OPERATION AND MAINTENANCE MANUAL

Read the instructions, warnings, and cautions thoroughly before using the tools and keep it well for future referring

TheGAW industries

OPERATION AND MAINTENANCE MANUAL FOR AST AND ALT HYDRAULIC TORQUE WRENCHES

It is the operating manual of the AST series and ALT series wrenches, please read carefully and follow the instructions. warnings and cautions before using the tools.

IMPORTANT RECEIVING INSTRUCTIONS

Carefully inspect all components for shipping damage. If any shipping damage is found, please notify the carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

SAFETY FIRST!

Please read carefully and follow the instructions, warnings, and caution. Please observe the safety precautions so that you can avoid personal and equipment injury when you operate the equipment. AmallGam is not responsible for any damage resulting from the operation of irregularity.

DESCRIPTION

The material of AST series and ALT series Hydraulic Torque Wrenches are Aluminum-Titanium alloy and super high strength alloy steel for increased strength, intensity, and durability of the tool. High repeatability, a precise design with accuracy ± 3%.

AST series, Square Drive Torque Wrenches:

SAFETY GUIDE

The TheGAW Hydraulic Torque wrench safe usage requires correct operation and regular inspection. The user is requested to follow always and carefully. ▲ Precaution to avoid direct loss of economic or property. ▲ Warning to avoid personal injury. Please follow herein before! When using, if something abnormal happens, please shut off the power immediately, and then consult AmallGam Service Team.

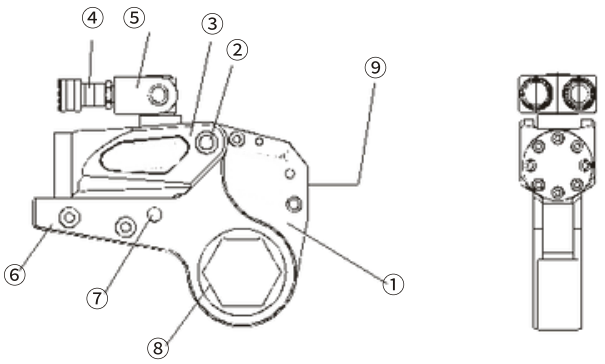


FIG 2

ITEM	NAME
①	LOW PROFILE CASSETTE
②	PIN
③	POWER HEAD
④	QUICK COUPLING
⑤	360° ×360° SWIVEL JOINT
⑥	REACTION ARM
⑦	LINK PIN
⑧	RATCHET
⑨	QUICK RELEASE ARM

WARNING AND CAUTION:

WARNING
To avoid personal injury and equipment damage, be sure that every hydraulic component can rate for IO,OOO PSI (700kg/cm2) Operating Pressure.

WARNING
Try to minimize the danger of overload: Use a hydraulic gauge to indicate the working pressure. A hydraulic gauge is a window to show what happened in the hydraulic system.

WARNING
To replace the worn components with the AmallGam new components as soon as possible.

CAUTION
Do not subject the components to potential hazards such as fire, sharp surfaces, extreme heat or cold, or heavy impact.
Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
Do not let the hose kink, twist, curl, or bend so tightly that oil flow within the hose is blocked.
Do rot use the hose to move the attached equipment. Stress can damage the hose, causing personal injury.

WARNING To avoid personal injuries and equipment damage, do not remove the shroud of the wrench. Do not modify any component of the wrench. Do not change the relief valve which is inside the swivel couplings.

CAUTION
The incorrect system connection will cause failure and danger. Before connection, make sure the swivel couplings are clean. After application, the swivel couplings must be put on the dust caps.
Do not use worn socket and square drive.

CAUTION
Please use the socket with good performance. The quality should be according to the standard of ISO-2725 or ISO-II 74 or DIN3129 or DIN3f 21 or ASME-B107.2/1995.

OPERATION

CONNECTING THE TOOL

The wrench and power pump are connected by a 700 BAR operating pressure, twin-line hose assembly. Each end of the hose will have one male and one female connector to assure proper interconnection between pump and wrench.

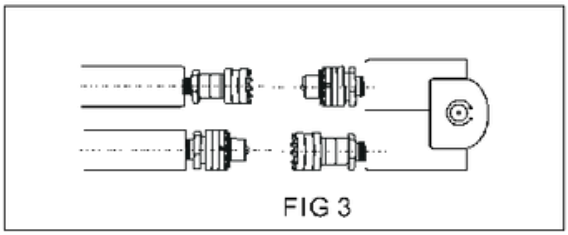


FIG 3

Insure the connectors are fully engaged and screwed snugly and completely together.

IBT SERIES

AST SERIES

DRIVE DIRECTION CHANGE

To remove the square, disengage the drive retainer assembly by depressing the center round button and gently pulling on the square end of the square drive. The square drive will slide easily out.

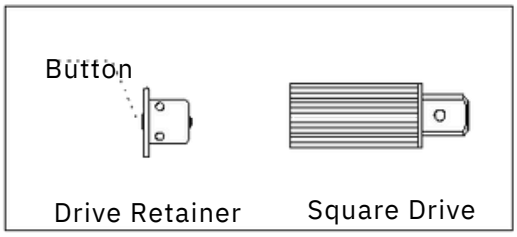
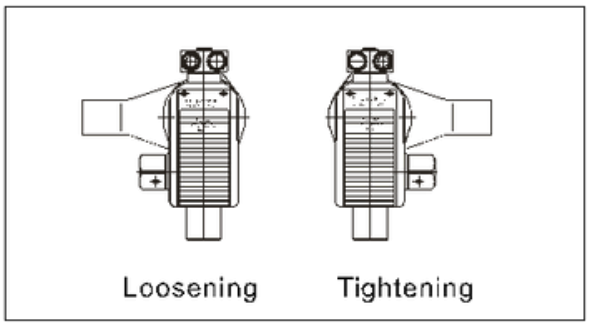


FIG 4

To insert the drive in the tool, place the drive in the desired direction, engage drive and bushing splines, then twist drive and bushing until ratchet spline can be engaged. Push drive through ratchet. Depress drive retainer button, engage retainer with drive and release button to lock.



Right is tight.
Left is loose.

FIG 5

SETTING THE REACTION ARM All AOT's Torque wrenches are equipped with a universal reaction arm.

These reaction arms are
employed to absorb and counteract forces created as the unit operates. The reaction arm should extend in the same direction as the square drive; However, slight adjustments may be made to suit your particular application. The function of a reaction device is to hold the tool in position against the forces generated to tighten or loosen bolts or nuts. Hydraulic wrenches generate tremendous force. The reaction arm can be

positioned in numerous places within a 360° circle. However, for the arm to be correctly positioned, it must be set within a 90° quadrant of that circle. That quadrant is the area located between the protruding square drive and the bottom of the housing away from the swivel inlets. It will always be toward the lower half of the housing and on one side of the housing when tightening and the other side when loosening.

SETTING THE SQUARE DRIVE FOR ROTATION

The position of the square drive when looking toward the shroud will determine if the tool is set to tighten or loosen the nut. When the square drive extends to the left when looking at the shroud with the inlets away from you, the tool is set to loosen the nut. When the square drive extends to the right, the tool is set to tighten the nut. To change the direction of rotation for AST series wrenches simply push the square drive into the housing until the drive projects out the opposite side of the tool.

SETTING THE TORQUE

After determining the desired torque, use the torque conversion charts on page 3 to determine the pressure that is necessary to achieve that torque.

1.Connect the tool to the power supply and turn the pump on.

2.Depress the advance remote control button causing the pressure to be shown on the gauge.

3.Adjust the pressure by first loosing the nut that locks the pressure adjustment handle and then rotate the handle clockwise to increase the pressure and counter clockwise to decrease the pressure. When decreasing pressure, always lower the pressure below the desired point and then bring the pressure gauge back up to the desired pressure.

4.When the desired pressure is reached, retighten the lock nut and cycle the tool again to confirm that the desired pressure setting has been obtained.

FIG 6

OPERATING THE WRENCH

1.Place the square Drive in the socket, insert the socket retainer ring and pin, and place the socket on the nut. Make certain the square drive and socket are the correct size for the nut and that the socket fully engages the nut.

2.Position the reaction arm against an adjacent nut, flange or solid system component. Make certain that there is clearance for the hoses and swivel couplings. Do not allow the tool to react against the hoses, or swivel couplings. When reacting directly off the tool body with reaction arm removed. Do not react off the exposed end plug spigot.

3.After having turned the pump on and presetting the pressure for the correct torque, depress the remote control advance button to advance the piston assembly.

4.When the wrench is started, the reaction surface of the wrench or reaction arm will move against the contact point and the nut will begin to turn. Once the piston reaches the end of its stroke depress the remote control return button to retract the piston.

5.Continue this cycling operation of advance and retract until the nut is no longer turning and the pump gauge reaches the preset pressure. The piston rod will retract when the retract button is pressed and under normal conditions, an audible ⌊click⌋ will be heard as the tool resets itself.
6.Continue to cycle the tool until it ⌋stalls⌊ and the preset psi/torque has been attained.
7.Once the nut stops rotating, cycle the tool one last time to achieve total torque

CAUTION

During the operaticn,if the tool locks cnto the nut ,press advance button on remote and build pressure-continue to press down on remote while pushing down on the reaction pawl-release remote while continuing to push down on reaction pawl,then the tool will be released from the nut.

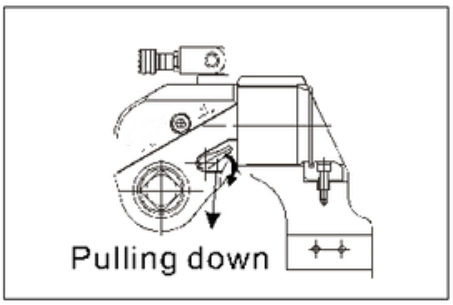


FIG 7

LOW MODEL ALT SERIES

CONNECTING THE POWER HEAD WITH THE LOW PROFILE CASSETTE

Both the square drive cartridge link and the low clearance ratcheting link are inserted and removed from the power head in the same way. The ⌋hook⌊ described by the link's drive plates is inserted around the fixed pin of the power head, and the link is swung down to rest along the base of the power head cylinder. At this point, the link pin holes of the power head and link will align. Insert the link pin to secure.

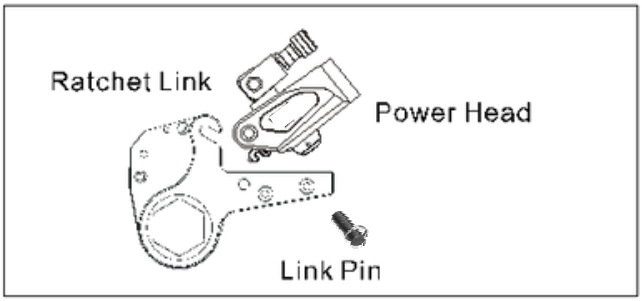


FIG 8

LOW PROFILE WRENCH POSITIONS

The position of the tool relative to the nut determines whether the action will tighten or loose the nut. The power stroke of the piston assembly will always turn the ratchet hex to ward the shroud

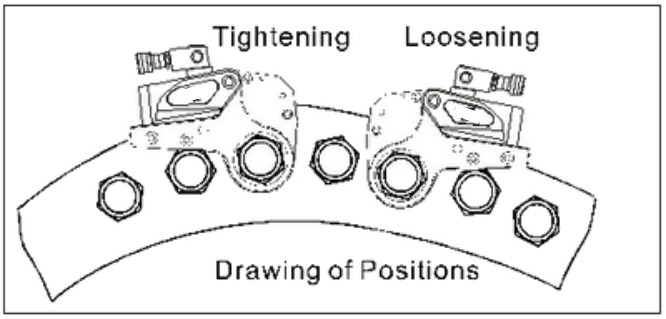


FIG 9

SETING THE TORQUE

After determining the desired torque, use torque conversion charts on page 5 to determine the pressure that is necessary to achieve that torque.

1. Connect the tool to the power supply and turn the pump on.
2. Depress the advance remote control button causing the pressure to be shown on the gauge.
3. Adjust the pressure by first loosing the nut that locks the pressure adjustment handle and then rotate the handle clockwise to increase the pressure and counter clockwise to decrease the pressure. When decreasing pressure, always lower the pressure below the desired point and then bring the pressure gauge back up to the desired pressure.
4. When the desired pressure is reached, retighten the lock nut and cycle the tool again to confirm that the desired pressure setting has been obtained.

OPERATING THE WRENCH

1. Place the ratchet hex on the nut. Make certain it is the correct size for the nut and that it fully engages the nut.
2. Position the reaction surface against an adjacent nut, flange or solid system component. Make certain that there is clearance for the hoses, swivel, and inlets. Do not allow the tool to react against the hoses, swivels or inlets.
3. After having turned the pump on and presetting the pressure for the correct torque, depress the remote control advance button to advance the piston assembly. If the notch in the piston rod did not engage the retract pin in the ratchet engage the pin automatically during the first advance stroke.
4. When the low profile cassette is connected to the housing and the wrench is started, the reaction surface of the wrench will move against the contact point and the nut will begin to turn. Once the piston reaches the end of its stroke depress the remote control return button to retract the piston.
5. Continue this cycling operation of advance and retract until the nut is no longer turning and the pump gauge reaches the preset pressure. The piston rod will retract when the retract button is pressed and under normal conditions, an audible "click" will be heard as the tool resets itself.
6. Continue to cycle the tool until it "stall" and the preset psi/torque has been attained.
7. Once the nut stops rotating, cycle the tool one last time to achieve torque.

CAUTION

During the operaticn,if the tool locks cnto the nut ,press advance button on remote and build pressure-continue to press down on remote while pushing down on the reaction pawl-release remote while continuing to push down on reaction pawl,then the tool will be released from the nut.

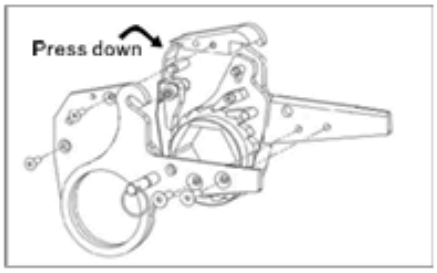
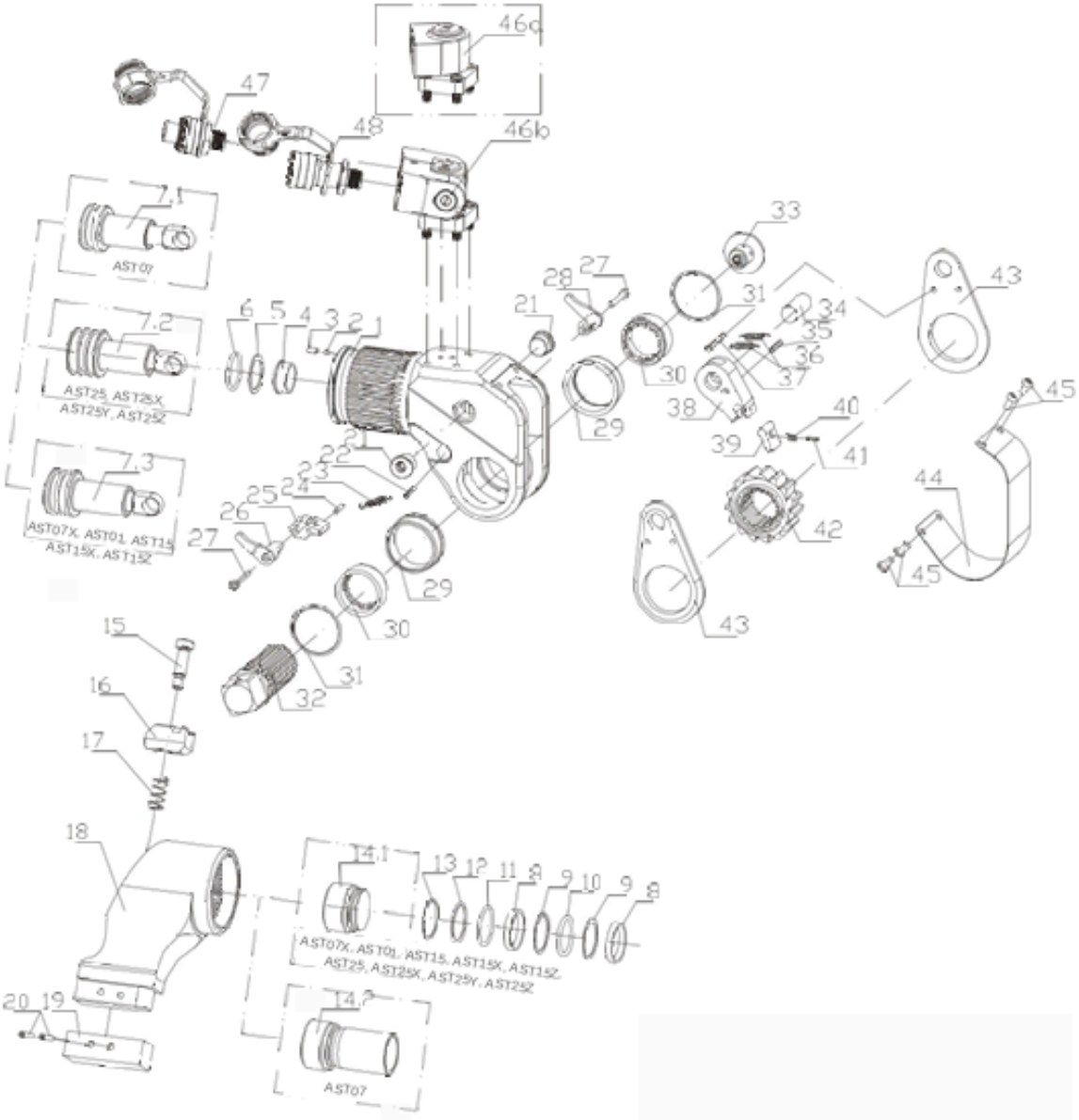


FIG 10

AST SERIES DRAWING AND PARTS LIST

AST07X, AST01, AST15, AST25X, AST25Y, AST25Z SERIES

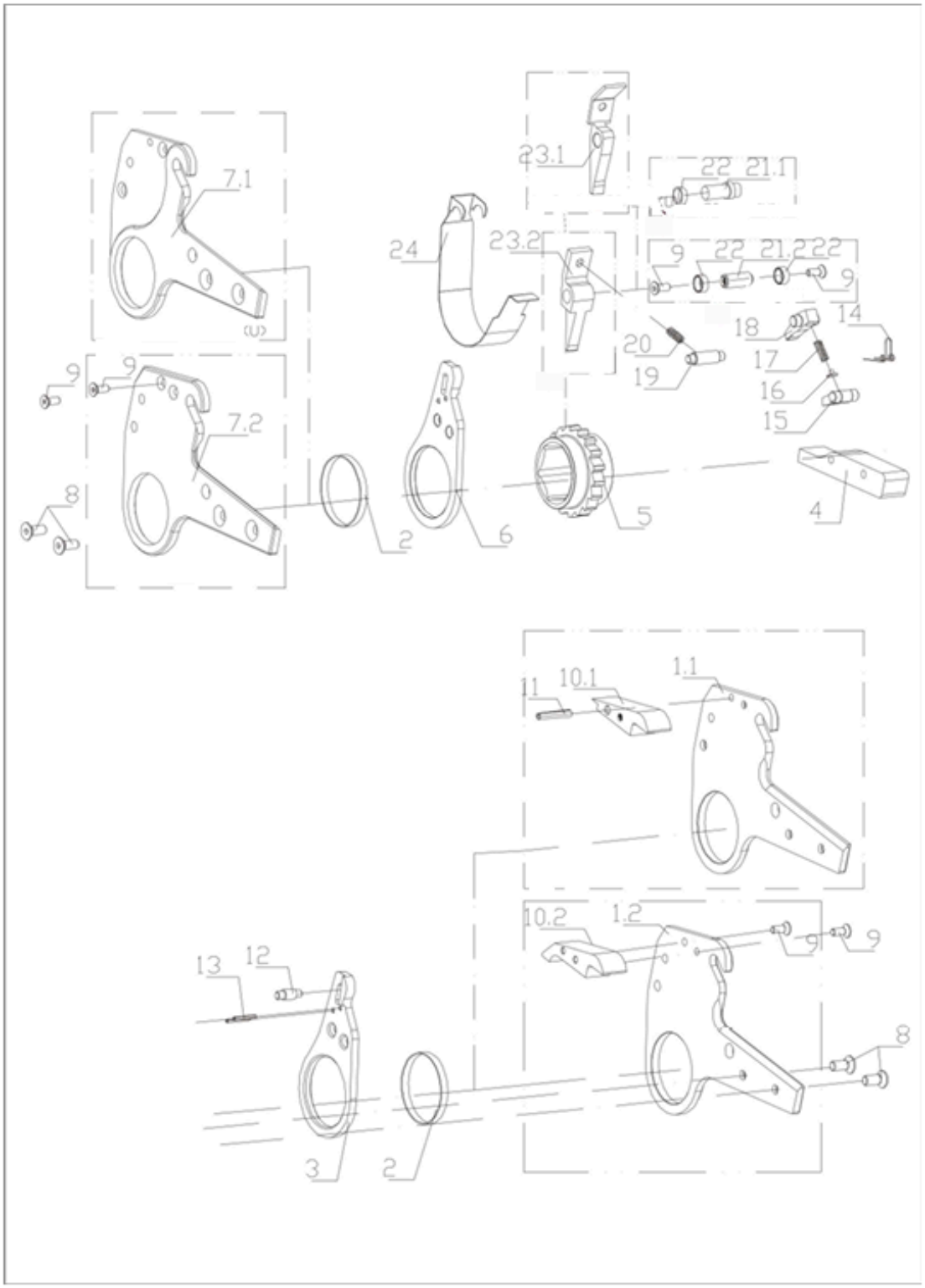


Note: 1. Swivel 46A, and 46B are spares for your choice, and interchangeable.
2.part 7# can not part from the piston rod assembly.

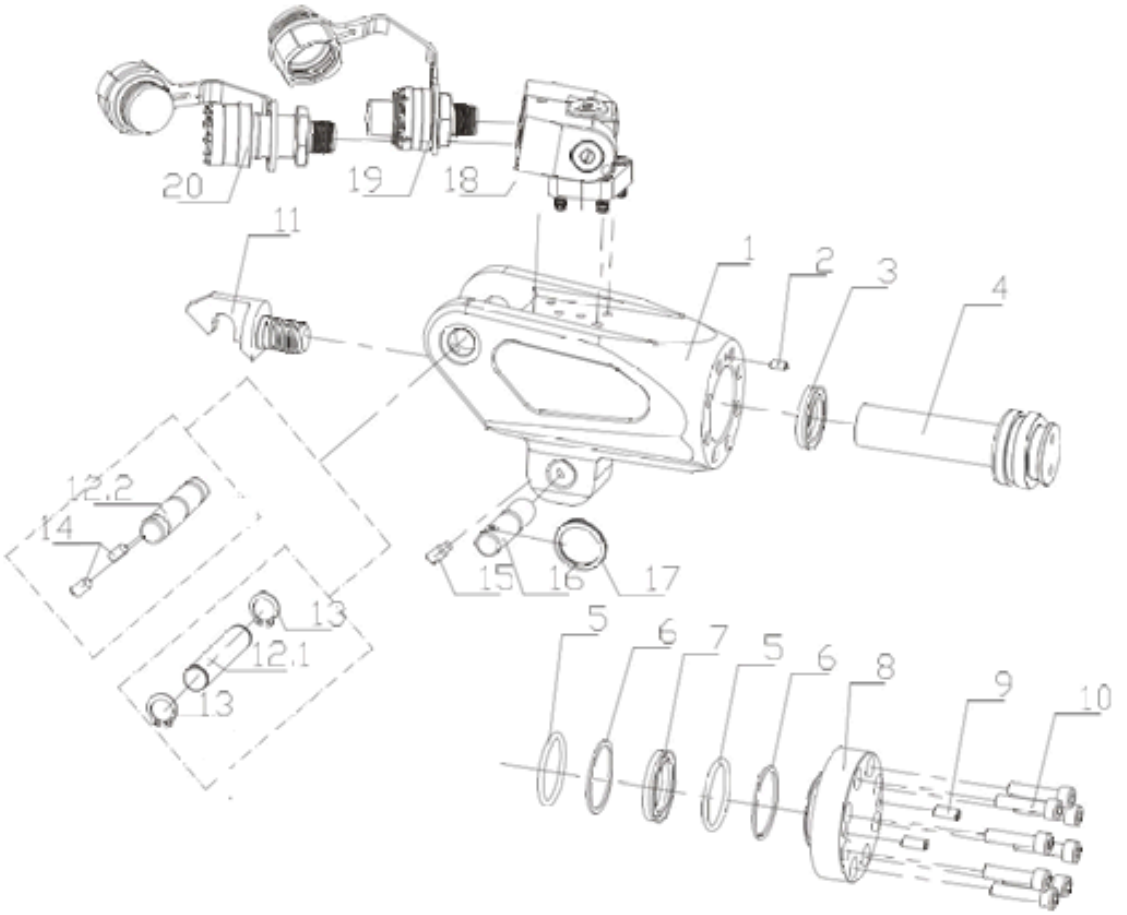
		AST07	AST07X	AST01	AST15	AST15X	AST15Z	AST25	AST25X	AST25Y	AST25Z
Item	Name	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
1	Body	1	1	1	1	1	1	1	1	1	1
2	Steel Ball					1	1	1	1	1	
3	Casing Cap		1	1	1	1	1	1	1	1	1
4	Copper Sleeve for Body										1
5	Retaining Ring of Body		1								
6	O-Ring/U-Ring for Body	1	1	1	1	1	1	1	1	1	1
7.1	Piston Rod Assembly	1									
7.2								1	1	1	1
7.3			1	1	1	1	1				
8	Wearable Ring for Piston Rod		1	1	1	1	1	2	2	2	2
9	Retaining Ring	1	1	1	1	2	2				
10	O-Ring for Piston Rod	1	1	1	1	1	1	1	1	1	1
11	O-Ring for Piston Housing	1									
12	O-Ring for End Cap	1	1	1	1	1	1	1	1	1	1
13	Retaining Ring for End Cap		1	1	1	1	1	1	1	1	1
14.1	End Cap		1	1	1	1	1	1	1	1	1
14.2	Piston Housing	1									
15	Screw	1	1	1	1	1	1	1	1	1	1
16	Reaction Arm Fixer	1	1	1	1	1	1	1	1	1	1
17	Compressed Spring for Reaction Arm	1	1	1	1	1	1	1	1	1	1
18	Reaction Arm	1	1	1	1	1	1	1	1	1	1
19	Reaction Arm Cover	1	1	1	1	1	1	1	1	1	1
20	Pin for Reaction Arm Cover	1	1	1	2	2	2	2	2	2	2
21	Screw	2	2	2	2	2	2	2	2	2	2
22	Pin for Body	1	1	1	1	1	1	1	1	1	1
23	Tension Spring for Reaction Pawl	1	1	1	1	1	1	1	1	1	1
24	Reaction Pawl Pin	1	1	1	1	1	1	1	1	1	1
25	Reaction Pawl	1	1	1	1	1	1	1	1	1	1
26	Button Lever(Left)	1	1	1	1	1	1	1	1	1	1
27	Screw for Button Lever	2	2	2	2	2	2	2	2	2	2
28	Reaction Pawl(Right)	1	1	1	1	1	1	1	1	1	1
29	Drive Bushing	2	2	2	2	2	2	2	2	2	
30	Drive Sleeve Spline	2	2	2	2	2	2	2	2	2	2
31	Circlip	2	2	2	2	2	2	2	2	2	2
32	Square Drive	1	1	1	1	1	1	1	1	1	1
33	Drive Retainer	1	1	1	1	1	1	1	1	1	1
34	Drive Pin	1	1	1	1	1	1	1	1	1	1
35	Roll Pin for Drive Pawl Primary	1	1	1	1	1	1	1	1	1	1
36	Tension Spring	2	2	2	2	2	2	2	2	2	2
37	Drive Plate Pin	1	1	1	1	1	1	1	1	1	1
38	Drive Pawl Primary	1	1	1	1	1	1	1	1	1	1
39	Drive Pawl Secondary	1	1	1	1	1	1	1	1	1	1
40	Compressed Spring for Drive Pawl Secondary	1	2	1	2	2	1	1	1	1	1
41	Pin	1					1	1	1	1	1
42	Ratchet Spline	1	1	1	1	1	1	1	1	1	1
43	Drive Plate	2	2	2	2	2	2	2	2	2	2
44	Shroud	1	1	1	1	1	1	1	1	1	1
45	Screw for Cover Plate	4	4	4	4	4	4	4	4	4	4
46a	Swivel Assembly	1	1	1	1	1	1	1	1	1	1
46b				1	1	1	1	1	1	1	1
47	Male Coupler	1	1	1	1	1	1	1	1	1	1
48	Female Coupler	1	1	1	1	1	1	1	1	1	1

LOW MODEL-ALT SERIES

ALT02, ALT06, ALT10, ALT18, ALT40



LOW MODEL-ALT SERIES



		ALT02	ALT06	ALT10	ALT18	ALT40
Item	Name	Quantity	Quantity	Quantity	Quantity	Quantity
1	Body	1	1	1	1	1
2	Casing Cap of Body	1		1	1	1
3	U-Ring for Body	1	1	1	1	1
4	Piston Rod	1	1	1	1	1
5	O-Ring for Piston Rod	1	1	1	1	1
	O-Ring for End Cap	1	1	1	1	1
6	Retaining Ring for Piston Rod		1	1	1	1
	Retaining Ring for End Cap	1	1	1	1	1
7	U-Ring for Piston Rod	1	1	1	1	1
8	End Cap	1	1	1	1	1
9	End Cap Screw		2	2	2	2
10	Screw of Body	8	8	8	8	8
11	Rod End	1	1	1	1	1
12.1	Fixed Pin Upper	1	1	1		
12.2					1	1
13	Retaining Ring for Fixed Pin Upper	2	2	2		
14	Screw for Fixed Pin Upper				2	2
15	Screw with Spring	1	1	1	1	1
16	Link Pin	1	1	1	1	1
17	Draw Ring	1	1	1	1	1
18	Swivel	1	1	1	1	1
19	Male Coupler	1	1	1	1	1
20	Female Coupler	1	1	1	1	1

TROUBLE SHOOTING GUIDE

TROUBLE	PROBABLE CAUSE	SOLUTION
Piston will not advance or retract	Couplers are not securely attached to the tool or pump	Check the coupler connections and make certain that they are connected
	Coupler is defective	Replace any defective Coupler
	Defective remote control unit	Replace the button and/orcontrol pendent
	Dirt in the direction-contol valve o the pump unit	Disassemble the pump and clean the direction-control valve
Piston will not retract	Hose connections reversed	Make certain the advance on the pump is connected to the advance on the tool and retract on the pump is connected to the retract on the tool
	Retract hose not connected	Connect the retract hose securely
	Retract pin and/or spring broken	Replace the broken pin and/or spring
Cylinder will not build up pressure	Piston Seal and/or End Plug Seal leaking	Replace any defective o-ring
	Coupler is defective	Replace any defective Coupler
Square Drive will not turn	Grease or dirt build up in the teeth of the Ratchet and Segment Pawl	Disassemble the Ratchet and clean the grease or dirt out of te teeth
	Worn or broken teeth on Ratchet an /or Segment Pawl	Replace any worn or damaged parts
Pump will not build up pressure	Defective relief valve	Inspect,adjust or replace the relief valve
	Electric power source is too low	Make certain the amperage,voltage and any extension aord size comply with the pump manual requirements
	Defective Gauge	Replace the Gauge
	Low oil level	Check and fill the pump reservoir
	Clogged filter	Inspect,clean and/or replace the pump filter
Nut Returns with retract stroke	Ball Plungers are not engaging the Drive Sleeves	Thread the Ball Pungers to the correct depth in the Housing

NOTES