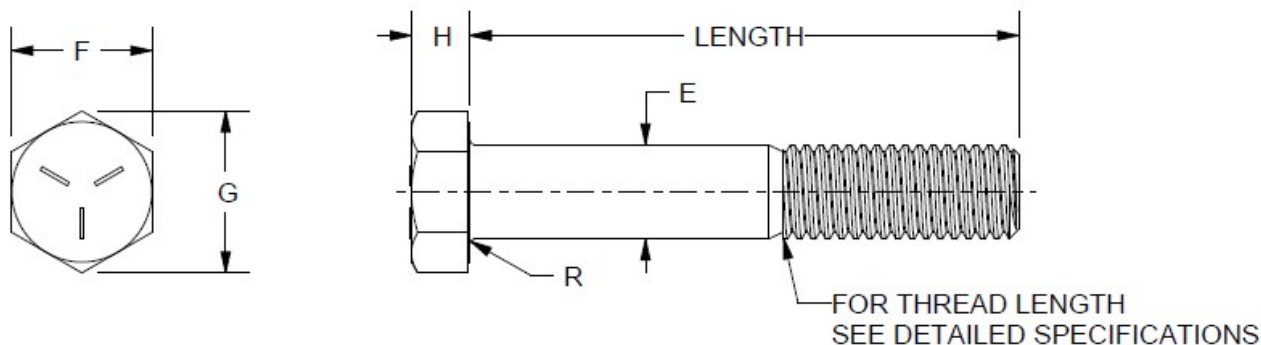


|                         |                                     |                           |
|-------------------------|-------------------------------------|---------------------------|
| ENGINEERING<br>STANDARD | <b>Hex Head Cap Screws, Grade 5</b> | <b>5.02.001</b><br>(2023) |
| <b>KOMATSU®</b>         | FASTENER SPECIFICATION              | REVISION: 01              |



### Dimensional Information

(all dimensions are in inches)

| Nominal Size |       | Body Diameter<br>E |       | Width Across Flats<br>F |       | Across<br>Corners<br>G | Head Height<br>H |       | Fillet Radius<br>R |       |
|--------------|-------|--------------------|-------|-------------------------|-------|------------------------|------------------|-------|--------------------|-------|
|              |       | Min.               | Max.  | Min.                    | Max.  | Min.                   | Min.             | Max.  | Min.               | Max.  |
| 1/4          | 0.250 | 0.245              | 0.250 | 0.428                   | 0.438 | 0.488                  | 0.150            | 0.163 | 0.009              | 0.023 |
| 5/16         | 0.312 | 0.306              | 0.312 | 0.489                   | 0.500 | 0.557                  | 0.195            | 0.211 | 0.009              | 0.023 |
| 3/8          | 0.375 | 0.369              | 0.375 | 0.551                   | 0.562 | 0.628                  | 0.226            | 0.243 | 0.009              | 0.023 |
| 7/16 *       | 0.438 | 0.430              | 0.438 | 0.612                   | 0.625 | 0.698                  | 0.272            | 0.291 | 0.009              | 0.023 |
| 1/2          | 0.500 | 0.493              | 0.500 | 0.736                   | 0.750 | 0.840                  | 0.302            | 0.323 | 0.009              | 0.023 |
| 9/16         | 0.562 | 0.554              | 0.562 | 0.798                   | 0.812 | 0.910                  | 0.348            | 0.371 | 0.021              | 0.041 |
| 5/8          | 0.625 | 0.617              | 0.625 | 0.922                   | 0.938 | 1.051                  | 0.378            | 0.403 | 0.021              | 0.041 |
| 3/4 **       | 0.750 | 0.741              | 0.750 | 1.100                   | 1.125 | 1.254                  | 0.455            | 0.483 | 0.021              | 0.041 |
| 7/8 **       | 0.875 | 0.866              | 0.875 | 1.285                   | 1.312 | 1.465                  | 0.531            | 0.563 | 0.041              | 0.062 |
| 1 **         | 1.000 | 0.990              | 1.000 | 1.469                   | 1.500 | 1.675                  | 0.591            | 0.627 | 0.062              | 0.093 |
| 1-1/8 **     | 1.125 | 1.114              | 1.125 | 1.631                   | 1.688 | 1.859                  | 0.658            | 0.718 | 0.062              | 0.093 |
| 1-1/4 **     | 1.250 | 1.239              | 1.250 | 1.812                   | 1.875 | 2.066                  | 0.749            | 0.813 | 0.062              | 0.093 |
| 1-1/2 **     | 1.500 | 1.488              | 1.500 | 2.175                   | 2.250 | 2.480                  | 0.902            | 0.974 | 0.062              | 0.093 |

\*7/16" cap screws are non-preferred and should be avoided, if possible.

**\*\* GRADE 5 CAP SCREWS 0.75" SIZE AND LARGER ARE NON-PREFERRED. USE GRADE 8 CAP SCREWS FOR NEW DESIGNS WITH THESE LARGER SIZES.**

|                         |                                     |  |                        |  |  |  |                            |  |              |
|-------------------------|-------------------------------------|--|------------------------|--|--|--|----------------------------|--|--------------|
| ENGINEERING<br>STANDARD | <b>Hex Head Cap Screws, Grade 5</b> |  |                        |  |  |  | <b>5.02.001<br/>(2023)</b> |  |              |
| <b>KOMATSU®</b>         |                                     |  | FASTENER SPECIFICATION |  |  |  |                            |  | REVISION: 01 |

| Komatsu Fastener Part Number List |       |                                           |        |             |        |                    |        |             |              |   |
|-----------------------------------|-------|-------------------------------------------|--------|-------------|--------|--------------------|--------|-------------|--------------|---|
| Length                            |       | Size (inch), Finish, Rev, and Part Number |        |             |        |                    |        |             |              |   |
|                                   |       | 1/4–20<br>(0.250)                         |        |             |        | 5/16–18<br>(0.312) |        |             |              |   |
| inch                              | mm    | Plain Finish                              | Rev    | Zinc Finish | Rev    | Plain Finish       | Rev    | Zinc Finish | Rev          |   |
| 0.375                             | 3/8   | 9.5                                       | H3336  | 6           | TG1575 | 6                  | VN6401 | 3           |              |   |
| 0.438                             | 7/16  | 11.1                                      | R4892  | 5           |        |                    | VN6405 | 3           |              |   |
| 0.500                             | 1/2   | 12.7                                      | H8136  | 6           | SH7597 | 7                  | R3868  | 6           | TR5365       | 6 |
| 0.625                             | 5/8   | 15.9                                      | C3145  | 7           | TD1548 | 6                  | R3869  | 5           | VC9049       | 6 |
| 0.750                             | 3/4   | 19.1                                      | C5746  | 6           | TD1809 | 6                  | C5747  | 6           | TD0794       | 6 |
| 0.875                             | 7/8   | 22.2                                      | S5716  | 5           |        |                    | E4538  | 7           |              |   |
| 1.000                             | 1     | 25.4                                      | C7588  | 5           | TR1306 | 6                  | C1598  | 7           | TR4731       | 6 |
| 1.250                             | 1-1/4 | 31.8                                      | H0596  | 5           | VC3573 | 5                  | H8620  | 4           | TR3782       | 6 |
| 1.500                             | 1-1/2 | 38.1                                      | C7589  | 5           | TV6025 | 6                  | C1599  | 7           | TR5324       | 6 |
| 1.750                             | 1-3/4 | 44.5                                      | C7590  | 5           | TR4065 | 6                  | C7593  | 6           |              |   |
| 2.000                             | 2     | 50.8                                      | C7591  | 5           | TV6026 | 6                  | C1639  | 5           | 58F-09-00370 | 1 |
| 2.250                             | 2-1/4 | 57.2                                      | SR6300 | 4           | TV3452 | 5                  | H5825  | 4           | WA3597       | 5 |
| 2.500                             | 2-1/2 | 63.5                                      | C7592  | 5           | TR6467 | 6                  | H9911  | 5           |              |   |
| 2.750                             | 2-3/4 | 69.9                                      | SR6301 | 4           | VD1921 | 6                  | HC5040 | 4           |              |   |
| 3.000                             | 3     | 76.2                                      | SR6302 | 4           |        |                    | C5748  | 5           |              |   |
| 3.250                             | 3-1/4 | 82.6                                      | HD6005 | 5           | VD6089 | 6                  | R5412  | 4           |              |   |
| 3.500                             | 3-1/2 | 88.9                                      | H3460  | 4           | VG1801 | 6                  | H9912  | 4           |              |   |
| 3.750                             | 3.75  | 95.3                                      | DC6306 | 5           | TR8836 | 6                  | DH0059 | 4           |              |   |
| 4.000                             | 4     | 101.6                                     | SR6303 | 4           |        |                    | C5749  | 5           | 58D-09-00220 | 0 |
| 4.500                             | 4-1/2 | 114.3                                     | VN6418 | 3           |        |                    | H9913  | 4           |              |   |
| 5.000                             | 5     | 127.0                                     | SR6306 | 4           | WA1737 | 5                  | H9914  | 4           |              |   |
| 5.500                             | 5-1/2 | 139.7                                     | VN6419 | 4           |        |                    | H9915  | 5           |              |   |
| 6.000                             | 6     | 152.4                                     | VN6420 | 3           |        |                    | H9916  | 5           |              |   |
| 6.500                             | 6-1/2 | 165.1                                     | VN6421 | 3           |        |                    | VC5251 | 3           |              |   |
| 7.000                             | 7     | 177.8                                     | VN6425 | 3           |        |                    | VN6426 | 3           |              |   |
| 7.500                             | 7-1/2 | 190.5                                     | VN6430 | 3           |        |                    | VN6431 | 3           |              |   |
| 8.000                             | 8     | 203.2                                     | TL4420 | 3           |        |                    | VN6435 | 3           |              |   |

|                         |                                     |                           |
|-------------------------|-------------------------------------|---------------------------|
| ENGINEERING<br>STANDARD | <b>Hex Head Cap Screws, Grade 5</b> | <b>5.02.001</b><br>(2023) |
| <b>KOMATSU®</b>         | FASTENER SPECIFICATION              | REVISION: 01              |

| Komatsu Fastener Part Number List |       |                                           |        |             |              |                      |        |             |              |   |
|-----------------------------------|-------|-------------------------------------------|--------|-------------|--------------|----------------------|--------|-------------|--------------|---|
| Length                            |       | Size (inch), Finish, Rev, and Part Number |        |             |              |                      |        |             |              |   |
|                                   |       | 3/8–16<br>(0.375)                         |        |             |              | 7/16–14 *<br>(0.438) |        |             |              |   |
| inch                              | mm    | Plain Finish                              | Rev    | Zinc Finish | Rev          | Plain Finish         | Rev    | Zinc Finish | Rev          |   |
| 0.375                             | 3/8   | 9.5                                       | VN6402 | 3           | TL7209       | 5                    | VN6403 | 3           |              |   |
| 0.438                             | 7/16  | 11.1                                      | VN6406 | 3           |              |                      | VN6407 | 3           |              |   |
| 0.500                             | 1/2   | 12.7                                      | C1600  | 8           | TR6922       | 6                    | VN6409 | 3           |              |   |
| 0.625                             | 5/8   | 15.9                                      | H8524  | 7           | TV3461       | 6                    | VN6410 | 3           |              |   |
| 0.750                             | 3/4   | 19.1                                      | C1601  | 8           | TC1234       | 8                    | SR6310 | 5           | TL7217       | 6 |
| 0.875                             | 7/8   | 22.2                                      | DC7524 | 5           | TL7218       | 6                    | SR6311 | 5           | VJ2388       | 5 |
| 1.000                             | 1     | 25.4                                      | C1602  | 10          | TG5720       | 6                    | C1608  | 7           | TG5722       | 6 |
| 1.250                             | 1-1/4 | 31.8                                      | C1603  | 7           | TD0791       | 6                    | H0594  | 6           | VD5905       | 7 |
| 1.500                             | 1-1/2 | 38.1                                      | C1604  | 7           | VC8762       | 6                    | C1609  | 5           | TR4090       | 6 |
| 1.750                             | 1-3/4 | 44.5                                      | C1605  | 6           | TD0789       | 6                    | F4016  | 4           | VC9189       | 6 |
| 2.000                             | 2     | 50.8                                      | C1606  | 6           | TR4434       | 6                    | C1610  | 5           | TD0793       | 6 |
| 2.250                             | 2-1/4 | 57.2                                      | H0595  | 6           | TD0792       | 6                    | DC8831 | 5           | VX0981       | 5 |
| 2.500                             | 2-1/2 | 63.5                                      | C5751  | 5           | 58F-09-00310 | 1                    | E5340  | 5           |              |   |
| 2.750                             | 2-3/4 | 69.9                                      | CC8396 | 5           | VG2358       | 4                    | DD1872 | 4           |              |   |
| 3.000                             | 3     | 76.2                                      | C5752  | 6           | VM0326       | 5                    | C5758  | 5           | VX0876       | 5 |
| 3.250                             | 3-1/4 | 82.6                                      | C8558  | 6           | 58F-09-00360 | 1                    | SR6312 | 4           |              |   |
| 3.500                             | 3-1/2 | 88.9                                      | H9917  | 4           | WA2551       | 6                    | SR6313 | 4           |              |   |
| 3.750                             | 3.75  | 95.3                                      | SD5157 | 5           |              |                      | SR6314 | 4           |              |   |
| 4.000                             | 4     | 101.6                                     | C5753  | 6           | TF8481       | 5                    | SR6315 | 4           |              |   |
| 4.500                             | 4-1/2 | 114.3                                     | H9918  | 4           |              |                      | SR6317 | 4           |              |   |
| 5.000                             | 5     | 127.0                                     | C1607  | 6           | 58B-09-40090 | 1                    | SR6319 | 4           | 58D-09-00020 | 1 |
| 5.500                             | 5-1/2 | 139.7                                     | C5754  | 6           |              |                      | SR7203 | 4           |              |   |
| 6.000                             | 6     | 152.4                                     | C5755  | 5           | TR6216       | 5                    | E2475  | 4           |              |   |
| 6.500                             | 6-1/2 | 165.1                                     | VN6422 | 3           |              |                      | VN6423 | 4           |              |   |
| 7.000                             | 7     | 177.8                                     | TF6011 | 3           |              |                      | VN6427 | 3           |              |   |
| 7.500                             | 7-1/2 | 190.5                                     | VN6432 | 3           |              |                      | VD3345 | 3           |              |   |
| 8.000                             | 8     | 203.2                                     | VN6436 | 3           |              |                      | VN6437 | 3           |              |   |
| 9.000                             | 9     | 228.6                                     |        |             | WB3607       | 1                    |        |             |              |   |

\* 7/16 cap screws are non-preferred and should be avoided, if possible.

|                         |                                     |  |                        |  |  |  |                            |  |              |
|-------------------------|-------------------------------------|--|------------------------|--|--|--|----------------------------|--|--------------|
| ENGINEERING<br>STANDARD | <b>Hex Head Cap Screws, Grade 5</b> |  |                        |  |  |  | <b>5.02.001<br/>(2023)</b> |  |              |
| <b>KOMATSU®</b>         |                                     |  | FASTENER SPECIFICATION |  |  |  |                            |  | REVISION: 01 |

| Komatsu Fastener Part Number List |       |       |                                           |     |              |     |                    |     |             |     |
|-----------------------------------|-------|-------|-------------------------------------------|-----|--------------|-----|--------------------|-----|-------------|-----|
| Length                            |       |       | Size (inch), Finish, Rev, and Part Number |     |              |     |                    |     |             |     |
|                                   |       |       | 1/2–13<br>(0.500)                         |     |              |     | 9/16–12<br>(0.562) |     |             |     |
| inch                              |       | mm    | Plain Finish                              | Rev | Zinc Finish  | Rev | Plain Finish       | Rev | Zinc Finish | Rev |
| 0.375                             | 3/8   | 9.5   | VN6404                                    | 3   |              |     |                    |     |             |     |
| 0.438                             | 7/16  | 11.1  | VN6408                                    | 3   |              |     |                    |     |             |     |
| 0.500                             | 1/2   | 12.7  | E7656                                     | 4   |              |     |                    |     |             |     |
| 0.625                             | 5/8   | 15.9  | TD3308                                    | 4   |              |     |                    |     |             |     |
| 0.750                             | 3/4   | 19.1  | C1611                                     | 9   | VG7146       | 10  | KC7102             | 3   |             |     |
| 0.875                             | 7/8   | 22.2  | SR6320                                    | 5   | TR4439       | 6   |                    |     |             |     |
| 1.000                             | 1     | 25.4  | C1612                                     | 12  | VC1387       | 6   |                    |     |             |     |
| 1.250                             | 1-1/4 | 31.8  | C1613                                     | 8   | TR1376       | 6   | DA4603             | 3   |             |     |
| 1.500                             | 1-1/2 | 38.1  | C1614                                     | 10  | VC6561       | 6   | WA2774             | 3   |             |     |
| 1.750                             | 1-3/4 | 44.5  | C1615                                     | 6   | TV1918       | 6   |                    |     |             |     |
| 2.000                             | 2     | 50.8  | C1616                                     | 4   | VC6500       | 6   |                    |     |             |     |
| 2.250                             | 2-1/4 | 57.2  | C1617                                     | 6   | WA0471       | 5   |                    |     |             |     |
| 2.500                             | 2-1/2 | 63.5  | C1618                                     | 5   | VC4898       | 5   | KC7103             | 3   |             |     |
| 2.750                             | 2-3/4 | 69.9  | C1619                                     | 4   | 58F-09-00320 | 1   | KC7104             | 3   |             |     |
| 3.000                             | 3     | 76.2  | C1620                                     | 6   | VC7083       | 6   |                    |     |             |     |
| 3.250                             | 3-1/4 | 82.6  | C1621                                     | 6   |              |     | KC7105             | 3   |             |     |
| 3.500                             | 3-1/2 | 88.9  | C1622                                     | 5   | 58F-09-00330 | 1   | KC7106             | 3   |             |     |
| 3.750                             | 3.75  | 95.3  | C1623                                     | 8   | 58F-09-00340 | 1   | KC7107             | 3   |             |     |
| 4.000                             | 4     | 101.6 | C1624                                     | 5   | 58F-09-00350 | 1   | KC7108             | 3   |             |     |
| 4.500                             | 4-1/2 | 114.3 | C1626                                     | 4   | 58E-09-50120 | 0   | KC7109             | 3   |             |     |
| 5.000                             | 5     | 127.0 | C5759                                     | 5   |              |     | KC7110             | 3   |             |     |
| 5.500                             | 5-1/2 | 139.7 | C5760                                     | 8   |              |     | KC7111             | 3   |             |     |
| 6.000                             | 6     | 152.4 | C5761                                     | 5   |              |     | KC7112             | 3   |             |     |
| 6.500                             | 6-1/2 | 165.1 | C1053                                     | 6   |              |     | KC7113             | 3   |             |     |
| 7.000                             | 7     | 177.8 | C1628                                     | 5   | 58E-09-50000 | 1   | KC7114             | 3   |             |     |
| 7.500                             | 7-1/2 | 190.5 | SR7215                                    | 4   | 58B-09-00540 | 1   | KC7115             | 3   |             |     |
| 8.000                             | 8     | 203.2 | D9105                                     | 4   | VZ5581       | 5   | KC7116             | 3   |             |     |
| 8.500                             | 8-1/2 | 215.9 |                                           |     |              |     | KC7117             | 3   |             |     |
| 9.000                             | 9     | 228.6 |                                           |     |              |     | KC7118             | 3   |             |     |
| 9.500                             | 9-1/2 | 241.3 | KC7100                                    | 5   |              |     | KC7119             | 3   |             |     |
| 10.00                             | 10    | 254   |                                           |     | 58E-09-50110 | 0   | KC7120             | 3   |             |     |

|                         |                                     |                            |
|-------------------------|-------------------------------------|----------------------------|
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| <b>KOMATSU®</b>         | FASTENER SPECIFICATION              | REVISION: 01               |

| Komatsu Fastener Part Number List |       |                                           |        |             |              |                       |        |             |              |   |
|-----------------------------------|-------|-------------------------------------------|--------|-------------|--------------|-----------------------|--------|-------------|--------------|---|
| Length                            |       | Size (inch), Finish, Rev, and Part Number |        |             |              |                       |        |             |              |   |
|                                   |       | 5/8–11<br>(0.625)                         |        |             |              | 3/4– 10 **<br>(0.750) |        |             |              |   |
| inch                              | mm    | Plain Finish                              | Rev    | Zinc Finish | Rev          | Plain Finish          | Rev    | Zinc Finish | Rev          |   |
| 0.750                             | 3/4   | 19.1                                      | CE2510 | 5           |              |                       |        |             |              |   |
| 1.000                             | 1     | 25.4                                      | C7594  | 8           | TR2961       | 5                     | E4067  | 6           | TR8082       | 4 |
| 1.250                             | 1-1/4 | 31.8                                      | C7595  | 7           | VC5162       | 5                     | D0312  | 6           |              |   |
| 1.500                             | 1-1/2 | 38.1                                      | C5762  | 6           | TV1748       | 5                     | C7645  | 8           | TR8083       | 4 |
| 1.750                             | 1-3/4 | 44.5                                      | C1629  | 7           | TR4229       | 5                     | C1643  | 7           | VC5624       | 4 |
| 2.000                             | 2     | 50.8                                      | C1630  | 8           | VC1388       | 5                     | C1644  | 8           | VF4171       | 4 |
| 2.250                             | 2-1/4 | 57.2                                      | C1631  | 5           | 58B-09-00510 | 1                     | C1645  | 6           |              |   |
| 2.500                             | 2-1/2 | 63.5                                      | C1632  | 5           | VC4744       | 5                     | C1646  | 9           | VG2651       | 5 |
| 2.750                             | 2-3/4 | 69.9                                      | C1633  | 11          | TL9048       | 5                     | C1647  | 8           | VF8334       | 5 |
| 3.000                             | 3     | 76.2                                      | C1634  | 5           | VX0579       | 3                     | C1648  | 6           | 58E-09-00490 | 0 |
| 3.250                             | 3-1/4 | 82.6                                      | C1635  | 5           | VF4170       | 4                     | C1649  | 6           | VX0416       | 3 |
| 3.500                             | 3-1/2 | 88.9                                      | C1636  | 6           |              |                       | C1650  | 6           |              |   |
| 3.750                             | 3.75  | 95.3                                      | C1637  | 5           | 58B-09-00520 | 1                     | C1651  | 8           |              |   |
| 4.000                             | 4     | 101.6                                     | C1638  | 4           | VX0422       | 3                     | C1652  | 9           | VX0598       | 3 |
| 4.250*                            | 4-1/4 | 108.0                                     |        |             | 58B-09-00260 | 0                     |        |             |              |   |
| 4.500                             | 4-1/2 | 114.3                                     | C1641  | 5           | 58F-09-00450 | 1                     | C1654  | 8           |              |   |
| 5.000                             | 5     | 127.0                                     | C5763  | 5           |              |                       | C1656  | 8           |              |   |
| 5.500                             | 5-1/2 | 139.7                                     | H0593  | 5           | 58B-09-00250 | 0                     | C1657  | 8           |              |   |
| 6.000                             | 6     | 152.4                                     | SH5272 | 4           | VG2260       | 4                     | C5764  | 7           |              |   |
| 6.500                             | 6-1/2 | 165.1                                     | SF4076 | 4           | VF5371       | 3                     | C9773  | 5           |              |   |
| 7.000                             | 7     | 177.8                                     | SR7219 | 4           |              |                       | C5765  | 6           |              |   |
| 7.500                             | 7-1/2 | 190.5                                     | H7729  | 4           | 58B-09-01000 | 0                     | R0324  | 5           |              |   |
| 8.000                             | 8     | 203.2                                     | SR7222 | 4           | 58B-09-00500 | 1                     | D3913  | 5           |              |   |
| 8.500                             | 8-1/2 | 215.9                                     | KC7221 | 3           |              |                       | KC7125 | 3           |              |   |
| 9.000                             | 9     | 228.6                                     | KC7122 | 3           |              |                       | KC7126 | 3           |              |   |
| 9.500                             | 9-1/2 | 241.3                                     | KC7123 | 4           |              |                       | VL0143 | 3           |              |   |
| 10.00                             | 10    | 254                                       | KC7124 | 3           |              |                       | KC6381 | 3           |              |   |

\*4.25" length fasteners are non-preferred and should be avoided, if possible.

\*\* GRADE 5 CAP SCREWS 0.75" SIZE AND LARGER ARE NON-PREFERRED AND SHOULD BE AVOIDED, IF POSSIBLE.  
USE GRADE 8 CAP SCREWS FOR NEW DESIGNS WITH THESE LARGER SIZES.

|                         |                                     |                           |
|-------------------------|-------------------------------------|---------------------------|
| ENGINEERING<br>STANDARD | <b>Hex Head Cap Screws, Grade 5</b> | <b>5.02.001</b><br>(2023) |
| <b>KOMATSU®</b>         | FASTENER SPECIFICATION              | REVISION: 01              |

| Komatsu Fastener Part Number List |       |       |                                           |     |              |     |                   |     |              |     |
|-----------------------------------|-------|-------|-------------------------------------------|-----|--------------|-----|-------------------|-----|--------------|-----|
| Length                            |       |       | Size (inch), Finish, Rev, and Part Number |     |              |     |                   |     |              |     |
|                                   |       |       | 7/8–9 **<br>(0.875)                       |     |              |     | 1–8 **<br>(1.000) |     |              |     |
| inch                              |       | mm    | Plain Finish                              | Rev | Zinc Finish  | Rev | Plain Finish      | Rev | Zinc Finish  | Rev |
| 1.250                             | 1-1/4 | 31.8  | VN6412                                    | 2   |              |     | H5273             | 5   | VG8263       | 4   |
| 1.500                             | 1-1/2 | 38.1  | VN6413                                    | 3   |              |     | DH1808            | 3   | VH1868       | 3   |
| 1.750                             | 1-3/4 | 44.5  | C1568                                     | 6   | VC9227       | 4   | C7644             | 7   |              |     |
| 2.000                             | 2     | 50.8  | C1659                                     | 7   | VC5625       | 4   | C1666             | 6   | VH1867       | 3   |
| 2.250                             | 2-1/4 | 57.2  | C1660                                     | 5   | VF7376       | 4   | D1784             | 8   |              |     |
| 2.500                             | 2-1/2 | 63.5  | C1661                                     | 5   |              |     | C1667             | 7   | VC7829       | 4   |
| 2.750                             | 2-3/4 | 69.9  | C1662                                     | 8   | 58B-09-00530 | 1   | D2781             | 5   | VX0599       | 3   |
| 3.000                             | 3     | 76.2  | C1663                                     | 5   |              |     | C1668             | 6   |              |     |
| 3.250                             | 3-1/4 | 82.6  | D3661                                     | 5   |              |     | E3909             | 7   | 58D-09-00060 | 1   |
| 3.500                             | 3-1/2 | 88.9  | C7642                                     | 5   |              |     | C1669             | 7   | 58B-09-40080 | 1   |
| 3.750                             | 3.75  | 95.3  | SR6321                                    | 4   |              |     | SR6323            | 4   |              |     |
| 4.000                             | 4     | 101.6 | C1664                                     | 5   |              |     | C1670             | 6   |              |     |
| 4.500                             | 4-1/2 | 114.3 | C7643                                     | 5   |              |     | C5766             | 6   |              |     |
| 5.000                             | 5     | 127.0 | C1665                                     | 6   |              |     | H8441             | 4   | VC8185       | 4   |
| 5.500                             | 5-1/2 | 139.7 | SR7229                                    | 6   |              |     | F4018             | 5   |              |     |
| 6.000                             | 6     | 152.4 | SR7231                                    | 4   |              |     | H0592             | 8   |              |     |
| 6.500                             | 6-1/2 | 165.1 | SR7233                                    | 4   |              |     | E2543             | 5   |              |     |
| 7.000                             | 7     | 177.8 | SR7235                                    | 4   |              |     | SR7241            | 4   |              |     |
| 7.500                             | 7-1/2 | 190.5 | SR7237                                    | 4   |              |     | HE0439            | 4   |              |     |
| 8.000                             | 8     | 203.2 | SR7239                                    | 5   |              |     | SP1824            | 4   |              |     |
| 8.500                             | 8-1/2 | 215.9 | KC7127                                    | 3   |              |     | VM1455            | 3   |              |     |
| 9.000                             | 9     | 228.6 | KC7128                                    | 3   |              |     | VM1456            | 3   |              |     |
| 9.500                             | 9-1/2 | 241.3 |                                           |     |              |     | KC7131            | 3   | PC2771       | 1   |
| 10.00                             | 10    | 254   | KC7129                                    | 3   |              |     |                   |     |              |     |

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USE GRADE 8 CAP SCREWS FOR NEW DESIGNS WITH THESE LARGER SIZES.**

|                             |                                     |                           |
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| Komatsu Fastener Part Number List |       |       |                                           |     |             |     |                       |     |             |     |
|-----------------------------------|-------|-------|-------------------------------------------|-----|-------------|-----|-----------------------|-----|-------------|-----|
| Length                            |       |       | Size (inch), Finish, Rev, and Part Number |     |             |     |                       |     |             |     |
|                                   |       |       | 1-1/8-7 **<br>(1.125)                     |     |             |     | 1-1/4-7 **<br>(1.250) |     |             |     |
| inch                              |       | mm    | Plain Finish                              | Rev | Zinc Finish | Rev | Plain Finish          | Rev | Zinc Finish | Rev |
| 1.250                             | 1-1/4 | 31.8  |                                           |     |             |     |                       |     | VD7231      | 4   |
| 1.500                             | 1-1/2 | 38.1  |                                           |     |             |     | VN6414                | 3   |             |     |
| 1.750                             | 1-3/4 | 44.5  |                                           |     |             |     | VN6416                | 3   |             |     |
| 2.000                             | 2     | 50.8  | KC7132                                    | 3   |             |     | E7193                 | 6   |             |     |
| 2.250                             | 2-1/4 | 57.2  | WA0282                                    | 4   |             |     | CC5188                | 4   |             |     |
| 2.500                             | 2-1/2 | 63.5  | KC7133                                    | 3   |             |     | E1473                 | 5   |             |     |
| 2.750                             | 2-3/4 | 69.9  | KC7134                                    | 3   |             |     | SR6325                | 4   |             |     |
| 3.000                             | 3     | 76.2  | TH1291                                    | 3   |             |     | C5542                 | 6   |             |     |
| 3.250                             | 3-1/4 | 82.6  | VY0639                                    | 4   |             |     | SR6326                | 5   |             |     |
| 3.500                             | 3-1/2 | 88.9  | KC7135                                    | 3   |             |     | SR6327                | 4   | VF8157      | 4   |
| 3.750                             | 3.75  | 95.3  | KC7136                                    | 3   |             |     | SR6328                | 4   |             |     |
| 4.000                             | 4     | 101.6 | KC7137                                    | 3   |             |     | E6835                 | 5   |             |     |
| 4.500                             | 4-1/2 | 114.3 | KC7138                                    | 3   |             |     | E0259                 | 5   |             |     |
| 5.000                             | 5     | 127.0 | KC7139                                    | 3   |             |     | D2821                 | 5   |             |     |
| 5.500                             | 5-1/2 | 139.7 | KC7140                                    | 3   |             |     | SR7246                | 4   |             |     |
| 6.000                             | 6     | 152.4 | TH1284                                    | 3   |             |     | D1558                 | 6   |             |     |
| 6.500                             | 6-1/2 | 165.1 | KC7141                                    | 3   |             |     | VH9735                | 3   |             |     |
| 7.000                             | 7     | 177.8 | KC7142                                    | 4   |             |     | VN6428                | 3   |             |     |
| 7.500                             | 7-1/2 | 190.5 | KC7143                                    | 3   |             |     | VN6433                | 3   |             |     |
| 8.000                             | 8     | 203.2 | KC7144                                    | 3   |             |     | VN6438                | 3   |             |     |
| 9.500                             | 9-1/2 | 241.3 |                                           |     |             |     | VY3033                | 3   |             |     |

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| Komatsu Fastener Part Number List |       |       |                                           |     |             |     |  |  |  |  |
|-----------------------------------|-------|-------|-------------------------------------------|-----|-------------|-----|--|--|--|--|
| Length                            |       |       | Size (inch), Finish, Rev, and Part Number |     |             |     |  |  |  |  |
|                                   |       |       | 1-1/2-6 **<br>(1.500)                     |     |             |     |  |  |  |  |
| Inch                              |       | mm    | Plain Finish                              | Rev | Zinc Finish | Rev |  |  |  |  |
| 1.500                             | 1-1/2 | 38.1  | VN6415                                    | 3   |             |     |  |  |  |  |
| 1.750                             | 1-3/4 | 44.5  | VN6417                                    | 3   |             |     |  |  |  |  |
| 2.000                             | 2     | 50.8  | S7996                                     | 4   |             |     |  |  |  |  |
| 2.250                             | 2-1/4 | 57.2  | SR6330                                    | 4   |             |     |  |  |  |  |
| 2.500                             | 2-1/2 | 63.5  | SC5572                                    | 4   |             |     |  |  |  |  |
| 2.750                             | 2-3/4 | 69.9  | SR6331                                    | 4   |             |     |  |  |  |  |
| 3.000                             | 3     | 76.2  | D9337                                     | 4   |             |     |  |  |  |  |
| 3.250                             | 3-1/4 | 82.6  | SF9704                                    | 4   |             |     |  |  |  |  |
| 3.500                             | 3-1/2 | 88.9  | SR6332                                    | 4   |             |     |  |  |  |  |
| 3.750                             | 3.75  | 95.3  | SR6333                                    | 4   |             |     |  |  |  |  |
| 4.000                             | 4     | 101.6 | SR6334                                    | 4   |             |     |  |  |  |  |
| 4.500                             | 4-1/2 | 114.3 | SR6336                                    | 4   |             |     |  |  |  |  |
| 5.000                             | 5     | 127.0 | SR6338                                    | 4   |             |     |  |  |  |  |
| 5.500                             | 5-1/2 | 139.7 | SR9098                                    | 4   |             |     |  |  |  |  |
| 6.000                             | 6     | 152.4 | C1950                                     | 5   |             |     |  |  |  |  |
| 6.500                             | 6-1/2 | 165.1 | VN6424                                    | 2   |             |     |  |  |  |  |
| 7.000                             | 7     | 177.8 | VN6429                                    | 3   |             |     |  |  |  |  |
| 7.500                             | 7-1/2 | 190.5 | VN6434                                    | 3   |             |     |  |  |  |  |
| 8.000                             | 8     | 203.2 | VN6439                                    | 3   |             |     |  |  |  |  |

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## 1. Scope:

- 1.1. This specification covers Grade 5 medium strength hex head cap screws that shall comply with ASME B18.2.1 and SAE J429. In the event of any discrepancies, this specification shall prevail.

## 2. Intended Application:

- 2.1. Grade 5 cap screws are intended to be used in moderately loaded bolted joints with Grade 5 nuts or in tapped holes. When enhanced corrosion resistance is required, cap screws with zinc finish should be used.
- 2.1.1. Grade 5 cap screws **should not** be used with lower strength nuts. Grade 5 cap screws **may be** used with higher strength nuts (such as Grade 8).

## 3. Material and Chemical Composition Requirements:

- 3.1. Fasteners shall be made from carbon or alloy steel conforming to Grade 5 requirements as specified in SAE J403/J404.
- 3.2. Decarburization shall conform to ASTM F2328.

## 4. Mechanical Properties Requirements:

- 4.1. Fasteners shall conform to Grade 5 requirements listed in the table below, as specified in SAE J429.

| Property                 | Criteria<br>Through 1.00 in. diameter | Criteria<br>Over 1.00 in. through 1.50 in.<br>diameter |
|--------------------------|---------------------------------------|--------------------------------------------------------|
| Minimum Tensile Strength | 120,000 psi                           | 105,000 psi                                            |
| Stress under Proof Load* | 85,000 psi                            | 74,000 psi                                             |
| Hardness Range           | 25 – 34 HRC                           | 19 – 30 HRC                                            |

\* Stress under Proof Load is multiplied by the stress area ( $A_s$ ) of the fastener to calculate the Proof Load requirement for each fastener size. See SAE J429 Table 1 and Table 5 for more details.

## 5. Dimensional Requirements:

- 5.1. Fastener dimensions and tolerances shall conform to ASME B18.2.1.

### 5.2. Threads:

- 5.2.1. Threads shall be Unified Standard Coarse, Class 2A (UNC-2A) or Unified Standard Fine, Class 2A (UNF-2A), conforming to ASME B1.1. Coarse threads are preferred.

### 5.3. Thread Length:

- 5.3.1. All threads are measured from end of cap screw to last complete thread. Minimum thread length is two diameters plus one fourth inch ( $2D + \frac{1}{4}$  in.) for cap screws up to and including six

|                             |                                     |                           |
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inches long, and two diameters plus one-half inch ( $2D + \frac{1}{2}$  in.) for cap screws over six inches long, as specified in ASME B18.2.1 Section 3.7.

- 5.3.2. When cap screws are too short for formula thread length, thread will extend as close to neck as possible.

## 6. Marking Requirements:

- 6.1. Grade 5 markings and the manufacturer's identification mark shall be indented or embossed on the cap screw head, as specified in SAE J429.

## 7. Surface Finish Requirements:

### 7.1. Plain Finish:

- 7.1.1. Plain fasteners shall have a dark "as produced" finish with oil residue on the surface.

- 7.1.1.1. Fasteners with black oxide finishes or dark phosphate and oil finishes are acceptable substitutes for plain fasteners.

### 7.2. Zinc Finish:

- 7.2.1. Zinc flake fasteners shall be coated with a silver-grey zinc flake coating conforming to ISO 10683 flZnL/nc/240h/Total COF 0.12 – 0.18 with minimum corrosion resistance of 240 hours before first appearance of red rust in a salt spray test conforming to ASTM B117 or ISO9227. Total COF (Coefficient of Friction) calculation shall conform to ISO 16047. HEXAVALENT CHROMIUM COATINGS SHALL NOT BE USED.

- 7.2.1.1. COF compliance shall be demonstrated by torque/clamp force testing using surrogate bolts that conform to ISO 4014. The test procedure shall conform to ISO 16047.

- 7.2.1.1.1. Test Washer shall be Type HH, plain surface uncoated and degreased.

- 7.2.1.1.2. Test Nut shall be plain surface uncoated and degreased.

- 7.3. Surface discontinuities shall conform to ASTM F788.

## 8. Procurement Data Requirements:

- 8.1. The vendor must certify, at first purchase order and thereafter as requested, that the product meets or exceeds this specification.
- 8.2. Products meeting the requirements of this specification may be obtained from reliable vendors without specific engineering approval.
- 8.3. Labels on shipping containers shall include the proper Komatsu part number designation and supplier's designation.

|                             |                                     |                           |
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## 9. Applicable Standards:

| Standard Designation | Description                                                                             |
|----------------------|-----------------------------------------------------------------------------------------|
| KOMATSU 5.02.003     | Hex Head Cap Screws, Grade 8                                                            |
| KOMATSU 5.02.004     | Hex Head Cap Screws, Class 10.9, Metric                                                 |
| KOMATSU 5.02.030     | Socket Head Cap Screws, Grade 170                                                       |
| ASME B1.1            | Unified Inch Screw Threads                                                              |
| ASME B18.2.1         | General and Dimensional Data for Bolts and Screws                                       |
| ASTM A354            | Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners |
| ASTM B117            | Standard Practice for Operating Salt Spray (Fog) Apparatus                              |
| ASTM F788            | Surface Discontinuities                                                                 |
| ASTM F2328           | Decarburization and Carburization                                                       |
| ASTM F3125           | High Strength Structural Bolts                                                          |
| ISO 4014             | Hexagon Head Bolts – Product Grades A and B                                             |
| ISO 9227             | Neutral Salt Spray Test                                                                 |
| ISO 10683            | Zinc Flake Coatings for Fasteners                                                       |
| ISO 16047            | Fasteners — Torque/clamp force testing                                                  |
| SAE J403             | Chemical Compositions of SAE Carbon Steels                                              |
| SAE J404             | Chemical Compositions of SAE Alloy Steels                                               |
| SAE J429             | Mechanical and Material Requirements for Externally Threaded Fasteners                  |

|                                                                                   |                                     |                           |
|-----------------------------------------------------------------------------------|-------------------------------------|---------------------------|
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| REVISION | DATE          | CHANGE HISTORY                                                                                                                                                                                   | PROPOSED<br>BY | APPROVED<br>BY |
|----------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| 00       | August 1994   |                                                                                                                                                                                                  |                |                |
| 01       | March<br>2023 | Combined std.5.02.001.1 zinc flake cap screw spec into 5.02.001 spec; Updated zinc flake COF requirements; Updated spec to match new Komatsu format and to align with current industry standards | Barry Dietz    | Joe Peschong   |