



**LEGENDARY
RELIABILITY
SINCE 1927**

Pump Shop / MWD Tools

Quality Driven – from the Tools we Make to the Service we offer – We Are PETOL

*ISO9001
Quality System
Certified*



The PETOL™ GEARENCH manufacturing facility is centrally located in Bosque County, Texas, about one mile south of Clifton on State Highway 6.

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About Us...

Founded in 1927 in partnership with J.A. Peterson and C.E. "Pat" Olsen, GEARENCH has been the name customers have depended on for reliable tools and expert services for nearly a century. In October of 1978, Chester Posey purchased the company, including facilities in Houston and Clifton, Texas. We are proud to announce that we are returning to our roots under the name first created by our founders - PETOL™.

We are a small-town, global company whose integrity has been forged by decades of doing what's right for each customer. Through the years, our company has grown and developed over 40 product lines for use across a range of vital industries. As a family company that is trusted to deliver what others cannot, the products our craftsmen design and build still set the standard for quality and dependability today.

As PETOL™, we will continue to build on our legacy of reliability, innovation and commitment to quality for years to come.

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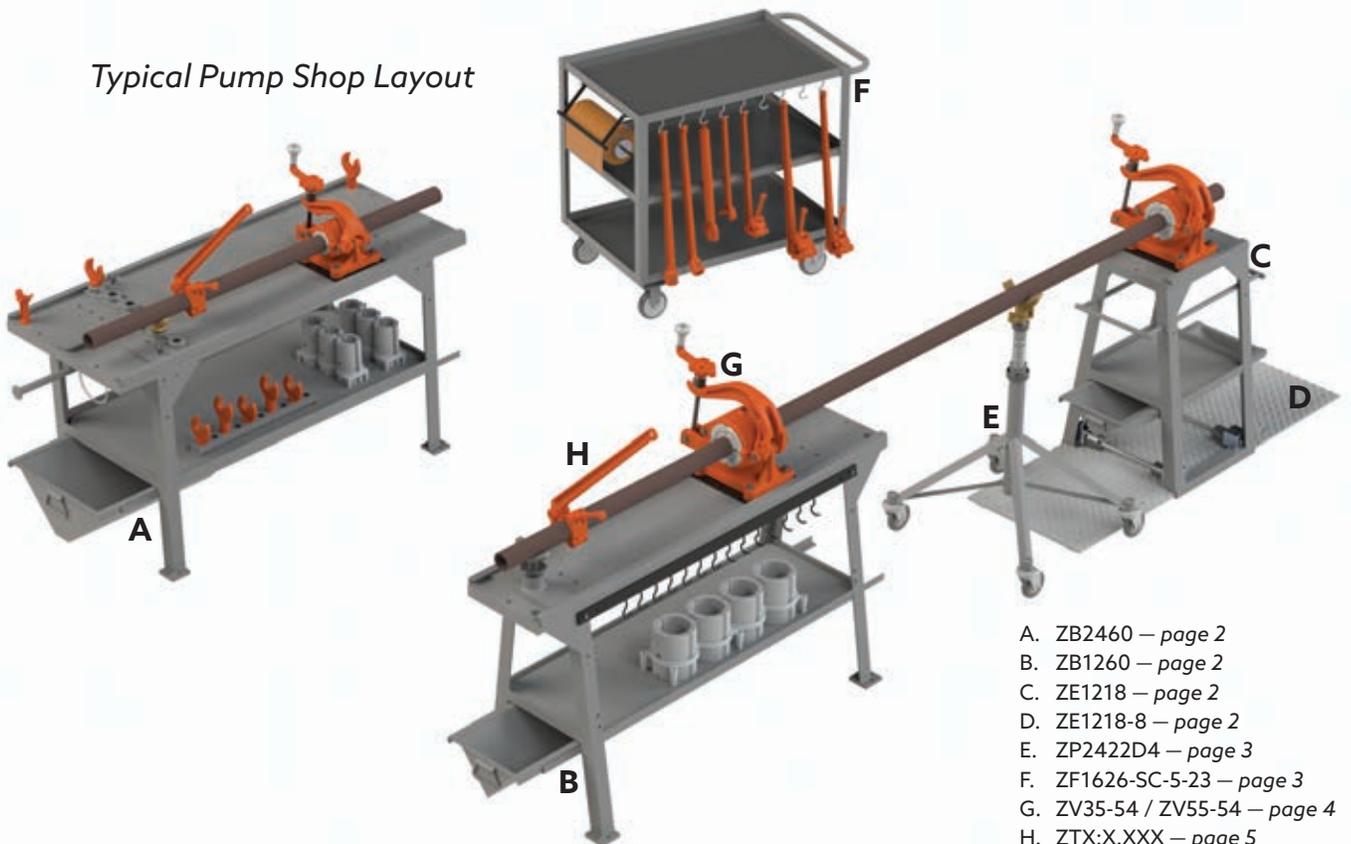
For the latest and most complete engineering data and specifications available for PETOL products, please visit our website at www.PETOL.com

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Typical Pump Shop Layout



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**LEGENDARY
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Pump Benches

- » All Pump Benches are designed to simplify the handling, servicing and repair of downhole pumps
- » ZB2460 bench allows pump barrels and plungers to be serviced simultaneously
- » Friction Vise attached to a Vise Plate and Sliding Socket Plates slide along the length of the bench top
- » If utilized, Drip Pans keep oil and pump grime off the shop floor



ZB2460

Note:
Back-up Bar must be ordered separately.



ZB1260

Note:
Barhook Rack must be ordered separately.



ZE1218

Note:
Roller Assembly & Base Plates must be ordered separately.

Specifications

Part No.	Description	Weight
ZB2460	Pump Bench - 32" High	261 lbs.
ZB2460-58-24	Bench Drip Pan - 8" Deep x 24" Long	18-3/8 lbs.
ZI2460	Bench Installation Kit	1 lb.
ZNB12	Bench Back-up Bar - 12" Long	4-5/8 lbs.
ZB1260	Pump Bench - 32" High	172 lbs.
ZB1260-56-30	Bench Drip Pan - 6" Deep x 30" Long	15-1/8 lbs.
ZI1260-7	Bench Installation Kit	1 lb.
ZB1260-10	Barhook Rack w/14 hooks - 48" Long	8 lbs.
ZB1260-16	Barrelrack - Steel	11 lbs.
ZB1219	Pump Bench - 32" High	115 lbs.
ZE1218-54-30	Bench Drip Pan - 4" Deep x 30" Long	13 lbs.
ZI1219	Bench Installation Kit	13 ozs.
ZE1218	Pump Bench Extension Stand - 32" High	107 lbs.
ZE1218-BTC	Pump Bench Extension Stand w/Base Tread Clamp	117 lbs.
ZE1218-1	Extension Stand Roller Assembly	14-1/4 lbs.
ZE1218-1H	Extension Stand Roller Assembly - Heavy Duty	17 lbs.
ZE1218-54-30	Extension Stand Drip Pan - 4" Deep x 30" Long	13 lbs.
ZI1218	Extension Stand Installation Kit	1-1/4 lbs.
ZE1218-8	Extension Stand Base Plate	164 lbs.



ZB1219

Note:
Drip Pans for **ALL** Pump Benches must be ordered separately.

Pump Support

Note:
ZSV2422-3AH-BR
vee-saddle must be
ordered separately.



- » Versatile mobile support for multiple uses during pump repair and maintenance
- » Capable of 15" of adjustable height beginning at 29-1/8"

Specifications

Part No.	Description	Weight	Rated Load*
ZP2422D4	Pump Support w/4" Casters	41 lbs.	750 lbs.
ZSV2422-3AH-BR	Pump Support Adj. Vee Saddle - Heavy Duty - Bronze	4-3/8 lbs.	1,000 lbs.

*Rated Loads are for combined weight and reaction force.

When used in conjunction with other equipment, the lowest rating is the limit.

Part No.	Description	Weight
Replacement Parts		
ZP2422-2-10A	Pump Support Shaft Assy.	10-1/4 lbs.
ZP2422-2-10	Pump Support Shaft	9-3/4 lbs.
ZP2422-2-11	Pump Support Shaft Collar	6 ozs.
ZP2422-2-13	Pump Support Shaft Spiralox Ring (2 req'd.)	1/8 oz.
ZP2422-2-14	Pump Support Shaft Steel Ball Bearings (4 req'd.)	1/8 oz.
ZP2422-0-1	Pump Support Tube	9-3/4 lbs.
ZP2422-0-2	Pump Support Tube Collar	9-1/2 ozs.
ZP2422-0-3	Pump Support Tube Spiralox Ring (2 req'd.)	1/8 oz.
ZP2422-0-4	Pump Support Tube Steel Ball Bearings (8 req'd.)	1/8 oz.
ZNC4	Pump Support Swivel Caster - 4"	1-1/2 lbs.
HXSS01	Swivel Caster Set Screw	<1 oz.
Miscellaneous Accessories		
ZSV2422-8A-BR	Pump Support Adj. Roller Saddle - Bronze	6-1/8 lbs.
ZP2422-7	Pump Support Susan	1-1/4 lbs.

Tool Stand



Note:
Paper Rack and Paper Cutter
must be ordered separately.
(paper not available from
PETOL)

- » Convenient cart for storing various tools for mobile access around the pump shop
- » Includes 23 hooks for hanging wrenches, handles and tongs

Specifications

Part No.	Description	Weight
ZF1626-SC-5-23	Tool Stand w/5" Casters - 35" High	122 lbs.
ZF1626-4	Tool Stand Paper Rack	3-5/8 lbs.
ZF1626-6	Tool Stand Paper Cutter	3 lbs.
ZNC5	Tool Stand Caster - 5"	1-7/8 lbs.

SURGRIP™ Friction Tongs



- » Originally developed for use by downhole pump manufacturers and pump repair shops
- » Make up and break out pump sections without marring surfaces
- » Three piece precision machined jaws grip entire circumference by friction
- » Ratcheting ability prevents frequent tong adjustment or removal
- » Each component is heat-treated for durability
- » Sizes capable of delivering up to 4,500 ft.-lbs. torque

Specifications

Part No.	O.D.	Gripping Width	Weight
ZT1:0.625	0.625"	2.25"	6-1/2 lbs.
ZT1:0.688	0.688"	2.25"	6-1/2 lbs.
ZT1:0.750	0.750"	2.25"	6-1/2 lbs.
ZT1:0.812	0.812"	2.25"	6-1/2 lbs.
ZT1:0.875	0.875"	2.25"	6-1/2 lbs.
ZT1:0.938	0.938"	2.25"	6-1/2 lbs.
ZT1:1.000	1.000"	2.25"	6-1/2 lbs.
ZT1:1.031	1.031"	2.25"	6-1/2 lbs.
ZT1:1.062	1.062"	2.25"	6-1/2 lbs.
ZT1:1.125	1.125"	2.25"	6-1/2 lbs.
ZT1:1.138	1.138"	2.25"	6-1/2 lbs.
ZT1:1.188	1.188"	2.25"	6-1/2 lbs.
ZT1:1.250	1.250"	2.25"	6-1/2 lbs.
ZT2:1.312	1.312"	2.50"	10-1/2 lbs.
ZT2:1.375	1.375"	2.50"	10-1/2 lbs.
ZT2:1.438	1.438"	2.50"	10-1/2 lbs.
ZT2:1.500	1.500"	2.50"	10-1/2 lbs.
ZT2:1.625	1.625"	2.50"	10-1/2 lbs.
ZT2:1.688	1.688"	2.50"	10-1/2 lbs.
ZT2:1.750	1.750"	2.50"	10-1/2 lbs.
ZT3:1.625	1.625"	2.50"	11-1/2 lbs.
(for rod couplings)			
ZT3:1.750	1.750"	2.50"	11-1/2 lbs.
ZT3:1.812	1.812"	2.50"	11-1/2 lbs.
ZT3:1.875	1.875"	2.50"	11-1/2 lbs.
ZT3:1.938	1.938"	2.50"	11-1/2 lbs.
ZT3:1.960	1.960"	2.50"	11-1/2 lbs.
ZT3:2.000	2.000"	2.50"	11-1/2 lbs.
ZT3:2.062	2.062"	2.50"	11-1/2 lbs.
ZT3:2.125	2.125"	2.50"	11-1/2 lbs.
ZT3:2.188	2.188"	2.50"	11-1/2 lbs.
ZT3:2.250	2.250"	2.50"	11-1/2 lbs.
ZT3:2.302	2.302"	2.50"	11-1/2 lbs.
ZT3:2.312	2.312"	2.50"	11-1/2 lbs.
ZT3:2.340	2.340"	2.50"	11-1/2 lbs.
ZT3:2.375	2.375"	2.50"	11-1/2 lbs.

Specifications

Part No.	O.D.	Gripping Width	Weight
ZT4:2.375	2.375"	3.00"	21 lbs.
ZT4:2.500	2.500"	3.00"	21 lbs.
ZT4:2.562	2.562"	3.00"	21 lbs.
ZT4:2.625	2.625"	3.00"	21 lbs.
ZT4:2.688	2.688"	3.00"	21 lbs.
ZT4:2.750	2.750"	3.00"	21 lbs.
ZT4:2.812	2.812"	3.00"	21 lbs.
ZT4:2.875	2.875"	3.00"	21 lbs.
ZT5:3.000	3.000"	3.50"	31 lbs.
ZT5:3.062	3.062"	3.50"	31 lbs.
ZT5:3.125	3.125"	3.50"	31 lbs.
ZT5:3.200	3.200"	3.50"	31 lbs.
ZT5:3.250	3.250"	3.50"	31 lbs.
ZT5:3.375	3.375"	3.50"	31 lbs.
ZT5:3.500	3.500"	3.50"	31 lbs.
ZT5:3.625	3.625"	3.50"	31 lbs.
ZT5:3.688	3.688"	3.50"	31 lbs.
ZT5:3.750	3.750"	3.50"	31 lbs.
ZT5:3.875	3.875"	3.50"	31 lbs.
ZT5:4.000*	4.000"	3.50"	31 lbs.

*For sizes larger than 4.000", see Friction Tongs w/Chain.

**NOTE: Special O.D. sizes available upon request.
Special sizes are non-returnable.**

>>> Maximum Working Loads <<<

*Torques vary according to tong being used.
See Max. Working Loads on product page of website.*



WARNING! Protect yourself and others from **SERIOUS INJURY!**
Never use a "cheater" or other means to extend handle!
If wrench slips you can be hurt or injure other workers!



SURGRIP™ Torque Wrench



Note:
Wrench Head, torque wrench handle and adaptor (if required) must be ordered separately.



An adaptor is required when using a 1/2" or 1" drive torque wrench handle

- » Provide exact torque measurement when making up pump parts
- » Make up and break out pump sections without marring surfaces
- » Three piece precision machined jaws grip specific O.D. by friction and do not mar the surface of parts
- » Offer same reliable features as SURGRIP™ Friction Tong (see page 5)
- » Can be used with any 1/2", 3/4" or 1" drive "click-type" torque wrench handle
- » Sizes capable of delivering up to 1000 ft.-lbs.torque

Specifications

Part No.	Description	Drive	Length	Weight
ZT250M	Torque Wrench Handle	1/2"	23-1/2"	4-3/8 lbs.
ZT600M	Torque Wrench Handle	3/4"	40"	14 lbs.
ZT1000M	Torque Wrench Handle	1"	70"	38 lbs.
ZT50A	1/2" Adaptor	3/4"	n/a	4 ozs.
ZT51A	1" Adaptor	3/4"	n/a	1-5/8 lbs.

Wrench Heads

Part No.	O.D.	Gripping Width	Weight
ZT1:0.625T	0.625"	2.25"	6-1/2 lbs.
ZT1:0.688T	0.688"	2.25"	6-1/2 lbs.
ZT1:0.750T	0.750"	2.25"	6-1/2 lbs.
ZT1:0.812T	0.812"	2.25"	6-1/2 lbs.
ZT1:0.875T	0.875"	2.25"	6-1/2 lbs.
ZT1:0.938T	0.938"	2.25"	6-1/2 lbs.
ZT1:1.000T	1.000"	2.25"	6-1/2 lbs.
ZT1:1.062T	1.062"	2.25"	6-1/2 lbs.
ZT1:1.125T	1.125"	2.25"	6-1/2 lbs.
ZT1:1.188T	1.188"	2.25"	6-1/2 lbs.
ZT1:1.250T	1.250"	2.25"	6-1/2 lbs.
ZT2:1.312T	1.312"	2.50"	9-1/4 lbs.
ZT2:1.375T	1.375"	2.50"	9-1/4 lbs.
ZT2:1.438T	1.438"	2.50"	9-1/4 lbs.
ZT2:1.500T	1.500"	2.50"	9-1/4 lbs.
ZT2:1.625T	1.625"	2.50"	9-1/4 lbs.
ZT2:1.688T	1.688"	2.50"	9-1/4 lbs.
ZT2:1.750T	1.750"	2.50"	9-1/4 lbs.
ZT3:1.625T	1.625"	2.50"	10-1/2 lbs.
ZT3:1.750T	1.750"	2.50"	10-1/2 lbs.
ZT3:1.812T	1.812"	2.50"	10-1/2 lbs.
ZT3:1.875T	1.875"	2.50"	10-1/2 lbs.
ZT3:1.938T	1.938"	2.50"	10-1/2 lbs.
ZT3:1.960T	1.960"	2.50"	10-1/2 lbs.
ZT3:2.000T	2.000"	2.50"	10-1/2 lbs.

NOTE: Maximum Working Load for ZT1 Wrench Heads is 500 ft.-lbs.

Specifications

Part No.	O.D.	Gripping Width	Weight
ZT3:2.062T	2.062"	2.50"	10-1/2 lbs.
ZT3:2.125T	2.125"	2.50"	10-1/2 lbs.
ZT3:2.188T	2.188"	2.50"	10-1/2 lbs.
ZT3:2.250T	2.250"	2.50"	10-1/2 lbs.
ZT3:2.312T	2.312"	2.50"	10-1/2 lbs.
ZT3:2.375T	2.375"	2.50"	10-1/2 lbs.
ZT4:2.375T	2.375"	3.00"	17-1/8 lbs.
ZT4:2.500T	2.500"	3.00"	17-1/8 lbs.
ZT4:2.625T	2.625"	3.00"	17-1/8 lbs.
ZT4:2.688T	2.688"	3.00"	17-1/8 lbs.
ZT4:2.750T	2.750"	3.00"	17-1/8 lbs.
ZT4:2.812T	2.812"	3.00"	17-1/8 lbs.
ZT4:2.875T	2.875"	3.00"	17-1/8 lbs.
ZT5:3.000T	3.000"	3.50"	24 lbs.
ZT5:3.125T	3.125"	3.50"	24 lbs.
ZT5:3.250T	3.250"	3.50"	24 lbs.
ZT5:3.375T	3.375"	3.50"	24 lbs.
ZT5:3.500T	3.500"	3.50"	24 lbs.
ZT5:3.625T	3.625"	3.50"	24 lbs.
ZT5:3.688T	3.688"	3.50"	24 lbs.
ZT5:3.750T	3.750"	3.50"	24 lbs.
ZT5:3.875T	3.875"	3.50"	24 lbs.
ZT5:4.000T	4.000"	3.50"	24 lbs.

NOTE: Special O.D. sizes available upon request.
Special sizes are non-returnable.

>>> Maximum Working Loads <<<

Torques vary according to handle and wrench head being used.
See Max. Working Loads on product page of website.



WARNING! Protect yourself and others from SERIOUS INJURY!
Never use a "cheater" or other means to extend handle!
If wrench slips you can be hurt or injure other workers!



Friction Tongs w/Chain

- » Designed to hold or turn workpiece by friction and protect from surface marring
- » Jaw is machined to fit a specific O.D.
- » Easily applied and removed from part being worked
- » Non-jamming ratchet action
- » Sizes capable of delivering up to 10,200 ft.-lbs. torque



Specifications

Part No.	O.D.	Gripping Width	Handle Length	Weight
FA3:3.000	3.000"	4.31"	51"	50 lbs.
FA3:3.125	3.125"	4.31"	51"	50 lbs.
FA3:3.250	3.250"	4.31"	51"	50 lbs.
FA3:3.500	3.500"	4.31"	51"	50 lbs.
FA3:3.625	3.625"	4.31"	51"	50 lbs.
FA3:3.750	3.750"	4.31"	51"	50 lbs.
FA4:4.000	4.000"	4.31"	51"	50 lbs.
FA4:4.000	4.000"	4.31"	46"	54 lbs.
FA4:4.125	4.125"	4.31"	46"	54 lbs.
FA4:4.250	4.250"	4.31"	46"	54 lbs.
FA4:4.500	4.500"	4.31"	46"	54 lbs.
FA4:4.750	4.750"	4.31"	46"	54 lbs.
FA4:5.000	5.000"	4.31"	46"	54 lbs.
FA4:5.375	5.375"	4.31"	46"	54 lbs.
FAS4:4.000	4.000"	4.31"	28"	45 lbs.
FAS4:4.125	4.125"	4.31"	28"	45 lbs.
FAS4:4.250	4.250"	4.31"	28"	45 lbs.
FAS4:4.500	4.500"	4.31"	28"	45 lbs.
FAS4:4.750	4.750"	4.31"	28"	45 lbs.
FAS4:5.000	5.000"	4.31"	28"	45 lbs.
FAS4:5.375	5.375"	4.31"	28"	45 lbs.

NOTE: Special O.D. sizes available upon request.
Special sizes are non-returnable.

>>> **Maximum Working Loads** <<<

*Torques vary according to tong being used.
See Torque Table on product page of website.*



WARNING! Do Not Exceed Maximum Working Load! Overloading may result in SERIOUS INJURY or DEATH!
Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid overload. Read Safe Practices & Procedures Manual prior to operation. Follow OSHA, NSC, etc. standards, safe practices, and procedures.



NOTE: Safe Practices & Procedures Manual can be found on pages 21-27 of this product guide.

Valve Cage Wrench

- » Safe and effective tool for making up and breaking out valve cages



Specifications

Part No.	Length	Size of Cage	Weight
ZWV1	14"	1-1/16", 1-1/4", 1-1/2"	2-1/8 lbs.
ZWV2	17"	1-1/2", 1-3/4"	2-7/8 lbs.
ZWV3	23"	2", 2-1/4", 2-1/2", 2-3/4"	4-1/2 lbs.
ZWV4	29"	over 2-3/4"	8-3/8 lbs.



WARNING! Protect yourself and others from SERIOUS INJURY!
Never use a "cheater" or other means to extend handle!
If wrench slips you can be hurt or injure other workers!



Shoprench

» One piece end wrench built to handle tough makeup and breakout jobs



Specifications

Part No.	Wrench Size	Weight
ZWS13	13/16"	4-1/4 lbs.
ZWS14	7/8"	4-3/8 lbs.
ZWS16	1"	4-1/4 lbs.
ZWS17	1-1/16"	4-3/8 lbs.
ZWS20	1-1/4"	4-3/8 lbs.
ZWS21	1-5/16"	4-1/4 lbs.
ZWS22	1-3/8"	4 lbs.
ZWS24	1-1/2"	5 lbs.

Specifications

Part No.	Wrench Size	Weight
ZWS26	1-5/8"	4-3/4 lbs.
ZWS27	1-11/16"	5 lbs.
ZWS28	1-3/4"	4-7/8 lbs.
ZWS30	1-7/8"	4-1/8 lbs.
ZWS32	2"	5-1/4 lbs.
ZWS35	2-3/16"	5-3/4 lbs.
ZWS36	2-1/4"	5-3/4 lbs.
ZWS38	2-3/8"	7-1/4 lbs.

! WARNING! Protect yourself and others from SERIOUS INJURY!
Never use a "cheater" or other means to extend handle!
If wrench slips you can be hurt or injure other workers! **!**

Vee Saddle

» For Pump Bench, Sliding Socket Plate, Extension Stand and Pump Support applications



Specifications

Part No.	Description	Weight	Rated Load*
ZSV2422-3AH-BR	Pump Support Adj. Vee Saddle - Heavy Duty - Bronze	4-3/8 lbs.	1,000 lbs.
ZSV60-3A-AL	Adjustable Vee Saddle - Aluminum	1 lb.	1,000 lbs.
ZSV60-3A-BR	Adjustable Vee Saddle - Bronze	2 lbs.	1,000 lbs.

*Rated Loads are for combined weight and reaction force. When used in conjunction with other equipment, the lowest rating is the limit.

Valve Cage Benchrench

» For Pump Bench, Sliding Socket Plate and Socketrench Handle applications



Specifications

Part No.	Fits Cage Size	Stem O.D.	Weight
ZWC01	1-1/16" to 1-1/2"	1-1/4"	2 lbs.
ZWC23	1-1/2" to 1-3/4"	1-1/4"	2-3/8 lbs.

Benchrench

- » Fits directly into pump bench tops
- » Provide a strong and stable hold for makeup and breakout of pump sections



Specifications

Part No.	Wrench Size/Stem O.D.	Weight
ZWB1320	13/16" – 1-1/4"	2 lbs.
ZWB1420	7/8" – 1-1/4"	2-3/8 lbs.
ZWB1620	1" – 1-1/4"	2-1/4 lbs.
ZWB1720	1-1/16" – 1-1/4"	2-1/4 lbs.
ZWB1820	1-1/8" – 1-1/4"	2-1/4 lbs.
ZWB2020	1-1/4" – 1-1/4"	2-1/4 lbs.
ZWB2120	1-5/16" – 1-1/4"	2-1/4 lbs.
ZWB2220	1-3/8" – 1-1/4"	2-1/4 lbs.
ZWB2420	1-1/2" – 1-1/4"	2-7/8 lbs.
ZWB2520	2-9/16" – 1-1/4"	2-7/8 lbs.
ZWB2620	1-5/8" – 1-1/4"	2-7/8 lbs.
ZWB2720	1-11/16" – 1-1/4"	2-7/8 lbs.
ZWB2820	1-3/4" – 1-1/4"	2-3/4 lbs.
ZWB3020	1-7/8" – 1-1/4"	2-3/4 lbs.
ZWB3220	2" – 1-1/4"	3-1/4 lbs.
ZWB3520	2-3/16" – 1-1/4"	3-7/8 lbs.
ZWB3620	2-1/4" – 1-1/4"	3-3/4 lbs.
ZWB3820	2-3/8" – 1-1/4"	5-1/8 lbs.
ZWB4620	2-7/8" – 1-1/4"	5-1/8 lbs.

Platerench

- » Designed to fit into the Sliding Socketplate and Socketrench Handle
- » Fits on pump flats to secure pump sections during makeup and breakout tasks



Specifications

Part No.	Wrench Size/Stem O.D.	Weight
ZWP1320	13/16" – 1-1/4"	1-5/8 lbs.
ZWP1420	7/8" – 1-1/4"	1-5/8 lbs.
ZWP1620	1" – 1-1/4"	1-1/2 lbs.
ZWP1720	1-1/16" – 1-1/4"	1-1/2 lbs.
ZWP1820	1-1/8" – 1-1/4"	1-1/2 lbs.
ZWP1920	1-3/16" – 1-1/4"	1-1/2 lbs.
ZWP2020	1-1/4" – 1-1/4"	1-1/2 lbs.
ZWP2120	1-5/16" – 1-1/4"	1-1/2 lbs.
ZWP2220	1-3/8" – 1-1/4"	1-1/2 lbs.
ZWP2420	1-1/2" – 1-1/4"	2-1/4 lbs.
ZWP2520	1-9/16" – 1-1/4"	2-1/8 lbs.
ZWP2620	1-5/8" – 1-1/4"	2-1/8 lbs.
ZWP2720	1-11/16" – 1-1/4"	2-1/8 lbs.
ZWP2820	1-3/4" – 1-1/4"	2-1/8 lbs.
ZWP3020	1-7/8" – 1-1/4"	2 lbs.
ZWP3220	2" – 1-1/4"	2-1/2 lbs.
ZWP3520	2-3/16" – 1-1/4"	3-1/8 lbs.
ZWP3620	2-1/4" – 1-1/4"	3-1/8 lbs.
ZWP3820	2-3/8" – 1-1/4"	4-5/8 lbs.
ZWP3224	2" – 1-1/2"	2-3/4 lbs.
ZWP3524	2-3/16" – 1-1/2"	5 lbs.
ZWP3824	2-3/8" – 1-1/2"	4-5/8 lbs.
ZWP4624	2-7/8" – 1-1/2"	4-3/4 lbs.



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Socketrench Handle



- » For versatile, interchangeable use with Platerenches and Valve Cage Benchrenches
- » Straight and angled handles available for 1-1/4" stem O.D. wrench heads

Specifications

Part No.	Socket Size / Item Description	Weight
ZWH2026-00	1-1/4" — Straight socket	6-1/4 lbs.
ZWH2026-45	1-1/4" — 45° socket	6 lbs.
ZWH2426-00	1-1/2" — Straight socket	6-1/8 lbs.
HXSS002	Socketrench Spring Plunger (all handles)	<1 oz.

⚠ WARNING! Protect yourself and others from SERIOUS INJURY!
Never use a "cheater" or other means to extend handle!
If wrench slips you can be hurt or injure other workers! **⚠**

Sliding Socketplate



- » Easily slides into all Pump Benches
- » Allows worker to place Platerenches or Valve Cage Benchrenches anywhere along the pump to provide additional stability when making up or breaking out pump sections

Specifications

Part No.	Socket Size / Placement	Weight
ZNP6060-20C	1-1/4" — Center ONLY	6-1/4 lbs.
ZNP6060-20RCL	1-1/4" — Right - Center - Left	9-1/8 lbs.
ZNP60602024RCL	1-1/4" & 1-1/2" — Right - Center - Left	13-1/4 lbs.
ZNP6060-24RCL	1-1/2" — Right - Center - Left	9-5/8 lbs.

Rinse Tank



- » Convenient for use when cleaning disassembled pump parts prior to reassembly
- » Constructed of 14 gauge stainless steel
- » 32 gallon capacity

Specifications

Part No.	Tub Dimensions	Height (closed)	Weight
ZM1832-01-41D5	32"L x 22"W x 18"D	39"H	129 lbs.

Thread Cutter



Note:
ZD00-R Ratchet Handle
must be ordered separately.

» For cutting Modified API Line Pipe Thread on pump valve rods

Specifications

Part No.	Description	For Rod O.D.	Weight
Complete Die Heads			
ZD375	3/8" Die Head w/Hi-Speed Steel Dies	11/16"	1-3/4 lbs.
ZD500	1/2" Die Head w/Hi-Speed Steel Dies	7/8"	3 lbs.
ZD750	3/4" Die Head w/Hi-Speed Steel Dies	1-1/16"	2-7/8 lbs.
Replacement Dies			
ZD375-1*	3/8" Hi-Speed Steel Dies ONLY (set of 4)	11/16"	1-3/4 lbs.
ZD500-1*	1/2" Hi-Speed Steel Dies ONLY (set of 4)	7/8"	3 lbs.
ZD750-1*	3/4" Hi-Speed Steel Dies ONLY (set of 4)	1-1/16"	2-7/8 lbs.
Ratchet Handle			
ZD00-R	Ratchet Handle (22" Long)	11/16"	1-3/4 lbs.

*Dies fit 00R API Die Head.

Bushing Rack



» Convenient rack for storing Friction Vise Bushings

Specifications

Part No.	Description	Weight
ZNU35-18-3	Holds 3 sets of #35 Bushings	12 ozs.
ZNU55-18-4	Holds 4 sets of #55 Bushings	1-7/8 lbs.

Wrench Rack



» Convenient rack for storing Benchwrenches and Platerwrenches

Specifications

Part No.	Description	Weight
ZNW100-20	1-1/4" Holes — Holds 10 wrench heads	3 lbs.
ZNW100-24	1-1/2" Holes — Holds 9 wrench heads	3 lbs.

Swab Tube



- » Designed for cleaning pump barrels
- » Heads are made of cast bronze to help reduce the hazard of sparking and surface marring
- » Aluminum tubes can be joined together to achieve desired lengths
- » Choice of knob or tee handle

Specifications

Part No.	Description	Weight
ZZ71-1612	Head - Bronze - 1" x 12" Long	1-1/8 lbs.
ZZ71-2412	Head - Bronze - 1-1/2" x 12" Long	1-5/8 lbs.
ZZ71-3212	Head - Bronze - 2" x 12" Long	2 lbs.
ZZ71-4412	Head - Bronze - 2-3/4" x 12" Long	2 lbs.
ZZ71-6012	Head - Bronze - 3-3/4" x 12" Long	2-1/2 lbs.
ZZ73-K38NPT	Knob Handle - Aluminum - 3/8" NPT	8 ozs.
ZZ73-T38NPT	Tee Handle - Aluminum - 3/8" NPT	8 ozs.
ZZ70-1405	Tube - Aluminum - 5 ft. Long	1-1/2 lbs.

Pump Support Vise



Note: Vise Plate must be ordered separately and does include bolts & nuts.

- » Open front vise that can be mounted on a special vise plate for use on a Pump Support

Specifications

Part No.	Pipe Capacity / Description	Weight
ZR2422-15-21	1/8" - 2"	8 lbs.
ZR2422-15-121	Vise Plate for ZR2422-15-21	3-1/2 lbs.
ZR2422-15-22	1/8" - 2-1/2"	12-1/8 lbs.
ZR2422-15-122	Vise Plate for ZR2422-15-22	3-3/4 lbs.

Bench Saddle Clamp



- » Designed to assure a pump plunger remains seated in a Vee Saddle during the makeup or breakout of pump sections or valve cages

Specifications

Part No.	Description	Weight
ZSC42S	Bench Saddle Clamp - Swivel Type	2-3/4 lbs.

Aligning Clamp



» Designed to help align plunger sections to precise tolerances for quick and easy fitting of plunger tubes

Specifications

Part No.	Capacity	Weight
ZSA234	1" O.D. - 2-3/4" O.D.	3 lbs.
ZSA334	1-1/4" O.D. - 3-3/4" O.D.	5 lbs.

Pump Support Susan



» Convenient tool holder to mount on Pump Support

Specifications

Part No.	Description	Weight
ZP2422-7	Pump Support Susan	1-1/4 lbs.

Oil Can Holder



» Convenient holder for oil or lubricant containers

Specifications

Part No.	Description	Weight
ZNO1218-90F	Oil Can Holder for Extension Stand	11 ozs.
ZNO1626-91	Lubricant Holder	1-1/8 lbs.



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**PETOL
FRICTION BREAKOUT
UNITS**



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Hydraulic Pump Bench



Note:
Friction Vise, Vise Bushings,
Friction Tongs and Bench Saddle
must be ordered separately.

Electric (110 or 220) power
consoles with hose assemblies
are available (sold separately)

Quick release pin
enables operator to quickly
change out tools



Bench Saddle has adjustable
height and offers additional
support of workpiece



Hydraulic cylinder, Friction Vise
and Bench Saddle slide the entire
bench length to grip different areas on workpiece and to change
from makeup to breakout position

- » Designed for making up or breaking out downhole pumps and specialty downhole tools requiring accurate torque without surface marring
- » Available power consoles for hydraulics provide a gauge with exact read-out in ft.-lbs. of torque and feature a pressure relief valve that can be set to a specific working pressure at which point the system will stop torquing
- » Capable of delivering up to 5,000 ft.-lbs. torque (see note below)

Specifications

Part No.	Description	Weight
ZB1260U*	Hydraulic Pump Bench - 32" High	300 lbs.
UHCN-ZB-E**	Hydraulic Console for Pump Bench	32 lbs.
UHCN-ZB-E220**	Hydraulic Console for Pump Bench	32 lbs.
ZI1260-7	Bench Installation Kit	1 lb.

*Includes Cylinder Assembly.

**Includes Electric Motor and Hose Assemblies.

>>> Maximum Working Loads <<<

The Friction Breakout Unit may be capable of producing more force than the rating of the tong or wrench being used. See Max. Working Loads on specific product page of website.



WARNING! Do Not Exceed Maximum Working Load! Overloading may result in SERIOUS INJURY or DEATH!
Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid overload.
Do not operate without a manual. Follow OSHA, NSC, etc. standards, safe practices, and procedures.



SURGRIP™ Friction Vise



Note:
Vise Plate, Vise Plate Bolts &
Nuts and Vise Bushings must
be ordered separately.

- » Provide a superior non-crushing and non-marring friction grip
- » Interchangeable aluminum bushings, held in place by spring loaded plungers, meet specific O.D. requirements
- » ZV55-54 vise can be fitted with special adaptor bushings enabling it to work the smaller O.D. range of the ZV35-54 vise

Specifications

Part No.	Description	Weight
ZV35-54	Friction Vise w/4" Nut Handle Assembly	47 lbs.
ZV35-1	Vise Plate	9-1/4 lbs.
HB64	Vise Plate Bolt, Nut & Washer (4 req'd. per vise)	2 ozs.
ZV35-1-1	Riser Pad (4 req'd. per vise)	2 ozs.
HP302	Vise Plate Lock Pin	4 ozs.
ZV55-54	Friction Vise w/4" Nut Handle Assembly	68 lbs.
ZV55-1	Vise Plate	10-1/4 lbs.
HB39	Vise Plate Bolt, Nut & Washer (4 req'd. per vise)	2 ozs.
HP302	Vise Plate Lock Pin	4 ozs.
ZUV55-35A	Vise Adaptor Bushings (includes 2 ea. ZUV55-35B-8)	8-1/8 lbs.
ZUV55-35B-8	Vise Adaptor Bushing Plunger Assembly	1-3/4 ozs.

Note: Vise Bushings can be found on page 4
of this product guide (sold separately).

Bench Saddle



- » Offers additional support of workpiece
- » Base plate slides along entire length of bench
- » Adjustable saddle height

Specifications

Part No.	Weight	Rated Load*
ZSV55	8-5/8 lbs.	7,200 lbs.

*Rated Loads are for combined weight and reaction force. When used in
conjunction with other equipment, the lowest rating is the limit.

Hydraulic SURGRIP™ Friction Tongs



- » Offer same reliable features as the standard SURGRIP™ Friction Tongs (see page 5)
- » Handle is designed to connect to clevis on hydraulic cylinder
- » Tongs attach or remove easily from hydraulic cylinder by a quick release pin provided with the Hydraulic Pump Bench
- » Sizes capable of delivering up to 4,500 ft.-lbs. torque

Specifications

Part No.	O.D.	Gripping Width	Weight
ZT1:0.625U	0.625"	2.25"	6-3/8 lbs.
ZT1:0.688U	0.688"	2.25"	6-3/8 lbs.
ZT1:0.750U	0.750"	2.25"	6-3/8 lbs.
ZT1:0.875U	0.875"	2.25"	6-3/8 lbs.
ZT1:0.938U	0.938"	2.25"	6-3/8 lbs.
ZT1:1.000U	1.000"	2.25"	6-3/8 lbs.
ZT1:1.062U	1.062"	2.25"	6-3/8 lbs.
ZT1:1.125U	1.125"	2.25"	6-3/8 lbs.
ZT1:1.188U	1.188"	2.25"	6-3/8 lbs.
ZT1:1.250U	1.250"	2.25"	6-3/8 lbs.
ZT2:1.312U	1.312"	2.50"	9 lbs.
ZT2:1.375U	1.375"	2.50"	9 lbs.
ZT2:1.438U	1.438"	2.50"	9 lbs.
ZT2:1.500U	1.500"	2.50"	9 lbs.
ZT2:1.625U	1.625"	2.50"	9 lbs.
ZT2:1.688U	1.688"	2.50"	9 lbs.
ZT2:1.750U	1.750"	2.50"	9 lbs.
ZT3:1.625U	1.625"	2.50"	10-1/2 lbs.
(for rod couplings)			
ZT3:1.750U	1.750"	2.50"	10-1/2 lbs.
ZT3:1.812U	1.812"	2.50"	10-1/2 lbs.
ZT3:1.875U	1.875"	2.50"	10-1/2 lbs.
ZT3:1.938U	1.938"	2.50"	10-1/2 lbs.
ZT3:1.960U	1.960"	2.50"	10-1/2 lbs.
ZT3:2.000U	2.000"	2.50"	10-1/2 lbs.
ZT3:2.062U	2.062"	2.50"	10-1/2 lbs.
ZT3:2.125U	2.125"	2.50"	10-1/2 lbs.

Specifications

Part No.	O.D.	Gripping Width	Weight
ZT3:2.188U	2.188"	2.50"	10-1/2 lbs.
ZT3:2.200U	2.200"	2.50"	10-1/2 lbs.
ZT3:2.228U	2.228"	2.50"	10-1/2 lbs.
ZT3:2.250U	2.250"	2.50"	10-1/2 lbs.
ZT3:2.312U	2.312"	2.50"	10-1/2 lbs.
ZT3:2.375U	2.375"	2.50"	10-1/2 lbs.
ZT4:2.375U	2.375"	3.00"	16-1/4 lbs.
ZT4:2.500U	2.500"	3.00"	16-1/4 lbs.
ZT4:2.562U	2.562"	3.00"	16-1/4 lbs.
ZT4:2.625U	2.625"	3.00"	16-1/4 lbs.
ZT4:2.688U	2.688"	3.00"	16-1/4 lbs.
ZT4:2.750U	2.750"	3.00"	16-1/4 lbs.
ZT4:2.812U	2.812"	3.00"	16-1/4 lbs.
ZT4:2.875U	2.875"	3.00"	16-1/4 lbs.
ZT5:3.000U	3.000"	3.50"	23-1/4 lbs.
ZT5:3.062U	3.062"	3.50"	23-1/4 lbs.
ZT5:3.125U	3.125"	3.50"	23-1/4 lbs.
ZT5:3.200U	3.200"	3.50"	23-1/4 lbs.
ZT5:3.250U	3.250"	3.50"	23-1/4 lbs.
ZT5:3.375U	3.375"	3.50"	23-1/4 lbs.
ZT5:3.500U	3.500"	3.50"	23-1/4 lbs.
ZT5:3.625U	3.625"	3.50"	23-1/4 lbs.
ZT5:3.688U	3.688"	3.50"	23-1/4 lbs.
ZT5:3.750U	3.750"	3.50"	23-1/4 lbs.
ZT5:3.875U	3.875"	3.50"	23-1/4 lbs.
ZT5:4.000U*	4.000"	3.50"	23-1/4 lbs.

*For sizes larger than 4.000", see Hydraulic Friction Tongs w/Chain.

**NOTE: Special O.D. sizes available upon request.
Special sizes are non-returnable.**

>>> Maximum Working Loads <<<

*Torques vary according to tong being used.
See Max. Working Loads on product page of website.*



WARNING! Protect yourself and others from **SERIOUS INJURY!** Do Not Exceed Working Load Limit! Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid overload. Follow OSHA, NSC, etc. standards, safe practices, & procedures.



Hydraulic Friction Tongs w/Chain



- » Offer same reliable features as the standard Friction Tongs w/Chain (see page 7)
- » Handle is designed to connect to clevis on hydraulic cylinder
- » Tongs attach or remove easily from hydraulic cylinder by a quick release pin provided with the Hydraulic Pump Bench
- » Sizes capable of delivering up to 10,200 ft.-lbs. torque*

Specifications

Part No.	O.D.	Gripping Width	Weight
FA3:3.000U	3.000"	4.31"	31 lbs.
FA3:3.125U	3.125"	4.31"	31 lbs.
FA3:3.250U	3.250"	4.31"	31 lbs.
FA3:3.500U	3.500"	4.31"	31 lbs.
FA3:3.625U	3.625"	4.31"	31 lbs.
FA3:3.750U	3.750"	4.31"	31 lbs.
FA3:4.000U	4.000"	4.31"	31 lbs.

Specifications

Part No.	O.D.	Gripping Width	Weight
FA4:4.000U	4.000"	4.31"	38 lbs.
FA4:4.250U	4.250"	4.31"	38 lbs.
FA4:4.500U	4.500"	4.31"	38 lbs.
FA4:4.750U	4.750"	4.31"	38 lbs.
FA4:5.000U	5.000"	4.31"	38 lbs.
FA4:5.250U	5.250"	4.31"	38 lbs.
FA4:5.375U	5.375"	4.31"	38 lbs.

NOTE: Special O.D. sizes available upon request.
Special sizes are non-returnable.

>>> **Maximum Working Loads** <<<

*Maximum Working Load of the Friction Breakout Unit Hydraulic System is 5,000 ft.-lbs.
If used aside from Breakout Unit, torques vary according to tong being used.
See Max. Working Loads on product page of website.



WARNING! Do Not Exceed Maximum Working Load! Overloading may result in SERIOUS INJURY or DEATH!
Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid overload. Read Safe Practices & Procedures Manual prior to operation. Do not operate without a manual.
Follow OSHA, NSC, etc. standards, safe practices, and procedures.



NOTE: Safe Practices & Procedures Manual can be found on pages 21-27 of this product guide.

Hydraulic Socketrench Handle



Note: Platerenches can be found on page 9 of this product guide (sold separately).

- » Handle connects to clevis on hydraulic cylinder by a quick release pin provided with the Hydraulic Pump Bench
- » For use with interchangeable Platerench heads to makeup and breakout parts with wrench flats

Specifications

Part No.	Socket Size	Weight*
ZWH2026-00U	1-1/4"	6-1/8 lbs.
HXSS002	Socketrench Spring Plunger	<1 oz.

>>> **Maximum Working Loads** <<<

Maximum Working Loads range from 700 ft.- lbs. to 2000 ft.-lbs.
depending on Platerench being used.
See Max. Working Loads on product page of website.



WARNING! Protect yourself and others from SERIOUS INJURY! Do Not Exceed Working Load Limit!
Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid overload. Follow OSHA, NSC, etc. standards, safe practices, & procedures.





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**SAFE PRACTICES
&
PROCEDURES MANUAL**



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RESPONSIBILITY, REPLACEMENT PARTS, SAFETY & SAFE PRACTICES

RESPONSIBILITY

"It is the responsibility of the employer to train the employee in the proper selection and usage of tools, chains, etc., and to ensure that they are selected and used in that manner. In many instances, injury results because it is assumed that anybody knows how to use common hand tools. Observations and the record show that this is not the case. A part of every job instruction program should therefore be detailed training in the proper use of hand tools (and of all other special tools and equipment needed to accomplish the job)."

(Source - NATIONAL SAFETY COUNCIL)

"Employers are responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees."

(Source - OSHA 1910.242A)

REPLACEMENT PARTS

Use only PETOL™ replacement parts - no other parts are of comparable strength, quality and interchangeability.

SAFETY

While we pride ourselves on the quality and dependability we build into PETOL GEARENCH tools and products, we caution users that it is only prudent to know and follow the simple rules of safety when using our products, or anyone else's.

Always follow safe practices and procedures in accordance with the recommendations of OSHA, The National Safety Council (NSC), The Hand Tools Institute (HTI), The International Association of Drilling Contractors (IADC), etc. All applicable Governmental rules, regulations or restrictions, now in effect or which may be promulgated, take precedence over the suggestions in this publication. The information in this publication is designed to supplement standard safe practices and procedures, not in lieu of, or replacement thereof.

SAFE PRACTICES (Source - The National Safety Council)

Failure to observe one or more of the following five safe practices accounts for most hand and powered tool accidents:

1. ALWAYS WEAR SAFETY GOGGLES TO PROTECT EYES
2. SELECT THE RIGHT TOOL FOR THE JOB
3. KEEP TOOLS IN GOOD CONDITION
4. USE TOOLS CORRECTLY
5. KEEP TOOLS IN A SAFE PLACE

Safety Goggles must always be worn by persons in any area where hand and powered tools are being used.

Never apply excess leverage to a wrench or tool by means of a "Cheater Bar." Never strike wrenches and tools with hammers or other objects.

All tools should be kept clean, inspected on a regular basis, and replaced when they show signs of wear.

Be especially careful not to place yourself in a position that could result in bodily injury in the event of a failure. Brace yourself firmly and pull rather than push when wrenching. (If necessary to push, do so with the flat of the hand rather than gripping around the wrench.)

Never stand under or near loads being hoisted off the ground.

READ SAFE PRACTICES AND PROCEDURES MANUAL, CATALOG INFORMATION AND PRODUCT LABELING PRIOR TO OPERATION.

NOTE: In view of the fact that the actual use determines whether safety requirements have been met, the ultimate responsibility to comply rests with the end user.

SAFETY SOURCES AND PUBLICATIONS

In the interest of safety PETOL GEARENCH recommends the following sources of safety related information:

HTI - The Hand Tools Institute
25 North Broadway • Tarrytown, New York 10591
(914)332-0040 • fax (914)332-1541 • www.hti.org

The National Safety Council (NSC)
1121 Spring Lake Drive • Itasca, Illinois 60143-3201
(630)285-1121 • fax (630)285-1434 • www.nsc.org

International Safety Council
1121 Spring Lake Drive • Itasca, Illinois 60143-3201
(630)285-1121 • fax (630)285-1434 • www.nsc.org

RESPONSIBILITY OF DISTRIBUTORS

IT IS THE RESPONSIBILITY OF THE PURCHASERS OF PETOL GEARENCH PRODUCTS TO CONVEY THE INFORMATION IN THIS PUBLICATION, AND ANY OTHER INFORMATION RELATING TO THE INDIVIDUAL PRODUCT, THROUGH THE CHANNELS OF DISTRIBUTION, DOWN TO AND INCLUDING THE INDIVIDUAL USING THE PRODUCT.

CHAIN INSPECTION

The service life of leaf chains can be altered by a variety of adverse operating conditions. The following information discusses the most important of these conditions for consideration when operating or scheduling replacement of leaf chain systems.

OVERLOADING / SHOCK LOAD / SIDE LOADING

- Attempting to “inch” loads which are beyond the rated capacity of the tool.
- Striking the tool with a hammer or other object while force is being exerted in an attempt to loosen a frozen joint.
- Side pull on the chain. Side pull can be caused by pulling or pushing on the tong in a direction that is not along a perpendicular plane, unlevel mounting of the vise, inadequate support of the part being broken out, and improper seating of the part being broken out in the tong or vise. Improper seating will occur when the O.D. of the part is not consistent within the width of the tong or vise jaw.

ENVIRONMENTAL CONDITIONS

Wrench and vise chains operate in widely varying environments, from wet outdoor conditions to mildly or highly corrosive industrial atmospheres. They can also be exposed to abrasives such as sand and grit.

The possible effects include:

Moisture - corrosion and rust reduce chain strength by causing pitting and cracking.

Temperature - very cold temperatures reduce chain strength by embrittlement.

Chemical Solutions or Vapors - Corrosive attack of the chain components grain structure and/or the mechanical connections between the chain components (crevice corrosion) may occur. Cracking often is microscopic. Propagation to complete failure can be eventual or sudden.

Abrasives - Accelerated wearing and scoring of the articulating chain members (pins and plates) may occur, with a corresponding reduction in chain strength. Due to inaccessibility of the bearing surfaces (pin surfaces and plate apertures), wear and scoring are not readily noticeable.

These conditions, when coupled with normal chain wear and inherent residual stress (normally in the chain as constructed), can result in environmentally assisted failure.

It is impossible to predict chain life under complex conditions, as the degree of hostility and its effects are dependent on many variables such as temperature, time of exposure, concentration of corrosive atmosphere or medium, degree of abrasive wear, etc. Establishing the degree and frequency of unpredictable dynamic loading is also difficult.

NORMAL LIFE EXPECTANCY

A leaf chain's normal life expectancy can be expressed as a maximum percent of elongation. This is generally between 2% to 3% of pitch. As the chain flexes back and forth, the bearing joints (pins and inside link plates) gradually wear from articulation.

As with all steel bearing surfaces, the precision, hardened steel joints of leaf chain require a constant film of oil between mating parts to prevent wear and to resist corrosion.

LUBRICATION

One of the most important but often overlooked factors is adequate lubrication. In addition to reducing internal friction, maintaining a film of oil on all chain surfaces will inhibit rusting and corrosion. This is important as corrosion of highly stressed hardened steel chain components can cause a major reduction in the load capacity of leaf chain and result in link plate cracking.

Protection from corrosion is important in storage as well as in service. The factory lubricant applied to PETOL™ Chain is a “Fingerprint Neutralizing Water Displacing Corrosion Preventive.” This is an excellent rust and corrosion inhibitor for chains in storage.

Do not attempt to paint chains. Though painting may help inhibit corrosion, it will seal off critical clearances and restricts oil from reaching the pin surfaces where it is needed for good joint lubrication. Do not plate chains or chain components. Highly stressed alloy steel components are subject to hydrogen embrittlement caused by plating. Periodic relubrication of chains is the most important factor in extending the life of the chains. There is no lubrication that is ideal for all situations.

A heavy oil lubricant provides excellent protection during prolonged storage, but is messy to apply, will attract dirt and other contaminants and is messy to use. These contaminants could lead to premature abrasive wear of the moving components. When operating in dusty environments, lubricated chains will accumulate a pastelike buildup of grime. At periodic intervals, this buildup should be removed by cleaning and the chain should be immediately relubricated. Do not use caustic or acid type cleaners; use a stiff brush and a certified safe petroleum base solvent.

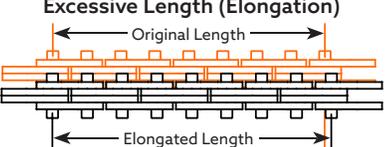
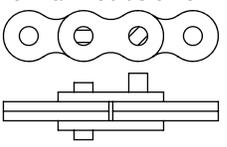
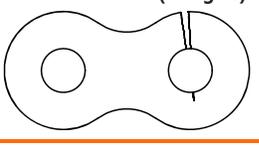
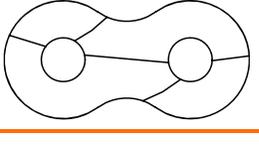
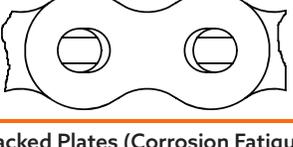
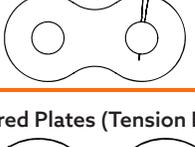
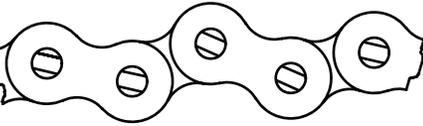
Light oil-based lubricants penetrate into articulated joints easily but can also be washed off or rubbed off during use. A light oil-based lubricant must have periodic reapplication of the lubricant to maintain coverage.

Specialty chain lubricants (wax-based) provide excellent lubrication. They have no oily residue. They are easy to apply. They can be more expensive than other lubricants and are subject to being washed off or worn off. Wax-based lubricants must have periodic reapplication of the lubricant to maintain coverage.

The frequency of relubrication is the most important factor. It will depend on frequency of use, length of storage between uses, exposure to dust and other contaminants, and exposure to salt water or other corrosion accelerants. The end user should establish a good preventive maintenance program for relubrication of all chains and articulated components.

PERIODIC INSPECTION LIST FOR PETOL™ SPECIAL CHAIN

1. Prior to each use, Leaf Chain and tools should be inspected for serviceability and lubrication.
2. Use Only PETOL™ Replacement Parts – No other parts are of comparable strength, quality, and interchangeability.

APPEARANCE AND/OR SYMPTOM	PROBABLE CAUSE	CORRECTION
<p>Excessive Length (Elongation)</p> 	<p>Normal Wear</p> <p>Permanent deformation (stretch) from overload</p>	<p>Replace chain</p> <p>Replace chain and correct cause of overload</p>
<p>Abnormal Protrusion of Pins</p> 	<p>Overloading</p> <p>Inadequate lubrication</p> <p>Side Loading</p>	<p>Replace chain and correct cause of overload</p> <p>Replace chain and improve lubrication</p> <p>Replace chain and correct cause of side load</p>
<p>Cracked Plates (Fatigue)</p> 	<p>Overloading</p> <p>Side Loading</p>	<p>Replace chain and correct cause of overload</p> <p>Replace chain and correct cause of side load</p>
<p>Arc-Like Cracked Plates (Stress Corrosion)</p> 	<p>Severe rusting or exposure to acidic or caustic medium, plus static stress at press fit between pin and plate.</p>	<p>Replace chain and protect from hostile environment</p>
<p>Enlarged Holes</p> 	<p>Overloading</p>	<p>Replace chain and correct cause of overload</p>
<p>Cracked Plates (Corrosion Fatigue) Perpendicular to Pitch Line, plus rust or other evidence of chemical corrosion</p> 	<p>Corrosive Environment</p>	<p>Replace chain and protect from hostile environment</p>
<p>Fractured Plates (Tension Mode)</p> 	<p>Overloading</p>	<p>Replace chain and correct cause of overload</p>
<p>Tight Joints</p> 	<p>Dirt or foreign substance packed in joints</p> <p>Corrosion and rust</p> <p>Bent Pins</p>	<p>Clean and relube</p> <p>Replace chain and protect from hostile environment</p> <p>Replace chain</p>

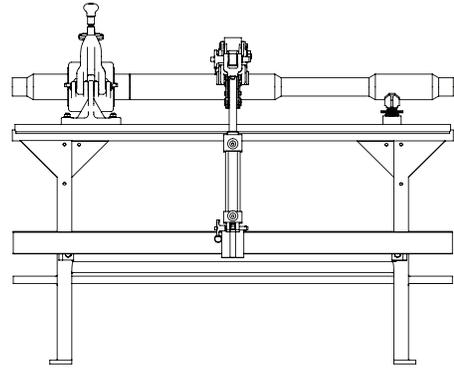
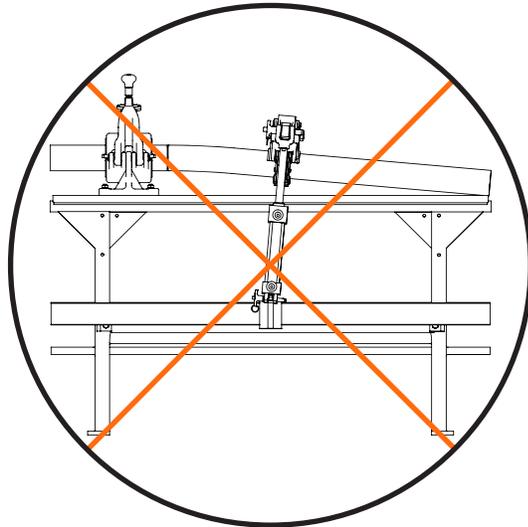
See definitions and diagrams on pages 26 and 27

Safety Precautions

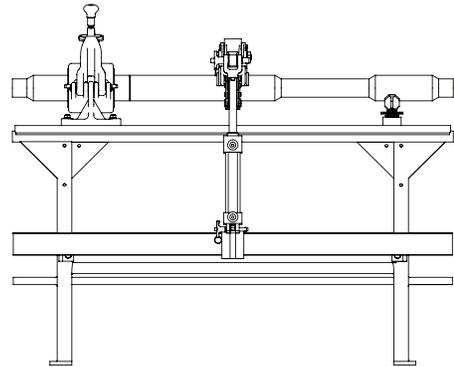
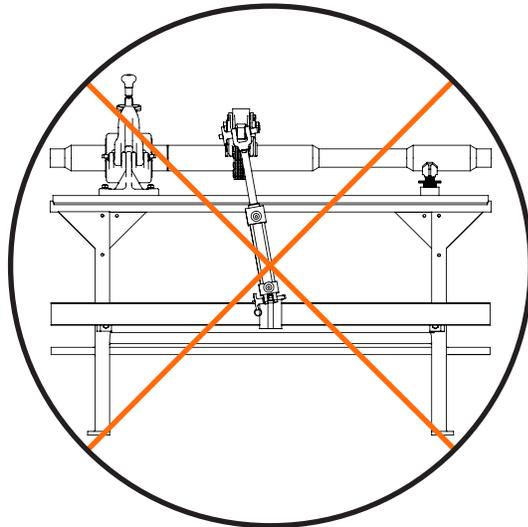
1. Always wear safety goggles to protect eyes.
2. Select the right tool for the job.
3. Keep tools in good condition.
4. Use tools correctly.
5. Keep tools in a safe place.
6. Wear protective clothing, gloves and safety shoes as appropriate.
7. Use lengths of assembled chain. Do not build lengths from individual components.
8. Do not attempt to rework damaged chain by replacing only the components obviously faulty. The entire chain may be compromised and should be discarded.
9. Never electroplate assembled leaf chains or components. Plating will result in failure from hydrogen embrittlement.
10. Do not weld any chain or component. Welding spatter should never be allowed to come in contact with chain or components.
11. Leaf chains are manufactured exclusively from heat-treated steels and therefore must not be annealed. If heating a chain with a cutting torch is absolutely necessary for removal, the chain should not be reused.
12. Inspect chains frequently and regularly for link plate cracking, pin turning, pin protrusion and corrosion.
13. Use only PETOL™ replacement parts to ensure proper strength.

COMMON CAUSES AND CORRECTION OF SIDE LOADING

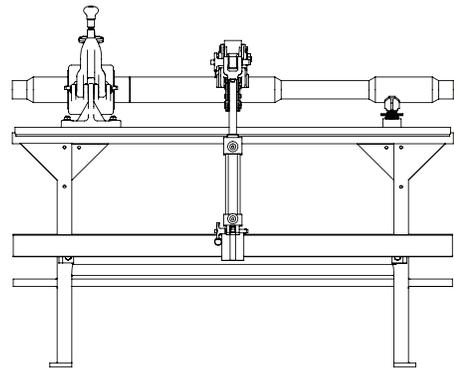
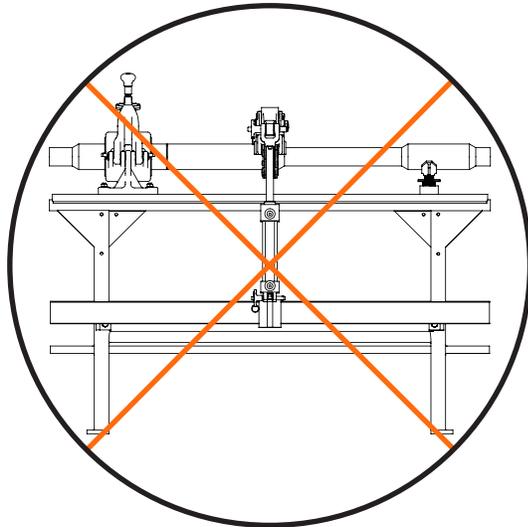
INADEQUATE
SUPPORT
OF WORKPIECE



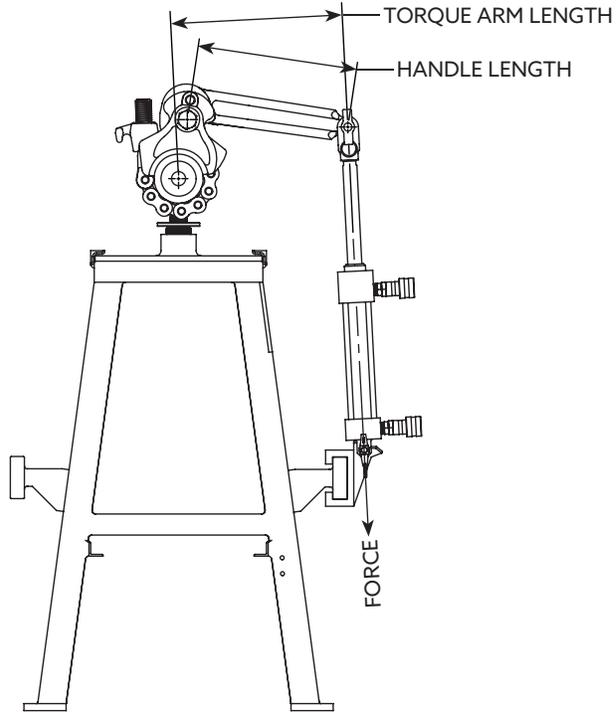
FORCE
BEING APPLIED
IS NOT IN LINE
WITH TONG



IMPROPER
SEATING OF
THE PART
DUE TO AN
INCONSISTENT
O.D.



TORQUE ARM LENGTH, HANDLE LENGTH, FT.-LBS. (TORQUE)

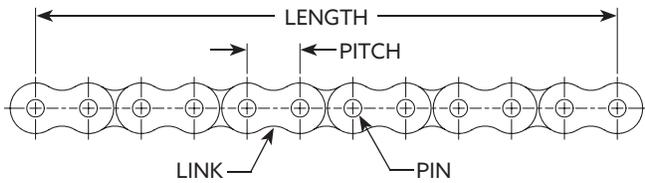


$$\text{TORQUE (FT.-LBS.)} = \text{FORCE (LBS.)} \times \text{TORQUE ARM LENGTH (IN)} / 12$$

WORKING LOAD IS THE MAXIMUM FORCE THAT MAY BE APPLIED TO A TOOL DURING OPERATION. DO NOT EXCEED THE PUBLISHED WORKING LOADS.

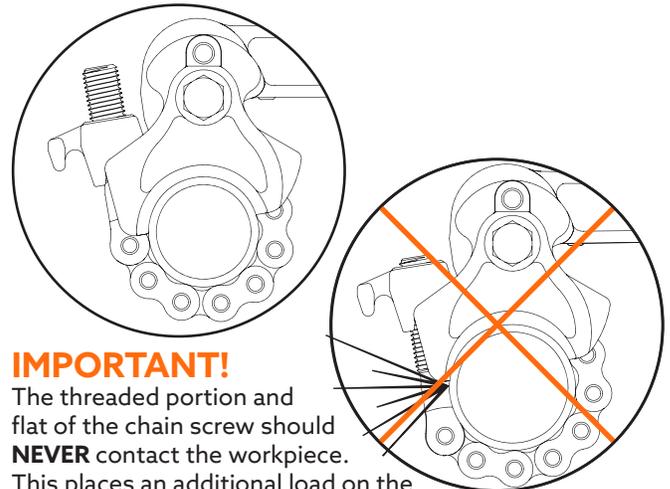
**PROPER CHAIN ADJUSTMENT for
PETOL™ FRICTION TONGS w/Chain**

CHAIN DETAIL



$$\text{ELONGATION (\%)} = \frac{\text{ACTUAL LENGTH}}{\text{ORIGINAL LENGTH}} \times 100$$

Nominal Chain Size	11	12	13 (131)	135	14	15 (151)	16 (161)	181	201
Pitch Length	.714	.809	.934	1.00	1.00	1.25	1.688	2.25	2.91



IMPORTANT!

The threaded portion and flat of the chain screw should **NEVER** contact the workpiece. This places an additional load on the chain screw which could result in breakage. Only the end radius of the chain screw should contact the workpiece, if at all. Such contact is corrected by adjustment of the chain screw nut.



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NOTES

PETOL™ GEARENCH Limited Warranty

WHAT IS COVERED

PETOL™ GEARENCH Tools are expressly warranted to you, the purchaser, to be free of defects in material and workmanship.

HOW LONG COVERAGE LASTS

This express warranty lasts for the lifetime of the PETOL GEARENCH tool. Warranty coverage ends when the tool becomes unusable for reasons other than defects in workmanship or material.

HOW CAN YOU GET WARRANTY SERVICE

To obtain the benefit of this warranty, contact a PETOL GEARENCH sales representative in Clifton, Texas.

PETOL GEARENCH • 4450 S. Hwy. 6 • P. O. Box 192 • Clifton, TX 76634

WHAT WILL WE DO TO CORRECT PROBLEMS

Warranted products will be repaired or replaced, at PETOL GEARENCH's option, and returned at no charge to you, the original purchaser; or, if after three attempts at repair or replacement during the warranty period, the product defect in material or workmanship persists, you can elect to receive a full refund of your original purchase price for the product.

WHAT IS NOT COVERED

Defects, failures or conditions that are due to normal wear and tear, abuse or misuse, are not covered by this limited warranty. In addition, this limited warranty is in lieu of all other warranties, express or implied, verbal or written. To the maximum extent allowed by law PETOL GEARENCH disclaims all implied warranties, including implied warranties of merchantability and/or fitness for a particular purpose. PETOL GEARENCH also specifically denies any liability for any incidental damages and/or consequential damages, including but not limited to property damage to property other than the product itself, loss of sales, profits, down time, costs or any other damages measurable in money, whether or not included in the foregoing enumeration.

Please be advised that some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you. This warranty gives you specific rights, and you may also have other rights, which vary, from state to state, province to province, or country to country.

ARE PERSONAL INJURIES COVERED

In the event you, someone working for you, or any other person sustain a personal injury as a result of using the PETOL GEARENCH tool, PETOL GEARENCH limits its potential liability for such a claim or injury to the fullest extent allowed by law, and disclaims and denies any liability for such personal injury.

Please be advised that some states do not allow the exclusion or limitation of liability for personal injuries, so the above limitation or exclusion may not apply to you, or the individual claiming injury.

NO OTHER EXPRESS WARRANTY APPLIES

This PETOL GEARENCH LIMITED WARRANTY is the sole and exclusive warranty, express or implied for PETOL GEARENCH products. No employee, agent, dealer or other person is authorized to alter, modify, expand or reduce the terms of this warranty or to make any other warranty on behalf of PETOL GEARENCH.

LAW APPLICABLE

All matters related to the sale and/or use of the PETOL GEARENCH tool that is the subject of this limited warranty, along with the construction and enforcement of the terms of this limited warranty itself, shall be subject to the substantive and procedural laws of the state of Texas, not the conflicts of laws provisions of Texas, but rather the laws of Texas themselves.

FORUM SELECTION CLAUSE

Any dispute arising out of the sale and/or use of the PETOL GEARENCH tool that is the subject of this limited warranty shall be presented in the form of a claim or lawsuit to the offices of PETOL GEARENCH in Clifton, Bosque County, Texas. No claim or suit may be brought against PETOL GEARENCH, arising out of the sale and/or use of the tool, or arising out of the terms of this warranty, except in such forum. Purchase and/or use of the PETOL GEARENCH tool makes you subject to the benefits and limitations of this limited warranty. Accordingly, any writ, judgment or other enforcement, obtained from a jurisdiction, county, parish, state or federal court or other country, other than from the forum identified above, shall be void and unenforceable against PETOL GEARENCH.

ARBITRATION CLAUSE

In the event of dispute or claim arises out of the sale and/or use of the PETOL GEARENCH tool that is the subject of this limited warranty, or arises out of the interpretation or enforcement of the terms and conditions of this limited warranty, such dispute shall be submitted to binding arbitration pursuant to the rules of the American Arbitration Association. If required to accomplish the purpose of this Arbitration clause, the purchaser hereby expressly waives any right to demand trial by jury.

COMPLETE AGREEMENT

This express limited warranty contains the entire agreement regarding express or implied warranties related to the PETOL GEARENCH tool that is the subject of it. No writing or language contained in the purchase order or any other document of the purchaser, or invoice of PETOL GEARENCH or any intermediate seller, shall be construed as modifying, in any way, the rights and liabilities contained in this limited warranty. PETOL GEARENCH expressly disclaims any obligations expressed in any customer purchase order or document that are contrary to the terms and limitations of this warranty.

SEVERABILITY

If any term or limitation contained in this limited warranty is deemed unenforceable by law, then that term shall be severed from the remaining portions of the limited warranty which shall remain enforceable.

All communications to PETOL GEARENCH regarding the use of the tool and any aspect of the sale of the tool or this limited warranty should be addressed to PETOL GEARENCH.

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