



DIN 84



DIN 963



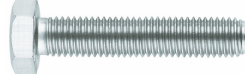
DIN 965



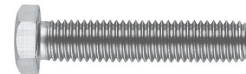
DIN 7985



DIN 931



DIN 933



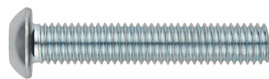
DIN 933 (A2)



DIN 6921



DIN 6921 (A2)



DIN 7380



DIN 912



DIN 603



DIN 603 (A2)



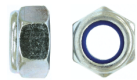
DIN 608



DIN 934



DIN 934 (A2)



DIN 985



DIN 985 (A2)



DIN 1587



DIN 6923



DIN 6923 (A2)



TU-MA



DIN 125



DIN 125 (A2)



DIN 127



DIN 127 (A2)



DIN 9021



DIN 9021 (A2)



DIN 6798

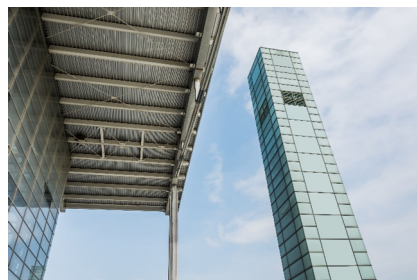


TP-MT

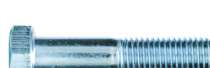
## CHARACTERISTICS

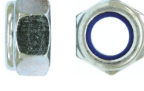
- Bolts for mechanical fixings.
- Metric thread.
- Requires pre-drilled threading or the use of a metric nut.
- Variety of sizes, heads and lengths: flexibility in installation.
- Zinc-plated coating and stainless steel.

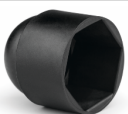
## APPLICATIONS



## 1. RANGE

| ITEM | CODE          | STANDARD      | PHOTO                                                                               | HEAD                                                                                                          | RECESS                                                                                              | MATERIAL                                                                                        |
|------|---------------|---------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1    | <b>T084</b>   | DIN 84        |    | <br>Cylinder                 | <br>Slot          | Steel class 4.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 2    | <b>T963</b>   | DIN 963       |    | <br>Countersunk              | <br>Slot          | Steel class 4.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 3    | <b>T965</b>   | DIN 965       |    | <br>Countersunk              | <br>Ph            | Steel class 4.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 4    | <b>T985</b>   | DIN 7985      |    | <br>Crowned                  | <br>Ph            | Steel class 4.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 5    | <b>D931</b>   | DIN 931       |    | <br>Hexagonal                | <br>Hexagonal     | Steel class 8.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 6    | <b>D933</b>   | DIN 933       |    | <br>Hexagonal                | <br>Hexagonal     | Steel class 8.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 7    | <b>D933I</b>  | DIN 933 (A2)  |  | <br>Hexagonal               | <br>Hexagonal    | Stainless steel A2-70 (AISI 304)                                                                |
| 8    | <b>D6921</b>  | DIN 6921      |  | <br>Hexagonal flange       | <br>Hexagonal   | Steel class 8.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 9    | <b>D6921I</b> | DIN 6921 (A2) |  | <br>Hexagonal flange       | <br>Hexagonal   | Stainless steel A2-70 (AISI 304)                                                                |
| 10   | <b>D7380</b>  | DIN 7380      |  | <br>Rivet                  | <br>Allen       | Steel class 10.9 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042      |
| 11   | <b>D912</b>   | DIN 912       |  | <br>Cylinder               | <br>Allen       | Steel class 8.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 12   | <b>D603</b>   | DIN 603       |  | <br>Rivet with square neck | <br>Tamperproof | Steel class 4.8 UNE EN ISO 898-1.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042       |
| 13   | <b>D603I</b>  | DIN 603 (A2)  |  | <br>Rivet with square neck | <br>Tamperproof | Stainless steel A2-70 (AISI 304)                                                                |
| 14   | <b>D608</b>   | DIN 608       |  | <br>Countersunk            | <br>Cylindrical | Steel class 8.8 UNE EN ISO 898-1.<br>Coating: yellow passivated $\geq 3 \mu\text{m}$ s/ISO 4042 |

| ITEM | CODE          | STANDARD               | PHOTO                                                                               | HEAD                                                                                             | RECESS | MATERIAL                                                                              |
|------|---------------|------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|
| 15   | <b>D934</b>   | DIN 934                |    | <br>Hexagonal   |        | Steel hardness > 140 HV.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042      |
| 16   | <b>D934I</b>  | DIN 934 (A2)           |    | <br>Hexagonal   |        | Stainless steel A2-70 (AISI 304)                                                      |
| 17   | <b>D985</b>   | DIN 985                |    | <br>Hexagonal   |        | Steel hardness > 140 HV.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042      |
| 18   | <b>D985I</b>  | DIN 985 (A2)           |    | <br>Hexagonal   |        | Stainless steel A2-70 (AISI 304)                                                      |
| 19   | <b>D1587</b>  | DIN 1587               |    | <br>Hexagonal   |        | Carbon steel<br>Coatings: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042                 |
| 20   | <b>D6923</b>  | DIN 6923               |   | <br>Hexagonal  |        | Carbon steel<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042                  |
| 21   | <b>D6923I</b> | DIN 6923 (A2)          |  | <br>Hexagonal |        | Stainless steel A2-70 (AISI 304)                                                      |
| 22   | <b>TU-MA</b>  | Equivalente<br>DIN 315 |  | --                                                                                               |        | Stainless steel A2-70 (AISI 304)                                                      |
| 23   | <b>D125</b>   | DIN 125                |  | --                                                                                               |        | Steel class 6 UNE EN 20898-2.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042 |
| 24   | <b>D125I</b>  | DIN 125 (A2)           |  | --                                                                                               |        | Stainless steel A2-70 (AISI 304)                                                      |
| 25   | <b>D127</b>   | DIN 127                |  | --                                                                                               |        | Steel class 6 UNE EN 20898-2.<br>Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042 |
| 26   | <b>D127I</b>  | DIN 127 A2             |  | --                                                                                               |        | Stainless steel A2-70 (AISI 304)                                                      |
| 27   | <b>D9021</b>  | DIN 9021               |  |                                                                                                  |        | Carbon steel<br>Coating: Zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042                  |
| 28   | <b>D9021I</b> | DIN 9021 (A2)          |  |                                                                                                  |        | Stainless steel A2-70 (AISI 304)                                                      |

| ITEM | CODE          | STANDARD | PHOTO                                                                             | HEAD                                                                                           | RECESS | MATERIAL                                                                |
|------|---------------|----------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------|
| 29   | <b>D6798A</b> | DIN 6798 |  |                                                                                                | --     | Carbon steel<br>Coating. Zinc-plated $\geq 5 \mu\text{m s/ISO}$<br>4042 |
| 30   | <b>TPMT</b>   | --       |  | <br>Hexagonal |        | Polyethylene (PE)                                                       |



## 2. CHARACTERISTICS

### 2.1 DIN-84

### Slotted bolt – cylindrical head



#### Properties



Steel



Zinc-plated coating

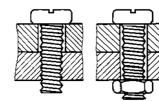


Plate fixings

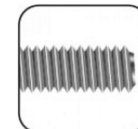
#### Properties



Slot

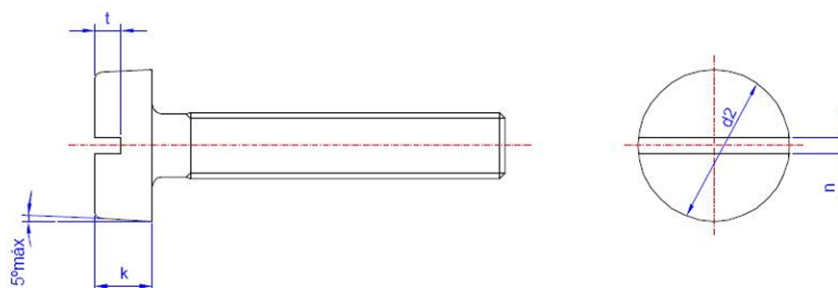


Cylindrical head



Metric

| SIZES              |      | M3   | M4   | M5   | M6  |
|--------------------|------|------|------|------|-----|
| Ød2: head diameter | [mm] | 5.5  | 7    | 8.5  | 10  |
| k: head thickness  | [mm] | 2.0  | 2.6  | 3.3  | 3.9 |
| n: slot width      | [mm] | 1.0  | 1.50 | 1.50 | 1.9 |
| t: slot depth      | [mm] | 1.15 | 1.5  | 1.8  | 2.2 |



## 2.2 DIN-963

## Slotted bolt – countersunk head



### Properties



Steel



Zinc-plated coating

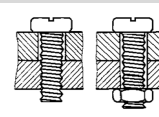


Plate fixings

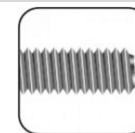
### Properties



Slot

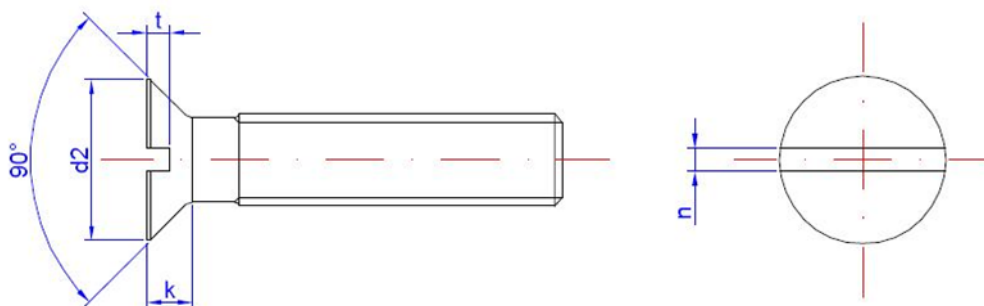


Countersunk head



Metric

| SIZES              |      | M4  | M5  | M6  | M8   |
|--------------------|------|-----|-----|-----|------|
| Ød2: head diameter | [mm] | 7.5 | 9.2 | 11  | 14.5 |
| k: head thickness  | [mm] | 2.2 | 2.5 | 3   | 4    |
| n: slot width      | [mm] | 1.5 | 1.5 | 1.9 | 2.3  |
| t: slot depth      | [mm] | 1.1 | 1.3 | 1.6 | 2.1  |



## 2.3 DIN-965

## Bolt – countersunk head – Ph socket



### Properties



Steel



Zinc-plated coating

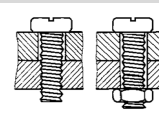


Plate fixings

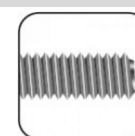
### Properties



Ph

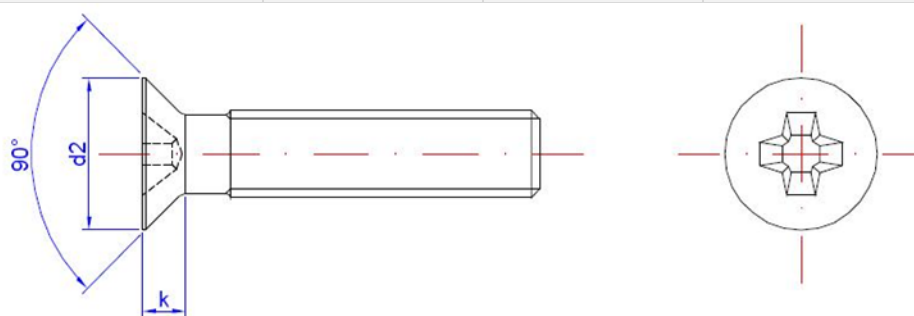


Countersunk head



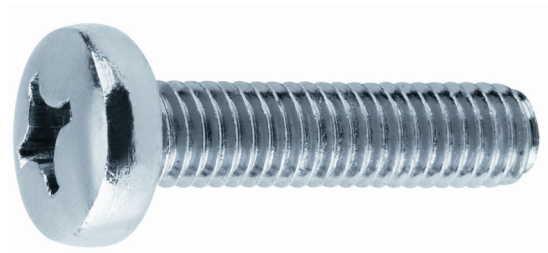
Metric

| SIZES              |      | M3                 | M4                  | M5                 | M6                 |
|--------------------|------|--------------------|---------------------|--------------------|--------------------|
| Ød2: head diameter | [mm] | 5.6                | 7.5                 | 9.2                | 11.0               |
| k: head thickness  | [mm] | 1.65               | 2.2                 | 2.5                | 3.0                |
| Ph socket          |      | 1                  | 2                   | 2                  | 3                  |
| Drill bit code     |      | PUPHC01<br>PUPHL01 | PUPHC02<br>PUPHL002 | PUPHC02<br>PUPHL02 | PUPHC03<br>PUPHL03 |



## 2.4 DIN-7985

## Dome head bolt – Ph socket



### Properties



Steel



Zinc-plated coating

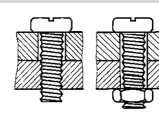
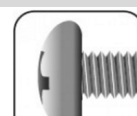


Plate fixings

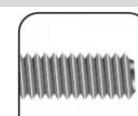
### Properties



Ph

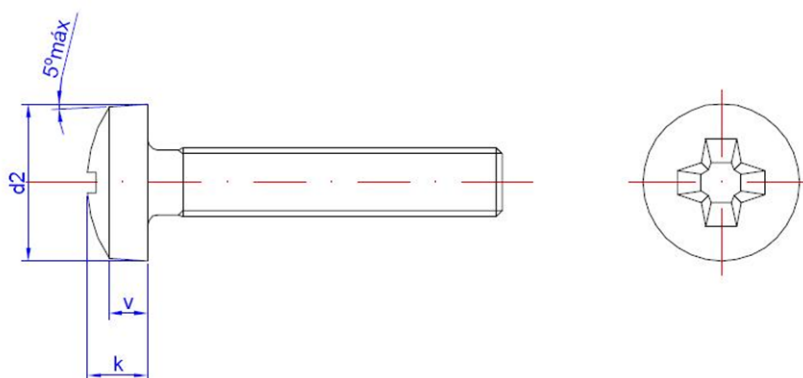


Dome head



Metric

| SIZES              |      | M3                 | M4                  | M5                 | M6                 |
|--------------------|------|--------------------|---------------------|--------------------|--------------------|
| Ød2: head diameter | [mm] | 6                  | 8                   | 10                 | 12                 |
| k: head thickness  | [mm] | 2.4                | 3.1                 | 3.8                | 4.6                |
| v                  | [mm] | 1.6                | 2.0                 | 2.5                | 3.0                |
| Ph socket          |      | 1                  | 2                   | 2                  | 3                  |
| Drill bit code     |      | PUPHC01<br>PUPHL01 | PUPHC02<br>PUPHL002 | PUPHC02<br>PUPHL02 | PUPHC03<br>PUPHL03 |



## 2.5 DIN-931

## Metric thread bolt – hexagonal head



### Properties



Steel



Zinc-plated coating

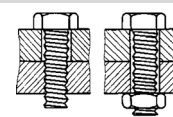


Plate fixings

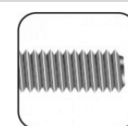
### Properties



Hexagonal

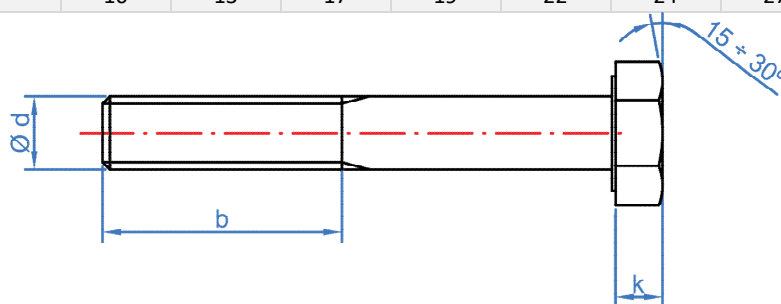
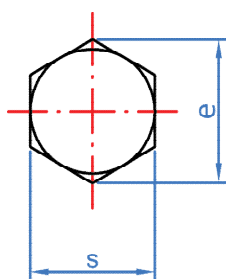


Hexagonal head



Metric

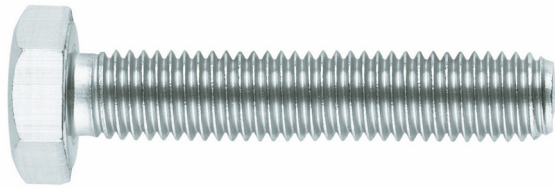
| SIZES                                 |      | M6    | M8    | M10   | M12   | M14   | M16   | M18   | M20   |
|---------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| s: distance between faces             | [mm] | 10    | 13    | 17    | 19    | 22    | 24    | 27    | 30    |
| k: head thickness                     | [mm] | 4     | 5,3   | 6,4   | 7,5   | 8,8   | 10    | 11,5  | 12,5  |
| e: distance between apices            | [mm] | 10,89 | 14,20 | 18,72 | 20,88 | 23,91 | 26,17 | 29,56 | 32,95 |
| b(min): thread length $l \leq 120$ mm | [mm] | 18    | 22    | 26    | 30    | 34    | 38    | 42    | 46    |
| b(min): thread length $l > 120$ mm    | [mm] | --    | 28    | 32    | 36    | 40    | 44    | 48    | 52    |
| Torque wrench                         |      | 10    | 13    | 17    | 19    | 22    | 24    | 27    | 30    |





## 2.6 DIN-933

## Metric thread bolt – hexagonal head



### Properties



Steel



Zinc-plated coating

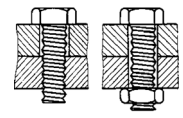


Plate fixings

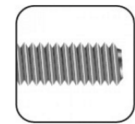
### Properties



Hexagonal

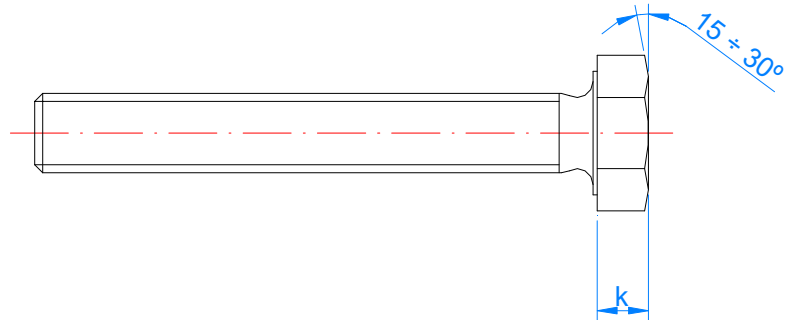
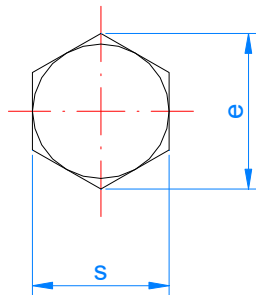


Hexagonal head



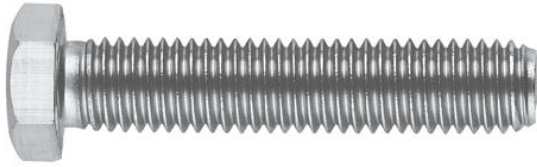
Metric

| SIZES                      |      | M4   | M5   | M6    | M8    | M10   | M12   | M14   | M16   | M18   | M20   |
|----------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| s: distance between faces  | [mm] | 7    | 8    | 10    | 13    | 17    | 19    | 22    | 24    | 27    | 30    |
| k: head thickness          | [mm] | 3    | 3,5  | 4     | 5,3   | 6,4   | 7,5   | 8,8   | 10    | 11,5  | 12,5  |
| e: distance between apices | [mm] | 7,50 | 8,63 | 10,89 | 14,20 | 18,72 | 20,88 | 23,91 | 26,17 | 29,56 | 32,95 |
| Torque wrench              |      | 7    | 8    | 10    | 13    | 17    | 19    | 22    | 24    | 27    | 30    |



## 2.7 DIN-933 A2

## Stainless Steel metric thread bolt – hexagonal head



### Properties



Steel



Stainless steel A2  
(AISI 304)

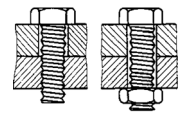


Plate fixings

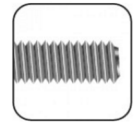
### Properties



Hexagonal

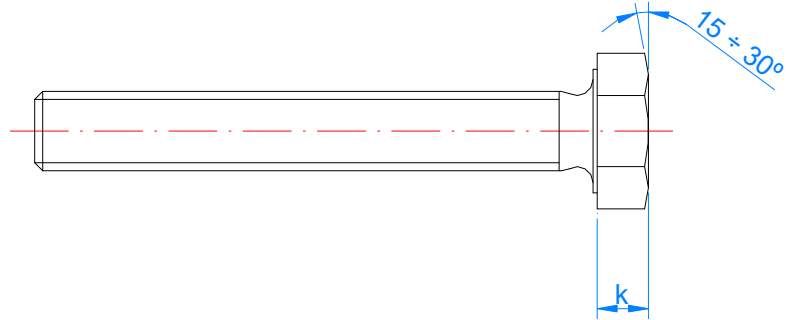
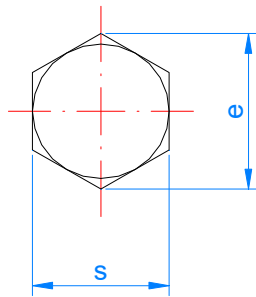


Hexagonal head



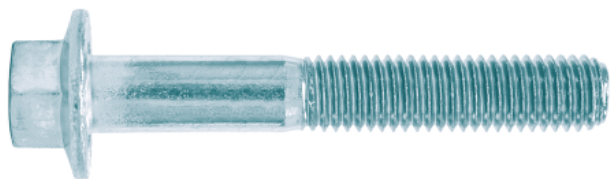
Metric

| SIZES                      |      | M4   | M5   | M6    | M8    | M10   | M12   | M14   | M16   | M18   |
|----------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| s: distance between faces  | [mm] | 7    | 8    | 10    | 13    | 17    | 19    | 22    | 24    | 27    |
| k: head thickness          | [mm] | 3    | 3,5  | 4     | 5,3   | 6,4   | 7,5   | 8,8   | 10    | 11,5  |
| e: distance between apices | [mm] | 7,50 | 8,63 | 10,89 | 14,20 | 18,72 | 20,88 | 23,91 | 26,17 | 29,56 |
| Torque wrench              |      | 7    | 8    | 10    | 13    | 17    | 19    | 22    | 24    | 27    |



## 2.8 DIN-6921

## Metric thread bolt – hexagonal head with washer



### Properties



Steel



Zinc-plated coating

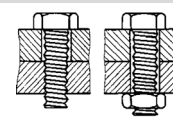


Plate fixings

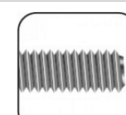
### Properties



Hexagonal

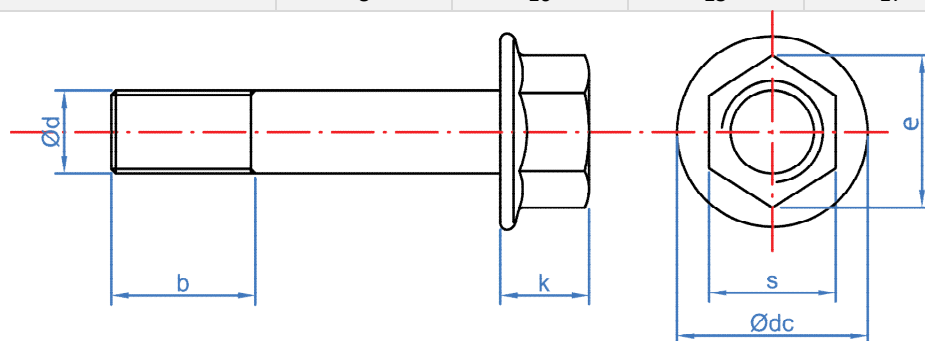


Hexagonal head



Metric

| SIZES                      |      | M5               | M6               | M8               | M10              | M12           |
|----------------------------|------|------------------|------------------|------------------|------------------|---------------|
| s: distance between faces  | [mm] | 8                | 10               | 13               | 17               | 19            |
| k: head thickness          | [mm] | 5,4              | 6,6              | 8,10             | 9,2              | 11,5          |
| e: distance between apices | [mm] | 8,71             | 10,95            | 14,26            | 16,50            | 17,62         |
| Ødc: washer diameter       | [mm] | 11,8             | 14,2             | 18,0             | 22,3             | 26,6          |
| b(min): thread length      | [mm] | Full /<br>16 min | Full /<br>18 min | Full /<br>22 min | Full /<br>26 min | Full / 30 min |
| Torque wrench              |      | 8                | 10               | 13               | 17               | 19            |



## 2.9 DIN-6921 A2

## Stainless steel metric thread bolt – hexagonal head with washer



### Properties



Steel



Stainless steel A2  
(AISI 304)

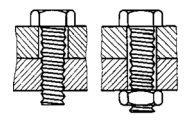
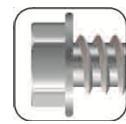


Plate fixings

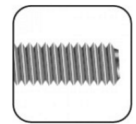
### Properties



Hexagonal

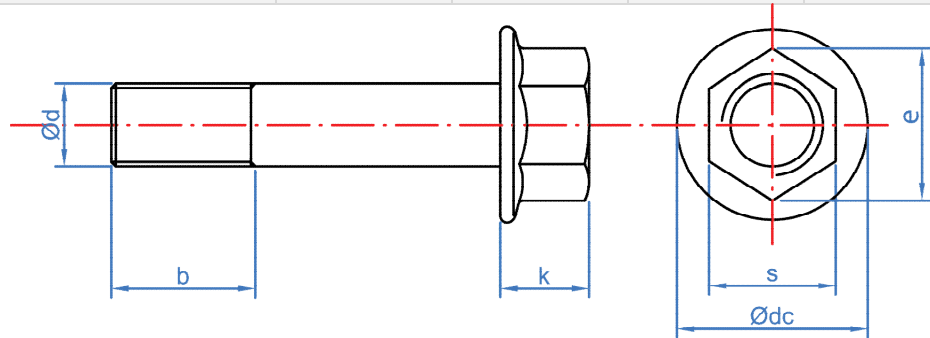


Hexagonal head



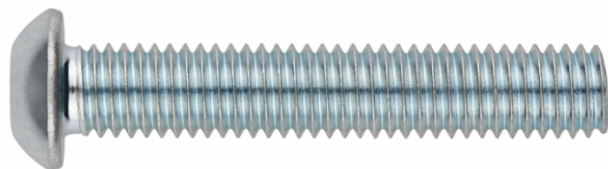
Metric

| SIZES                      |      | M5               | M6               | M8               | M10              | M12           |
|----------------------------|------|------------------|------------------|------------------|------------------|---------------|
| s: distance between faces  | [mm] | 8                | 10               | 13               | 17               | 19            |
| k: head thickness          | [mm] | 5,4              | 6,6              | 8,10             | 9,2              | 11,5          |
| e: distance between apices | [mm] | 8,71             | 10,95            | 14,26            | 16,50            | 17,62         |
| Ødc: washer diameter       | [mm] | 11,8             | 14,2             | 18,0             | 22,3             | 26,6          |
| b(min): thread length      | [mm] | Full /<br>16 min | Full /<br>18 min | Full /<br>22 min | Full /<br>26 min | Full / 30 min |
| Torque wrench              |      | 8                | 10               | 13               | 17               | 19            |



## 2.10 DIN-7380

## ISO 7380 Allen screw with rivet head



### Properties



Steel



Zinc-plated  
coating

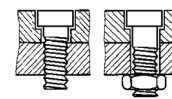
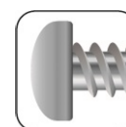


Plate fixings

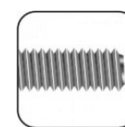
### Properties



Allen

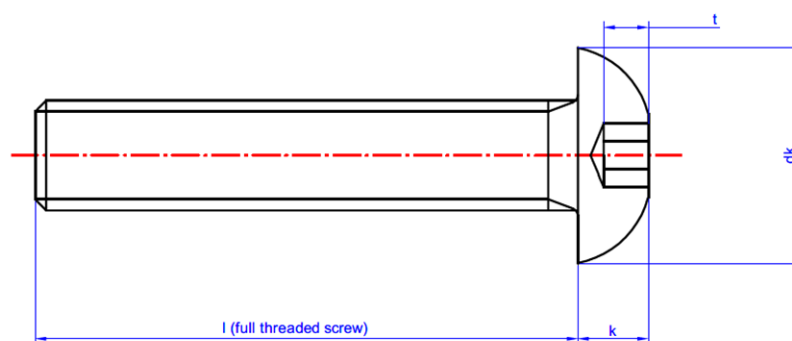
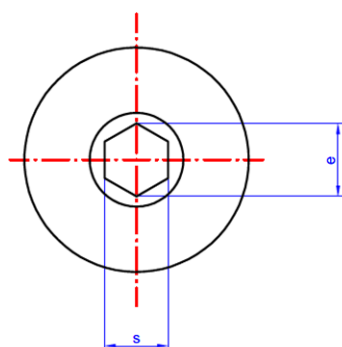


Cylindrical head



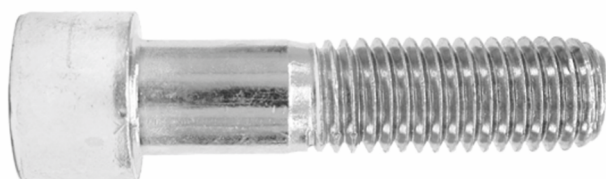
Metric

| SIZES                |      | M3      | M4        | M5      | M6      | M8      | M10     |
|----------------------|------|---------|-----------|---------|---------|---------|---------|
| Ødk: head diameter   | [mm] | 5,50    | 7,50      | 9,30    | 10,30   | 13,75   | 17,30   |
| k: head thickness    | [mm] | 1,50    | 2,00      | 2,50    | 3,00    | 4,10    | 5,20    |
| L: Available lengths | [mm] | 12 - 20 | 8 - 40    | 10 - 50 | 8 - 60  | 10 - 60 | 16 - 60 |
| Torque wrench        |      | Allen 2 | Allen 2.5 | Allen 3 | Allen 4 | Allen 5 | Allen 6 |



## 2.11 DIN-912

## Allen bolt



### Properties



Steel



Zinc-plated coating

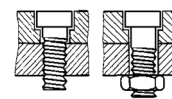


Plate fixings

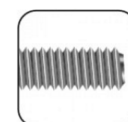
### Properties



Allen

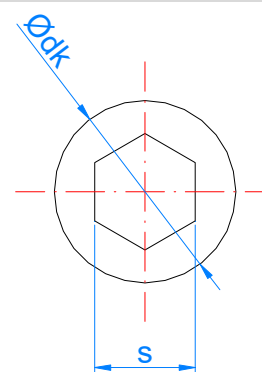
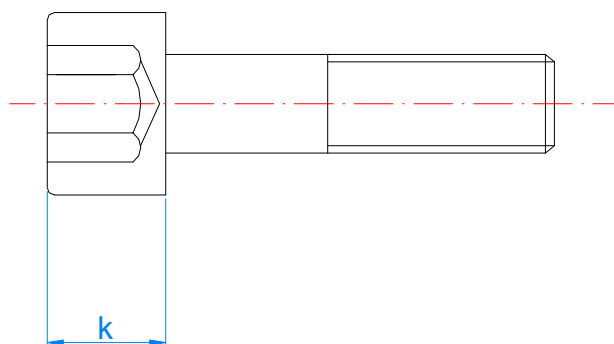


Cylindrical head



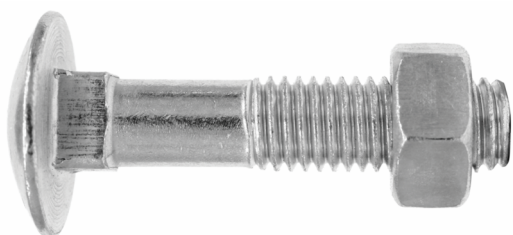
Metric

| SIZES                     |      | M4      | M5      | M6      | M8      | M10     | M12      |
|---------------------------|------|---------|---------|---------|---------|---------|----------|
| Ødk: head diameter        | [mm] | 7       | 8,5     | 10      | 13      | 16      | 18       |
| s: distance between faces | [mm] | 3       | 4       | 5       | 6       | 8       | 10       |
| k: head thickness         | [mm] | 4       | 5       | 6       | 8       | 10      | 12       |
| Torque wrench             |      | Allen 3 | Allen 4 | Allen 5 | Allen 6 | Allen 8 | Allen 10 |



## 2.12 DIN-603

## DIN-603 bolt and DIN-934 nut



### Properties



Steel



Zinc-plated coating

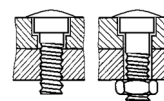
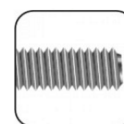


Plate fixings

### Properties

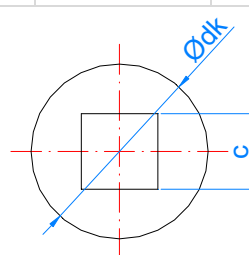
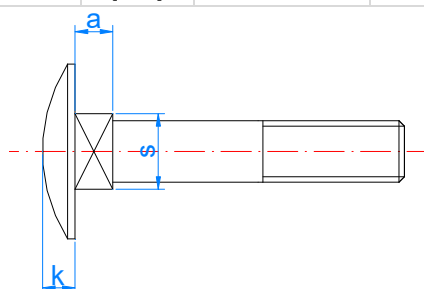


Round head square neck



Metric

| SIZES               |      | M5  | M6  | M8  | M10  | M12  |
|---------------------|------|-----|-----|-----|------|------|
| Ødk: head diameter  | [mm] | 13  | 16  | 20  | 24   | 30   |
| k: head thickness   | [mm] | 3   | 3,5 | 4,5 | 5    | 6,5  |
| a: square thickness | [mm] | 3,5 | 4   | 5   | 6    | 8    |
| s                   | [mm] | 5   | 6,2 | 7,8 | 9,85 | 11,6 |
| c                   | [mm] | 5   | 6   | 8   | 10   | 12   |





## 2.13 DIN-603 A2

## Stainless steel DIN-603 bolt



### Properties



Steel



Stainless steel A2 (AISI 304)

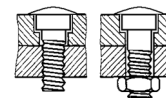
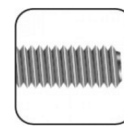


Plate fixings

### Properties

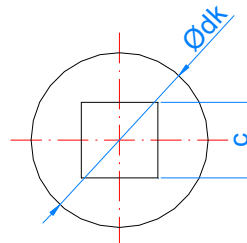
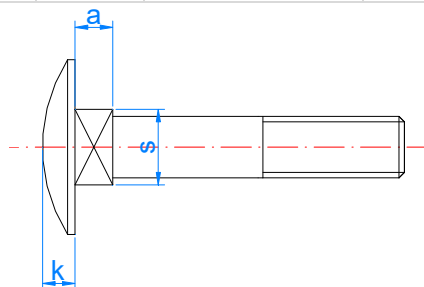


Round head square neck



Metric

| SIZES               |      | M5  | M6  | M8  | M10  | M12  |
|---------------------|------|-----|-----|-----|------|------|
| Ødk: head diameter  | [mm] | 13  | 16  | 20  | 24   | 30   |
| k: head thickness   | [mm] | 3   | 3,5 | 4,5 | 5    | 6,5  |
| a: square thickness | [mm] | 3,5 | 4   | 5   | 6    | 8    |
| s                   | [mm] | 5   | 6,2 | 7,8 | 9,85 | 11,6 |
| c                   | [mm] | 5   | 6   | 8   | 10   | 12   |



## 2.14 DIN-608

## DIN-608 bolt and DIN-934 nut



### Properties



Steel



Yellow passivated

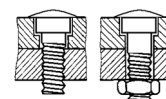
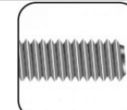


Plate fixings

### Properties

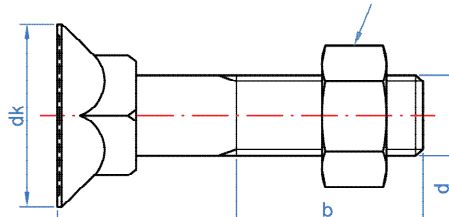
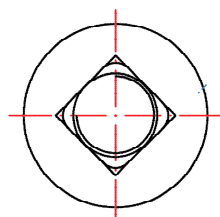


Countersunk head

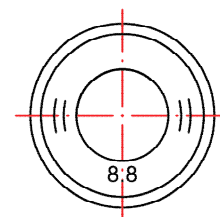


Metric

| SIZE               |      | M10  | M10  | M12  |
|--------------------|------|------|------|------|
| Ødk: head diameter | [mm] | 19,5 | 21,5 | 23,5 |
| b: thread length   | [mm] | 25   | 27   | 28,5 |
| d: metric          | [mm] | 10   | 11   | 12   |

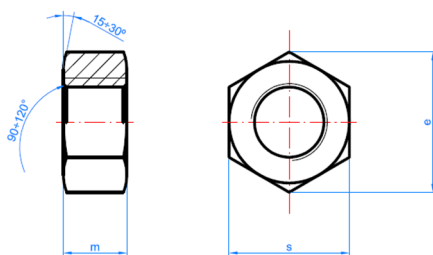


DIN 934



## 2.15 DIN-934

### Hexagonal nut



#### Properties



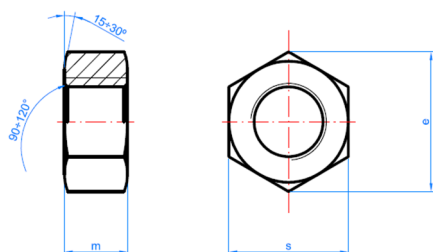
Steel

Zinc-plated coating

| M      | M3  | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27  | M30  | M33  | M36  |
|--------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| s      | 5,5 | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   | 41   | 46   | 50   | 55   |
| e      | 6,0 | 7,7 | 8,8 | 11,1 | 14,4 | 18,9 | 21,1 | 24,5 | 26,8 | 29,6 | 32,9 | 35,0 | 39,6 | 45,2 | 50,9 | 55,4 | 60,8 |
| m      | 2,4 | 3,2 | 4   | 5    | 6,5  | 8    | 10   | 11   | 13   | 15   | 16   | 18   | 19   | 22   | 24   | 26   | 29   |
| Wrench | 5,5 | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   | 41   | 46   | 50   | 55   |

## 2.16 DIN-934 A2

### Stainless Steel A2 hexagonal nut



#### Properties



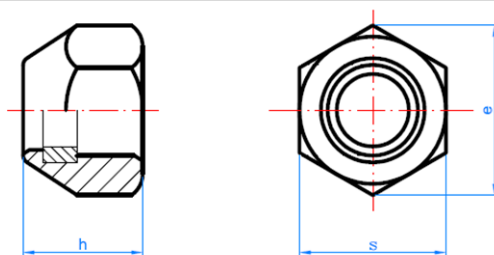
Steel

Stainless Steel A2  
(AISI 304)

| M      | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  |
|--------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| s      | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   |
| e      | 7,7 | 8,8 | 11,1 | 14,4 | 18,9 | 21,1 | 24,5 | 26,8 | 29,6 | 32,9 | 35,0 | 39,6 |
| m      | 3,2 | 4   | 5    | 6,5  | 8    | 10   | 11   | 13   | 15   | 16   | 18   | 19   |
| Wrench | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   |

## 2.17 DIN-985

### Self-locking nut



#### Properties



Steel

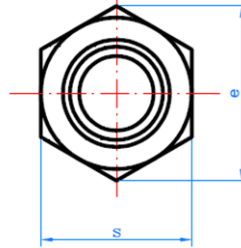
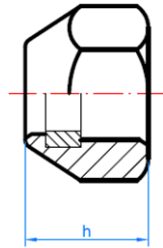
Zinc-plated coating

| M      | M3  | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27  | M30  |
|--------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| s      | 5,5 | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   | 41   | 46   |
| e      | 6,0 | 7,7 | 8,8 | 11,1 | 14,4 | 18,9 | 21,1 | 24,5 | 26,8 | 29,6 | 32,9 | 35,0 | 38,6 | 45,2 | 50,9 |
| h      | 4   | 5   | 5   | 6    | 8    | 10   | 12   | 14   | 16   | 18,5 | 20   | 22   | 24   | 27   | 30   |
| Wrench | 5,5 | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   | 41   | 46   |

2.18 DIN-985 A2

Stainless Steel A2 self-locking nut

Properties



Steel

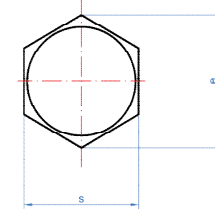
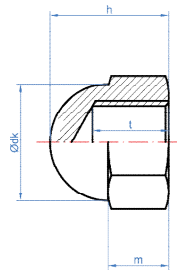
Stainless Steel A2  
(AISI 304)

| M      | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  |
|--------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| s      | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   |
| e      | 7,7 | 8,8 | 11,1 | 14,4 | 18,9 | 21,1 | 24,5 | 26,8 | 29,6 | 32,9 | 35,0 | 38,6 |
| h      | 5   | 5   | 6    | 8    | 10   | 12   | 14   | 16   | 18,5 | 20   | 22   | 24   |
| Wrench | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   | 27   | 30   | 32   | 36   |

2.19 DIN-1587

Cup nut

Properties



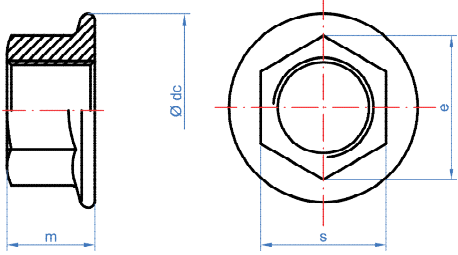
Steel

Zinc-plated coating

| M      | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  |
|--------|-----|-----|------|------|------|------|------|------|
| s      | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   |
| e      | 7,7 | 8,8 | 11,1 | 14,4 | 18,9 | 21,1 | 24,5 | 26,8 |
| h      | 8   | 10  | 12   | 15   | 18   | 22   | 25   | 28   |
| m      | 3   | 4   | 5    | 6,5  | 8    | 10   | 11   | 13   |
| t      | 5,5 | 7,5 | 8    | 11   | 13   | 16   | 18   | 21   |
| Ødk    | 6,5 | 7,5 | 9,5  | 12,5 | 16   | 18   | 21   | 23   |
| Wrench | 7   | 8   | 10   | 13   | 17   | 19   | 22   | 24   |

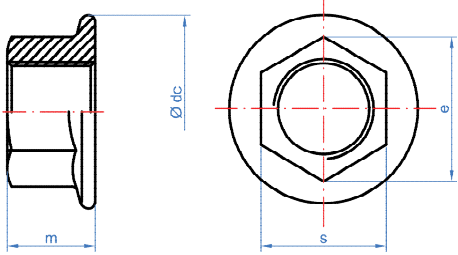
2.20 DIN-6923

Hexagonal flange nut with serration

|  |     |      |  |      |      | Properties                                                                          |                                                                                     |      |
|-----------------------------------------------------------------------------------|-----|------|------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
|                                                                                   |     |      |                                                                                    |      |      |  |  |      |
|                                                                                   |     |      |                                                                                    |      |      | Steel                                                                               | Zinc-plated coating                                                                 |      |
| M                                                                                 | M4  | M5   | M6                                                                                 | M8   | M10  | M12                                                                                 | M14                                                                                 | M16  |
| s                                                                                 | 7   | 8    | 10                                                                                 | 13   | 15   | 18                                                                                  | 21                                                                                  | 24   |
| e                                                                                 | 7,7 | 8,8  | 11,1                                                                               | 14,4 | 18,9 | 21,1                                                                                | 24,5                                                                                | 26,8 |
| m                                                                                 | 4,5 | 5    | 6                                                                                  | 8    | 10   | 12                                                                                  | 14                                                                                  | 16   |
| ØdC                                                                               | 10  | 11,8 | 14,2                                                                               | 17,9 | 21,8 | 26                                                                                  | 29,9                                                                                | 34,5 |
| Wrench                                                                            | 7   | 8    | 10                                                                                 | 13   | 17   | 19                                                                                  | 22                                                                                  | 24   |

2.21 DIN-6923 A2

Stainless steel hexagonal flange nut with serration

|  |     |      |  |      |      | Properties                                                                           |                                                                                      |      |
|------------------------------------------------------------------------------------|-----|------|------------------------------------------------------------------------------------|------|------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------|
|                                                                                    |     |      |                                                                                    |      |      |  |  |      |
|                                                                                    |     |      |                                                                                    |      |      | Steel                                                                                | Stainless Steel A2 (AISI 304)                                                        |      |
| M                                                                                  | M4  | M5   | M6                                                                                 | M8   | M10  | M12                                                                                  | M14                                                                                  | M16  |
| s                                                                                  | 7   | 8    | 10                                                                                 | 13   | 15   | 18                                                                                   | 21                                                                                   | 24   |
| e                                                                                  | 7,7 | 8,8  | 11,1                                                                               | 14,4 | 18,9 | 21,1                                                                                 | 24,5                                                                                 | 26,8 |
| m                                                                                  | 4,5 | 5    | 6                                                                                  | 8    | 10   | 12                                                                                   | 14                                                                                   | 16   |
| ØdC                                                                                | 10  | 11,8 | 14,2                                                                               | 17,9 | 21,8 | 26                                                                                   | 29,9                                                                                 | 34,5 |
| Wrench                                                                             | 7   | 8    | 10                                                                                 | 13   | 17   | 19                                                                                   | 22                                                                                   | 24   |

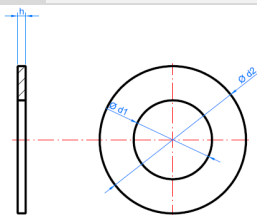
2.22 TU-MA

Wing nut

|  |    |    |    |    |    |     | Properties                                                                            |                                                                                       |                     |
|-------------------------------------------------------------------------------------|----|----|----|----|----|-----|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------|
|                                                                                     |    |    |    |    |    |     |  |  |                     |
|                                                                                     |    |    |    |    |    |     | Steel                                                                                 |                                                                                       | Zinc-plated coating |
| M                                                                                   | M3 | M4 | M5 | M6 | M8 | M10 | M12                                                                                   | M14                                                                                   | M16                 |
| ØD1:<br>interior<br>diameter                                                        | M3 | M4 | M5 | M6 | M8 | M10 | M12                                                                                   | M14                                                                                   | M16                 |

## 2.23 DIN-125

### Flat washer



#### Properties



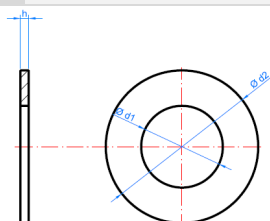
Steel

Zinc-plated coating

| M                            | M3  | M4  | M5  | M6  | M8  | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27  | M30  | M33  | M36  |
|------------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| Ød1:<br>interior<br>diameter | 3,3 | 4,3 | 5,3 | 6,4 | 8,4 | 10,5 | 13,0 | 15,0 | 17,0 | 19,0 | 21,0 | 23,0 | 25,0 | 28,0 | 31,0 | 34,0 | 37,0 |
| Ød2:<br>exterior<br>diameter | 7   | 9   | 10  | 12  | 16  | 20   | 24   | 28   | 30   | 34   | 37   | 39   | 44   | 50   | 56   | 60   | 66   |
| h:<br>thickness              | 0,8 | 0,8 | 1   | 1,6 | 1,6 | 2    | 2,5  | 2,5  | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 5    | 5    |

## 2.24 DIN-125 A2

### Stainless Steel A2 flat washer



#### Properties



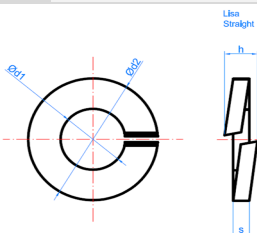
Steel

Stainless Steel A2 (AISI 304)

| M                            | M4  | M5  | M6  | M8  | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  |
|------------------------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
| Ød1:<br>interior<br>diameter | 4,3 | 5,3 | 6,4 | 8,4 | 10,5 | 13,0 | 15,0 | 17,0 | 19,0 | 21,0 | 23,0 | 25,0 |
| Ød2:<br>exterior<br>diameter | 9   | 10  | 12  | 16  | 20   | 24   | 28   | 30   | 34   | 37   | 39   | 44   |
| h:<br>thickness              | 0,8 | 1   | 1,6 | 1,6 | 2    | 2,5  | 2,5  | 3    | 3    | 3    | 3    | 4    |

## 2.25 DIN-127

### Grower spring washer



#### Properties



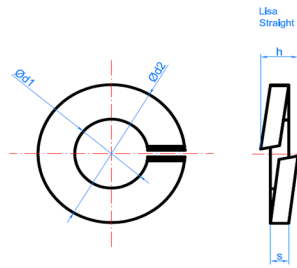
Steel

Zinc-plated coating

| M                            | M3  | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27  | M30  | M36  |
|------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ød1:<br>interior<br>diameter | 3,1 | 4,1 | 5,1 | 6,1  | 8,1  | 10,2 | 12,2 | 14,2 | 16,2 | 18,2 | 20,2 | 22,5 | 24,5 | 27,5 | 30,5 | 36,5 |
| Ød2:<br>exterior<br>diameter | 6,2 | 7,6 | 9,2 | 11,8 | 14,8 | 18,1 | 21,1 | 24,1 | 27,4 | 29,4 | 33,6 | 35,9 | 40   | 43   | 48,2 | 58,2 |
| h:<br>smooth<br>width        | 1,8 | 2   | 2,6 | 3,3  | 4,3  | 4,8  | 5,4  | 6,5  | 7,6  | 7,7  | 8,7  | 8,7  | 10,9 | 10,9 | 13,1 | 13,1 |
| s:<br>thickness              | 0,8 | 0,9 | 1,2 | 1,6  | 2    | 2,2  | 2,5  | 3    | 3,5  | 3,5  | 4    | 4    | 5    | 5    | 6    | 6    |

2.26 DIN-127 A2

Stainless steel grower spring washer



Properties



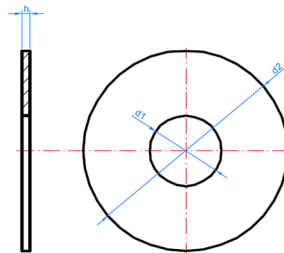
Steel

Stainless Steel A2  
(AISI 304)

| M                                          | M3  | M4  | M5  | M6   | M8   | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27  | M30  | M36  |
|--------------------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| $\varnothing d1$ :<br>interior<br>diameter | 3,1 | 4,1 | 5,1 | 6,1  | 8,1  | 10,2 | 12,2 | 14,2 | 16,2 | 18,2 | 20,2 | 22,5 | 24,5 | 27,5 | 30,5 | 36,5 |
| $\varnothing d2$ :<br>exterior<br>diameter | 6,2 | 7,6 | 9,2 | 11,8 | 14,8 | 18,1 | 21,1 | 24,1 | 27,4 | 29,4 | 33,6 | 35,9 | 40   | 43   | 48,2 | 58,2 |
| h:<br>smooth<br>width                      | 1,8 | 2   | 2,6 | 3,3  | 4,3  | 4,8  | 5,4  | 6,5  | 7,6  | 7,7  | 8,7  | 8,7  | 10,9 | 10,9 | 13,1 | 13,1 |
| s:<br>thickness                            | 0,8 | 0,9 | 1,2 | 1,6  | 2    | 2,2  | 2,5  | 3    | 3,5  | 3,5  | 4    | 4    | 5    | 5    | 6    | 6    |

2.27 DIN-9021

Wide flat washer



Properties



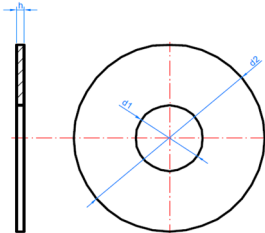
Steel

Zinc-plated coating

| M                                          | M3  | M4  | M5  | M6  | M8  | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  |
|--------------------------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
| $\varnothing d1$ :<br>interior<br>diameter | 3,2 | 4,3 | 5,3 | 6,4 | 8,4 | 10,5 | 13,0 | 15,0 | 17,0 | 20,0 | 22,0 | 24,0 | 26,0 |
| $\varnothing d2$ :<br>exterior<br>diameter | 9   | 12  | 15  | 18  | 24  | 30   | 37   | 44   | 50   | 56   | 60   | 66   | 72   |
| h:<br>thickness                            | 0,8 | 1   | 1,2 | 1,6 | 2   | 2,5  | 3    | 3    | 3    | 4    | 4    | 5    | 5    |

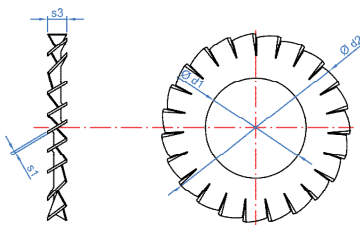
2.28 DIN-9021 A2

Stainless Steel wide flat washer

|  |     |     |     |  |      |      |      | Properties                                                                          |      |                                                                                     |      |      |
|-----------------------------------------------------------------------------------|-----|-----|-----|-----------------------------------------------------------------------------------|------|------|------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|------|------|
|                                                                                   |     |     |     |                                                                                   |      |      |      |  |      |  |      |      |
|                                                                                   |     |     |     |                                                                                   |      |      |      | Steel                                                                               |      | Stainless Steel A2 (AISI 304)                                                       |      |      |
| M                                                                                 | M4  | M5  | M6  | M8                                                                                | M10  | M12  | M14  | M16                                                                                 | M18  | M20                                                                                 | M22  | M24  |
| Ød1:<br>interior<br>diameter                                                      | 4,3 | 5,3 | 6,4 | 8,4                                                                               | 10,5 | 13,0 | 15,0 | 17,0                                                                                | 20,0 | 22,0                                                                                | 24,0 | 26,0 |
| Ød2:<br>exterior<br>diameter                                                      | 12  | 15  | 18  | 24                                                                                | 30   | 37   | 44   | 50                                                                                  | 56   | 60                                                                                  | 66   | 72   |
| h:<br>thickness                                                                   | 1   | 1,2 | 1,6 | 2                                                                                 | 2,5  | 3    | 3    | 3                                                                                   | 4    | 4                                                                                   | 5    | 5    |

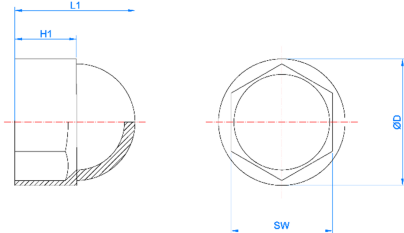
2.29 DIN-6798

Serrated lock washer external teeth

|  |       |     |     |  |     |      |      | Properties                                                                           |                                                                                      |
|------------------------------------------------------------------------------------|-------|-----|-----|------------------------------------------------------------------------------------|-----|------|------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                                    |       |     |     |                                                                                    |     |      |      |  |  |
|                                                                                    |       |     |     |                                                                                    |     |      |      | Steel                                                                                | Zinc-plated coating                                                                  |
| M                                                                                  | M3    | M4  | M5  | M6                                                                                 | M8  | M10  | M12  | M14                                                                                  | M16                                                                                  |
| Ød1:<br>interior<br>diameter                                                       | 3,2   | 4,3 | 5,3 | 6,4                                                                                | 8,4 | 10,5 | 13   | 15                                                                                   | 17                                                                                   |
| Ød2:<br>exterior<br>diameter                                                       | 6     | 8   | 10  | 11                                                                                 | 15  | 18   | 20,5 | 24                                                                                   | 26                                                                                   |
| s1:<br>thickness                                                                   | 0,4   | 0,5 | 0,6 | 0,7                                                                                | 0,8 | 0,9  | 1    | 1                                                                                    | 1,2                                                                                  |
| s3: width                                                                          | ~3*s1 |     |     |                                                                                    |     |      |      |                                                                                      |                                                                                      |

2.30 TP-MT

Plastic cap for hexagonal head

|  |      |  |      | Properties                                                                            |      |
|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|------|
|                                                                                     |      |                                                                                     |      |  |      |
|                                                                                     |      |                                                                                     |      | Polyethylene                                                                          |      |
| M                                                                                   | M6   | M8                                                                                  | M10  | M12                                                                                   | M16  |
| SW                                                                                  | 10   | 13                                                                                  | 17   | 19                                                                                    | 24   |
| ØD                                                                                  | 12,5 | 15,5                                                                                | 20,5 | 23,5                                                                                  | 29,5 |
| H1                                                                                  | 8,5  | 9,0                                                                                 | 11,5 | 11,5                                                                                  | 14,0 |
| L1                                                                                  | 14   | 15,5                                                                                | 20,5 | 21,5                                                                                  | 27,0 |



## 3. TORQUE FOR BOLTS

For steel bolts and nuts the standard UNE 17-108-81 establishes specific parameters for correct installation.

This standard is aimed to indicate the torque value needed in order to install, with dynamometric tools that don't produce any vibrations nor impacts, the standard steel bolt range, on rigid supports and only demanded by axial with constant value.

For joints between zinc plated materials, the coefficient of friction established by this standard is  $\mu=0,14$ . Torque moments for each size are specified in the table below.

### TORQUE [da N·m] (con $\mu=0,14$ )

| ITEM        | SIZES |      |      |      |      |      |      |      |       |       |       |
|-------------|-------|------|------|------|------|------|------|------|-------|-------|-------|
|             | M3    | M4   | M5   | M6   | M8   | M10  | M12  | M14  | M16   | M18   | M20   |
| T084        | 0,063 | 0,14 | 0,29 | 0,49 | 1,2  | 2,4  | 4,1  | 6,5  | 10    | 14    | 19,5  |
| T963        |       |      |      |      |      |      |      |      |       |       |       |
| T965        |       |      |      |      |      |      |      |      |       |       |       |
| T985        |       |      |      |      |      |      |      |      |       |       |       |
| D603        |       |      |      |      |      |      |      |      |       |       |       |
| D931        | 0,12  | 0,27 | 0,54 | 0,93 | 2,2  | 4,5  | 7,7  | 12,5 | 19    | 27    | 38    |
| D933        |       |      |      |      |      |      |      |      |       |       |       |
| D6921       |       |      |      |      |      |      |      |      |       |       |       |
| D912        |       |      |      |      |      |      |      |      |       |       |       |
| D933 (A2)*  | 0,10  | 0,17 | 0,34 | 0,59 | 1,45 | 3,00 | 5,00 | 7,90 | 12,10 | 17,40 | 22,40 |
| D603 (A2)*  |       |      |      |      |      |      |      |      |       |       |       |
| D6921 (A2)* |       |      |      |      |      |      |      |      |       |       |       |

\*Values according to DIN EN ISO 3506 for stainless steel A2-70 and coefficient of friction  $\mu_{total}=0.10$ . These values are indicative and will always depend on the nut and screw having adequate lubrication.



## 4. RESISTANCES

The standard ISO-898-1 "Mechanical properties of fasteners made of carbon steel and alloy steel" establishes the values for minimum ultimate tensile loads.

According to table 6 of the mentioned standard the values shown below correspond to the previous bolts of the datasheet.

The shear values are the same as 50% of the tensile values..

### MINIMUM ULTIMATE TENSILE LOAD [kN] ( $A_s, \text{nom} \times R_m, \text{min}$ )

| ITEM       | SIZES |      |       |       |       |       |       |       |        |        |        |
|------------|-------|------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
|            | M3    | M4   | M5    | M6    | M8    | M10   | M12   | M14   | M16    | M18    | M20    |
| T084       | 2,11  | 3,69 | 5,96  | 8,44  | 15,40 | 24,40 | 35,40 | 48,30 | 65,90  | 80,60  | 103,00 |
| T963       |       |      |       |       |       |       |       |       |        |        |        |
| T965       |       |      |       |       |       |       |       |       |        |        |        |
| T985       |       |      |       |       |       |       |       |       |        |        |        |
| D603       |       |      |       |       |       |       |       |       |        |        |        |
| D608       | 4,02  | 7,02 | 11,35 | 16,1  | 29,2  | 46,4  | 67,4  | 92,00 | 125,00 | 159,00 | 203,00 |
| D931       |       |      |       |       |       |       |       |       |        |        |        |
| D933       |       |      |       |       |       |       |       |       |        |        |        |
| D6921      |       |      |       |       |       |       |       |       |        |        |        |
| D912       |       |      |       |       |       |       |       |       |        |        |        |
| D933 (A2)  | 3,52  | 6,15 | 9,94  | 14,07 | 20,23 | 25,62 | 40,60 | 59,01 | 80,50  | 109,90 | 134,40 |
| D603 (A2)  |       |      |       |       |       |       |       |       |        |        |        |
| D6921 (A2) |       |      |       |       |       |       |       |       |        |        |        |

### MINIMUM ULTIMATE SHEAR LOAD [kN] ( $A_s, \text{nom} \times R_m, \text{min} \times 0,5$ )

| ITEM       | SIZES |      |      |      |       |       |       |       |       |       |        |
|------------|-------|------|------|------|-------|-------|-------|-------|-------|-------|--------|
|            | M3    | M4   | M5   | M6   | M8    | M10   | M12   | M14   | M16   | M18   | M20    |
| T084       | 1,06  | 1,85 | 2,98 | 4,22 | 7,70  | 12,20 | 17,70 | 24,15 | 32,95 | 40,30 | 51,50  |
| T963       |       |      |      |      |       |       |       |       |       |       |        |
| T965       |       |      |      |      |       |       |       |       |       |       |        |
| T985       |       |      |      |      |       |       |       |       |       |       |        |
| D603       |       |      |      |      |       |       |       |       |       |       |        |
| D608       | 2,01  | 3,51 | 5,68 | 8,05 | 14,60 | 23,20 | 33,70 | 46,00 | 62,50 | 79,50 | 101,50 |
| D931       |       |      |      |      |       |       |       |       |       |       |        |
| D933       |       |      |      |      |       |       |       |       |       |       |        |
| D6921      |       |      |      |      |       |       |       |       |       |       |        |
| D912       |       |      |      |      |       |       |       |       |       |       |        |
| D933 (A2)  | 1,76  | 3,07 | 4,97 | 7,04 | 10,12 | 12,81 | 20,30 | 29,51 | 40,25 | 54,95 | 67,20  |
| D603 (A2)  |       |      |      |      |       |       |       |       |       |       |        |
| D6921 (A2) |       |      |      |      |       |       |       |       |       |       |        |