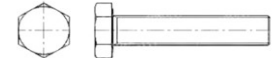


## Product Range: Screws & Bolts

### HEXAGON HEAD BOLTS (304 A2-70/316 A4-70)



| DIN933-1987(FT) |             |                        | DIN931-1987(PT) |             | ASME B18.2.1-2012 |           | JIS B1180-1994 TYPE 1 |             |
|-----------------|-------------|------------------------|-----------------|-------------|-------------------|-----------|-----------------------|-------------|
| M3-0.5          | 10 - 40 mm  |                        | --              | --          | 1/4-20            | 3/8-6"    | M3-0.5                | 10 - 40 mm  |
| M4-0.7          | 8 - 40 mm   |                        | --              | --          | 5/16-18           | 1/2-6"    | M4-0.7                | 8 - 40 mm   |
| M5-0.8          | 8 - 100 mm  |                        | --              | --          | 3/8-16            | 1/2-12"   | M5-0.8                | 8 - 65 mm   |
| M6-1.0          | 10 - 150 mm | D2-80<br>&2205<br>Size | M6-1.0          | 30 - 150 mm | 7/16-14           | 3/4-6"    | M6-1.0                | 10 - 150 mm |
| M8-1.25         | 10 - 200 mm |                        | M8-1.25         | 30 - 300 mm | 1/2-13            | 3/4-12"   | M8-1.25               | 12 - 200 mm |
| M10-1.5         | 12 - 300 mm |                        | M10-1.5         | 35 - 300 mm | W1/2-12           | 1"-4"(FT) | M10-1.5               | 16 - 200 mm |
| M12-1.75        | 16 - 300 mm |                        | M12-1.75        | 40 - 300 mm | 5/8-11            | 1"-12"    | M12-1.75              | 20 - 200 mm |
| M14-2.0         | 20 - 200 mm |                        | M14-2.0         | 45 - 300 mm | 3/4-10            | 1-1/4"-8" | M14-2.0               | 25 - 200 mm |
| M16-2.0         | 20 - 200 mm |                        | M16-2.0         | 45 - 300 mm | 7/8-9             | 2"-10"    | M16-2.0               | 25 - 200 mm |
| M18-2.5         | 30 - 200 mm |                        | --              | --          | 1"-8              | 2"-10"    | M18-2.5               | 30 - 200 mm |
| M20-2.5         | 30 - 200 mm |                        | M20-2.5         | 60 - 200 mm | 1-1/8"            | 2"-12"    | M20-2.5               | 30 - 200 mm |
| M22-2.5         | 50 - 200 mm |                        | M22-2.5         | 70 - 250 mm | 1-1/4"            | 2"-12"    | M22-2.5               | 50 - 200 mm |
| M24-3.0         | 50 - 200 mm |                        | M24-3.0         | 80 - 250 mm | --                | --        | M24-3.0               | 50 - 200 mm |
| M27-3.0         | 60 - 300 mm |                        | M27-3.0         | 70 - 200 mm | --                | --        | --                    | --          |
| M30-3.5         | 60 - 300 mm |                        | M30-3.5         | 80 - 200 mm | --                | --        | --                    | --          |
| M33-3.5         | 70 - 200 mm |                        | --              | --          | --                | --        | --                    | --          |
| M36-4.0         | 70 - 200 mm |                        | --              | --          | --                | --        | --                    | --          |

ISO 4017 : M10 M12

\*A4-80 is also available for M5-M20

FT = Full Thread Only

ISO 4014 : M10 M12

\*M27-M36 cold forming

\*D2-80 Duplex Stainless Steel only for DIN 933 M6-M24

### SOCKET HEAD CAP SCREWS (304 A2-70/316 A4-70)



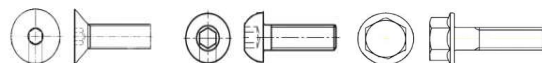
| DIN912-1983 FT |             |               | DIN912-1983 PT |             | ASME B18.3-2012(Socket head) |           |  | JIS 1176-2000 TYPE 1 |             |
|----------------|-------------|---------------|----------------|-------------|------------------------------|-----------|--|----------------------|-------------|
| M3- 0.5        | 6 - 40 mm   |               | --             | --          | 1/4 - 20                     | 1/2-6"    |  | M3- 0.5              | 6 - 40 mm   |
| M4- 0.7        | 6 - 50 mm   |               | M4- 0.7        | 30 - 50 mm  | 5/16 - 18                    | 1/2-6"    |  | M4- 0.7              | 6 - 50 mm   |
| M5- 0.8        | 8 - 65 mm   |               | M5- 0.8        | 30 - 50 mm  | 3/8 - 16                     | 3/4-6"    |  | M5- 0.8              | 8 - 65 mm   |
| M6- 1.0        | 8 - 150 mm  | D2-80<br>size | M6- 1.0        | 35 - 150 mm | 7/16 - 14                    | 7/8-4"    |  | M6- 1.0              | 8 - 150 mm  |
| M8- 1.25       | 12 - 150 mm |               | M8- 1.25       | 40 - 150 mm | 1/2 - 13                     | 7/8-4"    |  | M8-1.25              | 12 - 150 mm |
| M10-1.5        | 16 - 150 mm |               | M10-1.5        | 45 - 150 mm | 5/8 - 11                     | 1"-4"     |  | M10-1.5              | 16 - 150 mm |
| M12-1.75       | 20 - 150 mm |               | M12-1.75       | 55 - 150 mm | 3/4 - 10                     | 1 3/4"-5" |  | M12-1.75             | 20 - 150 mm |
| M14-2.0        | 25 - 150 mm |               | M14-2.0        | 60 - 150 mm |                              |           |  | M14-2.0              | 25 - 150 mm |
| M16-2.0        | 25 - 150 mm |               | M16-2.0        | 60 - 150 mm |                              |           |  | M16-2.0              | 25 - 150 mm |
| M20-2.5        | 40 - 150 mm |               | M20-2.5        | 80 - 150 mm |                              |           |  | M20-2.5              | 40 - 150 mm |
| M24-3.0        | 80 - 200 mm |               |                |             |                              |           |  |                      |             |
| M30-3.5        | 70 - 200 mm |               |                |             |                              |           |  |                      |             |

\*A4-80 is also available for M5-M20

\*D2-80 Duplex Stainless Steel only for DIN 912 FT M6-M20

## Product Range: Screws & Bolts

### SOCKET HEAD CAP SCREWS (304 A2-70/316 A4-70)

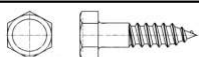


| ISO 7380-1 FT-2011 (Pan head) |             | DIN 7991 FT-1986 (Flat head) |             | JIS B 1194 FT (Flat head) |             |
|-------------------------------|-------------|------------------------------|-------------|---------------------------|-------------|
| M3, M4                        | 6 - 40 mm   | M3, M4                       | 8 - 40 mm   | M3- 0.5                   | 8 - 40 mm   |
| M5-0.8                        | 8 - 50 mm   | M5-0.8                       | 10 - 50 mm  | M4- 0.7                   | 8 - 40 mm   |
| M6-1.0                        | 10 - 60 mm  | M6-1.0                       | 12 - 60 mm  | M5-0.8                    | 10 - 50 mm  |
| M8-1.25                       | 12 - 100 mm | M8-1.25                      | 16 - 100 mm | M6-1.0                    | 12 - 60 mm  |
| M10-1.5                       | 16 - 100 mm | M10-1.5                      | 20 - 100 mm | M8-1.25                   | 16 - 100 mm |
| M12-1.75                      | 20 - 100 mm | M12-1.75                     | 25 - 100 mm | M10-1.5                   | 20 - 100 mm |
|                               |             |                              |             | M12-1.75                  | 25 - 100 mm |

Note: ISO 7380-1 is A2-070 / A4-070

| DIN 7984 FT (Low Socket head) |             | DIN 6921 FT (Flange head) |            |
|-------------------------------|-------------|---------------------------|------------|
| M5- 0.8                       | 8 - 65 mm   | M5- 0.8                   | 12 - 40 mm |
| M6- 1.0                       | 8 - 150 mm  | M6- 1.0                   | 16 - 50 mm |
| M8-1.25                       | 12 - 150 mm | M8- 1.25                  | 16 - 60 mm |
| M10-1.5                       | 16 - 150 mm | M10-1.5                   | 25 - 60 mm |
| M12-1.75                      | 20 - 150 mm | M12-1.75                  | 25 - 60 mm |

### LAG SCREWS (304 A2)



| DIN571-1986 |           | ASME B18.2.1-2012 |             |
|-------------|-----------|-------------------|-------------|
| 6           | 20-150 mm | 1/4               | 1" - 4"     |
| 8           | 25-150 mm | 5/16              | 1" - 6"     |
| 10          | 30-150 mm | 3/8               | 1" - 6"     |
| 12          | 35-150 mm | 1/2               | 1-1/2" - 6" |

Longer Sizes Available for ASME Lag Screws

### CARRIAGE BOLTS (304 A2-70)



| DIN603-2010(FT) |             | ASME B18.5-2012(FT) |          |
|-----------------|-------------|---------------------|----------|
| M6              | 12 - 150 mm | 1/4 - 20            | 1/2 - 6" |
| M8              | 12 - 150 mm | 5/16 - 18           | 5/8 - 6" |
| M10             | 20 - 200 mm | 3/8 - 16            | 3/4 - 8" |
| M12             | 30 - 150 mm | 1/2 - 13            | 1" - 6"  |

Note: 316 available with customized head mark

### D2-80 SERIES

- ◆ High Strength / High Yield
- ◆ High Corrosion Resistance
- ◆ Excellent Anti-lock Performance



#### Chemical Composition (%)

| TYPE | C    | Si  | Mn  | P    | S    | Cr        |
|------|------|-----|-----|------|------|-----------|
| A2   | 0.1  | 1.0 | 2.0 | 0.05 | 0.03 | 15.0-20.0 |
| D2   | 0.04 | 1.0 | 6.0 | 0.04 | 0.03 | 19.0-24.0 |

#### Compared to 304/A2,

Higher carbon content

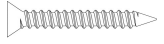
High Tensile Strength & Yield Strength

Higher carbon content

Better performance of the Corrosion Resistance

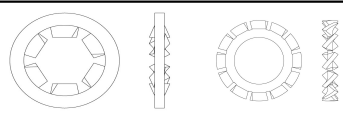
Also, after testing, the anti-lock performance of D2 is better than that of 304.

## Product Range: Screws & Bolts

| PHILLIPS DRIVER TAPPING SCREW (304 A2)                                                                                             |             |                    |               |                          |                |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------|---------------|--------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| DIN 7981 PAN HEAD                                                                                                                  |             | DIN 7982 FLAT HEAD |               | ASME B18.6.3 Pan/Flat HD |                |                                                                                     |                                                                                     |                                                                                     |
| ST2.9                                                                                                                              | 4.5—32mm    | ST2.9              | 6.5—32mm      | #4                       | 1/4"-1 1/4"    |                                                                                     |                                                                                     |                                                                                     |
| ST3.5                                                                                                                              | 6.5—40mm    | ST3.5              | 9.5—38mm      | #6                       | 3/8"-1 1/2"    |                                                                                     |                                                                                     |                                                                                     |
| ST3.9                                                                                                                              | 6.5—50mm    | ST3.9              | 9.5—50mm      | #7                       | 3/8"-2"        |                                                                                     |                                                                                     |                                                                                     |
| ST4.2                                                                                                                              | 9.5—50mm    | ST4.2              | 9.5—50mm      | #8                       | 3/8"-2"        |                                                                                     |                                                                                     |                                                                                     |
| ST4.8                                                                                                                              | 9.5—50mm    | ST4.8              | 9.5—50mm      | #10                      | 3/8"-2"        |                                                                                     |                                                                                     |                                                                                     |
| ST5.5                                                                                                                              | 13—50mm     | ST5.5              | 13—50mm       | #12                      | 1/2"-2"        |                                                                                     |                                                                                     |                                                                                     |
| ST6.3                                                                                                                              | 13—50mm     | ST6.3              | 13—50mm       | #14(1/4)                 | 1/2"-2"        |                                                                                     |                                                                                     |                                                                                     |
| * No head marking for above tapping screw                                                                                          |             |                    |               |                          |                |                                                                                     |                                                                                     |                                                                                     |
| PHILLIPS DRIVER MACHINE SCREW (304 A2)                                                                                             |             |                    |               |                          |                |  |  |  |
| DIN 7985 PAN HEAD                                                                                                                  |             | DIN 965 FLAT HEAD  |               | ASME B18.6.3 Pan/Flat HD |                |                                                                                     |                                                                                     |                                                                                     |
| M3-0.5                                                                                                                             | 6mm-45mm    | M3-0.5             | 8mm-45mm      | #6-40                    | 5/16"-1 3/4"   |                                                                                     |                                                                                     |                                                                                     |
| M4-0.7                                                                                                                             | 8mm-45mm    | M4-0.7             | 8mm-45mm      | #8-32                    | 5/16"-1 3/4"   |                                                                                     |                                                                                     |                                                                                     |
| M5-0.8                                                                                                                             | 8mm-50mm    | M5-0.8             | 10mm-50mm     | #10-24                   | 5/16"-2"       |                                                                                     |                                                                                     |                                                                                     |
| M6-1.0                                                                                                                             | 10mm-100mm  | M6-1.0             | 12mm-100mm    | 1/4"-20                  | 1/2"-4"        |                                                                                     |                                                                                     |                                                                                     |
| M8-1.25                                                                                                                            | 12mm-100mm  | M8-1.25            | 16mm-100mm    | 5/16"-18                 | 1/2"-4"        |                                                                                     |                                                                                     |                                                                                     |
| * No head marking for above machine screw                                                                                          |             |                    |               |                          |                |                                                                                     |                                                                                     |                                                                                     |
| SEMS SCREW: Hex Head bolt / Socket head screw / Flat head screw/ Pan head screw<br>with flat washer / spring washer / tooth washer |             |                    |               |                          |                |                                                                                     |                                                                                     |                                                                                     |
| Diameter                                                                                                                           | length      | Flat Washer        |               | Spring Washer            |                |                                                                                     |                                                                                     |                                                                                     |
|                                                                                                                                    |             | Diamter            | Thickness     | Diamter                  | Thickness      |                                                                                     |                                                                                     |                                                                                     |
| M3- 0.5                                                                                                                            | 12 - 35 mm  | 6.95 ± 0.1 mm      | 0.5 ± 0.05 mm | 5.25 ± 0.1 mm            | 0.85 ± 0.05 mm |                                                                                     |                                                                                     |                                                                                     |
| M4- 0.7                                                                                                                            | 12 - 50 mm  | 8.85 ± 0.1 mm      | 0.8 ± 0.10 mm | 6.74 ± 0.1 mm            | 1.15 ± 0.05 mm |                                                                                     |                                                                                     |                                                                                     |
| M5- 0.8                                                                                                                            | 10 - 50 mm  | 9.70 ± 0.8 mm      | 0.9 ± 0.50 mm | 8.50 ± 0.8 mm            | 1.40 ± 0.50 mm |                                                                                     |                                                                                     |                                                                                     |
| M6- 1.0                                                                                                                            | 10 - 50 mm  | 11.8 ± 1.0 mm      | 1.5 ± 0.60 mm | 10.8 ± 1.0 mm            | 1.60 ± 0.60 mm |                                                                                     |                                                                                     |                                                                                     |
| M8- 1.25                                                                                                                           | 12 - 60 mm  | 15.8 ± 1.5 mm      | 1.9 ± 0.60 mm | 13.5 ± 1.5 mm            | 2.10 ± 0.60 mm |                                                                                     |                                                                                     |                                                                                     |
| M10- 1.5                                                                                                                           | 16 - 80 mm  | 19.6 ± 2.0 mm      | 2.4 ± 0.80 mm | 16.5 ± 1.5 mm            | 2.60 ± 0.80 mm |                                                                                     |                                                                                     |                                                                                     |
| M12- 1.75                                                                                                                          | 20 - 100 mm | 23.6 ± 2.0 mm      | 2.9 ± 1.00 mm | 18.9 ± 2.0 mm            | 3.00 ± 1.00 mm |                                                                                     |                                                                                     |                                                                                     |



## Product Range: Washers & Socket Set Screws

|                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                  |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------|---------------------------------------------------------------------------------------|
| FLAT WASHERS (304 A2/ 316 A4)                                                                                                                                                                                                                                                                                                                                                    |            |                                                  |    |
| ※DIN125 A                                                                                                                                                                                                                                                                                                                                                                        |            | ※DIN9021 A                                       | ※ASME B18.22.1-1983 (SAE / USS)                                                       |
| Sizes:                                                                                                                                                                                                                                                                                                                                                                           | M1.6 - M33 | Sizes:                                           | M3 - M20                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                  |            | Sizes:                                           | #10 - 1"                                                                              |
| SPRING WASHERS (304 A2/ 316 A4)                                                                                                                                                                                                                                                                                                                                                  |            |                                                  |    |
| ※DIN127 B                                                                                                                                                                                                                                                                                                                                                                        |            | ※ANSI B18.21.1-1983                              |                                                                                       |
| Sizes:                                                                                                                                                                                                                                                                                                                                                                           | M3 - M30   | Sizes:                                           | 1/4" - 1"                                                                             |
| Tooth WASHERS (304 A2)                                                                                                                                                                                                                                                                                                                                                           |            |                                                  |    |
| ※DIN6797 / 6798 J Toothed lock washers                                                                                                                                                                                                                                                                                                                                           |            | ※DIN6797/ 6798 A Toothed lock washers            |                                                                                       |
| Internal Form                                                                                                                                                                                                                                                                                                                                                                    |            | External Form                                    |                                                                                       |
| Sizes:                                                                                                                                                                                                                                                                                                                                                                           | M3 - M20   | Sizes:                                           | M3 - M20                                                                              |
| SOCKET SET SCREWS (304 A2)                                                                                                                                                                                                                                                                                                                                                       |            |                                                  |  |
| ※DIN913-1980                                                                                                                                                                                                                                                                                                                                                                     |            | ※DIN916-1980                                     |                                                                                       |
| Hex Socket Set Screws with Flat Point<br>M3 - M10                                                                                                                                                                                                                                                                                                                                |            | Hex Socket Set Screws with Cup Point<br>M3 - M10 |                                                                                       |
| ※ Indicates products from Tong Ming approved manufacturers.                                                                                                                                                                                                                                                                                                                      |            |                                                  |                                                                                       |
| Note: The color mark is the extend range.                                                                                                                                                                                                                                                                                                                                        |            |                                                  |                                                                                       |
| Tong Ming guarantees the quality of our approved manufacturers. We select only qualified vendors and conduct periodic inspections and reviews of their quality system. All sourced products are delivered to Tong Ming where they are subjected to the same quality control procedures alongside Tong Ming's own products before they are packaged and shipped to our customers. |            |                                                  |                                                                                       |



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