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North America Edition



USERS MANUAL

SAFETY, OPERATION, MAINTENANCE

SA SERIES ANCHOR DRIVE

SA3, SA5, SA6, SA6L, SA7, SA8, SA12, SA16, SA20, SA30



Printed in the USA.

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PREFACE

This manual contains information for the safe operation and maintenance of your Dinamic Oil attachment. Read the entire manual before the initial start-up of the attachment. It is important to know the correct operating procedures of the attachment and all safety precautions to prevent the possibility of property damage and personal injury.

The attachment has been designed and manufactured with quality materials and care in workmanship. The instructions in this manual have been prepared to ensure that, when followed properly, the attachment will provide efficient and reliable service. Continuing product development and improvement may have caused changes in the attachment that are not reflected in this manual. If a question arises regarding the attachment, contact a Dinamic Oil dealer for the most current information available.

INTRODUCTION

Thank you for purchasing your new product! Dinamic Oil attachments are designed for use with specific mounting frames and linkage to be used with the prime mover. Provided these are used and maintained correctly, the products will provide a safe and efficient method of use.

Before operating your attachment, please note:

- The planetary drive comes complete, filled with the correct amount of gear oil.
- Hydraulic hoses must be fitted and tightened correctly.
- If a case drain hose is required, it must be used and fitted correctly.
- The attachment must be broken-in per the recommended procedure.

IMPORTANT

This manual must accompany the attachment at all times and be readily available to the operator. This operating manual should be used in conjunction with the prime movers operating instructions.

MANUAL REPLACEMENT

Should this manual become damaged, lost or additional copies are required, immediately contact any authorized Dinamic Oil dealer. You may also download a PDF copy at www.dinamicoil.us.

POSSIBLE VARIATIONS

Dinamic Oil cannot anticipate every possible circumstance that might involve a potential hazard, as the owner's requirements and equipment may vary. Therefore, the warnings in this publication and on the product may not be all-inclusive and you must ensure that the procedure, application, work method and operating technique is safe for you, and others, before operation.

PUBLIC NOTICE

Dinamic Oil reserves the right to make changes and improvements to its products and technical literature at any time, without public notice or obligation. Dinamic Oil also reserves the right to discontinue manufacturing any product at its discretion, at any time.

WARRANTY

All work or repairs to be considered for warranty reimbursement must be authorized by the Dinamic Oil Service Department before work is started. Any alterations, modifications or repairs performed before authorization by the Dinamic Oil Service Department will render all warranty reimbursement consideration null and void. Improper operation or improperly performed maintenance may render any warranty null and void.

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DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY
 ÜBEREINSTIMMUNGS-ERKLÄRUNG
 DECLARATION DE CONFORMITE CEE
 DECLARACION DE CONFORMIDAD
 DICHIARAZIONE DI CONFORMITA



I, the undersigned:

Ich, der Unterzeichner:

Je soussigné:

El abajo firmante:

Io sottoscritto:

President - North America

hereby declare that the equipment specified hereunder:

bestätige hiermit, daß erklaren Produkt genannten Werk oder Gerät:

déclare que l'équipement visé ci-dessous:

Por la presente declaro que el equipo se especifica a continuación:

Dichiaro che le apparecchiature specificate di seguito:

Category/Kategorie/Catégorie/Categoria/Categoria:

Planetary Anchor Drive Attachment

Make/Marke/Marque/Marca/Marca

Dinamic Oil

Type/Typ/Type/Tipo/Tipo:

SA and TA Series

Serial number of equipment:

Seriennummer des Geräts:

Numéro de série de l'équipement:

Numero de serie del equipo:

Matricola dell'attrezzatura:

All

Has been manufactured in conformity with

Wurde hergestellt in Übereinstimmung mit

Est fabriqué conformément

Ha sido fabricado de acuerdo con

E' stata costruita in conformità con

2006/42/EC - Machinery Directive
 2000/14/EC - Noise Emission

Directive/Standards

Richtlinie/Standards

Directives/Normes

Directriz/Los Normas

Direttiva/Norme

EN 12100-1:2010 - Safety of Machinery
 EN 16228-1:2014 - Drilling and Foundation Equipment. Common req.
 EN 16228-4:2014 - Drilling and Foundation Equipment. Fnd Equip.
 EN 16228-7:2014 - Drilling and Foundation Equipment. Aux Equip.

Representative in the Union:

Vertreter in der Union

Représentant dans l'union

Representante en la Union

Rappresentante presso l'Unione

Eris Lanciotti
 Dinamic Oil S.p.A. con Socio Unico
 Via Togliatti, 15
 41030 Bompoto - MO - Italy

Position/Position/Fonction/Cargo/Posizione

Technical Manager

SAFETY STATEMENTS

Your safety and the safety of others is a direct result of how you operate and maintain your equipment. Read and understand this manual and other safety information provided with the base machine and be sure that you understand all controls and operating instructions before attempting to operate this equipment. Failure to follow the safety precautions can result in personal injury, death or property damage.

Dinamic Oil cannot foresee all hazardous circumstances, the precautions listed in this manual and on the equipment are not all-inclusive. If a procedure, method, tool or part is not specifically recommended by Dinamic Oil, determine whether it is safe for you and others, and that the equipment will not be damaged or made unsafe as a result of your decision to implement it. The basic rules are summarized in this section of the manual. They also appear throughout the manual along with additional specific rules for safety and operation.

Carefully read all safety messages in this manual and on your equipment safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs.

SAFETY ALERT SYMBOLS AND SIGNAGE

Never compromise on safety! It can cause serious injury or death! All operators must read and fully understand all of the safety instructions and alert symbols.



The Safety Alert Symbol alerts you to potential personal injury hazards. Obey all safety messages.



Indicates an imminently hazardous situation which will result in death or serious injury.



Indicates a potential hazardous situation which could result in death or serious injury.



Indicates hazards that could result in damage to the equipment or personal injury.



Indicates important procedures.

READ MANUAL PRIOR TO INSTALLATION

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance.

READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment.

 NOTICE

Know and obey all regulations, local laws, and other professional guidelines for your operation.

Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.

KNOW YOUR EQUIPMENT

Know your equipment’s capabilities, dimensions, and operations before operating.

Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact.

Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured.

Remove and replace any damaged, fatigued, or excessively worn parts.

Make certain all safety decals are in place and are legible.

Keep decals clean, and replace them if they become worn or hard to read.

PRIME MOVER LIFT CAPACITY

Alert yourself to the weight of the Drive attachment. DO NOT exceed the recommended lift capacity of the prime mover. Refer to your prime mover’s owners manual for suggested lift capacity and lift considerations.

DO NOT MODIFY EQUIPMENT / PRODUCT

Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment.

When making repairs, use only the manufacturer’s genuine parts, following authorized instructions. Other parts may be substandard in fit and quality.

Never modify any ROPS (Roll Over Protective Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

RAISED EQUIPMENT CAUTION

DO NOT work under raised booms without supporting them.

 WARNING

Never place any body part between the prime mover chassis and the attachment.

Do not use support materials made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered.

Lower booms and attachments to the ground before leaving the cab or operator’s station.

Whenever the boom structure must be raised for attachment installation or servicing ensure the boom locking devices (if equipped) are deployed to prevent the accidental lowering of boom structures.

CALIFORNIA PROPOSITION 65 WARNING

 WARNING

This product may contain a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. www.P65Warnings.ca.gov

For Customers in California, pursuant to California Health and Safety Code Section 25249.5 et seq., commonly referred to as Proposition 65 (“Prop 65”), DONA hereby notifies Buyer that the Goods sold contain shale oils, mineral oils, and tetrachloroethylene, which are known to the State of California to cause cancer.

OPERATOR SAFETY

Safety equipment should be worn at all times when viewing, operating or maintaining the attachment.

Safety equipment includes eye protection, hard hat, steel toe shoes, gloves and hearing protection.

Wear protective clothing and equipment appropriate for the job. Avoid loose fitting clothing.

Prolonged exposure to excessive noise can cause hearing loss. Wear suitable hearing protection such as ear plugs.

Operating equipment safely requires the full attention of the operator. Avoid distractions.

Operate only from the operator's cab/station.

Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.

Travel only with the attachment in a safe transport position to prevent uncontrolled movement.

Drive slowly over rough ground and on slopes.

Before exiting the machine, lower the attachment to the ground, apply the parking brakes, turn off the prime mover's engine and remove the key.

Flow and pressure gauges, fittings, and hoses must have a continuous operating pressure rating of at least 25% higher than highest pressures of the system.

Do not operate the unit when you are tired, ill or under the influence of alcohol, drugs or medication.

Never let a minor or inexperienced person operate the unit.

Keep all body parts away from rotating objects.

Inspect the ground area before operation. Remove objects which can be thrown or become entangled.

DO NOT operate the attachment in areas where carbon monoxide fumes can accumulate.

Be alert when operating in locations where any type of landscaping fabric/mat may be present. The material can be rapidly drawn into the point of operation, possibly causing injury or death to anyone standing on or near the fabric.

PRODUCT SAFETY

NEVER suspend the attachment over people or equipment. Maintain a safe distance of at least 30 feet (10 meters).

Inspect the entire product before operation.

Replace parts that are cracked, chipped or damaged in any way before operation.

Keep others away when making any adjustments to the unit.

If the attachment is not functioning properly, shut down the machine, follow proper Lock-out / Tag-out procedures.

NEVER approach power lines with any part of the machine. Keep clear at a minimum of 15 feet (5 meters).

Avoid working on unstable or slippery areas and position the prime mover on firm, level ground.

Tether any anchor or extensions connected to the Anchor Drive with a chain if necessary, to prevent uncontrolled swinging of the attachments when moving from position to position.

Side loading is NOT recommended. Excessive side loading can cause output shaft deflection and or failure. Avoid excessive side loading to prevent possible instantaneous output shaft failure. Such a failure could result in injury from disconnected parts and or being hit by the Drive attachment causing serious injury or death.

Anchor Drive attachments shall be used only for their designed intent and shall not be loaded beyond their rated capacity. Overloading or exceeding the manufacturers specifications will void all warranty.

UNDERGROUND HAZARDS

It is the responsibility of the operator to know where buried power, gas, telephone, and other utilities are at in the work area.



This may lead to shock or an explosion. Have the work area marked for buried lines and do not dig in marked areas set by your local municipals.

BE ALERT ON THE JOB SITE

Tragic accidents can occur if the operator is not alert to the presence of bystanders.



Children in particular are often attracted to machinery and work activity. Never assume that children will remain where you last saw them.

BE ALERT and turn the equipment off if children enter the work area. Keep children out of the work area and under supervision of another responsible adult.

SILICA DUST CAUTION



Exposure to respirable crystalline silica dust along with other hazardous dusts may cause serious or fatal respiratory disease.

Concrete and masonry products contain silica sand. Quartz, which is a form of silica and the most common mineral in the earths crust, is associated with many types of rock. Some activities that silica dust may be present in the air include demolition, sweeping, loading, sawing, hammering, drilling, or planing of rock, concrete or masonry.

It is recommended to use dust suppression, dust collection or personal protective equipment during the operation of any attachment that may cause high levels of silica dust.

The NIOSH recommended exposure limit for respirable crystalline silica is 0.05 mg/m3 as a time-weighted average for up to 10 hours/day during a 40-hour work week [NIOSH 1974].

PRACTICE SAFE MAINTENANCE

Use proper tools and equipment when conducting maintenance. Work in a clean dry area.

Inspect all parts. Be sure parts are in good working condition and installed properly. Remove build up of grease, oil or any debris.

Remove all tools and unused parts from equipment before beginning operation.

REMOVE PAINT BEFORE WELDING OR HEATING

Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.



When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator.

If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

Prime mover type, age, condition, with or without cab enclosure and configuration

Operator training, behavior, stress level.

Job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all governmental and local regulations for recycling and disposal of the fluid and components.

TRANSPORTING THE DRIVE ATTACHMENT

Travel only with the Drive attachment in a safe transport position to prevent uncontrolled swinging. Tether the Drive attachment with a chain, if necessary, to prevent uncontrolled swinging of the attachment when moving from hole to hole.

Remove the earth auger or helical pile from the Drive attachment before transporting to and from the job site.

WARNING

Use extreme care during transport to prevent contact between the Drive attachment and bystanders or solid objects. Contact with the Drive attachment could cause serious damage, injury or death.

NOTICE

Never operate the Drive attachment while transporting.

Drive slowly over rough ground and on slopes. Position the Drive attachment as low to the ground as possible maintaining a low center of gravity.

Verify that all tie down accessories (chains, slings, ropes, shackles and etc.) are capable of maintaining attachment stability during transporting and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.

HYDRAULIC FLUID PRESSURE

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death.

Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

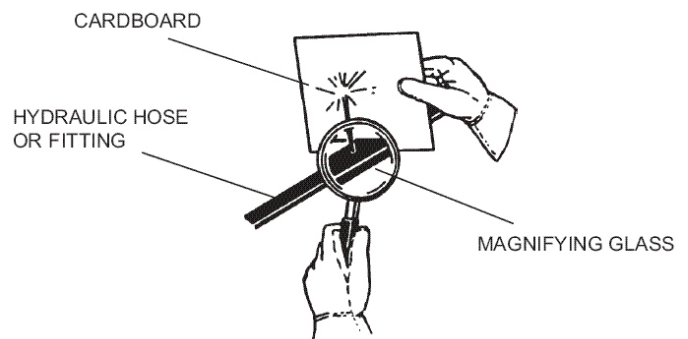
Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

WARNING

Hydraulic oil becomes hot during operation. DO NOT come in contact with hot hydraulic oil as it could cause severe burns. Wear adequate protective clothing and safety equipment.

DO NOT tamper with hydraulic lines or components while they are pressurized. Escaping fluid under pressure can penetrate the skin, causing serious injury. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure.

Wear safety glasses, protective clothing, and use a piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS! SEE ILLUSTRATION.**



Safety equipment should be worn at all times when working with hydraulics.

Safety equipment includes eye protection, hard hat, steel toe shoes, gloves and hearing protection. Wear protective clothing and equipment appropriate for the job. Avoid loose fitting clothing.



SAFETY DECALS

The Drive attachment comes equipped with all safety decals in place. They are designed to help you safely operate your unit. **Read and follow all safety decals.**

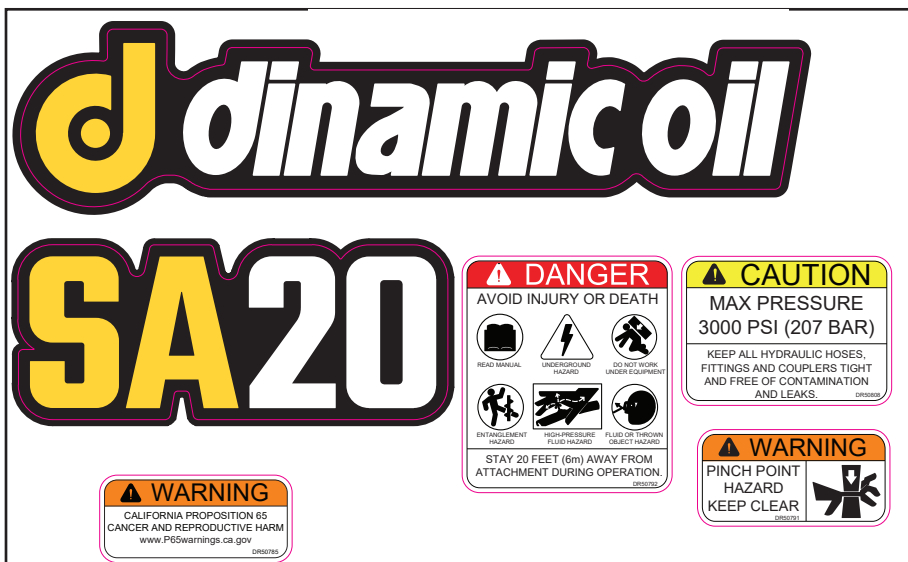
NOTICE

Keep all safety decals clean and legible at all times.

Replace safety decals that are missing or have become illegible.

Safety decals are available from your distributor or manufacture.

Some parts installed during repair may require safety decals to be affixed to the replacement part. When ordering the replacement part(s) be sure the correct safety decal(s) are included in your order.



Decal Kit Example

INSTALLING SAFETY DECALS

Clean the desired area with warm soapy water.

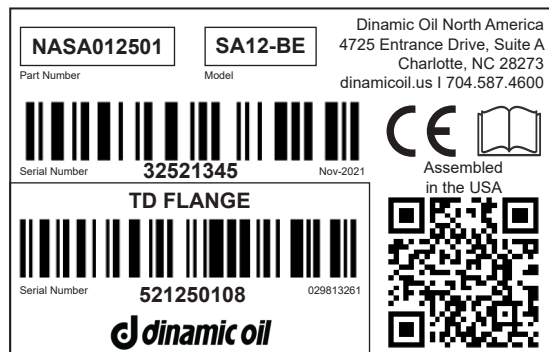
Decide on exact position before you remove the backing paper.

Peel backing paper from decal. Press firmly on the surface.

Remove all air pockets. Air pockets can be pierced with a pin and smoothed.

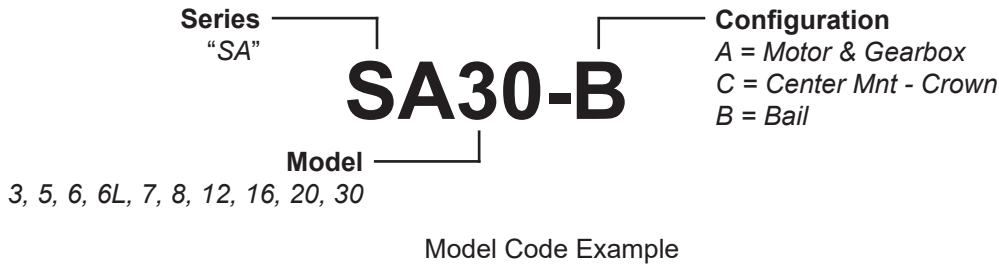
SERIAL TAG INFORMATION

Its important to make the correct reference to the serial number of the unit when making repairs or ordering parts. The serial number plate will be located near the top of the Drive attachment.



PART NUMBERS AND CODES (SA MODELS)

The list below outlines all SA series Anchor Drive models and configurations.



SA3

Part Number	Description
NASA003101	Anchor Drive SA3-A
NASA003300	Anchor Drive SA3-C
NASA003301	Anchor Drive SA3-C-ML
NASA003302	Anchor Drive SA3-C-BT

SA5

Part Number	Description
NASA005101	Anchor Drive SA5-A
NASA005204	Anchor Drive SA5-C
NASA005301	Anchor Drive SA5-B
NASA005201	Anchor Drive SA5-C-ML
NASA005202	Anchor Drive SA5-C-BT

SA6

Part Number	Description
NASA006100	Anchor Drive SA6-A
NASA006204	Anchor Drive SA6-C
NASA006301	Anchor Drive SA6-B
NASA006201	Anchor Drive SA6-C-ML
NASA006202	Anchor Drive SA6-C-BT

SA6L

Part Number	Description
NASA06L100	Anchor Drive SA6L-A

SA7

Part Number	Description
NASA007100	Anchor Drive SA7-A
NASA007204	Anchor Drive SA7-C
NASA007301	Anchor Drive SA7-B
NASA007201	Anchor Drive SA7-C-ML
NASA007202	Anchor Drive SA7-C-BT

SA8

Part Number	Description
NASA008100	Anchor Drive SA8-A
NASA008204	Anchor Drive SA8-C
NASA008300	Anchor Drive SA8-B
NASA008201	Anchor Drive SA8-C-ML
NASA008202	Anchor Drive SA8-C-BT

SA12

Part Number	Description
NASA012100	Anchor Drive SA12-A
NASA012200	Anchor Drive SA12-C
NASA012301	Anchor Drive SA12-B

SA16

Part Number	Description
NASA016100	Anchor Drive SA16-A
NASA016200	Anchor Drive SA16-C
NASA016301	Anchor Drive SA16-B

SA20

Part Number	Description
NASA020100	Anchor Drive SA20-A
NASA020200	Anchor Drive SA20-C
NASA020301	Anchor Drive SA20-B

SA30

Part Number	Description
NASA030100	Anchor Drive SA30-A
NASA030300	Anchor Drive SA30-B

PRODUCT SPECIFICATIONS (SA SERIES)

Dinamic Oil publishes both Theoretical and Actual performance values for comparative purposes. Mechanical and volumetric efficiencies are applied to the Actual torque and speed values. Product performance is dependent on the prime mover's hydraulic system. Dinamic Oil has made every effort to present accurate information at the time of publication. The performance values should be used for information and comparative purposes only. Contact Dinamic Oil for specific application information.

Dinamic Oil reserves the right to make changes and improvements to its products and technical literature at any time, without public notice or obligation.

SA3	Imperial	Metric
Max Hydraulic Pressure	2500 PSI	172 Bar
Max Hydraulic Flow	15 GPM	56 LPM
Motor Type	Single Speed	
Motor Ports	-8 JIC	
Output Shaft	2" Hex	
Oil Capacity	.26 Gallons	1.0 Liter
Oil Type	SAE 80W90	
Shaft Pullout Rating	12,900 LBS	5,851 Kg
SA3-C Weight (Center Mnt)	248 LBS	113 Kg
SA3-B Weight (Bail)	-	-
Actual Torque @ 2500 PSI	3,297 FT-LBS	4,470 Nm
Actual Speed @ 15 GPM	28 RPM	

SA5	Imperial	Metric
Max Hydraulic Pressure	2500 PSI	172 Bar
Max Hydraulic Flow	25 GPM	94 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2" Hex	
Oil Capacity	.6 Gallons	2.4 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	12,900 LBS	5,851 Kg
SA5-C Weight (Center Mnt)	248 LBS	113 Kg
SA5-B Weight (Bail)	218 LBS	99 Kg
Actual Torque @ 2500 PSI	5,104 FT-LBS	6,919 Nm
Actual Speed @ 25 GPM	30 RPM	

SA6	Imperial	Metric
Max Hydraulic Pressure	2500 PSI	172 Bar
Max Hydraulic Flow	25 GPM	94 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2" Hex	
Oil Capacity	.6 Gallons	2.4 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	12,900 LBS	5,851 Kg
SA6-C Weight (Center Mnt)	- LBS	- Kg
SA6-B Weight (Bail)	218 LBS	99 Kg
Actual Torque @ 2500 PSI	6,253 FT-LBS	28,477 Nm
Actual Speed @ 25 GPM	25 RPM	

SA6L	Imperial	Metric
Max Hydraulic Pressure	2500 PSI	172 Bar
Max Hydraulic Flow	25 GPM	94 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2" Hex	
Oil Capacity	.3 Gallons	1.2 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	5,700 LBS	2,585 Kg
SA6L-C Weight (Center Mnt)	-	-
SA6L-A Weight	114 LBS	42 Kg
Actual Torque @ 2500 PSI	6,631 FT-LBS	8,960 Nm
Actual Speed @ 25 GPM	23 RPM	

PRODUCT SPECIFICATIONS (SA SERIES) CONTINUED

SA7	Imperial	Metric
Max Hydraulic Pressure	2500 PSI	172 Bar
Max Hydraulic Flow	25 GPM	94 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2" Hex	
Oil Capacity	.7 Gallons	2.6 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	12,900 LBS	5,851 Kg
SA7-C Weight (Center Mnt)	264 LBS	120 Kg
SA7-B Weight (Bail)	234 LBS	106 Kg
Actual Torque @ 2500 PSI	7,381 FT-LBS	10,007 Nm
Actual Speed @ 25 GPM	25 RPM	

SA8	Imperial	Metric
Max Hydraulic Pressure	2750 PSI	189 Bar
Max Hydraulic Flow	25 GPM	94 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2-1/2" Hex	
Oil Capacity	.7 Gallons	2.6 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	12,900 LBS	5,851 Kg
SA8-C Weight (Center Mnt)	264 LBS	120 Kg
SA8-B Weight (Bail)	234 LBS	106 Kg
Actual Torque @ 2750 PSI	8,119 FT-LBS	11,007 Nm
Actual Speed @ 25 GPM	20 RPM	

SA12	Imperial	Metric
Max Hydraulic Pressure	3000 PSI	207 Bar
Max Hydraulic Flow	35 GPM	133 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2" Hex	
Oil Capacity	1.2 Gallons	4.5 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	13,600 LBS	6,168 Kg
SA12-C Weight (Center Mnt)	595 LBS	270 Kg
SA12-B Weight (Bail)	458 LBS	207 Kg
Actual Torque @ 3000 PSI	12,879 FT-LBS	17,461 Nm
Actual Speed @ 35 GPM	20 RPM	

SA16	Imperial	Metric
Max Hydraulic Pressure	3000 PSI	207 Bar
Max Hydraulic Flow	35 GPM	133 LPM
Motor Type	Single Speed	
Motor Ports	-12 JIC	
Output Shaft	2-1/2" Hex	
Oil Capacity	1.7 Gallons	6.5 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	16,500 LBS	7,484 Kg
SA16-C Weight (Center Mnt)	765 LBS	347 Kg
SA16-B Weight (Bail)	563 LBS	255 Kg
Actual Torque @ 3000 PSI	17,190 FT-LBS	23,306 Nm
Actual Speed @ 35 GPM	15 RPM	

SA20	Imperial	Metric
Max Hydraulic Pressure	3000 PSI	207 Bar
Max Hydraulic Flow	40 GPM	151 LPM
Motor Type	Single Speed	
Motor Ports	-16 JIC	
Output Shaft	3" Hex	
Oil Capacity	1.8 Gallons	7 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	16,500 LBS	7,484 Kg
SA20-C Weight (Center Mnt)	796 LBS	361 Kg
SA20-B Weight (Bail)	602 LBS	273 Kg
Actual Torque @ 3000 PSI	22,517 FT-LBS	30,529 Nm
Actual Speed @ 40 GPM	13 RPM	

SA30	Imperial	Metric
Max Hydraulic Pressure	3000 PSI	207 Bar
Max Hydraulic Flow	40 GPM	151 LPM
Motor Type	Single Speed	
Motor Ports	-16 JIC	
Output Shaft	4" Square	
Oil Capacity	2.9 Gallons	11 Liters
Oil Type	SAE 80W90	
Shaft Pullout Rating	25,300 LBS	11,475 Kg
SA30-C Weight (Center Mnt)	-	-
SA30-B Weight (Bail)	862 LBS	391 Kg
Actual Torque @ 3000 PSI	30,885 FT-LBS	41,875 Nm
Actual Speed @ 35 GPM	10 RPM	

INSTALLATION - MOUNTING KIT

Before connecting the Drive attachment to the prime mover, ensure all mounting surfaces, attachment plates, and quick couplers are free of dirt and debris. Confirm all attaching pins, fasteners, and latches are appropriately secured. Ensure the mounting plate or bracket is secure to the prime mover. Improper installation can result in product damage, personal injury, and death.

CAUTION

Never place any part of your body between the attachment mount and the prime mover.

ALWAYS work in pairs (2 skilled operatives) whenever the Drive attachment is being assembled or disassembled from the prime mover.

Always check the weight of the Drive attachment and verify you have the correct equipment for safe operation.

Ensure all connection pins, fasteners and latches are properly secured.

DANGER

Ensure that the mounting frame / attachment mounting plate is rigidly secured to the prime mover. Improper installation can result in product damage, personal injury and death.

Ensure all hydraulic hose assemblies are of adequate length and have enough slack for full Drive attachment movement. Failure to provide adequate length hydraulic hoses can result in hose rupturing. A hydraulic hose rupture can result in product damage, personal injury and death.

NOTICE

Follow all standard safety practices and the instructions for installing an attachment as shown in your prime movers manual.

General instructions for Skid Steer Loaders, Excavators and Telehandler prime movers.

1. Remove the bucket or other attachment from the prime mover quick attach platform.
2. Attach the Drive mounting bracket to the prime mover, as per manufacturer’s recommendations.

Note: The link arm is only used with Skid Steer Loaders and Excavators that utilize a quick coupler. The link arm will not be used with Excavators that DO NOT use a quick coupler. In this situation the Drive mount will connect directly to the Excavator boom (bucket linkage).

3. Attach the link arm to the Drive mounting bracket with the pin provided. Secure the pin in place with the provided end keepers.

4. Install the Drive Attachment to the link arm using the pin provided. Secure the pin in place with the provided end keepers.

INSPECT BEFORE USE

Before first use. Inspect the Drive attachment for shipping damage. If damage does exist, do not operate until the damaged parts have been replaced or repaired.

Ensure all fasteners are in place and properly tightened.

Make sure that all hydraulic fittings are tightened and that there are no leaks in any fittings or hoses.

NOTICE

Check the gearbox oil level before each operation to ensure the planetary is sufficiently lubricated. The lubricating oil level plug is located on the “top” section of the gearbox, to ensure the upper bearing is lubricated.

Visually inspect the oil level before each use.

Make sure that all safety signs are in place, are clean, and are legible.

INSTALLATION - HYDRAULIC KIT

The Drive attachment receives its hydraulic oil flow and pressure from the prime mover through the auxiliary hydraulic circuit via two quick-release couplers. All Drive attachments require pressure and return lines of hydraulic oil from the parent machine's auxiliary hydraulic power supply to operate. All Drive attachments are bi-directional and require the host machine to be fitted with a two-way flow auxiliary circuit.

NOTICE

Understand the Drive attachment maximum flow and pressure ratings. Ensure your prime mover flow and pressure settings are suitable to the Drive attachment. Never exceed the maximum flow and pressure ratings of the Drive attachment.

Follow the steps below to complete the hydraulic hook-up between your prime mover and Drive attachment.

1. Locate the auxiliary hydraulic connection ports on the prime mover.
2. Determine the length of hydraulic hose necessary to connect the auxiliary hydraulic circuit to the Drive attachment. Be sure to allow sufficient "slack" in the hose length to enable the Drive attachment to perform its full range of operation.
3. Ensure that the hydraulic hose couplers are compatible with the hydraulic quick couplers on the prime mover.
4. Relieve any pressure from the auxiliary hydraulic system and after ensuring no foreign matter on the hydraulic couplers, connect the power, return and case drain hoses to the auxiliary hydraulic system of your machine.
5. When all of the hydraulic connections have been made and checked for leaks, the Drive attachment is ready for operation.

If a hydraulic leak develops, correct it immediately. Escaping hydraulic fluid can have extremely high pressure. It is imperative that the connections are tight and that all hoses are in good working condition.

Hydraulic hoses and fittings used on the prime mover and Drive attachment must have a continuous operating pressure rating of at least 25% higher than the maximum pressure of the hydraulic system.

COLD WEATHER WARM-UP AND OPERATION

The information listed on this page will provide overall guidelines for warm-up and operation of your Dinamic Oil Drive attachment in cold weather conditions. Prepare the prime mover for cold weather conditions as instructed in the machines operator manuals.

Read and follow the information for selecting the correct gear oils for use in cold weather.

PROCEDURE FOR STARTUP IN COLD WEATHER

For temperatures below 5°C (48°F) it is recommended to slowly start the Drive attachment under no load, at minimum speed. Allow warm hydraulic oil from the prime mover to circulate through the hydraulic motor and slowly bring it to the minimum recommended operating temperature of 5°C (48°F).

When the minimum operating temperature has been achieved the Drive attachment is ready for full operation. *Note as the Drive attachment is operated under load the gearbox oil will increase in temperature.*

Follow the same warm-up procedure after each period of down time in cold weather conditions. The prime mover will retain internal component heat longer than the Drive attachment. It is critical that the same warm-up procedure is followed to ensure full operating temperatures. Operating the Drive attachment without a proper warm-up procedure can cause issues such as high back pressure reading and potential shaft seal issues.

BREAK IN OPERATION

To maximize the life of the unit, it must be broke-in or commissioned. Suspend the drive unit in it's vertical, working position.

For the duration of the break-in procedure, ensure that no bystanders (including animals) can get within 6 meters of the work area.

Operate the attachment at 50% of rated pressure for 10 minutes in each direction before application of full operating load.

To further ensure best motor life and maintain warranty, refer to page 16 for lubrication temperature instructions.

LUBRICATION INFORMATION

In order for the Drive attachment to operate at peak performance the following guidelines must be followed to avoid damage to the main components.

All Dinamic Oil Anchor Drive gearboxes are supplied with lubricating oil.

TYPE OF LUBRICATION

Gearboxes are oil bath lubricated. Before putting the gearbox to use, fill it with oil, looking through the level cap to see if it is at the correct level. This operation requires special attention, and the level must be checked again after a few minutes of operation.

SELECTING AN OIL

Any mechanical transmission oil with EP additives in viscosity classes ISO VG220 to ISO VG320 under ISO 3448 can be used. In special cases oils with different viscosities may be used. In this case, contact Dinamic Oil technical assistance service. The oil viscosity must be chosen to suit the room temperature and the gearbox’s real operating temperature. If the gearboxes must operate at very high ambient temperatures or with very large temperature excursions, synthetic oil is recommended.

RECOMMENDED VISCOSITY

ISO VG 3448	OPERATING TEMPERATURE [C°]												
	AMBIENT TEMPERATURE [C°]												
	-20°	-10°	0	10°	20°	30°	40°	50°	60°	70°	80°	90	100°
220													
320													

Lubricants for general use:

Manufacturer	Mineral oil	Synthetic oil	
		Polyalphaolefins (PAO)	Polyglycols (PG)
AGIP	Blasia	Blasia SX	Blasia S
ARAL	Degol BG		Degol GS
BP	Energol GR-XP	Energol EPX	Energol HTX
CASTROL	Alpha SP	Alphasyn EP	Alphasyn PG
CHEVRON	Ultra Gear	Tegra Synthetic	HiPerSYN
DEA	Falcon CLP		
ELF	Reductelf	Elf Syntherma	Elf Syntherma
ESSO	Spartan EP	Spartan S EP	Glycolube
FINA	Giran		
IP	Mellana		Telesia Oil
KLÜBER	Kluberoil GEM 1	Klubersynt EG4	Klubersynt GH6
MOBIL	Mobilgear XMP	Mobilgear SHC	Glygoile
OPTIMOL	Ultra		
Q8	Goya	El Greco	El Greco
SHELL	Omala S2 G	Omala S4 GX	Omala S4 WE
TOTAL	Carter EP	Carter SH	Carter SY

OPERATING TEMPERATURE PARAMETERS

In order for the Drive attachment to operate at peak performance the following guidelines must be followed to avoid damage to the main components.

DO NOT exceed the advertise maximum hydraulic pressure.

DO NOT exceed the published maximum hydraulic flow.

Approved Operating Temperature Ranges F (C):

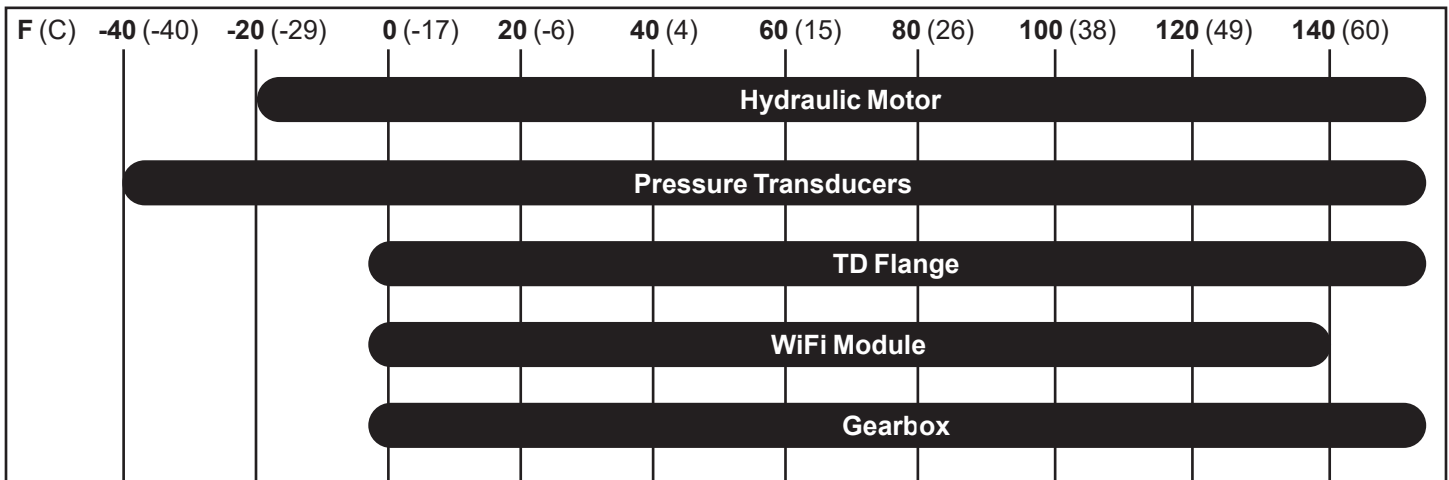
- Hydraulic Motor/Manifold: -20 to 194 F (xx to 90 C)
- Pressure Transducers: -40 to 250 F (-40 to 125 C)
- TD Flange (Energi models): -4 to 194 F (-20 to 90 C)
- WiFi Module (Energi models): -4 to 140 F (-20 to 60 C)
- Gearbox: -4 to 194 F (-20 to 90 C)

DO NOT Exceed Maximum Oil Temperatures. Hydraulic Fluid and Gearbox Oil should not exceed:

Min Temperature = -4 F (-20 C)
Min Temperature = 194 F (90 C)



Exceeding these temperatures lowers the oil viscosity, which will lead to premature wear in the gears and seals in the hydraulic motor and gearbox.



Approved Temperature Ranges

OIL FILLING AND LEVEL CHECKING

Every gearbox is equipped with level, vent, filling and draining caps for gear oil. The lubricating oil level is located on the “top” section of the gearbox, to ensure the upper bearing is lubricated.

OIL REPLACEMENT AND FILLING PROCEDURE

- Ensure the power supply is disconnected when filling.
- Unscrew and remove the loading and level plugs.
- Place a receptacle of sufficient size underneath the draining cap.
- Unscrew the gearbox’s loading and draining caps and allow the oil to completely drain.
- Replace the oil drain plug.
- Feed the oil through the filling port at the top of the gearbox until it flows out of the level port.
- Refit the plugs using the appropriate tightening torques.
- Unscrew the plug adjacent the filling port, located on the upper part of the gearbox, to prevent an air bubble from forming at the upper rotary seal.

AMOUNT OF OIL

Gear oil amounts are given on pages 12 and 13 of this manual. The data sheets show the quantities of oil required for filling. However, these values should be used for reference purposes only and exact lubrication should be verified by means of visual checks.

SUPPORT AND SERVICING

Servicing must be performed by authorized personnel adhering to the work and environmental safety standards. **Servicing on the gearbox must be performed with the power supply disconnected and the gearbox taken “out of service” to prevent an accident. The oil temperature must be at a safe level so as not to burn the operators.** The instructions given in this paragraph must be followed, ensuring the gearbox is operational and that required levels of safety are met:

- Only use original spare parts.
- Use lubricants that are recommended by the manufacturer.
- After any servicing work, always replace the seal washers and any lubricating oil.
- Use additional lighting if carrying out servicing work in dimly lit areas, to ensure that it is performed safely.
- Take relevant precautions if carrying out servicing work in enclosed spaces, to ensure that it is performed safely.

ROUTINE SERVICING

Proper servicing improves performance, longevity and safety.

Check the gearbox oil level before each operation to ensure the planetary is sufficiently lubricated.

After the first 50 hours of operation:

- Check the gearbox oil level. Check for leaks.
- Change the gearbox oil - this is required as the first 50 hours are considered the break-in period.

Important! If the first oil change is not performed after the first 50 hours excessive gearbox wear can occur and cause failure.

After the first 150 hours of operation:

- Check the gearbox oil level. Check for leaks.
- Check there are no metal residues of abnormal size in the magnetic caps on the gearboxes.
- Clean the surfaces of the hydraulic motor and gearbox body and the air ventilation pathways.
- Change the lubricating oil.
- Check the screws are all tight, and tighten them where required.

After every 3 months of operation and for the entire service life of the gearbox, it is necessary to check:

- Check the gearbox oil level. Check for leaks.
- Check for contamination from dirt, metal residues and other contaminants and deposits of water or other contaminating liquids in the areas of the input or output shafts, in particular close to the seals.
- Absence of oxidation on the input and output shafts and near the sealing areas.
- Absence of abnormal clearance on the output/input shafts, pinions, joints and other accessories.
- Absence of contact wear on input/output shafts, joints, and other accessories; absence of cracks and damage on supports, shaft flanges, and other parts of the gearbox.
- No breakage or extension of the flange and bolts.
- Check for any damage and vibrations or abnormal noise.
- Be aware of any abnormal heating or abnormal temperatures.

After every 2000 hours of operation or at least every 12 months:

- Clean the surfaces of the gearbox body and the air ventilation pathways to ensure correct heat dispersal.
- Check the screws are all tight, and tighten them where required.

TORQUE CHART FOR COMMON FASTENERS

The chart below lists the correct tightening torque for fasteners. When bolts are to be tightened or replaced, refer to this chart to determine the grade of the bolt and the proper torque. Except when specific torque values are list in a particular application.

Bolt Size (In)	Grade 2		Grade 5		Grade 8		Bolt Size (mm)	Class 5.8		Class 8.8		Class 10.9	
tpi	Nm	Ft-Lbs	Nm	Ft-Lbs	Nm	Ft-Lbs	mm x	Nm	Ft-Lbs	Nm	Ft-Lbs	Nm	Ft-Lbs
1/4"-20	7.4	5.6	11	8	16	12	M5 X 0.8	4	3	6	5	9	7
1/4"-28	8.5	6	13	10	18	14	M6 X 1	7	5	11	8	15	11
5/16"-18	15	11	24	17	33	25	M8 X 1.25	17	12	26	19	36	27
5/16"-24	17	13	26	19	37	27	M8 X 1	18	13	28	21	39	29
3/8"-16	27	20	42	31	59	44	M10 X 1.5	33	24	52	39	72	53
3/8"-24	31	22	47	35	67	49	M10 X 0.75	39	29	61	45	85	62
7/16"-14	43	32	67	49	95	70	M12 X 1.75	58	42	91	67	125	93
7/16"-20	49	36	75	55	105	78	M12 X 1.5	60	44	95	70	130	97
1/2"-13	66	49	105	76	145	105	M12 X 1	90	66	105	77	145	105
1/2"-20	75	55	115	85	165	120	M14 X 2	92	68	145	105	200	150
9/16"-12	95	70	150	110	210	155	M14 X 1.5	99	73	155	115	215	160
9/16"-18	105	79	165	120	235	170	M16 X 2	145	105	225	165	315	230
5/8"-11	130	97	205	150	285	210	M16 X 1.5	155	115	240	180	335	245
5/8"-18	150	110	230	170	325	240	M18 X 2.5	195	145	310	230	405	300
3/4"-10	235	170	360	265	510	375	M18 X 1.5	220	165	350	260	485	355
3/4"-16	260	190	405	295	570	420	M20 X 2.5	280	205	440	325	610	450
7/8"-9	225	165	585	430	820	605	M20 X 1.5	310	230	650	480	900	665
7/8"-14	250	185	640	475	905	670	M24 X 3	480	355	760	560	1050	780
1"-8	340	250	875	645	1230	910	M24 X 2	525	390	830	610	1150	845
1"-12	370	275	955	705	1350	995	M30 X 3.5	960	705	1510	1120	2100	1550
1-1/8"-7	480	355	1080	795	1750	1290	M30 X 2	1060	785	1680	1240	2320	1710
1-1/8"-12	540	395	1210	890	1960	1440	M36 X 3.5	1730	1270	2650	1950	3660	2700
1-1/4"-7	680	500	1520	1120	2460	1820	M36 X 2	1880	1380	2960	2190	4100	3220
1-1/4"-12	750	555	1680	1240	2730	2010							
1-3/8"-6	890	655	1990	1470	3230	2380							
1-3/8"-12	1010	745	2270	1670	3680	2710							
1-1/2"-6	1180	870	2640	1950	4290	3160							
1-1/2"-12	1330	980	2970	2190	4820	3560							

tpi = Nominal thread diameter in inches per inch.
 Nm = Newton Meters.
 Ft-Lbs = Foot Pounds
 mm x = Nominal thread diameter in millimeters x thread pitch.

WARRANTY INFORMATION

Dinamic Oil North America (DONA) warrants its gearbox for a period of twenty-four (24) months and twelve (12) months on the hydraulic motor months from invoice date to the original user.

DONA warranty covers faulty workmanship and defective parts manufactured by DONA. The warranty does not extend to transportation cost of parts, nor does it cover consequential loss or damage to prime mover equipment. Dinamic Oil Construction Attachments must be operated in accordance with the recommended procedures and within the specified operating parameters, both on the unit and contained in the operating manual. DONA will not be responsible for or accept any charges for work carried out by any repairs, or for any charges for any spare parts fitted to any DONA products without written approval from DONA. This warranty is void if field repairs have been made to the hydraulic motors, gearboxes and controls without written approval. The complete unit must be available for inspection in its original but alleged failed condition. Dinamic Oil North America reserves the right to make design, specification and price changes without notice, and obligations to the effect of such changes.

LIMITATION OF LIABILITY - DONA takes no responsibility for Goods selection, operation, and use, regardless of any recommendations or suggestions made by the DONA. Buyer shall make selections based upon its own analysis with regard to function, material compatibility, fitness for use or intended purpose, and Goods ratings. Any such analysis, including testing, shall be the sole responsibility of Buyer. Proper installation, operation, and maintenance are solely the responsibility of Buyer or its customer. Any specifications listed in DONA's datasheets, catalog, and website are for reference only and are subject to change without notice.

RETURNED GOODS (RGA)

Dinamic Oil reserves the right to determine whether products claimed to be defective shall be inspected by our personnel in the field or returned to the factory. If determined to be defective in material or workmanship, the product will be replaced or a credit issued at the option of Dinamic Oil North America.

All returns for replacement or credit **MUST** be accompanied by a RGA number. **Products returned without an RGA number will be rejected and returned to the sender freight collect.** All returns must be shipped "prepaid". Products shipped "collect" will be refused. Proof of purchase such as invoice number must accompany returns. **All RGA's must be returned within 30 days of the request.**

PARTS / SERVICE

Minimize downtime and maintain peak performance by choosing genuine Dinamic Oil parts and maintenance kits for your gear products. For assistance, please contact us:

EMAIL: service.usa@dinamicoil.com

PHONE: 1.704.587.4600

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