

Petol Surgrip Casing Tong

SCT2036

Data Book

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Form SCT2036 revision 01/11/11

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Petol SCT2036 Surgrip Casing Tong Description

The SCT2036 Petol Surgrip Casing Tong was designed for making up and breaking out large diameter casing. It is rated for operation on 18" to 38" diameters.

The tong is adjusted by exchanging belts to work different nominal sizes of casing.

The SCT2036 offers the following features:

A high strength aramid fiber belt with polyurethane covering to grip the pipe and reduce the weight dramatically as compared to chain or lug jaws.

The tong is designed such that in case of an overload, the belt would fracture and extend. The tong will stay connected to the casing and no fragments would be expelled from the tong.

A yoke plate is provided with mountings for pipe or coupling to allow the tong to be used on couplings if required without the need for a different belt.

A hanger attached to the tong handle to suspend the tong during operation with multiple mounting holes to achieve a proper balance point.

Warranty

What Is Covered

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 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 GEARENCH sales representative in Clifton, Texas.

GEARENCH · 4450 South Highway 6 · P.O. Box 192 · Clifton, TX 76634

What Will We Do To Correct Problems

Warranted products will be repaired or replaced, at 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 GEARENCH disclaims all implied warranties, including implied warranties of merchantability and/or fitness for a particular purpose. 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 GEARENCH tool, 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 GEARENCH LIMITED WARRANTY is the sole and exclusive warranty, express or implied for 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 GEARENCH.

Law Applicable

All matters related to the sale and/or use of the 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 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 GEARENCH in Clifton, Bosque County, Texas. No claim or suit may be brought against 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 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 that from the forum identified above, shall be void and unenforceable against GEARENCH.

Arbitration Clause

In the event of dispute or claim arises out of the sale and/or use of the 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 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 GEARENCH or any intermediate seller, shall be construed as modifying, in any way, the rights and liabilities contained in this limited warranty. 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 the term shall be severed from the remaining portions of the limited warranty which shall remain enforceable.

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

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Safe Practices and Procedures

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 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 National Association of Chain Manufacturers (NACM), 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.

Spinning and drill pipe chain, cathead chain, and the PETOL Connecting Link attachment are designed for the specific purpose for which the name indicates. Chains and attachments that are to be used for any other purpose should be selected in accordance with the recommendations of ASTM, NACM, Rigger's Handbook, and the commercial chain manufacturer's technical manuals.

Safety Sources and Publications

In the interest of Safety the following sources of Safety information is furnished:

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

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

International Safety Council
1121 Spring Lake Drive
Itasca, Illinois 60143-3201
(630) 285-1121

Responsibility of Distributors

IT IS THE RESPONSIBILITY OF THE PURCHASERS OF 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

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.

Tong and Belt Inspection

It is recommended that the tong be visually inspected on a daily basis for signs of damaged components. The belt should be visually inspected on a daily basis for indications of exposed cords or fractured cords. Belts with more than 6 exposed cords should be immediately removed from service. Belts with any single exposed cord reduced to 2/3 (67%) or less of the initial fiber cross-sectional area should be immediately removed from service. A belt with any cord which protrudes through the polyurethane covering, which indicates a fractured cord, should be removed from service immediately. Cord separation is allowable provided the fibers are not exposed beyond the limits stated above. The hanger bolts should be inspected on a daily basis.

It is recommended that the tong handle and jaw be removed and magnetic particle inspected, at a minimum, on an annual basis for indications of cracking. Local operational procedures may require more frequent inspection. Please refer to the appropriate section for inspection criteria and allowable repair procedures.

Overloading / Shock Loads / Side Loading

Damage to the tong is possible if the following conditions are present. Users are cautioned to be aware that these practices could result in premature breaking of the tong.

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.

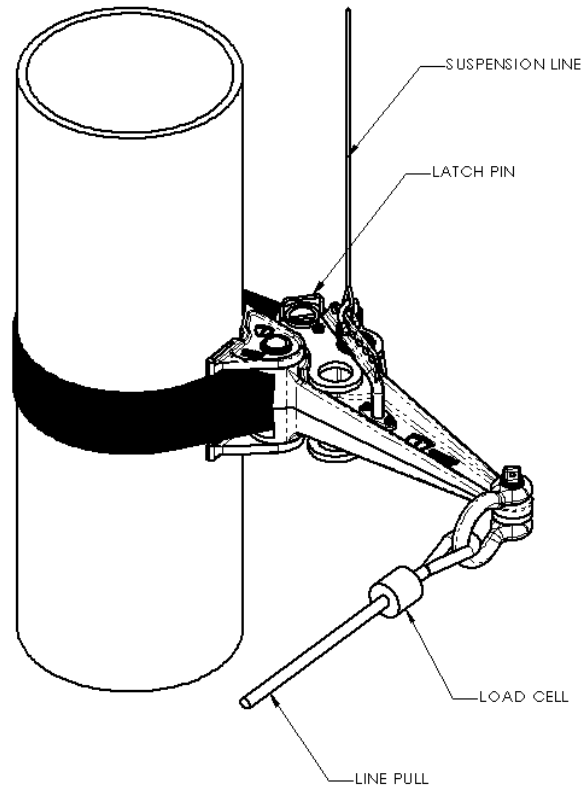
Side pull on the belt. Side pull can be caused by pulling or pushing on the tong in a direction that is not along a perpendicular plane, unlevelled mounting of the vise, inadequate support of the part being broken out, and improper seating of the part being broken out in the tong or vise. Improper seating will occur when the OD of the part is not consistent within the width of the tong or vise jaw.

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 only PETOL & TITAN replacement parts to ensure proper strength.

Operation

The typical application of one Surgrip Casing Tong is shown in the figure below. Normally an additional tong is used as a backup. The backup tong is not shown for clarity. The tong will exert torque in the direction shown. The tong will ratchet when moved in a direction opposite to the line pull. Ratcheting is used when the tong must be pulled more than once to completely makeup or breakout the connection.



Suspension

The tong should be suspended by the attached hanger. Use the appropriate hole in the hanger to obtain the best possible balance of the tong. Always use a suspension line of adequate capacity to safely hold up the tong during operation.

Torque capacity

The Surgrip Casing Tong is available with a standard duty belt for typical use and a heavy duty belt for the most demanding applications. Always verify which belt is being used to properly determine the capacity of the tong. The maximum working loads for both belts are shown in the tables below.

With standard duty belts (0.197 inch thick, 41 cords wide)

Diameter	Belt Part Number	Torque Arm Length (inches)	Maximum Torque (foot-pounds)	Maximum Line Pull (pounds)
18	SCTB2036-18	45.65	69,200	18,200
18 3/8	SCTB2036-1838	45.83	69,900	18,300
18 5/8	SCTB2036-1858	45.95	70,500	18,400
18 3/4	SCTB2036-1834	46.01	70,900	18,500
20	SCTB2036-20	46.62	73,400	18,900
22	SCTB2036-22	47.60	77,700	19,600
23 1/4	SCTB2036-2314	48.20	79,900	19,900
24	SCTB2036-24	48.56	81,300	20,100
26	SCTB2036-26	49.54	85,000	20,600
28	SCTB2036-28	50.51	88,800	21,100
29	SCTB2036-29	51.00	90,500	21,300
30	SCTB2036-30	51.48	92,200	21,500
32	SCTB2036-32	52.46	95,700	21,900
32 1/4	SCTB2036-3214	52.58	96,000	21,900
32 1/2	SCTB2036-3212	52.70	96,200	21,900
34	SCTB2036-34	53.43	98,800	22,200
34 1/2	SCTB2036-3412	53.67	99,700	22,300
36	SCTB2036-36	54.40	102,000	22,500
38	SCTB2036-38	55.38	105,200	22,800

With heavy duty belts (0.250 inch thick, 31 cords wide)

Diameter	Belt Part Number	Torque Arm Length (inches)	Maximum Torque (foot-pounds)	Maximum Line Pull (pounds)
18	SCTB2036-18H	45.65	105,400	27,700
18 3/8	SCTB2036-1838H	45.83	106,600	27,900
18 5/8	SCTB2036-1858H	45.95	107,600	28,100
20	SCTB2036-20H	46.62	111,900	28,800
22	SCTB2036-22H	47.60	118,200	29,800
24	SCTB2036-24H	48.56	123,800	30,600
26	SCTB2036-26H	49.54	129,600	31,400
28	SCTB2036-28H	50.51	135,100	32,100
30	SCTB2036-30H	51.48	140,300	32,700
32	SCTB2036-32H	52.46	145,600	33,300
32 1/4	SCTB2036-3214H	52.58	145,900	33,300
32 1/2	SCTB2036-3212H	52.70	146,700	33,400
36	SCTB2036-36H	54.40	155,000	34,200
38	SCTB2036-38H	55.38	159,700	34,600

WARNING: Under no circumstances should the maximum working load be exceeded. Always use a load cell or other calibrated indicating device to monitor the line pull on the tong to avoid an overload.

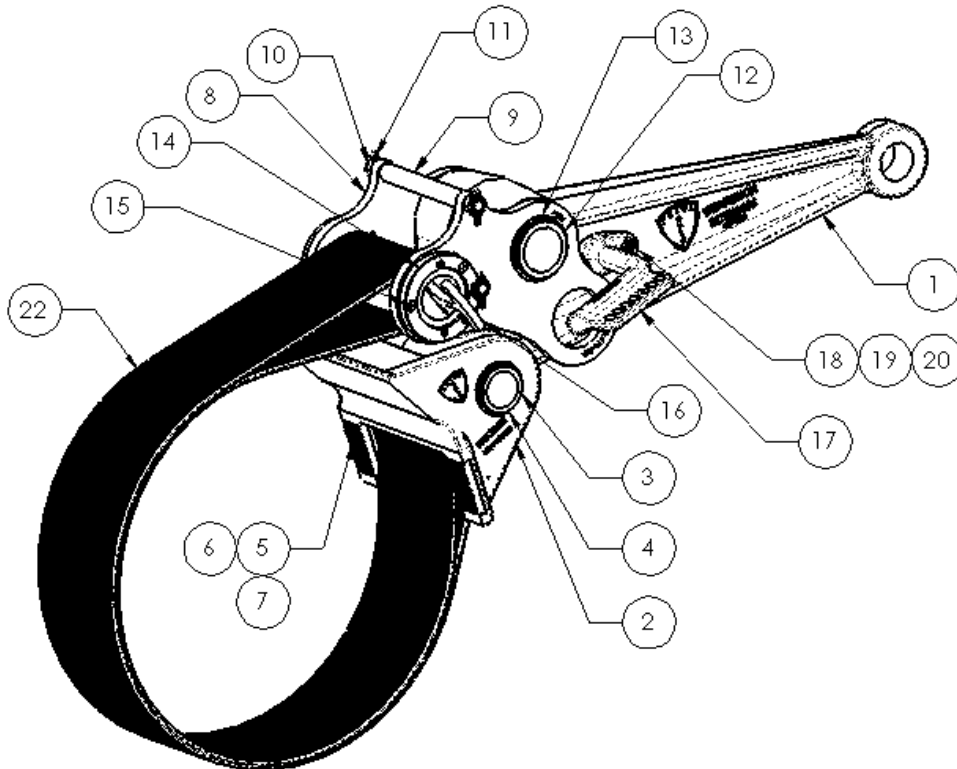
Use on couplings

The yoke plates attached to the handle have three holes. One hole is used to fix the belt to the yoke plates. One hole is marked "PIPE", when this hole is fixed to the handle, the tong will latch on the pipe for the appropriate belt. The third hole is marked "COUPLING", this hole will allow the tong to be latched onto a coupling with a diameter of one inch over the pipe diameter.

Parts List

The following drawings, diagrams, and parts lists describe all parts, which may be needed as replacement items.

All tong components are manufactured only by GEARENCH. DO NOT ATTEMPT TO SUBSTITUTE THESE COMPONENTS. The tong will not work properly unless these components are matched to the specific application. Consult our factory as your requirements change. Any non-GEARENCH substitutions of these components void all warranties and subject the user to assumption of liabilities resulting from subsequent use.



Parts List

Item	Qty.	Part Number	Description	Notes
1	1	SCTH2036	Handle	
2	1	SCTJ2036	Jaw	
3	1	HP403	Jaw-handle pin	
4	2	HXSR300	Spiral retaining ring	Smalley WSM-300 (or equal)
5	2	HI09D	Diamond point insert	
6	2	HP904	Insert key	
7	2	HS21	Insert key spring	
8	2	SCTY2036-1	Yoke plate	
9	2	SCTY2036-2	Yoke grip	
10	4	HXN057	Slotted nut	3/4-16UNF
11	4	HXC003	Cotter pin	5/32 x 1 3/4
12	1	HP387	Yoke-handle pin	
13	2	HXSR362	Spiral retaining ring	Smalley WSM-362 (or equal)
14	2	SCTY2036-3	Locking cap	
15	6	HXS011	Countersunk screw	5/16-18UNC x 1-1/4
16	1	HP388	Latch pin	
17	1	HH18	Hanger	
18	2	HXS047	Hex bolt	1/2-20UNF x 2 gr. 5
19	2	HXN062	Slotted nut	1/2-20UNF
20	2	HXC008	Cotter pin	1/8 x 1 1/4
21	1	HXL001	Lanyard	Not shown
22	1	-----	Belt	As required (see page 9)

Wear Limits

The following table indicates limiting diameters on the components of the Surgrip Casing Tong. When localized wear is beyond any one of the limits indicated, the component should be replaced.

Part Number	Description	Location	Limit diameter
HP403	Jaw – handle pin	Pin body	2.970 (min)
HP387	Yoke – handle pin	Pin body	3.595 (min)
HP388	Belt – yoke pin	Pin body	3.595 (min)
SCTH2036	Handle	Jaw pin hole	3.030 (max)
SCTH2036	Handle	Yoke pin hole	3.655 (max)
SCTH2036	Handle	Load loop	2.625 (max)
SCTJ2036	Jaw	Handle pin hole	3.030 (max)
SCTY2036-1	Yoke plate	All holes	3.655 (max)

Material Qualifications

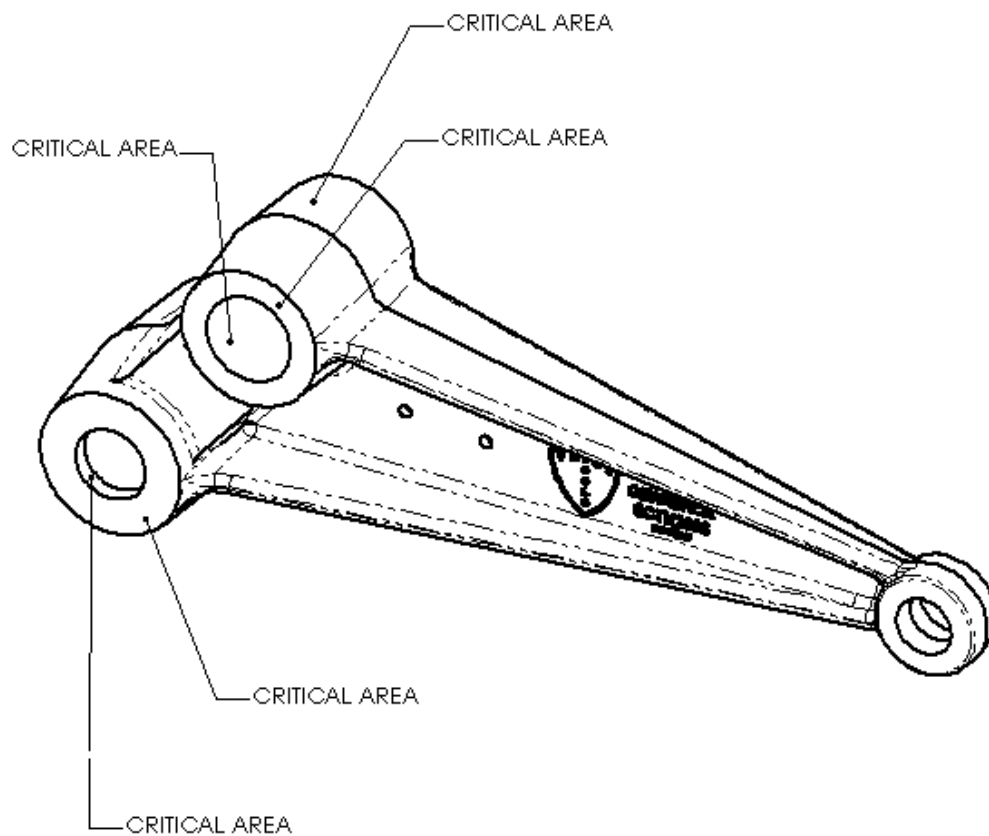
The following table is a list of the materials and grades used in the manufacture of the SCT2036 Surgrip Casing Tong.

Note: Yield and tensile strengths are post heat treat. Parts are heat treated after machining.

Part Number	Description	Material	Yield Strength (min)	Tensile Strength (min)	Impact @-4°F (min)	Reduction of Area (min)
SCTH2036	Handle	AISI 4318	110 ksi	120 ksi	31.0 ft-lb	25 %
SCTJ2036	Jaw	AISI 4318	110 ksi	120 ksi	31.0 ft-lb	25 %
HP403	Pin	AISI 4140	165 ksi	180 ksi	N/A	N/A
HI09D	Insert	AISI M2	N/A	N/A	N/A	N/A
SCTY2036-1	Yoke plate	AISI 4340	165 ksi	178 ksi	N/A	N/A
SCTY2036-2	Yoke grip	AISI 1018	N/A	N/A	N/A	N/A
HP387	Pin	AISI 4140	165 ksi	180 ksi	N/A	N/A
HP388	Pin	AISI 4140	165 ksi	180 ksi	N/A	N/A
HH18	Hanger	ASTM A148 Gr. 90-60	60 ksi	90 ksi	N/A	N/A
SCTB2036	Belt	Aramid- Polyurethane Composite	N/A	N/A	N/A	N/A

Non-Destructive Evaluation

The figure below indicates the critical areas of the tong handle. A critical area is defined as an area in which no unrepaired crack indications are permitted and in which no major weld repairs are permitted. A weld repair shall be considered minor when the depth of the cavity does not exceed 30% of the actual wall thickness or 1 inch, whichever is smaller, or when the extent of the cavity does not exceed approximately 10 square inches. Major weld repairs must be performed by Gearencb or an approved repair center using appropriate procedures followed by full heat treatment and load testing. There are no critical areas on the jaw that meet these criteria.



Weld Repairs

Scope:

This procedure is to be followed for minor repairs of crack indications in heat treated alloy steels. A weld repair shall be considered minor when the depth of the cavity does not exceed 30% of the actual wall thickness or 1 inch, whichever is smaller, or when the extent of the cavity does not exceed approximately 10 square inches. Major weld repairs must be performed by Gearench or an approved repair center using appropriate procedures followed by full heat treatment and load testing.

Application:

This procedure applies to steel castings, forgings and, wrought with carbon content between 0.15% and 0.31%.

Weld preparation:

The crack indication is to be removed by carbon arc gouging, grinding, or machining until all indication is removed. Magnetic particle inspection shall be used to verify that the crack indication has been removed.

Filler material and process:

Repairs made with the FCAW process shall use a filler material of class E120T5-K4 or equivalent with CO₂ shielding gas. Repairs made with the SMAW process shall use a filler material of type E-12018-M. All welding is to be performed by a qualified welder.

Preheat:

Preheat the weld area to 300°F minimum.

Interpass temperature:

The interpass temperature is to be 600°F maximum. All weld slag to be removed prior to application of additional layers by chipping, grinding or wire brushing. Do not peen the weld repair.

Post weld heat treatment:

Do not allow weld to cool below 300°F before stress relief. Post heat immediately after welding to 1010 - 1040°F for 1 hour per inch of thickness, 2 hours minimum at temperature. Water quench after stress relief.

Weld blending and inspection:

The weld is to be ground flush with the adjacent parent material. The weld is to be inspected by magnetic particle to verify that the weld area is free of all crack indications.



DET NORSKE VERITAS

DESIGN VERIFICATION REPORT
 (Independent Review Certificate)

MANUFACTURER : **GEARENCH**
 LOCATION : Clifton, Texas 76634
 SALES ORDER NO. : 4570 (to DNV)
 DNV FILE NO. : 410-3-5430
 REGULATORY BODY : Unknown

This is to certify that the design of:

Petol Surgrip Casing Tong Assembly, Type SCT2036

has been reviewed and found to comply with:

- Offshore Standard DNV-OS-E101 'DRILLING PLANT', October 2000

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Certificates

SCT2036.doc Operating Manual Revisions and Approval

<u>Revision</u>	<u>Description</u>
03/15/03	Original Document
05/14/03	Added 18, 18-3/8, 18-5/8, and 38 inch diameters. Revised torque ratings
05/30/03	Added DNV certificates, Revised torque ratings
04/01/04	Changed warranty from lifetime to one year. Added cord separation to belt inspection
09/27/04	Revised weld repair procedure.
04/29/05	Revised warranty. Updated safety sources. Added 34-1/2 belt.
04/24/06	Added Declaration of conformity. Changed nuts to slotted nuts with cotter pins. Added lanyard.
01/25/07	Added locking cap and screws. Added scanned WPS and PQR for weld repair.
06/16/08	Added note to material qualification table. Removed cadmium plating on pins. Added 18-3/4, 32-1/4, 32-1/2, and 34 inch diameters (standard). Added 32, 32-1/4, and 32-1/2 inch diameters (heavy duty).
07/10/08	Changed jaw pin from HP386 to HP403. Added wear limits table.
05/13/09	Added 29, 32 inch diameters (standard). Added 18-3/4, 29, 34, 34-1/2 inch diameters (heavy duty).
06/05/09	Updated material qualifications table for jaw and handle. Revised weld repair procedure. Removed weld procedure qualification.
04/15/10	Removed declaration of conformity
04/23/10	Revised ratings tables. Added 23-1/4 standard duty belt
01/11/11	Revised belt inspection criteria. Revised material qualifications.

Reviewed and Approved by:

Sales Manager: _____

QA/Mfg. Manager: _____

Chief Engineer: _____