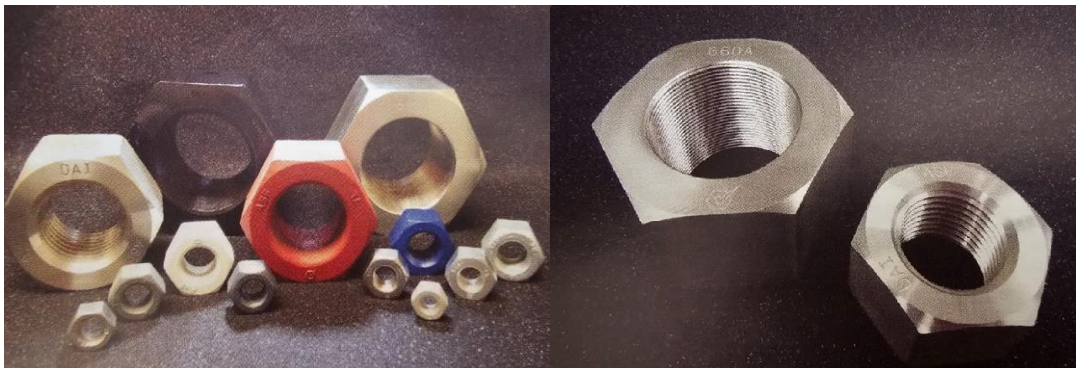


MANUFACTURING – BOLTS & ACCESSORIES**GREENING INDUSTRIAL LLC – USA****STOCK OVERVIEW – BOLTS**

ASTM A193 BOLTS			
GRADE	HEAD TYPE	GRADE	HEAD TYPE
B5	HEAVY HEX	B8 CLASS 1	HEAVY HEX
B6	HEAVY HEX		FINISHED HEX
B7	HEAVY HEX	B8 CLASS 2	HEAVY HEX
	FINISHED HEX		FINISHED HEX
	12 POINT FLANGE	B8M CLASS 1	HEAVY HEX
B7M	HEAVY HEX		FINISHED HEX
	FINISHED HEX	B8M CLASS 2	HEAVY HEX
B16	HEAVY HEX		FINISHED HEX
	FINISHED HEX	B8C	HEAVY HEX
		B8T	HEAVY HEX
ASTM A320 BOLT			
	GRADE	HEAD TYPE	
	L7	HEAVY HEX	
	B8 CLASS 1	HEAVY HEX	
	B8 CLASS 2	HEAVY HEX	
	B8M CLASS 1	HEAVY HEX	
	B8M CLASS 2	HEAVY HEX	
STAINLESS HEX BOLTS			
GRADE	HEAD TYPE	GRADE	HEAD TYPE
304	FINISHED HEX	317 ELC	FINISHED HEX
304 ELC	FINISHED HEX	321	FINISHED HEX
309	FINISHED HEX	347	FINISHED HEX
310	FINISHED HEX	410	FINISHED HEX
316	FINISHED HEX	ALLOY 20	FINISHED HEX
316 ELC	FINISHED HEX	ALLOY 400	FINISHED HEX
		DUPLEX 2205	FINISHED HEX
NON-FERROUS & HIGH-NICKEL ALLOY BOLTS			
GRADE	HEAD TYPE	GRADE	HEAD TYPE
17-4 PH	FINISHED HEX	K-MONEL	FINISHED HEX
HASTELLOY	FINISHED HEX	MONEL 400	FINISHED HEX
INCOLOY	FINISHED HEX	NICKEL 200	FINISHED HEX
INCONEL	FINISHED HEX	NITRONIC 60	FINISHED HEX

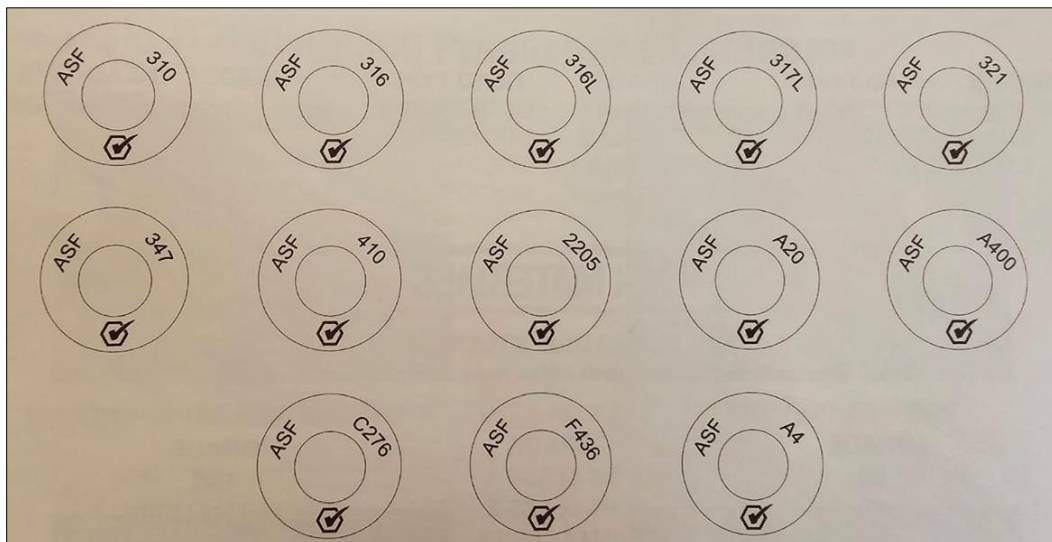
STOCK OVERVIEW – NUTS

HEAVY HEX	HEAVY HEX	FINISHED HEX
ASTM A194	ASTM A453	ASTM A194
GRADE	GRADE	GRADE
2H	660B NR	2H
2H ZINC & CLEAR	660D NR	8
2H ZINC & YELLOW		8M STRAIN HARDENED
2H MECH GALV		
2H METRIC (H=D)	STAINLESS STEELS	STAINLESS STEELS
2HM	GRADE	GRADE
3	304	18/8
4	304 STRAIN HARDENED	304 ELC
6	316	304 STRAIN HARDENED
6F	316 ELC	309
7	316 STRAIN HARDENED	310
7L	321	316
7M	410	316 ELC
16	416	316 STRAIN HARDENED
8		317 ELC
8 METRIC (H=D)		410
8A		ALLOY 20
8 STRAIN HARDENED		
8C	NON-FERROUS	NON FERROUS
8F	GRADE	GRADE
8M	ALLOY 20	ALLOY 400
8M METRIC (H=D)	ALLOY 400	DUPLEX 2205
8MA	DUPLEX 2205	HASTELLOY C-276
8M STRAIN HARDENED		SILICON BRONZE
8T		



STOCK OVERVIEW – WASHERS

MATERIAL	FLAT	LOCK	FLAT WASHER DIMENSIONS			
			STAINLESS STEEL			
			BOLT SIZE	O.D.	I.D.	THK.
18/8	¼" TO 2"	¼" TO 1 ½"	¼"	5/8"	9/32"	0,050'
310	¼" TO 1 ¼"		5/16"	3/4"	11/32"	0,050'
316	#6 TO 2"	8# TO 1 ½"	3/8"	7/8"	13/32"	0,063'
316 METRIC	M8 TO M14	M6 TO M20	7/16"	1 1/8"	15/32"	0,063'
316 ELC	¼" TO 1 ½"		½"	1 ¼"	17/32"	0,078'
317 ELC	3/8" TO ½"		9/16"	1 3/8"	19/32"	0,078'
321	¼" TO 1 ½"		5/8"	1 ½"	11/16"	0,078'
347	3/8" TO ¾"		3/4"	1 ¾"	13/16"	0,109'
410	¼" TO 1"	½" TO ¾"	7/8"	2"	15/16"	0,109'
ALLOY 20	¼" TO 1"	3/8"	1"	2 ¼"	1 1/16"	0,125'
ALLOY 400	¼" TO 1"		1 1/8"	2 ½"	1 3/16"	0,125'
HASTELLOY C-276	3/8" TO 1"	3/8" TO ¾"	1 ¼"	2 ¾"	1 5/16"	0,125'
DUPLEX 2205	3/8" TO 1 ¼"		1 3/8"	3"	1 7/16"	0,125'
K-MONEL		¼" TO 1"	1 ½"	3"	1 9/16"	0,140'
F436	½" TO 2 ½"		1 ¾"	3 ½"	1 7/8"	0,160'
LOW CARBON ZINC		¼" TO 1 ½"	2"	4"	2 1/8"	0,160'
LOW CARBON HDG	½" TO 1 ½"		STAINLESS STEEL FLAT WASHERS ARE GRADE MARKED EXCEPT FOR THE 18/8			
DISC SPRING WASHERS (BELLEVILLE TYPE)						
H13	5/8" TO 1 ½"					



STOCK OVERVIEW – SOCKETS

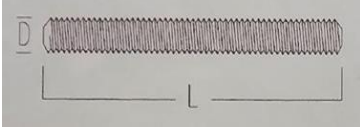
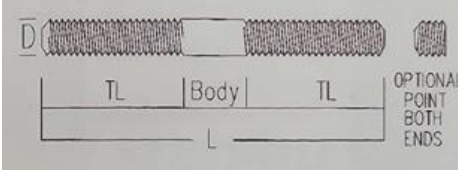
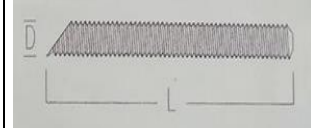
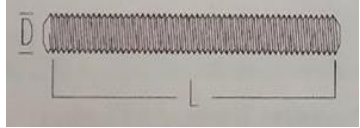
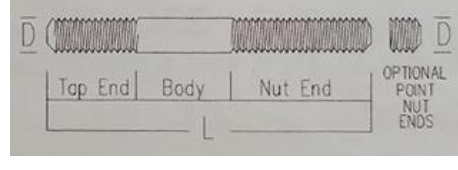
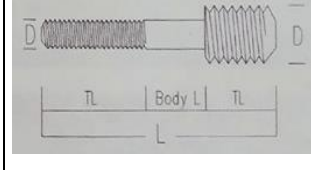
ASTM 193 – SOCKET CAP SCREWS				ASTM A320 – SOCKET CAP SCREWS	
GRADE	HEAD TYPE	GRADE	HEAD TYPE	GRADE	HEAD TYPE
B7	SOCKET CAP	B8 CLASS 1	SOCKET CAP	L7	SOCKET CAP
B7M	SOCKET CAP	B8 CLASS 2	SOCKET CAP		
B16	SOCKET CAP	B8M CLASS 1	SOCKET CAP		
		B8M CLASS 2	SOCKET CAP		

STOCK OVERVIEW – STUDS

CONTINUOUS THREADED STUDS AND STUD BOLTS		
Stud Bolt assemblies with 2 Hex Nuts available upon request		
ASTM A193	ASTM A320	STAINLESS & NON-FERROUS
GRADE	GRADE	GRADE
B5	B8 CLASS 1	18/8
B6	B8 CLASS 2	18/8 METRIC
B7	B8M CLASS 1	304
B7M	B8M CLASS 2	304 ELC
B7 METRIC	L7	304 STRAIN HARDENED
B8 CLASS 1		309
B8 CLASS 2	ASTM A354	310
B8 METRIC	GRADE	316
B8C	BD	316 ELC
B8M CLASS 1		316 STRAIN HARDENED
B8M CLASS 2	ASTM A453	317 ELC
B8M METRIC	GRADE	321
B8S	660B	330
B8T	660D	347
B16		410
	SAE J429	501
	GRADE	ALLOY 20
	8	ALLOY 400
		BRASS
		DUPLEX 2205
		HASTELLOY C-276
		NITRONIC 60
		SILICON BRONZE

MANUFACTURING – STUDS

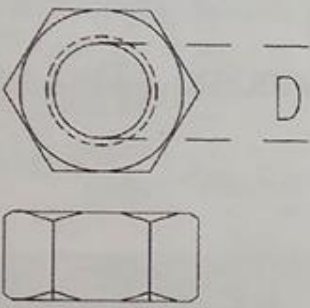
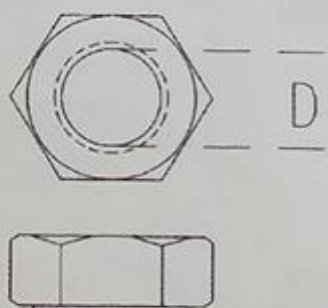
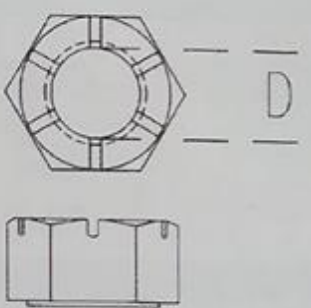
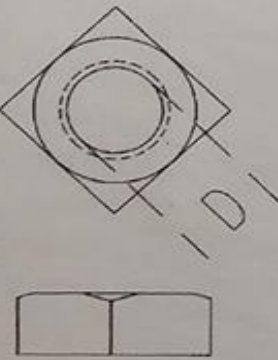
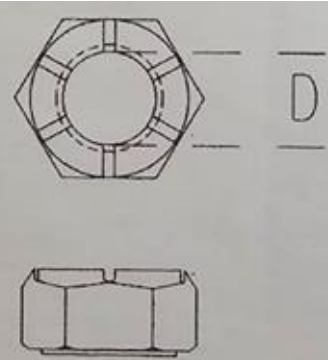
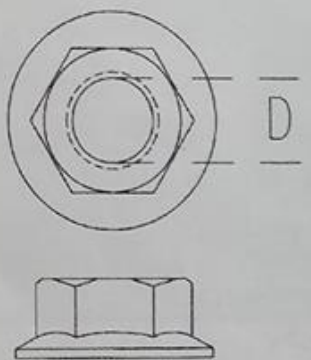
ASF STANDARD PRODUCT TYPES

FULL THREAD BLANK (UNTHREADED)	SINGLE END DOUBLE END	TAP END RADIUS END	CHISEL POINT REDUCING
FULL THREAD (Measured end to end)	DOUBLE END		CHISEL POINT 45° POINT
			
FULL THREAD (Measured first thread to first thread per ASTM A193/A320)	TAP END		REDUCING
			
Diameters: N° 2" to 4" – Lengths: As Specified – Fits: 1A, 2A, 3A, 5 CSF, 5 ONF, and 5 HF			

Order your Product Type with Diameter, Thread Pitch, Length(s) and Material.

MANUFACTURING – NUTS

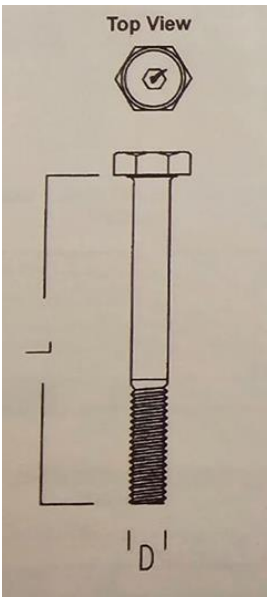
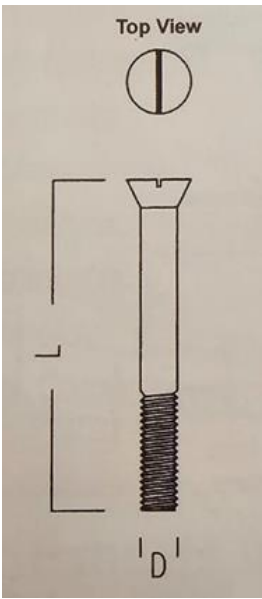
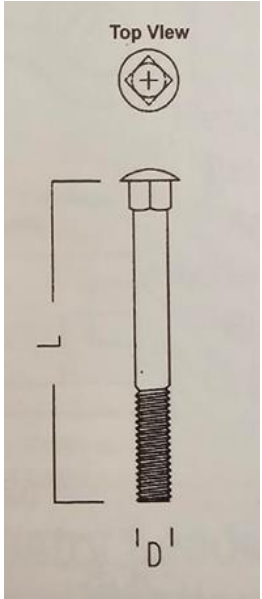
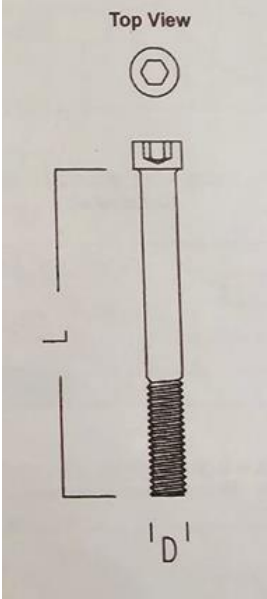
ASF STANDARD PRODUCT TYPES

HEX HEAVY HEX	HEX JAM HEAVY HEX JAM	SLOTTED HEAVY SLOTTED
		
SQUARE	CASTLE	FLANGE
		

Order your Product Type with Diameter, Thread Pitch and Material.

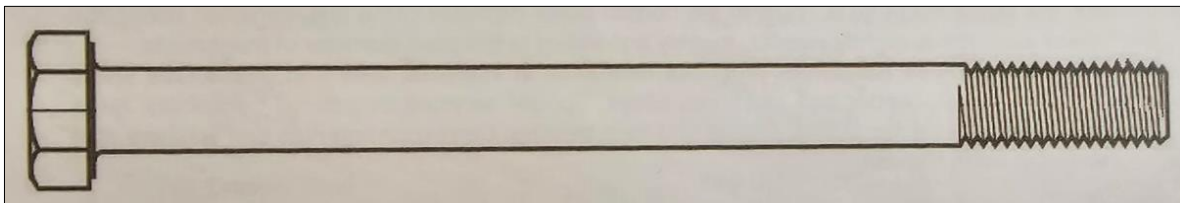
MANUFACTURING – BOLTS

ASF STANDARD PRODUCT TYPES

HEX HEAD	FLAT HEAD	CARRIAGE BOLT	SOCKET CAP
			

Order your Product Type with Diameter, Thread Pitch, Length and Material.

LONG LENGTH BOLTS

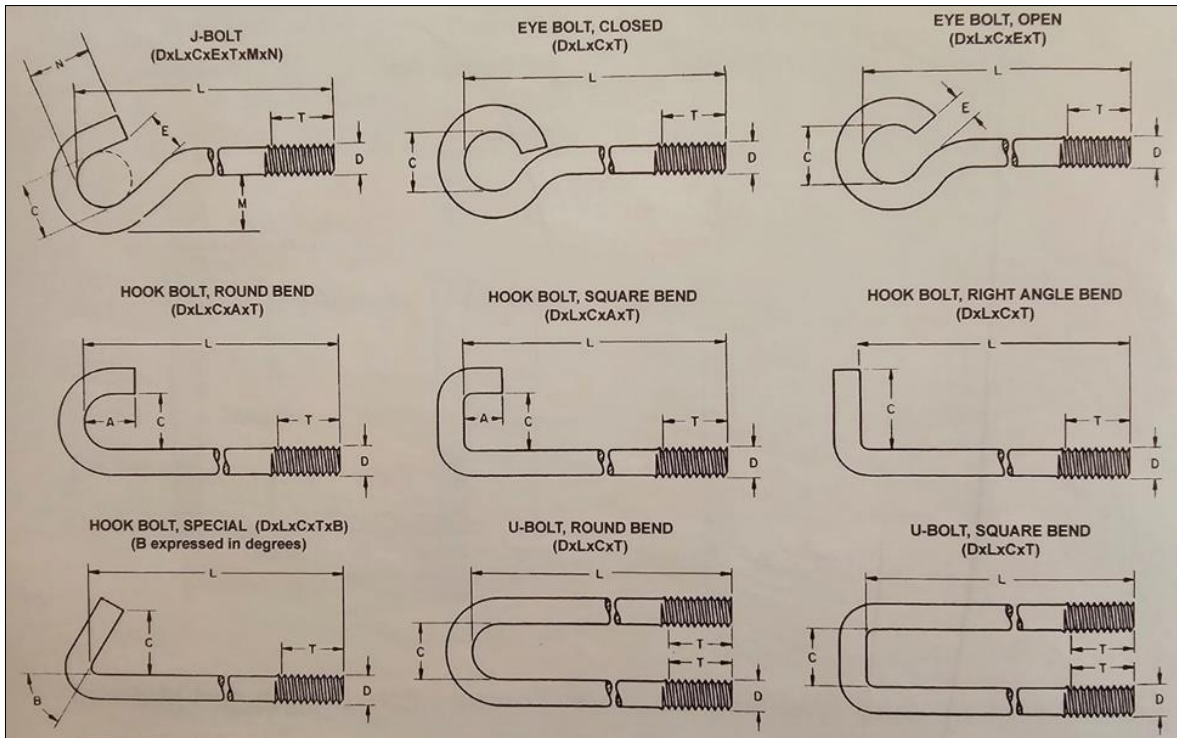


ASF Manufactures long length bolts that range from ¼" and larger in diameter and in lengths up to 40" long, in a variety of materials and in the customer's choice of standard head or custom designed head styles.

24/7 – SOS – SERVICE

CUSTOM MANUFACTURED – BENT BOLTS

ASF STANDARD PRODUCT TYPES & DIMENSIONS



Supplies a complete line of bent bolts, each specially produced to your specification. Our bent bolts are produced with all types of threads: coarse, fine, right-hand, left-hand, acme, withworth, metric and all specials. Threads may be cut or rolled, when cut, the shank diameter is equal to the normal major diameter of the threads, when rolled, the shank diameter is slightly smaller, roughly equivalent to the pitch diameter of the threads.

Produces bent bolts in stainless, alloy and non-ferrous steels including nickel, copper and aluminium alloys. Special services include full traceability, quick deliveries, special machining, plating and heat treating. Corresponding nuts and washers also available upon request.

Notes

1. To avoid possible misunderstanding when specifying the dimensions of bent bolts, it is recommended that they be given in the order indicated by the dimension letters in the Brackets above each illustration. For example, if a J-Bolt is required with $D=3/8"$, $L=6"$, $C=1"$, $E=5/8"$, thread length $T=1\frac{1}{2}"$, $M=7/8"$, and $N=1\frac{1}{4}"$, it should be specified as $3/8" \times 6" \times 1" \times 5/8" \times 1\frac{1}{2}" \times 7/8" \times 1\frac{1}{4}"$ J-Bolt.
2. Thread length is the distance from the extreme end of the bolt to (and includes) the last complete (full form) thread.
3. Grinnell specifications for bent bolts are also available.
4. Round Bend U-Bolts can be ordered by pipe size.

COATINGS – PLATINGS – FINISHES

Zinc	Sermagard
Cadmium, ASTM B766	Silver
Xylan 1424, 1014, 1070, 1052	Gold
Xylar 2	Nickel
Hot-Dip Galvanized	Copper
Mechanical Galvanized	Chrome
Phosphate	Electropolishing
Zinc & Manganese	Passivation
Fluoropolymer	Anodine
Aluminizing	Molybdenum Disulfide
Armoloy	Rhodium
Black Oxide	O ₂ Cleaning
And many more...	

SUPPORT FOR INDUSTRY LEADERS

AIR LIQUIDE

AIR LIQUIDE	FMT TECHNOLOGIES
AKER SOLUTIONS	GE OIL & GAS
BAE SYSTEMS	LOCKHEED MARTIN
BAKER HUGHES	NATIONAL OILWELL VARCO
BP	OIL STATES INDUSTRIES
CAMERON	SCHLUMBERGER
CHEVRON	VETCO GRAY
DRESSER RAND	WELL DYNAMICS
DUPONT	WOOD GROUP
EXXON	

MANUFACTURING

BOLT FORGING

NUT MACHINING

STUD THREADING

WASHER STAMPING

BOLT BENDING

**STAINLESS STEELS – NICKEL ALLOYS – COPPER ALLOYS – ALUMINIUM ALLOYS
– DUPLEX – SUPER DUPLEX – ALLOY STEELS – SPECIALITY STEELS – TITANIUM**

OVER 25 CHOICES OF COATINGS AND PLATINGS

24/7 – SOS – SERVICE

MANUFACTURING MATERIALS

STAINLESS STEELS	STAINLESS STEELS	NICKEL ALLOYS	ALLOY STEELS
303	ASTM A193 B5	*NICKEL 200	4140
304	ASTM A193 B6	*MONEL 400	4340
304 STRAIN HARD	ASTM A193 B8 CLASS 1	*MONEL R-405	ASTM A193 B7
304 ELC	ASTM A193 B8 CLASS 2	*MONEL K-500	ASTM A193 B7M
309	ASTM A193 B8M CLASS 1	*INCONEL 600	ASTM A193 B16
310	ASTM A193 B8M CLASS 2	*INCONEL 601	ASTM A320 L7
316	ASTM A193 B8C	*INCONEL 625	ASTM A320 L7M
316 STRAIN HARD	ASTM A193 B8R	*INCONEL 718	ASTM A320 L43
316 ELC	ASTM A193 B8S	*INCONEL X-750	ASTM A325 TYPE 3
317 ELC	ASTM A193 B8T	*INCONEL 925	ASTM A354 BC
321	ASTM A320 B8 CLASS 1	*INCOLOY 800H	ASTM A354 BD
330	ASTM A320 B8 CLASS 2	*INCOLOY 825	ASTM A490 TYPE 3
347	ASTM A320 B8M CLASS 1	*HASTELLOY C-22	ASTM A588
410	ASTM A320 B8M CLASS 2	*HASTELLOY C-276	SAE J429 Grade 8
410 HEAT TREATED	ASTM A453 660A		
416	ASTM A453 660B	COPPER ALLOYS	ALUMINIUM ALLOYS
430	ASTM A453 660D	COPPER	2024T4
440C		BRASS	6061T6
501 HEAT TREATED	DUPLEX	NAVAL BRASS	
630	2205	SILICON BRONZE	ADDITIONAL MATERIAL GRADES UPON REQUEST
*17-4 PH		ALUMINIUM BRONZE	
904L	SUPER DUPLEX	PHOSPHOR BRONZE	
ALLOY 20	2507	CUPRO-NICKEL	
*A286	*ZERON 100		
*254 SMO			
*AL-6XN	TITANIUM		
*CARPENTER 20Cb-3	ASTM B348		
*FERRALIUM 255	ASTM B381		
*NITRONIC 50			
*NITRONIC 60	CARBON STEEL		
	ASTM A325 TYPE 1		
	ASTM A490 TYPE 1		
*Registered Trademark			

ASF and ASTM

ASTM A193 Grade B5 – B6 – B7 – B7M – B8 – B8A – B8 CL2 – B8C – B8T – B16 – B8M – B8MA – B8M CL2
ASTM A194 Grade 2H- 2HM – 3 – 4 – 6 – 6F – 7 – 7M – 8 – 8A – 8C – 8F – 8M – 8MA – 8T – 16
ASTM A320 Grade L7 – L7M – L43 – B8 – B8A – B8 CL2 – B8F – B8M – B8MA – B8M CL2
ASTM A276 Type 304 – 304L – 310 – 316 – 316L – 317L – 321 – 347
ASTM A479 Type 304 – 304L – 310 – 316 – 316L – 317L – 321 - 347
ASTM B574 UNS N10276 (HASTELLOY C-276)
ASTM A182 Grade F5 (501) – F51 (DUPLEX)
ASTM A540 Grade B21 – B22 – B23 – B24
ASTM B164 UNS N04400 (ALLOY 400)
ASTM B473 UNS N08020 (ALLOY 20)
ASTM A564 Type 630 (17-4 PH)
ASTM A453 Grade 660B – 660D
ASTM A354 Grade BC – BD
ASTM A582 Type 303 - 316

ASSEMBLY COMPONENT MANUFACTURING FOR INDUSTRY

PUMP	POWER GENERATION	RENEWABLE ENERGY
VALVE	*GAS FIRED	*HYDRO POWER
TURBINE	*COAL FIRED	*NUCLEAR POWER
MEDICAL	*HYDRO GENERATED	*SOLAR POWER
MIL-SPEC	*STEAM GENERATED	*WIND POWER

EQUIPMENTS – “PASSION POR PRECISION”

CNC METAL CUTTING

CNC MACHINING

CNC HOT FORGING

CNC THREADING

CNC LOW STRESS MARKING

VIBRATORY FINISHING

POSITIVE MATERIAL IDENTIFICATION

VARIABLE THREAD GAGE INSPECTION

DIGITAL READ-OUT RECORDING

DOCUMENTED QUALITY CONTROL

CUSTOM MANUFACTURED PER PRODUCTION DRAWING

MACHINED PARTS – TO MEET YOUR SPECIFICATION DETAILS UNDER OUR QUALITY ASSURANCE PROGRAM.

QUALITY IN ACTION

A documented Quality Management System (QMS) has been maintained for over 20 years for the consistent improvement of our processes and products.

Accreditation QMS to ISO 9001:2015 has been certified for the Manufacture and Supply of Industrial Fasteners and Machined Components by the International accredited DNV/GL

Products are supplied to the Military / Defense and Nuclear Industries manufactured under the current QMS which meets and exceeds the established requirements.

CAGE Code # 3Y787

CCR registered

NAICS – 332722

Federal Supply Class – FSC – 5306/5307

Main Product Supply Class PSC – 5307

On the Quality team there are two active members of the American Society of Testing and Materials (ASTM). Each have participated as ASTM members since 1994.

Supply chain is capable of meeting all domestic requirements, and the DFARS requirement as it relates to Specially Metals.

Our Quality system maintains full material traceability to the original melting mill on all materials as well as complete chemical and mechanical certifications, all testing requirements are completed at A2LA, accredited laboratories. It can also provide Positive Material Identification (PMI) and Laser Dimension Inspections when requested.

CUSTOMS COMPONENTS

- MANUFACTURING FOR ASSEMBLY COMPONENTS
- MACHINING FOR ENGINEER DESIGNED STUDS
- HEX, SQUARE, SLOTTED, AND SOCKET DRIVE PRODUCTS
- FORGING WITH AUTOMATION ACCURACY
- QUICK RESPONSE FOR EMERGENCY TURNAROUNDS
- DOCUMENT QUALITY CONTROL
- GLOBAL SHIPPING

PROCESSING



BAR DRAWING



BAR PEELING



BAR GRINDING



BAR COMBINED DRAWING

- “Hard to Find” Round Bar Sizes
- Thread Rolling Sizes
- Metric Round Sizes
- Bar Processing for Your Bar too

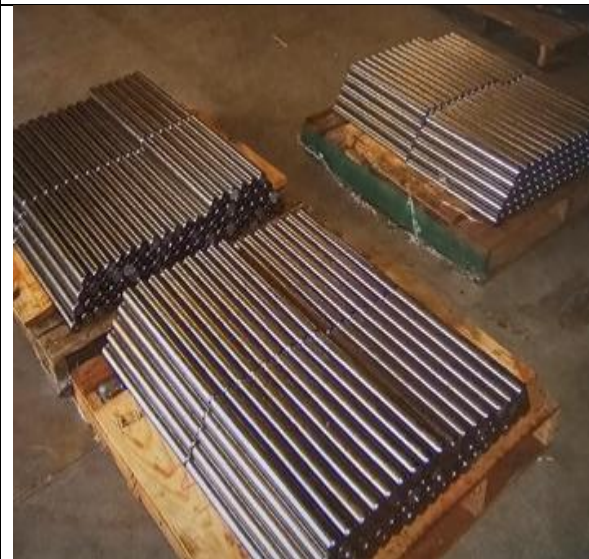
METAL CUTTING



BANDSAW CUTTING



CUT PIECES



BLANK PINS



PRECISION LENGTH CUTTING

- Production Quantities – Single Cut or Multiple Cuts
- Production Band Sawing – 36 Inch Diameter Cutting Capacity
- Precision Tolerance Cutting on Short Lengths
- Chamfering for Bar and Blank Pins

INVENTORY



BAR AND WIRE



WIRE ROD

SERVICES



LOW STRESS MARKING



POSITIVE MATERIAL IDENTIFICATION

MATERIALS

ALLOY STEEL – CARBON STEEL

STAINLESS STEEL – ASTM GRADE

4140 – 4145 – B7 – Cr-Mo-V – B16

303 – 304 – 304L – 304 Cond. B – 310 – 316

316 L – 316 Cond. B – 317 L – 321 – 347

Strain Hardened Stainless

Duplex 2205 – 2507 – Super Duplex

410 – 416 – 440C – 501 – 904L

630 – 660 – 17-4 PH – ALLOY 20

NICKEL ALLOYS – SUPERALLOYS – ALUMINIUM

HIGH PERFORMANCE ALLOYS

TITANIUM – A286 – BRASS

COPPER ALLOYS – BRONZE ALLOYS

INCONEL – K-MONEL – MONEL – FERRALIUM 255

HASTELLOY – NITRONIC – 20Cb3 – 254 – SMO

Zeron 100 – AL-6XN

**SPECIALITY STEEL & METAL PROCESSING
FOR YOUR CUSTOM BAR REQUIREMENTS**