

AEROSPACE

||||| THE NEXT LEVEL OF PERFORMANCE



ARMSTRONG[®]
INDUSTRIAL HAND TOOLS

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Few other industries demand quality products to the degree required by the aerospace industry. Aerospace Standards are used extensively by the military services as well as by the private sector. Today there are over 2,300 Aerospace Specifications, covering a vast array of materials and processes. Each of these standards is instituted for a variety of purposes. However, the general overall goal of the standards is aimed at assuring the reliability and quality of products and services that meet the high demands of aerospace applications. The ARMSTRONG® aerospace approved tools are stamped with the "ASTM" symbol, a stamp that is only present on ARMSTRONG® branded tools that meet all the stringent applicable aerospace specification standards. Not just strong, ARMSTRONG®.



■ RATCHETS



■ SOCKETS



■ WRENCHES

AEROSPACE SPECIFICATIONS

AS4984-2005

This aerospace standard covers aerospace coatings. Specifically, for Nickel-Chrome plating it specifies requirements for plating thickness, appearance, and adhesion. For alternative coatings to Nickel-Chrome plating, it specifies requirements for plating appearance and adhesion, and the products must also pass corrosion and abrasion testing. AS4984 has a higher requirement for corrosion resistance than ASME standards for non-aerospace hand tools.

AS478N – 2007

This aerospace standard covers markings on aerospace products. Specifically, it provides requirements for permanent markings (i.e. stampings) in terms of character height, spacing, and the depth of the stamping.

AS4283A-2004

This aerospace standard covers ratchets, extensions, speeder bars, breaker bars, and universal joint attachments. It specifies requirements for each of these products in terms of dimensions, ultimate torque, and cycle life performance (ratchets only). AS4283 specifies a higher requirement for minimum Nickel-Chrome plating thickness than ASME standards for non-aerospace hand tools, which allows the aerospace products covered by this standard to meet the harsh aerospace corrosion resistance requirements. Finally, this standard requires products to meet Foreign Object Damage (FOD) requirements.

AS954E-2004

This aerospace standard covers wrenches and sockets, and specifies requirements for these products in terms of dimensions, ultimate torque, and cycle life performance. AS954 specifies a higher requirement for minimum Nickel-Chrome plating thickness than ASME standards for non-aerospace hand tools, which allows the aerospace products covered by this standard to meet the harsh aerospace corrosion resistance requirements. Finally, this standard requires that the wrenches and sockets not bear on the outer 5% of the fastener's wrenching points as well as that they meet Foreign Object Damage (FOD) requirements.





Bolt Clearance Holes Have Larger Diameters and Depths to Accommodate a Wider Variety of Fasteners

Special Plating Prevents Corrosion Under the Harshest of Conditions

Thinner Nut End Walls Provide Increased Access to Obstructed Fasteners

Enhanced Strength Prevents FOD (Foreign Object Damage), Creating a Safer Work Environment in Aerospace Conditions

Tighter Tolerances and Ultimate Torque and Cycle Performance Meet the Toughest Specs on the Market



Standard Drive



Surface Drive

Surface Drive™ Technology Transmits Torque without Fastener Rounding



DRIVE TOOLS



Extensions

Product Number	Drive Size	Length Inches	Weight Lbs.
10-921	1/4"	2.000	0.060
10-923	1/4"	6.000	0.140
10-925	1/4"	14.000	0.320
11-922	3/8"	3.000	0.160
11-923	3/8"	6.000	0.250
11-927	3/8"	12.000	0.480
12-923	1/2"	5.000	0.380

Socket Accessories

Product Number	Product Name	Drive Size	Length Inches	Weight Lbs.
12-917A	Flex Handle Breaker Bar	1/2"	15.000	1.510
11-935	Speeder Handle	3/8"	17.50	0.990
10-947	Universal Joint	1/4"	-	0.150
11-947	Universal Joint	3/8"	-	0.040

SOCKETS

1/4" Drive 12 Pt. Standard Length Sockets

Product Number	Opening Inches	Overall Length	Drive End Width	Wrench End Width	Wrench Depth	Bolt Clearance Width	Bolt & Wrench Clearance Depth	Length to Shoulder	Weight
36-107	7/32"	0.876	0.435	0.338	0.200	0.215	0.365	0.410	0.02
36-108	1/4"	0.876	0.435	0.375	0.220	0.245	0.400	0.410	0.02
36-109	9/32"	0.876	0.435	0.417	0.220	0.265	0.450	0.410	0.02
36-110	5/16"	0.876	0.462	0.462	0.260	0.260	0.475	-	0.02
36-111	11/32"	0.876	0.494	0.494	0.280	0.320	0.533	-	0.03
36-112	3/8"	0.876	0.544	0.544	0.500	0.370	0.520	-	0.03
36-114	7/16"	1.003	0.613	0.613	0.590	0.435	0.625	-	0.03
36-116	1/2"	1.003	0.678	0.678	0.650	0.450	0.670	-	0.04

1/4" Drive 12 Pt. Deep Length Sockets

36-208	1/4"	2.000	0.435	0.374	0.250	0.240	0.960	0.830	0.05
36-210	5/16"	2.000	0.446	0.446	0.650	0.280	1.140	-	0.05
36-212	3/8"	2.000	0.542	0.542	0.900	0.360	1.420	-	0.07

3/8" Drive 12 Pt. Standard Length Sockets

Product Number	Opening Inches	Overall Length	Drive End Width	Wrench End Width	Wrench Depth	Bolt Clearance Width	Bolt & Wrench Clearance Depth	Length to Shoulder	Weight
36-312	3/8"	1.013	0.656	0.544	0.280	0.320	0.535	0.495	0.04
36-314	7/16"	1.128	0.654	0.654	0.380	0.390	0.610	-	0.05
36-316	1/2"	1.128	0.724	0.724	0.380	0.455	0.665	-	0.06
36-318	9/16"	1.193	0.777	0.777	0.580	0.545	0.680	-	0.06
36-320	5/8"	1.303	0.862	0.862	0.740	0.617	0.790	-	0.08
36-322	11/16"	1.378	0.952	0.952	0.800	0.672	0.850	-	0.11
36-324	3/4"	1.503	1.002	1.002	0.930	0.735	0.980	-	0.13
36-326	13/16"	1.563	1.076	1.076	1.030	0.798	1.050	-	0.14
36-328	7/8"	1.745	1.167	1.167	0.900	0.780	1.135	-	0.21
36-330	15/16"	1.760	1.244	1.244	1.189	0.943	1.215	-	0.24
36-332	1"	1.760	1.307	1.307	1.232	1.005	1.290	-	0.28

3/8" Drive 12 Pt. Deep Length Sockets

36-412	3/8"	2.500	0.646	0.544	0.375	0.320	1.350	0.84	0.12
36-414	7/16"	2.500	0.653	0.653	0.870	0.430	1.350	-	0.12
36-416	1/2"	2.500	0.723	0.723	1.188	0.460	1.750	-	0.15
36-418	9/16"	2.500	0.774	0.774	1.377	0.500	2.000	-	0.14
36-420	5/8"	2.500	0.860	0.860	1.377	0.605	2.000	-	0.18
36-422	11/16"	2.500	0.950	0.950	1.377	0.650	2.000	-	0.23
36-424	3/4"	2.500	1.000	1.000	1.377	0.730	2.000	-	0.24

1/2" Drive 12 Pt. Deep Length Sockets

Product Number	Opening Inches	Overall Length	Drive End Width	Wrench End Width	Wrench Depth	Bolt Clearance Width	Bolt & Wrench Clearance Depth	Length to Shoulder	Weight
36-632	1"	3.248	1.307	1.307	1.000	0.887	1.498	-	0.63
36-634	1-1/16"	3.248	1.405	1.405	1.511	0.990	2.595	-	0.70
36-636	1-1/8"	3.248	1.485	1.485	1.473	1.053	2.595	-	0.75
36-642	1-5/16"	3.248	1.635	1.635	0.950	1.156	2.465	-	1.35

WRENCHES

Enhanced Strength Prevents FOD (Foreign Object Damage), Creating a Safer Work Environment in Aerospace Conditions

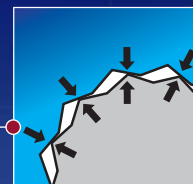
Tighter Tolerances and Ultimate Torque and Cycle Performance Meet the Toughest Specs on the Market

Special Plating Prevents Corrosion Under the Harshest of Conditions

Box End Outer Diameter and Thickness Meet Aerospace Requirements for Increased Access to Obstructed Fasteners



Surface Drive™ Technology Transmits Torque without Fastener Rounding



Standard Drive



Surface Drive

12 Pt. Combination Wrenches

Product Number	Opening Inches	Overall Length	Open End Width	Box End Width	Open End Thickness	Box End Thickness
25-208	1/4"	4.965	0.510	0.405	0.175	0.185
25-210	5/16"	5.760	0.680	0.495	0.185	0.210
25-211	11/32"	6.090	0.745	0.553	0.203	0.240
25-212	3/8"	6.510	0.785	0.580	0.225	0.265
25-214	7/16"	7.240	0.938	0.680	0.235	0.293
25-216	1/2"	8.050	1.055	0.771	0.270	0.330
25-218	9/16"	8.695	1.180	0.855	0.283	0.358
25-220	5/8"	9.455	1.290	0.948	0.305	0.403
25-222	11/16"	10.180	1.430	1.023	0.313	0.440
25-224	3/4"	10.970	1.580	1.100	0.343	0.478
25-226	13/16"	11.665	1.680	1.200	0.355	0.523
25-228	7/8"	12.400	1.795	1.285	0.380	0.558
25-230	15/16"	13.170	1.945	1.370	0.398	0.578
25-232	1"	13.960	2.035	1.440	0.425	0.610

12 Pt. Box Wrenches

Product Number	Opening Inches	A1 Overall Length	A2 Overall Length	B1 Box End Width	B2 Box End Width	B1 Box End Thickness	B2 Box End Thickness
26-631	1/4" x 5/16"	7.240	7.010	0.368	0.461	0.220	0.245
26-643	3/8" x 7/16"	8.270	8.010	0.549	0.631	0.280	0.295
26-667	1/2" x 9/16"	8.990	8.730	0.722	0.800	0.310	0.340

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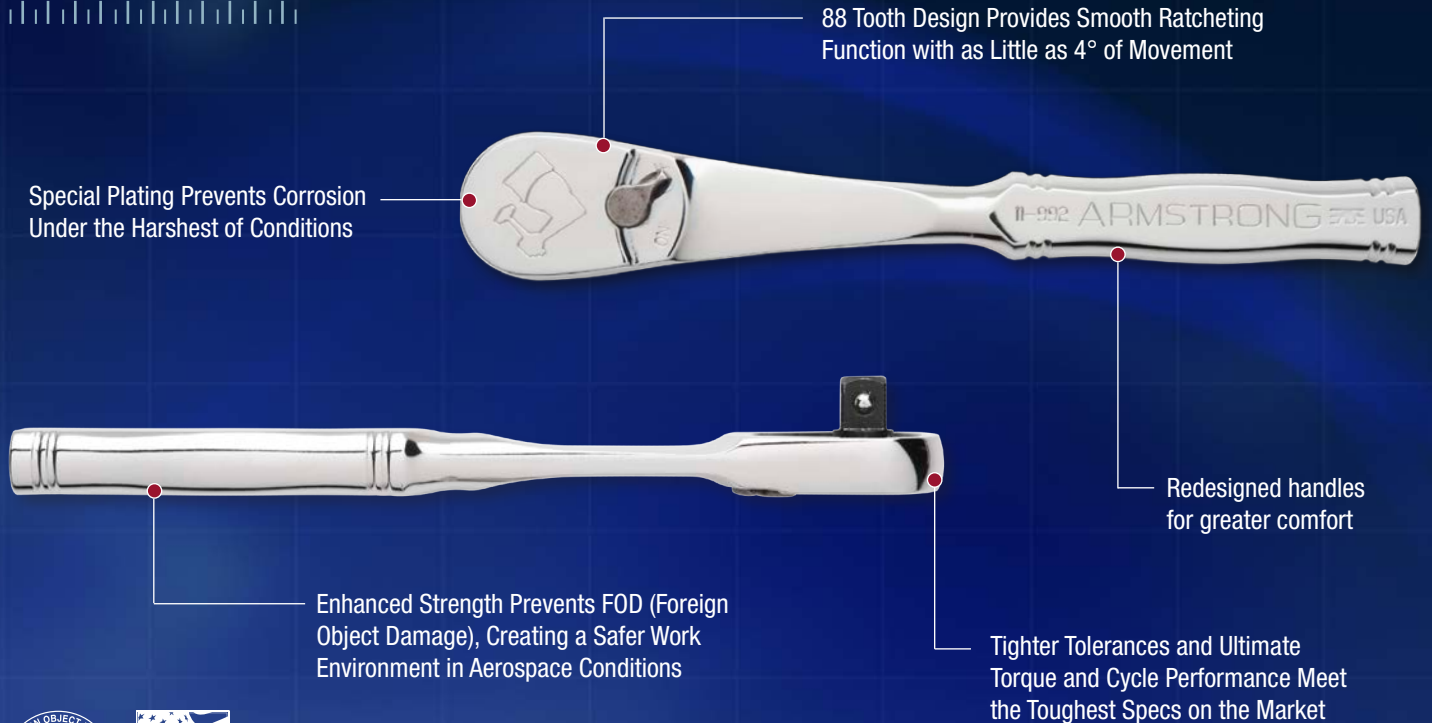


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This Aerospace Standard (AS 954, AS 4283) provides dimensional, performance, testing, and other requirements for selected Hand Tools.

RATCHETS



Ratchets					
Product Number	Drive Size	Overall Length	Head Width	Head Depth	Number of Teeth
10-992	1/4"	5.475	0.950	0.362	88
11-992	3/8"	7.800	1.230	0.477	88