SIDEWINDER
PULL AND ASSIST CAPSTAN WINCH

70751 - 42 inch Capstan
SIDEWINDER with Electric Start

QC Final Inspection by:_____ Date:_____

Unit Serial Number:_____

Build Date:_____

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Warranty can be found at http://www.gmptools.com/warranty/

1.0 INTRODUCTION

Founded by engineer George M. Pfundt in 1936, GMP started operations in a downtown Philadelphia building as a specialty machine shop doing work for the local Bell Telephone company and for the electric utility company. GMP expanded to a production shop after landing a contract with Western Electric Company and, subsequently, forming a close relationship with Bell Telephone Laboratories in Murray Hill, N.J., which enabled it to manufacture prototypes of products for experimental use within the Bell System.

Having outgrown the original factory building, the company built a 100,000 square foot plant in Trevose, PA (a Philadelphia suburb) and moved there in 1957. Today GMP is recognized as a premier worldwide supplier of specialty tools and equipment for the outside plant marketplace. The company's products are known for their robust design and durability to withstand many years of frequent use.

GMP is a member of the **Klein family of companies** that includes complementary industry leaders to help provide our customers the right solution for their job.

2.0 SAFETY INSTRUCTIONS

THIS EQUIPMENT MUST ONLY BE USED BY AUTHORIZED PERSONNEL, WHO HAVE BEEN SUITABLY TRAINED AND COMPETENT TO DO SO.

THESE INSTRUCTIONS ARE TO BE MADE AVAILABLE TO OPERATORS OF THIS EQUIPMENT AT ALL TIMES, FAILURE TO OBSERVE THESE SAFETY INSTRUCTIONS COULD RESULT IN SERIOUS PERSONAL INJURY AND / OR PROPERTY DAMAGE.

1. Read and understand the operation and maintenance manual supplied with this equipment. Keep it in a convenient place for future reference.
2. Keep children and untrained personnel away from this equipment while in operation.
3. Keep all guards and safety devices in place. Do not operate this equipment with guards removed or damaged.
4. Keep hands, feet and loose clothing away from moving parts.
5. Always stop the machine to carry out lubrication or servicing.
6. Check machine before starting for worn or damaged parts. Check that all nuts and bolts are tight.
7. If machine is left unattended, ensure that unauthorized use is prevented.
8. Never leave the machine unattended while in use.
9. Consider the use of safety barriers, especially when used in public places.
10. Beware of pinch points involved with rotating components, e.g. rope/cable drums, capstans, bullwheels, shafts and chain drives.
11. Beware of hot surfaces, especially around the engine, engine exhaust pipe and hydraulic oil tank.
12. Some component and assembly parts are in excess of 55lb (25kg) . When lifting care must be taken, ensure sufficient man power/lifting gear is available, to prevent personal injury and damage to the machine.
13. Beware of exposed electrical contacts especially around the engine. Do not touch, or allow metal objects to come into contact.
14. Waste engine and hydraulic oils are to be disposed of via an environmentally acceptable method – e.g. passed on for recycling.
15. Wear ear protection when engine is running to prevent ear damage.
16. Machine may cause additional fire hazard if involved in an existing fire due to gasoline, diesel, oil and hydraulic oils involved.
17. No personnel are to be in manholes or ducts when the winch is being operated.
18. The machine must be operated on firm ground.
19. Stay clear of cables or lines under tension.
20. Only use the machine for its intended purpose.
21. Do not tamper with pressure relief valves or pressure reducing valves.
22. Rear stabilizing props must be down and on solid surface before use.

3.0 GENERAL DESCRIPTION

The GMP SideWinder is a trailer mounted pull and assist capstan winch, mounted on a sturdy all-steel fabricated chassis. It is equipped with torsional suspension axles, stabilizing prop legs, a front telescopic jockey wheel and a tow bar with a Lunette Ring. The unit is easily pulled by a standard pickup truck.

The power source is an electric start gasoline engine which drives the fixed displacement tandem mounted hydraulic pumps. The hydraulic pump is attached to the engine via a bell housing and flexible coupling. One pump powers a hydraulic motor, through an in-line planetary gearbox, to the capstan. The second pump drives the rope take-up drum again through a hydraulic motor. The hydraulic oil tank is fitted with double filtration protection, sight glass and filler/breather.

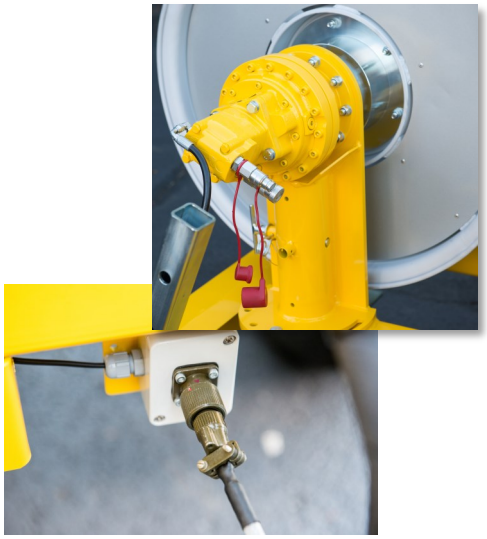
Controls are operator friendly and very simple to use. A spring centered lever controls the direction of rotation of the capstan, while a detented lever engages the take-up drum drive. A control knob is used to limit the rope/cable tension using the panel mounted tension indicator. The electric start, throttle and choke are located within easy reach of all the operational controls allowing the operator full control from a single position.

The rope take-up drum is removable and can be split to enable removal of rope. When the winch is in the working mode the rear props are extended out of the chassis to provide greater stability.

3.1 Hydraulic Quick Disconnect Feature

The supplied hydraulic quick disconnect feature allows the operator to utilize the Side-winder's hydraulic output to power a number of options like a hydraulic dewatering pump or a Tornado Fiber Optic Blowing Machine. A connection for the Tornado's emergency stop is provided at the rear of the Sidewinder.

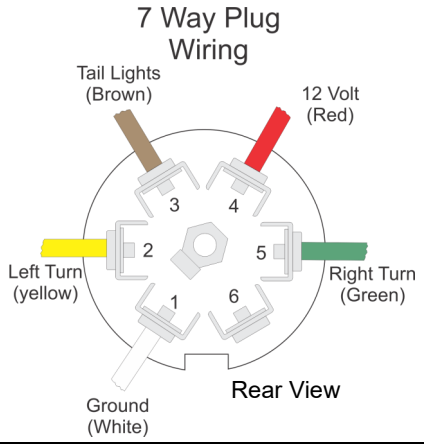
Hydraulic unit will provide 1800 psi @ 12 gpm maximum (adjustable)



Emergency stop connection for Tornado

4.0 SPECIFICATION

Max. Pulling Capacity	600 lbs	(272 kg)
Rope Speed Max.	262 ft/min	(80 m/min)
Capstan Diameter	42”	(1067 mm)
Dimensions:		
	Length:144”	(3658 mm)
	Width: 69”	(1753 mm)
	Height: 57”	(1450 mm)
	Weight: 1500 lbs.	(680 kg)
	Track: 60”	(1676 mm)
	Tire Size: F78-14	205/75D14
	Coupling: Lunette Ring (Pintle hook)	
	Lighting Adapter: 7-Way (others available by request)	
Power Supply:	Honda GX390 11.7 HP, Electric and Recoil Start, Overhead Valve, Cast Iron Cylinder Sleeve, 1.5 Gallon tank	
Battery:	12 volt 325 Ah	
Load Indication:	Calibrated gauge bezel	
Main Drive:	Fixed displacement tandem pumps to fixed displacement high torque motors.	
Gear Box:	In-line planetary gearbox (capstan drive)	
Gear Oil Grades:	MobileLube HD Plus 85W-140	
	Refer to the instruction manual supplied with the gearbox for alternative oil types and grades	
Controls: (see section 8)	(a) Pay-in / pay-out spring centered control valve. (b) Detented take-up drum drive control valve. (c) Tension control knob (d) Tension indicator (e) Throttle and Choke	
Hydraulic Circuit:	Closed circuit system with full filtration and overload protection	
Hydraulic Output to Accessory ports	1800 psi @ 12 gpm maximum (adjustable)	
Hydraulic Oil Tank Capacity:	16.5 Gal. (63 Liters)	
Hydraulic Oil Grade:	SHELL TELLUS S2 VX 32 (recommended)	



5.0 OPERATING PROCEDURE

IT IS IMPERATIVE THAT ALL PERSONS USING, OPERATING OR MAINTAINING THIS WINCH BE FULLY TRAINED AND COMPETENT TO DO SO, AND HAVE READ THE ENTIRE OPERATING MANUAL.
GMP CANNOT BE HELD RESPONSIBLE FOR MIS-USE OF THIS EQUIPMENT.

5.1 CONTROLS

The operator controls have been designed to be safe and simple to use, with regard to ergonomic considerations. The operators control station is complete with the following: (see section 8)

(a) Control lever for winching in and paying out. This provides bi-directional selection of capstan rotation. The valve spool has a soft start facility allowing for a limited creep and inching movement.
(b) Control lever for operation of the rear take-up drum. This lever should be in its operating position before operating the capstan. If the winch is not being used, this lever should be returned to its non-operating position, thus saving on fuel and preventing the hydraulic oil from overheating.
(c) Tension control knob. This can be used to limit the actual pulling tension applied to the capstan.
(d) Pressure gauge which is also an indication of the pulling tension.

5.2 PRE-WINCHING PROCEDURE

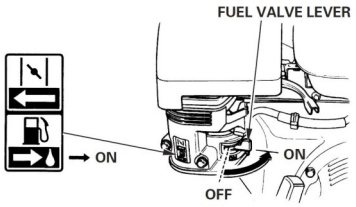
- Prior to using the winch for any hauling application, it is important to ensure that the rear prop legs are extended and lowered in order to level the winch, and that the front jockey wheel is also lowered to a position where the winch is firm and stable. The winch should be securely anchored to either a suitable vehicle, ground anchors or other substantial holding point. The winch should be in line with the direction of pull.
- Refer to the pre-winching maintenance checks in section 6.1.
- The capstan must be rotated from the “Transverse” transit position to the In-Line working position. Ensure that the retaining pin and hair-pin are correctly replaced.

It may be necessary to remove the lighting board. This is accomplished by first un-plugging the connector from the rear jack on the trailer, and then pulling the spring loaded release pins. The complete lighting board can then be removed and stored safely.

5.3 PAYING OUT ROPE

The rope take-up drum should be de-clutched by removing the lynch pin at the end of the drum shaft, grasping the drum flange, pulling and then rotating. Once the drum is free from its drive clutch, it is free to rotate on the shaft and the rope can be pulled manually from the drum.

5.4 STARTING THE ENGINE



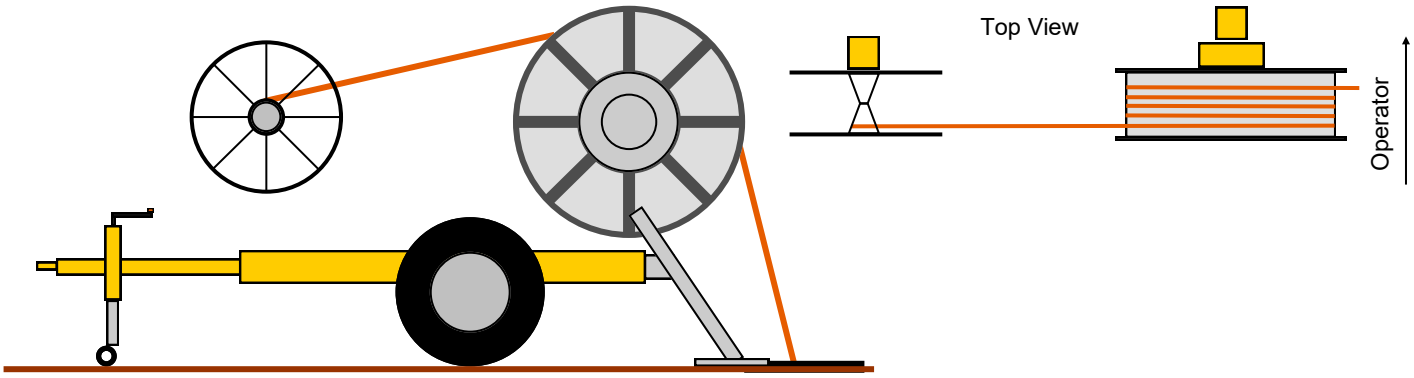
- Before starting the engine, check the fuel level, engine oil level and oil level in hydraulic tank.
- Move the fuel valve lever to the on position
- To start a cold engine, pull the choke lever fully out.
- Turn the key to the START position, and hold it there until the engine starts. When the engine starts, release the key, allowing it to return to the ON position.
- Gradually push in the choke lever as the engine warms up.
- Throttle is increased by turning counter- clockwise

The engine manufacturer's operating and service manual form an integral part of this manual. It is recommended that these instructions are read and fully understood by all operating personnel before starting the engine.

5.5 PULLING IN

5.5.1 The rope should be wrapped around the capstan such that:

(a) The rope to take-up drum comes off the **top of the capstan** and is furthest away from the operator.
(b) The rope to the fiber cable (load side) comes off the **top of the capstan**, and nearest to the operator and gearbox. Approximately four to five complete turns are required.



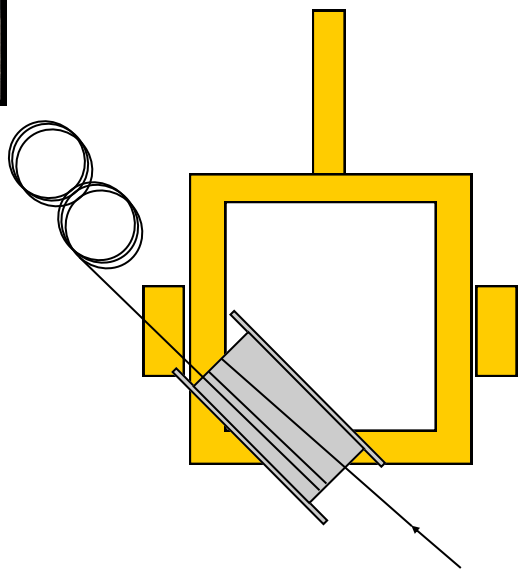
5.5.2 Operate the drum control lever to engage the drum drive. This should be left in its operating position at all times that the winch is working. At all other times it is advantageous to return the drum control lever to its non-operating position.

5.5.3 Operate the winch control lever by pulling gently towards the operator. The rope will now be pulled in and be wound onto the rope take-up drum. The speed of pulling can be increased or decreased by adjusting the engine speed control. The specific maximum pulling tension is adjusted by the operator by turning the tension control knob to suit the application.

When winching is completed, move the take-drum operating lever to the “off” position.

5.5.4 When being used as an assist winch, the drum drive is not required and therefore the operator should ensure that the lever is in the off position. Capstan wrapping of the cable should ensure that the high tension side should be nearest to the gearbox and hydraulic motor.

5.6.0 The winch is capable of being used to “figure 8” fiber cable. The capstan should be rotated to 30° and locked in place by the supplied bolt and nut as shown in photo below.



5.6 REMOVING ROPE FROM SPLIT DRUMS

The split drum has been designed to enable removal of the rope in a complete coil. In order to achieve this, ensure that the drum is fully engaged in its clutch and untie the rope from the drum.

It is often advantageous at this stage to tie a few wraps of waste string, tie wraps or tape around the rope coils, ensuring that the string does not pass around one of the drum spokes. This will help to keep the rope in a nice tight coil when released from the drum.
To remove the rope from the drum, first remove the retaining pin on the drum's drive shaft. Remove the locking bolt from the drum flange-retaining nut. The ears on the nut can now be used to release the nut by rotating counter-clockwise. Because of the tightness of the rope on the drum, a soft-faced hammer may be used on the retaining nut's ears to help with the initial movement. The nut and outer drum flange may then be removed. The rope coil may now be removed. Re-assemble the drum.

5.7 ON COMPLETION OF THE WINCHING OPERATION

- The machine should be wiped down and cleaned.
- The capstan should be returned and fixed in the transverse transit position.
- The lighting board should be re-fitted and the light operation checked.
- The winch should be preferably stored in a dry place e.g. garage or workshop.

6.0 MAINTENANCE AND SERVICING

It is recommended that this winch is serviced every 12 months, regardless of its condition or the number of operating hours used. This will help to ensure reliable, trouble free service. It is imperative that any maintenance work is carried out by personnel suitably trained and qualified to do so.

6.1 PRE-WINCHING MAINTENANCE CHECK

This should be carried out each day prior to the start of winching.

6.1.1
Check the hydraulic oil level. Oil should be visible within the black lines marked on the hydraulic oil level sight gauge. Replenish if necessary with the correct grade of hydraulic oil to suit the climatic conditions. (Refer to the section 4 for grades of hydraulic oil required).

6.1.2
Check the engine oil level as indicated in the engine manufacturers manual. Replenish if necessary.

6.1.3
Check that there is enough fuel in the tank to complete the planned winching schedule.

6.1.4
Check the condition of the hydraulic hoses, replace if damaged.

6.1.5
Check the condition of the pulling rope, particularly where it joins the drum. Only use a good condition rope of suitable pulling capacity

6.1.6
Check that all screw fasteners are tight.

6.1.7
Check the hydraulic oil system for leaks, rectify before proceeding.

6.1.8
Clean any dirt or debris from the take-up drum shaft and capstan face.

6.2 MONTHLY MAINTENANCE

This should be carried out at intervals not exceeding 4 weeks. These intervals will depend upon the degree of use of the winch.

6.2.1
Carry out all the pre-winching checks as detailed in 6.1

6.2.2
Check the function of all the lighting equipment, this should be more frequent if regular problems arise.

6.2.3
Check and adjust the tire pressures.

6.2.4
With the engine and drum shaft running, check the return filter condition indicator. This is a red/green indicator mounted on the hydraulic oil tank return line filter. If the indicator is well over into the red area, replace the filter.

6.2.6
Grease all bearings and grease fittings.

6.2.7
Oil all moving parts to prevent corrosion.

6.2.8
Apply oil to all oilite bushes.

6.2.9
Check the condition of the towing breakaway chain. If damaged, replace immediately.

6.3 ANNUAL SERVICING

This should be carried out at approximately 12 monthly intervals by a qualified and experienced workshop team.

6.3.1
Carry out all the work as specified above in section 6.2

6.3.2
Drain the hydraulic circuit of oil. Clean the filler/breather and replace. Renew the suction filter element and return line filter element. Refill with fresh oil. Check and reset all relief valves, (Refer to section 6.4 for further information).
Refer to section 4 for grades of hydraulic oil.

6.5.3
Service the engine as per the engine manufacturers manual supplied with the winch.

6.5.4
Check the condition of the tires, and running gear. Adjust and reset if necessary.

6.5.5
In-line planetary gearbox (capstan drive):
Change the gearbox oil, (refer to section 4 for gear oil grades) refer to the instruction manual supplied with the gearbox for further details on maintenance and servicing.

6.5.6
Ensure that the support that holds the drive capstan has a liberal amount of grease at its base where it rotates.

Lubricate with high quality general purpose grease. The grease fitting is found under the plate.

6.5.7
Lubricate the pillow block bearing with a high quality bearing grease by unplugging the starter switch box, removing the four retaining bolts and lifting off the cover to gain access to the grease fitting.

Plug

6.4 RELIEF VALVE SETTING

Reference should be made to the hydraulic circuit diagram on page 19 of this manual. There are four relief valves in the circuit and with the exception of item 10, all have been factory pre-set and should not be adjusted. Item 10 is adjusted by the operator to set a maximum pulling tension.

If it is necessary to replace or adjust any of the relief valves, the following guidance should assist.

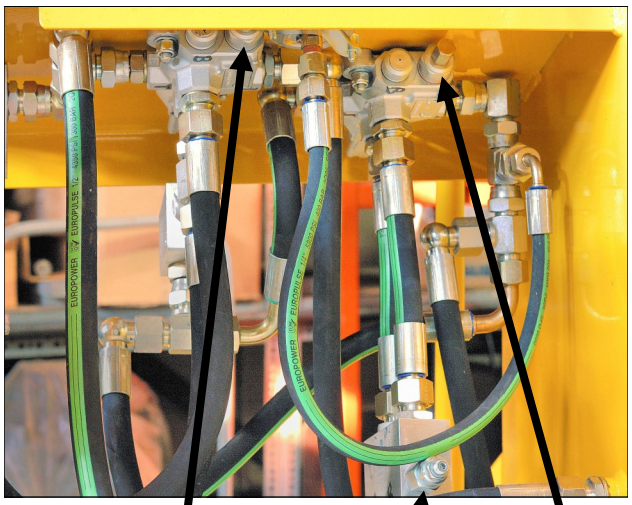
Item 7 This is a Capstan directional control valve. The relief valve is mounted in the body of this control valve and is the main system relief valve. With a Dynamometer in the rope load line, and with 4 complete turns around the capstan, this relief valve should be set to relieve at 650 lbs. (295 kg) at approx. 1522 psi (105 Bar). Note: Relief valve adjustment is hidden by a protective cap and sealing washer.

Item 8 This relief valve is situated on the drum directional control valve. This controls the rope tension between Capstan 10 and Drum when pulling in. The valve should be set to relieve when the rope tension measures approx. 85-110 lbs. (40-50 kg). This measurement and adjustment should be made when the rope drum is almost empty. Note: Relief valve adjustment is hidden by a protective cap and sealing washer.

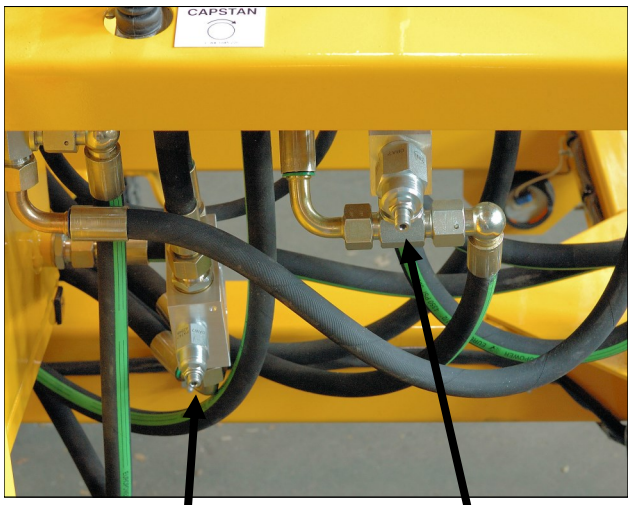
Item 2 This relief valve is mounted in an aluminum body connected to the drum hydraulic motor. This valve prevents drum overrun when paying out under power. With the rope drum almost empty, the relief valve can be set so that a rope tension of approx. 85 lbs. (40 kg) will cause the drum to rotate.

Item 10 This relief valve is mounted in an aluminum body connected to the capstan hydraulic motor. It is intended that the site supervisor will set this relief valve to give maximum rope tension to suit specific operating conditions. There are two adjustments, limiting forward and reverse.

Control Panel Rear



Control Panel Front

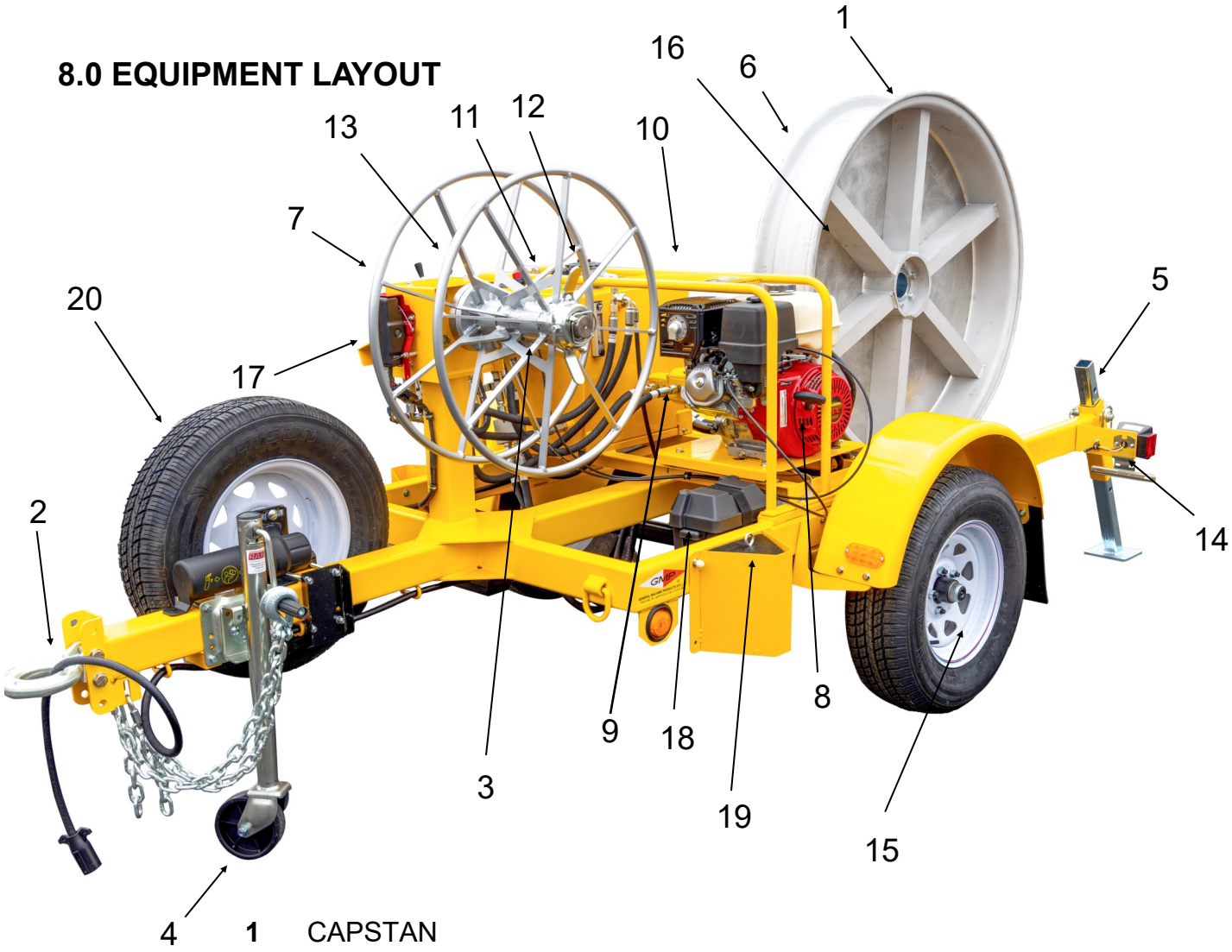


7.0 TOWING INSTRUCTIONS

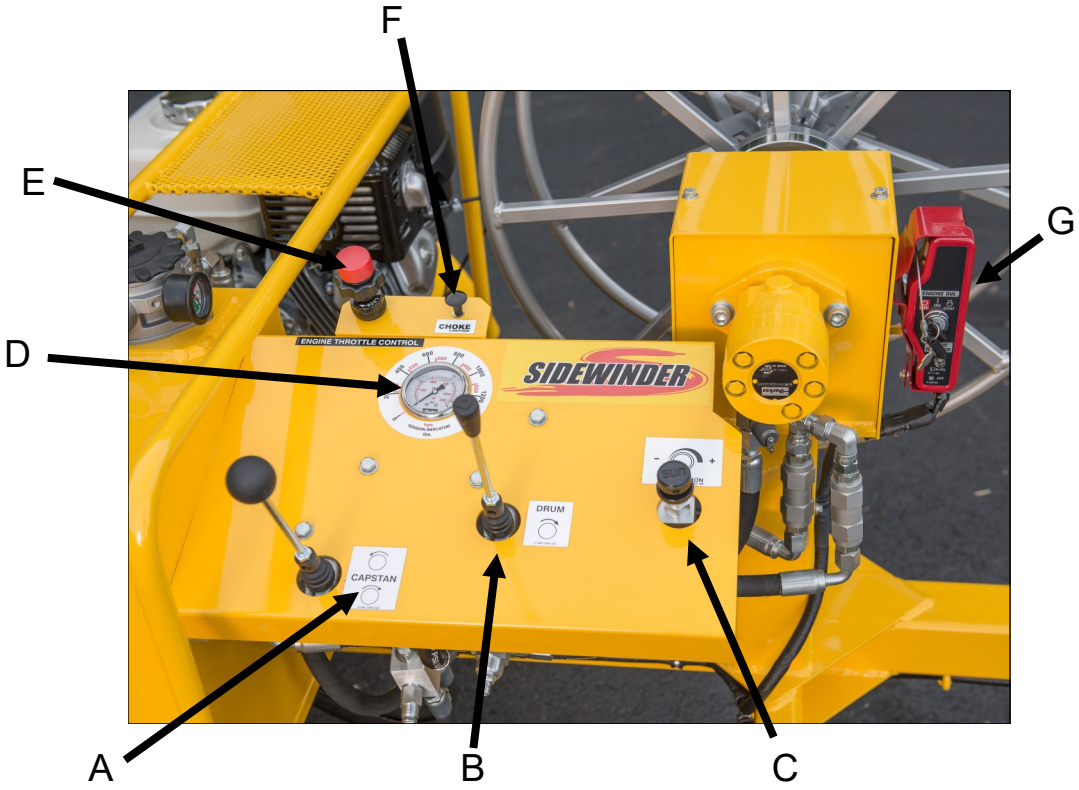
BEFORE TOWING

A. Check the load is distributed to give a positive hitch weight to ensure stable towing. Also ensure the hitch weight is within limit of the vehicle.
B. Ensure that the Pintle hook is locked and the safety chains are securely attached to the tow vehicle.
C. Make sure that the Jockey wheel is rotated up in the driving position and that the rear prop legs are securely retracted and locked.
D. Make sure all trailer lights are working properly.
E. Check tires for proper inflation.

8.0 EQUIPMENT LAYOUT

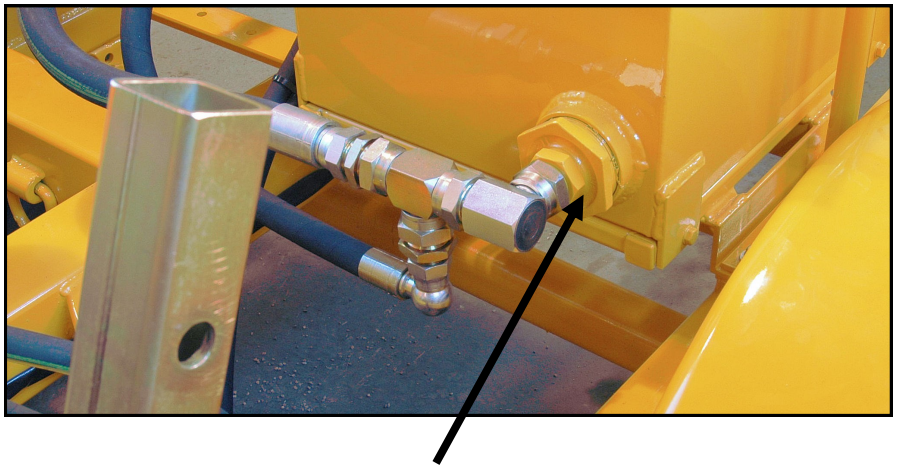


1 CAPSTAN
2 TOW BAR
3 ROPE TAKE-UP DRUM
4 JOCKEY WHEEL
5 REAR PROP LEG
6 CAPSTAN DRIVE GEARBOX
7 ROPE TAKE-UP DRUM HYDRAULIC MOTOR
8 ENGINE
9 HYDRAULIC PUMPS
10 HYDRAULIC OIL TANK
11 HYDRAULIC OIL TANK FILLER / BREATHER
12 RETURN LINE FILTER
13 CONTROL PANEL
14 REAR LIGHTING
15 AXLE AND WHEELS
16 CAPSTAN HYDRAULIC MOTOR
17 ELECTRIC START
18 STARTER BATTERY
19 WHEEL CHOCKS
20 OPTIONAL SPARE TIRE



CAPSTAN WINCH CONTROL PANEL

A. WINCH IN / PAYING OUT CONTROL LEVER
B. ROPE TAKE-UP DRUM OPERATION CONTROL LEVER
C. TENSION CONTROL KNOB
D. PRESSURE GAUGE / TENSION INDICATOR
E. ENGINE THROTTLE
F. ENGINE CHOKE
G. ENGINE ELECTRIC START PANEL



HYDRAULIC OIL TANK SUCTION FILTER

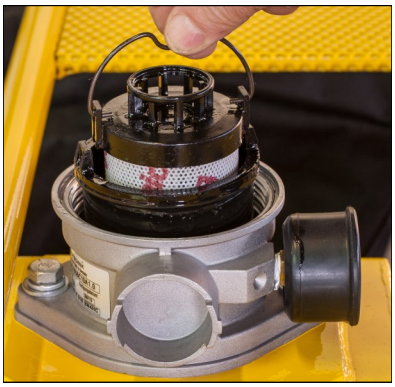
9.0 USER REPLACEABLE PARTS

Return Line Filter Element Replacement

Replace the Return Line Filter Element when the arrow of the clogging indicator is in the red range.

Indicator showing need for filter element replacement.

1. Unscrew the return line filter top cap using a suitable wrench.



2. Remove the clogged element and plastic carrier. Twist and pull the element to separate it from the carrier. Install new element in carrier and drop in filter housing.

3. Replace the top cap making sure not to cross the thread. Check for leaks after tightening.

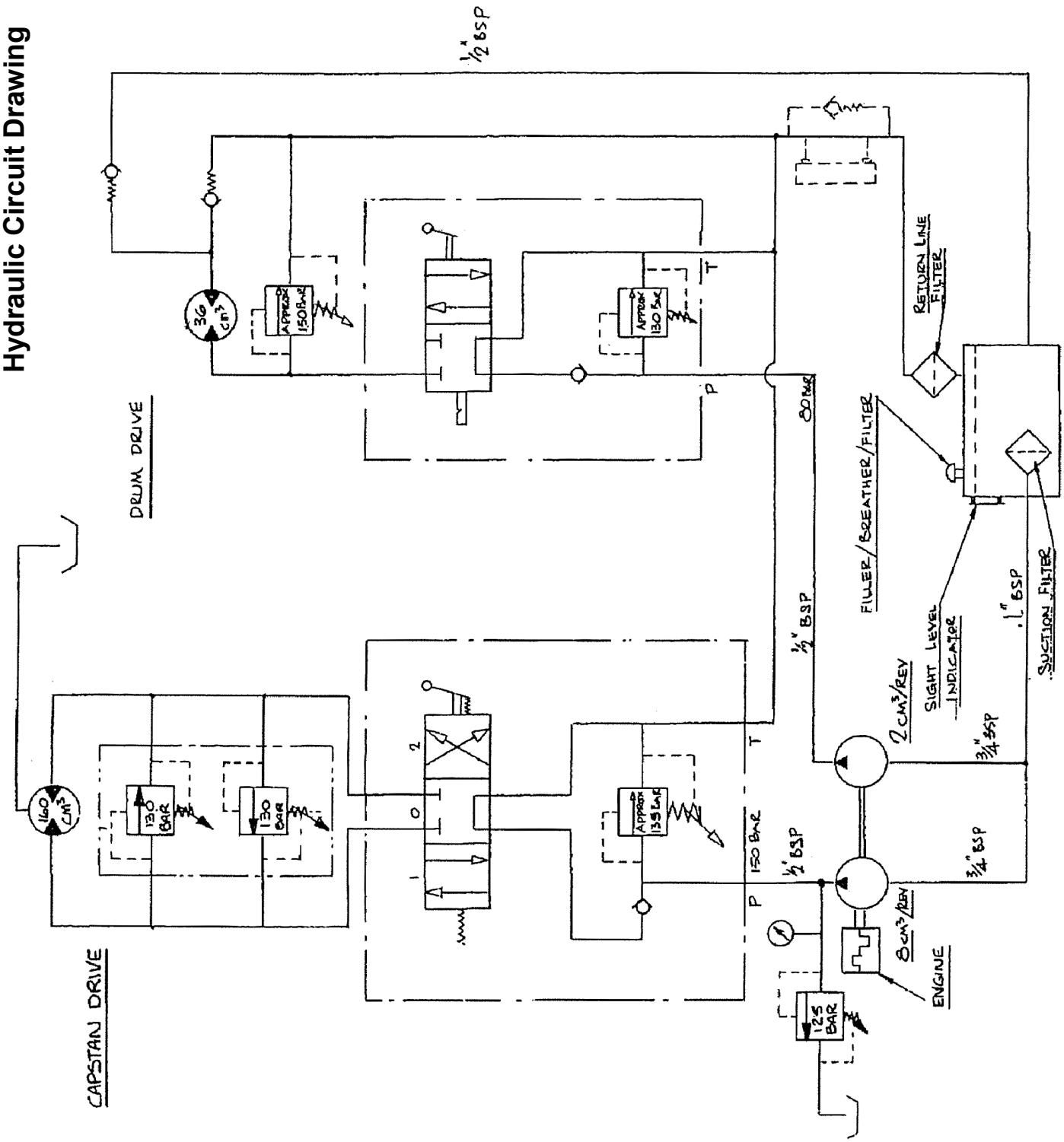
Typical User Replaceble Parts:	**Part Number:**
Oil Tank Filler Breather	32073
Oil Tank Suction Filter	32134
Return Line Filter Element	34565
Sight Level Gauge	32053

For spare parts, call:

General Machine Products
3111 Old Lincoln Highway Trevose, PA 19053
Tel: +1.215.357.5500 Fax: +1.215.357.6216 Email: info@GMPtools.com

34565 Return Line Filter Element

Hydraulic Circuit Drawing



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