



ASSEMBLY PROCEDURE FOR MODEL 105ME MOTOR EXTENSION

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INTRODUCTION

Thank you for purchasing a Simple Pump gear motor assembly. The 105GM Motorized Extension Kit is designed for use with the Simple Pump model 100 and 125 hand pumps. When assembled and installed on the model 125 pump, the gear motor is capable of delivering 1.5 to 3.1 gallons of water per minute from as deep as 200 feet. A 12VDC or 24 VDC power source, such as a solar panel or a marine or automotive battery, must power the gear motor. Precaution must be taken to prevent operation under low voltage conditions below 11.5 volts.

Tools required: (1) 3/16" hex Allen wrench, preferably with a "T" handle
(1) small Phillips screwdriver

SPECIFICATIONS

WHEN POWERED WITH 12V DC

Motor Rating (12 VDC):	.140 HP continuous
Gear Ratio:	30:1
Output Torque (12VDC):	154 in/lbs. continuous
Output Torque Maximum (12 VDC):	175 in/lbs. @ 56RPM @ 16.3 amps
Nominal Output RPM (12 VDC):	57%
Efficiency:	59.5
Full Load Motor Current (12 VDC):	14.6 amps
Allowable Voltage Range (12 VDC):	11.5 to 15 VDC

WHEN POWERED WITH 24V DC

IMPORTANT NOTE: 24V is non-standard usage. It is possible, under certain circumstances. You must contact us to clarify for your particular set-up, or you will automatically void warranty.

Motor Rating (24VDC):	.318 HP continuous
Gear Ratio:	30:1
Output Torque (24VDC):	154 in/lbs. continuous
Output Torque Maximum (24 VDC):	350 in/lbs. @ 114RPM @ 30.2 amps
Nominal Output RPM (24 VDC):	130
Efficiency:	67.6%
Full Load Motor Current (24 VDC):	14.6 amps
Allowable Voltage Range (24 VDC):	11.5 to 30 VDC
Shipping Weight:	28 lbs.

SECTION 1: UNPACKING & INSPECTION

Carefully remove the gear motor assembly from the shipping box, along with the small plastic bag of screws and spare fuses.

Using a Phillips screwdriver, remove the two small screws that attach the cover. Remove the cover and lift the large steel yoke out. You should have all of the components shown in Fig. 1.

The plastic bag should have (4) Allen screws and (3) spare fuses.



Fig. 1

SECTION 2: PREPARING YOUR EXISTING PUMP

Your Simple Hand Pump should already be installed and pumping water without any binding and with an overall smooth operation prior to attempting to install this gear motor.

You should confirm that your pump is delivering at least one gallon of water with approximately 25 strokes with the lever handle system (model 100L). If you have the model 125L, your pump should be delivering about one gallon of water in approximately 14 complete strokes.

Once proper pumping function is confirmed, remove all hardware on the top of the pump head so that your pump looks like Fig. 2. Also, push the pump rod fully down. It should be no higher than 3¾" from the top of the head to the shoulder as shown in the figure.

If this is not the case, an adjustment in pipe length may be required.



Fig. 2



Fig. 3

SECTION 3: GEAR MOTOR MOUNTING

- a) Using a 3/16" hex Allen wrench, remove the crank arm roller as show in Fig. 3.
- b) Screw the yoke onto the top of the pump rod (Fig. 4). Hold the pump rod as high as possible with adjustable pliers and tighten the yoke. Tapping with a rubber mallet works well.
- c) Attach the entire assembly to the pump head using the (4) screw provided (Fig. 5). Leave the screws very lightly tightened. Lift the pump rod as shown in Fig. 6. Make sure that the movement is smooth and does not bind. The clearance in the mounting holes provides a small amount of movement in the gear motor. Make small adjustments to the gear motor mounting, bumping it from side to side until the pump rod strokes up and down freely (Fig. 6). This step is very important. If the pumping motion is not free at this stage, the gear motor will not pump freely.
- d) Reinstall the cam roller in the hole closest to the center (Fig. 7). Do this by lifting the pump rod until the roller can be installed in the correct position.



Fig. 4



Fig. 5



Fig. 6



Fig. 7 (same as Fig. 3)

SECTION 4: ELECTRICAL CONNECTION

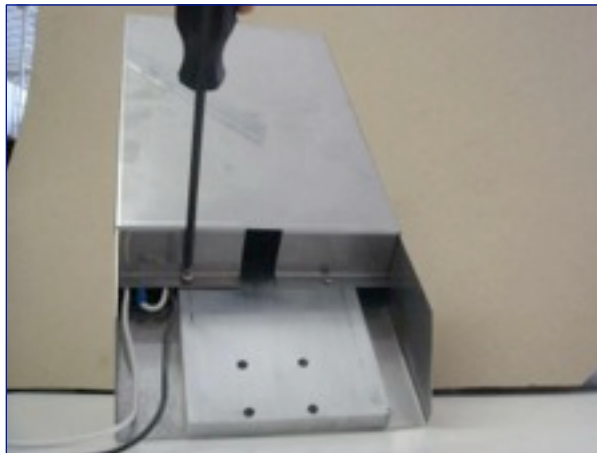
The two wires coming out the bottom of the gear motor are to be supplied with 12 VDC or 24 VDC power. Make sure that your supply wiring is at least 16 gauge and can maintain a minimum of 11.5 volts with the motor at a full load of 15 Amps.

The white wire is the positive (+) power lead and the black is the negative (-). When working on the power connection, put the switch next to the motor in the off position by pushing the button on the bottom side and remove the fuse by pushing and turning it counter-clockwise.

Provisions need to be made in your power supply to prevent operation of the motor when voltage is below 11.5 volts, such as when the battery is nearly discharged.

SECTION 5: OPERATION

Once the power has been connected, reinstall the fuse and attach the cover shown in Fig. 8. On the break-in period, leave the pump outlet open or pump through a garden hose unrestricted. Make sure that nothing is settling on top of the gear motor. Turn on the switch that initiated the pumping action.



With the stroke setting at the shortest position, the pump will only generate about $\frac{3}{4}$ gallon of

water per minute. The pump should run for at least 2 hours at this setting to facilitate the break-in.

Once the pump has run for 2 hours at the first stroke setting, disconnect the power, open the cover and move the roller to the next position. Run the pump for 2 hours at each setting. When you reach a setting that causes the fuse to blow, you know that you have exceeded the motor limit. Move the roller back to the previous setting.

This will be the maximum pump rate for your well conditions. If you connect your pump to pressurize a house system or to an elevated storage tank, you will need to determine the optimum stroke setting using the same method as above, but under actual maximum pressure conditions.

FLOW CAPACITIES AND PRESSURE WITH MODEL 100CA PUMP CYLINDER

Maximum Total Head	Flow Rate (GPM)	Pump Stroke Setting
200 feet (87 psi)	1.5	5.8"
160 feet (69 psi)	2.0	6.9"
126 feet (54 psi)	2.0	6.9"
92 feet (40 psi)	2.0	6.9"
76 feet (33 psi)	2.0	6.9"

FLOW CAPACITIES AND PRESSURE WITH MODEL 125CA PUMP CYLINDER

Maximum Total Head	Flow Rate (GPM)	Pump Stroke Setting
150 feet (65 psi)	2.1	4.6"
123 feet (53 psi)	2.6	5.8"
103 feet (45 psi)	3.1	6.9"

SECTION 6: MAINTENANCE & TROUBLE-SHOOTING

As long as the gear motor system is pumping correctly and not causing the motor to overload, no maintenance is required. If the mechanism experiences a bearing failure for any reason, the motor protection fuse will blow. It is extremely important to replace the fuse with only a 25 amp quick blow ¼" x 1¼". Using a larger fuse will overheat the motor and damage the gears. The motor normally operates at around 100-110° F.

If the fuse has blown for any reason, remove the cover and the crank arm roller. Lift the yoke up and down, by hand. How freely the yoke moves or does not move is an indication of what the motor is working against. Typical reasons for difficult movement are:

Misalignment of the gear motor assembly: Loosen the (4) attaching screws on the pump head and make sure that the assembly is aligned before re-tightening. Make sure that there is no metal-to-metal contact, except at the rollers.

Seized roller: Check both rollers for free movement.

Pump binding: Remove the gear motor and stroke pump rod by hand. It should require about 40 lbs. of lifting effort for each 100 feet of water level. If the effort is any more than this, remove the pump head and try again to determine if the problem is in the head.

After this routine check, reassemble the system and repeat the start-up procedure.

SECTION 7: WARRANTY

The gear motor assembly is warranted against defective materials and workmanship for a period of 1 year from the date of purchase. The motor load must not be exceeded and all routine maintenance recommended in these instructions must be adhered to.

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