

NASS 45[®] Corrosion Resistant, High Strength Stainless Pump Shaft

Nass 45 [®] PSQ Stainless Steel	304 & 316 Grade Stainless Steel
<p>Ease of machining. Engineered for ease of machining. Less induced stress. Less movement. Not gummy. Will hold a close tolerance bright surface finish.</p>	<p>Hard to Machine. Gummy. Won't hold a bright finish. Machining difficulty results in bow and twist. Subject to bow later in service. (memory).</p>
<p>Corrosion Resistant. Superior service life in corrosive applications. Corrosion resistance like 316.</p>	<p>Corrosion Resistant. Most frequently used stainless in maintenance applications because of high degree of corrosion resistance.</p>
<p>High Strength. At approx. 30RC NASS 45 has Typical Tensile Properties of 140KSI – consistent from the smallest diameter through large size rounds.</p>	<p>Low Strength. Not harden-able by heat treatment. Can be supplied with some hardness developed by “Strain Hardening”, but limited to sizes smaller than 1-3/4” Diameter. Strain hardening results in higher retained stress.</p>
<p>Anti-Galling. Excellent for use with OEM threaded parts of 300 series stainless. Use in conjunction with; 300 series stainless, 400 series stainless, PH series, carbon and alloy steel grades. Parts come apart easily during changeovers.</p>	<p>Highly Susceptible To “Galling”. Most OEM parts are supplied with both male and female parts made from a 300 series grade. Parts seize and gall. Threads are easily damaged due to galling and low strength.</p>
<p>Low-Retained Stress. Special “Double-Stress-Relief” at mill. Second tempering cycle added at end of mill production. Ease of machining means less stress is released during processing operations. Less stress = less memory = no movement.</p>	<p>High Degree of Retained Stress. i.e. high degree of “Memory”. Gummy during machining operations. Even moderate machining results in bow, twist, and movement.</p>
<p>Pump Shaft Straightness. Delivered to special straightness. (.005” in first 5 ft, plus .0015” for each additional foot of shaft.) Less wear on bearings, seals and sleeves. Shipped “Boxed-and-Cradled”.</p>	<p>Commercial Straightness. Subject to movement in machining. Subject to movement in service. Chatter, vibration, wear on bearings, seals and sleeves.</p>
<p>More Options From Stock. Available in two surface finishes; TG&P and Fine Turned Oversize (The size will make the size), and rough machined heavy wall bushing stock. Tight tolerance TG&P will often accept bearings with no further machining.</p>	<p>Limited Options. Commercially available as Cold Drawn, Center-less Ground, or peeled. Tolerances are plus and minus. Most often requires machining the next largest size for bearing fit. Difficult machining causes bow and twist, etc.</p>
<p>Long Lengths. On the shelf in lengths up to 30ft. Sold also as cut lengths, even to 17 and 18ft dead lengths. No splicing or welding is required. Offered as random lengths covering a broad length range. Pieces, or long cut bars are no problem.</p>	<p>Standard Commercial Lengths are 10 to 13ft random. Difficult to purchase as small cut lengths. Difficult to purchase as long cut lengths.</p>

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Nass 45 [®] PSQ Stainless Steel	410 & 416 Grade Stainless Steel
High Degree Of Corrosion Resistance; Nass 45 provides corrosion resistance greatly superior to 410 and 416.	Relatively low degree of corrosion resistance compared to 316. You get hardness but give up corrosion resistance.
Elevated Strength Levels. Hardness as delivered – 26 to 33RC. Typical Tensile approx. 140K @ 30RC. Can be hardened to 36 to 44RC with very little loss in corrosion resistance.	Most often delivered at 22 to 28 RC. Typical Tensile @ 26RC, 115KSI. Additional hardening diminishes corrosion resistance and lowers toughness.
Anti-Galling. Compatible with most stainless, carbon and alloy grades of steel	Susceptible To Galling. Parts can seize and tear during routine disassembly.
Easy To Machine. Contains no detrimental additives, such as sulfur and selenium.	S or Se added to 410 to make it easier to machine (416). That inhibits welding, and lowers strength.
Low Carbon Levels (.05)	High Carbon Levels (.15), lowers corrosion resistance and toughness. Contributes to corrosion cracking.
Low Degree Of Memory. Low degree of retained stress. Very little movement during machining or in service.	High “Memory”. retained stress causes bow and twist in thermal treatment, machining, and in service.
High Degree Of Wear Resistance as delivered. Can be safely hardened to wear plate levels of 352 to 425BHN.	Very Low Degree Of Wear Resistance. Further hardening diminishes corrosion resistance.
Welds Easily. Welding data is available. See page 34.	In 410, higher carbon increases susceptibility for weld cracks. (416 not recommended for welding).
Elevated Nickel content, with additions of Moly, Columbium and Tantalum for corrosion resistance, strength and toughness.	Low Chemistry general tool room grade. No Nickel. Low strength and toughness.
28RC – Charpy V notch impact of near 120ft/lbs @ 70F. %RA=70, %EL=28	28RC - Charpy V notch impact of 38ft/lbs, 70F. %RA=60. %EL=19
Stress corrosion test .1% NaCl+.5% Acetic Acid + H/2S @33RC, 60KSI applied stress. No findings after 500hrs	At 35RC, 60KSI applied stress – visible change after 3 hours.