

**DIMENSIONAL REQUIREMENTS FOR PREVAILING TORQUE TYPE STEEL METRIC HEX NUTS AND HEX FLANGE NUTS****1. SCOPE**

This standard covers the general and dimensional requirements for hexagon (M5 - M24) and flanged hexagon (M5 - M20) prevailing torque nuts. Use for released standard parts only (W5). Not for use with new utility parts (W7).

2. REFERENCES

ISO 261	General purpose metric screw threads - General plan.
ISO 965	General purpose metric screw threads - Tolerances.
ISO 1502	General purpose metric screw threads - Gauging.
WE 950	Prevailing torque type steel hexagon nuts and hexagon flanged nuts - Mechanical and performance properties.
WE 990	Surface discontinuities of nuts.
WX 100	Finish Specification

3. GENERAL REQUIREMENTS

- 3.1 **DIMENSIONS AND TOLERANCES.** The dimensions and tolerances of hexagon and flanged hexagon prevailing torque nuts must be in accordance with Clauses 1 - 6, Tables 1 - 3, and Figures 1 and 2.
- 3.2 **GAUGING REQUIREMENTS.** Prevailing torque nuts must satisfy the gauging requirements specified in Appendix A except for the screw thread which must satisfy the requirements of Clause 4.
- 3.3 **PROTECTIVE FINISH.** All dimensions and tolerances defined in this specification apply prior to the application of the protective finish except where otherwise specified.

4. SCREW THREADS

- 4.1 **DIMENSIONS AND TOLERANCES.** Screw threads, prior to the inclusion of a prevailing torque feature, must conform to the dimensions and tolerances specified in ISO 261 and ISO 965 tolerance class 6H.
- 4.2 **GAUGING.** Nuts shall assemble a minimum of one full turn by hand on a basic GO thread plug gauge before engaging the prevailing torque feature. The gauge must conform to the dimensions and tolerances defined in ISO 1502 appropriate to the specified thread size and tolerance class.
- 4.3 When coated with organic type coatings tightness to inspection gauges may be experienced, see WX 100.

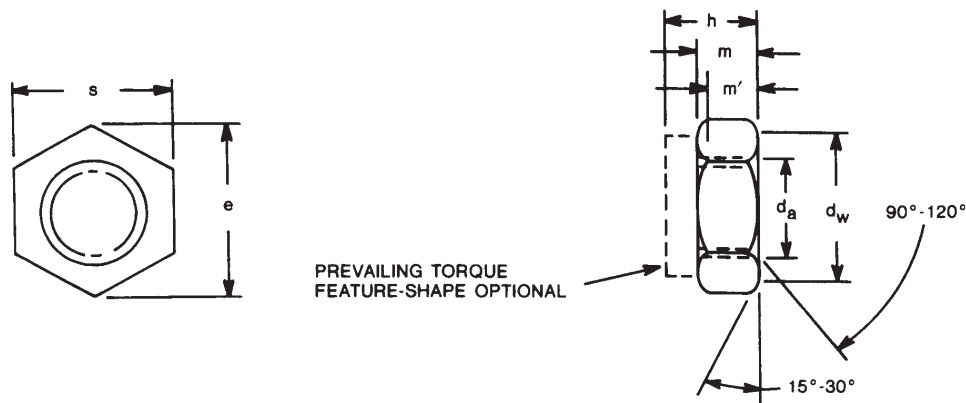
5. FORM AND POSITION TOLERANCES

- 5.1 **CONCENTRICITY OF HEXAGON TO THREAD.** The concentricity of the hexagon flats to the thread shall be within the values specified in Table 3.
- 5.2 **CONCENTRICITY OF FLANGED PORTION TO THREAD.** The concentricity of the outside diameter of the flanged portion to the thread shall be within the values specified in Table 3.
- 5.3 **SQUARENESS OF THE BEARING SURFACE TO THE THREAD.**
 - 5.3.1 **HEXAGON NUTS.** The bearing surface shall be flat and perpendicular to the axis of the thread within 1°.
 - 5.3.2 **HEXAGON FLANGE NUTS.** The bearing surface shall be flat to a maximum of 1.5° concave from the plane formed by the bearing circle diameter (d_w). The plane formed by the bearing circle diameter shall be perpendicular to the thread within 1°.
- 5.4 **PARALLELISM OF HEXAGON FLATS TO THREAD.** The hexagon flats (measured over the minimum wrenching height m' for hexagon nuts or T_a for hexagon flanged nuts) must be parallel to the thread within $0.17 \times m'$ for hexagon nuts or $0.17 \times T_a$ for hexagon nuts.



6. SURFACE DISCONTINUITIES OF NUTS

Shall be evaluated in accordance with WE 990.

Figure 1. Hex nuts

Table 1. Dimensions of prevailing torque hex nuts

Dimensions in mm

Nominal Size		M5	M6	M8	M10	M12	M14	M16	M20	M24
Pitch		0.8	1	1.25	1.5	1.75	2	2	2.5	3
s ³⁾	Max	8	10	13	15	18	21	24	30	36
	Min.	7.8	9.78	12.73	14.73	17.73	20.67	23.67	29.16	35
e ³⁾	Min.	8.79	11.05	14.38	16.64	20.03	23.35	26.75	32.95	39.55
	Max	5.1	6	8	10	12	14.1	16.4	20.3	23.9
h	Max	5.1	6	8	10	12	14.1	16.4	20.3	23.9
	Min.	4.8	5.4	7.14	8.94	11.57	13.4	15.7	19	22.6
h	Max	6.8	8	9.5	11.9	14.9	17	19.1	22.8	27.1
	Min.	6.8	8	9.5	11.9	14.9	17	19.1	22.8	27.1
m ²⁾	Min.	4.4	4.9	6.44	8.04	10.37	12.1	14.1	16.9	20.2
	Min.	4.4	4.9	6.44	8.04	10.37	12.1	14.1	16.9	20.2
m' ¹⁾	Min.	2.75	3.3	4.4	5.5	6.6	7.7	8.8	11	13.2
	Min.	2.75	3.3	4.4	5.5	6.6	7.7	8.8	11	13.2
d_w	Min.	6.9	8.9	11.6	13.6	16.6	19.6	22.5	27.7	33.2
	Min.	6.9	8.9	11.6	13.6	16.6	19.6	22.5	27.7	33.2
d_a	Max	5.75	6.75	8.75	10.8	13	15.1	17.3	21.6	25.9
	Min.	5	6	8	10	12	14	16	20	24

- 1) Minimum wrenching height.
- 2) Minimum height of the metal thread.
- 3) May be less than the specified minimum in the area of deformation provided the wrenching height m' is maintained.