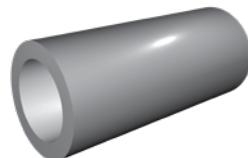




FRISA

HOLLOWs

The inside diameter of our hollows is forged into the part rather than bored from a bar, which makes them an excellent option that eliminates extra time, cost and material waste. Since we forge them as a single component; we pass along several benefits to our customers by saving production time and increasing part strength.



MANUFACTURING CAPABILITIES

| | |
|------------|--|
| Range | O.D. up to 60 in |
| | I.D. up to 30 in |
| | Weight up to 55,000 lb. |
| Material | Carbon Steel, Alloy Steel, Tool Steel, Stainless Steel. |
| Heat Treat | Normalizing, Quenching, Tempering, Annealing, Solution Annealing, Spherodizing, 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 | 1.0460 |
| | A694 | | | |
| | | | E355 | 1.0580 |
| | 4130 | G41300 | 25CrMo4 | 1.7218 |
| Alloy Steels | 4140 | G41400 | 42CrMo2 | 1.7225 |
| | 4145 | G41450 | | |
| | 4320 | G43200 | | |
| | 4330 | | | |
| | 4340 | G43400 | 34CrNiMo6 | 1.6582 |
| | 52100 | | 100Cr6 | 1.3505 |
| | 8620 | G86200 | 21NiCrMo22 | 1.6543 |
| | 8630 | G86300 | | 1.6545 |
| | A182 Grade F5 | K41545 | 12CrMo195 | 1.7362 |
| | A 182 Grade F11 | K11597 | 13CrMo4-5 | 1.7335 |
| | A 182 Grade F22 | K21590 | 10CrMo9-10 | 1.7380 |
| | A707 Grade L5 | | | |
| | A707 Grade 3W | | | |
| Tool Steels | H13 | T20813 | X 40 CrMoV 5-1 | 1.2344 |
| | P20 | T51620 | 40CrMnNiMo8-6-4 | 1.2311 |
| | L6 | T61206 | 55NiCrMoV6 | 1.2713 |
| 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 |
| | 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 | | | |
| Superalloys | Waspaloy | N07001 | NiCr20Co13Mo4Ti3Al | 2.4654 |
| | Alloy 909 | N19909 | X4NiCo38Nb | |
| | Alloy 907 | N19907 | X4NiCo38Nb | |
| | 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 | 2.4880 |
| | 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 |
| Aluminum | Alloy C263 | N07263 | NiCo20Cr20Mo6Ti2Al | 2.4650 |
| | | S66286 | X5 NiCrTi 26-15 | 1.4980 |
| | | N07041 | NiCr19Co11MoTi | 2.4973 |
| | Thermo Span | | | |
| | AI 6061 | | | |
| | AI 7075 | | | |
| | AI 2618 | | | |
| Titanium | AI 2014 | | | |
| | AI 2219 | | | |
| | AI 7050 | | | |
| | Ti-6-4 | R56400 | TiAl6V4 | 3.7165 |
| | Ti 6-2-4-2 | R54620 | TiAl6Sn2Zr4Mo2 | 3.7145 |
| | Ti 21s | R58210 | | |
| | Ti 834 | | | |
| | Ti-407 | | | |