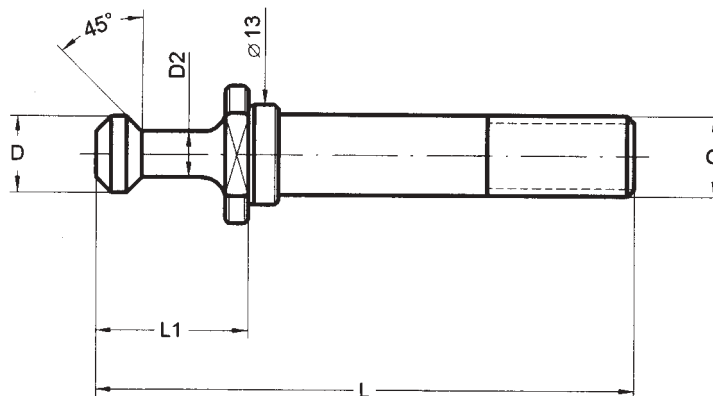
Without coolant through channel
Sin paso de refrigerante

| D | G | L | L ₁ | D ₁ | D ₂ | COD. | |
|------|------|------|----------------|----------------|----------------|-----------------|---|
| 18,8 | M-16 | 44,5 | 16,25 | 17 | 12,80 | 003 99 27 02 00 |  |
| 29 | M-24 | 65,5 | 25,4 | 25 | 19,45 | 003 99 27 04 00 | |



$\alpha = 45^\circ$

| D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|----|------|----|----------------|----------------|----------------|-----------------|
| 10 | M-12 | 36 | 20 | 13 | 6 | 003 99 30 01 00 |



$\alpha = 45^\circ$

| D | G | L | L ₁ | D ₁ | D ₂ | COD. |
|----|------|----|----------------|----------------|----------------|-----------------|
| 10 | M-6 | 74 | 20 | 13 | 6 | 003 99 30 01 20 |
| 10 | M-10 | 84 | 20 | 13 | 6 | 003 99 30 01 30 |
| 10 | M-12 | 89 | 20 | 13 | 6 | 003 99 30 01 40 |