



HT-Tong

User's Manual

pn 50006190

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General information

How to use this manual

This manual is divided into 9 sections. Each page within each section is marked with a black tab that lines up with the thumb nail index tabs for each section. You can quickly find each section without looking through a full table of contents. Use the symbols printed at the top corner of each page as a quick reference system. Each section uses a different symbol.

When applicable, each section includes:

1. A table of contents, or an illustrated view index showing:
 - ❑ Major assemblies, system or operations
 - ❑ Page references to descriptions in text
2. Disassembly / assembly information and tools
3. Inspection information
4. Testing / trouble shooting information
5. Repair information
6. Adjustment information
7. Torque values

Special information

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual may contain warnings about procedures which could damage equipment, make it unsafe, or cause PERSONAL INJURY. Please understand that these warnings cannot cover all conceivable ways in which service (whether or not recommended by Varco) might be done, or the possible hazardous consequences of each conceivable ways. Anyone using service procedures or tools, whether or not recommended by Varco Systems, must be thoroughly satisfied that neither personal safety nor equipment safety will be jeopardized.

All information contained in this manual is based upon the latest product information available at any time of printing. We reserve the right to make changes at any time without notice.

Intended audience

This manual is intended for use by field engineering, installation, operation, and repair personnel. Every effort has been made to ensure the accuracy of the information contained herein. Varco® 2004, Varco LP, will not be held liable for errors in this material, or for consequences arising from misuse of this material.

Conventions

Notes, Cautions, and Warnings

Notes, cautions, and warnings provide readers with additional information, and to advise the reader to take specific action to protect personnel from potential injury or lethal conditions. They may also inform the reader of actions necessary to prevent equipment damage. Please pay close attention to these advisories.



Note:



The note symbol indicates that additional information is provided about the current topics.

Caution:



The caution symbol indicates that potential damage to equipment or injury to personnel exists. Follow instructions explicitly. Extreme care should be taken when performing operations or procedures preceded by this caution symbol.

Warning:



The warning symbol indicates a definite risk of equipment damage or danger to personnel. Failure to observe and follow proper procedures could result in serious or fatal injury to personnel, significant property loss, or significant equipment damage.

Illustrations

Illustrations (figures) provide a graphical representation of equipment components or screen snapshots for use in identifying parts or establishing nomenclature, and may or may not be drawn to scale.

For component information specific to your rig configuration, see the technical drawings included with your Varco documentation.

Safety Requirements

Varco equipment is installed and operated in a controlled drilling rig environment involving hazardous situations. Proper maintenance is important for safe and reliable operation. Procedures outlined in Varco manuals are the recommended methods of performing operations and maintenance.



CAUTION: *To avoid injury to personnel or equipment damage, carefully observe requirements outlined in this section.*

General System Safety Practices

The equipment discussed in this manual may require or contain one or more utilities, such as electrical, hydraulic, pneumatic, or cooling water.



CAUTION: Read and follow the guidelines below before installing equipment or performing maintenance to avoid endangering exposed persons or damaging equipment.

- ❑ Isolate energy sources prior to beginning work.
- ❑ Avoid performing maintenance or repairs while the equipment is in operation.
- ❑ Wear proper protective equipment during equipment installation, maintenance or repair.

Personnel Training

All personnel performing installation, operations, repair, or maintenance procedures on the equipment, or those in the vicinity of the equipment, should be trained on rig safety, tool operation, and maintenance to ensure their safety.



CAUTION: Personnel should wear protective gear during installation, maintenance, and certain operations.

Contact the Varco Drilling Equipment training department for more information about equipment operation and maintenance training.

Recommended Tools

Service operations may require the use of tools designed specifically for the purpose described. Varco recommends that only those tools specified be used when stated. Ensure that personnel and equipment safety are not jeopardized when following service procedures or using tools not specifically recommended by Varco.

Replacing Components

- ❑ Verify that all components (such as cables, hoses, etc.) are tagged and labeled during assembly and disassembly of equipment to ensure correct installation.
- ❑ Replace failed or damaged components with Varco certified parts. Failure to do so could result in equipment damage or injury to personnel.



Routine Maintenance

Equipment must be maintained on a routine basis. See this manual for maintenance recommendations.



CAUTION: Failure to conduct routine maintenance could result in equipment damage or injury to personnel.

Proper Use of Equipment

Varco equipment is designed for specific functions and applications, and should be used only for its intended purpose.

Identification numbers

You will find the serial number of the tool stamped into the lever.

Warning plates



WARNING: Warning plates must be present on the HT-Tong. Do not remove the labels. When a label or warning plate has disappeared, it must be replaced.

WARNING

Dies and inserts could be hazardous if improperly handled, installed or removed. Such misuse could cause serious injury to personnel. Wear eye protection at all times when installing or removing. Wear gloves when handling.

Warning plate p/n # 52319

CAUTION: Manual tongs are critically loaded tools when used to torque tubular goods. Line pull on lever should be at 90 degrees (a right angle) to axis of lever. The full length of the tong die must be engaged with tool joint when making up or breaking out connections. Running tong dies on irregular surfaces of tool joints, such as hard banding, must be avoided. Torque on tongs should not exceed manufacturer's rating at any time.

WARNING: Only Varco BJ parts should be used. Manual tongs are cast alloy heat treated steel and should not be welded in the field. Improper welding can cause cracks and brittleness in heat affected areas which can result in drastic weakening of the part and possible failure. Repairs involving welding and/or machining should be performed only by an authorized Varco BJ repair facility. Using a manual tong that has been improperly welded or repaired can cause failure which may result in serious bodily injury or property damage.

Warning plate p/n # 201350

Lifting

The lifting procedures should carefully be observed and carried out according to the manual.

HT-Tong restrictions

The HT-Tong is designed to be used as a tong for making up and breaking out tubular connections, and must not be used for any other purpose.

Limited warranty

The warranty will be void if the HT-Tong or parts were either:

- ❑ unauthorized modified, repaired or serviced
- ❑ replacement parts not manufactured by Varco were utilized
- ❑ not properly stored or maintained

Design standard

The HT-Tong complies with API-7K and with the Directive 98/37/EC (Machinery Directive)







General specifications

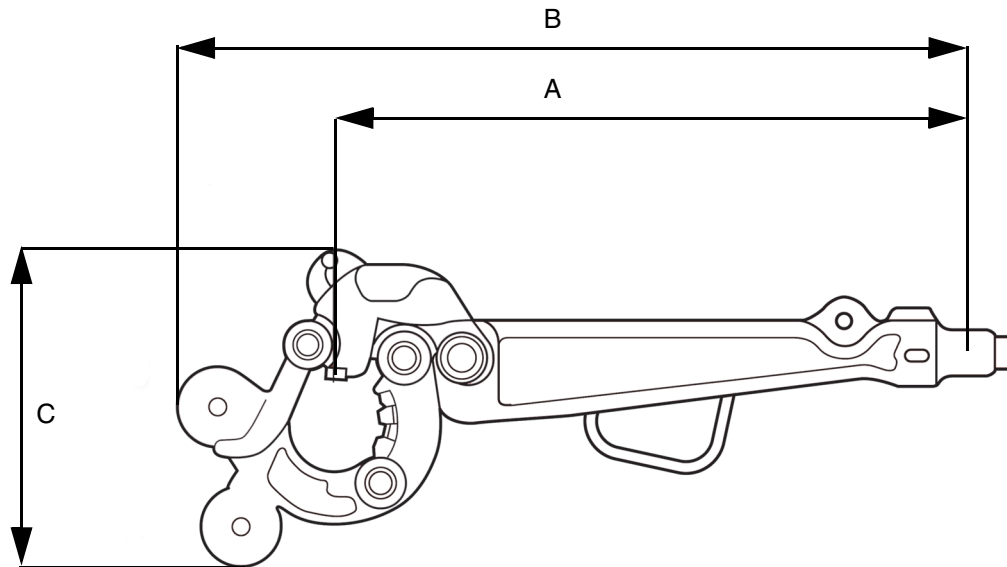
Specifications, requirements & sizes

General description

The HT-Tong is a tool designed for making up and breaking connections of tubular goods, from light tubing to heavy wall pipe and drill collars. There are 7 types, varying in torque capacity from 10,000 to 200,000 Lbs / ft (13,560 - 271,000Nm). Covered sizes from 2 ³/₈" to 17 ", or 36" (HT50 with extended reach).

Interchangeable lug jaw design permits each tong to handle different sizes of pipe. By installing hinge jaws (available for some models), bigger pipe sizes can be handled.

The tongs can be assembled for either making-up or break-out by removing the hanger and turning the complete HT Tong over.



Tong type	Size range lever			Dimensions									
				A max		A min		B max		B min		C	
	inch	mm	type	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
HT14	2 3⁄8 -7	60.3 - 177.8	Standard	27	685	24 3⁄4	628	33	838	30 3⁄4	181	14	355
HT35	2 3⁄8 -10 3⁄4	60.3 - 273.1	Long lever	47 1⁄8	1196	4 5⁄8	1133	57 1⁄8	1450	54 5⁄8	1387	18	457
			Short lever	36 3⁄16	919	33 11⁄16	885	46 11⁄16	1173	43 11⁄16	1109	18	457
HT55	3 1⁄2 -13 3⁄8	88.9 - 339.7	Long lever	55 3⁄16	1401	52 1⁄16	1322	66 7⁄16	1687	59 9⁄16	1512	23 1⁄4	590
			Short lever	49 3⁄16	1249	46 1⁄16	1169	60 7⁄16	1535	53 9⁄16	1360	23 1⁄4	590
HT65	3 1⁄2 -17	88.9 - 431.8	Standard	59 9⁄16	1436	50 15⁄16	1293	72 9⁄16	1843	72 9⁄16	1519	35 3⁄4	908
HT100	4-17	101.6 - 431.8	Standard	60	1524	53 7⁄8	1368	78	1981	78	1641	34 1⁄8	866
	7 1⁄2 -12	190.5 - 304.8	Standard	62 1⁄2	1597	60	1524	80	2032	76 3⁄8	1940	31 3⁄4	806
HT200	8-16	203.2 - 406	Standard	62 3⁄8	1584	57 11⁄16	1465	78	1981	68	1727	38	965
Casing head assembly only													
HT50	13 3⁄8 - 36	339.7 - 914.4	Lever to be used with HT55 tong and hanger										



Part numbers, ratings & weights

Part number	Type	Lug jaw pn#	Lug jaw size (inch)	Rating (ft-lbs)	Part number	Type	Lug jaw pn#	Lug jaw size (inch)	Rating (ft-lbs)
200500	HT-200	200506-1	8 - 9 $\frac{5}{8}$ "	200,000	Casing head assemblies only	HT-50	200580-8	24 - 25 $\frac{1}{2}$ "	50,000
	HT-200	200507-1*	9 - 11 $\frac{1}{8}$ "	175,000		HT-50	200600-1	25 $\frac{1}{2}$ - 27"	50,000
	HT-200	200508-1**	11 - 12 $\frac{1}{2}$ "	200,000		HT-50	200600-2	27 - 28 $\frac{1}{2}$ "	50,000
200071	HT-100	200663-1	4 - 8 $\frac{1}{2}$ "	100,000		HT-50	200600-3	28 $\frac{1}{2}$ - 30"	50,000
	HT-100	200664	8 $\frac{1}{2}$ - 12"	100,000		HT-50	200600-4	30 - 31 $\frac{5}{8}$ "	50,000
	HT-100	200665	12 - 15"	75,000		HT-50	200600-5	31 $\frac{1}{2}$ - 33"	50,000
	HT-100	200666	15 $\frac{3}{4}$ "	60,000		HT-50	200600-6	33 - 34 $\frac{1}{2}$ "	50,000
	HT-100	200667	16 - 17"	60,000		HT-50	200600-7	34 $\frac{1}{2}$ - 36"	50,000
200540	HT-65	200546-1	3 $\frac{1}{2}$ - 8 $\frac{1}{4}$ "	65,000	200620-1 (short lever 7-5/8 x 10-3/4) 200620-2 (long lever 2-3/8 x 7) 200620-3 (short lever 2-3/8 x 7)	HT-35	200076-1	2 $\frac{3}{8}$ - 3.668"	15,000
	HT-65	200547-1	8 - 11 $\frac{1}{4}$ "	65,000		HT-35	200077-1	2 $\frac{7}{8}$ - 4 $\frac{1}{4}$ "	15,000
	HT-65	200548-1	11 $\frac{3}{4}$ - 14 $\frac{3}{8}$ "	40,000		HT-35	200078-1	3 $\frac{1}{2}$ - 5 $\frac{1}{4}$ "	25,000
	HT-65	200549-1	16 - 17"	40,000		HT-35	200079-1	5 $\frac{1}{4}$ - 7"	33,500
200560 (long lever) 200560-1 (short lever)	HT-55	200083-1	3 $\frac{1}{2}$ - 5"	35,000		HT-35	200080-2***	7 - 8 $\frac{5}{8}$ "	25,000
	HT-55	200084-1	5 - 6 $\frac{3}{4}$ "	55,000		HT-35	200081-2***	9 $\frac{5}{8}$ - 10 $\frac{3}{4}$ "	32,000
	HT-55	200085-1	6 $\frac{5}{8}$ - 9"	55,000	200640	HT-14	200645-1	2 $\frac{3}{8}$ - 3 $\frac{1}{2}$ "	10,000
	HT-55	200086-1	9 - 10 $\frac{3}{4}$ "	40,000		HT-14	200646-1	3 $\frac{1}{2}$ - 5"	10,000
	HT-55	200087-1	11 $\frac{3}{4}$ "	30,000		HT-14	200647-1	4 $\frac{3}{4}$ - 6 $\frac{1}{4}$ "	14,000
	HT-55	200088-1	12"	30,000		HT-14	200648-1	5 $\frac{3}{4}$ - 7"	12,000
	HT-55	200089-1	12 $\frac{3}{4}$ - 13"	30,000					
	HT-55	200090-1	13 $\frac{3}{8}$ "	30,000					
Casing head assemblies only	HT-50	200580-1	13 $\frac{3}{8}$ - 14 $\frac{1}{2}$ "	50,000	Appr. Weights (1 tong ass'y only) HT-14 125 to 145 lbs (57 to 66 kg) HT-35 285 to 330 lbs (130 to 150 kg) HT-55 425 to 465 lbs (192 to 210 kg) HT-65 500 to 590 lbs (226 to 267 kg) HT-100 665 to 760 lbs (300 to 335 kg) HT-200 1140 to 1200 lbs (517 to 545 kg)				
	HT-50	200580-2	14 $\frac{1}{2}$ - 16"	50,000					
	HT-50	200580-3	16 - 17 $\frac{1}{2}$ "	50,000					
	HT-50	200580-4	17 $\frac{1}{2}$ - 19"	50,000					
	HT-50	200580-5	19 - 20"	50,000					
	HT-50	200580-6	20 - 21 $\frac{1}{2}$ "	50,000					
	HT-50	200580-7	21 $\frac{1}{2}$ - 23"	50,000					

* = 200507-1 is also for size range 13" - 14 $\frac{3}{4}$ " with hinge jaw (pn 200505-1)

** = 200508-1 is also for size range 14 $\frac{3}{4}$ " - 16" with hinge jaw (pn 200505-1)

*** = 200080-2 + 200081-2 is hinge + lug jaw assembly



Lubrication and maintenance



CAUTION: Practice safety in all performances of operation and maintenance and use approved safety methods, materials and tools. Keep hands away from any pinch point or undesignated areas; use provided handles for operating manual tongs.

Recommended General Purpose EP grease

Lube code description	Above -20° C	Below -20° C
Castrol	MP grease	n/a
Chevron	Avi-Motive	Avi-Motive W
Exxon	Lidok EP2	Lidok EP1
Gulf	Gulfcrown EP2	Gulfcrown EP1
Mobil	Mobilux EP2	Mobilux EP1
Shell	Alvania EP2	Alvania EP1
Texaco	Multifak EP2	Multifak EP1
Union	Unoba EP2	Unoba EP1

Inspection

Daily inspection schedule (when HT-Tong is in use)

Daily inspection, visual inspect and repair when needed. Carry out maintenance as stated.

1. Check exterior for worn and damaged parts
2. Check for loose and missing parts
3. Check all pins are properly locked
4. Check for worn hinge pins and hinge pin bores by trying to vertically move jaws from lever
5. Check for proper latch engagement on lugs of lug jaw. The latch must not contact any part of the tong when latched and under torque except the lug on lug jaw.
6. Check that all bolts and nuts are secured by lock wire, lock tabs or cotter pins
7. Brush dies clean and check for wear.
8. Grease hinge pins through grease nipples.

6 Monthly inspection schedule (when HT-Tong is in use)

Carry out Magnetic Particle Inspection.

1. Clean the surface from oil, grease, sand, paint and loose rust which may interfere with satisfactory inspection.
2. Carry out MPI according to the continuous method.
3. Examinations must be performed with sufficient overlap to ensure 100% coverage of the area or part under inspection.
4. Carry out MPI according to ASTM E709 and compare defects to ASTM E125 reference photographs.



Magnetic Particle Inspection

Acceptance criteria for MPI

See also the critical area drawings in chapter “Drawings”.

Type	Discontinuity descriptions	Max. Permitted degree	
		Critical areas	Non critical areas
I	Hot tears, cracks	None	Degree 1
II	Shrinkage	Degree 2	Degree 2
III	Inclusions	Degree 2	Degree 2
IV	Internal chills and chaplets	Degree 1	Degree 1
V	Porosity	Degree 1	Degree 2



NOTE: Only a Varco BJ authorized repair facility is allowed to remanufacture HT tongs which have indications outside the acceptance criteria.

Tests

Torque test

The HT tongs are torque tested after manufacture or repair to 1.5 times their torque rating.



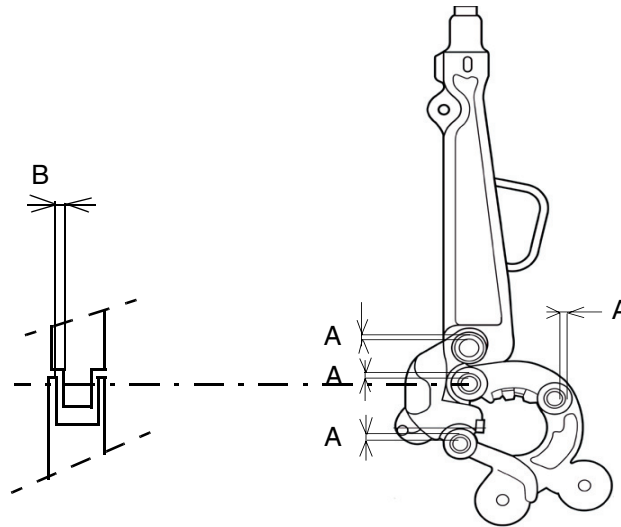
WARNING: HT tongs which have experienced wear or are found to have cracks must be replaced or repaired by a Varco BJ authorized repair facility.



WARNING: Only original Varco BJ parts must be used. Manual tongs are produced from cast alloy heat treated steel and must not be welded in the field. Improper welding can cause cracks and brittleness in heat-affected areas which can result in dramatic weakening of the part and possible failure. Repairs involving welding and/or machining should be performed only by an Varco BJ authorized repair facility. Using a HT tong that has been improperly welded or repaired is dangerous.



Maximum allowable wear to maintain 100% torque rating



Tong type	Dimension A	Dimension B
	Maximum clearance (inch)	Maximum clearance (inch)
HT 200	0.045	0.035
HT 100	0.035	0.035
HT 65	0.035	0.035
HT 55	0.035	0.035
HT 35	0.030	0.035
HT 14	0.030	0.035
HT 50	0.025	0.035

Shop repairs

Changing dies/inserts

Procedure

1. Remove the retaining pins by taking out the cotter pin



CAUTION: Wear eye protection when removing or replacing inserts to protect against chip fragments

2. A tong die slot conditioner and die driver can be used to drive the dies out and recondition the die slots.
3. After replacing the inserts, the retaining pins with the cotter pins shall be reinstalled.





Installation and commissioning

General procedure

1. To install the HT Tong, the tong support line should be connected to a suspension ring.
2. Install the right lug and/or hinge jaw, to cover the correct size range. Ensure that the tong is capable of handling the torque required. See tables in chapter 2.
3. For easy tong operation, freely suspend tong up by the tong support line as close to the center of the rotary table as is conveniently possible. This reduces the arc of swing and the distance that the tong must travel to the table.
4. With jaws open and free from pipe, balance the tong. Carry this out from lever to latch and from side to side by adjusting the hanger adjustment bolt / screw, and / or the balancing screw. For best operation the long jaw should be about 1" lower than the short jaw.
5. The pull line must than be connected to the end of the lever. A back up line, sized to safely withstand the tong torque rating, should in all cases be connected to secure safe operation.
6. A Varco BJ tong pull back can be installed which automatically re-positions the tong for another take-up.





Operations



WARNING: Keep hands away from any pinch point or undesignated areas; use the handles provided for operating the HT tongs.



WARNING: Personnel must stay out of working area of tong



WARNING: Ensure snub-line-saver with safety line is in place

Procedure

With the HT Tong positioned and balanced properly, follow the steps outlined below;

1. Grasp safety handle on lug jaw and safety handle on hanger and move the tong into position around the pipe
2. Press the short jaw firmly around and against the pipe
3. Pushing both safety handles simultaneously, the HT Tong will latch automatically
4. Pull both safety handles to break-over the tong and grip the pipe



WARNING: HT Tongs are critically loaded tools when torquing up tubular goods. Line pull on lever should be at 90° from axis of lever. Torque on the tong must not exceed manufacturers rating at any time. To avoid injury in case the tong slips, releases or fails, rig personnel must be out of tong's travel area on the rig floor.

The HT tong can be assembled for either making-up or break-out by removing the hanger and turning the complete HT Tong over.



Changing size components

Changing dies/inserts

Procedure

1. Remove the retaining pins by taking out the cotter pin



CAUTION: Wear eye protection when removing or replacing inserts to protect against chip fragments

2. A “nifty” tong die slot conditioner and die driver can be used to drive the dies out and recondition the die slots.
3. After replacing the inserts, the retaining pins with the cotter pins shall be reinstalled.

Lug jaw removal for changing sizes

Procedure

1. Remove the hinge pin by unscrewing the hinge pin nut and unlocking pin.
2. Take out the lug jaw and replace by correct sized lug jaw needed for the job
3. Relock the pin



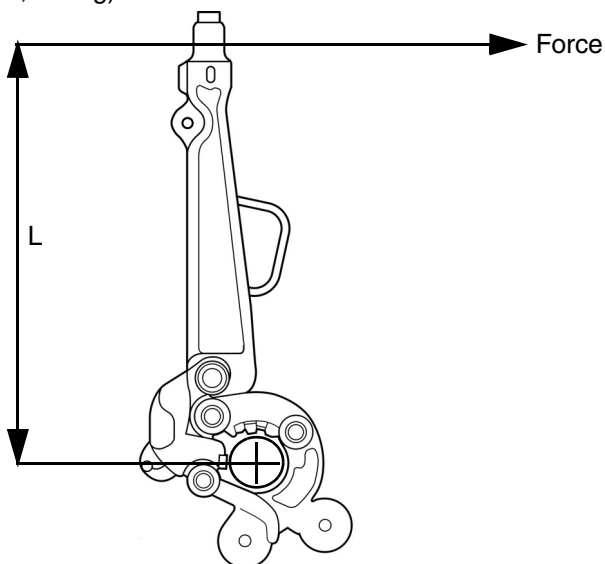
Applying make up torque

Torque is the measurement of the amount of twist applied to two pipes as they are screwed together. The product of the tong arm length L and the line pull F is the measurement of torque, when the tong-arm and the pulling line are at a (90°) angle.

Example:

$7 \frac{3}{4}$ " DC with $6 \frac{5}{8}$ " reg. connection has a recommended make-up torque of 58,500 Ft Lbs (79,315 Nm). The HT tong capable of supplying this torque is the HT 65 tong. The length of the tong arm is appr. 4.25 Ft (1.29 m). The force to be applied on the pull line will be:

$F = \text{make-up torque} / \text{arm length} = 58,500 / 4.25 = \text{appr. } 13,765 \text{ Lbs. } (79,315 / 1.29 = 61,485 \text{ N} = \text{appr. } 6,000 \text{ kg})$



	Appr. Dimensions L max		Appr. Dimensions L min	
	Ft	m	Ft	m
HT14	2.25	0.69	2.05	0.63
HT35 short lever	3	0.92	2.8	0.85
HT35 long lever	3.95	1.2	3.72	1.13
HT50	Depending on casing head assembly			
HT55 short lever	4.6	1.4	4.25	1.29
HT55 long lever	4.1	1.25	3.85	1.17
HT65	4.95	1.45	4.25	1.29
HT100	5	1.53	4.5	1.37
HT200	5.2	1.59	6.5	2



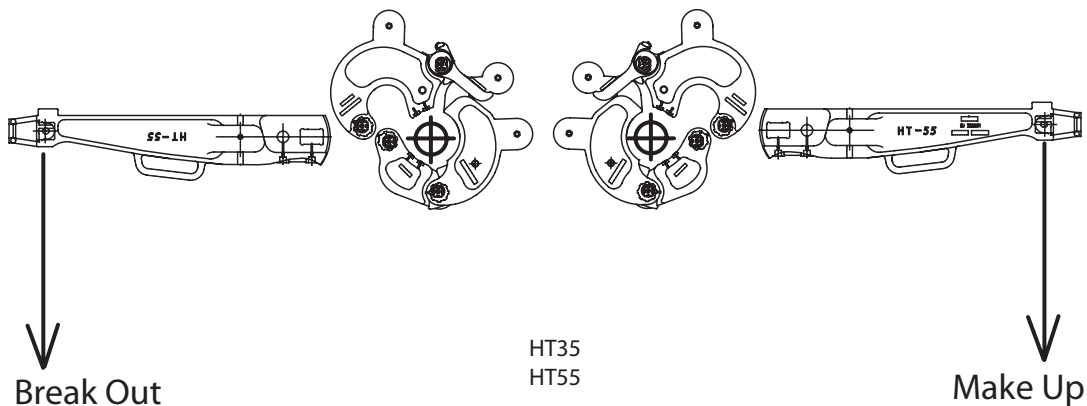
NOTE: A line-pull measuring device should be used in making-up connections. It is important that the line-pull is measured when the line is at the right 90° angle relative to the tong handle. When applying line-pull to the tong, apply a long steady pull rather than jerking the line.



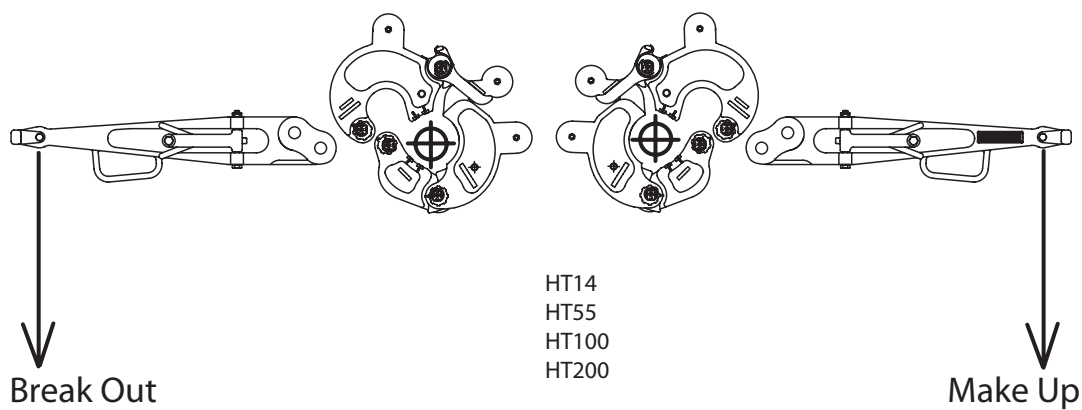
Direction of pulling



NOTE: In below figure the tongs are NOT the back up tongs, but the ones being used for MU/BO. Below images show TOPVIEWS



5





Assembly and dis-assembly

Head assembly procedure

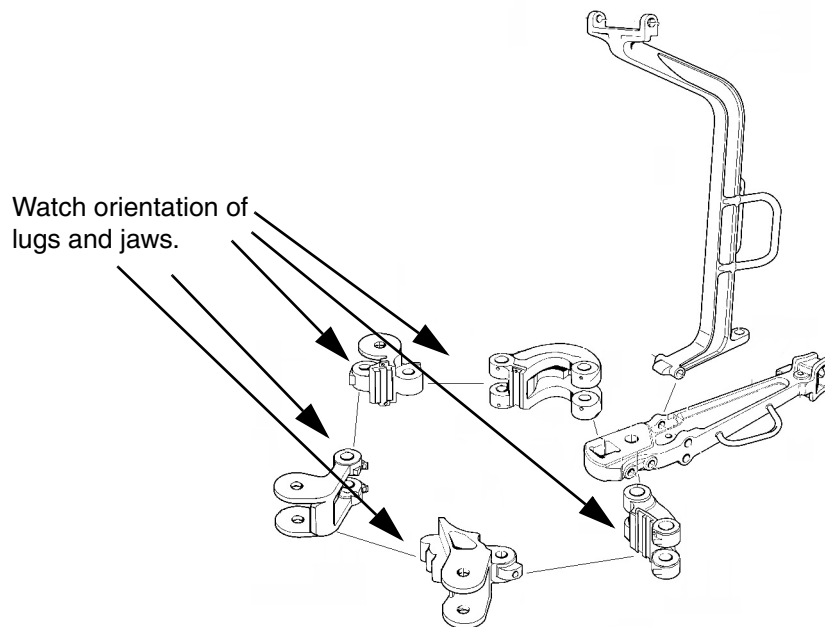
Procedure

1. Disconnect the head assembly from the lever by removing the hinge pins and lock
2. Disconnect the latch by removing the hinge pin . This allows removal of the latch spring and latch spring plunger.
3. For HT 55 and HT35 tongs remove the latch jaw by removing the hinge pin. This will allow removal of the adjustable stop assembly and booster plunger assembly.
4. Remove all other lug, hinge, short and long jaws by taking out the various hinge pins.
5. Complete disassembly of the various jaws can be done by removing all nuts and bolts.

Disassembly of the hanger and lever assembly

Procedure

1. Disconnect the hanger assembly from the lever by removing the hanger bolt and nut
2. Complete disassembly of the hanger and lever can be carried out by removing all nuts and bolts.



CAUTION: Ensure that the orientation of the parts is correct while assembling the HT-tong. For proper order of installation of parts, see exploded views in chapter "Drawings"



Trouble shooting

When problems cannot be solved, contact an authorized Varco repair facility

Overview possible problems

Problem	Possible cause	Possible solution
Tong does not bite	Worn die	Replace die
	Tong not correctly dressed for size	Check manual for correct dressing for size
	Tong assembled wrongly	Reassemble tong properly
Tong does not hang level	Balancing (eye) bolt not adjusted properly	Adjust balancing (eye) bolt
Tong does not open OR parts do not move freely.	Yielding due to overload	Replace tong
Bent pins or sheared pin heads	Tong is overloaded	Replace tong
Elongated holes	Tong is overloaded	Replace tong
	Tong holes worn	Check amount of wear. If within acceptance criteria use as is, when over acceptance criteria, replace tong





Appendixes

Summary of risk assessment

Identified potential hazard	Point of failure	Result
Chain/cable/pull line overtensioned	Breaking of chain/cable/pull line	This may cause the tong rotate uncontrollable, hitting everything in it's way.
Chain/cable/pull line overtensioned	Breaking of chain/cable/pull line	Cable releases energy, flying all over the place
Pulling too hard relative to tong (wrong tong being used)	Failing or breaking tong.	The tong being used may break because of too small tong utilized, resulting in tong debris flying around all over the place.
Pinch points due to other devices in work area of tong (e.g. back up tong on the same level))	Device collides with HT-tong	Crushing hand/fingers/limps/body
Applying tong too low to floor	No control over tong(s)	Crushing hands/limps
MU Tong too close to Back Up tong	Dangerously close	Crushing / shearing hands/limps
Tong line connection failure	Breaking of pin / lever/snub line saver	This may cause the tong rotate uncontrollable, hitting everything in it's way.
Failing tong line retention	Breaking tong line retainer bolt	This may cause the line to break free from the tong when tensioning, resulting in not being able to apply torque
		Cable releases energy, flying all over the place
Snub line saver break	Breaking parts/bolts/u-clamp	This may cause the tong rotate uncontrollable, hitting everything in it's way
Missing nameplate	Not using proper size tong	The tong being used may break because of too small tong utilized, resulting in tong debris flying around all over the place
Breaking lever	Not checked during inspection schedule (MPI)	Tong debris may fly around all over the place
Breaking / missing hanger bolt	Not checked during inspection schedule	Tong may drop to the floor
Breaking hanger	Not checked during inspection schedule	Tong may drop to the floor
Missing / loose hanger adjustment screw	Not checked during inspection schedule	Tong may be hard to handle during run
Missing/failing balancing screw bolt	Not checked during inspection schedule	Tong may drop to the floor
Breaking suspension ring	Not checked during inspection schedule	Tong may drop to the floor
Missing grease nipples	No proper lubrication of hinge pins results in worn out bores/pins	Tong may be hard to handle during run
		Tong pins may break due to wear
		Tong parts may break due to wear
Breaking jaws or latch	Not checked during inspection schedule (MPI)	Tong debris may fly around all over the place.
Slipping dies	Inserts worn out.	Tong may slip and make unexpected movement
		Coupling may not be made up properly, resulting of loosing pipe
Missing handle bolts	Loose nuts	Pinch points as operator will grab other parts
Missing protective hose around handle bolts	Worn hose	May cause uncomfortable situation
Missing nuts of hinge pin(s)	Not checked during inspection schedule	May cause dangerous situation as hinge pin failure may occur
Missing hinge pin(s)	Missing nut/dowel pin	Not being able to use tong
Missing dowel pins of hinge pin nuts	Not checked during inspection schedule	May cause dangerous situation as hinge pin failure may occur
Missing/failing springs	Not checked during functional check	Latch may not close easily



Identified potential hazard SYSTEM	Point of failure	Result
Missing dies	Missing cotter pin/retainer pins	Tong may slip and make unexpected movement
		Coupling may not be made up properly resulting of loosing pipe
Breaking dies	Overload/wear	Tong may slip and make unexpected movement
		Coupling may not be made up properly resulting of loosing pipe
		Flying debris
Breaking dies	Not properly latched/wrong size tong	Tong may slip and make unexpected movement
		Coupling may not be made up properly resulting of loosing pipe
		Flying debris
Pinch points	Grabbing at restricted areas	Pinching/loosing fingers
	As a result of failing other parts	Pinching/loosing fingers/limps/death
Flying debris from breaking dies	Worn dies	Eye puncture / hit by debris
Splinters/burrs	Cutting from pipe/dies	Finger punctures
Falling tong	Failing suspension	Bruises/fractures
Wrong assembly of tong	Failing MU or BO	Unexpected movements of tong

General conclusions

- ❑ Ensure training is carried out
- ❑ Ensure rig procedures are in place and followed up
- ❑ Carry out inspection according to manual
- ❑ Work according to procedures in manual
- ❑ Ensure snub-line saver is in place with safety line
- ❑ Personnel must stay out of working area of tong
- ❑ Wear personal safety equipment



Torque values (US) for bolts

		Bolts Lubricated with Light Machine Oil Grade 8			Bolts lubricated with Anti-seize compound Grade 8		
Dia.	Threads per inch	Min. Torque (ft lb)	Max. Torque (ft lb)	Clamp force (lb)	Min. Torque (ft lb)	Max. Torque (ft lb)	Clamp force (lb)
Coarse Thread Series, UNC							
1/4"	20	11.4	12.6	2860	8.6	9.5	2860
5/16"	18	24	26	3720	17.8	19.7	3720
3/8"	16	43	47	7000	32	35	7000
7/16"	14	67	74	9550	50	55	9550
1/2"	13	105	116	12750	78	87	12750
9/16"	12	143	158	16100	107	118	16100
5/8"	11	209	231	20350	157	173	20350
3/4"	10	361	399	30100	271	299	30100
7/8"	9	570	630	41600	428	473	41600
1"	8	855	945	54500	641	709	54400
1 1/8"	7	1216	1344	68700	912	1008	68700
1 1/4"	7	1729	1911	87200	1297	1433	87200
1 3/8"	6	2261	2499	104000	1696	1874	104000
1 1/2"	6	3002	3318	126500	2252	2489	126500

Tensile Strength = 120,000 psi to 1" dia. Proof Strength = 85,000 psi

		Bolts Lubricated with Light Machine Oil Grade 8			Bolts lubricated with Anti-seize compound Grade 8		
Dia.	Threads per inch	Min. Torque (ft lb)	Max. Torque (ft lb)	Clamp force (lb)	Min. Torque (ft lb)	Max. Torque (ft lb)	Clamp force (lb)
Fine Thread Series, UNF							
1/4"	28	13.3	14.7	3280	10	11	3280
5/16"	24	24	26	5220	17.8	19.7	5220
3/8"	24	48	53	7900	36	39	7900
7/16"	20	76	84	10700	57	63	10700
1/2"	20	114	126	14400	86	95	14400
9/16"	18	162	179	18250	121	134	18250
5/8"	18	228	252	23000	171	189	23000
3/4"	16	399	441	33600	299	331	33600
7/8"	14	627	693	45800	470	520	45800
1"	14	950	1050	59700	713	788	59700
1 1/8"	12	1368	1512	77000	1026	1134	77000
1 1/4"	12	1900	2100	96600	1425	1565	96600
1 3/8"	12	2584	2856	118400	1938	2142	118400
1 1/2"	12	3382	3738	142200	2537	2804	142200

Tensile Strength = 120,000 psi to 1" dia. Proof Strength = 85,000 psi



Torque values (metric) for bolts

		Bolts Lubricated with Light Machine Oil Grade 8			Bolts lubricated with Anti-seize compound Grade 8		
Dia meter	Threads per inch	Min. Torque (Nm)	Max. Torque (Nm)	Clamp force (N)	Min. Torque (Nm)	Max. Torque (Nm)	Clamp force (N)
Coarse Thread Series, UNC							
1/4"	20	15.5	17.1	12870	11.7	12.9	12870
5/16"	18	32.6	35.4	16740	24.2	26.8	16740
3/8"	16	58.5	64	32500	43.5	47.6	31500
7/16"	14	91.1	100.6	42980	68	92.5	42980
1/2"	13	143	158	57380	106	118	57380
9/16"	12	195	215	72450	145.5	160	72450
5/8"	11	284	314	91580	213.5	235	91580
3/4"	10	491	542	135450	368	407	135450
7/8"	9	775	857	187200	582	643	187200
1"	8	1163	1285	245250	872	965	245250
1 1/8"	7	1654	1828	309150	1240	1370	309150
1 1/4"	7	2351	2598	382400	1764	1949	392400
1 3/8"	6	3075	3398	468000	2306	2549	468000
1 1/2"	6	4082	4512	569250	3062	3385	569250

		Bolts Lubricated with Light Machine Oil Grade 8			Bolts lubricated with Anti-seize compound Grade 8		
Dia meter	Threads per inch	Min. Torque (Nm)	Max. Torque (Nm)	Clamp force (N)	Min. Torque (Nm)	Max. Torque (Nm)	Clamp force (N)
Fine Thread Series, UNF							
1/4"	28	18.1	20	14760	13.6	15	14760
5/16"	24	32.6	35	23490	24.2	26.8	23490
3/8"	24	65.3	72	35550	49	53	35550
7/16"	20	103	114	48150	77.5	86	48150
1/2"	20	155	171	64800	117	129	64800
9/16"	18	220	239	82130	165	182	82130
5/8"	18	310	343	103500	232	257	103500
3/4"	16	542	600	151200	406	450	151200
7/8"	14	853	943	206100	639	707	206100
1"	14	1292	1428	268650	970	1071	268650
1 1/8"	12	1860	2056	346500	1396	1542	346500
1 1/4"	12	2584	2856	434700	1938	2128	434700
1 3/8"	12	3514	3884	532800	2635	2913	532800
1 1/2"	12	4599	5083	639900	3450	3813	639900



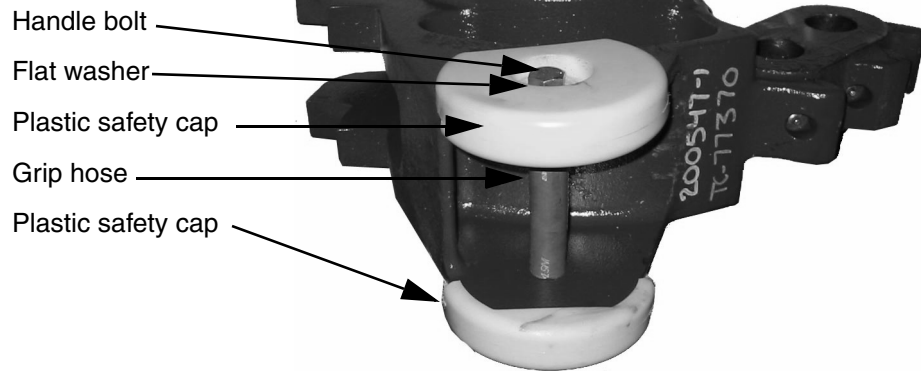
Drawings and Parts Break Down

Added parts jaw assemblies

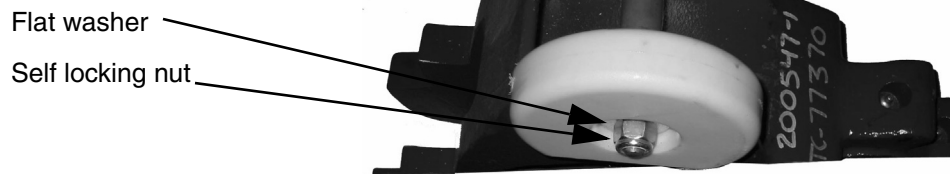


NOTE: In the exploded views on the following pages, several parts, especially the jaw assemblies, are not showed. In this chapter you will find these parts.

TOPVIEW



BOTTOM VIEW





HT-14 additional parts

Per grip point

Qty	Name	Part number
1	Handle bolt	50010-52-C8
1	Grip hose	203439
1	Nut, self locking	51850-10-C
2	Plastic safety cap	250369
2	Washer, flat	50810-R-C

HT-35 additional parts

Per grip point

Qty	Name	Part number
1	Handle bolt	50010-52-C8
1	Handle bolt (long jaw)	50010-60-C8
1	Grip hose	203439
1	Nut	51850-10-C
2	Plastic safety cap	250369
2	Flat washer	50810-R-C

HT-55 additional parts

Per grip point

Qty	Name	Part number
1	Handle bolt	50010-60-C8
1	Grip hose	203439
1	Nut, self locking	51850-10-C
2	Plastic safety cap	250369
2	Washer flat	50810-R-C

HT-65 additional parts

Per grip point

Qty	Name	Part number
1	Handle bolt	50010-60-C8
1	Handle bolt (short jaw)	50010-54-C8
1	Grip hose	203439
1	Nut, self locking	51850-10-C
2	Plastic safety cap	250369
2	Washer flat	50810-R-C



HT-100 additional parts

Per grip point

Qty	Name	Part number
1	Handle Bolt	50010-60-C8
1	Grip hose	203439
1	Nut, self locking	51850-10-C
2	Plastic safety cap	250369
2	Washer flat	50810-R-C

HT-200 additional parts

Per grip point

Qty	Name	Part number
1	Handle bolt	50010- 76-C8
1	Grip hose	203439
1	Nut, self locking	51850-10-C
2	Plastic safety cap	250369
2	Washers, flat	50810-R-C



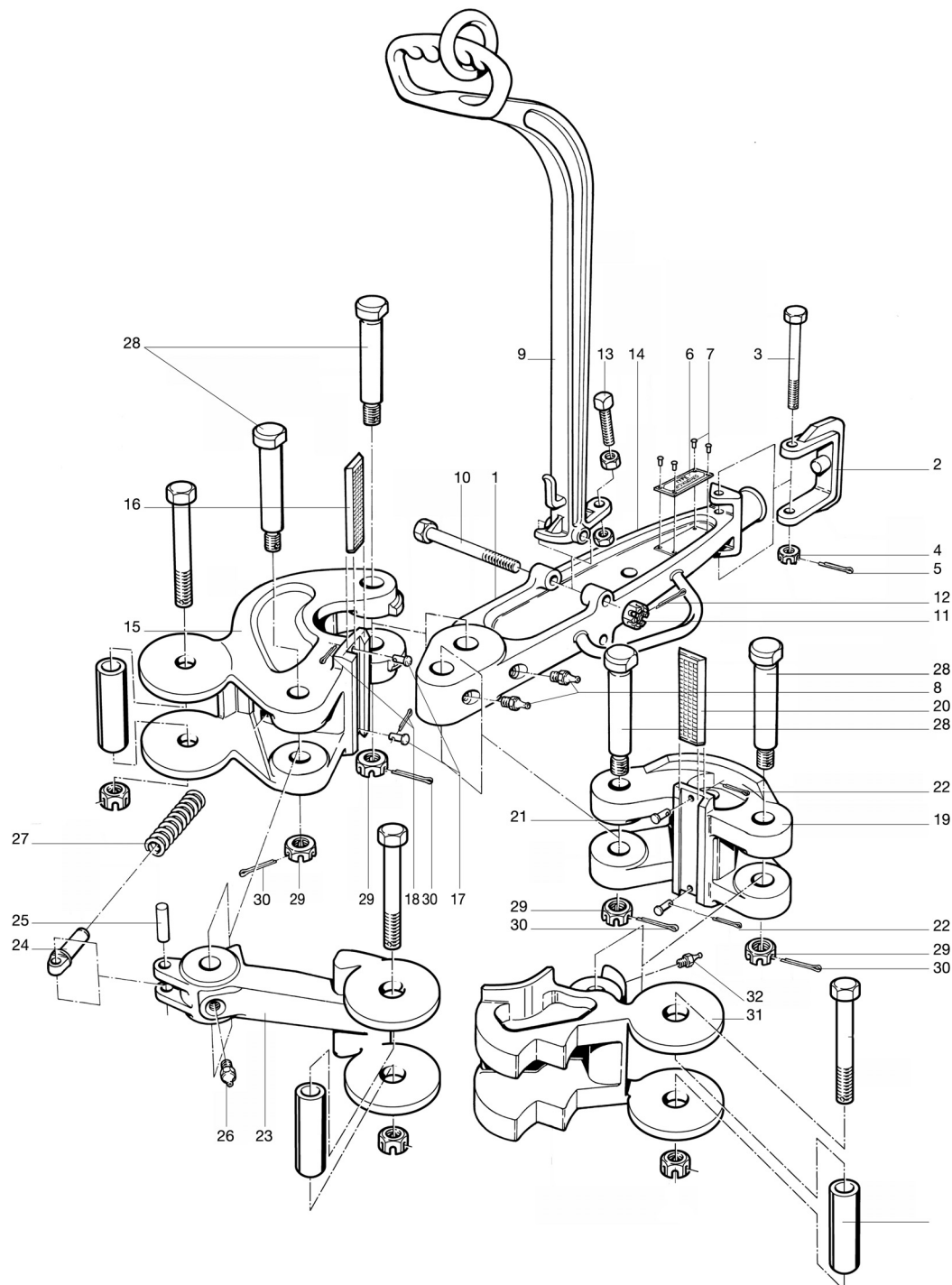
Parts lists and exploded views

Parts list HT 14 manual tong

Item. No	No. Req	Description	Part no.	Item. No	No. Req	Description	Part no.
	1	Lever ass'y	200641-1	25	1	Plunjer pin	23922
1	1	Lever	(note 1)	26	1	Grease fitting	53201
2	1	Tong line pin retainer	23918				
3	1	Safety line bolt	939099-204	27	1	Latch spring	23920
4	1	Safety line bolt nut	50508-C	28	4	Hinge pin	200649
5	1	Cotter pin	51402-8	29	4	Hinge pin nut	8150
6	1	Name plate	26119-1	30	4	Cotter pin	51435-20
7	4	Drive screw	53301-4-5	Range 2 $\frac{3}{8}$" - 3 $\frac{1}{2}$"			
8	2	Grease fitting	53201		1	Lug jaw ass'y	200645-1
	1	Hanger ass'y	200650-1	31	1	Lug jaw	(note 1)
9	1	Hanger	(note 1)	32	1	Grease fitting	53201
10	1	Hanger bolt	939099-165	Range 3 $\frac{1}{2}$" - 5"			
11	1	Hanger bolt nut	50510-C		1	Lug jaw ass'y	200646-1
12	1	Cotter pin	51402-12	31	1	Lug jaw	(note 1)
13	1	Hanger adjustment screw	939168-96	32	1	Grease fitting	53201
14	1	Hanger jam nut	50312-C	Range 4 $\frac{3}{4}$" - 6 $\frac{1}{4}$"			
					1	Lug jaw ass'y	200647-1
	1	Long jaw ass'y	200642-1	31	1	Lug jaw	(note 1)
15	1	Long jaw	(note 1)	32	1	Grease fitting	53201
16	1	Die	16401-6	Range 5 $\frac{3}{4}$" - 7"			
17	2	Retainer pin	BJ 17194		1	Lug jaw ass'y	200648-1
18	2	Cotter pin	51402-6	31	1	Lug jaw	(note 1)
	1	Short jaw ass'y	200643-1	32	1	Grease fitting	53201
19	1	Short jaw	(note 1)	Not in drawing			
20	1	Die	16401-6	-	-	Warning label	201350
21	2	Retainer pin	BJ 17194	-	-	Warning label	52319
22	2	Cotter pin	51402-6				
	1	Latch ass'y	200644-1				
23	1	Latch	(note 1)	For part numbers gripping points see page 9-32			
24	1	Latch spring plunger	23915	Note 1: Available as ass'y only			



Exploded view HT-14



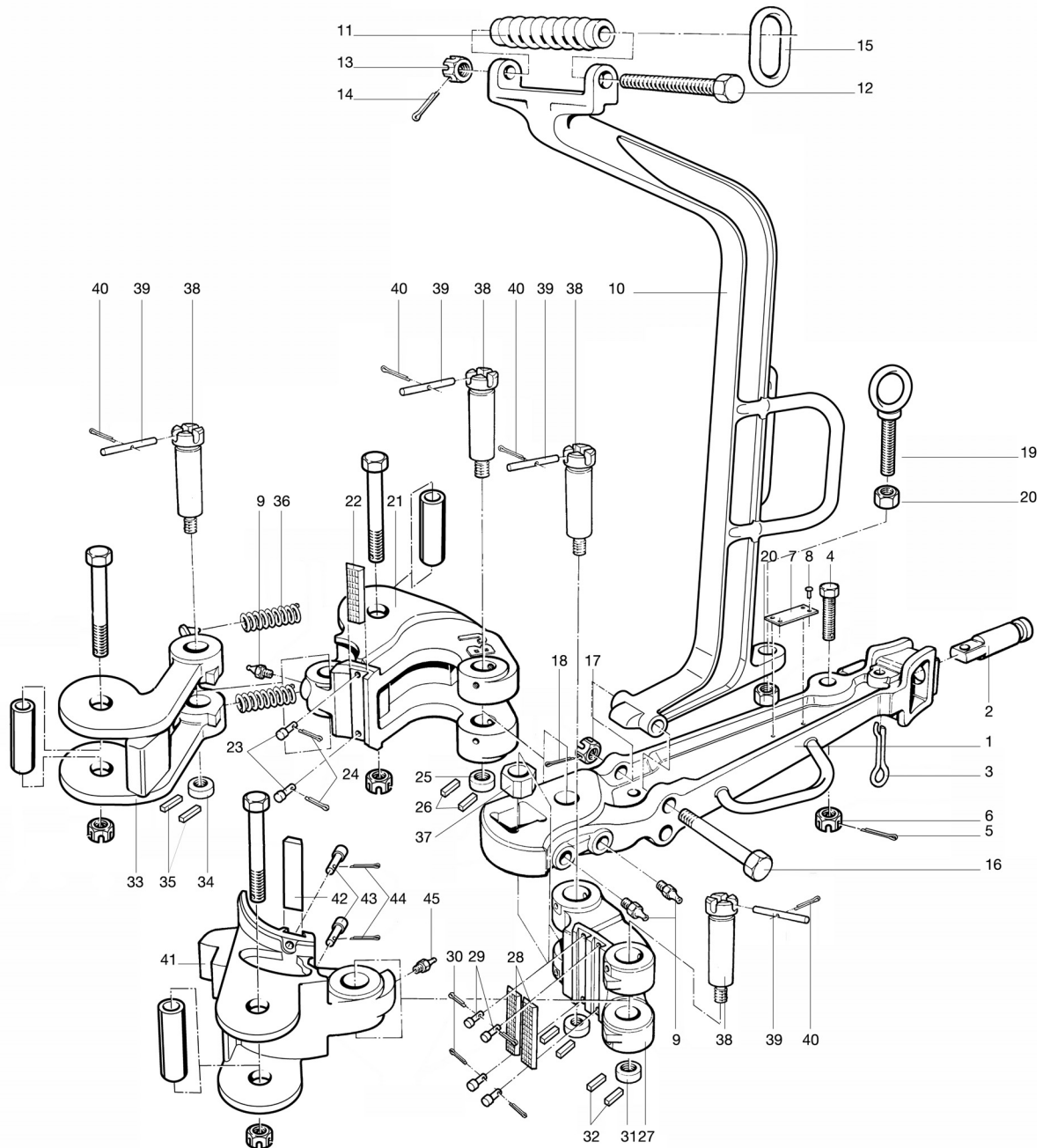


Parts list HT 35 manual tong

Item.No	No. Req	Description	Part no.	Item. No	No. Req	Description	Part no.
	1	Long lever ass'y	200621-1		1	Latch ass'y	200626-1
1	1	Long lever	(note 1)	33	1	Latch	(note 1)
	1	Short lever ass'y	200622-1	34	1	Hinge pin nut	200632
1	1	Short lever	(note 1)	35	2	Groove pin	51506-8
2	1	Tong line pin	200633				
3	1	Tong line pin retainer	25468	36	2	Latch spring	9561
4	1	Safety line bolt	50012-56-C8	37	1	Hinge pin block	200631
5	1	Safety line bolt nut	50512-C	38	4	Hinge pin threaded	200629
6	1	Cotter pin	51402-16	39	4	Dowel pin	11199
7	1	Name plate	26119-1	40	4	Cotter pin	51402-6
8	4	Drive screw	53301-4-5	Range 2 $\frac{3}{8}$ "-3 $\frac{11}{16}$ "			
9	2	Grease fitting	53201		1	Lug jaw ass'y	200076-1
16	1	Hanger bolt	939099-108	41	1	Lug jaw	(note 1)
17	1	Hanger bolt nut	50216-C	Range 2 $\frac{7}{8}$ "-4 $\frac{1}{4}$ "			
18	1	Cotter pin	51402-14		1	Lug jaw ass'y	200077-1
	1	Hanger ass'y	200630-1	41	1	Lug jaw	(note 1)
10	1	Hanger	(note 1)	Range 3 $\frac{1}{2}$ "-5 $\frac{1}{4}$ "			
11	1	Balancing screw	12586		1	Lug jaw ass'y	200078-1
12	1	Balancing screw bolt	939099-596	41	1	Lug jaw	(note 1)
13	1	Balancing screw bolt nut	50512-C	Range 5 $\frac{1}{4}$ "-7"			
14	1	Cotter pin	51402-16		1	Lug jaw assy	200079-1
15	1	Suspension ring	BJ 12863	41	1	Lug jaw	(note 1)
19	1	Hanger adjustment screw	203438-1	Range 7"-8 $\frac{5}{8}$ "			
20	2	Hanger jam nut	50314-C	-	1	Hinge & Lug jaw ass'y (not shown)	200080-2
	1	Long jaw ass'y	200623-1	-	1	Hinge jaw ass'y (not shown)	200627-1
21	1	Long jaw	(note 1)	Range 7"-8 $\frac{5}{8}$ "			
22	1	Die	16401-6		1	Lug jaw ass'y	200080-1
23	2	Retainer pin	BJ 17194	41	1	Lug jaw	(note 1)
24	2	Cotter pin	51402-6	Range 9 $\frac{5}{8}$ "-10 $\frac{3}{4}$ "			
25	1	Hinge pin nut	200632	-	1	Hinge & Lug jaw ass'y (not shown)	200081-2
26	2	Groove pin	51506-8	-	1	Hinge ass'y (not shown)	200628-1
	1	Short jaw ass'y 2 $\frac{3}{8}$ "-7"	200625-1	Range 9 $\frac{5}{8}$ "-10 $\frac{3}{4}$ "			
27	1	Short jaw 2 $\frac{3}{8}$ "-7"	(note 1)	41	1	Lug jaw ass'y	200081-1
	1	Short jaw ass'y 7 $\frac{5}{8}$ "- 10 $\frac{3}{4}$ "	200624-1	41	1	Lug jaw	(note 1)
27	1	Short jaw 7 $\frac{5}{8}$ "- 10 $\frac{3}{4}$ "	(note 1)	42	1	Die	16402-6
28	2	Die	16401-6	43	2	Retainer pin	BJ 17194
29	4	Retainer pin	BJ 17194	44	2	Cotter pin	51402-6
30	4	Cotter pin	51402-6	45	2	Grease fitting	53201
31	2	Hinge pin nut	200632	Not in drawing			
32	4	Groove pin	51506-8	-	-	Warning label	52319
Note 1: Available as ass'y only				-	-	Warning label	201350
				For part numbers gripping points, see page 9-32			



Exploded view HT-35



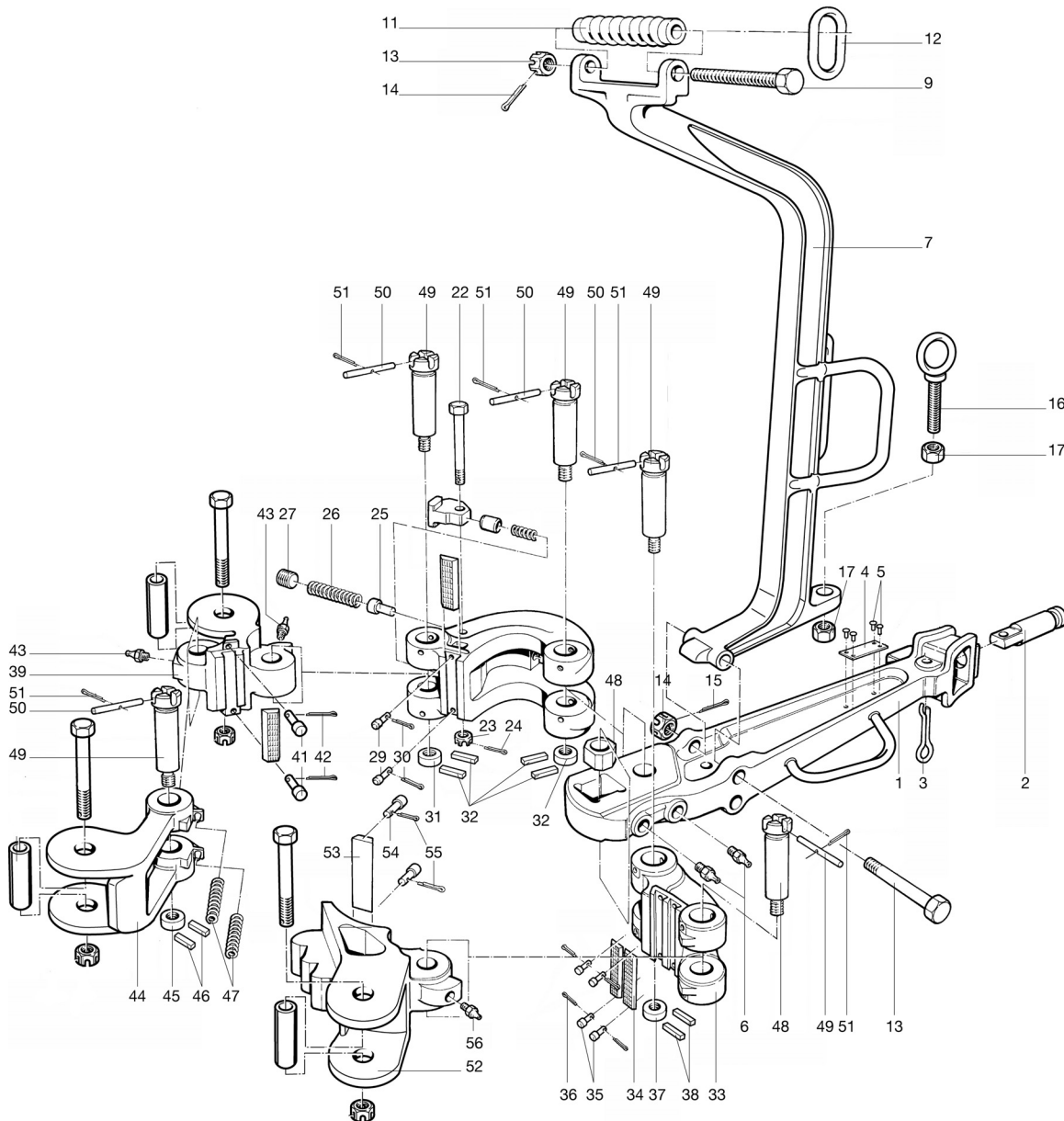


Parts list HT 55 manual tong

Item. No	No. Req	Description	Part no.	Item. No	No. Req	Description	Part no.
	1	Long lever ass'y	200561-1		1	Latch jaw ass'y	200566-1
1	1	Long lever	(note 1)	39	1	Latch jaw	(note 1)
	1	Short lever ass'y	200562-1	40	1	Die	16402-6
1	1	Short lever	(note 1)	41	2	Retainer pin	BJ 17194
2	1	Tong line pin	200570	42	2	Cotter pin	51402-6
3	1	Tong line pin retainer	25468	43	2	Grease fitting	53201
4	1	Name plate	200568		1	Latch ass'y	200565-1
5	4	Drive screw	53301-4-5	44	1	Latch	(note 1)
6	2	Grease fitting	53201	45	1	Hinge pin nut	200572
13	1	Hanger bolt	939099-556	46	2	Groove pin	51506-8
14	1	Hanger bolt nut	50512-C	47	2	Latch spring	9561
15	1	Cotter pin	51402-16	48	1	Hinge pin block	200569
	1	Hanger ass'y	203344-36	49	5	Hinge pin threaded	200567
7	1	Hanger	(note 1 & 2)	50	5	Dowel pin	11199
8	1	Balancing screw	12586	51	5	Cotter pin	51402-6
9	1	Balancing screw bolt	939099-596	Range 3 1/2" - 5"			
10	1	Balancing screw bolt nut	50512-C		1	Lug jaw ass'y	200083-1
11	1	Cotter pin	51402-16	52	1	Lug jaw	(note 1)
12	1	Suspension ring	BJ 12863	Range 5" - 6 3/4"			
16	1	Hanger adjustment screw	203438-1		1	Lug jaw ass'y	200084-1
17	2	Hanger jam nut	50314-C	52	1	Lug jaw	(note 1)
	1	Long jaw ass'y	200563-1	Range 6 5/8" - 9"			
18	1	Long jaw	(note 1)		1	Lug jaw ass'y	200085-1
19	1	Adjustable stop	11139	52	1	Lug jaw	(note 1)
20	1	Adjustable stop plunger	11144	Range 9" - 10 3/4"			
21	1	Adjustable stop spring	11192		1	Lug jaw ass'y	200086-1
22	1	Adjustable stop bolt	11191	52	1	Lug jaw	(note 1)
23	1	Adjustable stop bolt nut	8150	Range 11 3/4"			
24	1	Cotter pin	51402-14		1	Lug jaw ass'y	200087-1
25	1	Booster plunger	200571	52	1	Lug jaw	(note 1)
26	1	Booster plunger spring	11229	Range 12 3/4" - 13"			
27	1	Booster spring ret. plug	53000-16		1	Lug jaw ass'y	200089-1
28	1	Die	16402-6	52	1	Lug jaw	(note 1)
29	2	Retainer pin	BJ 17194	Range 13 3/8"			
30	2	Cotter pin	51402-6		1	Lug jaw ass'y	200090-1
31	2	Hinge pin nut	200572	52	1	Lug jaw	(note 1)
32	4	Groove pin	51506-8	53	1	Die	16402-6 *
	1	Short jaw ass'y	200564-1	54	2	Retainer pin	BJ 17194 *
33	1	Short jaw	(note 1)	55	2	Cotter pin	51402-6 *
34	2	Die	16402-6	56	1	Grease fitting	53201
35	4	Retainer pin	BJ 17194	Not in drawing			
36	4	Cotter pin	51402-6	-	-	Warning label	52319
37	2	Hinge pin nut	200572	-	-	Warning label	201350
38	2	Groove pin	51506-8	For grip points, see page 9-32			
Note 1: Available as ass'y only , * = from 11 3/4" die only				Note 2: Also available in length of 48" and 96"			



Exploded view HT55



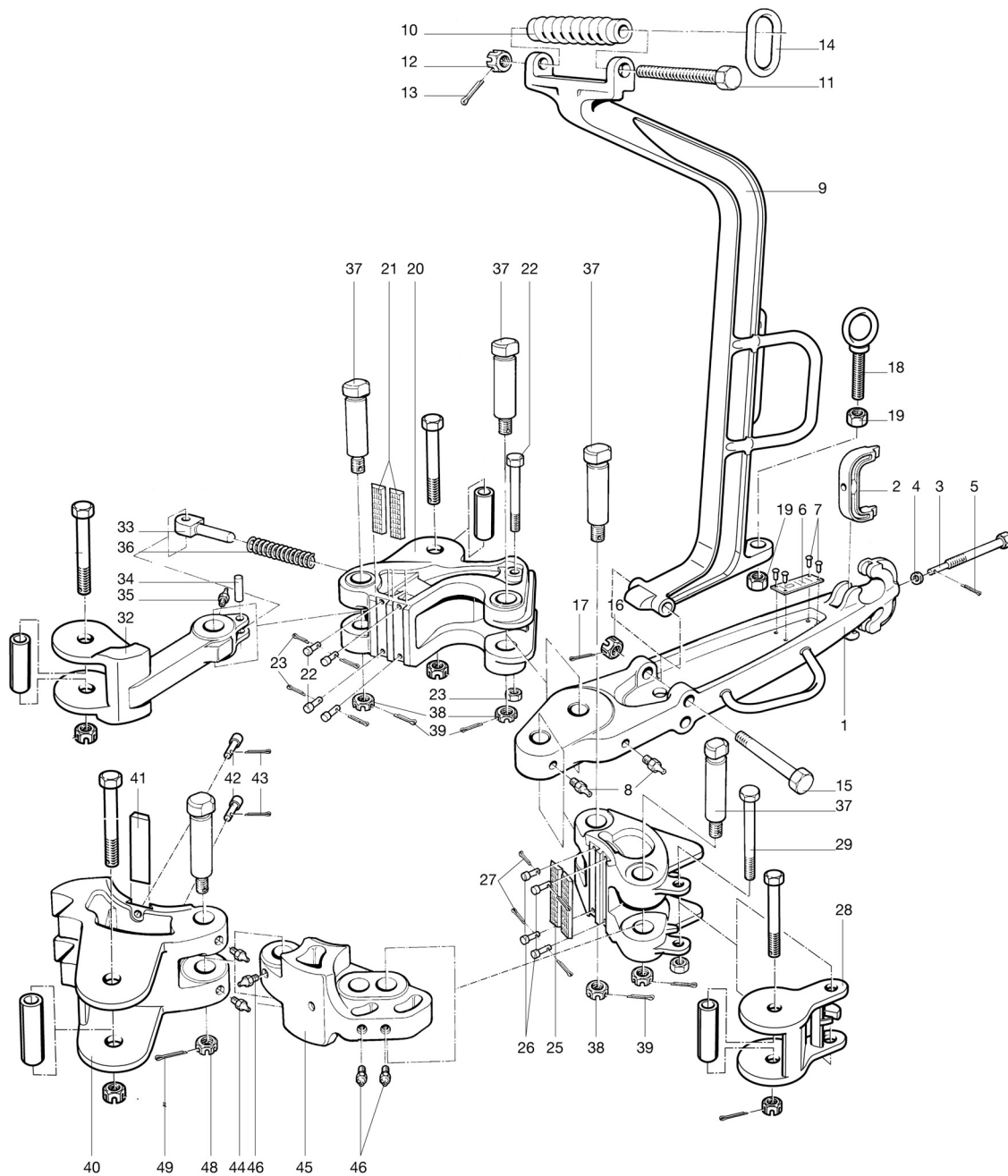


Part list HT 65 manual tong

Item No	No. Req	Description	Part no.	Item No	No. Req	Description	Part no.
	1	Lever ass'y	200541-1	36	1	Latch spring	24525
1	1	Lever	(note 1)	37	4	Hinge pin	200550
2	1	Tong line retainer	24529	38	4	Hinge pin nut	24528
3	1	Tong line retainer bolt	24249	39	4	Cotter pin	51405-24-S
4	1	Plain washer	50809-N-C	Range 3 1/2" - 8 1/4"			
5	1	Cotter pin	51402-8		1	Lug jaw ass'y	200546-1
6	1	Name plate	200551	40	1	Lug jaw	(note 1)
7	4	Drive screw	53301-4-5	41	1	Die	16402-6
8	2	Grease fitting	53201	42	2	Die retaining pin	BJ 17194
15	1	Hanger bolt	939099-546	43	2	Cotter pin	51402-6
16	1	Hanger bolt nut	50512-C	44	2	Grease fitting	53201
17	1	Cotter pin	51402-6	Range 8" - 11 1/4"			
	1	Hanger ass'y	203344-36		1	Lug jaw ass'y	200547-1
9	1	Hanger	(note 1&2)	40	1	Lug jaw	(note 1)
10	1	Balancing screw	12586	44	2	Grease fitting	53201
11	1	Balancing screw bolt	939099-596	Range 11 3/4" - 14 3/8"			
12	1	Balancing screw bolt nut	50512-C		1	Lug jaw ass'y	200548-1
13	1	Cotter pin	51402-16	40	1	Lug jaw	(note 1)
14	1	Suspension ring	BJ 12863	Range 16" - 17"			
18	1	Hanger adjustment screw	203438-1		1	Lug jaw ass'y	200549-1
19	2	Hanger jam nut	50314-C	40	1	Lug jaw	(note 1)
	1	Long jaw ass'y	200542-1		1	Hinge jaw ass'y 8 1/2" - 17"	200545-1
20	1	Long jaw	(note 1)	45	1	Hinge jaw	(note 1)
21	2	Die	16402-6	46	3	Grease fitting	53201
22	4	Retaining pin	BJ 17194	47	1	Hinge pin	200550
23	4	Cotter pin	51402-6	48	1	Hinge pin nut	24528
	1	Short jaw ass'y	200543-1	49	1	Cotter pin	51405-24
24	1	Short jaw	(note 1)	Not in drawing			
25	1	Die	16402-6	-	-	Warning label	52319
26	2	Retainer pin	BJ 17194	-	-	Warning label	201350
27	2	Cotter pin	51402-6				
28	1	Short jaw handle	25864				
29	1	Bolt	50012-52-C8				
30	1	Nut	50212-C				
31	1	Lock washer	50912-C				
	1	Latch ass'y	200544-1				
32	1	Latch	(note 1)				
33	1	Latch spring plunger	24526	For part numbers grip points, see page 9-32			
34	1	Plunger pin	24530	Note 1: Available as ass'y only			
35	1	Grease fitting	53201	Note 2: Also available in length of 48" and 96"			



Exploded view HT-65



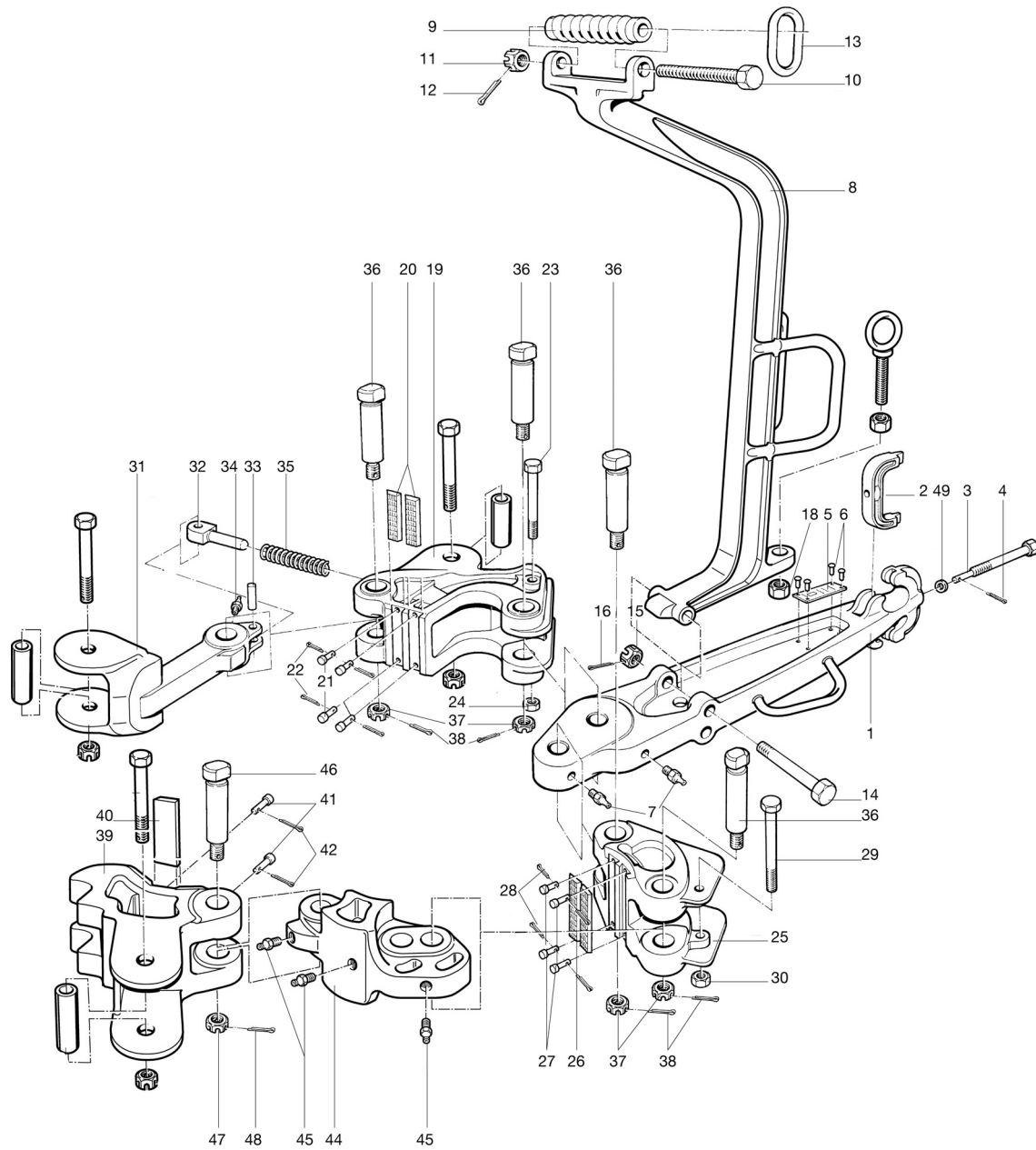


Parts list HT100 manual tong

Item. No	No. Req	Description	Part no.	Item. No	No. Req	Description	Part no.
	1	Lever ass'y	200661-1	35	1	Latch spring	24525
1	1	Lever	(note 1)	36	4	Hinge pin	200204
2	1	Tong line retainer	24529	37	4	Hinge pin nut	24528
3	1	Tong line retainer bolt	24249	38	4	Cotter pin	51405-24-S
4	1	Cotter pin	51402-8	49	1	Flat washer	50809-N-C
5	1	Name plate	200669	Range 4" - 8 1/2"			
6	4	Drive screw	53301-4-5		1	Lug jaw ass'y 4"-8 1/2"	200663-1
7	2	Grease fitting	53201	39	1	Lug jaw	(note 1)
14	1	Hanger bolt	939099-556	40	1	Die	16401-6
15	1	Hanger bolt nut	50512-C	41	2	Die retaining pin	BJ 17194
16	1	Cotter pin	50402-16				
	1	Hanger ass'y	203344-36	42	2	Cotter pin	51402-6
8	1	Hanger	(note 1&2)	43	2	Grease fitting	53201
9	1	Balancing screw	12586	Range 8 1/2" - 12"			
10	1	Balancing screw bolt	939099-596		1	Lug jaw ass'y	200664
11	1	Balancing screw bolt nut	50512-C	39	1	Lug jaw	(note 1)
12	1	Cotter pin	51402-16	Range 12" - 15"			
13	1	Suspension ring	BJ 12863		1	Lug jaw ass'y	200665
17	1	Hanger adjustment screw	203438-1	39	1	Lug jaw	(note 1)
18	2	Hanger jam nut	50314-C	Range 15 3/4"			
	1	Long jaw ass'y	200072-1		1	Lug jaw ass'y	200666
19	1	Long jaw	(note 1)	39	1	Lug jaw	(note 1)
20	2	Die	16401-6	Range 16" - 17"			
21	4	Retaining pin	BJ 17194		1	Lug jaw ass'y	200667
22	4	Cotter pin	51402-6	39	1	Lug jaw	(note 1)
23	1	Bolt	50012-56-C8	Hinge jaw ass'y 8 1/2" - 17"			
24	1	Nut	50212-C	44	1	Hinge jaw	(note 1)
				45	3	Grease fitting	53201
	1	Short jaw ass'y	200074-1	46	1	Hinge pin	200204
25	1	Short jaw	(note 1)	47	1	Hinge pin nut	24528
26	2	Die	16401-6	48	1	Cotter pin	51405-20
27	4	Retainer pin	BJ 17194	Not in drawing			
28	4	Cotter pin	51402-6	-	-	Warning label	52319
29	1	Bolt	939107-516	-	-	Warning label	201350
30	1	Nut	50214-C				
	1	Latch ass'y	200073-1				
31	1	Latch	(note 1)				
32	1	Latch spring plunger	24526	For part numbers grip points, see page 9-33			
33	1	Plunger pin	24530	Note 1: Available as ass'y only			
34	1	Grease fitting	53201	Note 2: Also available in length of 48" and 96"			



Exploded view HT-100



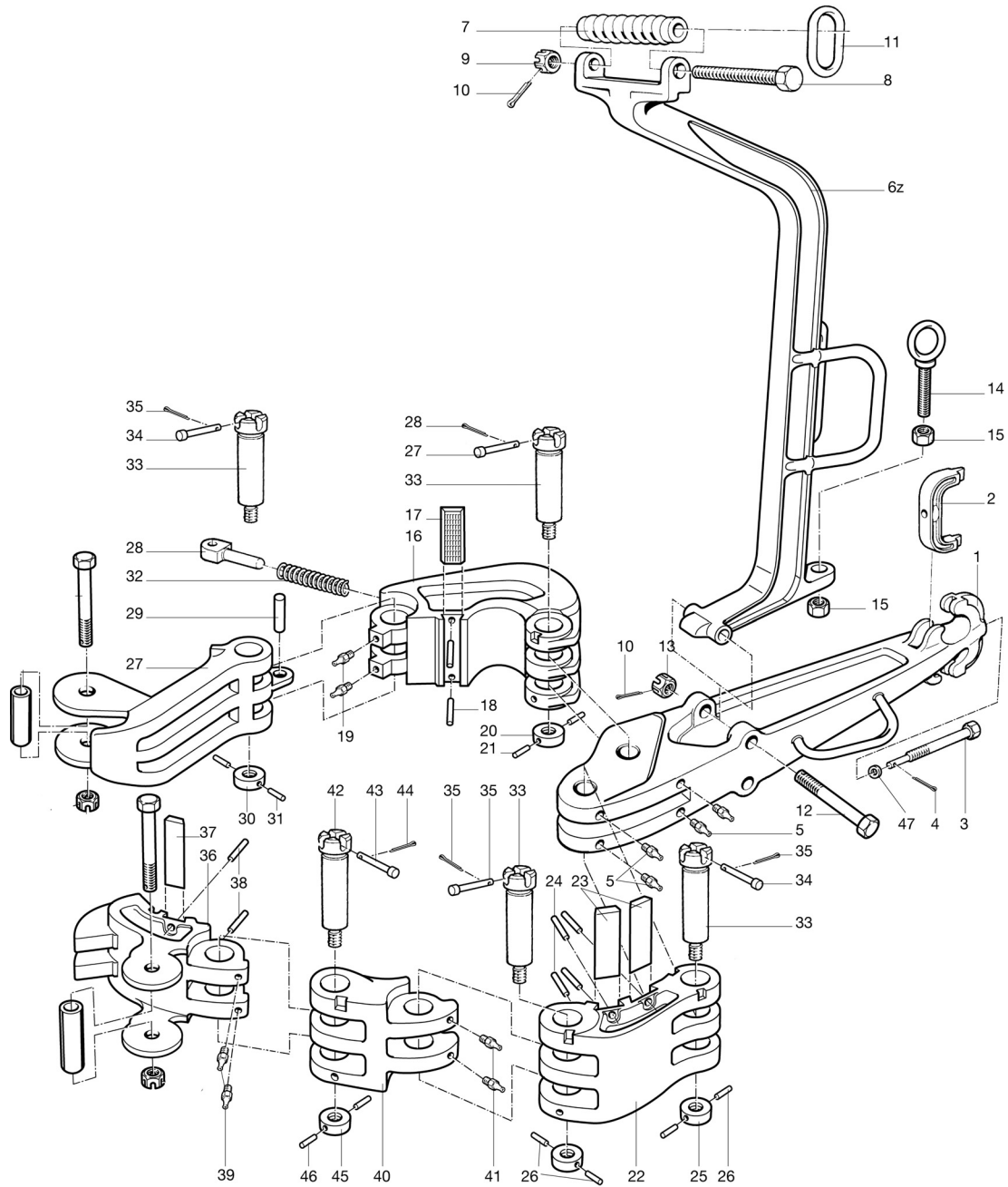


Parts list HT 200 manual tong

Item. No	No. Req	Description	Part no.	Item. No	No. Req	Description	Part no.
	1	Lever ass'y	200501-1	Opt.	1	Air lift ass'y	30041-1
1	1	Lever	(note 1)	Range 6"-7 7/8"			
2	1	Tong line retainer	24529		1	Lug jaw ass'y	200506-SP
3	1	Tong line retainer bolt	24249	36	1	Lug jaw	(note 1)
4	1	Cotter pin	51402-8	37	1	Coarse die	33562
5	2	Grease fitting	53201	38	10	Die retainer spirol pin	51405-16
12	1	Hanger bolt	939099-801	39	2	Grease fitting	53201
13	1	Hanger bolt nut	50514-C		1	Die carrier (range 6" to 7-7/8" ; not shown)	200512
14	1	Cotter pin	51402-16	Range 8"-9 5/8" or 11 1/2"-13 1/4"			
	1	Hanger ass'y	203344-48		1	Lug jaw ass'y	200506-1
6	1	Hanger	(note 1)	36	1	Lug jaw	(note 1)
7	1	Balancing screw	12586	37	1	Coarse die	33562
8	1	Balancing screw bolt	939099-596	38	2	Die retainer spirol pin	947129-194
9	1	Balancing screw bolt nut	50512-C	39	2	Grease fitting	53201
10	1	Cotter pin	51402-16	Range 9 1/2"-11 1/8" or 13"-14 3/4"			
11	1	Suspension ring	BJ 12863		1	Lug jaw ass'y	200507-1
15	1	Hanger adjustment screw	203438	36	1	Lug jaw	(note 1)
16	2	Hanger jam nut	50314-C				
	1	Long jaw ass'y	200502-1	39	2	Grease fitting	53201
16	1	Long jaw	(note 1)	Range 11"-12 1/2" or 14 3/8"-16"			
17	2	Coarse die	33562		1	Lug jaw ass'y	200508-1
18	2	Die retainer spirol pin	947129-194	36	1	Lug jaw	(note 1)
19	2	Grease fitting	53201	39	2	Grease fitting	53201
21	1	Hinge pin nut	200510		1	Hinge jaw ass'y 11 1/2"-16"	200505-1
22	2	Groove pin	51506-8	40	1	Hinge jaw	(note 1)
	1	Short jaw ass'y	200503-1	41	2	Grease fitting	53201
22	1	Short jaw	(note 1)	42	1	Hinge pin	200509
23	2	Coarse die	33562	43	1	Clevis pin	56405-40-SHP
24	2	Die retainer spirol pin	947129-194	44	1	Cotter pin	51402-8
25	4	Hinge pin nut	200510	45	1	Hinge pin nut	200510
26	2	Groove pin	51506-8	46	2	Groove pin	51506-8
	1	Latch ass'y	200504-1	Not in drawing			
27	1	Latch	(note 1)	-	-	Warning label	201350
28	1	Latch clevis	33561	-	-	Warning label	52319
29	1	Latch clevis pin	33563				
30	1	Hinge pin nut	200510				
31	2	Groove pin	51506-8				
32	1	Latch clevis spring	33570				
33	4	Hinge pin	200509				
34	4	Clevis pin	56405-40-SHP	For part numbers grip points, see page 9-33			
35	4	Cotter pin	51402-8	Note 1: Available as ass'y only			
47	1	Flat washer	50809-N-C	Note 2: Also available in lenght of 48" and 96"			



Exploded view HT-200





Parts list HT 50 casing head assemblies

		Fig. A	Fig. B	Fig.C	Fig. D	Fig.E	Fig F	Fig G	Fig.H	
	pn#	200580-1	200580-2	200580-3	200580-4	200580-5	200580-6	200580-7	200580-8	
Ref.	Description	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	pn#
1	Lever ass'y									
2	Long jaw ass'y	1	1	1	1	1	1	1	1	200581-1
3	Short jaw ass'y	1	1	1	1	1	1	1	1	200582-1
4	Latch jaw ass'y	1	1	1	1	1	1	1	1	2005831-1
5	Latch ass'y	1	1	1	1	1	1	1	1	200565-1
6	Latch lug jaw ass'y	1	1	1	1	1	1	1	1	200587-1
7	Hinge jaw ass'y A	-	1	-	1	2	1	2	2	200584-1
8	Hinge jaw ass'y B	1	1	1	1	1	1	1	1	200585-1
9	Hinge jaw ass'y C	1	-	2	1	-	2	1	2	200586-1
-	Hinge pin block	1	1	1	1	1	1	1	1	200569
-	Latch spring	2	2	2	2	2	2	2	2	9561
-	Hinge pin threaded	7	7	8	8	8	9	9	10	200567
-	Dowel pin	7	7	8	8	8	9	9	10	11199
-	Cotter pin	7	7	8	8	8	9	9	10	51402-6
-	Hinge pin nut	7	7	8	8	8	9	9	10	200572
-	Die	2	2	2	2	2	2	2	2	16402-6
-	Handle bolt	4	4	4	4	4	4	4	4	50010-54-C8
-	Nut	4	4	4	4	4	4	4	4	50510-C
-	Rubber hose	4	4	4	4	4	4	4	4	203439
-	Cotter pin	4	4	4	4	4	4	4	4	51435-12
-	Warning label	1	1	1	1	1	1	1	1	201350

		Fig I.	Fig J	Fig. K	Fig. L	Fig. M	Fig. N	Fig.O	
		200600-1	200600-2	200600-3	200600-4	200600-5	200600-6	200600-7	
Ref.	Description	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	Part no.
1	Lever ass'y								
2	Long jaw ass'y	1	1	1	1	1	1	1	200601-1
3	Short jaw ass'y	1	1	1	1	1	1	1	200602-1
4	Latch jaw ass'y	1	1	1	1	1	1	1	200603-1
5	Latch ass'y	1	1	1	1	1	1	1	200565-1
6	Latch lug jaw ass'y	1	1	1	1	1	1	1	200607-1
7	Hinge jaw ass'y D	3	4	3	4	3	2	2	200604-1
8	Hinge jaw ass'y E	1	1	3	2	2	2	5	200605-1
9	Hinge jaw ass'y F	1	-	-	-	2	4	1	200606-1
-	Hinge pin block	1	1	1	1	1	1	1	200569
-	Latch spring	2	2	2	2	2	2	2	9561
-	Hinge pin threaded	10	10	11	11	12	13	13	200567
-	Dowel pin	10	10	11	11	12	13	13	11199
-	Cotter pin	10	10	11	11	12	13	13	51402-6
-	Hinge pin nut	10	10	11	11	12	13	13	200572



		Fig I.	Fig J	Fig. K	Fig. L	Fig. M	Fig. N	Fig.O	
		200600-1	200600-2	200600-3	200600-4	200600-5	200600-6	200600-7	
Ref.	Description	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	No. req.	Part no.
-	Die	2	2	2	2	2	2	2	16402-6
-	Handle bolt	4	4	4	4	4	4	4	50010-54-C8
-	Nut	4	4	4	4	4	4	4	50510-C
-	Rubber hose	4	4	4	4	4	4	4	203439
-	Cotter pin	4	4	4	4	4	4	4	51435-12
-	Warning label	1	1	1	1	1	1	1	201350

Range	Casing head assy pn#	Range	Casing head assy pn#	Range	Casing head assy pn#
13 ³ / ₈ " to 14 ¹ / ₂ "	200580-1	20" to 21 ¹ / ₂ "	200580-6	28 ¹ / ₂ " to 30"	200600-3
14 ¹ / ₂ " to 16"	200580-2	21 ¹ / ₂ " to 23"	200580-7	30" to 31 ⁵ / ₈ "	200600-4
16" to 17 ¹ / ₂ "	200580-3	24" to 25 ¹ / ₂ "	200580-8	31 ¹ / ₂ " to 33"	200600-5
17 ¹ / ₂ " to 19"	200580-4	25 ¹ / ₂ " to 27"	200600-1	33" to 34 ¹ / ₂ "	200600-6
19" to 20"	200580-5	27" to 17 ¹ / ₂ "	200600-2	34 ¹ / ₂ " to 36"	200600-7



Casing head assemblies overview

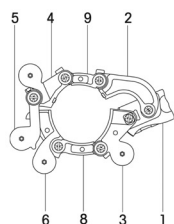


Fig A, 13^{3/8}" - 14^{1/2}", Part no. 200580-1

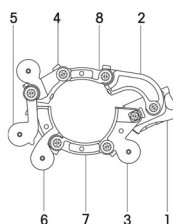


Fig B, 14^{1/2}" - 16", Part no. 200580-2

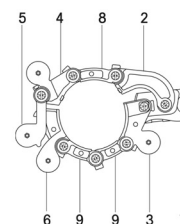


Fig C, 16" - 17^{1/2}", Part no. 200580-3

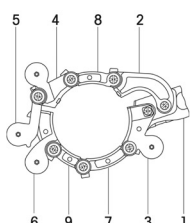


Fig D, 17^{1/2}" - 19", Part no. 200580-4

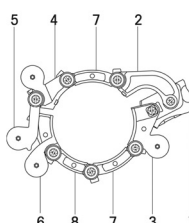


Fig E, 19" - 20", Part no. 200580-5

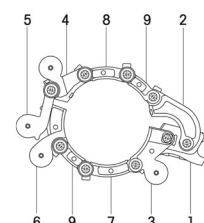


Fig F, 20" - 21^{1/2}", Part no. 200580-6

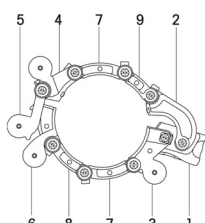


Fig G, 21^{1/2}" - 23", Part no. 200580-7

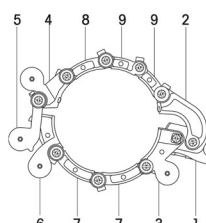


Fig H, 24" - 25^{1/2}", Part no. 200580-8

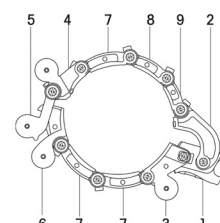


Fig I, 25^{1/2}" - 27", Part no. 200600-1

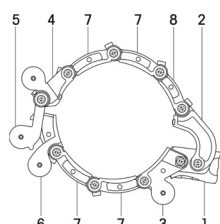


Fig J, 27" - 28^{1/2}", Part no. 200600-2

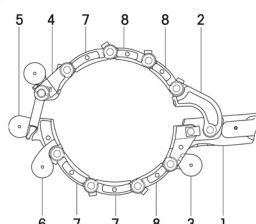


Fig K, 28^{1/2}" - 30", Part no. 200600-3

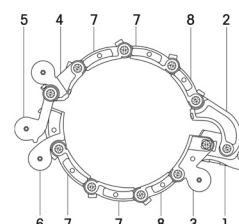


Fig L, 30" - 31^{1/2}", Part no. 200600-4

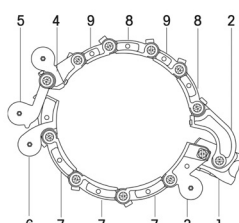


Fig M, 31^{1/2}" - 33", Part no. 200600-5

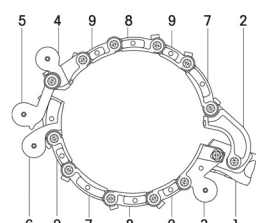


Fig N, 33" - 34^{1/2}", Part no. 200600-6

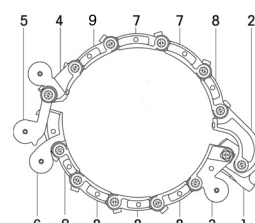


Fig O, 34^{1/2}" - 36", Part no. 200600-7

HT-Tong

9-49

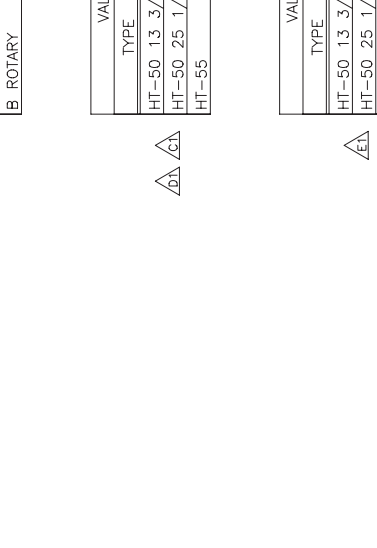
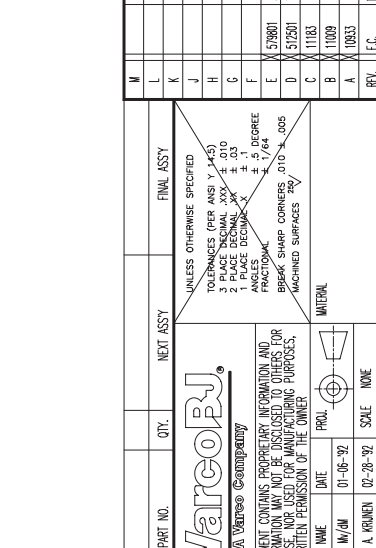


Drawings

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B1	EXT B 13 3/8-36 30793		
B2	EXT B 25 1/2-36 51884		
B ROTARY	11195		

VALID FOR		PART. NO.	
TYPE		TYPE	
E1	HT-50 13 3/8-36 200583		
	HT-50 25 1/2-36 200603		
	HT-55 200566		

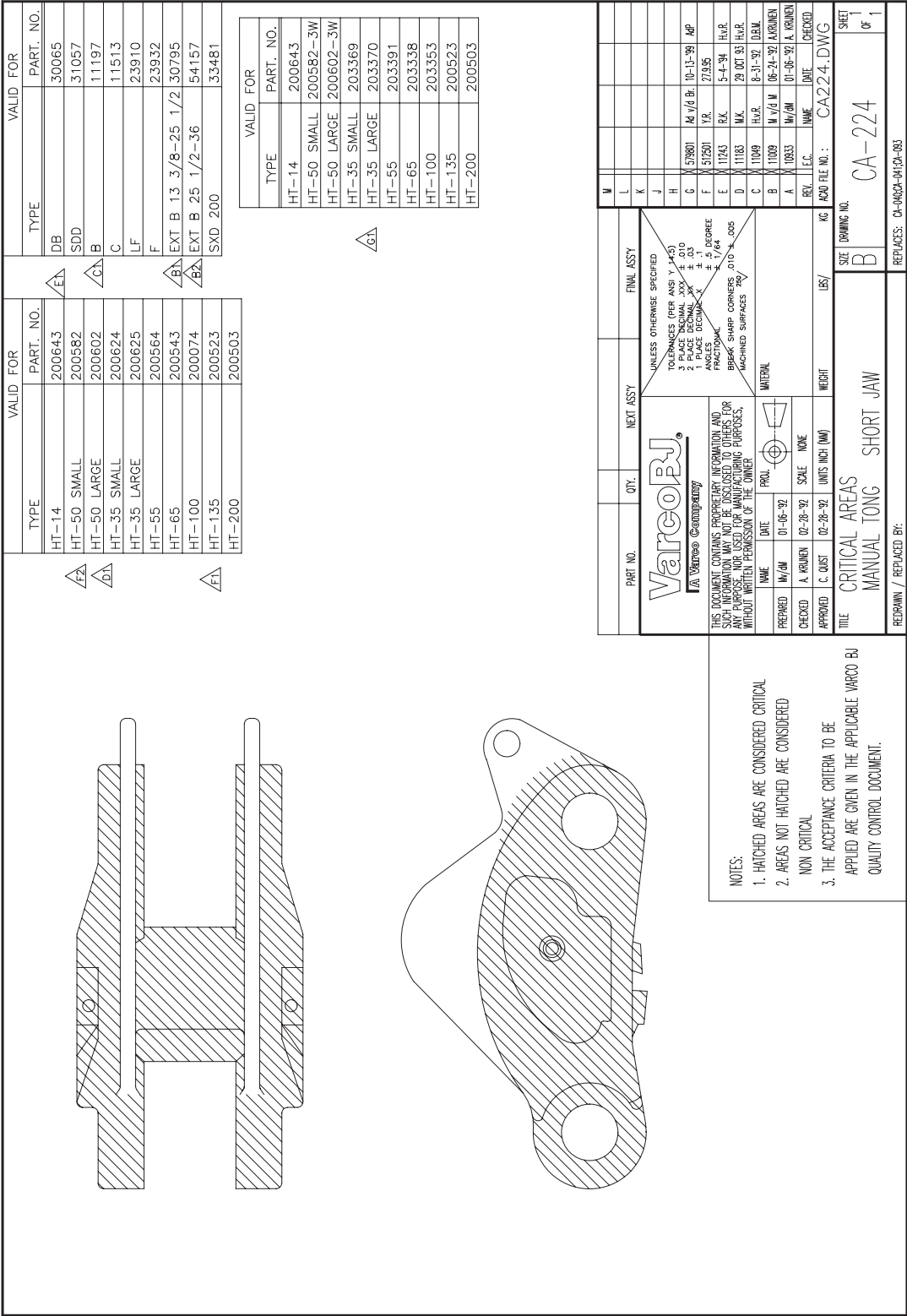
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TYPE		TYPE	
E1	HT-50 13 3/8-36 200583-3W		
	HT-50 25 1/2-36 200602-3W		
	HT-55 200566-3W		

NOTES:

- HATCHED AREAS ARE CONSIDERED CRITICAL
- AREAS NOT HATCHED ARE CONSIDERED NON CRITICAL
- THE ACCEPTANCE CRITERIA TO BE APPLIED ARE GIVEN IN THE APPLICABLE VARCO BU QUALITY CONTROL DOCUMENT.

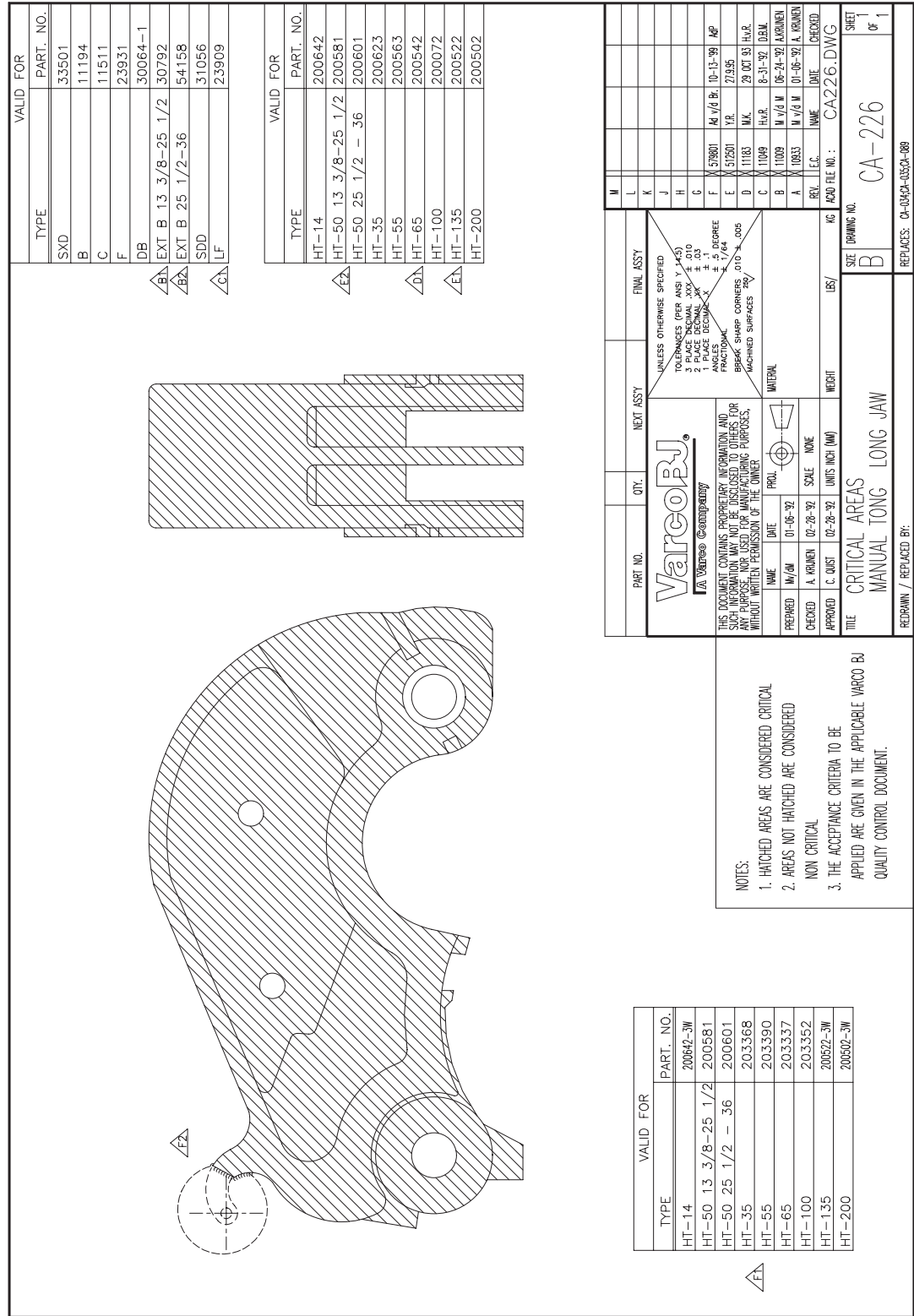
PART NO.	QTY.	NEXT ASSY	FINAL ASSY
Varco Bu. A Varco Company			
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE DISCLOSED TO OTHERS FOR ANY PURPOSE NOR USED IN ANY MANNER WITHOUT WRITTEN PERMISSION OF THE OWNER.			
PREPARED	DATE	DRAWN	MATERIAL
A. KRUMEN	01-16-92		
CHECKED	A. KRUMEN	02-26-92	SCALE NONE
APPROVED	C. QUIST	02-26-92	UNITS INCH (MM)
TITLE		CRITICAL AREAS MANUAL TONG LATCH JAW	
DRAWING NO.		SIZE B	
SHEET 1 OF 1		CA-223	
REPLACES: CA-0062-039			





Drawings

[illegible]



[illegible]

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-14	200644	LF	23914
HT-65	200544	F	23933
HT-65	200544-4	DB	25853-2
HT-100	200073	SDD	31058
HT-100	203360		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524	B	11138
HT-55	200565	C	11933
HT-35	200626		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-200	200504	SXD	200
HT-200	200504-3W		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-200	200504	SXD	200
HT-200	200504-3W		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

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HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

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HT-35	203381		

VALID FOR

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HT-35	203381		

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HT-35	203381		

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HT-35	203381		

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HT-55	203392		
HT-35	203381		

VALID FOR

TYPE	PART. NO.	TYPE	PART. NO.
HT-135	200524-3W		
HT-55	203392		
HT-35	203381		

VALID FOR

