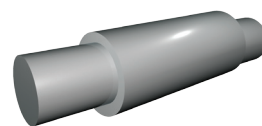




SHAFTS

The open die forging process for our shafts enables us to orient the grain flow all along the geometry, which is essential for achieving the high mechanical properties expected of a product of this type. Our forging capabilities provide significant cost and material savings when compared to machined bar step shafts.



MANUFACTURING CAPABILITIES

| | |
|------------|--|
| Range | O.D. up to 70 in. |
| | Length up to 287 in. |
| | Weight up to 55,000 lb. |
| Material | Carbon Steel, Alloy Steel, Tool Steel, Stainless Steel. |
| Heat Treat | Normalizing, Quenching, Tempering, Annealing, Solution Annealing, Spheroidizing, Aging, Stress Relieving. |
| Testing | Destructive and Non-Destructive. |
| Machining | Available CNC machining capabilities: vertical & horizontal turning, milling, boring, drilling, deep drilling. |



MATERIAL STOCKING GRADES

| Classification | Grade | UNS Number | DIN | Werkstoff Nr |
|-----------------------------|-----------------|---------------|--------------------|-----------------|
| Carbon and Low Alloy steels | A105 | K03504 | C22.8 | 1.0460 |
| | 1010 | G10100 | CK10 | 1.1121 |
| | 1018 | G10180 | CK15 | 1.1141 |
| | 1020 | G10200 | CK20 | |
| | 1035 | G10350 | CK35 | 1.1181 |
| | 1045 | G10450 | CK45 | 1.1191 |
| | 1050 | G10500 | CK50 | |
| | 1080 | G10800 | CK80 | |
| | 1552 | G15520 | | |
| | A350 Grade LF6 | | | |
| | A350 Grade LF2 | K03011 | C22.8 | 1.046 |
| | A694 | | | |
| | | | E355 | 1.058 |
| Alloy Steels | 4130 | G41300 | 25CrMo4 | 1.7218 |
| | 4140 | G41400 | 42CrMo2 | 1.7225 |
| | 4145 | G41450 | | |
| | 4320 | G4320 | | |
| | 4330 | | | |
| | 4340 | G43400 | 34CrNiMo6 | 1.6582 |
| | 52100 | | 100Cr6 | 1.3505 |
| | 8620 | G86200 | 21NiCrMo22 | 1.6543 |
| | 8630 | G86300 | | 1.6545 |
| | A182 Grade F5 | K41545 | 12CRM0195 | 1.7362 |
| | A 182 Grade F11 | K11597 | 13CrMo4-5 | 1.7335 |
| | A 182 Grade F22 | K21590 | 10CrMo9-10 | 1.738 |
| | A707 Grade L5 | | | |
| | A707 Grade 3W | | | |
| | A707 Grade 3W | | | |
| Tool Steels | H13 | T20813 | X 40 CrMoV 5-1 | X 40 CrMoV 5-1 |
| | P20 | T51620 | 40CrMnNiMo8-6-4 | 40CrMnNiMo8-6-4 |
| | L6 | T61206 | 55NiCrMoV6 | 55NiCrMoV6 |
| Stainless Steels | A182 F44 | S31254 | X1CrNiMoN20-18-7 | 1.4547 |
| | A182 F51 | S31803 | X 2 CrNiMoN22-5-3 | 1.4462 |
| | A182 F53 | S32750 | X2CrNiMoN25-7-4 | 1.4410 |
| | A182 F60 | S32205 | | |
| | A182 F91 | K90901 | X 10 CrMoVNb9-1 | 1.4903 |
| | 51431 | S43100 | X 17CrNi 16-2 | 1.4057 |
| | 15-5 PH | S15500 | X5CrNiCuNb15-5 | 1.4545 |
| | 17-4 PH | S17400 | X5CrNiCuNb 17-4 | 1.4542 |
| | 304 | S30400 | X5CrNi18-10 | 1.4301 |
| | 304L | S30403 | X5CrNi18-9 | 1.4306 |
| | 310 | S31000 | X8 CrNi 25-21 | 1.4845 |
| | 316 | S31600 | X5CrNiMo17 12-2 | 1.4401 |
| | 316L | S31603 | X2CrNiMo17 12-2 | 1.4404 |
| | 321 | S32100 | X6CrNiTi18-10 | 1.4541 |
| | 347 | S34700 | X6CrNiNb18-10 | 1.4551 |
| | 410 | S41000 | X12Cr13 | 1.4006 |
| | 420 | S42000 | X46Cr13 | 1.4034 |
| | 422 | S42200 | | 1.4935 |
| | 431 | S43100 | X17CrNi16-2 | 1.4057 |
| | | | X 22 CrNiMoV 12-1 | 1.4923 |
| | | | X11CrMo 12-1 | |
| | F6NM | S41500 | X 3 CrNiMo 13-4 | 1.4313 |
| | Alloy 718 | N07718 | NiCr19Fe19Nb5Mo3 | 2.4668 |
| | Alloy 718 Plus | | | |
| | Waspaloy | N07001 | NiCr20Co13Mo4Ti3Al | 2.4654 |
| | Alloy 909 | N19909 | X4NiCo38Nb | |
| | Alloy 907 | N19907 | X4NiCo38Nb | |
| Superalloys | Alloy 625 | N06625 | NiCr22Mo9Nb | 2.4856 |
| | Alloy 600 | N06600 | NiCr15Fe8 | 2.4816 |
| | Alloy 617 | N06617 | NiCr23Co12Mo | 2.4663 |
| | Alloy X | N06002 | NiCr22Fe18Mo | 2.4665 |
| | Alloy H230 | N06230 | NiCo29Cr28Si | 2.488 |
| | Alloy 188 | R30188 | CoCr22NiW | 2.4683 |
| | Alloy H242 | N10242 | | |
| | Alloy HR120 | N08120 | NiFe33Cr25Co | 2.4854 |
| | Nimonic 80 | N07080 | NiCr20TiAl | 2.4952 |
| | Alloy 825 | N08825 | NiCr 21 Mo | 2.4858 |
| | Alloy 800 H | N08800/N08810 | X8 NiCrAlTi 32-21 | 1.4876 / 1.4958 |
| | Alloy C276 | N10276 | NiMo 16 Cr 15 W | 2.4819 |
| | Monel 400 | N04400 | NiCu 30 Fe | 2.4360 |
| | Alloy C263 | N07263 | NiCo20Cr20Mo6Ti2Al | 2.4650 |
| | Alloy 286 | S66286 | X5 NiCrTi 26-15 | 1.4980 |
| | Rene 41 | N07041 | NiCr19Co11MoTi | 2.4973 |
| | Thermo Span | | | |
| Titanium | Ti-6-4 | R56400 | TiAl6V4 | 3.7165 |
| | Ti 6-2-4-2 | R54620 | TiAl6Sn2Zr4Mo2 | 3.7145 |
| | Ti 21s | R58210 | | |
| | Ti 834 | | | |