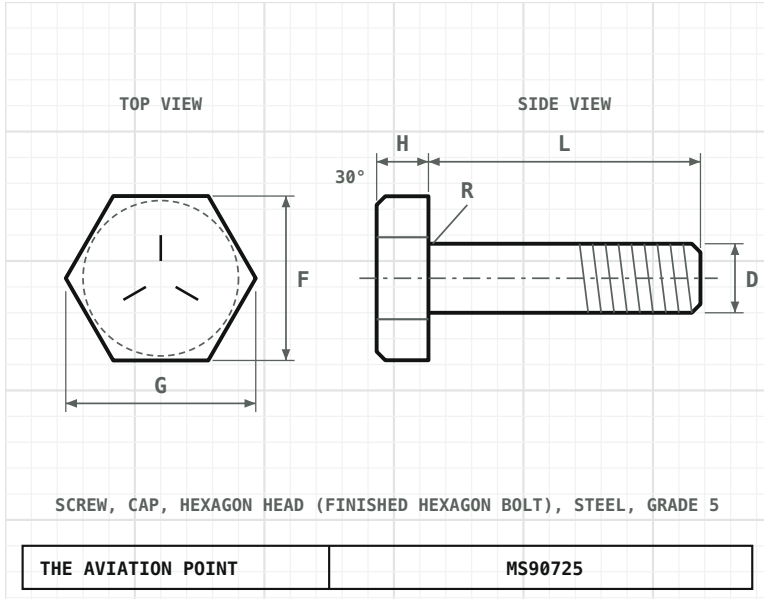
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MS90725 screw — hexagon

MS90725: hex head cap screw (finished hexagon bolt), Grade 5 steel, cadmium plated, UNC-2A, 1/4 to 2-1/2.



Engineering drawing · dimensions in inches

Specification

Item	Value
Head	hexagon
Drive	external hexagon
Thread series	coarse (UNC-2A)
Material	Medium carbon steel, Grade 5, per the procurement specification.
Heat treatment	Minimum tensile load based on a minimum ultimate tensile strength of 120,000 psi for diameters through 1 in, 105,000 psi for 1-1/8 through 1-1/2 in and 90,000 psi over 1-1/2 in, on the stress areas of Handbook H28.

Item	Value
Finish	Cadmium plated per the procurement specification.
Procurement	FF-S-85
Thread specification	FED-STD-H28/2
Status	Check the current issue before design use. Rev. D (2 Jul 1974) with Amendment 1 (6 Nov 1992). Notice 1 (Feb 2000): cancelled and superseded by NASM90725; the part numbers are identical (MS90725-1 = NASM90725-1).

Dimensions by size

Dimension, in	1/4-20 UNC-2A	5/16-18 UNC-2A	3/8-16 UNC-2A	7/16-14 UNC-2A	1/2-13 UNC-2A	9/16-12 UNC-2A	5/8-11 UNC-2A	3/4-10 UNC-2A	7/8-9 UNC-2A	1-8 UNC-2A	1-1/8-7 UNC-2A	1-1/4-7 UNC-2A	1-3/8-6 UNC-2A	1-1/2-6 UNC-2A	1-3/4-5 UNC-2A	2-4 1/2 UNC-2A	2-1/4-4 1/2 UNC-2A	2-1/2-4 UNC-2A
D body dia	.2450 – .2500	.3065 – .3125	.3690 – .3750	.4305 – .4375	.4930 – .5000	.5545 – .5625	.6170 – .6250	.7410 – .7500	.8660 – .8750	.9900 – 1.0000	1.1140 – 1.1250	1.2390 – 1.2500	1.3630 – 1.3750	1.4880 – 1.5000	1.7380 – 1.7500	1.9880 – 2.0000	2.2380 – 2.2500	2.4880 – 2.5000
F width across flats	.4280 – .4375	.4890 – .5000	.5510 – .5625	.6120 – .6250	.7360 – .7500	.7980 – .8125	.9220 – .9375	1.1000 – 1.1250	1.2850 – 1.3125	1.4690 – 1.5000	1.6310 – 1.6875	1.8120 – 1.8750	1.9940 – 2.0625	2.1750 – 2.2500	2.5380 – 2.6250	2.9000 – 3.0000	3.2620 – 3.3750	3.6250 – 3.7500
G width across corners	.488 – .505	.557 – .577	.628 – .650	.698 – .722	.840 – .866	.910 – .938	1.051 – 1.083	1.254 – 1.299	1.465 – 1.516	1.675 – 1.732	1.859 – 1.949	2.066 – 2.165	2.273 – 2.382	2.480 – 2.598	2.893 – 3.031	3.306 – 3.464	3.719 – 3.897	4.133 – 4.330
H head height	.150 – .163	.195 – .211	.226 – .243	.272 – .291	.302 – .323	.348 – .371	.378 – .403	.455 – .483	.531 – .563	.591 – .627	—	.749 – .813	.810 – .878	.902 – .974	1.054 – 1.134	1.175 – 1.263	1.327 – 1.423	1.479 – 1.583
R radius	.015 – .025	.015 – .025	.015 – .025	.015 – .025	.015 – .025	.020 – .045	.020 – .045	.020 – .045	.040 – .065	.060 – .095	.060 – .095	.060 – .095	.060 – .095	.060 – .095	.060 – .095	.060 – .095	.060 – .095	.060 – .095
min tensile lbf	—	6300	9300	12800	17000	21800	27100	40100	55400	72700	80100	101700	121300	147500	171000	225000	292500	360000

Dimensions in inches, as tabulated in Tables I and II of the standard (letters as on its drawing); a dash marks a value not given here.

Part numbers and lengths

1/4-20 UNC-2A 26 part numbers

Part no.	Length, in	Tol.
MS90725-1	.375	+0/-.031
MS90725-2	.438	+0/-.031
MS90725-3	.500	+0/-.031
MS90725-4	.562	+0/-.031
MS90725-5	.625	+0/-.031
MS90725-6	.750	+0/-.031
MS90725-7	.875	+0/-.031
MS90725-8	1.000	+0/-.031

3/8-16 UNC-2A 26 part numbers

Part no.	Length, in	Tol.
MS90725-53	.375	+0/-.031
MS90725-54	.438	+0/-.031
MS90725-55	.500	+0/-.031
MS90725-56	.562	+0/-.031
MS90725-57	.625	+0/-.031
MS90725-58	.750	+0/-.031
MS90725-59	.875	+0/-.031
MS90725-60	1.000	+0/-.031

1/2-13 UNC-2A 28 part numbers

Part no.	Length, in	Tol.
MS90725-104	.500	+0/-.031
MS90725-105	.562	+0/-.031
MS90725-106	.625	+0/-.031
MS90725-107	.750	+0/-.031
MS90725-108	.875	+0/-.031
MS90725-109	1.000	+0/-.031
MS90725-110	1.125	+0/-.062
MS90725-111	1.250	+0/-.062

5/16-18 UNC-2A 26 part numbers

Part no.	Length, in	Tol.
MS90725-27	.375	+0/-.031
MS90725-28	.438	+0/-.031
MS90725-29	.500	+0/-.031
MS90725-30	.562	+0/-.031
MS90725-31	.625	+0/-.031
MS90725-32	.750	+0/-.031
MS90725-33	.875	+0/-.031
MS90725-34	1.000	+0/-.031

7/16-14 UNC-2A 25 part numbers

Part no.	Length, in	Tol.
MS90725-79	.438	+0/-.031
MS90725-80	.500	+0/-.031
MS90725-81	.562	+0/-.031
MS90725-82	.625	+0/-.031
MS90725-83	.750	+0/-.031
MS90725-84	.875	+0/-.031
MS90725-85	1.000	+0/-.031
MS90725-86	1.125	+0/-.062

9/16-12 UNC-2A 25 part numbers

Part no.	Length, in	Tol.
MS90725-130	.562	+0/-.031
MS90725-131	.625	+0/-.031
MS90725-132	.750	+0/-.031
MS90725-133	.875	+0/-.031
MS90725-134	1.000	+0/-.031
MS90725-135	1.125	+0/-.062
MS90725-136	1.250	+0/-.062
MS90725-137	1.375	+0/-.062

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.

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5/8-11 UNC-2A 24 part numbers

Part no.	Length, in	Tol.
MS90725-155	.625	+0/-.031
MS90725-156	.750	+0/-.031
MS90725-157	.875	+0/-.031
MS90725-158	1.000	+0/-.031
MS90725-159	1.125	+0/-.062
MS90725-160	1.250	+0/-.062
MS90725-161	1.375	+0/-.062
MS90725-162	1.500	+0/-.062

3/4-10 UNC-2A 23 part numbers

Part no.	Length, in	Tol.
MS90725-179	.750	+0/-.031
MS90725-180	.875	+0/-.031
MS90725-181	1.000	+0/-.031
MS90725-182	1.125	+0/-.062
MS90725-183	1.250	+0/-.062
MS90725-184	1.375	+0/-.062
MS90725-185	1.500	+0/-.062
MS90725-186	1.750	+0/-.062

7/8-9 UNC-2A 22 part numbers

Part no.	Length, in	Tol.
MS90725-202	.875	+0/-.062
MS90725-203	1.000	+0/-.062
MS90725-204	1.125	+0/-.125
MS90725-205	1.250	+0/-.125
MS90725-206	1.375	+0/-.125
MS90725-207	1.500	+0/-.125
MS90725-208	1.750	+0/-.125
MS90725-209	2.000	+0/-.125

1-8 UNC-2A 21 part numbers

Part no.	Length, in	Tol.
MS90725-224	1.000	+0/-.062
MS90725-225	1.125	+0/-.125
MS90725-226	1.250	+0/-.125
MS90725-227	1.375	+0/-.125
MS90725-228	1.500	+0/-.125
MS90725-229	1.750	+0/-.125
MS90725-230	2.000	+0/-.125
MS90725-231	2.250	+0/-.188

1-1/8-7 UNC-2A 20 part numbers

Part no.	Length, in	Tol.
MS90725-245	1.125	+0/-.125
MS90725-246	1.250	+0/-.125
MS90725-247	1.375	+0/-.125
MS90725-248	1.500	+0/-.125
MS90725-249	1.750	+0/-.125
MS90725-250	2.000	+0/-.125
MS90725-251	2.250	+0/-.188
MS90725-252	2.500	+0/-.188

1-1/4-7 UNC-2A 19 part numbers

Part no.	Length, in	Tol.
MS90725-265	1.250	+0/-.125
MS90725-266	1.375	+0/-.125
MS90725-267	1.500	+0/-.125
MS90725-268	1.750	+0/-.125
MS90725-269	2.000	+0/-.125
MS90725-270	2.250	+0/-.188
MS90725-271	2.500	+0/-.188
MS90725-272	2.750	+0/-.188

1-3/8-6 UNC-2A 18 part numbers

Part no.	Length, in	Tol.
MS90725-284	1.375	+0/-.125
MS90725-285	1.500	+0/-.125
MS90725-286	1.750	+0/-.125
MS90725-287	2.000	+0/-.125
MS90725-288	2.250	+0/-.188
MS90725-289	2.500	+0/-.188
MS90725-290	2.750	+0/-.188
MS90725-291	3.000	+0/-.188

1-1/2-6 UNC-2A 17 part numbers

Part no.	Length, in	Tol.
MS90725-302	1.500	+0/-.125
MS90725-303	1.750	+0/-.125
MS90725-304	2.000	+0/-.125
MS90725-305	2.250	+0/-.188
MS90725-306	2.500	+0/-.188
MS90725-307	2.750	+0/-.188
MS90725-308	3.000	+0/-.188
MS90725-309	3.250	+0/-.188

1-3/4-5 UNC-2A 16 part numbers

Part no.	Length, in	Tol.
MS90725-319	1.750	+0/-.125
MS90725-320	2.000	+0/-.125
MS90725-321	2.250	+0/-.188
MS90725-322	2.500	+0/-.188
MS90725-323	2.750	+0/-.188
MS90725-324	3.000	+0/-.188
MS90725-325	3.250	+0/-.188
MS90725-326	3.500	+0/-.188

2-4 1/2 UNC-2A 14 part numbers · tolerance +0/-.188

Part no.	Length, in
MS90725-335	2.250
MS90725-336	2.500
MS90725-337	2.750
MS90725-338	3.000
MS90725-339	3.250
MS90725-340	3.500
MS90725-341	3.750
MS90725-342	4.000

2-1/4-4 1/2 UNC-2A 12 part numbers · tolerance +0/-.188

Part no.	Length, in
MS90725-349	2.750
MS90725-350	3.000
MS90725-351	3.250
MS90725-352	3.500
MS90725-353	3.750
MS90725-354	4.000
MS90725-355	4.250
MS90725-356	4.500

2-1/2-4 UNC-2A 12 part numbers · tolerance +0/-.188

Part no.	Length, in
MS90725-361	2.750
MS90725-362	3.000
MS90725-363	3.250
MS90725-364	3.500
MS90725-365	3.750
MS90725-366	4.000
MS90725-367	4.250
MS90725-368	4.500

Showing 144 of 374 rows. Complete table: theaviationpoint.com/parts/screws/ms90725/

How to read the part number

Part	Meaning
Format	MS90725-<dash number>
Example	MS90725-1: 1/4-20 UNC-2A, .375 long
Length tolerance, Table I, size 3/4 and under	+0/-.031 to 1.000; +0/-.062 over 1.000 to 2.000; +0/-.094 over 2.000 to 6.000
Length tolerance, Table I, size 7/8	+0/-.062 to 1.000; +0/-.125 over 1.000 to 2.000
Length tolerance, Table II, sizes 1 to 2-1/2	+0/-.062 at 1.000; +0/-.125 over 1.000 to 2.000; +0/-.188 over 2.000 to 6.000
Dash	Dash number from Tables I and II selects thread size and length (1 to 372, plus 400 and 401)

Notes

- Thread length: minimum twice the diameter plus 1/4 in, tolerance plus 3/16 in or 2-1/2 threads, whichever is greater. On screws too short for the minimum thread length, the distance from the bearing surface of the head to the first complete thread does not exceed 2-1/2 threads for sizes up to and including 1 in, and 3-1/2 threads for larger sizes.
- Threads per FED-STD-H28/2; acceptability per FED-STD-H28/20, System 21.
- Screws less than three diameters long meet the minimum and maximum hardness of the procurement specification, which is their only mechanical property requirement for acceptance.
- Heads are marked; raised markings are preferred, stampings are acceptable.
- Cross reference: the screws of the cancelled standards, including MS35291, MS35293, MS35295 and MS35297, have the same dash numbers in MS90725, so no interchangeability table is needed. The cancelled screws cannot always replace MS90725 screws and should be used until existing stocks are depleted; use only MS90725 screws for design and replacement.
- Approved data governs. Use the screw the SRM, drawing or IPC calls for.

SOURCES · MS90725 Rev. D, 2 Jul 1974 — Screw, Cap, Hexagon Head, Steel, Grade 5, Cadmium Plated, UNC-2A

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/screws/ms90725/

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.