Data sheet sockets and impact sockets — width across flats per bolt, square drive, tightening torques

The width across flats (AF) is the size across the flats of the nut or bolt head. Impact sockets are chrome-molybdenum steel and withstand the blows of an impact wrench; ordinary chrome-vanadium sockets crack on it. The square drive must match both wrench and socket.

Width across flats per metric bolt (ISO 4014/4017, DIN 931/933 in brackets)

Bolt	AF mm	Square impact socket
M4	7	1/4"
M5	8	1/4"
M6	10	1/4" – 3/8"
M8	13	3/8" – 1/2"
M10	17 (16)	3/8" – 1/2"
M12	19 (18)	1/2"
M14	22 (21)	1/2"
M16	24	1/2" – 3/4"
M18	27	1/2" – 3/4"
M20	30	3/4"
M22	32 (34)	3/4"
M24	36	3/4" – 1"
M27	41	3/4" – 1"
M30	46	1"
M36	55	1"

Square drives

Square	AF range	Typical torque
1/4"	4 – 14 mm	up to about 30 Nm
3/8"	6 – 22 mm	up to about 100 Nm
1/2"	8 – 36 mm	up to about 400 Nm
3/4"	17 – 60 mm	up to about 1,000 Nm
1"	24 – 80 mm	up to about 2,500 Nm

Tightening torques (Nm, dry, μ = 0.14, VDI 2230 guide values)

Bolt	8.8	10.9
M6	10	15
M8	25	36
M10	49	72
M12	85	125
M14	135	200
M16	210	310
M20	410	610
M24	710	1.050

Version

Point	Advice

CrMo (impact socket)	tough steel, thick wall, black phosphated; only these on an impact wrench
CrV (hand socket)	for ratchet and torque wrench; never on an impact wrench
Short / deep	short for normal nuts; deep for nuts on threaded rods, studs and wheel bolts
Retaining pin and ring	locks the impact socket on the square of the impact wrench; supplied with each socket or ordered separately
Final check	impact wrench for running down, torque wrench for the final torque
Nut setter on bit shank	small AF 5.5 – 13 mm with drill driver; magnetic for roofing screws