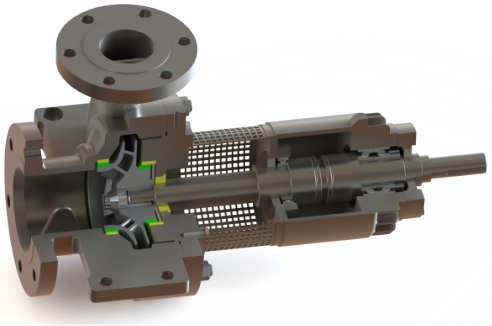

Greene Tweed
WR®650
New Product Introduction

Introducing WR®650

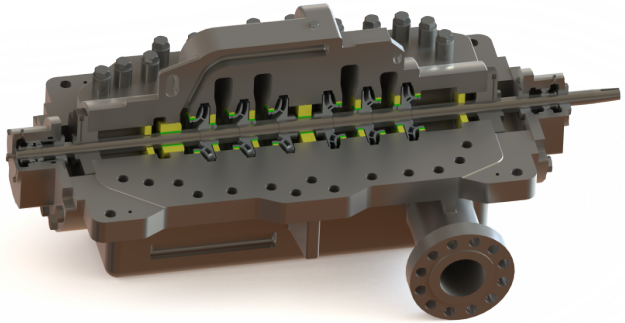
- PFA/carbon fiber composite
  - Ultimate in pump reliability
  - Enhanced chemical resistance
- Replaces older PFA technology
  - Better physical properties
  - Better dry run
  - Better material

Applications

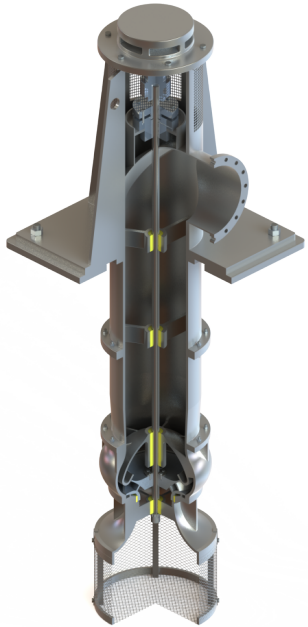
Stationary wear parts in all pumps



Over Hung (OH)



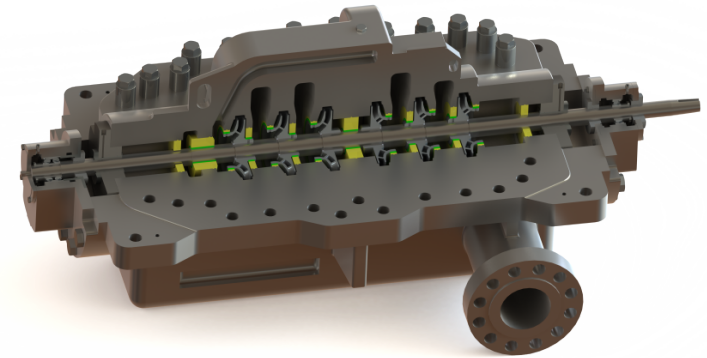
Between Bearing (BB)



Vertically Suspended (VS)

Improved Physical Properties

- Higher physical properties
  - Higher pressure applications



Higher compressive modulus = higher differential pressure capabilities

Maximize Reliability – Dry Run

- ISO 7148-2 standard test rig
- No lubrication -> completely dry run
- Open clearance conditions to simulate wear and friction environment

WR®650

Old Technology

PV of 1.5 MPa*m/s (42,825 psi*ft/min) represents a side load of 30 kg (66 lb) on a rotating shaft Ø 68.5 mm (2.7 in.) running at 3,600 rpm.

PV: MPa*m/s (psi*ft/min)	0.3 (8,565)	0.6 (17,130)	0.9 (25,695)	1.2 (34,260)	1.5 (42,825)

WR®650 can sustain 2.5x higher side load before showing signs of degradation.

Maximize Reliability – Survive Upset

- ISO 7148-2 standard test rig
- Test condition initiated with water lubrication
- Close clearance environment to simulate loss of lubrication in actual application
- 26,000 psi*fpm [0.9 MPa*m/s]

Time to Seizure

Old Technology [24.8 minutes]

WR®650 [42.4 minutes]

Stock Program

Global Stock Program

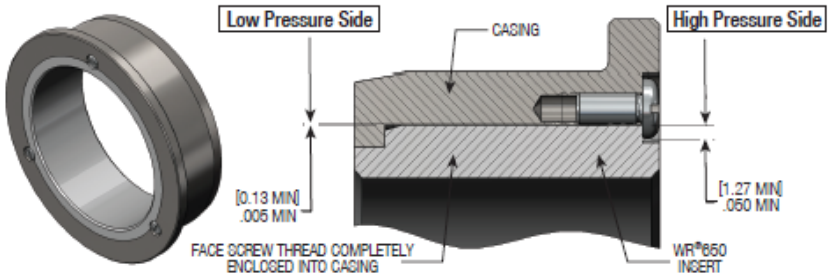
- Americas (Houston, TX)
- Europe (Nottingham, UK)
- APAC (Singapore)

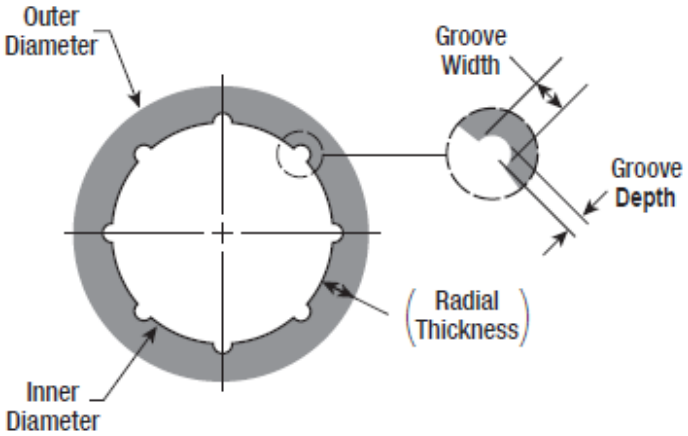
AR®HT GT Part Number	WR®525 GT Part Number	WR®650 GT Part Number	OD Inches (mm)	ID Inches (mm)	Tube Length (mm)
391N0250-0100TS060	914-0250-0100TS060	8023-0250-0100TS060	2.5 (63.5)	1 (25.4)	6 (152.4)
391N0300-0150TS060	914-0300-0150TS060	8023-0300-0150TS060	3 (76.2)	1.5 (38.1)	6 (152.4)
391N0350-0200TS060	914-0350-0200TS060	8023-0350-0200TS060	3.5 (88.9)	2 (50.8)	6 (152.4)
391N0400-0250TS060	914-0400-0250TS060	8023-0400-0250TS060	4 (101.6)	2.5 (63.5)	6 (152.4)
391N0450-0300TS060	914-0450-0300TS060	8023-0450-0300TS060	4.5 (114.3)	3 (76.2)	6 (152.4)
391N0500-0350TS060	914-0500-0350TS060	8023-0500-0350TS060	5 (127)	3.5 (88.9)	6 (152.4)
391N0550-0400TS060	914-0550-0400TS060	8023-0550-0400TS060	5.5 (139.7)	4 (101.6)	6 (152.4)
391N0600-0450TS060	914-0600-0450TS060	8023-0600-0450TS060	6 (152.4)	4.5 (114.3)	6 (152.4)
391N0650-0500TS060	914-0650-0500TS060	8023-0650-0500TS060	6.5 (165.1)	5 (127)	6 (152.4)
391N0700-0550TS060	914-0700-0550TS060	8023-0700-0550TS060	7 (177.8)	5.5 (139.7)	6 (152.4)
391N0750-0600TS060	914-0750-0600TS060	8023-0750-0600TS060	7.5 (190.5)	6 (152.4)	6 (152.4)
391N0800-0650TS060	914-0800-0650TS060	8023-0800-0650TS060	8 (203.2)	6.5 (165.1)	6 (152.4)
391N0850-0700TS060	914-0850-0700TS060	8023-0850-0700TS060	8.5 (215.9)	7 (177.8)	6 (152.4)
391N0900-0750TS060	914-0900-0750TS060	8023-0900-0750TS060	9 (228.6)	7.5 (190.5)	6 (152.4)
391N0950-0800TS060	914-0950-0800TS060	8023-0950-0800TS060	9.5 (241.3)	8 (203.2)	6 (152.4)
391N1000-0850TS060	914-1000-0850TS060	8023-1000-0850TS060	10 (254)	8.5 (215.9)	6 (152.4)
391N1050-0900TS060	914-1050-0900TS060	8023-1050-0900TS060	10.5 (266.7)	9 (228.6)	6 (152.4)
391N1100-0950TS060	914-1100-0950TS060	8023-1100-0950TS060	11 (279.4)	9.5 (241.3)	6 (152.4)
391N1150-1000TS060	914-1150-1000TS060	8023-1150-1000TS060	11.5 (92.1)	10 (254)	6 (152.4)
391N1200-1050TS060	914-1200-1050TS060	8023-1200-1050TS060	12 (304.8)	10.5 (266.7)	6 (152.4)

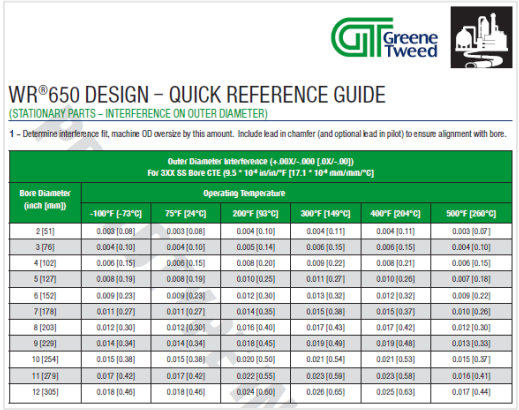
Technical Support

Tools Available

- Design Reference Guide
- Machining Guide
- Global engineering staff





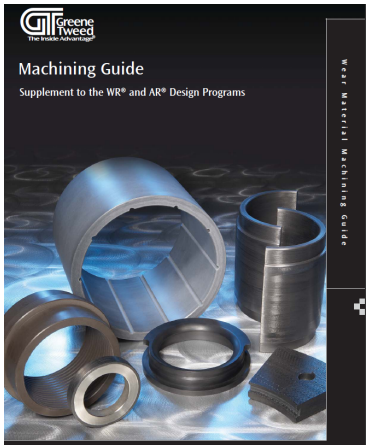


WR®650 DESIGN – QUICK REFERENCE GUIDE

(STATIONARY PARTS – INTERFERENCE ON OUTER DIAMETER)

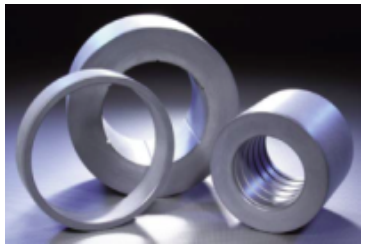
1 – Determine interference fit, machine OD oversize by this amount. Include lead in chamfer (and optional lead in pilot) to ensure alignment with bore.

Outer Diameter Interference (+.00X/-.000 [.0X/-.00]) For 3XX SS Bore CTE (9.5 * 10⁻⁶ in/in/°F [17.1 * 10⁻⁶ mm/mm/°C])						
Bore Diameter (inch [mm])	Operating Temperature					
	-100°F [-73°C]	75°F [24°C]	200°F [93°C]	300°F [149°C]	400°F [204°C]	500°F [260°C]
2 [51]	0.003 [0.08]	0.003 [0.08]	0.004 [0.10]	0.004 [0.11]	0.004 [0.11]	0.003 [0.07]
3 [76]	0.004 [0.10]	0.004 [0.10]	0.005 [0.14]	0.006 [0.15]	0.006 [0.15]	0.004 [0.10]
4 [102]	0.006 [0.15]	0.006 [0.15]	0.008 [0.20]	0.009 [0.22]	0.008 [0.21]	0.006 [0.15]
5 [127]	0.008 [0.19]	0.008 [0.19]	0.010 [0.25]	0.011 [0.27]	0.010 [0.26]	0.007 [0.18]
6 [152]	0.009 [0.23]	0.009 [0.23]	0.012 [0.30]	0.013 [0.32]	0.012 [0.32]	0.009 [0.22]
7 [178]	0.011 [0.27]	0.011 [0.27]	0.014 [0.35]	0.015 [0.38]	0.015 [0.37]	0.010 [0.26]
8 [203]	0.012 [0.30]	0.012 [0.30]	0.016 [0.40]	0.017 [0.43]	0.017 [0.42]	0.012 [0.30]
9 [229]	0.014 [0.34]	0.014 [0.34]	0.018 [0.45]	0.019 [0.49]	0.019 [0.48]	0.013 [0.33]
10 [254]	0.015 [0.38]	0.015 [0.38]	0.020 [0.50]	0.021 [0.54]	0.021 [0.53]	0.015 [0.37]
11 [279]	0.017 [0.42]	0.017 [0.42]	0.022 [0.55]	0.023 [0.59]	0.023 [0.58]	0.016 [0.41]
12 [305]	0.018 [0.46]	0.018 [0.46]	0.024 [0.60]	0.026 [0.65]	0.025 [0.63]	0.017 [0.44]

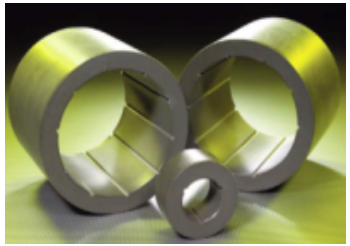


Complete Composite Portfolio

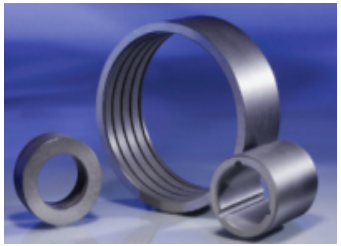
WR®300
Wear resistant
Sub-zero to 275°F (135°C)



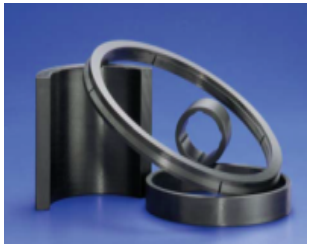
AR®HT
Best abrasive resistance
Sub-zero to 250°F (120°C)



AR®1
Abrasive resistant
Sub-zero to 120°F (50°C)



WR®650
Best chemical resistance
Best dry run capability
Sub-zero to 500°F (260°C)



WR®525
Highest pressure applications
Best wear resistance
Sub-zero to 525°F (275°C)


Greene
Tweed


Greene
Tweed