

EXTREME™

Auto Processor Excavator Attachment

=====

Manual v13

USA Patents: D672,369 ; D704,752 ; D740,861, 9,211,832 ; D747,170 ; 8,414,704 ; D779,564; D779,565,
9,414,704 & Other Patents Pending



SERIAL NUMBER LOCATIONS (PAGE 2)

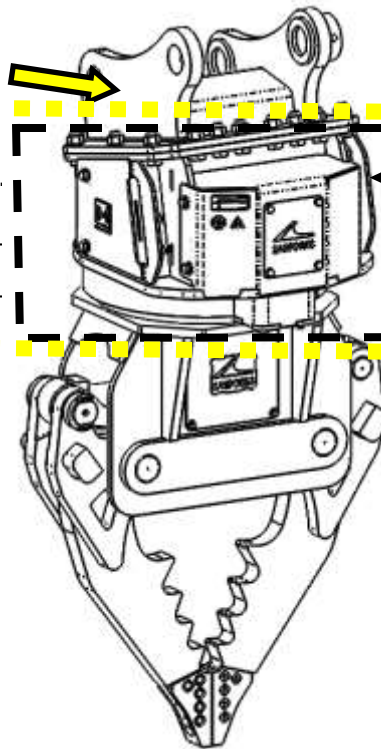
SAS™ EXTREME™ AUTO PROCESSOR

Local Distributor or Supplier Name _____ Phone _____

Locate serial numbers and model numbers on SAS EXTREME Auto Processor Attachment..

Note below for easy reference. Providing this information when contacting your local Distributor, Supplier, Service Representative, or SAS will improve accuracy and level of service.

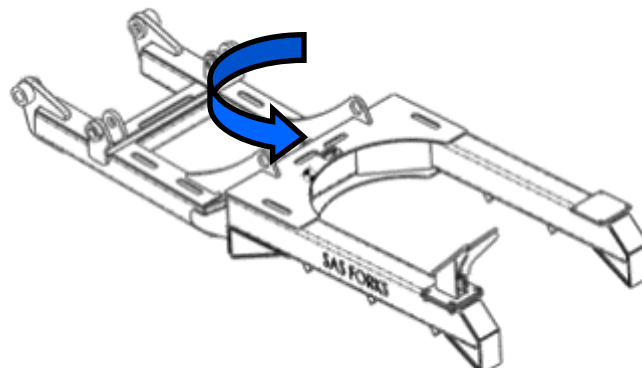
SAS EXTREME
Head Assembly
Model.....
Serial Number _____



~~SAS EXTREME:~~
Rotator Only:
.Model:.....
.Serial Number _____

PATENTED JAWS
& patents pending

SAS EXTREME Hold Down Arm
SAS EXTREME Hold Down Arm Assembly.....Serial Number _____



PATENTED
hold down arm

PATENTED
WIRE STRIPPER

S.A.S. of Luxemburg, LLC. 133 Center Drive Hwy 54, PO Box 260, Luxemburg, WI 54217 USA
Phone: 920-845-2307 • 1-877-SAS-FORK • Fax: 920-845-2309 • Web: www.sasforks.com



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LIMITED INTENDED USE OF THIS EQUIPMENT:

SAS EXTREME™ Auto Processor excavator attachment is designed break recyclable scrap materials from end of life cars and trucks. Not intended to remove or contact batteries, due to corrosive, spark, electrical shock, explosive and fire risks. Materials removed from cars and trucks will be damaged. Some excavators may require modification to pressures, valves, cylinders, reinforcement of x-frame, or other modifications for installation and to operate in a desirable manner. This attachment is considered a non-OEM attachment and has not been approved by any specific excavator manufacturer. Customer is responsible to read the excavator's manual and warranty documents, if any, and identify any impact installation and use of this attachment may have on the excavator's warranty. Read this manual completely before installation or use.

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INTRODUCTION LETTER (PAGE 4)

SAS™ EXTREME™ AUTO PROCESSOR

TO THE OWNERS, MANAGERS, AND OPERATORS OF EXCAVATORS EQUIPPED WITH SAS™ EXTREME™ AUTO PROCESSOR

Safety is the most important issue in the workplace. Observing safety guidelines, equipment capacities and using common sense will provide a work environment that is safe and efficient for employees, management and customers. It is important that you and your operators read and understand the information included in this manual prior to use of this equipment.

Safety warnings are highlighted through out this manual. Understanding the significance of these symbols is important. The following is a definition of each symbol you will encounter in this manual:



The Symbol is intended to draw your attention to important safety information, hazard or precaution.



The Danger Symbol indicates a hazardous situation that if not avoided will result in serious injury or death



The Warning Symbol indicates a hazardous situation that if not avoided could result in serious injury or death



The Caution Symbol indicates a hazardous situation that if not avoided could result in minor injury or potential property damage



The Notice Symbol indicates worst credible severity of harm is property damage.

The following information presented in this Operator Manual for SAS FORKS™ is intended to be a guide only, and is not meant to encompass all issues that may need to be addressed for your particular type of business operation.

If you encounter additional information that would be helpful to us, or others, please contact us.

Thank you for your business,

SAS Ltd.

S.A.S. OF LUXEMBURG, LLC.

133 Center Dr Hwy 54 · PO Box 260

LUXEMBURG, WI 54217 U.S.A.

Phone:

U.S.A. Dial: 920-845-2198

International: 00+1+920-845-2198

Email:

buyit@sasforks.com

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USA Patents: D672,369 ;D704,752 ; D740,861; D779,564; 9,815,128; D779,565; 9,211,832; 9,414,704; D747,170

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GENERAL SAFETY GUIDELINES (PAGE 5)

SAS™ EXTREME™ AUTO PROCESSOR

Installation & operation of equipment should only be performed by qualified and trained individuals. All persons operating or working in the area of operation should read this manual. A copy of this manual should be kept with the equipment. A qualified operator will operate the machine safely in accordance with, and:

- Understand the written instructions supplied by the manufacturer of the device, the manufacturer of the excavator, all company rules and any applicable OSHA or regulatory governing body regulations.
- Completed training including actual operation of the device and excavator to which it is attached.
- Know and follow the safety rules and regulations of the jobsite.



Operation of equipment by un-qualified or un-trained individuals can result in serious injury or death. All operators must be properly trained prior to operation.

Not designed to be operated in an explosive environment. Only use this equipment in well ventilated areas, a sufficient distance away from flammable or explosive gases, liquids or substances to avoid risk of ignition. Operating in an explosive environment may cause an explosion and fire, resulting in injury, death, property damage.



Serious bodily injury, death and property damage can be caused by an operator that is under the influence of drugs or alcohol (of any type, illegal, prescribed or over the counter) due to impaired operator judgment. Do not operate when impaired. Consult your physician before operation of this equipment while on medication.



Inspect the device and perform all preventative maintenance before operation at the start of every work shift. Failure to perform inspections or proper maintenance can result in equipment failure resulting in serious injury or property damage.



This equipment is operated by high pressure hydraulics. Hydraulics are a stored power source and as such must be treated as energized at all times. Be certain pressure has been relieved prior to handling, inspecting or performing maintenance on this unit. Follow lockout tag out procedures and release all stored energy before servicing equipment. Failure to release energy or disable hydraulic energy can result in serious injury or death. High pressure fluids can also discharge at great velocity and cause injection into skin. Wear safety glasses and appropriate gloves while inspecting, operating and maintaining this equipment.



This equipment has numerous moving components. Operate only from the cab equipped with safety glass windshield and adequate protective steel guard while seated and wearing a safety belt. Be aware of potential pinch points and keep clear during operation, inspection and maintenance. Pinch points exist between grapple attachment jaws, cab swing, hold down arms and others, failure to keep clear while in operation can result in serious injury or death.



Do not exceed posted weight limits on equipment. Exceeding rated load limits will result in equipment damage, loss of steering control, machine tip over, serious injury or death.

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GENERAL SAFETY GUIDELINES (PAGE 6)

SAS™ EXTREME™ AUTO PROCESSOR



PROTECTIVE EQUIPMENT



- Safety glasses with side shields
- Work boots with heavy sole and safety toes
- Fire extinguishing equipment
- Other such safety equipment to protect personnel from injury.
- Leather gloves
- Hard hat
- Adequate spill kit, oil dry etc.



Puncture or cut injuries may occur if contact made with sharp objects. Sharp objects are present from breaking materials out of scrap cars. Avoid contact.



Do not work under grapple claws, hold down, or any object lifted by this equipment. An unexpected movement, shift in the object, or hydraulic failure may cause claw, hold down, or object drop. Serious injury or death may occur.



PERSONNEL TRAINING



Prior to installation or use of this equipment all personnel must review this operator manual, excavator manufacturer's manual and other pertinent safety manuals and be trained by qualified personnel. All hazards must be identified to ensure personnel avoid these hazards. Signed documentation certifying individual training has been completed is a must. Periodic retraining is recommended. Failure to follow Manufacturers recommendations can result in serious injury and property damage.

SITE PREPARATION & CLEAR OPERATING SPACE RECOMMENDED



- The Extreme™ Auto Processor should only be used in areas that are equipped with proper fluid containment measures, to ensure capture and containment of residual fluids in accordance with any and all environmental regulating body.
- Operation area must be sufficiently clear of buildings and overhead power lines.
- No Smoking, Safety Glasses & Hard Hat Required signage is recommended.
- Provide adequate space around this equipment to ensure all persons are kept at least 15 Meters (50 feet) away from the equipment and cars being moving by it.

VEHICLE PREPARATION PRIOR TO USING THE EXTREME™ AUTO PROCESSOR



- Prior to use of this attachment, remove all batteries, gasoline, diesel fuel, all types of fuels, mercury switches, air conditioning Freon, engine oil, transmission fluid, antifreeze and other fluids.
- Engines, transmissions, and other components will be damaged, and only be suitable for metals recycling, not as cores or resalable operable parts.



Vehicles contain several hazardous elements that pose explosion and fire hazards, such as gasoline and electric batteries containing battery acid. Be sure these are safely removed prior to using the EXTREME™ Auto Processor. Failure to remove may result in explosion, fire hazard & injuries. Keep adequate fire suppression equipment accessible and persons trained on operation.



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CE SPECIFIC NOTICES (PAGE 7)

SAS™ EXTREME™ AUTO PROCESSOR



EMERGENCY STOP FUNCTION

To immediately stop the motion of this equipment:

1. Operator is to release all joystick button(s).

Additional secondary measures to immediately stop the motion include:

2. Moving excavator's auxiliary hydraulic 3rd spool lever to neutral

position

3. Turn off ignition key of excavator to shut off engine

All three emergency stop options stop flow of hydraulic fluid. See excavator manufacturer's operator manual to identify proper controls & functions prior to use.



po-

NOTICE

Even after emergency stop function is followed, there is residual stored hydraulic pressure in the system. See following:

WARNING

THIS EQUIPMENT IS OPERATED BY HIGH PRESSURE HYDRAULICS.

Hydraulics are a stored power source and as such must be treated as energized at all times. Be certain pressure has been relieved prior to handling, inspecting or performing maintenance on this unit. Follow lockout tag out procedures and release all stored energy before servicing equipment. Failure to release energy or disable hydraulic energy can result in serious injury or death. High pressure fluids can also discharge at great velocity and cause injection into skin. Wear safety glasses and appropriate gloves while inspecting, operating and maintaining equipment.



WARNING

STAY CLEAR

- Do not lift persons with this equipment. Not intended to lift people
- Always maintain a safe distance away from this equipment.
- Do not go near or under this equipment or any object lifted by this equipment. Failure to stay clear will result in injury or death.
- Refer to and follow all additional safety information in excavator manufacturer's operator, safety and service manuals.



POWER FAILURE

In the event of electrical or hydraulic supply failure from the excavator occurs, the equipment will stop further motion. Under normal circumstances the equipment is not expected to drop a load. *The symbol at the left indicates the hydraulic controls on this equipment are normally closed.* Thus without electrical power the gate valves are closed, in essence halting further movement. **See excavator manufacturer's operator manual to identify actual operation during power failure mode prior to use.**



SOUND

This equipment does not emit more than 70dba.



VIBRATIONS

This equipment does not transfer vibrations in excess of 2.5m/s².



OPERATING TEMPERATURE

Equipment is best suited to operate in temperatures 0°C to 32°C (32°F to 90°F) with minimum temperature -30°C (-23°F) and maximum temperature 65°C (150°F)



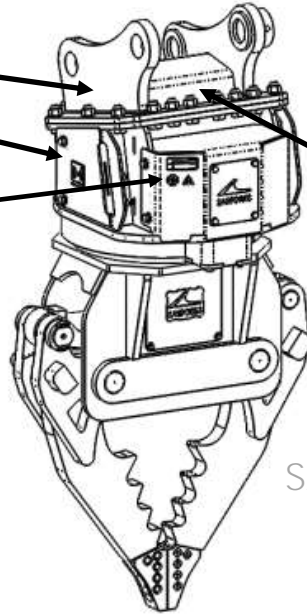
SAFETY LABELING (PAGE 8)

SAS™ EXTREME™ AUTO PROCESSOR

LABEL 1

LABEL 2 (BOTH COVERS)

LABELS 3,4,5



SERIAL NUMBER LOCATIONS
-Stamped in steel
Serial Number Format SAS F####

SAS PATENTED JAWS
& patented tips



LABEL 1:

Label Description
PRODUCT ID PLATE

Quantity **Label reorder #**
1 ID PLATE CE-EX



LABEL 2:

KEEP BACK 15 METERS (50 FT)

2 W-LAB-STAYBACK50FT



LABEL 3:

KEEP AWAY MOVING PARTS

1 W-LAB-WARNING-PINCH



LABEL 4:

READ EQUIPMENT MANUALS

1 W-LAB-READ-504060



LABEL 5:

HIGH PRESSURE HYDRAULICS

1 W-LAB-PRES-503600



LABEL 6:

STABILITY LABEL FOR CAB

1 W-LAB-EX-STABLE-1

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INSTALLATION: PREPARATION (PAGE 9)

SAS™ EXTREME™ AUTO PROCESSOR

ADVANCE PREPARATION BEFORE ARRIVAL & INSTALLATION OF EXTREME AUTO PROCESSOR

- Review this operator manual. Review operator, safety & service manuals of excavator manufacturer.

Items you need to obtain before arrival of Extreme™ Auto Processor:

- Excavator must have two bi-directional auxiliary hydraulics at the end of the stick with cab controls.
- Excavator must have one filtered free flow drain line back to tank
- Hydraulic fluid (specific for your machine). Identify fluid check and fill points.
- Identify and obtain needed hydraulic hose quick connections on your machine and fitting required.
- Locate supplier to make hydraulic hoses (Minimum recommend 19 mm (3/4") diameter, 34 Mpa (5,000 PSI) hoses and fittings once proper length is determined during installation.

Tools your mechanic may need for installation:

- Sockets, wrenches, large adjustable wrench, large rubber hammer, hydraulic bottle jack, grease gun

Service to do on your excavator in advance:

- Have maintenance personnel replace hydraulic system filters & fluids (as needed)
- Pressure and flow test. Have pressure results available. Set pressures between 24-31 Mpa, 240-310 Bar (3,500-4,500 PSI). Not to exceed 31 Mpa, 310 Bar (4,500 PSI)
- Inspect pins & bushings in arm and dozer blade for wear (replace as needed)
- SAS has no responsibility as to performance of excavator's hydraulic system with this attachment.

Available for training:

- Designate an area (i.e. where it is safe to run equipment) and an employee to operate unit
- Designate operator who can read and speak English, if SAS staff onsite to assist your mechanic.

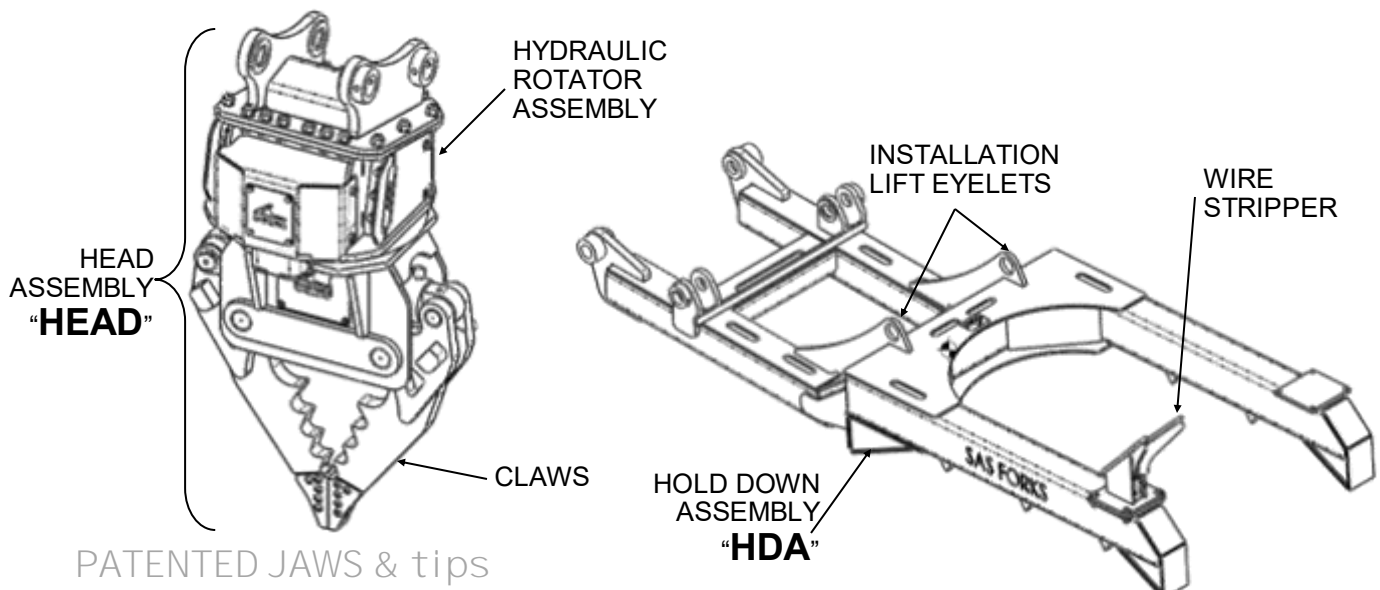


Installation Hazards (Additional details covered elsewhere in this manual):

- Pinch & crush points, High pressure hydraulics, Stored pressure, Skin injection risk
- **Installing this Extreme Head & Hold Down Assembly will change lifting dynamics & likely reduce lift capacity and reduce stability of the excavator.**

- Installer and operator must use caution in establishing reasonable lift capacities. Consider Head & HDA attachment weights and excavator manufacturer's manual guidance. These hazards may cause equipment damage, injury or death. Only qualified persons should complete installation.

COMPONENT IDENTIFICATION



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INSTALLATION: PREPARATION (PAGE 10)

EXCAVATOR FRAME REINFORCEMENT

POTENTIAL X-FRAME REINFORCEMENTS TO CONSIDER:

Excavator OEM x-frame brackets which mount OEM dozer blade may not provide sufficient distribution of loads from SAS Extreme Hold Down Arm attachment & may result in x-frame & bracket structural failure.

- Careful consideration of this information will reduce the likelihood of x-frame & x-frame bracket failure.
- **Operational advice:** Minimize the amount of down force applied when restraining the car, specifically, avoid pushing down to the extent that the front of the excavator is lifted and suspended.
- This document is not authorization to modify excavator x-frame, it is intended to provide a guide for consideration of reinforcements for Customer, OEM, OEM authorized equipment tech., & professional welder.

NOTICE: Any reinforcement work may cause Excavator OEM warranty, if any, to be void.

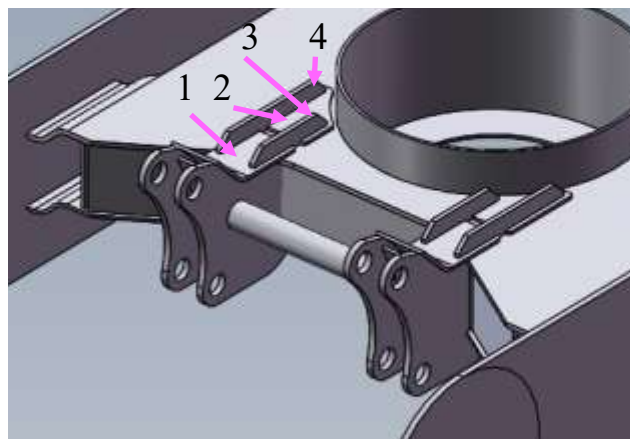
• Any reinforcement/modification of x-frame may cause other unintended cracking or damage. SAS is not responsible for reinforcement installation or performance, or resulting issues, if any.

SAS Limited Warranty applies only to SAS manufactured components, not excavator, x-frame or x-frame brackets.

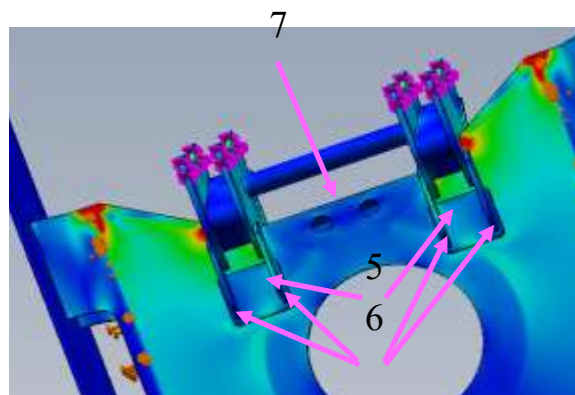
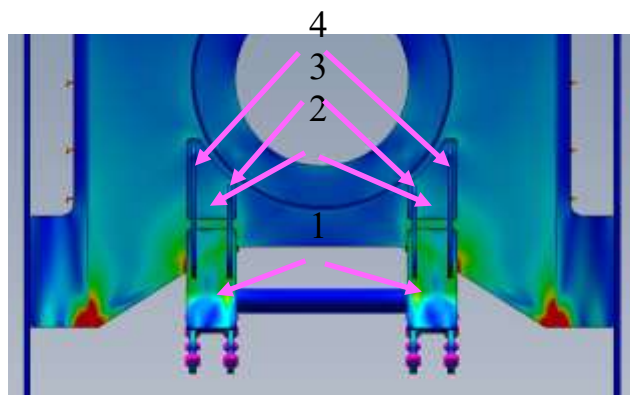
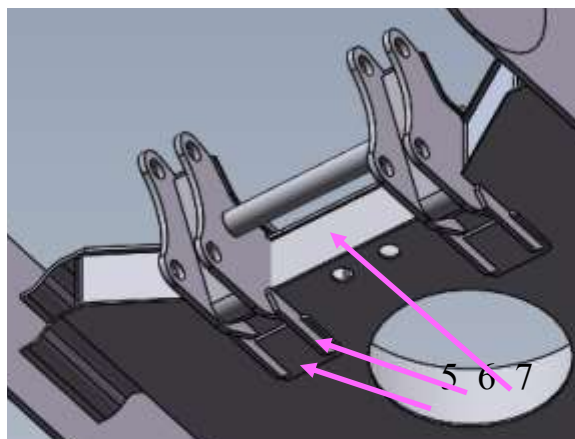
Intent is to extend the force back further on x-frame where there is internal support to dissipate the loading forces.

- Reference:
- | | |
|---|--|
| 1 - OEM hinge base plate existing | 5 - NEW lower base plate expansion (two) |
| 2 - NEW hinge base plate expansion (two) | 6 - NEW lower load rib extension (four) |
| 3 - NEW inner vertical load rib extension (two) | 7 - NEW mid hinge frame tie in plate (one) |
| 4 - NEW outer vertical load rib extension (two) | |

Upper view



Lower view



Welding can damage excavator electronics.
Read excavator manufacturer's manual before welding.



NOTICE

High pressure hydraulics. Stay clear of pinch points to avoid serious injury. Relieve pressure prior to work.

Follow safety precautions in SAS EXTREME Auto Processor Manual prior to work.

www.sasforks.com/safety

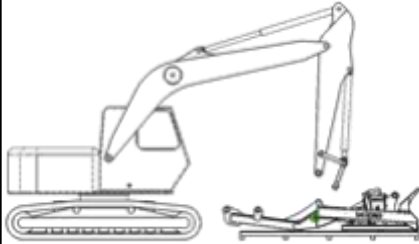


INSTALLATION: HOLD-DOWN ASSEMBLY (PAGE 11)

SAS™ EXTREME™ AUTO PROCESSOR

INSTALLATION OF SAS™ EXTREME™ AUTO PROCESSOR HOLD DOWN ASSEMBLY (HDA):

INSTALLATION SHOULD BE COMPLETED BY AN EXPERIENCED HEAVY EQUIPMENT MECHANIC

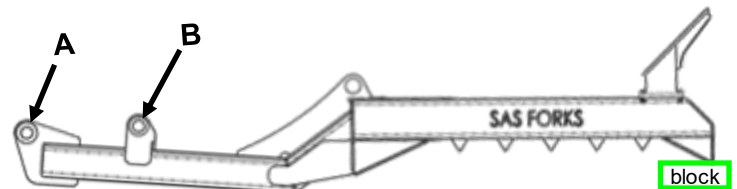
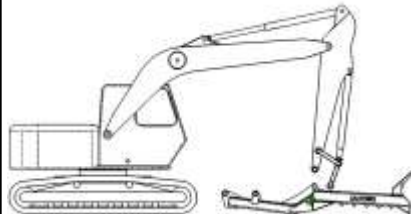


1. Remove existing dozer blade. Inspect pins and bushings. Replace as needed.
2. Hold Down Assembly (HDA) weight approximately 1,600 kg (3,500 LB). Eyelets in center of HDA is balance point. If excavator is sufficiently rated to lift such, align stick with lifting eyelets. Using safe and adequately rated rigging chains, keeping all persons clear, lift HDA off pallet. Move away from shipping pallet and place on ground with block in place which will allow upper surface of HDA to be level.



3. HDA should be set level as shown below for staging. Drive excavator up to HDA and align lower pivot holes in dozer blade mount on excavator with holes "A" in HDA. Insert and secure pivot pins into assembly.
4. With pivot pins inserted and secure, slowly extend dozer blade hydraulic cylinders to align holes in rod end of cylinder to lift holes "B" in HDA. Keep clear of pinch points. Insert and secure pivot pins into assembly.
5. Replace any guarding that may have been removed during the removal of the dozer blade assembly.

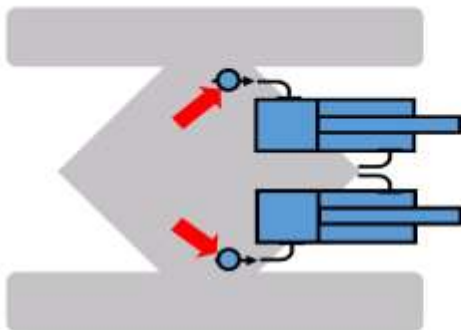
SAS has no responsibility as to performance of excavator's Hydraulic system or structural adequacy or durability with this attachment.



GROUND

AFTER INSTALLATION, PRIOR TO OPERATION

1. Grease all pivot points with Stick and HDA resting on the ground and machine engine off.
2. Stay clear of pinch points. Slowly engage controls. Watch for interference. Stop if interference occurs.
 - a) **Test up and down** motions of HDA. Due to differences in machines and cylinder control valves, if down cycle is not smooth, a jerking condition may occur.



Typically this can be rectified by installing simple flow control valves on the hydraulic lines which feed the extend side of the dozer cylinders. (Indicated by arrows). (see Hold Down Parts list on separate page). Two flow control valves are included in parts kit with Qty 2, SAS Part No. HV-FLW-D-EF30S : Thread #8 NPT

Install flow control valves with fittings between car body frame hose connection and hydraulic hose. Turn settings to near zero.

Test motion. Slightly open valves uniform amount. Retest. Repeat until jerking occurs, then turn back to achieve smooth motion.

- b) **Test rotational clearance** with HDA raised incrementally high-

er. Stay clear of pinch points, overhead electrical wires, and other structures, slowly and cautiously rotate cab and counter weight visually checking for interference of lower cab and counter weight with HDA lifted at highest level.

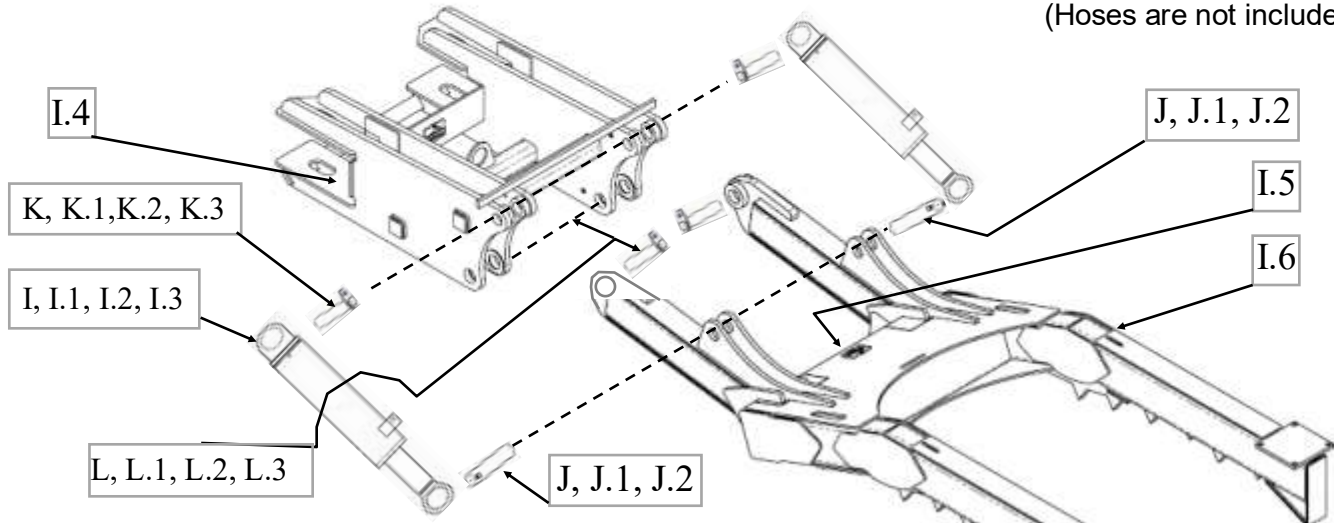
Stop if interference occurs.

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INSTALLATION: HINGE & HYDRAULICS (PAGE 12)

SAS™ EXTREME™ AUTO PROCESSOR

OPTIONAL: SAS SUPPLIED HINGE, HYDRAULIC DIVERTER BLOCK & CYLINDERS:
 INSTALLATION SHOULD BE COMPLETED BY AN EXPERIENCED HEAVY EQUIPMENT MECHANIC
 (Hoses are not included)



DESCRIPTION

[I] Cylinder for SAS Hinge & Hold Down **2** **HY-CYL-5.0X11.25-5K**

This cylinder is not for use with excavator which had existing dozer blade. Call excavator manufacturer.
 CYLINDER COMPONENTS (IDENTIFY CYLINDER STAMP TO SELECT CORRECT PARTS)

BM: Cyl stamp includes.... BM....I.-1 CYL SEAL KIT.....	1	HK-5.00-783-244
Cyl stamp includes.... BM....I.-2 CYL PIN BUSHING	2	W-B2.500X3.000X2.000
Cyl stamp includes.... BM....I.-3 CYL PIN GREASE SEAL	2	W-WIPER-2.5X3.0
RR: Cyl stamp includes.... RR....I.-1 CYL SEAL KIT	1	HK-5.00-732703
Cyl stamp includes.... RR....I.-2 CYL PIN BUSHING	2	W-B2.505X3.002X2.000
Cyl stamp includes.... RR....I.-3 CYL PIN GREASE SEAL	2	W-WIPER-2.5X3.0

I.4 Hinge (weldment)	1	0-EX-HGN- (Custom # per machine)
Read warnings on "Excavator Frame Reinforcement" page & separate instructions provided with hinge.		
I.5 Id plate	1	ID-PLATE-CE-EX (Specify serial no.)
I.6 Hold down arm (weldment).....	1	0-EX-HD- (Custom # per machine)

[J] Pin (cylinder to hold down: rod end) **2** **1903-202VOL220-5112**

J.1 Bolt (for cyl rod end pin)	2	WBOLT 0.375X425 GR8
J.2 Nut (for cyl rod end bolt).....	2	WNUT 0.375-16-GR8-NY

[K] Pin (cylinder to hinge: base end) **2** **1904-006VOL220-5112A**

K.1 Bolt (cylinder base pin)	2	WBOLT 0.625X1.50 GR8
K.2 Pin lock spacer (cylinder base pin).....	2	SPACER-0625-0000
K.3 Flat Washer (cylinder base pin).....	2	WASHER-F 0.625 GR8

[L] Pin (hold down to hinge: lower pivot) **2** **1315TILT-3454 ASY**

L.1 Bolt (lower pivot pin)	2	WBOLT 0.625X1.50 GR8
L.2 Pin lock spacer (lower pivot pin).....	2	SPACER-0625-0000
L.3 Flat Washer (lower pivot pin)	2	WASHER-F 0.625 GR8

[M] HYDRAULICS

These parts are not for use with excavator which had existing dozer blade. Call excavator manufacturer.

M.1 Flow valves (thread #8 NPT)..... 2 HV-FLW-D-EF30S

If jerking occurs during lowering Hold Down Arm (HDA), install flow valves on hydraulic lines which feed extend side of both cylinders, adjust equally reduce flow to eliminate or reduce this issue.

M.2 Counter balance block (empty block) 2 HV-BLK-S-YEJ-S

M.3 Counter balance valve (valves for block) 4 HV-CB-S-CBPA20MNS050

After cycling the Hold Down Arm a number of times to eliminate air in lines, if Hold Down Arm does not hold it's positioning, install counter balance valve block with valves in line before each cylinder.

M.4 Pilot valve (see next page)..... 1 HV-BLK-F-DS70HP-1

INSTALLATION: HINGE & HYDRAULICS (PAGE 13)

SAS™ EXTREME™ AUTO PROCESSOR

OPTIONAL: SAS SUPPLIED HINGE, HYDRAULIC DIVERTER BLOCK & CYLINDERS:
INSTALLATION SHOULD BE COMPLETED BY AN EXPERIENCED HEAVY EQUIPMENT MECHANIC

(Installation may impact or void machine OEM warranty, if any)
 (Hoses are not included)



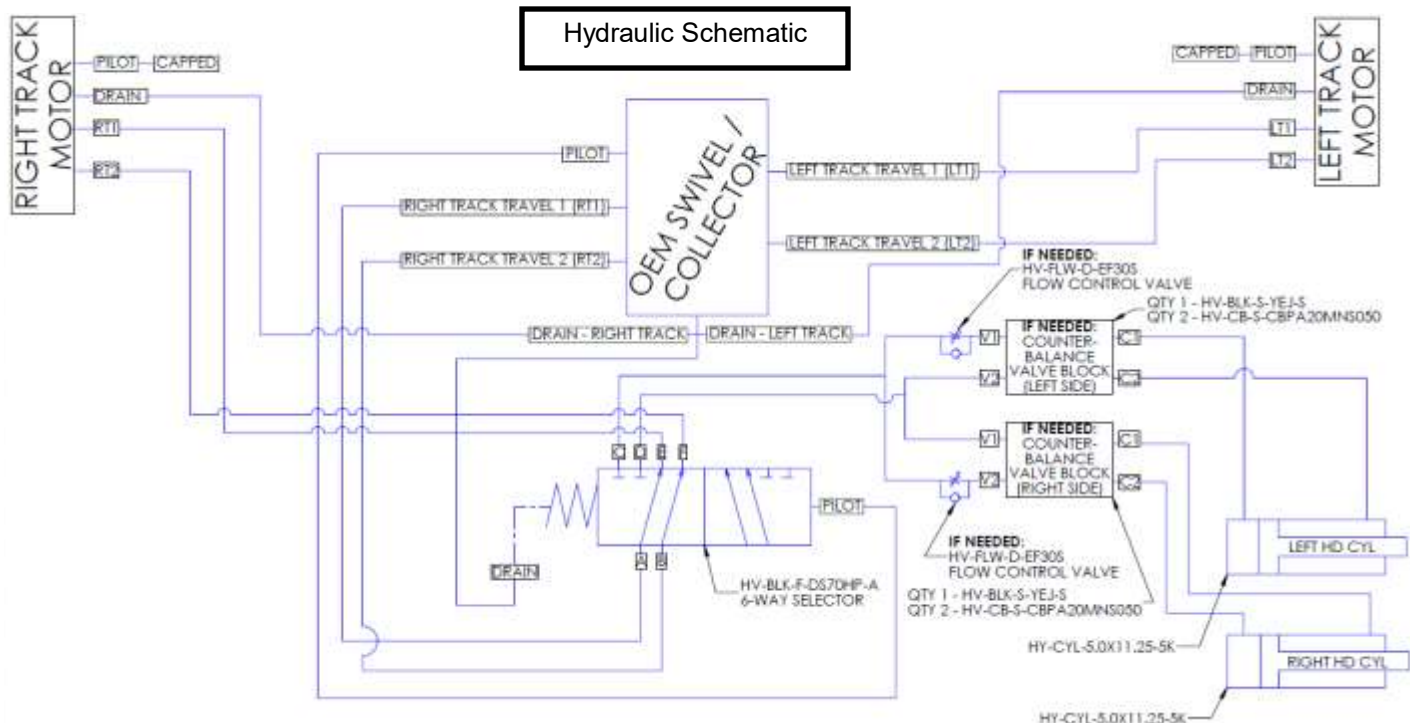
DESCRIPTION

M.4 Pilot Operated Selector Valve Block ['Valve']..... QTY 1 PART NUMBER HV-BLK-F-DS70HP-1

Locate 'Valve' for installation within protected area inside the x-frame belly.

Purpose: Divert fluid from right track to hydraulics to SAS Extreme hold down cylinders.

- Ports A & B are input into 'Valve' which are pulled downstream of swivel/collector underneath the excavator that would originally route to one drive motor for one of the tracks, SAS has always used the 'right' track hydraulics.
- Ports E & F are then routed to drive motor for right track in standard position.
- The high speed pilot line that originally runs to each the left and the right track drive motors is disconnected from the motors and now only is routed to the pilot port on this 'Valve'. This pilot line is typically the smaller of the two small lines that run through the swivel/collector. This enables the 2nd position of the 'Valve' to function when the 'high speed' function is actuated in the cab of the excavator.
- With this pilot line pressurized, the ports C & D are now live and will be routed to the cylinders to position the hold down up and down.
- 'Drain line' is final port on 'Valve', this will be need to be teed into existing drain line that runs from each track drive motor and back up through the swivel. This line is typically larger of two 'small' lines running through swivel/collector.



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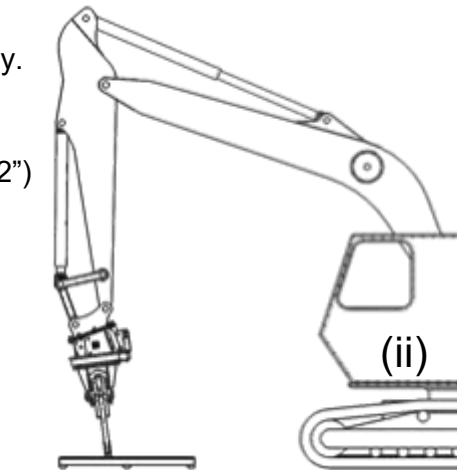
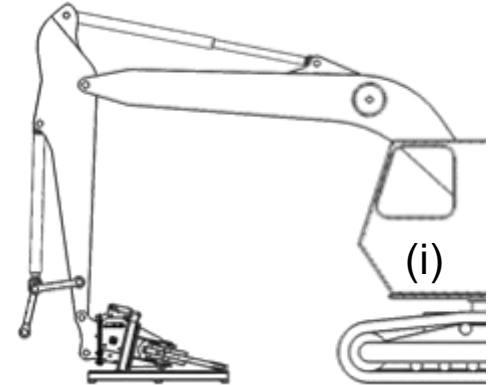
INSTALLATION: HEAD (PAGE 14)

SAS™ EXTREME™ AUTO PROCESSOR

INSTALLATION OF SAS™ EXTREME™ AUTO PROCESSOR HEAD ASSEMBLY:

INSTALLATION SHOULD BE COMPLETED BY AN EXPERIENCED HEAVY EQUIPMENT MECHANIC

1. Remove existing bucket and inspect pins and bushings. Replace as needed.
2. Line up palletized head assembly with machine as shown in image (i).
Note: Head weight approximately:
Model EX-25, standard: 1,400 kg (3,000 lb)
Model EX-35, large: 2,064 kg (4,550 lb)
3. Lower stick of excavator down to line up with hole at top of assembly and insert and secure pin "A" into head assembly.
4. With pin "A" secure in head assembly, lift assembly so that only the tips of the head assembly are resting on pallet as shown in image (ii). Align curl linkage to other hole in head Assembly mount. Insert and secure pin "B" into head assembly.
5. Connect hydraulic hoses 34 Mpa, 344 Bar (5,000 psi)
Jaw (Grapple) & Rotator minimum hose dia. 19 mm (3/4").
Motor drain (case drain) free flow hydraulic return 12.5mm (1/2")



SAS has no responsibility as to performance of excavator's hydraulic system with this attachment.

Connection jaws (Fittings: 12 ORFS)
Maximum Pressure
31 MPa, 310 Bar (4,500 psi)
Maximum Flow
130 L/min (35 gpm)

Connection rotator (Fittings: 12 ORFS)
Maximum Pressure
31 MPa, 310 Bar (4,500 psi)
Model EX-25 (Rotator RLP-902)
Maximum Flow 45 L/min (12 gpm)
Model EX-35 (Rotator RGP-1302)
Maximum Flow 125 L/min (33 gpm)

Connection drain (Fittings: 10 ORFS)
"D" Drain line must be connected to the drain line filter on the carrier.



AFTER INSTALLATION PRIOR TO OPERATION

1. Grease all pivot points with Head and Hold Down resting on ground and machine engine off.
2. Read excavator manufacturer's manual to identify control levers operation, method to stop motions, safety parameters related to operation of the excavator with any specialized attachment.
3. Stay clear of pinch points. Slowly engaging controls, test all motions of Head Assembly. Watch for interference points and stop further motion if interference occurs.



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PREVENTIVE MAINTENANCE (PAGE 15)

SAS™ EXTREME™ TORQUE INTERVALS

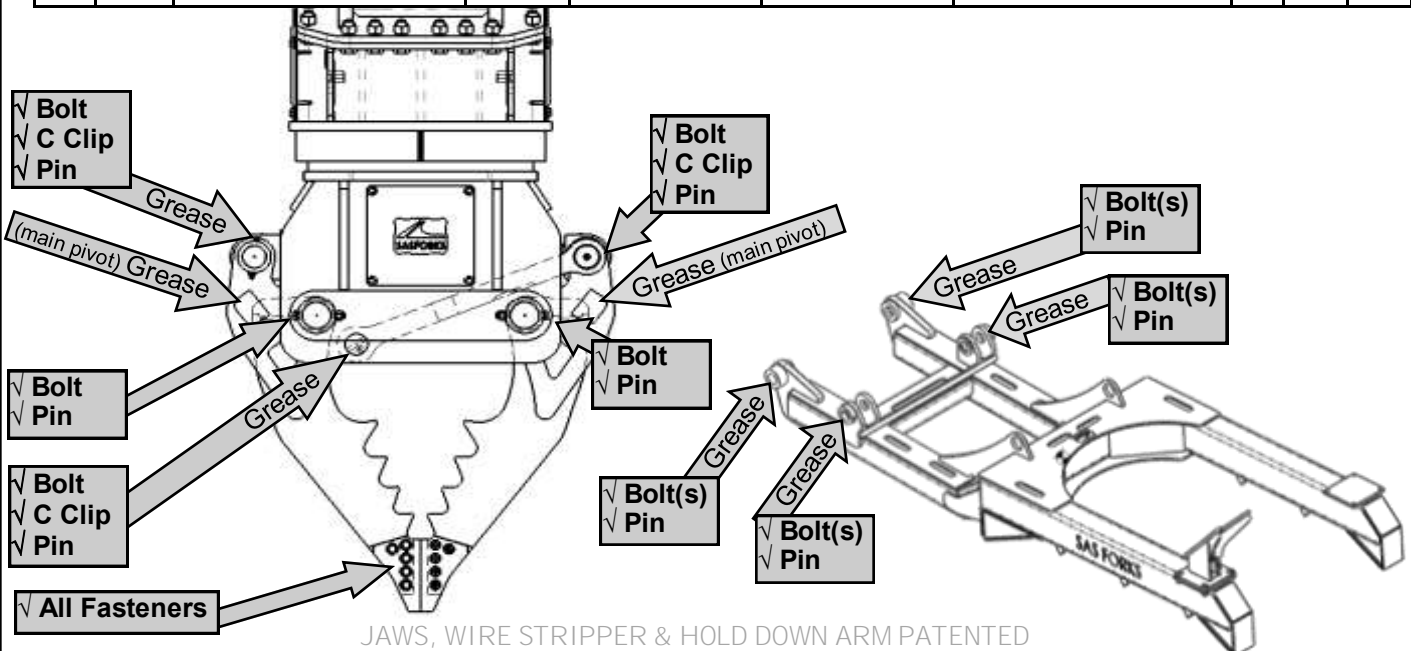


Set attachments on ground, turn off excavator, depressurize hydraulic supply to attachments, stay clear of pinch points during greasing. Safe & proper daily maintenance will help ensure long term performance and prevent failures. Failure to follow preventive maintenance guidelines can result in equipment failure resulting in injury or property damage.

Re-Torque interval chart: Frequency after first 100 hours of operation & every 500 hours thereafter.

Visual Inspections: Frequency daily, pre-operation inspection (or every 10 operating hours)

Ref.	Bolt Item No.	Location	# Bolts	Torque Spec	Wrench Size	Inspection	Hour Interval		
							10	100	500
A	7&10	Stick mount bolts	18	500 ft-lbs.	1 - 1/2"				
B		Stick large hoses	4	70-78 ft-lb	1 - 3/8"	Leaks & condition			
C		Stick small hose	1	50-56 ft-lb	1 - 1/16"	Leaks & condition			
D	8	Hydraulic motor	4	80 ft-lb	3/4"				
E	6	Hydraulic motor cover	2	160 ft-lb	15/16"				
F.1	5	Slewing ring	35	160 ft-lb	15/16"				
F.2	50	Slewing ring	36	160 ft-lb	15/16"	Inside side covers under round yellow cap			
G	9	Side service covers	2 & 2	Hand tighten	15/16"				
H		Cylinder hoses	4 fits	46-56 ft-lb	30mm:1-3/16"	Leaks & condition			
I		Cylinder service cover	4 & 4	Hand tighten	9/16"				
J		Bolts, clip & pin (head)	5	Hand tighten	15/16"	Bolts & C clip in place			
K		Claw tips bolts	10	160 ft-lb	3/8" HEX & 15/16 Socket				
L		Hold down bolts & pins	4	Hand tighten	9/16"				



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Place grapple on firm level surface, turn off machine & avoid pinch points.

Lubricating the rotating grapple head (For models: SAS EXTREME EX-25 v2 & v3)

Lubricate the SAS EXTREME Auto Processor rotating grapple head daily. Use this opportunity to closely inspect the pins and pin retaining hardware and conduct necessary repairs.

Recommended grease

Grease should have excellent water-repulsion durability, antirust capabilities, adhesive abilities and mechanical stability.

Brand	Grapple Pins
Mobil * <small>(11/4/2016 Per Eric @ Harlon Oil)</small>	Centaur Moly EP2 *
Mobil	Mobilegrease CM-P
Comparable	Comparable

Grease nipples (zerks) are 1/8" NPT

**operating hours

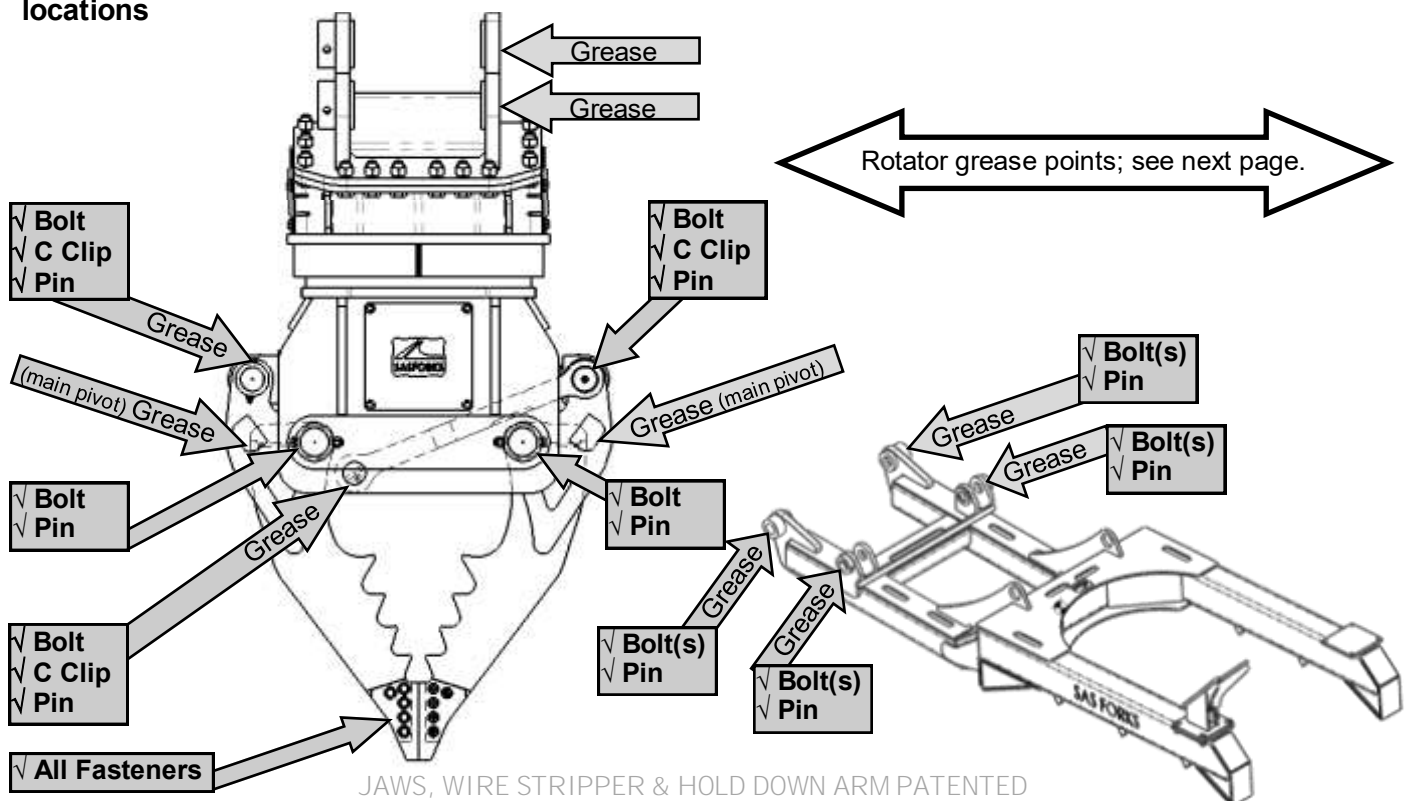
Lubrication in-

terval chart

EXTREME head	Grapple Pins
Quantity of nipples	5 nipples
Every 10 hours**	4 shots grease
Every 40 hours**	4 shots grease

EXTREME hold down	Pivot Pins
Quantity of nipples	4 nipples
Every 10 hours**	2 shots grease
Every 40 hours**	4 shots grease

Grease nipple locations



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Place grapple on firm level surface, turn off machine & avoid pinch points.

Lubricating the RLP rotator (For models: SAS EXTREME EX-25 v2 & v3)

Lubricate the RLP rotator after it has been working for several hours because the new grease penetrates more easily when the old grease is hot. If the working environment contains a high percentage of dirt and/or humidity, the lubrication period must be shortened.

Recommended grease

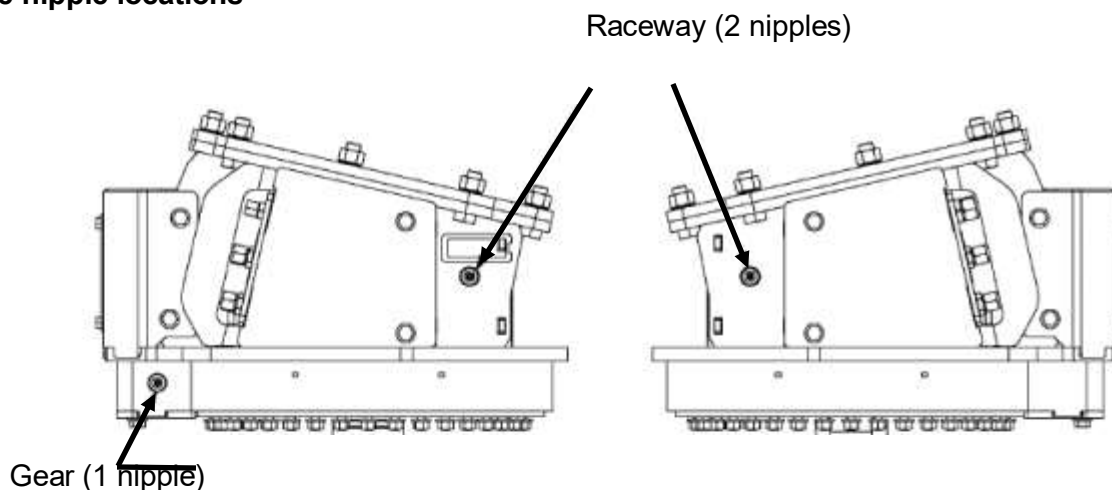
This grease can also be used in winter conditions. Avoid mixing different types of grease. Grease should have excellent water-repulsion durability, antirust capabilities, adhesive abilities and mechanical stability.

Brand	Raceway	Gear	Grapple Pins
Mobil * <small>(11/4/2016 Per Eric @ Harlon Oil)</small>	Centaur Moly EP2 *	Centaur Moly EP2 *	Centaur Moly EP2 *
Mobil	Mobilux EP2	Centaur Moly EP1	Mobilegrease CM-P
Shell	Albida EP2	SRS 2000 Extreme EP2	Comparable
Petro-Canada	Precision EP2	XCG-Flex EP1	Comparable
Mobil	Mobilux EP2	Centaur Moly EP1	Comparable
Exxon	Beacon EP2	Ronex Extra Duty Moly EP2	Comparable
Chevron Texaco	Multifak EP2	Open Gear 100 NC	Comparable

Lubrication interval chart

RLP-902	Raceway	Gear	Grapple Pins
Quantity of nipples	2 nipples	1 nipples	5 nipples
Every 10 hours operating	0 none	2 shots of grease	2 shots grease
Every 40 hours operating	4 shots of grease	6 shots of grease	2 shots grease

Grease nipple locations





Place grapple on firm level surface, turn off machine & avoid pinch points.

Inspection of Accumulator inside the RLP rotator (For models: SAS EXTREME EX-25 v2 & v3)

Rotators without case drain line installed require regular accumulator pressure inspection by a professional equipment service technician with a Hydac charging & gauging unit (PN#02068195) or similar device.

Pressure test interval

Perform a pressure check bi-monthly, or at 100 hour intervals. Hour meter and date should be recorded.

Overview accumulator pressure requirement

Accumulator should have 15 PSI. Test at accumulator pressure port, only with proper test kit.

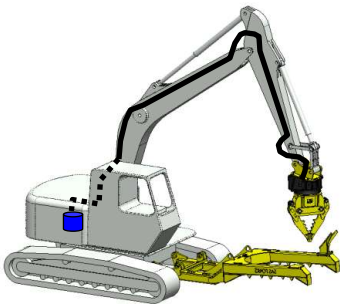
OPTIONAL CASE DRAIN LINE INSTALLATION WILL PROMOTE LONGER LIFE:

From factory the rotator came with an accumulator to relieve pressure. These parts have a life cycle and can fail. Installing a **case drain (free flow return line)** can help prevent damage to motor if accumulator fails. **Extreme units with five hoses have already have the case drain installed.**

~~Installation of case drain line will help prevent damage risk due to pressure spikes to hydraulic motor.~~

Case drain free flow return line filtered to tank:

Contact your local equipment dealer for proper installation



Components:

#10 MORFS x #10 MORFS

Angle fitting:

#10 FORFS x #10 MORFS 45°

Reducer:

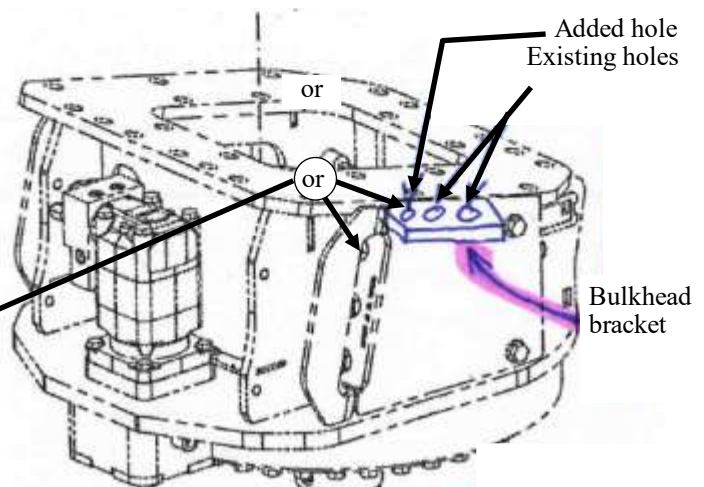
#10 FORFS x #6 MORFS reducer

Hose: #6 >20 MPa

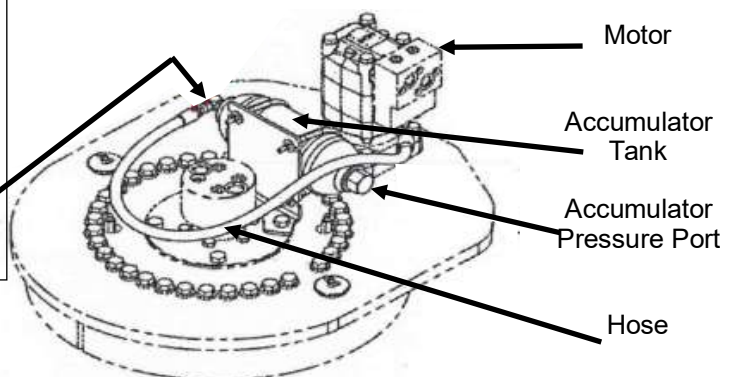
#6 FORFS straight x #6 FORFS 90°
450 mm long

T fitting:

#6 FORFS on run x #6 MORFS x #6 MORFS



Interior Reference View:



High pressure hydraulics. Stay clear of pinch points to avoid serious injury. Relieve pressure prior to work.
Follow safety precautions in SAS EXTREME Auto Processor Manual prior to work. www.sasforks.com/safety

PRE-OPERATION CHECKLIST (PAGE 19)

SAS™ EXTREME™ AUTO PROCESSOR



READ & FOLLOW SAFETY INFORMATION IN ORIGINAL EXCAVATOR MANUFACTURER'S OPERATOR, SAFETY AND SERVICE MANUALS. This checklist is limited to pre-operations inspection focused on Extreme Head and Hold Down Arm assemblies (HDA). Additional inspection points will be recommended in the excavator manufacturer manuals.



Failure to follow instructions and precautions noted in excavator manufacturer's manuals and this manual can result in serious damage to equipment and/or result in injury or death.

Use caution while inspecting. Be aware of:

- Pinch points (and additional risks covered throughout this manual)
- High pressure hydraulic fluids or stored energy
- Location of other individuals in the work area

Prior to conducting inspection;

- Stick and Head assembly must be resting on firm level ground.
- Hold Down Assembly (HDA) must be resting on firm level ground.
- Excavator must be parked on firm level ground
- Excavator engine must be turned 'off'

EXTREME AUTO PROCESSOR ATTACHMENT INSPECTION POINTS:

Head to stick fastening pins

- Check both pins for proper securement.
- Check stick mount for cracks

Rotator

- Check bolts that fasten the rotator to the stick mounts
- Check for leaks or damage on hoses.

Clamp body

- Check for damaged pins, pin retention hardware or misaligned pins
- Check clamp body for cracks

Claws & tips

- Check claws for cracks
- Check claw tip bolts (loose or missing pins and bolts)

Hold Down Assembly (HDA)

- Check all pins for properly secured
- Check HDA for cracks
- Check wire stripper for loose or missing bolts

Excavator x-frame inspection

- Look from bottom up & or cracks around hinges

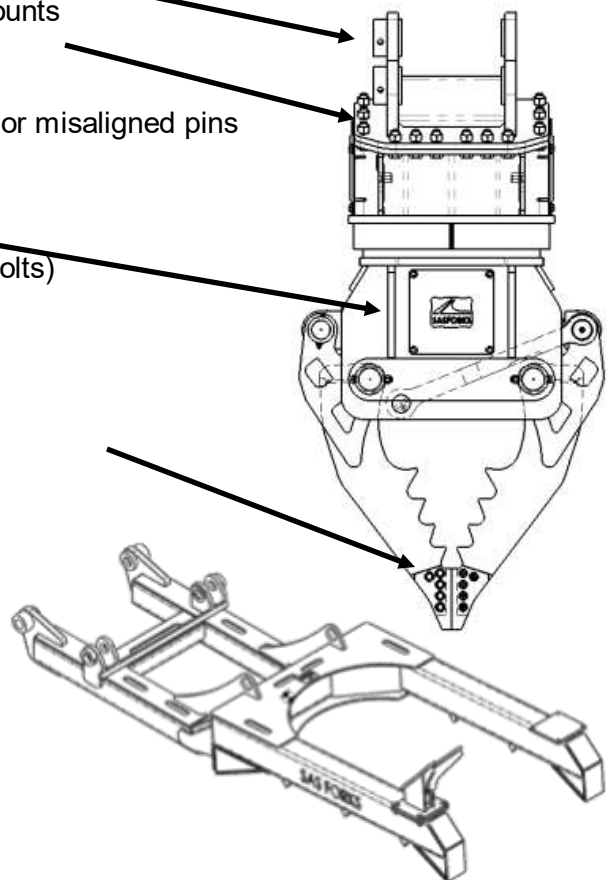
Operator cab

- Cab should have Roll Over Protection System
- Verify safety glass windshield in place
- Verify exterior steel guard is in place over front windshield to protect operator.

Repair all problems before operation.

Lock out / tag out excavator if defects present.

Repairs must only be completed by authorized mechanic.





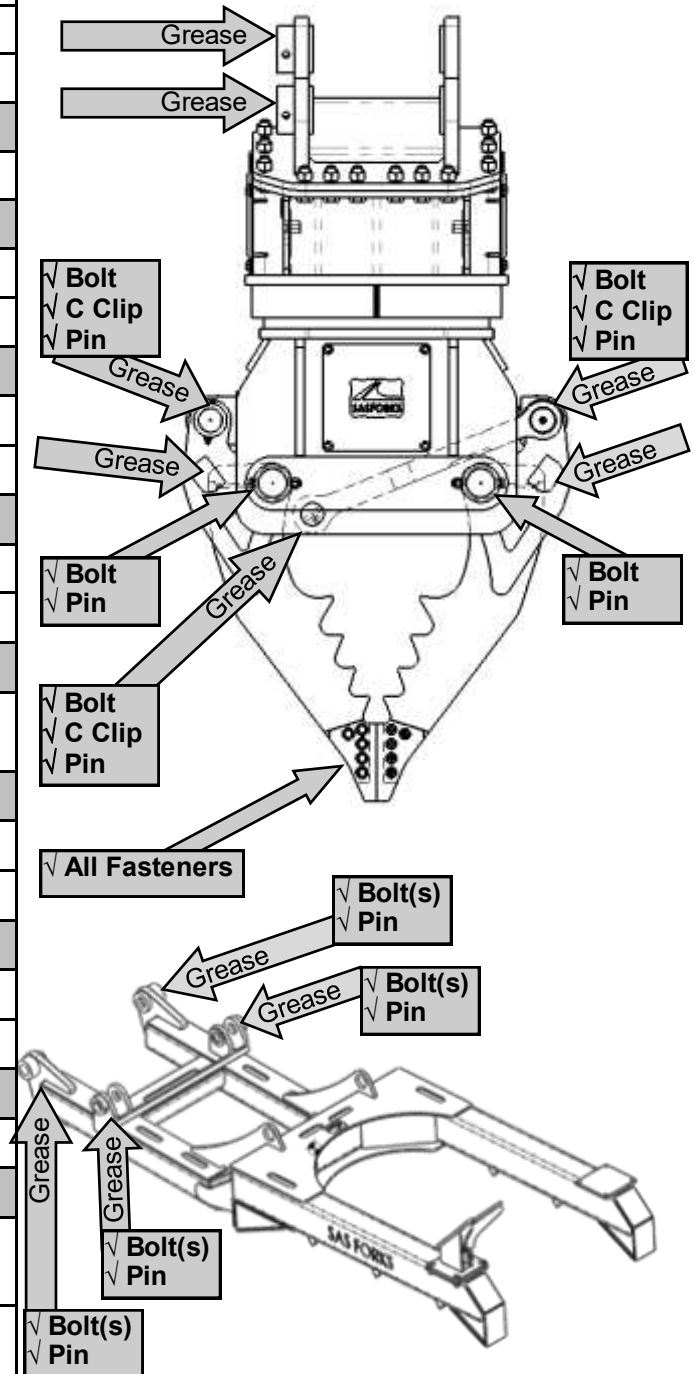
DAILY PRE-OPERATION CHECKLIST (PAGE 20)

SAS™ EXTREME™ AUTO PROCESSOR



Set attachments on ground, turn off excavator, depressurize hydraulic supply to attachments, stay clear of pinch points during greasing. Safe & proper daily maintenance will help ensure long term performance and prevent failures. Failure to follow preventive maintenance guidelines can result in equipment failure resulting in injury or property damage.

Item	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stick pin & bolt										
Stick pin & bolt										
Stick mount bolts										
R-Cyl bolt, clip, pin										
L-Cyl bolt, clip, pin										
Main pivot grease										
Main pivot grease										
Main pivot pin, bolt										
Main pivot pin, bolt										
Parallel bar pin, bolt, clip										
R-Claw tip bolts										
L-Claw tip bolts										
Hold arm bolt, pin										
Hold arm bolt, pin										
Wire stripper bolts										
Date										
Machine hours										
Inspection by:										



JAWS, JAW TIPS, WIRE STRIPPER
& HOLD DOWN ARM PATENTED



DETERMINING LIFT CAPACITY (PAGE 21)

SAS™ EXTREME™ AUTO PROCESSOR



READ & FOLLOW SAFETY INFORMATION IN ORIGINAL EXCAVATOR MANUFACTURER'S OPERATOR, SAFETY AND SERVICE MANUALS.



Excavator will handle loads differently than with the original dozer blade & bucket.

The purpose of this document is to describe the **method of** load rating and operating limitation **parameters**

of the Extreme auto processor as indicated on the operating data plate of the device.

On this product, SAS Forks installs a data plate on the product which specifies ;

- Product model
- Product serial number
- Product weight
- Product production date

■ Notice to refer to Excavator OEM positional lift chart and make appropriate reductions in permissible lift capacities to offset any differential in the original rated attachment, if any, and the weight of the Product, the Extreme Head Assembly.

It is important to note that the actual load (lift) ratings of the product are impacted by multiple factors in which the operator is responsible to take into account and to reduce the weight of any potential item to lift, to ensure machine remains stable, and does not tip. The below items are not a comprehensive list, but these complex work variables must be taken into account by the operator to ensure safe operation;

■ **Ground or working surface stability**

■ ***(More unsafe: soft, unpredictable or variable surface compaction /vs/ More safe: solid surface)***

■ **Positioning of excavator on such working surface**

■ ***(More unsafe: angled and tilted /vs/ More safe: flat & level)***

■ **Proximity in which excavator is to work and materials to be lifted.**

■ ***(More unsafe: Extending lift arms and lifting /vs/ More safe: working close with minimum reach***

■ **Lowering and engagement of outriggers to working surface**

■ ***(More unsafe: Outriggers removed and/or not engaged to ground /vs/ More safe; Outriggers lowered fully and engaged with solid working surface.***

■ **Amount of hydraulic pressure operator allocates to the grapple of the Extreme product**

■ ***(More unsafe: Operator not providing sufficient hydraulic pressure to engage object lifted /vs/ More safe: Operator engages excavator's hydraulic system to ensure secure grappling.***

■ **Lift capacity limitation of excavator, based on excavator's OEM lift capacity chart**

■ ***(More unsafe: Not understanding parameters and assumes within the excavator's OEM chart vs/ More safe: Clearly understand excavator's OEM load chart, product weight, & parameters.***

■ **Strength and durability of the item being lifted. (This product is meant only to lift scrap metal, never**

lift any good resalable product. Never lift any persons or any device holding any persons.

■ ***(Prohibited & dangerous: Attempting to lift persons in any manner will result in injury or death.***

■ ***(More unsafe: Lifting items in such a manner that may rip or separate /vs/***

■ ***More safe: Grapple items on heavy surface that provides a secure grip with Extreme grapple.***

DETERMINING LIFT CAPACITY (PAGE 22)

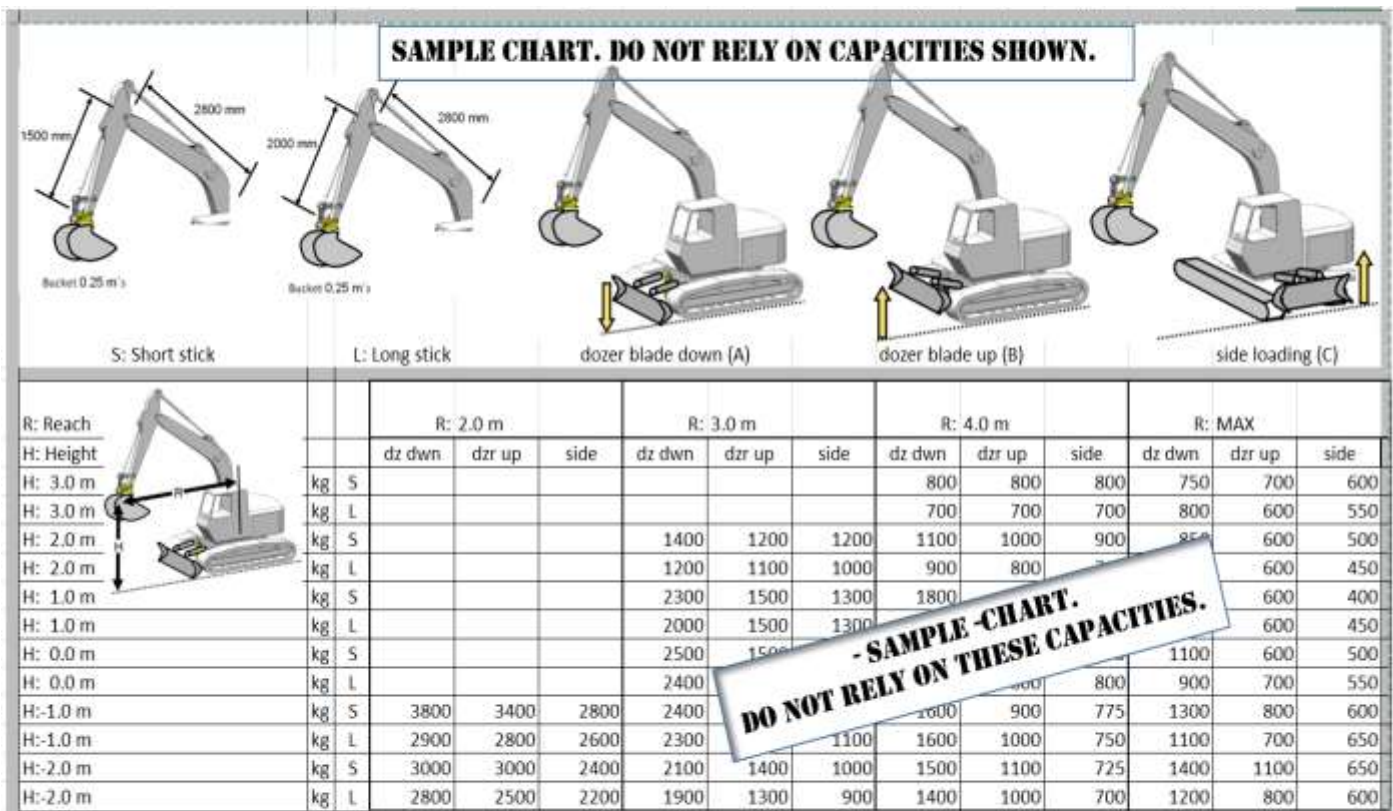
SAS™ EXTREME™ AUTO PROCESSOR

Establishing Load Ratings

The structure of the Extreme auto processor grapple head attachment is designed to lift a load that meets or exceeds the excavator's boom lift capacity, when hydraulic pressure of between 80% and 100% of maximum pressure per the label on Extreme grapple head attachment is supplied by the excavator, the Extreme's grapple mechanism to adequately engage the item lifted.

The lift limitations set forth by the excavator OEM (Original Equipment Manufacturer) must be reviewed and understood by the operator. The excavator OEM operator manual or in cab label is expected to provide a chart with lifting capacities at a variety of lift positions, **in accordance with ISO 10567:2007**. The operator must apply the weight of the Extreme grapple head assembly and interpret the excavator OEM chart whereas the position of the dozer blade or stabilizers are considered to be off the ground to determine the permissible load.

Sample chart. This chart does not contain any valid lift capacities for any excavator equipped with an Extreme auto processor attachment.



In accordance with typical excavator OEM lifting charts, with general reference to sample chart above, positions that effectively reduce the load threshold at which tipping occurs, include:

- Lifting dozer blade, downriggers or Extreme hold down arm, as shown in sample illustration (B) or (C).
- Turning of excavator's cab across tracks or wheels with the dozer up, shown in sample illustration (C).
- Extending the reach of the boom and stick.



Operator must identify load chart for specific excavator, not included herein, and use limits per the chart which specifies 'dozer up and side lift' or 'outriggers up and side lift', and subtract weight of Extreme grapple head assembly, to identify the net lift capacity permissible.

OPERATION GUIDE (PAGE 23)

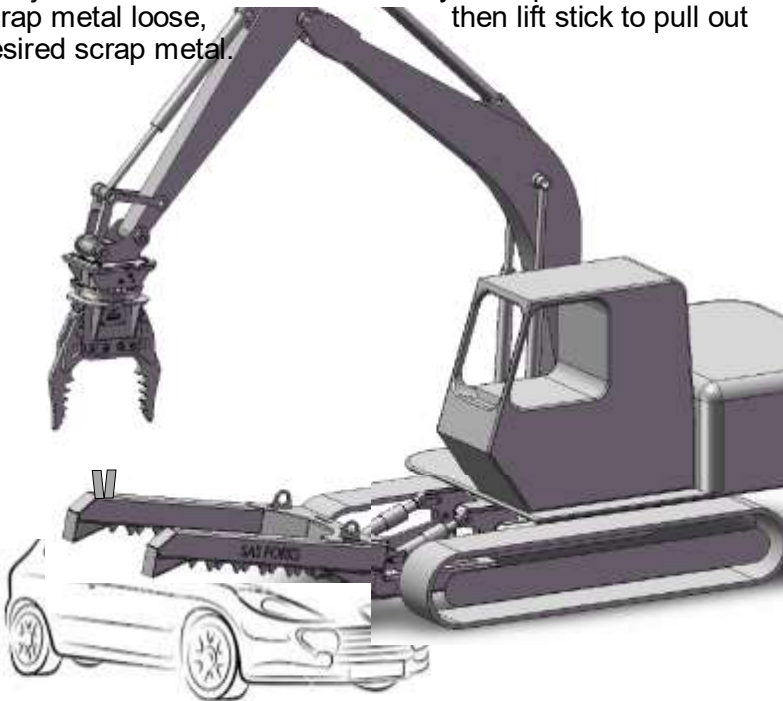
SAS™ EXTREME™ AUTO PROCESSOR



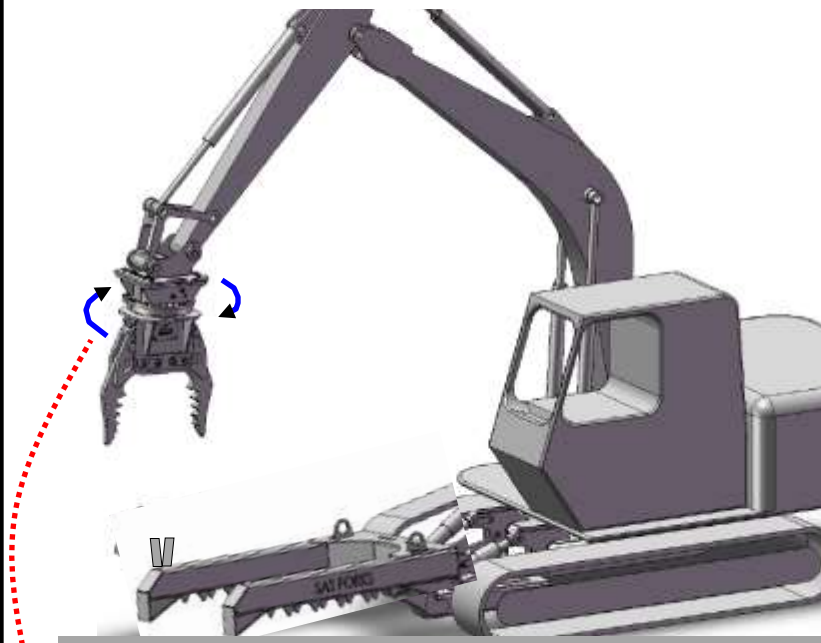
FOLLOW SAFETY INFORMATION IN EXCAVATOR MANUFACTURER OPERATOR MANUAL.

Be cautious, as working load capacities are determined.

Secure car down with Hold Down Arm. Grasp scrap metal with jaws, use stick breakout force cylinder power to break scrap metal loose, then lift stick to pull out desired scrap metal.



Lower Hold Down Arm against car or ground prior to rotating cab.



Multiple times during work day, complete several full rotations to circulate fresh fluid from tank to rotator.

NOTICE

Minimize down force applied when restraining car. Avoid pushing down to extent that front of excavator is lifted and suspended. Excess stress can cause x-frame failure. Hold down arm swaying or reduced lift height may indicate x-frame damage. Stop use immediately.

NOTICE

Move controls slowly, not jerking machine. Rough or jerking motions may cause damage to machine or Extreme

WARNING

Tip over & crush risk. Extreme Grapple Head Assembly may weigh more than original bucket which excavator manufacturer installed, thus reducing potential lift capacity. Lifting excess weight may cause tip over, damage, injury or death. **Wear seat belt and Operate to maintain safe stability.**



WARNING

Tip over & crush risk. **Wear seat belt.** Rotating machine with hold down arm or out-riggers not in firm contact with ground or traveling with an elevated load, may **cause machine to tip over**. For best stability prior to rotating cab, lower hold down arm to ground or on top of car.

WARNING

Electrocution and crush risk if contact made with electric power lines or building structure. **Avoid contact.**



WARNING

Electric & Hybrid—High Voltage battery equipped vehicles pose electrocution, explosion & fire hazards. Identify these vehicles clearly. **Do not use SAS EXTREME grapple jaws to remove, impact or damage battery assemblies.**

NOTICE

Head, claw & wire stripper impact will cause damage. Avoid contact.

WARNING

Risk of claw contact to cab, damage & or injury to operator if operator curls boom, stick, & jaws in tightly toward cab. Do not fully curl boom, stick, jaws in.

NOTICE

Avoid overheating of hydraulic fluid in rotator by engaging rotate function and allowing head to rotate several full rotations to **circulate fresh fluid from tank to rotator**, occasionally during day.

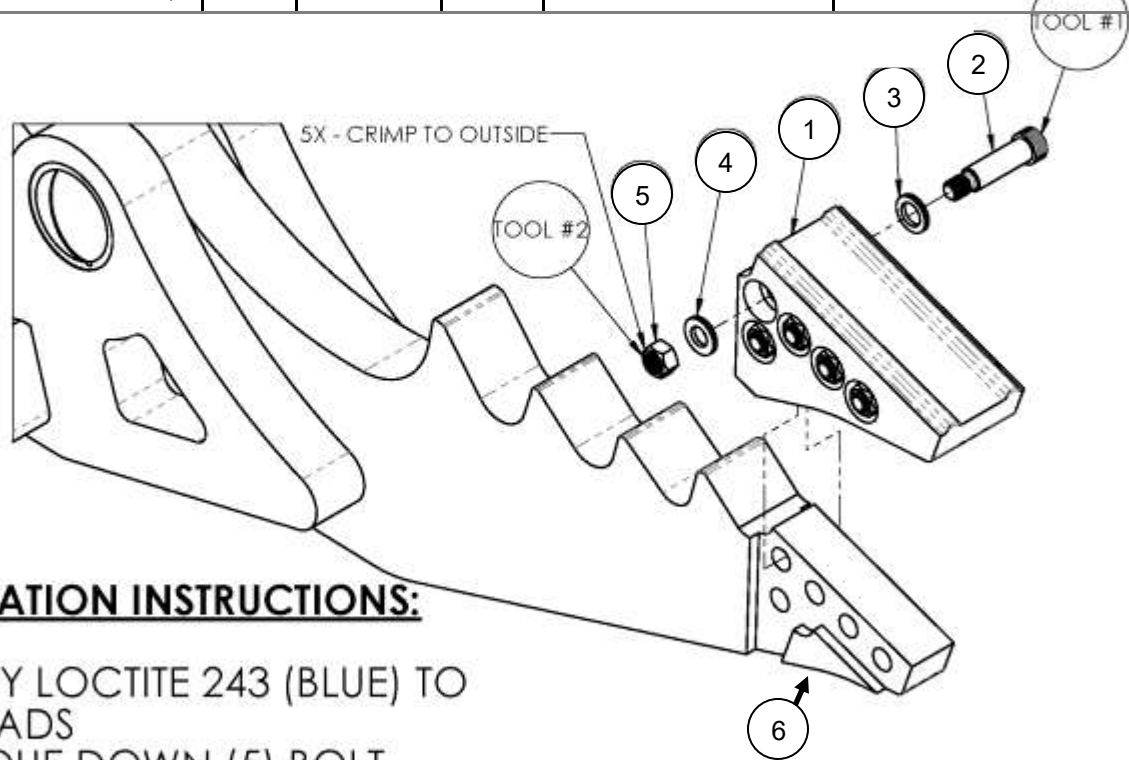


PARTS DIAGRAM (PAGE 24)

SAS™ EXTREME™ AUTO PROCESSOR-v3

FITS ALL EX CLAWS W/REPLACEABLE TIPS

ITEM NO.	DESCRIPTION	Quantity One Tip	Quantity Two Tips Req. Tip-1 & Tip-2	WEIGHT	SAS PART NUMBER	NOTES
1	REPLACABLE CLAW TIP	1	2	12.802	EP-EXC-CLAW-TIP-2-V3	ONE RIDGE P# IS EP-EXC-CLAW-TIP-1-V3
2	SHOULDER BOLT	5	10	0.430	WBOLT 0.750X2.25 SLD	INCLUDED IN EP-EXC-CLAW-TFAST-V3
3	3/4" LOCK WASHER	5	10	0.03	WASHER-L 0.750 NORD	INCLUDED IN EP-EXC-CLAW-TFAST-V3
4	5/8" LOCK WASHER	5	10	0.03	WASHER-L 0.625 NORD	INCLUDED IN EP-EXC-CLAW-TFAST-V3
5	CRIMP LOCK NUT	5	10	0.08	WNUT 0.625-11-GR8-CONE	INCLUDED IN EP-EXC-CLAW-TFAST-V3
6	WEDGE (Retro-fit old claws)	2	4	0.5	1902-017	REQUIRES WELD/GRIND FIT



INSTALLATION INSTRUCTIONS:

1. APPLY LOCTITE 243 (BLUE) TO THREADS
2. TORQUE DOWN (5) BOLT HEADS & NUTS TO **160 FT-LBS**

TOOL #	TOOL	SIZE	QTY	TO BE USED
1	HEX DRIVER	3/8"	1	INSTALLING SHOULDER BOLT
2	SOCKET DRIVER	15/16"	1	INSTALLING CRIMPED NUT

PATENTED JAWS & JAW TIPS.



Pinch points will cause serve injury. Stay clear of pinch points at all times. Only an authorized and experienced person should perform this work.

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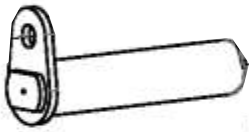


EX-25 v3 PARTS DIAGRAM (PAGE 25)

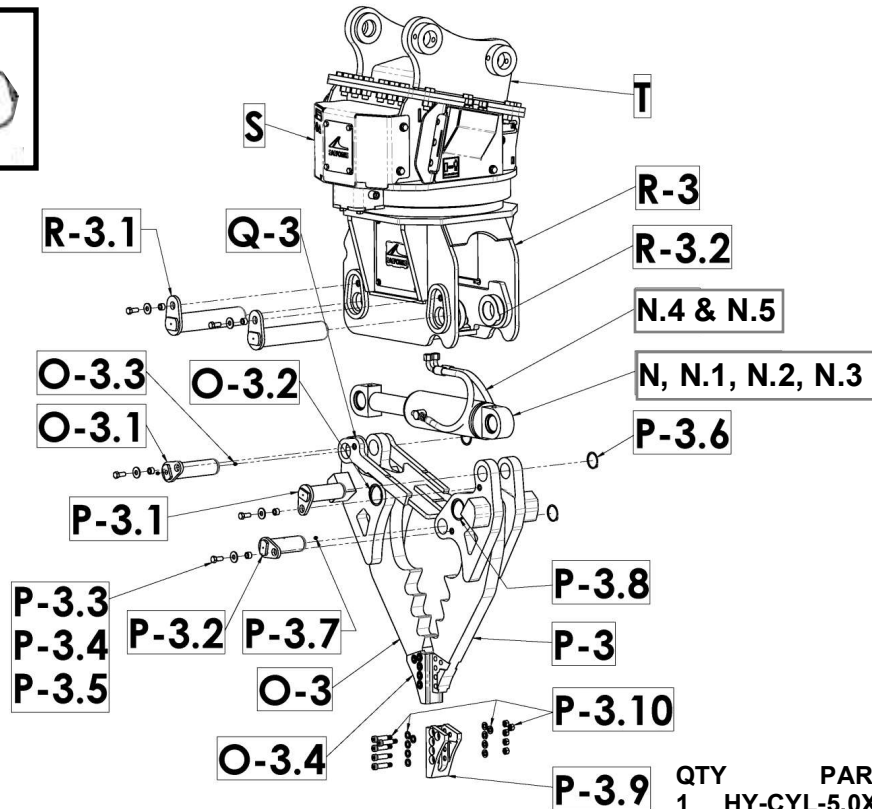
SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBER F5343 & UP

Pin
Type



SAS
PATENTED
JAWS



DESCRIPTION

DESCRIPTION	QTY	PART NUMBER
[N] CLAW CYLINDER	1	HY-CYL-5.0X11.25-5K
CYLINDER COMPONENTS (IDENTIFY CYLINDER STAMP TO SELECT CORRECT PARTS)		
BM: Cyl stamp includes.... BM....N-1 CYL SEAL KIT.....	1	HK-5.00-783-244
Cyl stamp includes.... BM....N-2 CYL PIN BUSHING	2	W-B2.500X3.000X2.000
Cyl stamp includes.... BM....N-3 CYL PIN GREASE SEAL..	2	W-WIPER-2.5X3.0
RR: Cyl stamp includes.... RR....N-1 CYL SEAL KIT	1	HK-5.00-732703
Cyl stamp includes.... RR....N-2 CYL PIN BUSHING	2	W-B2.505x3.002x2.00
Cyl stamp includes.... RR....N-3 CYL PIN GREASE SEAL	2	W-WIPER-2.5X3.0
N.4 HOSE ASSEMBLY - EXTEND & RETRACT INCL. IN KIT.....	1	HY-EXTREME-KIT
N.5 HOSE CLAMP—HOLDS HOSES UNDER SWIVEL BASE	1	HY-CLAMP-.750-2HOSE
[O-3] CLAW ASSEMBLY W/TIP (FASTENED WITH 2 PINS: R-3.1, O-3.1)	1	EP-EX25-CLAW-LH-V3-3
O-3.1 PIN-CYLINDER ROD END CLAW PIN - LH	1	1902-004-V3 ASY
O-3.2 BUSHING (FOR CLAW PIVOT).....	1	W-B3.002X3.505X6.437
O-3.3 GREASE ZERK - SMALL - 1/4-28 UNF	2	WGREASE ZERK 1/4-28
O-3.4 REPLACEABLE CLAW TIP WITH 2 RIDGES	1	EP-EXC-CLAW-TIP-2-V3
[P-3] CLAW ASSEMBLY W/TIP (FASTENED WITH 3 PINS: R-3.1, P-3.1, P-3.2)	1	EP-EX25-CLAW-RH-V3-3
P-3.1 PIN-CYLINDER BASE END CLAW PIN - RH	1	1902-007-V3 ASY
P-3.2 PIN-PARALLEL PAR PIN - RH.....	1	1902-008-V3 ASY
P-3.3 RETAINER BOLT FOR PINS	5	WBOLT 0.625X1.50 GR8
P-3.4 WASHER RETAINER BOLT.....	5	WASHER-F 0.625 GR8
P-3.5 PIN-LOCK SPACER	5	SPACER-0625-0000
P-3.6 C-CLIP RING.....	3	MCC-98410A231
P-3.7 GREASE ZERK - SMALL—1/4-28 UNF	1	WGREASE ZERK 1/4-28
P-3.8 BUSHING (FOR CLAW PIVOT).....	1	W-B3.002X3.505X6.437
P-3.9 REPLACEABLE CLAW TIP WITH 1 RIDGE	1	EP-EXC-CLAW-TIP-1-V3
P-3.10 TIP FASTENERS - QTY 5 PER TIP - QTY 10 TOTAL.....	10	EP-EXC-CLAW-TFAST-V3
[Q-3] PARALLEL BAR ASSEMBLY	1	EP-EX25-PBR-V31
[R-3] CLAMP BODY ASSEMBLY	1	EP-EX25-CLAMPBODY-V3
R-3.1 PIN-MAIN CLAW PIVOT PIN	2	1901-011-V3-ASY
R-3.2 3" ID SHIM X 0.09375" THICK	4	W-SC-SHIM-.094
[S] v3 - HYDRAULIC ROTATOR (F4989 & UP) Rotator Model: RLP-902	1	HR-ROTAR-R-7002-4803
S.1 v3 HYDRAULIC HOSE COVER—RIGHT (S/N F4989 & UP) (CASE DRAIN LINE SIDE)	1	HR-R-7004-8031
S.2 v3 HYDRAULIC HOSE COVER - LEFT (S/N F4989 & UP)	1	HR-R-7004-8014
S.3 v3 HYDRAULIC MOTOR COVER ASSEMBLY (NOT SHOWN)	1	HR-R-07001-7090
[T] STICK MOUNT ASSEMBLY	1	VARIES WITH MACHINE
T.1 STICK MOUNT FASTENERS (REQ. BLUE LOCTITE 243 & MIN. 500 FT#) QTY 18 : WBOLT 1.00X03.00 GR8 & WNUT 1.000-8 GR8		

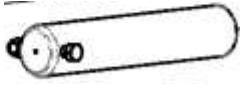


EX-25 v2 PARTS DIAGRAM (PAGE 26)

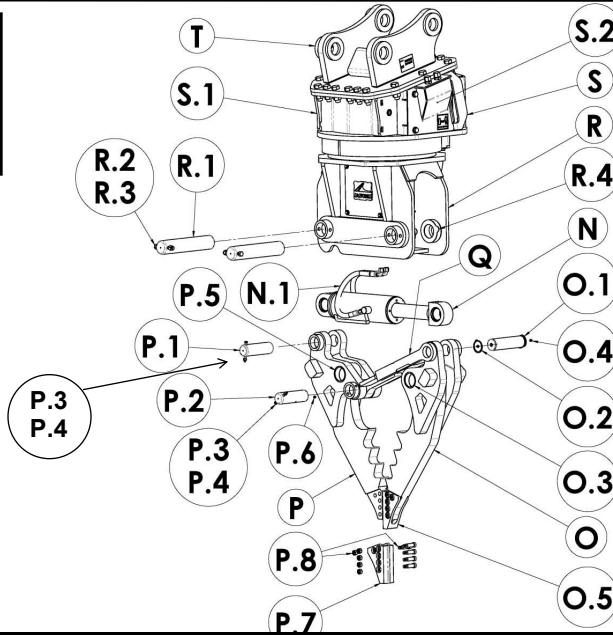
SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS F4775 TO F5330 (excl F4908)

Pin Type



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DESCRIPTION

	QTY	PART NUMBER
[N] CLAW CYLINDER	1	HY-CYL-5.0X11.25-5K
CYLINDER COMPONENTS (IDENTIFY CYLINDER STAMP TO SELECT CORRECT PARTS)		
BM: Cyl stamp includes.... BM....N-1 CYL SEAL KIT.....	1	HK-5.00-783-244
Cyl stamp includes.... BM....N-2 CYL PIN BUSHING	2	W-B2.500X3.000X2.000
Cyl stamp includes.... BM....N-3 CYL PIN GREASE SEAL..	2	W-WIPER-2.5X3.0
RR: Cyl stamp includes.... RR....N-1 CYL SEAL KIT	1	HK-5.00-732703
Cyl stamp includes.... RR....N-2 CYL PIN BUSHING	2	W-B2.505x3.002x2.00
Cyl stamp includes.... RR....N-3 CYL PIN GREASE SEAL	2	W-WIPER-2.5X3.0
N.4 HOSE ASSEMBLY - EXTEND & RETRACT INCLUDED IN KIT.....	1	HY-EXTREME-KIT
[O] CLAW ASSEMBLY W/TIP (FASTENED WITH 2 PINS: R1, O1)	1	EP-EX25-CLAW-LH-V2-2
O.1 PIN-CYLINDER ROD END CLAW PIN - LH	1	1902-004-V2
O.2 C-CLIP RING	1	MCC-98410A231
O.3 BUSHING (FOR CLAW MAIN PIVOT).....	1	W-B3.002X3.505X6.437
O.4 GREASE ZERK - SMALL - 1/4-28 UNF	2	WGREASE ZERK 1/4-28
O.5 REPLACEABLE CLAW TIP (WEDGELOCK TIP) WITH 2 RIDGES	1	EP-EXC-CLAW-TIP-2-V3
[P] CLAW ASSEMBLY W/TIP (FASTENED WITH 3 PINS: R1, P1, P2)	1	EP-EX25-CLAW-RH-V2-2
P.1 PIN ON CLAW CYLINDER BASE- RH—S/N F4775—F5260 (excl. F5203)	1	1902-007-V2.1
P.1 PIN ON CLAW CYLINDER BASE- RH—S/N F5270—F5330 (incl. F5203)	1	1902-007-V2.2
P.2 PIN ON PARALLEL BAR RH—S/N F4775—F5260 (excl. F5203)	1	1902-008-V2.1
P.2 PIN ON PARALLEL BAR RH—S/N F5270—F5330 (incl. F5203)	1	1902-008-V2.2
P.3 FASTENERS: BOLT FOR PINSS/N F4775-F5330	2	WBOLT 0.375X4.25 GR8
NUTS FOR PINSS/N F4775-F5330	2	WNUT 0.375-16-GR8-NY
P.4C-CLIP RING S/N F5270—F5330 (incl. F5203)	2	MCC-98410A231
P.5 BUSHING (FOR CLAW MAIN PIVOT).....	1	W-B3.002X3.505X6.437
P.6 GREASE ZERK - SMALL—1/4-28 UNF	1	WGREASE ZERK 1/4-28
P.7 REPLACEABLE CLAW TIP (WEDGELOCK TIP) WITH 1 RIDGE	1	EP-EXC-CLAW-TIP-1-V3
P.8 TIP FASTENERS.....(FIT V3 WEDGELOCK TIP) - QTY 5 PER TIP - TOTAL = 10	10	EP-EXC-CLAW-TFAST-V3
TIP FASTENERS (FIT V2 NON-WEDGE LOCK TIPS) - 5 PER TIP-TOTAL = 10	5	EP-EXC-CLAW-TFAST-V2
[Q] PARALLEL BAR ASSEMBLY	1	EP-EX25-PBR-V2
[R] CLAMP BODY ASSEMBLY	1	EP-EX25-CLAMPBODY-V2
R.1 MAIN CLAW PIVOT PIN	2	1901-011-V2.2
R.2 RETAINER BOLT FOR PINS	2	WBOLT 0.625X5.00 GR8
R.3 NUTS FOR RETAINER BOLTS	2	WNUT 0.625-11-GR8-NY
R.4 3" ID SHIM X 0.09375" THICK (other thickness available)	4	W-SC-SHIM-.094
[S] v2 - HYDRAULIC ROTATOR (F4989 & UP) Rotator Model: RLP-902	1	HR-ROTAR-R-7002-4803
S.1 v2 HYDRAULIC HOSE COVER—RIGHT (S/N F4989 & UP) (CASE DRAIN LINE SIDE)	1	HR-R-7004-8031
S.2 v2 HYDRAULIC HOSE COVER - LEFT (S/N F4989 & UP)	1	HR-R-7004-8014
S.3 v2 HYDRAULIC MOTOR COVER ASSEMBLY (NOT SHOWN)	1	HR-R-07001-7090
S. v1 HYDRAULIC ROTATOR (S/N F4968 & DOWN)	1	HR-ROTAR-K-770058341
S.1 v1 HYDRAULIC COVER ASSEMBLY W/GREASE ACCESS (S/N F4968 & DOWN)	1	1901-029
S.2 v1 HYDRAULIC COVER ASSEMBLY (S/N F4968 & DOWN)	1	1901-024
[T] STICK MOUNT ASSEMBLY	1	VARIES WITH MACHINE
T.1 STICK MOUNT FASTENERS (REQ. BLUE LOCTITE 243 & MIN. 500 FT#) QTY 18: WBOLT 1.00X03.00 GR8 & WNUT 1.000-8 GR8	18	

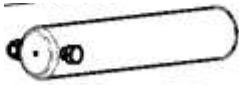


EX-25 v1 PARTS DIAGRAM (PAGE 27)

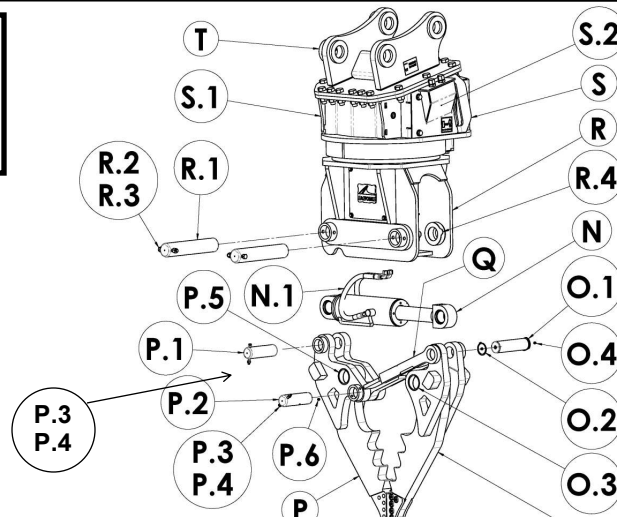
SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS F4627& (F4908 claws only)

Pin Type

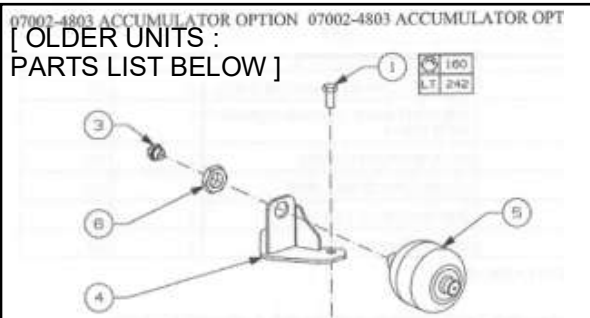
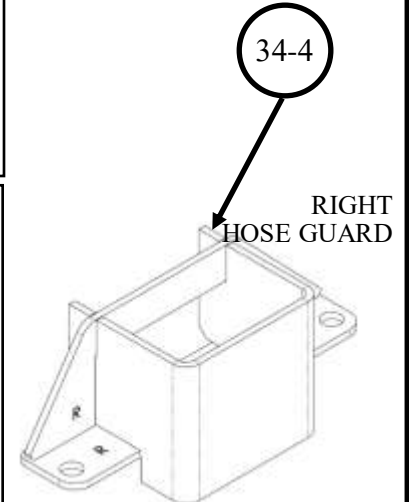
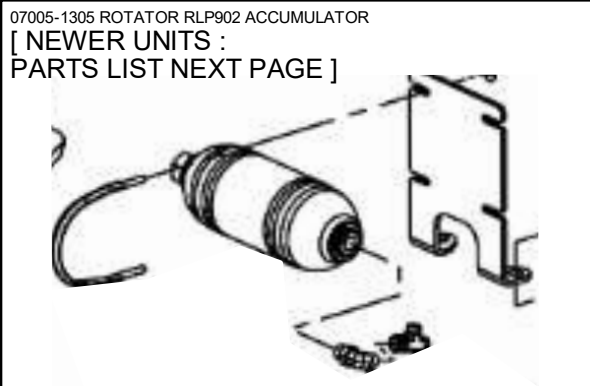
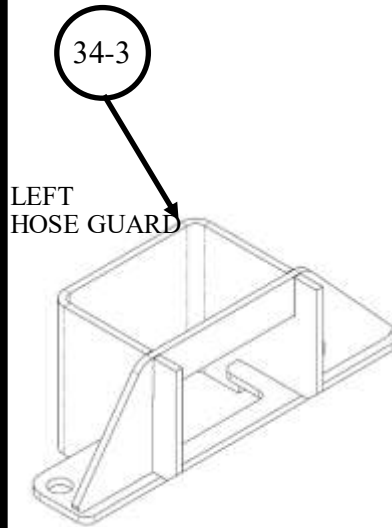
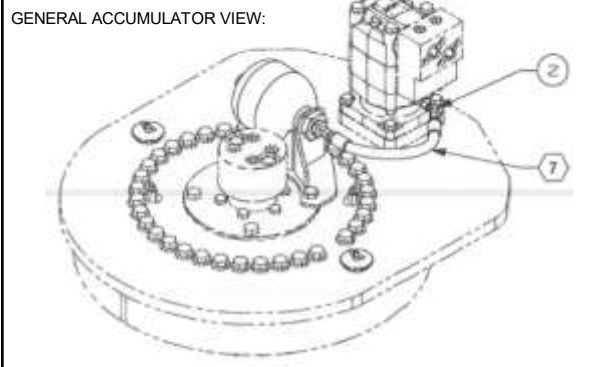


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DESCRIPTION	QTY	PART NUMBER
[N] CLAW CYLINDER (Special order with 2" diameter pins)	1	HY-CYL-5.0X11.25-4K
N.1 N/A CYLINDER SEAL REBUILD KIT	1	N/A
N.2 N/A CYLINDER PIN BUSHING.....	2	N/A
[O] CLAW ASSEMBLY (non-replaceable tip) (FASTENED WITH 2 PINS: R1, O1)	1	EP-EX25-CLL-V1
O.1 CYLINDER ROD END CLAW PIN - LH—S/N F4627 & F4908 CLAWS ONLY	1	1902-004-V1
O.2a BOLT.....	1	WBOLT 0.500X4.50 GR8
O.2b NUT	1	WNUT 0.500-13-NY
O.3 BUSHING (FOR CLAW MAIN PIVOT).....	1	W-B2.000X2.500X5.875
O.4 GREASE ZERK - SMALL - 1/4-28 UNF	2	WGREASE ZERK 1/4-28
[P] CLAW ASSEMBLY (non-replaceable tip) (FASTENED WITH 3 PINS: R1, P1, P2)	1	EP-EX25-CLR-V1
P.1 PIN ON CLAW CYLINDER BASE- RH—S/N F4627 & F4908 CLAWS ONLY	1	1902-007-V1
P.2 PIN ON PARALLEL BAR - RH—S/N F4627 & F4908 CLAWS ONLY	1	1902-007-V1
P.2 PIN ON PARALLEL BAR - RH—S/N F4627 & F4908 CLAWS ONLY	1	1902-008-V1
P.3 FASTENERS: BOLT FOR PINS	2	WBOLT 0.375X4.25 GR8
P.4 NUTS FOR PINS	2	WNUT 0.375-16-GR8-NY
P.5 BUSHING (FOR CLAW MAIN PIVOT).....	1	W-B2.000X2.500X5.875
P.6 GREASE ZERK - SMALL—1/4-28 UNF	1	WGREASE ZERK 1/4-28
[Q] PARALLEL BAR ASSEMBLY	1	EP-EX25-PBR-V1
[R] CLAMP BODY ASSEMBLY	1	EP-EX25-CLAMPBODY-V1
R.1 MAIN CLAW PIVOT PIN	2	1901-011-V1
R.2 RETAINER BOLT FOR PINS	2	WBOLT 0.625X5.00 GR8
R.3 NUTS FOR RETAINER BOLTS	2	WNUT 0.625-11-GR8-NY
[S] HYDRAULIC ROTATOR options:		
S. v1 KINSHOFER ROTATOR MODEL RD20A500BA2 (DUAL MOTORS)	1	HR-ROTAR-K-770058341
S.1 v1 KINSHOFER HYDRAULIC COVER W/GREASE ACCESS (S/N F4968 & DOWN)	1	1901-029
S.2 v1 KINSHOFER HYDRAULIC COVER (S/N F4968 & DOWN)	1	1901-024
S. v2 ROTOBEC ROTATOR MODEL RLP-902 (SINGLE ROTATE MOTOR)	1	HR-ROTAR-R-7002-4803
S.x v2 ROTOBEC HYDRAULIC MOTOR COVER ASSEMBLY (NOT SHOWN)	1	HR-R-07001-7090
[T] STICK MOUNT ASSEMBLY	1	VARIES WITH MACHINE

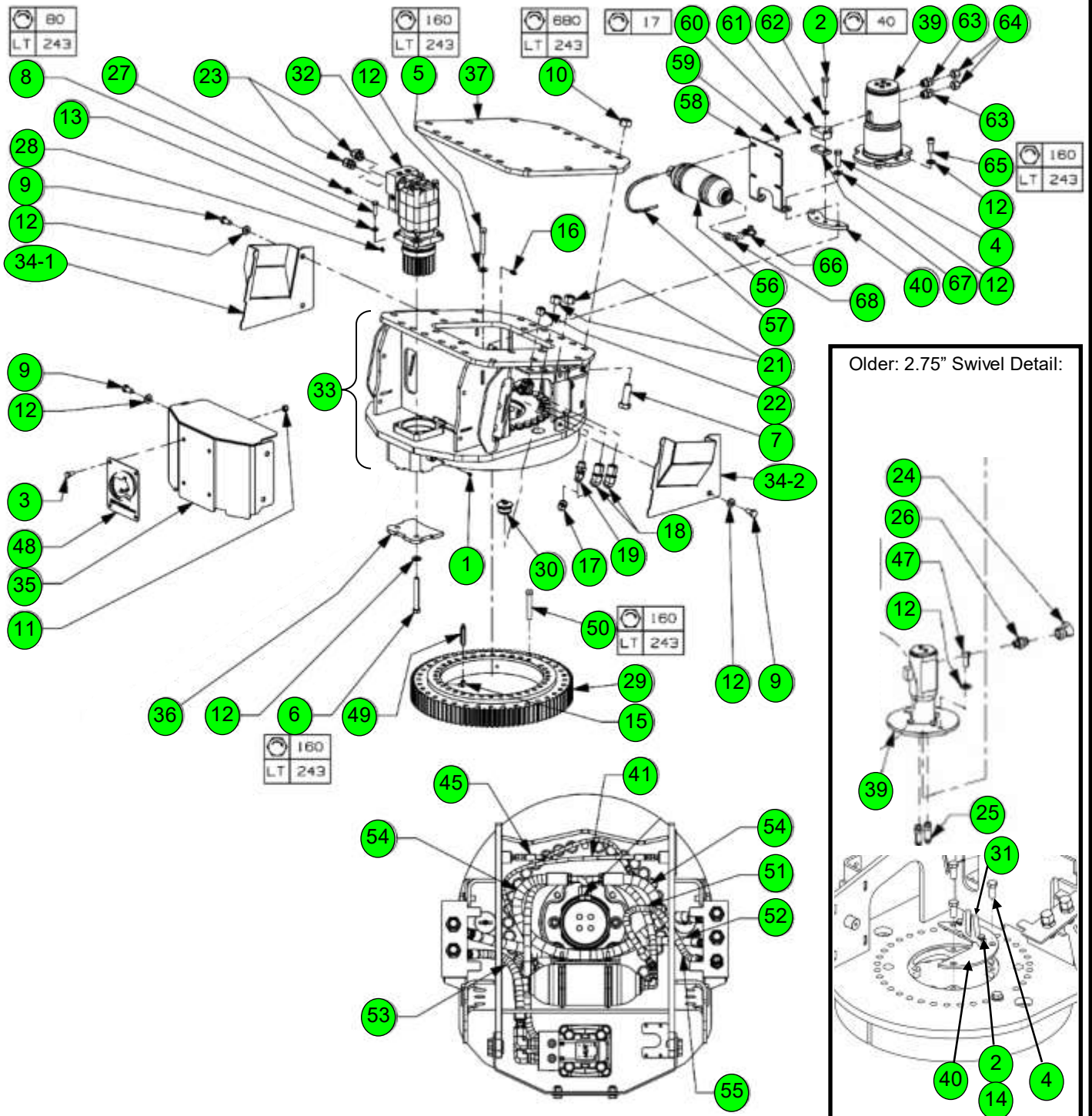
Rotator Model: RLP-902



Item	Part Number	Description		Qty	UOM
1	HR-R-008-0259	BOLT 5/8 -11UNC X 1 1/2" Long	008-0259	2	EA
2	HR-R-030-5067	45 degree SWIVEL ADAPTOR FJIC 6 X MJIC 6	030-5067	1	EA
3	HR-R-030-7898	STRAIGHT MALE ADAPTOR BSPP MJIC 6 X M BSPP 8	030-7898	1	EA
4	HR-R-07002-4798	ACCUMULATOR HOLDER (SHORT SPHERICAL) Older Units	07002-4798	1	EA
5	HR-R-07002-9837	CHARGED ACCUMULATOR (SHORT SPHERICAL) Older Units	07002-9837	1	EA
6	HR-R-116-0004	HIN NUT M33 X 1.5 X 14 (SHORT SPHERICAL) Older Units	116-0004	1	EA

Rotator Model: RLP-902

Newer: 5.5" Swivel Detail:



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EX-25 v2 & v3 ROTATOR PARTS (PAGE 30)

SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS: F4989-F5687

Rotator Model: RLP-902

Item No.	SAS Part #	Description		Qty	UOM
1	WGREASE ZERK 1/8 NPT	GREASE FITTING 1/8"NPT	001-0001	3	EA
2	SELECT CORRECT # WBOLT 0.375X0.75 GR8 WBOLT 0.625X2.50 GR8	FORK BOLTS OPTIONS: 2.75" SWIVEL FORK BOLTS 3/8"-16UNCx 1 3/4" LONG GR8 5.50" SWIVEL FORK BOLTS 5/8"-11UNCx 3 1/2" LONG GR8	008-0003	2	EA
3	WBOLT 0.500X1.00 GR8	LOGO BOLTS 1/2"-13UNCx1" LONG GR8	2: 008-0239	4	EA
4	SELECT CORRECT # WBOLT 0.625X1.50 GR8 WBOLT 0.625X2.00 GR8	FORK MOUNT PLATE BOLTS OPTIONS: 2.75" SWIVEL: BASE BOLTS 5/8"-11UNC x 1 1/2" Long 5.50" SWIVEL: BASE BOLTS 5/8"-11UNC x 2" Long	008-0259 008-0261	3 2	EA
5	WBOLT 0.625X3.50 GR8	BOLT 5/8" -11UNC x 3 1/2" Long	5: 008-0264	35	EA
6	WBOLT 0.625X5.00 GR8	BOLT 5/8" -11UNC x 5" Long	7: 008-0267	2	EA
7	WBOLT 1.00X03.00 GR8	BOLT 1" - 8UNC x 3" Long	8: 008-0297	18	EA
8	WBOLT 0.500X1.75-GR8	BOLT 1/2" -13UNC x 1 3/4" Long	9: 008-4527	4	EA
9	WBOLT 0.625X1.25 GR8	BOLT 5/8"- 11UNC x 1 1/4" Long	10: 008-8596	8	EA
10	WNUT 1.000-8 GR8	NUT 1" - 13UNC	11: 009-0337	18	EA
11	WNUT 0.500-13-GR8-NY	NUT 1/2 - 13UNC	12: 010-4433	4	EA
12	WASHER-F 0.625 GR8	5/8" FLAT WASHER	13: 012-0003	50	EA
13	HR-R-052-1233	CAM WEDGES 1/2" WASHER	34: 052-1233	4	EA
14	WASHER-L 0.375 GR8	LOCK WASHER 3/8" dia (2.75" swivel stop only)	013-0364	2	EA
15	HR-R-026-1036	90 M / F ADAPTOR 1/8 NPT X 1/8 NPT	18: 026-1036	2	EA
16	HR-R-030-1323	STRAIGHT MALE ADAPTOR MJIC 4 X 2 NPT	28: 030-1323	2	EA
17	HR-R-030-0488	Reducer fitting 883-TT Female 10 ORFS—Male 06 ORFS	25: 030-0488	1	EA
18	SELECT CORRECT # HR-R-030-0423 HR-R-030-1375	BULK HEAD FITTING OPTIONS (aux spools): <i>Side hose mount (newer):</i> BH 45 degree fitting 854-TT (Male 12 ORFS—Male 12 NPTF) <i>Front hose mount (older):</i> BH Straight fitting MJIC 12 X MJIC 12	19: 030-0423 030-1375	4	EA
19	SELECT CORRECT # HR-R-030-0487 HR-R-030-1376	BULK HEAD FITTING OPTIONS (case drain): <i>Side hose mount (newer):</i> BH 45 degree fitting 854BH-TT Male 10 ORFS—Male 10 ORFS <i>Front hose mount (older):</i> BH STRAIGHT ADAPTOR MJIC 10 X MJIC 10	24: 030-0487 030-1376	1	EA
20	HR-R-030-1387	Cap (not used)	030-1387		EA
21	HR-R-030-8542	Cap (for shipping) FEMALE 12 ORFS	29: 030-8542	4	EA
22	HR-R-030-8552	Cap (for shipping) FEMALE 10 ORFS	30: 030-8552	1	EA

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EX-25 v2 & v3 ROTATOR PARTS (PAGE 31)

SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS: F4989-F5687

Rotator Model: RLP-902

Item No.	SAS Part #	Description		Qty	UOM
23	SELECT CORRECT # HR-R-030-0425 HR-R-030-1403	OPTIONS: <i>5.50" Dia. Swivel (newer):</i> 90 degree fitting 879-TT MALE 10 ORFS—FEMALE 10 ORFS <i>2.75" Dia. Swivel (older):</i> SWIVEL 90° ADAPTOR FJIC 10 X MJIC 10	20: 030-0425 030-1403	2	EA
24	HR-R-030-1404	<i>5.50" Dia. Swivel (new): Item #24 not used.</i> <i>2.75" Dia. Swivel (older):</i> SWIVEL 90° ADAPTOR FJIC 12 X MJIC 12	030-1404	1	EA
25	SELECT CORRECT # HR-R-030-0429	OPTIONS: <i>5.50" Dia. Swivel (newer):</i> #10 MORB x #10 MORFS <i>2.75" Dia. Swivel (older):</i>	030-0429 030-4477	2	EA
26	HR-R-030-5716	<i>5.50" Dia. Swivel (newer): Item #26 not used.</i> <i>2.75" Dia. Swivel (older):</i> ORB MALE CONNECTOR MJIC 12 X 10 ORB	030-5716	2	EA
27	SELECT CORRECT # HR-R-030-0426 HR-R-030-7901	OPTIONS: <i>5.50" Dia. Swivel (newer):</i> #6 BSPP x #4 MORFS <i>2.75" Dia. Swivel (older):</i> STRAIGHT MALE ADAPTOR BSPP 6 X M BSPP 4	21: 303-0426 030-7901	1	EA
28	HR-R-041-1729	O-RING	31: 041-1729	1	EA
29	HR-R-048-0097	SLEWING RING	32: 048-0097	1	EA
30	HR-R-052-0657	PLUG	33: 052-0657	2	EA
31	HR-R-07000-5796	<i>5.50" Dia. Swivel (newer): Item #31 not used.</i> <i>2.75" Dia. Swivel (older):</i> HYDRAULIC SWIVEL LOCK		1	EA
32	SELECT CORRECT # HR-R-07001-6479 HR-R-07005-3647	MOTOR ASSEMBLY (Each P/N Motor is interchangeable, simply by changing the manifold connector.) Older motor 07001-4679 w/ Hydr Manifold with CONNECTOR: ORB MALE CONNECTOR MJIC 10 x 10 ORB Newer motor 7005-3647 w/Hydr Manifold with CONNECTOR: ORB MALE CONNECTOR ORFS 10 X 10 ORB	07001-6479 48: 07005-3647	1	EA
32.1	HR-R-061-0245	MOTOR REBUILD KIT	061-0245	1	EA
33	HR-R-07005-0270	ROTATOR BASE BARE STRUCTURE (with side tabs for side mounted hose connections)	43: 07005-0270	1	EA

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EX-25 v2 & v3 ROTATOR PARTS (PAGE 32)

SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS: F4989-F5687

Rotator Model: RLP-902

Item No.	SAS Part #	Description		Qty	UOM
34	SELECT CORRECT # HR-R-07001-7083	OPTIONS: COVER (Flat plate, Early model) (replaced by below #)	7001-7083	2	EA
34-1	HR-R-7004-8014	COVER (w/Angled Plate) Left of motor (black)	41: 7004-8014	1	EA
34-2	HR-R-7004-8031	COVER (w/Angled Plate) Right of motor (black) (Case drain side)	42: 7004-8031	1	EA
34-3	1901-030	UPPER HOSE GUARD (Heavy Plate) Left of motor (yellow)	1901-030	1	EA
34-4	1901-033	UPPER HOSE GUARD (Heavy Plate) Right of motor (yellow)	1901-033	1	EA
35	HR-R-07001-7090	MOTOR GUARD (Standard 3/16" plate)	36: 07001-7090	1	EA
	HR-R-07001-7090-THK	MOTOR GUARD (Optional 3/8" plate)	N/A		
36	HR-R-07001-7366	PROTECTOR PLATE	37: 7001-7366	1	EA
37	HR-R-07001-7414	LUGGING UNIVERSAL BASE PLATE	38: 07001-7414	1	EA
38	HR-R-07001-7443	DECAL KIT OPEN/CLOSE & ROTATE	07001-7443	1	EA
39	SELECT CORRECT # HR-R-7004-3734 HR-R-097-0008 HR-R-7005-1234 HR-R-098-0028 EX SWL RB.....	COLLECTOR (HYDRAULIC SWIVEL) OPTIONS: 2.75" BASE, 3.5" UPPER DIAMETER COLLECTOR SWIVEL ASSY SAS EXTREME S/N: F4908, F4989-F5330 (NOT INCL. F5203) SEAL KIT ONLY FOR HR-R-7004-3734 (3.5" SWIVEL) 5.50" BASE, 5.0" UPPER DIAMETER COLLECTOR SWIVEL ASSY SAS EXTREME S/N: F5188,F5203,F5343, & HIGHER SEAL KIT ONLY FOR HR-R-7005-1234 (5.0" SWIVEL) SWIVEL REPL COMPNTS TO CONVERT FROM 2.75" TO 5.50" This is 'KIT' number. KIT number does <u>not</u> include swivel. Also requires swivel p/n: HR-R-7005-1234	7004-3734 07005-1234	1	EA
40	SELECT CORRECT # HR-R-07004-3796 HR-R-07005-1261	FORK MOUNT PLATE (FOR COLLECTOR SWIVEL) OPTIONS: 2.75" BASE, 3.5" UPPER DIAM. COLLECTOR FORK MOUNT 5.50" BASE, 5.0" UPPER DIAM. COLLECTOR FORK MOUNT	.. 7004-3796 7005-1261	1	EA
41	HR-R-099-0907	PLASTIC HOSE .188" 3000 PSI 4FJIC X 4FJIC90 25"lg	49: 099-0907	1	EA
42	HR-R-099-3590	2.75" BASE SWIVEL ONLY, WITH FRONT FACING HOSES: HOSE#8 2 WIRE 5000 PSI ST 10FJIC X 12FJIC 20"lg		1	EA
43	HR-R-099-3715	2.75" BASE SWIVEL ONLY, WITH FRONT FACING HOSES: HOSE ASSEMBLY, CUT LENGTH 15 1/2"lg		1	EA
44	HR-R-099-3716	2.75" BASE SWIVEL ONLY, WITH FRONT FACING HOSES: HOSE ASSEMBLY, CUT LENGTH 14"lg		1	EA

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EX-25 v2 & v3 ROTATOR PARTS (PAGE 33)

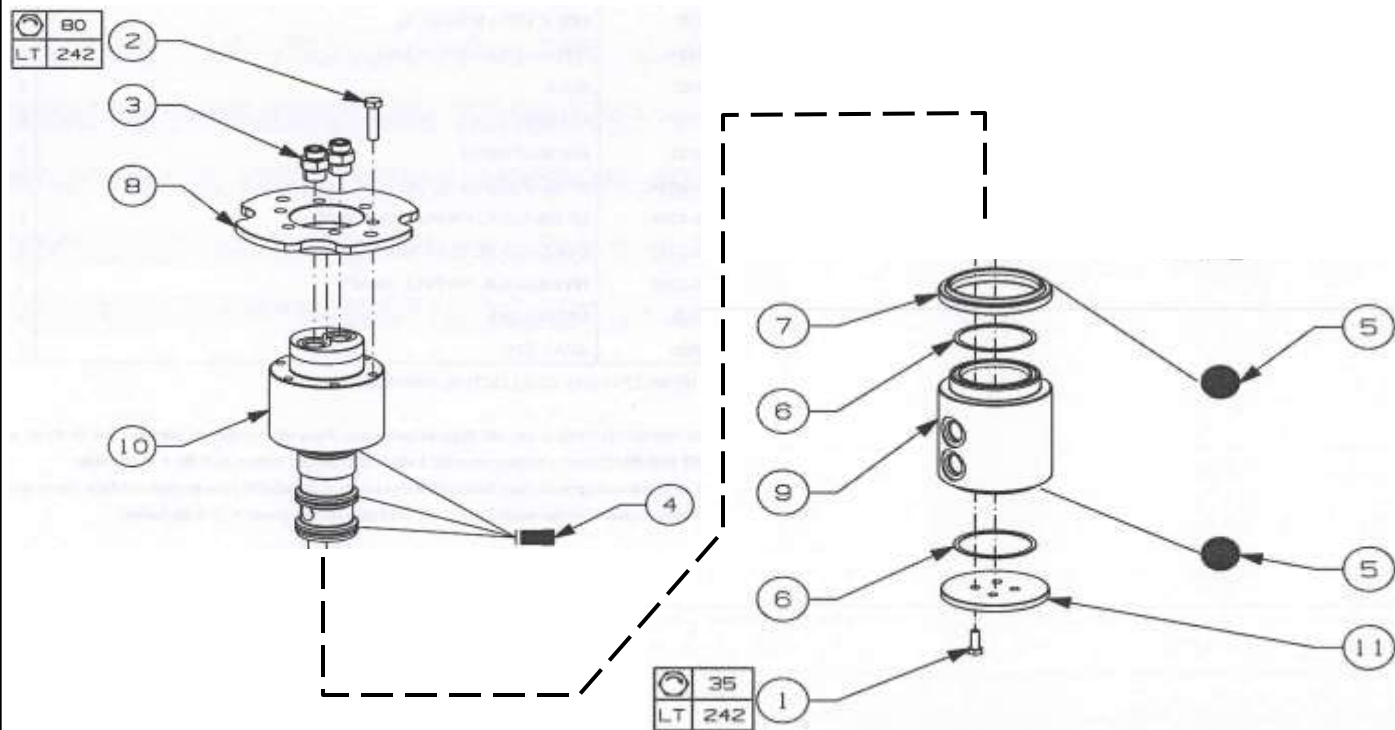
SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS: F4989-F5687

Rotator Model: RLP-902

Item No.	SAS Part #	Description		Qty	UOM
45	HR-R-099-3717	HOSE ASSEMBLY, CUT LENGTH 12"lg	53: 099-3717	1	EA
46	HR-R-099-3718	2.75" BASE SWIVEL ONLY, WITH FRONT FACING HOSES: HOSE ASSEMBLY, CUT LENGTH 35"lg		1	EA
47	HR-R-115-0003	5.50" Dia. Swivel (new): Item #47 not used. 2.75" Dia. Swivel (older): METRIC BOLT		2	EA
48	LOGO PLATE ROT	LOGO PLATE ROTATOR	N/A	1	EA
49	HR-R-572-0044	1/8" NPT x 1/8" NPT LONG COUPLING	58: 572-0044	2	EA
50	HR-R-008-0266	BOLT (GR8) 5/8-11 UNC X 4" LONG	6: 008-0265	36	EA
51	HR-R-099-2277	HOSE 43" (CUT LENGTH)	51: 099-2277	1	EA
52	HR-R-099-2280	HOSE 28" (CUT LENGTH)	52: 099-2280	1	EA
53	HR-R-099-2276	HOSE 15" (CUT LENGTH)	50: 099-2276	1	EA
54	HR-R-099-4380	HOSE 35" (CUT LENGTH)	54: 099-4380	1	EA
55	HR-R-099-6664	HOSE 30" (CUT LENGTH)	55: 099-6664	1	EA
56	HR-R-07001-0536	ACCUMULATOR CHARGE	35: 07001-0536	1	EA
57	HR-R-018-0041	ACCUMULATOR FIXATION CLAMP	17: 018-0041	2	EA
58	HR-R-7004-4629	ACCUMULATOR HOLDER	40: 07004-4629	1	EA
59	WASHER-F 0.375 GR8	3/8" DIA. FLAT WASHER	14: 012-0352	4	EA
60	HR-R-127-7299	NYLON LOCK NUT M8x1.25	56: 127-7299	4	EA
61	HR-R-07005-1284	HYDRAULIC SWIVEL LOCK	46: 07005-1284	1	EA
62	WASHER-L 0.625 GR8	SPLIT LOCK WASHER 5/8" DIA	15: 013-368	2	EA
63	HR-R-030-0429	HYDRAULIC FITTING 10x12 Style 848-TTO Male ORFS to Male ORB	23: 030-0429	2	EA
64	HR-R-030-8552	ORFS PLUG 10	30: 030-8552	3	EA
65	WBOLT 0.625X1350 GR8	(METRIC NOT USED: HEX HEAD CAP SCREW M16X2X 40 long)		2	EA
66	HR-R-030-0489	HYDRAULIC FITTING Style 871-TT Male ORFS to Female ORFS	26: 030-0489	1	EA
67	HR-R-7005-1296	SPACER 1.5" X 3" X 0.5" 2 HOLES	47: 07005-1296	1	EA
67.1	HR-R-7005-1296-1	SECONDARY SPACER 1.5" X 3" X 1.0" 2 HOLES		1	EA
68	HR-R-030-0427	HYDRAULIC FITTING Style 849-TTO Male ORFS to Adj. Male ORB	22: 030-0427	1	EA

Rotator Model: RLP-902 : **SAS Extreme EX25v3 S/N:** F5188,F5203,F5343 & HIGHER S/N



5" UPPER DIA: SAS Extreme EX25 S/N: F5188,F5203,F5343 & HIGHER

Item	Part No.	Name	Qty
1	WBOLT 0.375X01.00	BOLT 3/8" -16UNC x 1" lg (GR8)	4
2	WBOLT 0.500X2.00-GR8	BOLT 1/2" -13UNC x 2" lg (GR8)	6
3	HR-R-030-0429	Hydraulic Fitting 10x12 Style 848-TTO Male ORFS to Male ORB	2
4	***See Seal Kit #12	Seal	3
5	***See Seal Kit #12	O-Ring	2
6	***See Seal Kit #12	Backup Ring	2
7	HR-R-07000-0924	Seal Holder	1
8	HR-R-07005-1258	Hydraulic Swivel Holder	1
9	HR-R-07005-2247	Collector Tubing	1
10	HR-R-07005-2250	Hydraulic Swivel Shaft	1
11	HR-R-691-0008	End Plate	1
12	HR-R-098-0028	Seal Kit for 5" diameter swivel	1

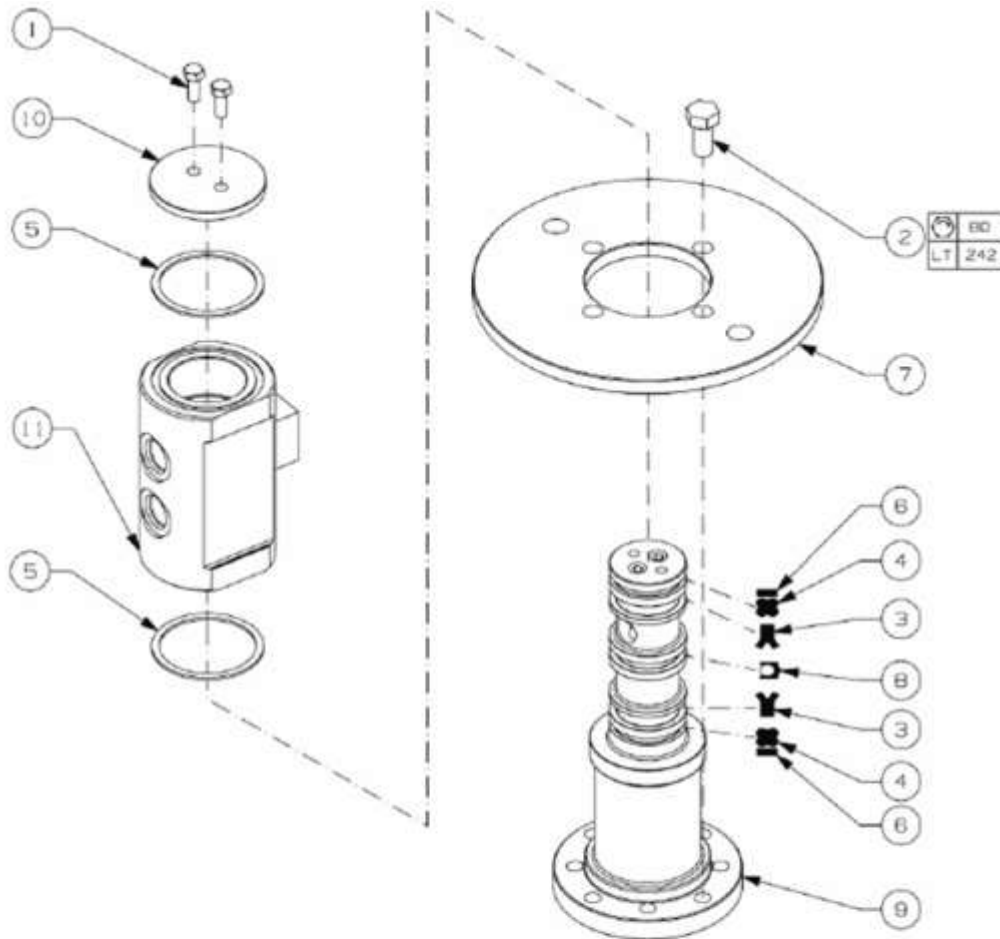


EX-25 v2 & v3 ROTATOR SWIVEL PARTS (PAGE 35)

SAS™ EXTREME™ AUTO PROCESSOR

SERIAL NUMBERS: F4908-F5330

Rotator Model: RLP-902 : **SAS Extreme EX25 S/N:** F4908, F4989-F5330 (NOT INCL. F5188, F5203)

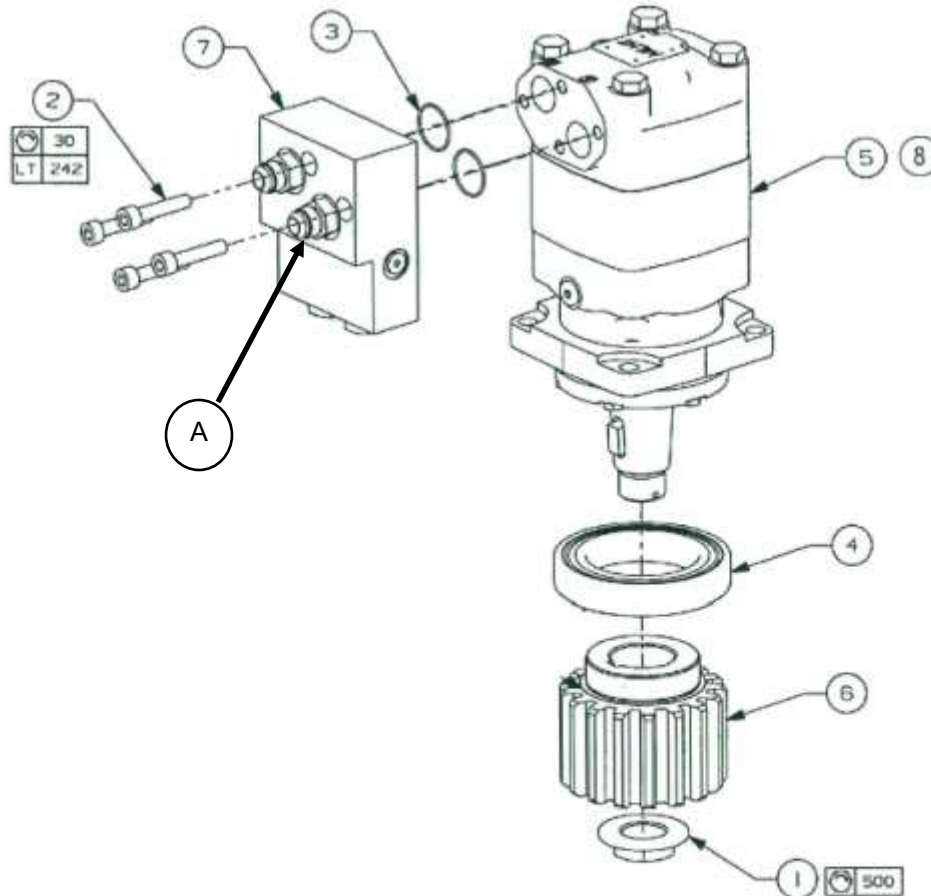


3.5" UPPER DIA: SAS Extreme EX25 S/N: F4908, F4989-F5330 (EXCL. F5203)

Item No.	SAS Part #	Description	Qty	UOM
1	HR-R-008-0094	BOLT 5/16"-24UNFx3/4"lg	2	EA
2	HR-R-008-0239	BOLT 1/2"-13UNC x 1"lg	4	EA
3	*See Seal Kit #12	U-CUP	2	EA
4	*See Seal Kit #12	QUAD-X SEAL	2	EA
5	*See Seal Kit #12	BACKUP RING	2	EA
6	*See Seal Kit #12	BACKUP RING	2	EA
7	HR-R-07004-3739	FIXATION RING	1	EA
8	*See Seal Kit #12	SEAL	1	EA
9	HR-R-512-0066	SHAFT	1	EA
10	HR-R-512-0067	END PLATE	1	EA
11	HR-R-712-0039	TUBING	1	EA
12	HR-R-097-0008	SEAL KIT for 3.5" diameter swivel	1	EA

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Rotator Model: RLP-902



Item No.	SAS Part #	Description	Qty	UOM
1	HR-R-011-0349	NUT	1	EA
2	HR-R-017-0190	HEX. SOCKET HEAD CAP SCREW	4	EA
3	HR-R-041-0103	URETHANE SEAL	2	EA
4	HR-R-048-0112	BALL BEARING	1	EA
5	HR-R-061-0244	HYDRAULIC MOTOR	1	EA
6	HR-R-07001-7357	PINION	1	EA
7	HR-R-07001-7409 HR-R-07005-3648	HYDRAULIC MANIFOLD IS SAME: Difference is Hydraulic Fitting 'A' (OLDER MANIFOLD) 'A' MJIC 10 X 10 ORB (NEWER MANIFOLD) 'A' ORFS 10 X MALE SAE 10	1	EA
8	HR-R-061-0245	MOTOR SEAL KIT	1	EA

(fr) (#1 011-0349) Utiliser une clé dynamométrique. Tous les couples de serrage sont en lb-pi.

(en) (#1 011-0349) Use a torque wrench. Lubricated torque values in ft-lb.

(fr) (#2 017-0190) Utiliser une clé dynamométrique. Tous les couples de serrage sont en lb-pi. et lubrifiés. LT= Loctite

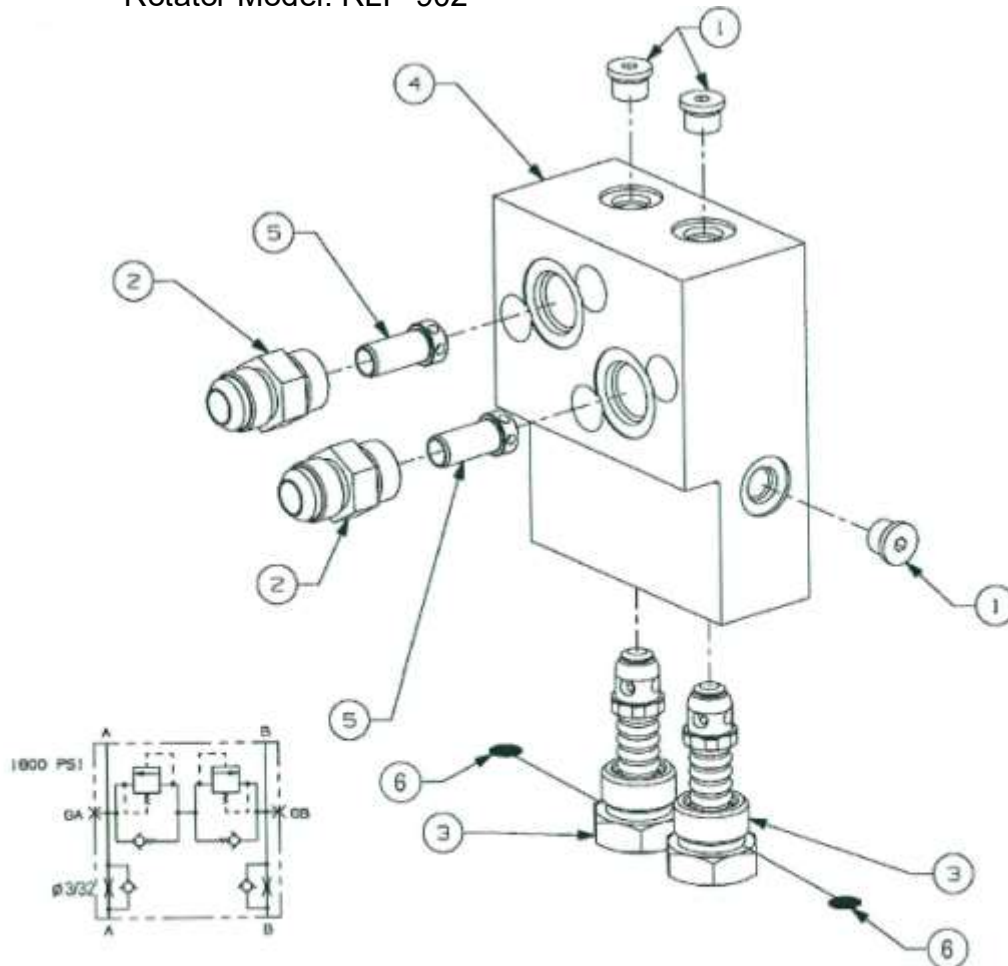
(en) (#2 017-0190) Use a torque wrench. Lubricated torque values in ft-lb. LT= Loctite

(fr) (#8 061-0245) Pour l'item 5

(en) (#8 061-0245) For item 5

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Rotator Model: RLP-902



Item No.	SAS Part #	Description		Qty	UOM
1	HR-R-030-0228	HYDRAULIC FITTING		3	EA
2	SELECT CORRECT # HR-R-030-0185 HR-R-030-1413	OPTIONS: (newer): ORB MALE CONNECTOR ORFS 10 x 10 ORB (older): ORB MALE CONNECTOR MJIC 10 X 10 ORB	030-0185 030-1413	2	EA
3	HR-R-07000-2297	RELIEF CARTRIDGE VALVE ASSEMBLY		2	EA
4	HR-R-07001-7374	HYDRAULIC MANIFOLD		1	EA
5	HR-R-638-0010	RESTRICTOR		2	EA
6	HR-R-041-3741	CARTRIDGE O'RING		2	EA

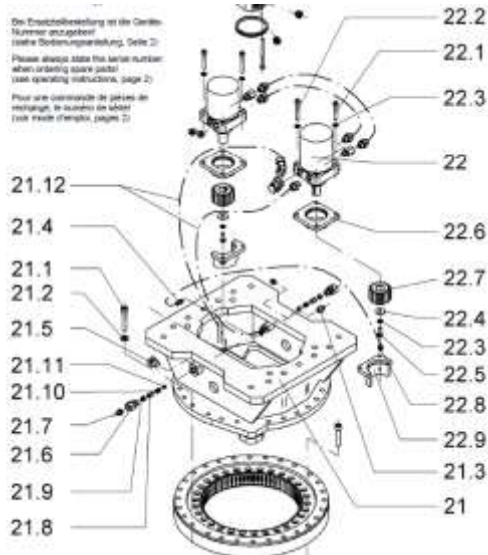
Comments for Page: 07001-7409 (02) HYDRAULIC MANIFOLD

[fr] (#3 07000-2297) Item 6 inclus

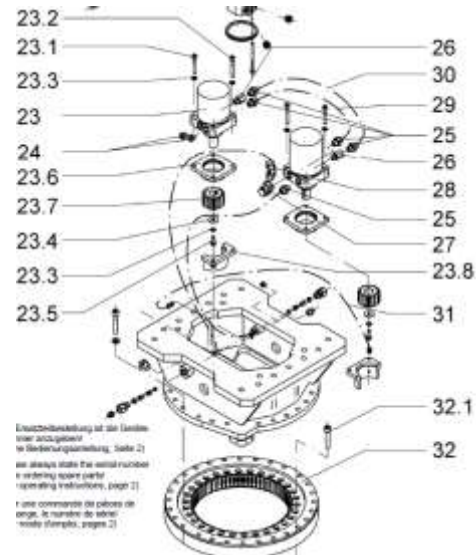
[en] (#3 07000-2297) Item 6 included

EX-25 v1 ROTATOR PARTS (PAGE 38)

SAS™ EXTREME™ AUTO PROCESSOR (F4968 & DOWN)



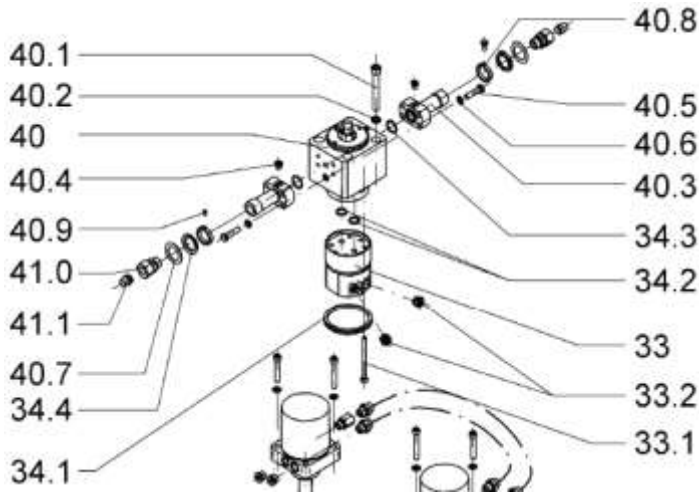
Pos. Item Rep	Stück Qty. Nbre..	Description		Bestell-Nr. Order-no. Pièce N°
21	1	rotator head		DR401349
21.1	24	socket head cap screw	M16x90	120014331
21.2	24	washer	17x30x4	122000044
21.3	1	grease nipple	AM10x1	132056413
21.4	1	screw fitting	GE 8-L M10x1 M12x1,5	290013317
21.5	2	screw plug	VST1 R 1/8"	291011144
21.6	2	screw fitting	GE 18-SR G1/2"	291010212
21.7	2	drain plug	BUZ 16-S	290010662
21.8	2	filter		DR502000
21.9	2	choke	Ø18.5xØ8	773058645
21.10	2	pressure spring		165050749
21.11	2	valve cone		273058601
21.12	2	hydraulic hose SAE100R2AT 540		DR500842
22	1	hydraulic motor		DR401223
22.1	2	socket head cap screw	M12x70	DR500253
22.2	2	socket head cap screw	M12x90	DR500255
22.3	5	spring washer	M12	DR500068
22.4	1	washer		DR500062
22.5	1	hexagon head cap screw	M12x30	DR500131
22.6	1	motor flange		DR400593
22.7	1	pinion		DR500851
22.8	1	screw fitting	GE 8-L M10x1 M12x1,5	290013317
22.9	1	cap pinion		DR400063



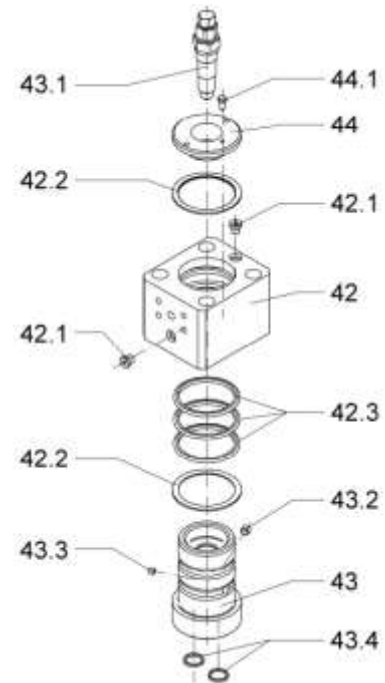
Pos. Item Rep	Stück Qty. Nbre..	Description		Bestell-Nr. Order-no. Pièce N°
23	1	hydraulic motor		DR401224
23.1	2	socket head cap screw	M12x70	DR500253
23.2	2	socket head cap screw	M12x90	DR500255
23.3	5	spring washer	M12	DR500068
23.4	1	washer		DR500062
23.5	1	hexagon head cap screw	M12x30	DR500131
23.6	1	motor flange		DR400593
23.7	1	pinion		DR500851
23.8	1	cap pinion		DR400063
24	2	screw plug	VST1 G 1/2"	291010934
25	5	screw fitting	XGE 16-SR G1/2" M24x1,5	291010223
26	2	adapter extension	G1/2" x G1/2" 42.5	291052263
27	1	swivelling screw-fitting	SWVE 16-SR G1/2"	291010668
28	1	male stud elbow fitting	EVW 16-S M24x1,5	290010654
29	1	hydraulic hose SAE100R2AT 205		DR505047
30	1	hydraulic hose SAE100R2AT 350		DR505048
31	1	hydraulic hose DN 5 KD KD 415	Schwennschlauch 20' Länge Typus identisch	296012429
32	1	rotary union		DR500590
32.1	30	socket head cap screw	M16x80	120010575

EX-25 v1 ROTATOR PARTS (PAGE 39)

SAS™ EXTREME™ AUTO PROCESSOR (F4968 & DOWN)



Pos. Item Rep	Stück Qty. Nbre..	Description		Bestell-Nr. Order-no. Pièce N°
33	1	connecting flange		207058445
33.1	6	socket head cap screw	M10x130	120011676
33.2	4	easy-fit plug-in	Gc. 8	290057513
34	1	seal kit cpl.		255058522
34.1	1	V-ring seal motor flange	VA105-114	DR500623
34.2	2	O-ring swivel	25,8x3,53	DR500600
34.3	2	O-ring swivel	32,93x3,53	DR500601
34.4	2	V-ring seal swivel	VA 37-42	DR500620
40	1	swivel		207058287
40.1	4	socket head cap screw	M16x120	DR500268
40.2	4	spring washer	16,2x24x3,25	DR500078
40.3	2	hydraulic flange-pipe		773058355
40.4	2	screw plug	VSTI G 1/4"	291010894
40.5	8	hexagon head cap screw	M12x50	120000447
40.6	8	spring washer	M12	DR500068
40.7	2	axial washer	40x60x1	170058298
40.8	2	positioning sleeve	ø 50	773058356
40.9	2	hexagon head cap screw	M 5x10	120014016
41.0	2	screw fitting	GE 20-SR G3/4" M30x2	291007050
41.1	2	drain plug	BUZ 20-S	290010502



Pos. Item Rep	Stück Qty. Nbre..	Description		Bestell-Nr. Order-no. Pièce N°
42	1	casing		241500833
42.1	2	screw plug	V3 R 1/4" WD- Viton	DR500650
42.2	2	axial ring	110x90,5x3	773500832
42.3	3	Roto-Glyd ring	90x105,5x8,3	DR500630
43	1	flange shaft		244058288
43.1	1	overcentre valve		DR500751
43.2	1	screw plug	NPTF 1/4"-18	DR502124
43.3	1	screw plug	NPTF 1/8"-27	DR502123
43.4	2	O-ring	25,8x3,53	DR500600
44	1	cover		235058295
44.1	4	hexagon head cap screw	M 8x30	120000102
44.2	4	spring washer	10x M 8	DR500066

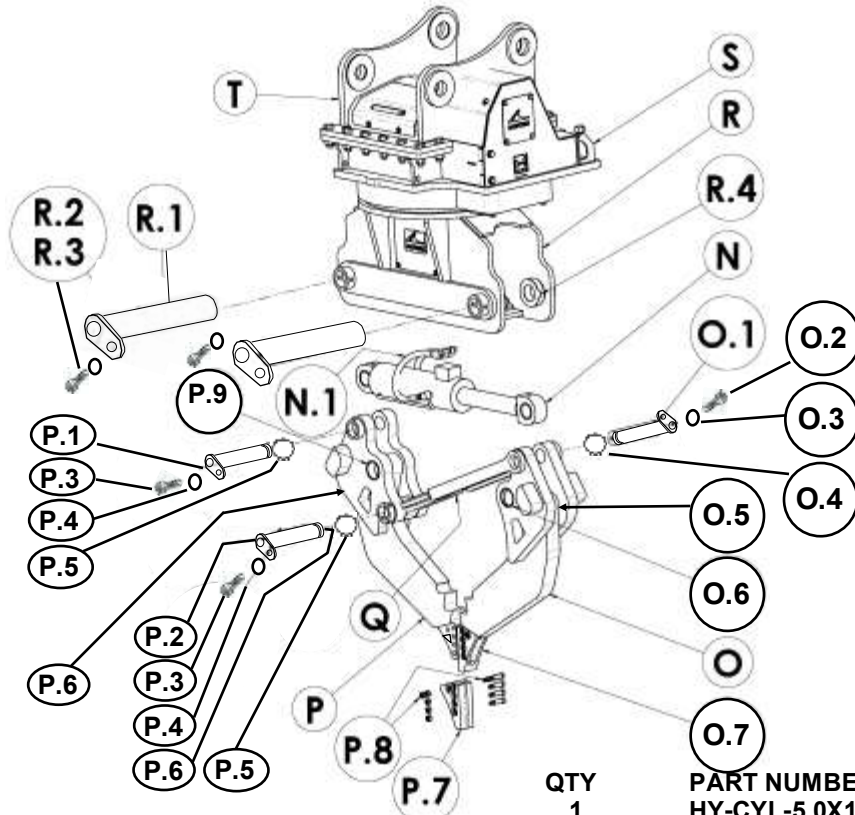
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EX-35-v2 PARTS DIAGRAM (PAGE 40)

SAS™ LARGE EXTREME™ AUTO PROCESSOR

EX-35: SERIAL NUMBERS F5453-F5720

SAS
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&
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TIPS.



DESCRIPTION

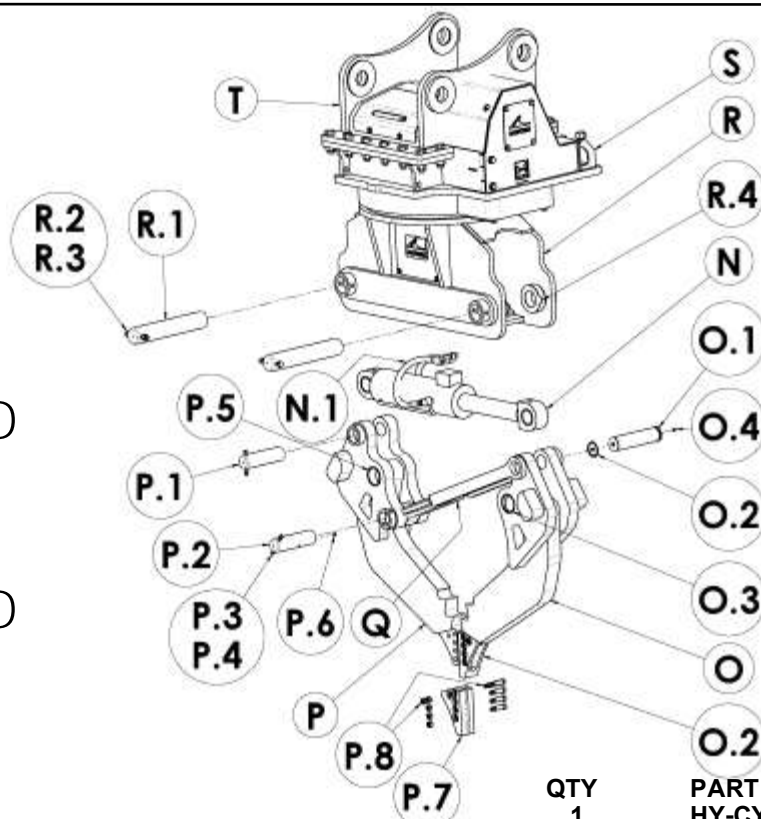
	QTY	PART NUMBER
[N] CLAW CYLINDER	1	HY-CYL-5.0X15.25-5K
N.1 CYLINDER SEAL REBUILD KIT	1	HK-5.00-783-244
N.2 CYLINDER CHECK VALVE	2	HV-CRT-S-CKCB-XCN
N.3 CYLINDER PIN BUSHING.....	2	W-B2.500X3.000X2.125
N.4 CYLINDER PIN GREASE SEAL	4	W-WIPER-2.5X3.0
N.5 HOSE ASSEMBLY - EXTEND & RETRACT INCLUDED IN KIT.....	1	HY-EXTREME-KIT
N.6 HOSE CLAMP—HOLDS HOSES UNDER SWIVEL BASE	1	HY-CLAMP-.750-2HOSE
[O] LEFT CLAW ASSY W/TIP (CYL & P-BAR SAME PIN)	2	EP-EX35-CLAW-LH-V2-3
O.1 CYLINDER CLAW PIN - LEFT	1	1912-06-V2 ASY
O.2 RETAINER BOLT FOR PIN.....	1	WBOLT 0.625X1.50 GR8
O.3 RETAINER FLAT WASHER	1	WASHER-F 0.6250. GR8
O.4 RETAINER C-CLIP RING.....	1	MCC-98410A231
O.5 GREASE ZERK - SMALL - 1/4-28 UNF.....	1	WGREASE ZERK 1/4-28
O.6 BUSHINGS (FOR CLAW PIVOT).....	2	W-B3.002X3.505X3.719
O.7 REPLACEABLE CLAW TIP (WEDGELOCK TIP) 2 RIDGES	1	EP-EXC-CLAW-TIP-2-V3
[P] RIGHT CLAW ASSY W/TIP (CYL & P-BAR DIFFERENT PINS)	1	EP-EX35-CLAW-RH-V2-3
P.1 CYLINDER CLAW PIN - RIGHT	1	1912-07-V2 ASY
P.2 PARALLEL BAR PIN - RIGHT (WITH GREASE ZERK IN PIN).....	1	1912-08-V2 ASY
P.3 RETAINER BOLT FOR PINS	2	WBOLT 0.625X1.50 GR8
P.4 RETAINER FLAT WASHER	2	WASHER-F 0.6250. GR8
P.5 RETAINER C-CLIP RING	2	MCC-98410A231
P.6 GREASE ZERK - SMALL—1/4-28 UNF.....	2	WGREASE ZERK 1/4-28
P.7 REPLACEABLE CLAW TIP (WEDGELOCK TIP) WITH 1 RIDGE	1	EP-EXC-CLAW-TIP-1-V3
P.8 TIP FASTENERS....(FIT V3 WEDGELOCK TIP) - [5/TIP]	10	EP-EXC-CLAW-TFAST-V3
(3/4" X 2-1/4" SHOULDER BOLT, 3/4" WASHER, 5/8" WASHER & 5/8" LOCK NUT)		
P.9 BUSHING (FOR CLAW MAIN PIVOT).....	2	W-B3.002X3.505X3.719
[Q] PARALLEL BAR ASSEMBLY	1	EP-EX35-PARALLEL-V2
[R] CLAMP BODY ASSEMBLY	1	EP-EX35-CLAMPBODY-V2
R.1 MAIN CLAW PIVOT PIN	2	1911-10-V2 ASY
R.2 RETAINER BOLT FOR PINS.....	2	WBOLT 0.625X1.50 GR8
R.3 RETAINER FLAT WASHER	2	WASHER-F 0.625 GR8
R.4 3" ID SHIM X 0.09375" THICK.....	4	W-SC-SHIM-.094
[S] HYDRAULIC ROTATOR	1	HR-ROTAR-R-7005-1816
[T] STICK MOUNT ASSEMBLY	1	VARIES WITH MACHINE

EX-35-v1 PARTS DIAGRAM (PAGE 41)

SAS™ LARGE EXTREME™ AUTO PROCESSOR

EX-35: SERIAL NUMBER F5188 ONLY

SAS
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TIPS.



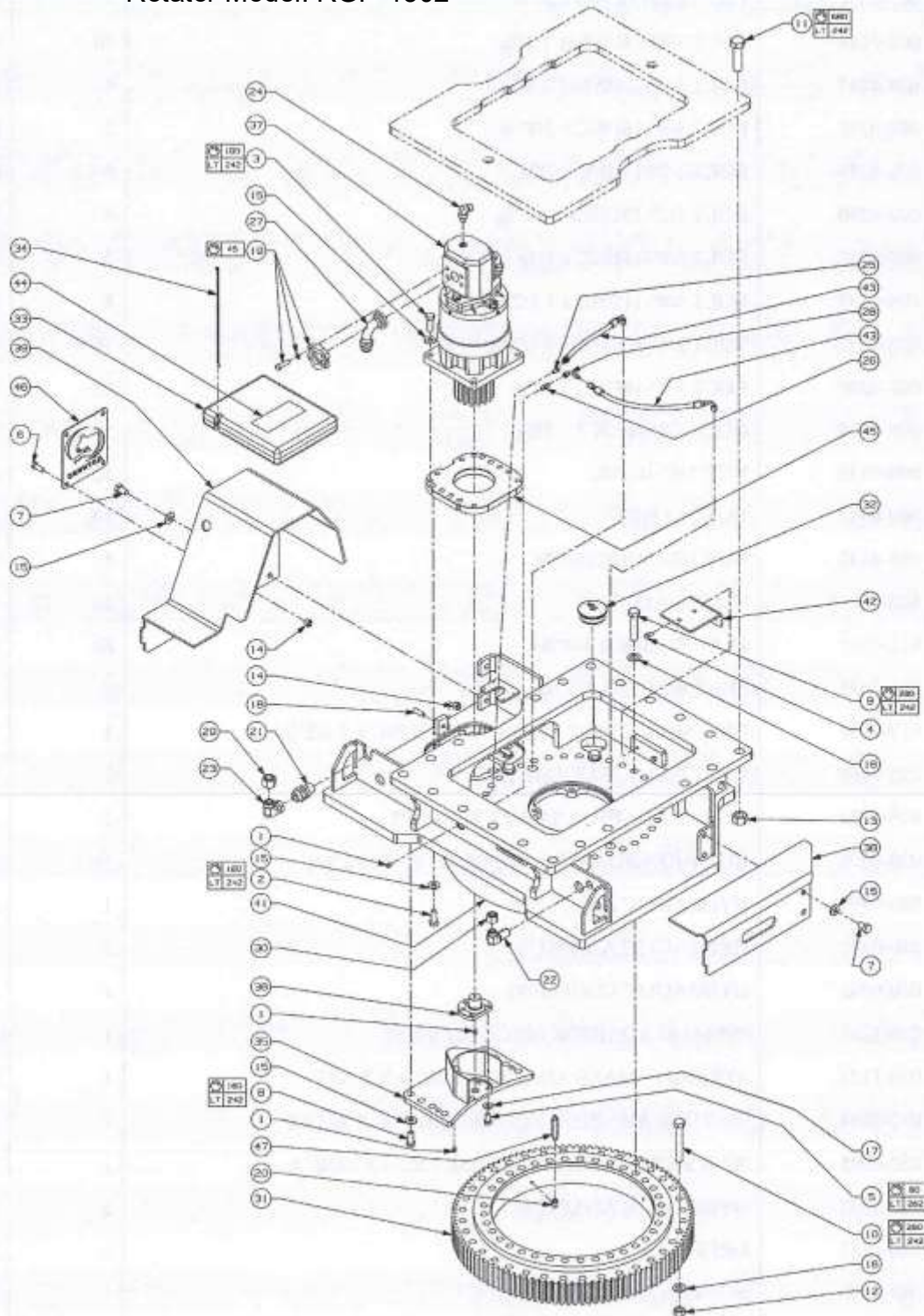
DESCRIPTION	QTY	PART NUMBER
[N] CLAW CYLINDER	1	HY-CYL-5.0X15.25-5K
N.1 CYLINDER SEAL REBUILD KIT.....	1	HK-5.00-783-244
N.2 CYLINDER CHECK VALVE.....	2	HV-CRT-S-CKCB-XCN
N.3 CYLINDER PIN BUSHING.....	2	W-B2.500X3.000X2.125
N.4 CYLINDER PIN GREASE SEAL.....	4	W-WIPER-2.5X3.0
N.5 HOSE ASSEMBLY - EXTEND & RETRACT INCLUDED IN KIT.....	1	HY-EXTREME-KIT
N.6 HOSE CLAMP—HOLDS HOSES UNDER SWIVEL BASE.....	1	HY-CLAMP-.750-2HOSE
[O] LEFT CLAW ASSY W/TIP (CYL & P-BAR SAME PIN)	2	EP-EX35-CLAW-LH-1-2
O.1 CYLINDER CLAW PIN - LEFT.....	1	1912-06
O.2 C-CLIP RING.....	1	MCC-98410A231
O.3 BUSHING.....	1	W-B3.002X3.500X3.719
O.4 GREASE ZERK - SMALL - 1/4-28 UNF.....	2	SS-GREASE ZERK-SMALL
O.5 REPLACEABLE CLAW TIP (WEDGELOCK TIP) 2 RIDGES.....	1	EP-EXC-CLAW-TIP-2-V3
[P] RIGHT CLAW ASSY W/TIP (CYL & P-BAR DIFFERENT PINS)	1	EP-EX35-CLAW-RH-1-2
P.1 CYLINDER CLAW PIN - RIGHT.....	1	1912-07
P.2 PARALLEL PAR PIN - RIGHT.....	1	1912-08
P.3 RETAINER BOLT FOR PINS.....	2	WBOLT 0.375X4.25 GR8
P.4 NUTS FOR RETAINER BOLTS.....	2	WNUT 0.375-16-GR8-NY
P.5 BUSHING.....	1	W-B3.002X3.500X3.719
P.6 GREASE ZERK - SMALL—1/4-28 UNF.....	1	SS-GREASE ZERK-SMALL
P.7 REPLACEABLE CLAW TIP (WEDGELOCK TIP) WITH 1 RIDGE.....	1	EP-EXC-CLAW-TIP-1-V3
P.8 TIP FASTENERS....(FIT V3 WEDGELOCK TIP) - [5/TIP].....	10	EP-EXC-CLAW-TFAST-V3
(3/4" X 2-1/4" SHOULDER BOLT, 3/4" WASHER, 5/8" WASHER & 5/8" LOCK NUT)		
TIP FASTENERS (FIT V2 NON-WEDGE LOCK TIPS) - [5/TIP].....	10	EP-EXC-CLAW-TFAST-V2
(3/4" X 2"SHOULDER BOLT,.....5/8" WASHER & 5/8" LOCK NUT)		
[Q] PARALLEL BAR ASSEMBLY	1	EP-EX35-PARALLEL-V1
[R] CLAMP BODY ASSEMBLY	1	EP-EX35-CLAMP-BODY-1
R.1 MAIN CLAW PIVOT PIN.....	2	1911-10
R.2 RETAINER BOLT FOR PINS.....	2	WBOLT 0.625X5.00 GR8
R.3 NUTS FOR RETAINER BOLTS.....	2	WNUT 0.625-11-GR8-NY
R.4 3" ID SHIM X 0.09375" THICK.....	4	W-SC-SHIM-.094
[S] HYDRAULIC ROTATOR Rotator Model RGP-1302	1	HR-ROTAR-R-7005-1816
[T] STICK MOUNT ASSEMBLY	1	VARIES WITH MACHINE

EX-35-v1 & v2 ROTATOR PARTS (PAGE 42)

SAS™ LARGE EXTREME™ AUTO PROCESSOR

S/N: F5188, F5453, F5545, F5685 & F5720

Rotator Model: RGP-1302



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EX-35-v1 & v2 ROTATOR PARTS (PAGE 43)

SAS™ LARGE EXTREME™ AUTO PROCESSOR

S/N: F5188, F5453, F5545, F5685 & F5720

Item	Part No.	Rotator Model: RGP-1302 Name	Qty	Uom
1	HR-R-001-0001	GREASE FITTING 1/8"NPT	4	EA
2	HR-R-008-0146	BOLT 5/8"-18UNFx1 1/2"lg	10	EA
3	HR-R-008-0147	BOLT 5/8"-18UNFx1 3/4"lg	4	EA
4	HR-R-008-0216	BOLT 3/8"-16UNC x 3/4" lg	2	EA
5	HR-R-008-0239	BOLT 1/2"-13UNC x 1"lg	5	EA
6	HR-R-008-0240	BOLT 1/2"-13UNCx1 1/4"lg	4	EA
7	HR-R-008-0258	BOLT 5/8"-11UNC x 1"lg	4	EA
8	HR-R-008-0259	BOLT 5/8"-11UNC x 1 1/2"lg	8	EA
9	HR-R-008-0277	BOLT 3/4"-10UNC x 3 1/2"lg	36	EA
10	HR-R-008-0280	BOLT 3/4"-10UNC X 5"lg	32	EA
11	HR-R-008-0298	BOLT 1-8UNC X 3 1/2"lg	20	EA
12	HR-R-009-0335	NUT 3/4"-10UNC	32	EA
13	HR-R-009-0337	NUT 1"-13UNC	20	EA
14	HR-R-010-4433	NUT 1/2-13UNCx5/8"lg.	5	EA
15	HR-R-012-0003	FLAT WASHER	26	EA
16	HR-R-012-0012	FLAT WASHER 3/4"dia.	68	EA
17	HR-R-012-0025	FLAT WASHER 1/2" dia. Gr. L9	5	EA
18	HR-R-017-0634	HEX. SOCKET SET SCREW 1/2"-13UNC x 1 1/2"lg	1	EA
19	HR-R-025-0989	SPLIT FLANGE CLAMP 20	2	EA
20	HR-R-026-1036	90 M / F ADAPTOR 1/8 NPT X 1/8 NPT	2	EA
21	HR-R-030-0096	BH UNION ADAPTOR 12 ORFSM X 12 ORFSM	5	EA
22	HR-R-030-0399	HYDRAULIC ADAPTOR	1	EA
23	HR-R-030-0402	HYDRAULIC ADAPTOR	5	EA
24	HR-R-030-0405	HYDRAULIC COUPLING	1	EA
25	HR-R-030-1265	45° M / M ADAPTOR MJIC 4 X 1/8 NPT	1	EA
26	HR-R-030-1323	STRAIGHT MALE ADAPTOR MJIC 4 X 2 NPT	1	EA
27	HR-R-030-4604	90° TUBE ADAPTOR CODE 61 MJIC 16 X 20 ORF	2	EA
28	HR-R-030-4995	90° S SWIVEL TUBE ADAPTOR FJIC 4 X MJIC 4	1	EA
29	HR-R-030-8542	HYDRAULIC ADAPTOR	5	EA
30	HR-R-030-8552	ORFS PLUG 10	1	EA
31	HR-R-048-0090	SLEWING RING	1	EA
32	HR-R-052-0819	PLUG	2	EA

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EX-35-v1 & v2 ROTATOR PARTS (PAGE 44)
SAS™ LARGE EXTREME™ AUTO PROCESSOR
S/N: F5188, F5453, F5545, F5685 & F5720

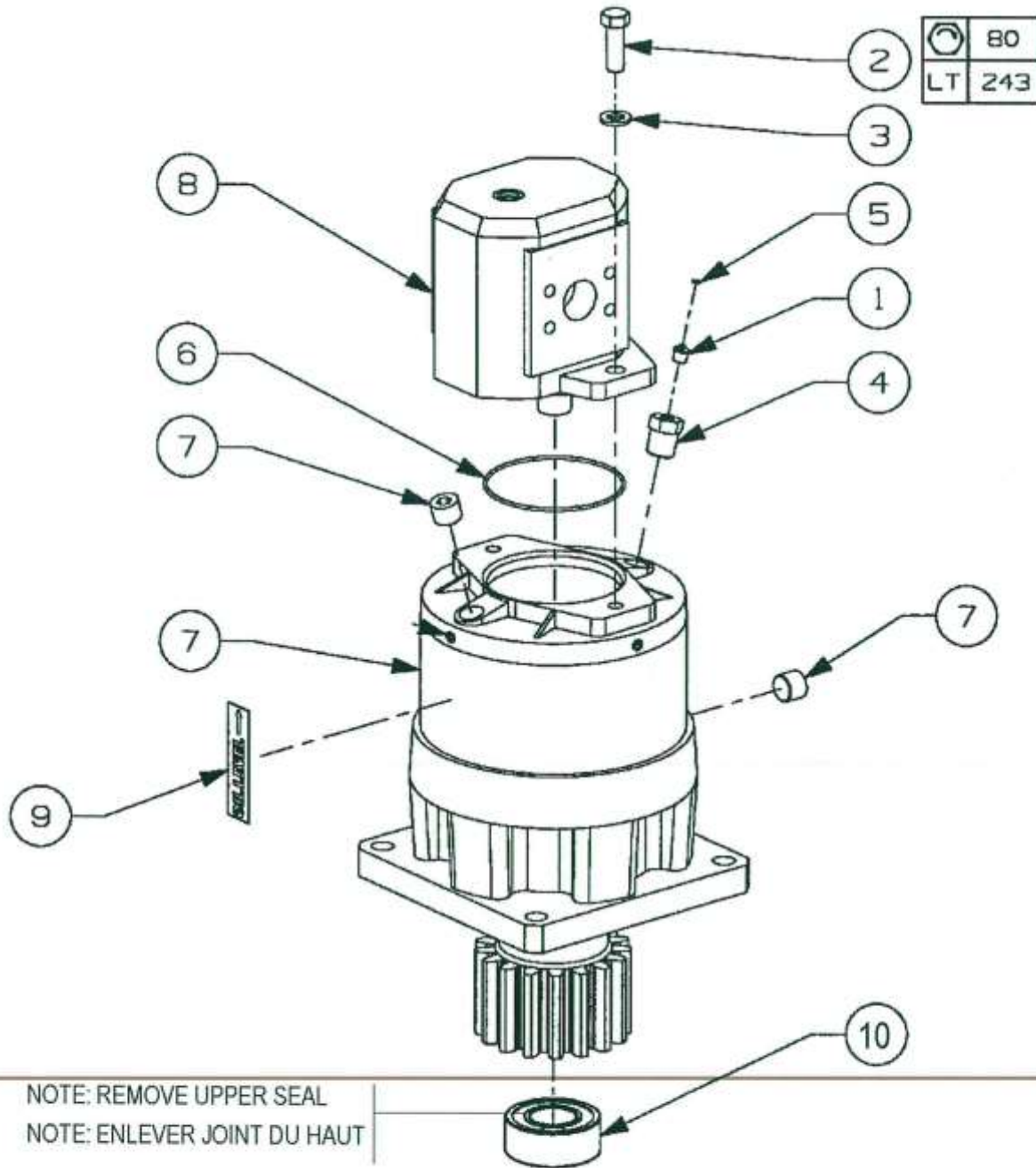
Item	Part No.	Rotator Model: RGP-1302 Name	Qty	Uom
33	HR-R-052-1227	MANUAL PACK	1	EA
34	HR-R-052-7294	NYLON TIE WRAP	1	EA
35	HR-R-07000-2541	PINION COVER	1	EA
36	HR-R-07000-2543	PINION HOLDER	1	EA
37	HR-R-07000-2948	MOTOR ASSEMBLY	1	EA
38	HR-R-07003-9211	ROTATOR GUARD	1	EA
39	HR-R-07003-9236	MOTOR GUARD	1	EA
40	HR-R-07004-3977	DECALS KIT	1	EA
41	HR-R-07005-1807	ROTATION BASE ASSY	1	EA
42	HR-R-07005-1814	HOLDER	1	EA
43	HR-R-099-3313	PLASTIC HOSE .25 2750 PSI 4FJIC X 4FJIC 90° 13"lg	2	EA
44	HR-R-146-0236	DECAL	1	EA
45	HR-R-440-0002	MOTOR SPACER	1	EA
46	HR-R-509-0005	COVER	1	EA
47	HR-R-572-0044	HYDRAULIC FITTING	2	EA

Comments for Page: 07005-1813 ROTATOR

(fr) (#2 008-0146),(#3 008-0147),(#5 008-239),(#8 008-0259),(#9 008-0277),(#10 008-0280),(#11 008-0298) Utiliser une clé dynamométrique. Tous les couples de serrage sont en lb-pi. et lubrifiés. LT= Loctite

(en) (#2 008-0146),(#3 008-0147),(#5 008-239),(#8 008-0259),(#9 008-0277),(#10 008-0280),(#11 008-0298) Use a torque wrench. Lubricated torque values in ft-lb. LT= Loctite

Rotator Model: RGP-1302



Item	Part No.	Name	Qty	Uom
1	HR-R-001-0013	GREASE RELIEF	1	EA
2	HR-R-008-0241	BOLT 1/2"-13UNCx1 1/2"lg	2	EA



EX-35-v1 &v2 ROTATOR PARTS (PAGE 46)

SAS™ LARGE EXTREME™ AUTO PROCESSOR

S/N: F5188, F5453, F5545, F5685 & F5720

Item	Part No.	Rotator Model: RGP-1302 Name	Qty	Uom
3	HR-R-012-0009	FLAT WASHER 1/2"dia	2	EA
4	HR-R-026-1000	REDUCER M / F 1/2 NPT X 1/8 NPT	1	EA
5	HR-R-041-1642	O-RING	1	EA
6	HR-R-041-1727	O-RING	1	EA
7	HR-R-110-0013	GEAR BOX	1	EA
8	HR-R-112-0141	HYDRAULIC MOTOR	1	EA
9	HR-R-146-0075	OIL LEVEL DECAL	1	EA
10	HR-R-048-0094	BEARING	1	EA
11	HR-R-112-0162	HYDRAULIC MOTOR SEAL KIT 112-0141	1	EA
12	HR-R-110-0004	GEARBOX SHAFT SEAL	1	EA

Comments for Page: 07000-2948 (02) MOTOR ASSEMBLY

[fr] (#2 008-0241) Utiliser une clé dynamométrique. Tous les couples de serrage sont en lb-pi. et lubrifiés. LT= Loctite

[en] (#2 008-0241) Use a torque wrench. Lubricated torque values in ft-lb. LT= Loctite

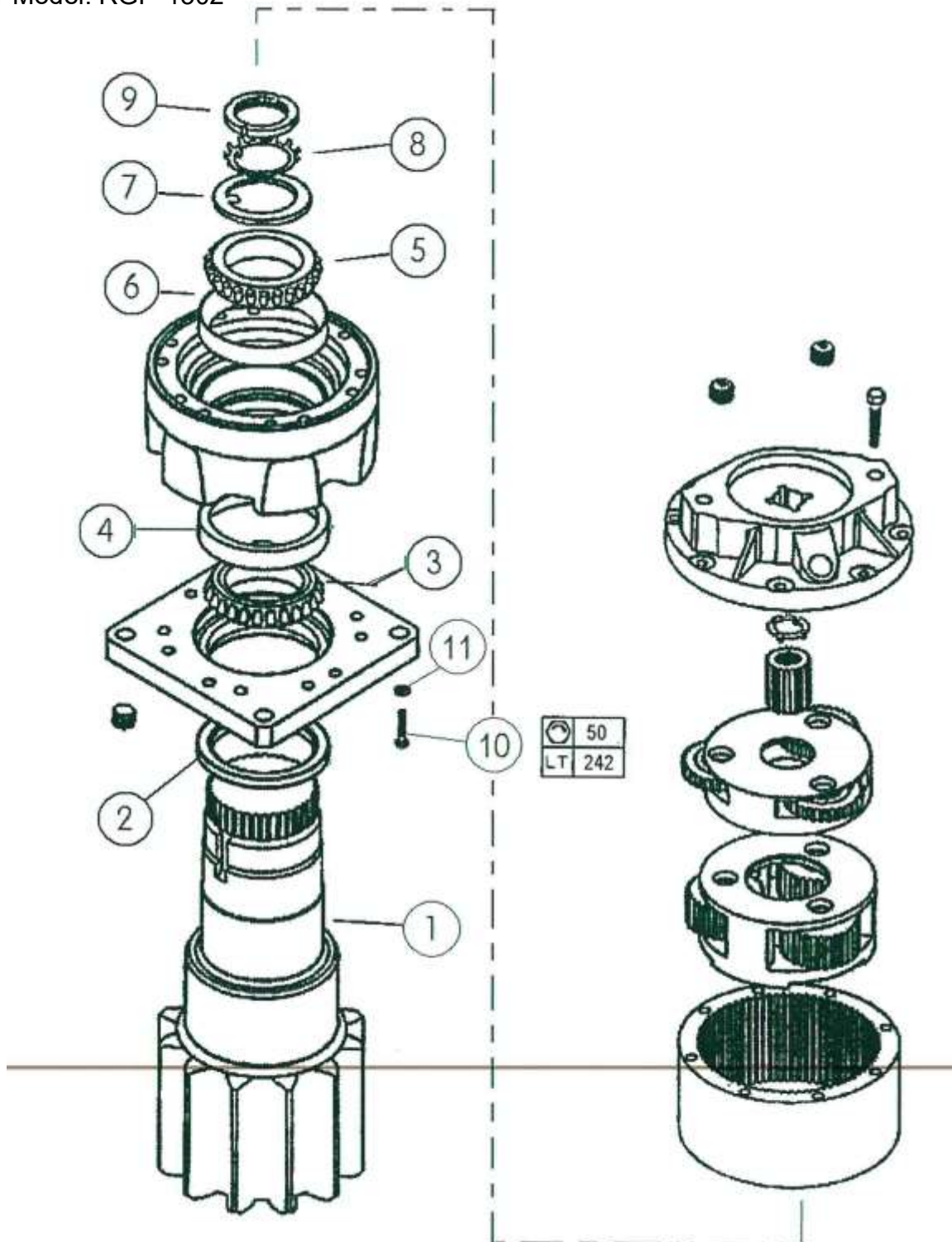
[fr] (#11 112-0162) Ensemble de joints d'étanchéité pour le #8

[en] (#11 112-0162) Seal kit for #8

[fr] (#12 110-0004) Joint d'étanchéité de l'arbre pour #7

[en] (#12 110-0004) Shaft seal for #7

Rotator Model: RGP-1302



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EX-35-v1 &v2 ROTATOR PARTS (PAGE 48)
SAS™ LARGE EXTREME™ AUTO PROCESSOR
 S/N: F5188, F5453, F5545, F5685 & F5720

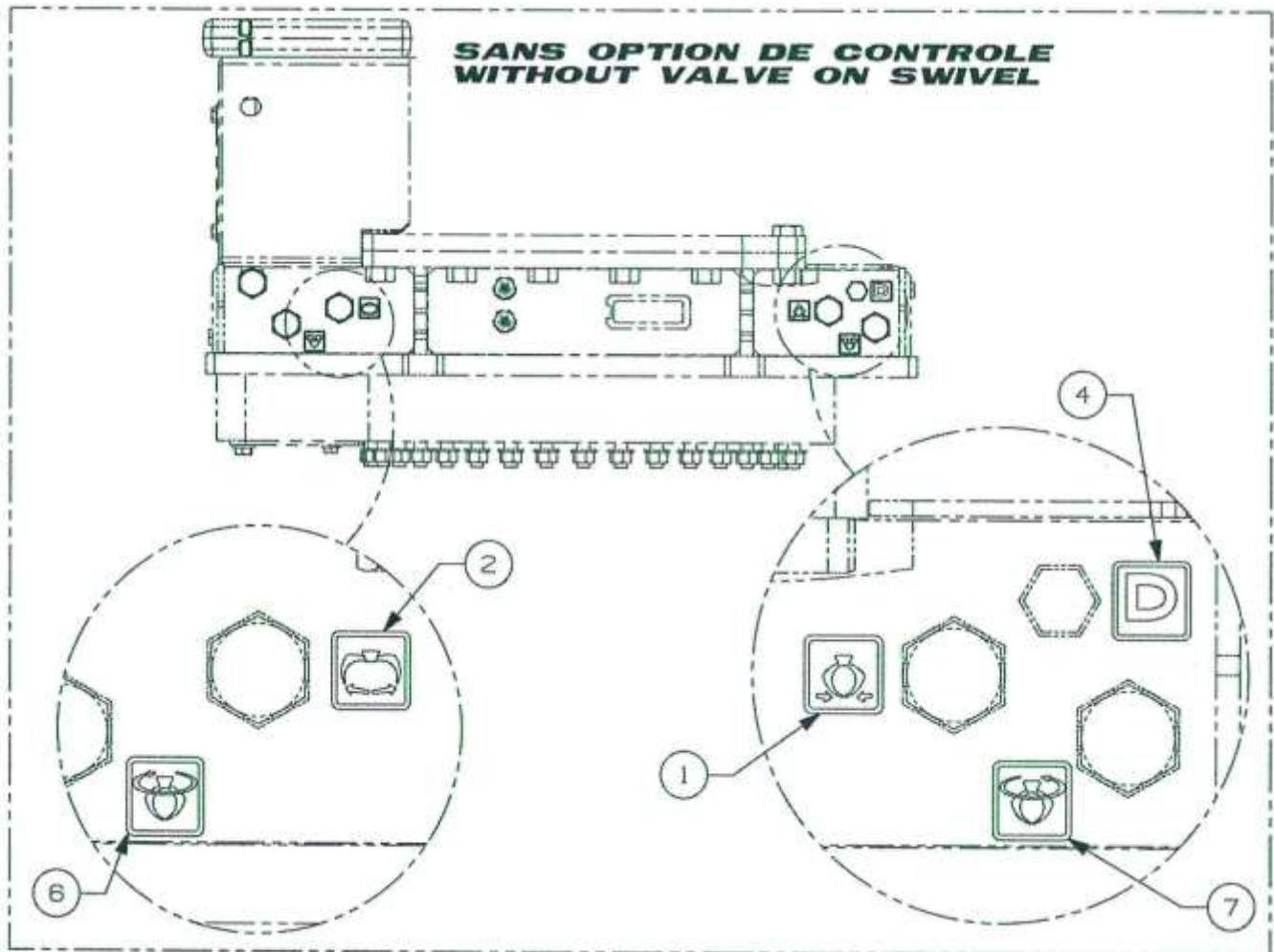
Item	Part No.	Rotator Model: RGP-1302 Name	Qty	Uom
1	HR-R-110-0015	PINION SHAFT	1	EA
2	HR-R-110-0004	GEARBOX SHAFT SEAL	1	EA
3	HR-R-110-0005	TAPERED ROLLER BEARING (CONE)	1	EA
4	HR-R-110-0006	TAPERED ROLLER BEARING (CUP)	1	EA
5	HR-R-110-0007	TAPERED ROLLER BEARING (CONE)	1	EA
6	HR-R-110-0008	TAPERED ROLLER BEARING (CUP)	1	EA
7	HR-R-110-0009	THRUST WASHER	1	EA
8	HR-R-110-0010	EXTERNAL TOOTHED LOCK WASHER	1	EA
9	HR-R-110-0011	NUT	1	EA
10	HR-R-110-0016	HEX. SOCKET HEAD CAP SCREW	12	EA
11	HR-R-110-0017	FLAT WASHER	12	EA

Comments for Page: 110-0013 GEARBOX REDUCER

[fr] (#10 110-0016) Utiliser une clé dynamométrique. Tous les couples de serrage sont en lb-pi. et lubrifiés. LT= Loctite

[en] (#10 110-0016) Use a torque wrench. Lubricated torque values in ft-lb. LT= Loctite

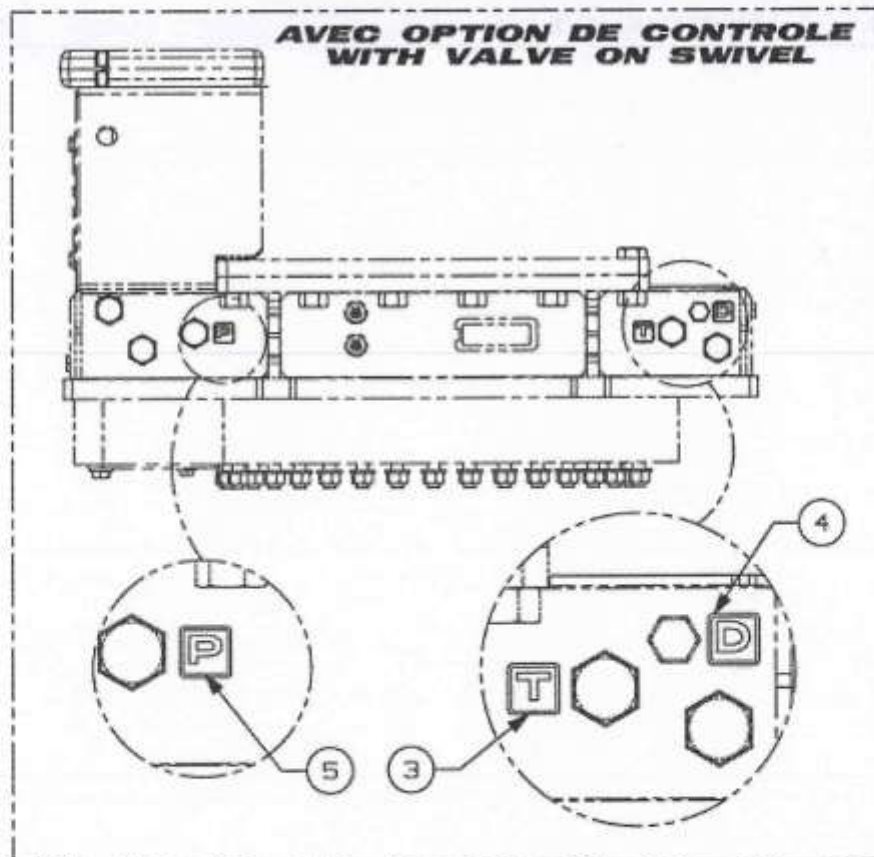
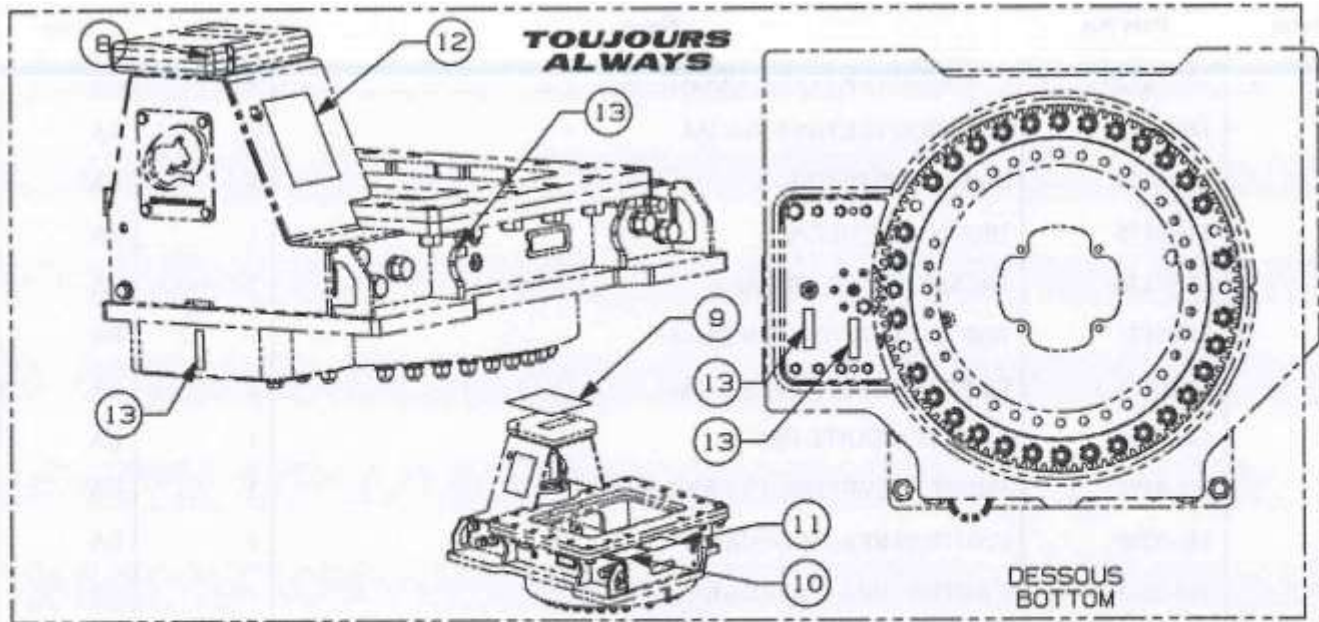
Rotator Model: RGP-1302



Item (4) Fitting [D]

Important: The drain line must be connected to the drain line filter on the carrier.

Rotator Model: RGP-1302



Item (4)
 Fitting [D]
 Important:
 The drain
 line must be
 connected
 to the drain
 line filter on
 the carrier.



EX-35-v1 &v2 ROTATOR PARTS (PAGE 51)
SAS™ LARGE EXTREME™ AUTO PROCESSOR
 S/N: F5188, F5453, F5545, F5685 & F5720

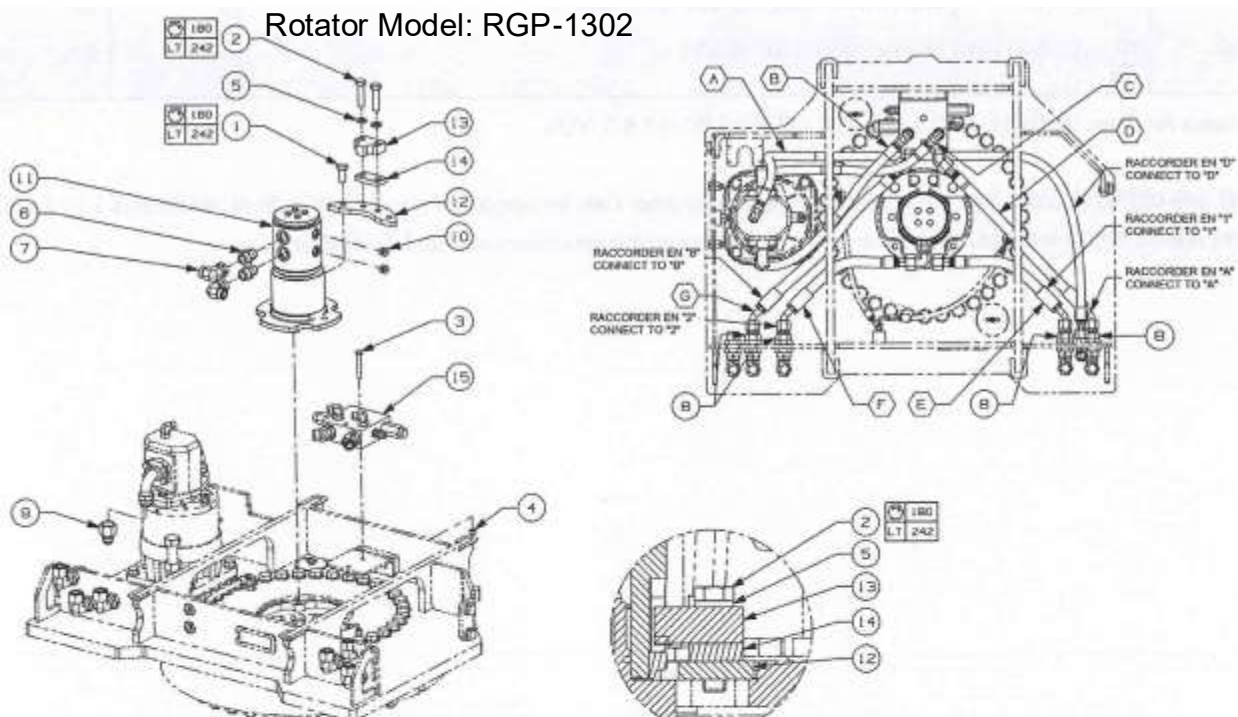
Item	Part No.	Rotator Model: RGP-1302 Name	Qty	Uom
1	HR-R-146-0172	RGP GRAPPLE CLOSE DECAL	1	EA
2	HR-R-146-0173	RGP GRAPPLE OPEN DECAL	1	EA
3	HR-R-146-0174	TANK -RGP DECAL	1	EA
4	HR-R-146-0175	DRAIN -RGP DECAL	1	EA
5	HR-R-146-0176	PRESSURE -RGP DECAL	1	EA
6	HR-R-146-0177	RGP RIGHT ROTATION DECAL	1	EA
7	HR-R-146-0178	RGP LEFT ROTATION DECAL	1	EA
8	HR-R-146-0182	ADJUST CHARTE DECAL	1	EA
9	HR-R-146-0192	SHEET POLYESTER, CLEAR DECAL	1	EA
10	HR-R-146-0209	CAUTION RPA-FR DECAL	1	EA
11	HR-R-146-0211	CAUTION RPA-EN DECAL	1	EA
12	HR-R-146-0219	RGP GREASE DECAL	1	EA
13	HR-R-146-0739	RIGHT GREASE DECAL	4	EA

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EX-35-v1 &v2 ROTATOR PARTS (PAGE 52)

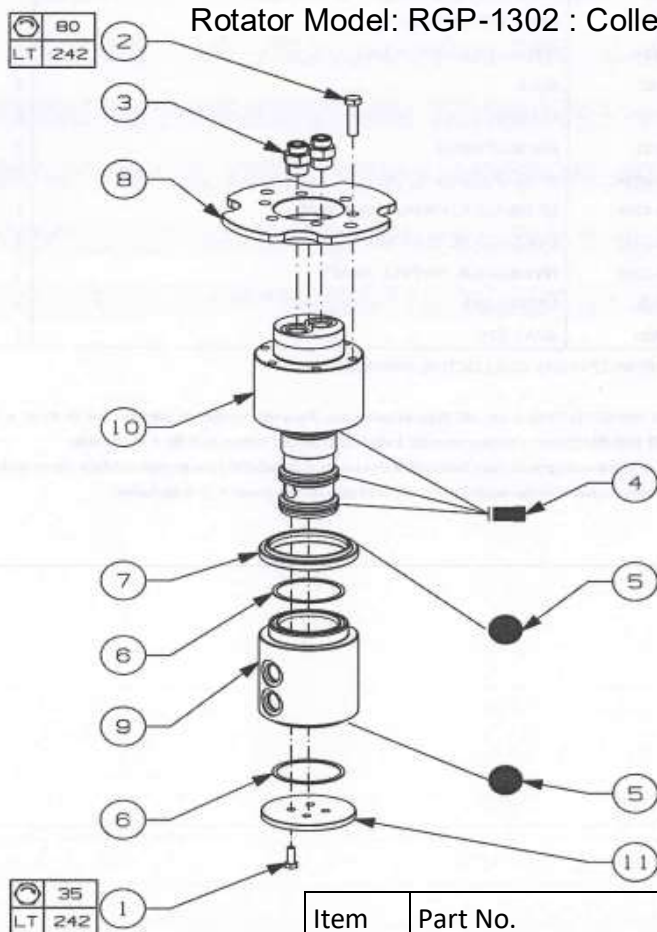
SAS™ LARGE EXTREME™ AUTO PROCESSOR

S/N: F5188, F5453, F5545, F5685 & F5720



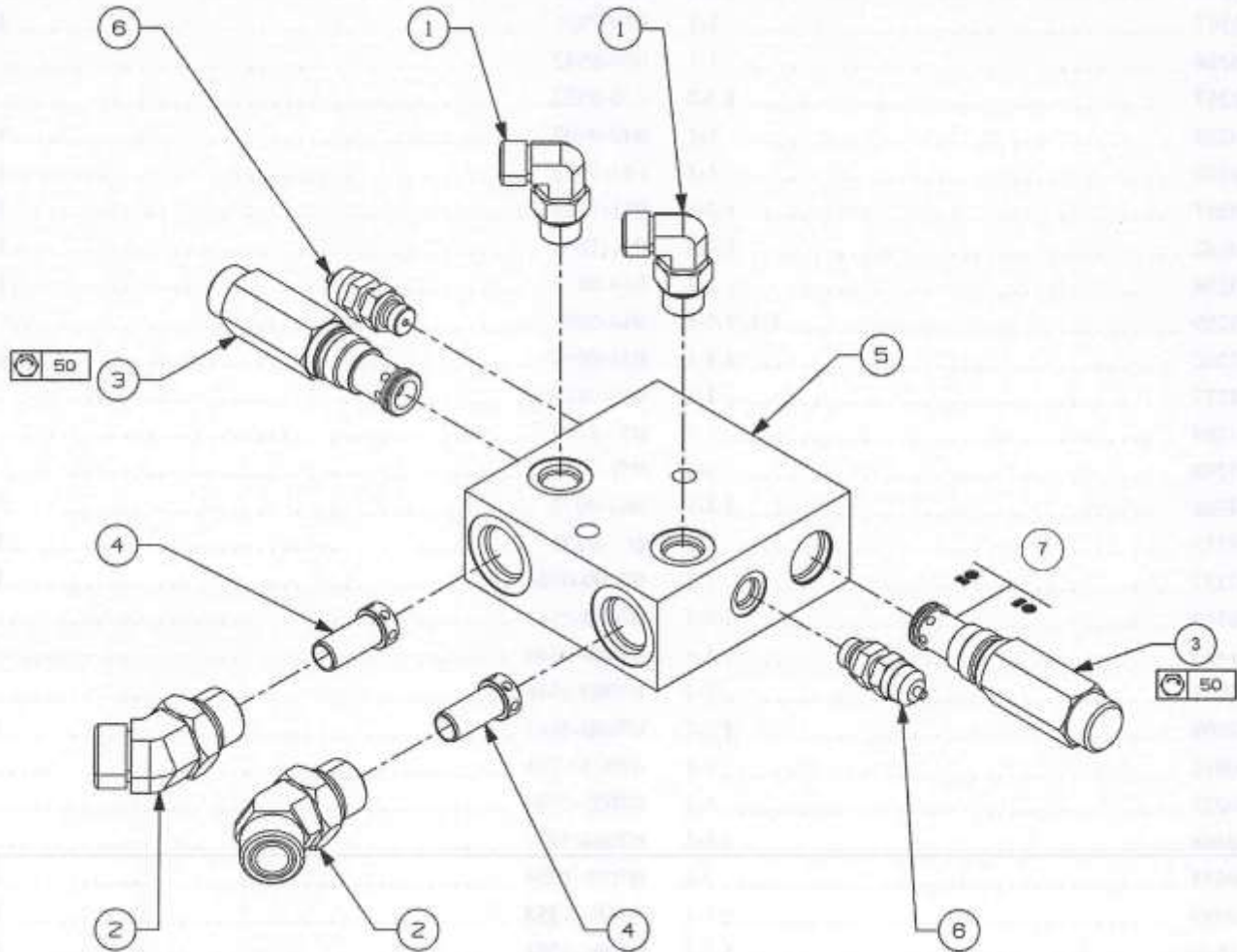
Item	Part No.	Name	Qty	Uom
1	HR-R-008-0259	BOLT 5/8"-11UNC x 1 1/2"lg	2	EA
2	HR-R-008-0262	BOLT 5/8"-11UNCx2 1/2"lg	2	EA
3	HR-R-008-0305	BOLT 3/8"-16 UNCx2 3/4"lg	2	EA
4	HR-R-010-0340	NYLON LOCK NUT 3/8"-16UNC	2	EA
5	HR-R-013-0368	SPLIT LOCK WASHER 5/8" dia	2	EA
6	HR-R-030-0029	ORFS STRAIGHT MALE ADAPTOR 12 ORFSM X 12 ORB	2	EA
7	HR-R-030-0402	HYDRAULIC ADAPTOR	2	EA
8	HR-R-030-0404	HYDRAULIC ADAPTOR	4	EA
9	HR-R-030-5064	REDUCING TUBING FJIC 16 X MJIC 12	2	EA
10	HR-R-030-7821	HEX SOCKET PLUG 8 ORB	4	EA
11	HR-R-07005-1234	COLLECTOR ASSEMBLY	1	EA
12	HR-R-07005-1261	PLATE	1	EA
13	HR-R-07005-1284	HYDRAULIC SWIVEL LOCK	1	EA
14	HR-R-07005-1296	SPACER	1	EA
15	HR-R-07005-1787	DISTRIBUTION BLOCK ASSEMBLY	1	EA
A...G	NOPARTNUMBER	HOSES (SEE FACTORY)	X	EA

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Item	Part No.	Name	Qty
1	WBOLT 0.375X01.00	BOLT 3/8" -16UNC x 1" lg (GR8)	4
2	WBOLT 0.500X2.00-GR8	BOLT 1/2" -13UNC x 2" lg (GR8)	6
3	HR-R-030-0429	Hydraulic Coupling	2
4	***See Seal Kit #12	Seal	3
5	***See Seal Kit #12	O-Ring	2
6	***See Seal Kit #12	Backup Ring	2
7	HR-R-07000-0924	Seal Holder	1
8	HR-R-07005-1258	Hydraulic Swivel Holder	1
9	HR-R07005-2247	Collector Tubing	1
10	HR-R-07005-2250	Hydraulic Swivel Shaft	1
11	HR-R-691-0008	End Plate	1
12	HR-R-098-0028	Seal Kit for 5" diameter swivel	1

Rotator Model: RGP-1302



Item	Part No.	Name	Qty	Uom
1	HR-R-030-0405	HYDRAULIC COUPLING	2	EA
2	HR-R-030-0406	HYDRAULIC COUPLING	2	EA
3	HR-R-067-0196	CUSHION CARTRIDGE VALVE 2200 PSI	2	EA
4	HR-R-07000-4613	RESTRICTOR	2	EA
5	HR-R-07005-1783	DISTRIBUTION HOUSING	1	EA
6	HR-R-125-9676	PRESSURE TEST COUPLING	2	EA
7	HR-R-067-0072	CARTRIDGE SEAL KIT	2	EA



PARTS GUIDE (PAGE 55)
SAS™ EXTREME™ AUTO PROCESSOR

WIRE STRIPPER

DESCRIPTION	PART NUMBER
[A] WIRE STRIPPER	EP-EXC-WIRE-STRIP-1
[B] FASTENERS	
BOLTS	Qty 4 WBOLT 0.750X3.00 GR8
NUTS	Qty 4 WNUT 0.750-10-GR8-NY



PATENTED
WIRE STRIPPER
U.S.A. PATENT NUMBER:
9414704

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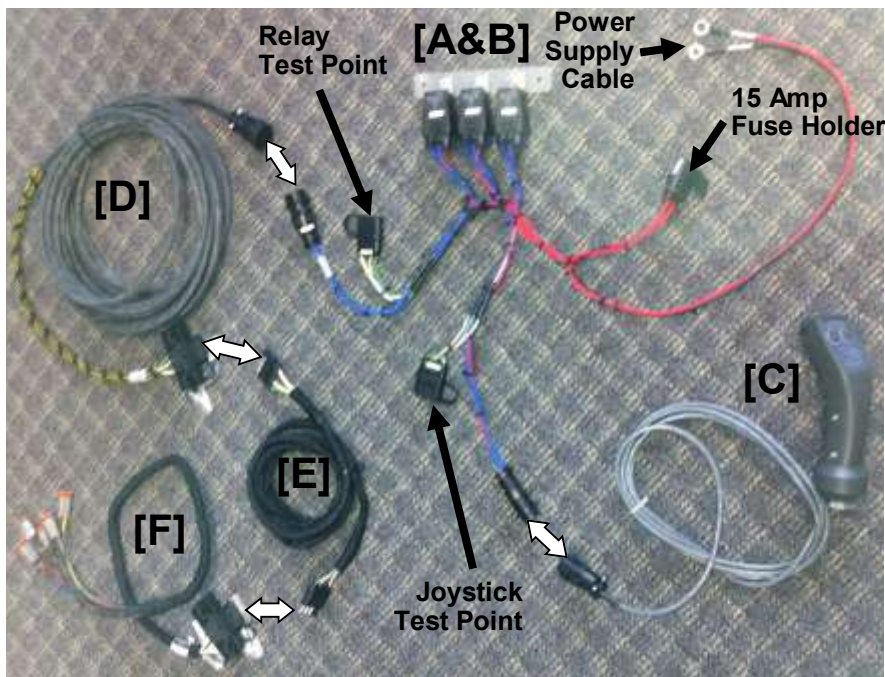
OPTIONAL ELECTRONICS PARTS GUIDE (PAGE 56)

SAS™ EXTREME™ AUTO PROCESSOR

PLEASE NOTE:

The electrical components called out below are considered as optional components that could be supplied by SAS™. Since the physical setup of the electrical controls for the Extreme™ will vary from machine to machine, please consult the Sales team at SAS™ in order to determine which components (if any) will need to be ordered for your particular unit.

DESCRIPTION	PART NUMBER
[A&B] CONTROL MODULE W/LOCAL TEST & 2' PWR WIRE	HC-MOD-S-21478
B.1 RELAY 24 VOLT (BLACK) (3 REQ.)	HC-BRL-H-4RD933332
B.2 15 AMP FUSE (TYPICAL AUTOMOTIVE STYLE FUSE) (1 REQ.)	HC-FUS-...-ATC15
[C] JOYSTICK & 10' CABLE ASSEMBLY W/PLUG (NOTE: This is the standard SAS™ Joystick)	HC-JYA-S-50270
[D] 30' FORWARD CONTROL CABLE W/FLAT 4 WIRE PLUG	HC-CAB-S-50266-1
[E] 7' JUMPER CABLE W/PLUGS (EXCAVATOR STICK TO [F])	HC-CAB-S-50274
[F] 32" VALVE BLOCK CABLE W/BULKHEAD AND COIL PLUGS	HC-CAB-S-50272
OPTIONAL TEST LIGHTS	
1-LED CIRCUIT TESTER FOR WIRE [F] AT HYDRAULIC BLOCK	HC-PLG-I-TESTLIGHT-1
3-LED CIRCUIT TESTER FOR "Test Points" SHOWN BELOW	HC-PLG-I-TESTLIGHT-3



Test point
for using
3-LED
CIRCUIT
TESTER

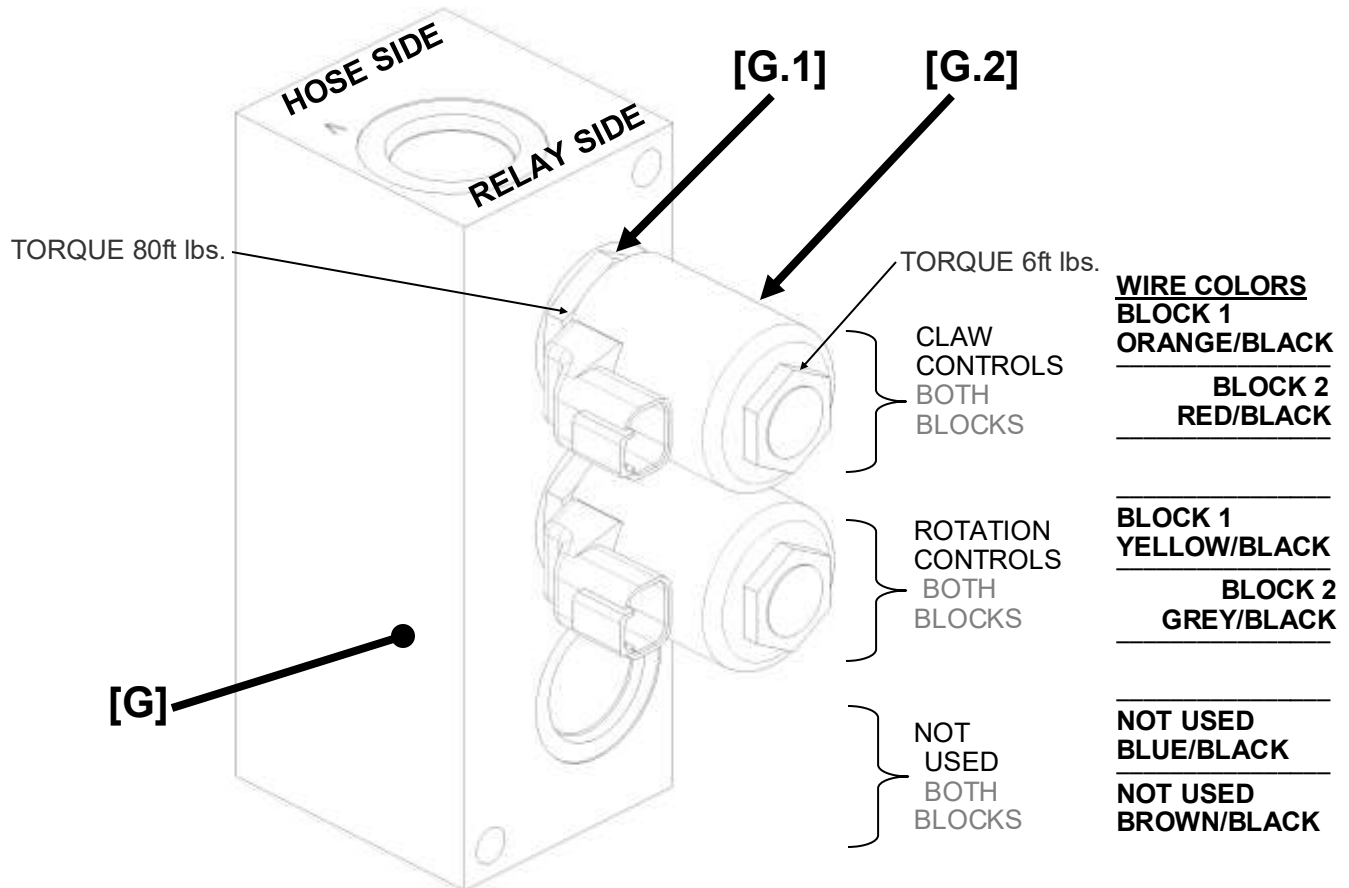
Use tester
between:
[D] & [E]
OR
[E] & [F]

For testing
cables:
[D] & [E]

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OPTIONAL VALVE BLOCK PARTS GUIDE (PAGE 57)

SAS™ EXTREME™ AUTO PROCESSOR



DESCRIPTION

	DESCRIPTION	PART NUMBER
[G]	HYDRAULIC VALVE BLOCK ASSY W/ VALVES & COILS (2 REQ.)	HV-BLK-S-FV9292V3
G.1	SOLENOID CARTRIDGE Closed VALVE (Screws in block-4 REQ.)	HV-CRT-V-SBV1112VC00
	VALVE INSTALLATION NOTE: REQUIRES 1-1/4" WRENCH, TORQUE TO 80 FT-LBS	
G.2	SOLENOID ELECTRIC COIL 24 VOLT STANDARD (4 REQ.)	HV-COL-V-300AA00142A
	COIL INSTALLATION NOTE: REQUIRES 7/8" WRENCH, TORQUE TO 6 FT-LBS	
[H]	HYDRAULIC PRESSURE RELIEF & BLOCK ASSEMBLY OPTIONAL FOR CUSTOM INSTALLATION	HV-REL-P-RAH101S30



System may have stored hydraulic pressure. Disassembly of any hydraulic part, cartridge valve, coil or hose may result in sudden release of hydraulic fluid and may result in unexpected movement. Avoid this fluid or pinch hazard. Only qualified personnel should service this unit. The Hydraulic Adjustable unit should be lowered to the ground and secured.



OPTIONAL ELECTRONIC SCHEMATIC (PAGE 58)

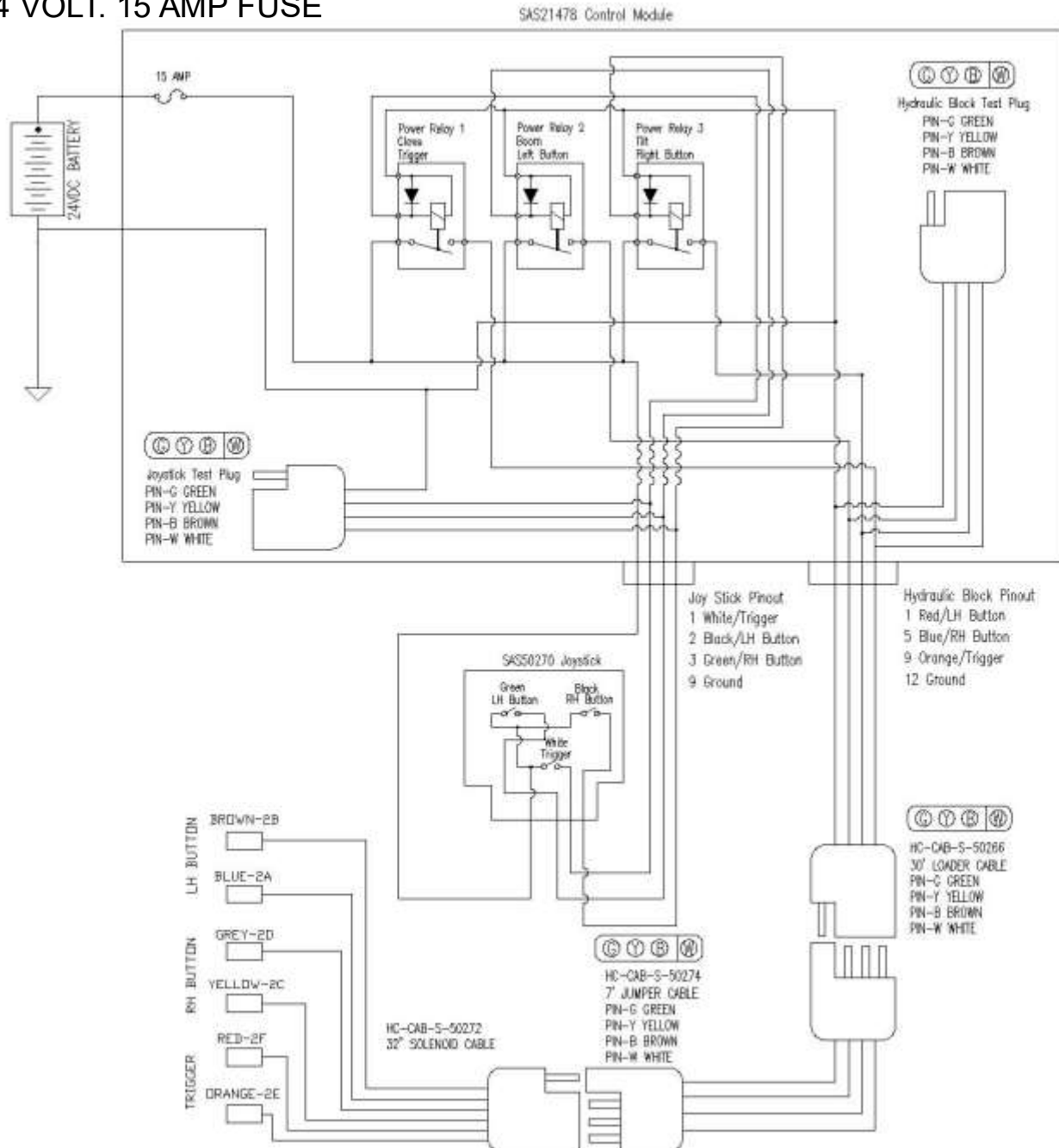
SAS™ EXTREME™ AUTO PROCESSOR

MAIN PLUG ON LOADER ARM (LEADING TO CONTROL BOX)



GREEN=BOOM POSITIVE WITH BUTTON PRESSED
YELLOW=TILT POSITIVE WITH BUTTON PRESSED
BROWN=CLAW POSITIVE WITH BUTTON PRESSED
WHITE= GROUND

24 VOLT. 15 AMP FUSE



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LIMITED WARRANTY (PAGE 59)

SAS™ EXTREME™ AUTO PROCESSOR

SAFETY

Buyer accepts the responsibility to (1) Ensure that all personnel that will use and/or work in the area of the purchased product will read the safety ID plate and the Operator Manual for machines equipped with SAS FORKS™ and the machine manufacturer's Operators Manual, prior to use; and (2) Ensure that all personnel follow the safety guidelines outlined on these materials.

S.A.S. OF LUXEMBURG, LLC. IS NOT RESPONSIBLE FOR SAFETY IN THE FIELD.

GOALS OF THE S.A.S. OF LUXEMBURG, LTD. LIMITED WARRANTY PROCEDURE

- ASSURE MINIMUM CUSTOMER DOWNTIME by resolving the problem correctly on a timely basis.
- ASSURE END-USER CONFIDENCE while maintaining an equitable warranty expense for both your company and SAS.
- PRODUCT IMPROVEMENT. We have an engineering staff ready to assist you. Call us at 1-877-SAS-FORK (1-877-727-3675)
Please call S.A.S. of Luxemburg, LLC. (SAS™) before attempting any repair, modification, or questionable job applications.

LIMITED WARRANTY FOR SAS FORKS™

For products that SAS™ manufactures, SAS™ warrants that such products conform to all specifications for materials and workmanship for the period of time indicated below, after delivery, when used in compliance with the SAS FORKS™ Operator Manual.

PRODUCT	LIMITED WARRANTY PERIOD	ITEM	COVERED
EXTREME™	1 year from original ship date	Rotator Head Weldment / Hold Down	Defects in materials & workmanship
EXTREME™	1 year from original ship date	Hydraulic cylinders, Hydraulic Rotator Motor Assembly	Defects in materials

No warranty on other products not listed above, unless otherwise specified on the face of the original invoice.

No warranty against abrasion wear, claw chip wear, fork tip damage, blade bending, fusible link, separation, bent fork mounting shafts, hoses, cables, or wires.

No warranty against used equipment. All used excavators, loaders, and other equipment sold "AS IS".

SAS™ does not warrant the products that it does not manufacture. Rather all warranties, if any, for these products are supplied by the manufacture. SELLER EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CALL FOR LIMITED WARRANTY CONSIDERATION:

To be considered for warranty repairs or replacement buyer must notify SAS™ of any warranty claim within 10 days after such claim arises, and prior to expiration of the warranty period and prior to the performance of any repairs being done, otherwise buyer waives all rights to such claim.

- Obtain the SAS™ Fork serial number & call SAS™ at 920-845-2198. Clearly describe the problem and the operation that was taking place when it occurred.
- Buyer is to return defective assembly, freight prepaid, or photographic evidence clearly showing the problem area and details of failure to SAS™ for review. When necessary, a factory representative may evaluate the problem in the field.

WHAT SAS WILL DO:

SAS™ will examine the defective product, and the details of the failure. If SAS™ determines that the failure of materials or workmanship was proven to be within the terms of this limited warranty, SAS™ will, at its option, repair or replace, Freight On Board (FOB) to the factory, in Luxemburg, WI, USA, the defective product. If the product cannot be returned to the factory, SAS™ may approve field repair of defective product. SAS™ will approve an appropriate amount of hours and cost for the repair before authorizing repairs to begin. No provisions will be made for incidental damages, mileage, travel time, overtime, downtime, or special freight charges.

CONDITIONS THAT WILL VOID YOUR LIMITED WARRANTY:

Failures, which in our determination were the result of:

- Improper installation.
- Misapplication - See SAS FORKS™ Operator Manual.
- Misuse or improper operation - See SAS FORKS™ Operator Manual.
- Exceeding the weight and/or lift limitation posted on the Identification Plate attached the SAS FORKS™.
- Negligence or failure to perform routine inspection and/or maintenance as outlined in the SAS FORKS™ Operator Manual.
- Unauthorized modification, welding, burning, grinding, installation of non-factory skid plates, etc. (other than specifically allowed in the SAS FORKS™ Operator Manual or as provided in a written authorization directly from SAS™ Factory Engineers.).
- Continued use after a malfunction of the hydraulic system in the forklift or loader.
- Accidental damage.

LIMITED WARRANTY REMEDIES:

Buyer must notify SAS™ of any warranty claim within 10 days after such claim arises; otherwise buyer waves all rights to such claim, unless agreed otherwise in writing. Buyer's sole remedy for breach of warranty is, at seller's option, the repair of the defect, or the providing of a replacement part FOB to seller's office. **Seller will not be responsible for costs of shipping, travel time, travel expense, dismantling or reassembling the product.** Further, seller will not be liable for any direct, indirect, consequential, incidental, or special damages arising out of a breach of warranty. These remedies are exclusive, and all other warranty remedies are excluded.

PROPRIETARY RIGHTS:

All designs and other proprietary rights provided by SAS™ to Buyer are to remain the property of SAS™, and Buyer shall honor all proprietary legends. Buyer agrees not to copy the design of SAS FORKS™, SAS™ EXTREME™ Auto Processor attachment, or any other SAS™ products or hire a third party to copy.

LIMITATION OF LIABILITY:

The seller's price is based on the enforceability of this limitation of liability, and the buyer understands that the price would be substantially higher without this limitation. Seller shall have no liability to buyer for lost profits or for special, consequential, exemplary, or incidental damages of any kind, whether arising in contract, tort, product-liability, or otherwise, even if advised of the potential damages in advance.

- In no event shall seller be liable to buyer for any damages whatsoever in excess of the contract price.
- In the event that any warranty or warranty remedy fails of its essential purpose, or is held to be invalid or unenforceable for any reason, in consideration of the other provisions of this agreement, the parties understand and agree that all limitations of liability under this provision will nevertheless remain in effect.

SEVERABILITY:

Any legally unenforceable provision may be severed from this agreement, and the remaining terms and conditions will be enforced as a whole.

SALES TERMS:

SAS FORKS™ SALES TERMS document is included as part of this document. See www.sasforks.com/SalesTerms.pdf



**Declaration of Conformity for CE Marking
EU Directive 2006/42/EC (Machinery Directive)**

We declare that the products listed below conform to the listed provisions of the following Council Directives

Model	Description
Extreme Auto Processor	Hydraulically actuated attachment for excavator used to extract vehicle engines for salvage operations

Conforms to the following directives:

2006/42/EC	Machinery Directive
ISO 10567_2007	Earth Moving Machinery Hydraulic Excavators

Date of CE Marking: October 20, 2014

Technical Construction File is maintained at:

SAS Headquarters
133 Center Drive Hwy 54
Luxemburg, WI 54217 USA

Signed

Adam Lindley, President
S.A.S. of Luxemburg, LLC.
DBA: SAS FORKS
133 Center Drive Hwy 54
Luxemburg WI 54217-0260 U.S.A.