

Snap-on

SUN MFX Xtreme™



Operations Manual



940847

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INTRODUCTION

Congratulations on the purchase of your SUN MFX Xtreme transmission fluid and power steering fluid exchanging machine!

Simply put, this machine is the cleanest, safest, easiest, fastest, most thorough, and most cost-efficient method of fluid exchange ever devised. Suddenly, regular automatic transmission and power steering maintenance become a more realistic proposition. Transmission and power steering fluid exchanging are cleaner and neater than ever!

Transmission Fluid Exchange:

To attain the highest level of protection for internal transmission components and increase the life span of your transmission to the maximum, it is recommended that the transmission's lubrication system is serviced every 15,000 miles (or according to the vehicle owner's manual). The SUN MFX Xtreme exchanges virtually all of your used transmission fluid to new, without requiring you to drop the transmission pan. There is no spillage, and no mess.

Power Steering Fluid Exchange:

Service neglect leads to power steering system complaints including poor handling, hard or sluggish steering, and objectionable noise. Historically, power steering system fluid service has been neglected, often due to the lack of a convenient method for providing such flush or fluid exchange services. Previous methods for flushing the power steering system or replacing the power steering fluid were time consuming and often inefficient or incomplete. Now, it's easier than ever to replace up to 95% of the old power steering fluid in less than 8 minutes!

- The MFX Xtreme can be used practically anywhere – and with almost any vehicle.
- It is compact, mobile, and self-contained.
- It operates off the 12-volt battery of the vehicle being serviced.
- You do not need a pit, lift, or ramp.
- The MFX Xtreme hooks up directly to one of the vehicle's transmission cooler lines for a transmission fluid exchange.
- The ATF fluid exchange, from setup to finish, typically takes 15 minutes or less!

No wonder an ATF exchange is the most requested method of preventative automatic transmission maintenance today. Now you have the option of a power fluid exchange as well... Both in one machine!

Please take time to read through this manual to familiarize yourself with the SUN MFX Xtreme before performing your first ATF or PSX exchange.

SAFETY INFORMATION

Important Safety Notice

For your safety, read this manual thoroughly before operating your MFX Xtreme unit. Your MFX Xtreme unit is intended for use by properly trained, skilled professional automotive technicians. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise care when using this unit. Before using your MFX Xtreme unit, always refer to and follow the safety messages and applicable service procedures provided by the manufacturer of the vehicle being serviced.

Read All Instructions

Read, understand and follow all safety messages and instructions in this manual. Safety messages in this section of the manual contain a signal word with a three-part message and, in some instances, an icon. The signal word indicates the level of the hazard in a situation:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

IMPORTANT

Indicates a situation which, if not avoided, may result in damage to the MFX machine or the vehicle being serviced.

Safety messages in this section contain three different type styles:

- Normal type states the hazard.
- **Bold type** states how to avoid the hazard.
- *Italic type* states the possible consequences of not avoiding the hazard.

An icon, when present, gives a graphical description of the potential hazard.

IMPORTANT SAFETY INSTRUCTIONS



Products may have inherent risk to the user.

- **Read, understand and follow all safety messages in this manual before operating the SUN MFX Xtreme.**

Improper use may result in injury.

DANGER



Engine systems can malfunction expelling fuel, oil vapors, hot steam, hot toxic exhaust gases and other debris.

- **Wear safety goggles and protective clothing, user and bystander.**

Engine systems that fail can cause serious injury.

DANGER



Risk of expelling pressurized fluids.

- **Wear safety goggles and protective clothing, user and bystander.**
- **Keep the service hoses away from hot or moving engine parts. Hoses can split or burst causing fluid to be expelled.**
- **Tighten all connections properly. Insufficient or excessive torque can result in fluid leakage.**
- **Avoid contact with automatic transmission or power steering fluid.**
- **Treatment methods are as follows:**
 - Eyes: Flush eyes with plenty of water.
 - Skin: Wash with soap and water.
 - Inhalation: Move to uncontaminated area.
 - Ingestion: If large amount, get medical attention.
 - If any irritation persists, get medical attention.

- **Dispose of used fluid according to environmental laws and regulations.**

Although automatic transmission and power steering fluid pose no significant health hazards, some individuals may experience adverse reactions upon contact. Pressurized fluid can cause serious injury.

DANGER



Engine exhaust contains toxic gases.

- **Vent vehicle's exhaust away from work area.**
- **Do not breathe exhaust.**

Exhaust gases can cause injury or death.

WARNING

Risk of unexpected vehicle movement.

- **Block drive wheels before starting vehicle's engine to begin an exchange.**
- **Unless instructed otherwise, set parking brake and put gear selector in park.**
- **Do not leave a running vehicle unattended.**

A moving vehicle can cause injury.

WARNING



Engine has moving parts. Risk of entanglement.

- **Do not place tools on fenders or other places in engine compartment.**
- **Keep yourself, clothing, battery cables and service hoses clear of moving parts such as fan blades, belts and pulleys.**

Contact with moving parts can cause injury.

WARNING



Risk of fire or explosion.

- **Do not operate the MFX Xtreme in the vicinity of open containers of flammable liquids such as gasoline.**
- **Keep hoses and jumper cables away from heat sources and sharp edges.**
- **Do not operate equipment with damaged cords or hoses until they have been examined by a qualified serviceman.**

Fire or explosion can cause injury.

WARNING



Risk of fire or explosion. Gases produced by a battery are highly explosive.

- **Wear safety goggles and protective clothing, user and bystander.**
- **This machine is equipped to operate on 12-volt DC power only. A power source greater than this can result in serious injury to the user as well as damage to the machine.**
- **Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.**
- **Clean battery terminals before hooking the machine's battery clips to them. During cleaning, keep airborne corrosion from eyes, nose and mouth.**
- **Be sure both battery cables are tightly connected to the battery terminals as instructed before proceeding with a fluid exchange.**
- **Never remove battery cables from the battery terminals while the machine is operating. Only use the "EMERGENCY STOP" button located on the control panel to stop an exchange.**

Battery explosion can cause injury.

WARNING



Battery acid is a highly corrosive sulfuric acid.

- **Wear safety goggles and protective gloves, user and bystander.**
- **Have plenty of fresh water and soap nearby. If battery acid contacts skin, clothing, or eyes, flush exposed area with soap and water for 10 minutes.**
- **While cleaning battery's terminals, keep airborne corrosion from eyes, nose and mouth.**
- **Do not touch eyes while working near battery.**

Battery acid can burn eyes and skin.

WARNING



Risk of burns.

- **Wear gloves when working near hot engine components.**
- **Do not touch hot exhaust systems, manifolds, engines, radiators, etc.**
- **The automatic transmission fluid coming from the vehicle along with some of the machine's components that the fluid comes into direct contact with (i.e. external: hoses and quick-disconnect fittings; internal: hoses and all fittings) may reach temperatures uncomfortable to the touch. Exercise caution in avoiding contact with these items.**

Hot components can cause injury or discomfort.

CAUTION

Ratchet mechanisms and tools may slip or break if dirty. Mismatched or partially worn parts can cause ratchet or any tool to slip or break.

- **Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.**

- Do not replace worn parts individually. If adapter hose fittings become worn, see “Appendix C – Replacement Parts” to order new hoses.
- The use of any other accessories not specified in this manual may create a hazard.

Tools that slip or break can cause injury.

CAUTION



Risk of injury or equipment damage.

- This equipment should be operated by qualified personnel only.
- The SUN MFX Xtreme is fully automatic. Refer to your control panel at all times.
- Use this equipment only as described in this manual. Use only the manufacturer’s recommended attachments.
- Connect battery cables to a 12-volt power source only (i.e. vehicle’s battery).
- Always unplug the machine from its power source when not in use.
- Loop the power cord loosely in its proper location when machine is not in use.
- Do not operate equipment with a damaged battery cables or hoses, or if the equipment has been dropped or damaged, until it has been examined by a qualified service representative.
- Care should be taken to arrange the battery cables and service hoses so that they will not be tripped over or pulled.
- Never pull on the power cables or service hoses to transport the MFX Xtreme. Damage may occur to these components, or machine may tip over.
- Servicing, transporting, or storing this machine in an attitude other than the normal operating position can result in fluid spillage and/or component damage.
- Keep area of operation clear of unnecessary tools and equipment.
- Utilize recessed tool storage areas on the top of the machine.
- Never leave the machine running unattended.
- The MFX Xtreme is not designed for any other purpose than the exchanging of automatic transmission and power steering fluid.
- Periodically clean the machine by wiping down with a clean, soft, dry cloth.

Operation of your MFX Xtreme unit by anyone other than qualified personnel may result in injury or damage to equipment.

SAVE AND FOLLOW THESE INSTRUCTIONS.

SYSTEM FEATURES AND SPECIFICATIONS

FEATURES

Cabinet Features

- Durable roto-cast polyethylene body and tanks
- Integral performance designed hose and tool compartment with drain orifice
- 5" locking caster wheels – very maneuverable
- Ergonomically correct working height
- Large diameter fill hole
- Easy access service panel

Electronic Features

- Drain used fluid tank (no need to tip machine upside-down)
- Drain new fluid tank
- Add new fluid to transmission in .2 qt. increments
- Remove fluid from transmission in .2 qt. increments
- Select 4, 12, 16 or 20 qt. exchange volume
- Accurate sensor technology (+/- 5%)
- 10 micron absolute fluid filters
- Cycle valves feature allows you to electronically clean out valves
- Totalize check (indicates lifetime use)
- Interactive options menu:
 - "Auto Prime" feature automatically primes the system
 - Indicate new fluid volume
 - Indicate used fluid capacity

Power Steering Fluid Exchange Unit

- Remote pendant for ease of operation
- Compartment for new fluid bottle
- Drains directly to waste tank

DIMENSIONS AND TECHNICAL SPECIFICATIONS

Cabinet:

Roto-cast molded polyethylene

Fluid Tanks:

24-Quart New Fluid Tank

24-Quart Used Fluid Tank

Dimensions:

39" Tall

25" Deep

17" Wide

Service Hoses:

10' outside of machine

Wheels:

5" locking casters (front)

5" casters (back)

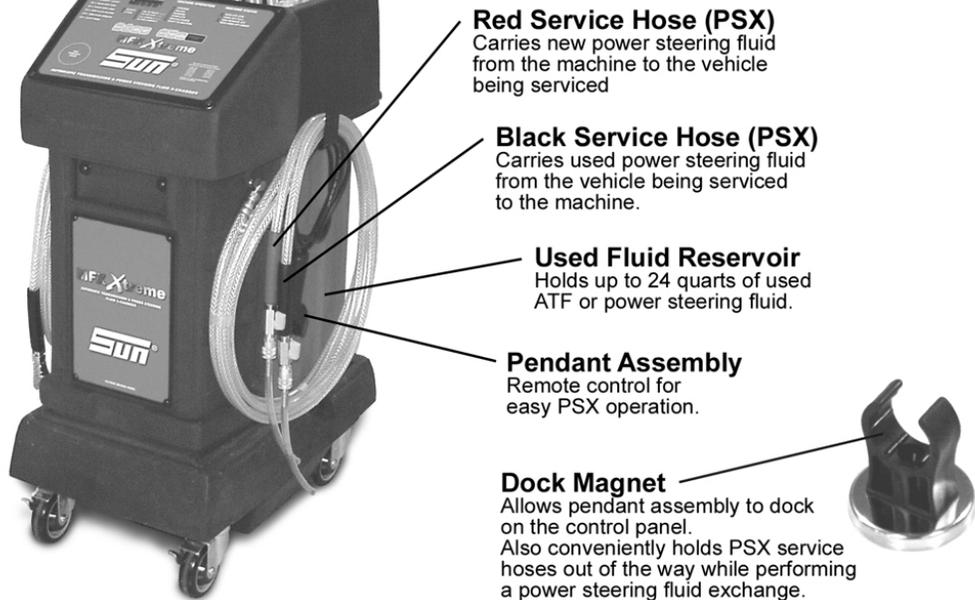
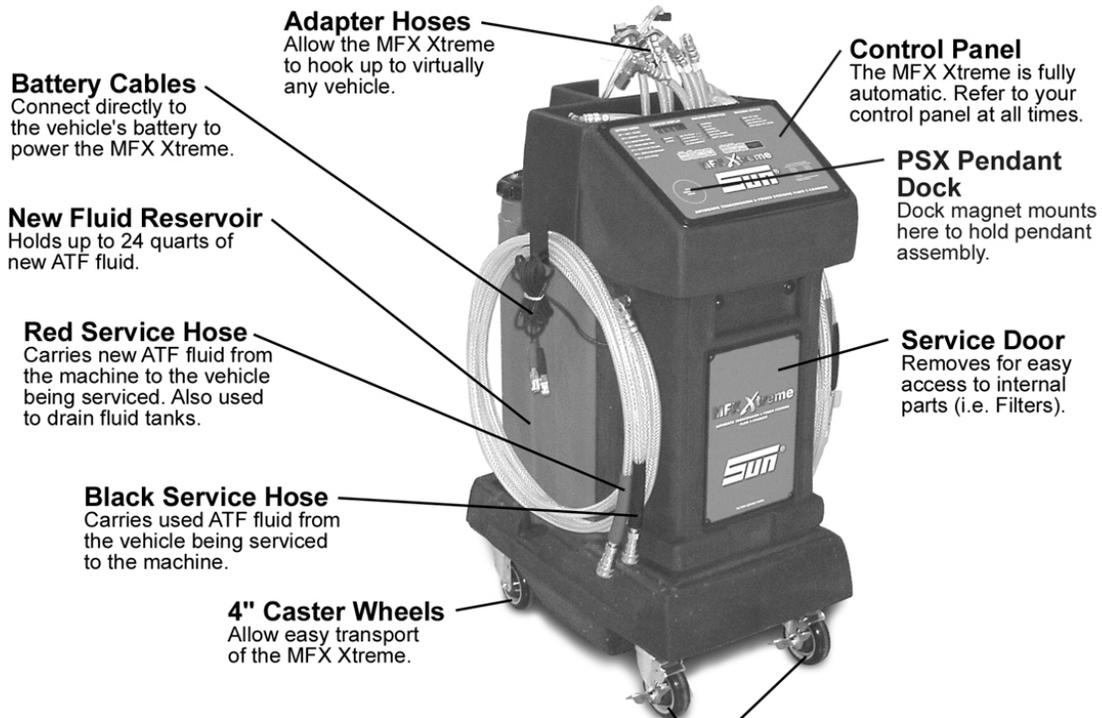
Weight:

85 lbs

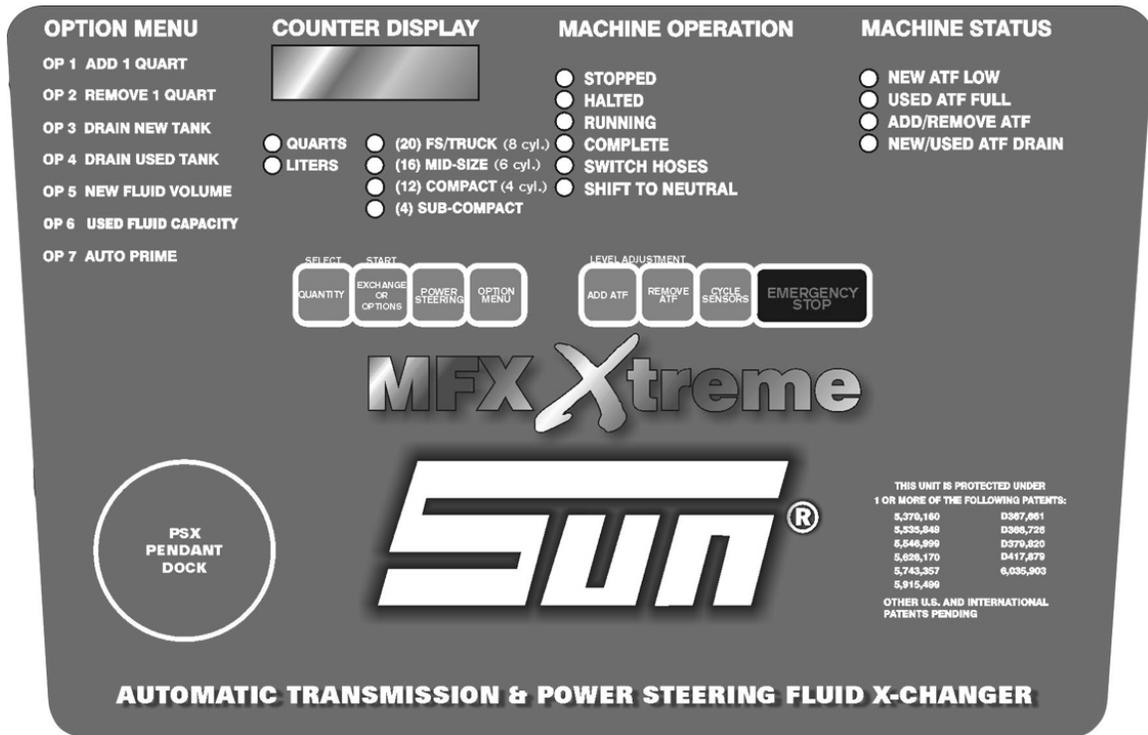
Power:

12-Volt DC from vehicle battery

MACHINE OVERVIEW



CONTROL PANEL OVERVIEW



OPTION MENU

Option:

OP 1 – ADD 1 QUART

OP 2 – REMOVE 1 QUART

OP 3 – DRAIN NEW TANK

OP 4 – DRAIN USED TANK

OP 5 – NEW FLUID VOLUME

OP 6 – USED FLUID CAPACITY

OP 7 – AUTO PRIME

Function:

Quickly adds fluid / Used for filling the pan.

Quickly drains fluid / Used for draining the pan.

Allows operator to drain the fluid from the new fluid tank.

Allows operator to drain the fluid from the used fluid tank.

Indicates exactly how much fluid is in the new fluid tank.

Indicates exactly how much fluid is in the used fluid tank.

Automatically purges any air out of the system.

BUTTONS

Button:	Function:
SELECT / QUANTITY	Allows operator to choose one of four different exchange volumes.
START / EXCHANGE or OPTIONS	Starts an exchange at the amount selected. Also activates options when selected in the option menu.
POWER STEERING	Switches machine to power steering mode.
OPTION MENU	Scrolls through options.
ADD ATF	Adds 6 ounces of ATF to the vehicle.
REMOVE ATF	Removes 6 ounces of ATF from the vehicle.
CYCLE SENSORS	Allows operator to manually cycle both valves.
EMERGENCY STOP	Stops operations.

MACHINE OPERATION (LED lights)

LIGHT	INDICATION
STOPPED	The machine is stopped.
HALTED	The machine has halted operation.
RUNNING	The machine is running.
COMPLETE	The exchange is complete.
SWITCH HOSES	The service hoses need to be reversed.
SHIFT TO NEUTRAL	The vehicle needs to be shifted to neutral.

MACHINE STATUS (LED lights)

LIGHT	INDICATION
NEW ATF LOW	There is not enough fluid in the new fluid tank to complete the quantity selected.
USED ATF FULL	The used fluid tank does not have enough remaining capacity to complete the exchange.
ADD / REMOVE ATF	The operator is either adding or removing ATF.
NEW / USED ATF DRAIN	One of the tanks is being drained.

SPECIAL FUNCTIONS

WARNING



- **Wear safety goggles and protective clothing, user and bystander.**
- **Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.**
- **Clean battery terminals before hooking the machine's battery clips to them.**
- **Read, understand and follow Safety Instructions in the front pages of this manual.**

Totalizer Check: *Hold "STOP" button for approximately 5 seconds.*

The control panel will first display a dash with up to a 3 digit number. This number indicates how many times the totalizer has rolled over at 9999 quarts/liters. After a short delay, the total amount of fluid used since last rollover will be displayed in quarts/liters.

CAUTION



- **Wear safety goggles and protective clothing, user and bystander.**
- **Avoid contact with automatic transmission or power steering fluid.**
- **Dispose of used fluid according to environmental laws and regulations.**
- **Read, understand and follow Safety Instructions in the front pages of this manual.**

Completely Drain Tanks: By draining the tanks using Options 3 and 4, a small amount of fluid is left in the tanks. To empty ALL the fluid, *select either Option 3 or 4 by repeatedly pressing the "OPTIONS" button. Press and hold the "START" button for 13 seconds, until tank begins to drain. The pump will continue to run until the "STOP" button is pressed.*

(After tanks are completely drained, the system must be primed again before another exchange is performed.)

SENSOR CHECK

This feature allows you to test the accuracy of the new and used fluid sensors.

1. Check to ensure there is no fluid accumulation in the sensor tubes (*see Appendix B - Maintenance*).
2. Press and hold the "OPTIONS" button for at least 6 seconds, until you hear an audible beep.
3. Scroll through the options menu by repeatedly pressing the "OPTIONS" button, until "OP 8" shows on the display, followed by a number.
4. Reset this number to zero by pressing the "START" button.

5. Pour 1000ml of ATF fluid into the new fluid reservoir, and record the number that shows up on the display.
6. Scroll through the options menu until "OP 9" shows on the display, followed by a number.
7. Reset this number to zero by pressing the "START" button.
8. Remove the used fluid screen located in the bottom of the recessed hose tray compartment.
9. Pour 1000ml of ATF fluid into the used fluid reservoir, and record the number that shows up on the display.
10. If the difference between the new and used fluid sensor values is less than 3, the sensors are within tolerance.
11. If the difference between the new and used fluid sensor values is greater than 3, repeat steps 2 - 9.
12. If the difference between the values is still greater than 3, see *Ordering Replacement Parts* to order a new board.

NOTE: After tanks are completely drained, the system must be primed again before another exchange is performed.

OPERATING PROCEDURES

SUGGESTED ADDITIONAL TOOLS

CAUTION

- Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.
- The use of any other accessories not specified in this manual may create a hazard.
- Read, understand and follow Safety Instructions in the front pages of this manual.

Line Wrenches

3/8"
7/16"
1/2"
9/16"
5/8"
11/16"
3/4"

End Wrenches

3/8"
7/16"
1/2"
9/16"
5/8"
11/16"
3/4"

Allen Wrenches

1/8"
11/16"

Nut Drivers (American)

3/16"
1/4"
5/16"
3/8"
7/16"

Nut Drivers (Metric)

6 mm
8 mm
9 mm
10 mm
11 mm
12 mm
13 mm
14 mm

Metric End or Line Wrenches

10 mm
11 mm
12 mm
13 mm
14 mm
15 mm
16 mm
17 mm
18 mm
19 mm
20 mm

Screwdrivers

<i>Phillips</i>	<i>Standard</i>
1 long	1 long
1 short	1 short

Filter Band Clamp

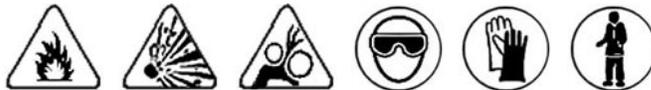
TRANSMISSION FLUID EXCHANGE

DANGER



- Vent vehicle's exhaust away from work area.
- Do not breathe exhaust.
- Wear safety goggles and protective clothing, user and bystander.
- Keep the service hoses away from hot or moving engine parts. Hoses can split or burst causing fluid to be expelled.
- Tighten all connections properly. Insufficient or excessive torque can result in fluid leakage.
- Block drive wheels before starting vehicle's engine to begin an exchange.
- Unless instructed otherwise, set parking brake and put gear selector in park.
- Do not leave a running vehicle unattended.
- Read, understand and follow Safety Instructions in the front pages of this manual.

WARNING



- Wear safety goggles and protective clothing, user and bystander.
- Do not operate the MFX Xtreme in the vicinity of open containers of flammable liquids such as gasoline.
- This machine is equipped to operate on 12-volt DC power only.
- Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.
- Clean battery terminals before hooking the machine's battery clips to them. During cleaning, keep airborne corrosion from eyes, nose and mouth.
- Keep yourself, clothing, battery cables and service hoses clear of moving parts such as fan blades, belts and pulleys.
- Read, understand and follow Safety Instructions in the front pages of this manual.

CAUTION



- Use this equipment only as described in this manual. Use only the manufacturer's recommended attachments.
- The SUN MFX Xtreme is fully automatic. Refer to your control panel at all times.
- Care should be taken to arrange the battery cables and service hoses so that they will not be tripped over or pulled.
- Read, understand and follow Safety Instructions in the front pages of this manual.

FIRST TIME OPERATION (Priming the System)

(Only necessary when machine is received, before first operation. **System must be primed before use.**)

1. Fill new fluid tank with at least 3 quarts of transmission fluid.
2. Insert *master connectors* (see adapter listing) into *service hoses*.
3. Connect and fasten two mating *adapter hoses* together (i.e. #72 & #73).
4. Select "AUTO PRIME" (Option 7) by repeatedly pressing the "OPTION MENU" button. Press "START". The system will automatically prime.
5. Disconnect *adapter hoses*, leaving *master connectors* attached to *service hoses*.

IMPORTANT



- Never pull on the power cables or service hoses to transport the MFX Xtreme. Damage may occur to these components, or machine may tip over.
- Servicing, transporting, or storing this machine in an attitude other than the normal operating position can result in fluid spillage and/or component damage.
- Read, understand and follow Safety Instructions in the front pages of this manual.

BASIC HOOKUP

1. Position the MFX Xtreme in front of vehicle to be serviced.
2. Use the included vehicle adapter hose chart (*page #*) to assist in identifying the specific adapter hose required for each particular vehicle.
3. Locate and disconnect the most easily accessible hose or fitting at the radiator end of the transmission cooler system.
4. Attach the two *adapter hoses* to the vehicle. Be sure the *master connectors* are inserted into the *adapter hoses*.
5. Attach MFX Xtreme's *service hoses* to the *adapter hoses*.

BASIC OPERATION

1. Check vehicle owner's manual for recommended fluid type.
2. Ensure the vehicle's battery terminals are free of any corrosion.
3. Connect the MFX Xtreme battery cables to the vehicle's battery (Refer to control panel).
4. Start the vehicle's engine (vehicle will automatically go into bypass).
 - a. Check transmission fluid level.
 - b. Check for any possible leaks at connection points.
5. Using the "QUANTITY" button, select the amount of fluid required for the particular vehicle (refer to vehicle's owner's manual).
6. Press green "EXCHANGE" button.
7. If the exchange does not begin within 5-10 seconds, and the "Shift to Neutral" light comes on, set the vehicle's emergency brake, and shift the vehicle into Neutral. This will engage the vehicle's transmission pump. Press "EXCHANGE" again.
8. If the exchange does not begin within 5-10 seconds, the "Reverse Machine Hoses" light will come on. To reverse, simply turn vehicle off, switch the hoses (**leave the *master connectors on adapter hoses***), and then restart the vehicle and press "EXCHANGE" again.

9. After the exchange, the machine will automatically shut off (vehicle will automatically return to bypass) and the counter display will indicate the amount of fluid flushed.
10. Check transmission fluid level.
 - a. If the level is low, push the "ADD ATF" button. This will add 6 ounces of fluid (approximately 1/8 of an inch on the dipstick).
 - b. If the level is high, push the "REMOVE ATF" button. This will remove 6 ounces of fluid (approximately 1/8 of an inch on the dipstick).
11. Turn the vehicle's engine off.
12. Disconnect the adapters (leave the *master connectors* attached to the *adapter hoses*), and connect the cooler line to the radiator.
13. Start the vehicle for final inspection.
 - a. Check transmission fluid level.
 - b. Check for any possible leaks at connection points.

IMPORTANT

- **Dispose of used fluid according to environmental laws and regulations.**
- **Read, understand and follow Safety Instructions in the front pages of this manual.**

Draining the Used ATF Fluid

With the battery cables connected to a 12-volt battery source, connect an open-end hose (i.e. #55 w/ master connector attached) to the **red service hose (ATF side)**. Place this hose in your *waste fluid receptacle* (be sure black service hose is disconnected from vehicle and is not connected to an adapter hose) and then select "DRAIN USED TANK" (Option 4).

POWER STEERING FLUID EXCHANGE

NOTE: When in Power Steering mode, the used fluid tank is constantly monitored. To prevent overfilling, if the used fluid tank becomes too full the system will disable the "DRAIN" button on the pendant, and audible alarm will sound, and the "Drain Used Fluid" LED will light up. At this point the "FILL" button on the pendant will remain active, but the "DRAIN" button is disabled.

1. Ensure the vehicle's battery terminals are free of any corrosion.
2. Attach the MFX Xtreme's battery clips to the vehicle's battery terminals.
3. Activate power steering mode by pressing "POWER STEERING" button. The display will show "PS" to indicate it is in power steering mode.
4. Remove cap from power steering fluid reservoir (and screen if applicable).
5. With the vehicle's engine running, place hoses (same length) into power steering fluid reservoir. Use the included dock magnet to hold the hoses in place.
6. Turn the ball valves to the "on" position on both hoses.
7. While watching the fluid level in the reservoir, use the "DRAIN" and "ADD" buttons on the remote pendant to repeatedly drain and add fluid. Repeated purging and adding of fluid will flush the old fluid out of the reservoir.
8. Turn the vehicle's steering wheel all the way to the left, then all the way to the right, and back to center.
9. Check the color of the fluid in the reservoir to ensure a clean exchange. Repeat steps 7 & 8 if necessary.

10. When finished, adjust fluid level, turn the ball valves to the “off” position on both hoses, and remove hoses from power steering fluid reservoir.
11. Turn off vehicle’s engine, and replace reservoir cap and screen (if applicable).
12. To return to ATF mode, either press the “POWER STEERING” button again, or disconnect battery cables, and then reconnect.

TROUBLESHOOTING AND ADDITIONAL HELP

COMMON PROBLEMS / SOLUTIONS

DANGER



- Vent vehicle’s exhaust away from work area.
- Do not breathe exhaust.
- Wear safety goggles and protective clothing, user and bystander.
- Keep the service hoses away from hot or moving engine parts. Hoses can split or burst causing fluid to be expelled.
- Tighten all connections properly. Insufficient or excessive torque can result in fluid leakage.
- Block drive wheels before starting vehicle’s engine to begin an exchange.
- Unless instructed otherwise, set parking brake and put gear selector in park.
- Do not leave a running vehicle unattended.
- Read, understand and follow Safety Instructions in the front pages of this manual.

WARNING



- Wear safety goggles and protective clothing, user and bystander.
- Do not operate the MFX Xtreme in the vicinity of open containers of flammable liquids such as gasoline.
- This machine is equipped to operate on 12-volt DC power only.
- Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.
- Clean battery terminals before hooking the machine’s battery clips to them. During cleaning, keep airborne corrosion from eyes, nose and mouth.
- Keep yourself, clothing, battery cables and service hoses clear of moving parts such as fan blades, belts and pulleys.
- Read, understand and follow Safety Instructions in the front pages of this manual.

CAUTION

- Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.
- The use of any other accessories not specified in this manual may create a hazard.
- Read, understand and follow Safety Instructions in the front pages of this manual.

Problem: System does not power up, or operates erratically.

Solution: Check battery connection. Make sure there are no loose connections, and the machine's battery clips are not reversed. Remove all corrosion from the battery terminals.

Problem: Exchange does not start within 5-10 seconds, and the "Shift to Neutral" LED lights up.

Solution: Set the vehicle's emergency brake and shift the vehicle into Neutral. This will engage the vehicle's transmission pump. Press "EXCHANGE" again.

Problem: Exchange does not start within 5-10 seconds, and the "Reverse Machine Hoses" LED lights up.

Solution: Turn vehicle off, switch the red and black service hoses (leave the *master connectors* on *adapter hoses*), and then restart the vehicle and press "EXCHANGE" again.

Problem: Either New or Used fluid tank will not drain.

Solution: Tanks may not drain through the Black service hose. Make sure tanks are being drained through the RED service hose.

Problem: Machine operation becomes slow.

Solution: Replace filters.

Problem: Exchange is not balanced.

Solution: Check sensor tubes for fluid accumulation. Sensor tubes must be free of any fluid. If fluid is present in sensor tubes, completely drain both tanks (*see Special Functions*), and empty sensor tubes by removing them from the 90° fitting at the bottom of the tank. Make sure tubes are fully inserted back into the fittings.

Problem: Machine stops after starting an exchange.

Solution: Make sure system has been primed. Check filters.

CUSTOMER SERVICE CONTACT INFO

If you are still experiencing problems, call technical support at:

1-800-225-5786

APPENDIX A - HOSES & ADAPTERS

⚠ CAUTION

- Do not replace worn parts individually. If adapter hose fittings become worn, see “Appendix C – Replacement Parts” to order new hoses.
- The use of any other accessories not specified in this manual may create a hazard.
- Read, understand and follow Safety Instructions in the front pages of this manual.

ADAPTER HOSES

 #941801- Hose #51 <i>(Mates with #52)</i>	<i>-Green-</i> 5/8"-18 [F] SAE 45° Flare - Swivel <i>(Chrysler - 1993 and Newer)</i>
 #941802- Hose #52 <i>(Mates with #51)</i>	<i>-Green-</i> 5/8"-18 [M] SAE 45° Flare <i>(Chrysler)</i>
 #941803- Hose #53 <i>(Mates with #57)</i>	<i>-Blue-</i> 5/8"-18 [M] SAE 45° Flare - Swivel <i>(General Motors with 3/8" Tube Diameter Lines - All Years)</i>
 #941805- Hose #55 <i>(Mates with Step Fitting)</i>	<i>-Black-</i> 3/8" Diameter Hose [F] Open End Hose w/Clamp <i>(Import - 1987 and Newer)</i>
 #941807- Hose #57 <i>(Mates with #53)</i>	<i>-Blue-</i> 5/8"-18 [F] SAE 45° Inverted <i>(General Motors with 3/8" Tube Diameter Lines - 1997 and Newer)</i>
 #941808- Hose #58	<i>-Black-</i> 11/16"-18 [M] SAE 90° Inverted <i>(BMW O-Ring Adapter- 1987 and Newer)</i>
 #941809- Hose #59 <i>(Mates with Step Fitting)</i>	<i>-Black-</i> 1/2" Diameter Hose [F] Open End Hose w/Clamp <i>(Import)</i>
 #941813- Hose #63 <i>(Mates with Step Fitting)</i>	<i>-Black-</i> 5/16" Diameter Hose [F] Open End Hose w/Clamp <i>(Import)</i>
 	<i>-Green-</i> 1/4"-18 [M]

#941815- Hose #65
(Mates with #75)

NPTF
(Jeep Cherokee- 1980-1986)



-Red-

1/2"-20 [F]

#941816- Hose #66
(Mates with #67)

SAE 45° Inverted
(Chrysler, Ford Aerostar, Jaguar, Mercedes, & Cadillac-1985 and Newer) * Needs Ford Slide Tool 940140 for Aerostar / Windstar



-Red-

1/2"-20 [M]

#941817- Hose #67
(Mates with #66)

SAE 45°
(Chrysler and Ford)



-Red-

5/8"-18 [M]

#941818- Hose #68
(Mates with #69)

SAE Inverted - Swivel
(Ford With Large Nut Adapter - 1980 and Newer)



-Red-

5/8"-18 [F]

#941819- Hose #69
(Mates with #68)

SAE Inverted
(Ford)



-Blue-

1/2"-20 [M]

#941820- Hose #70
(Mates with #71)

SAE 90° Inverted - Swivel
(General Motors with 5/16" Tube Diameter Lines - All Years)



-Blue-

1/2"-20 [F]

#941821- Hose #71
(Mates with #70)

SAE Inverted
(General Motors)



-Red-

1/2"-20 [F]

#941822- Hose #72
(Mates with #73)

SAE Inverted
(Ford)



-Red-

1/2"-20 [M]

#941823- Hose #73
(Mates with #72)

SAE 90° Inverted - Swivel
(Ford 5/16" Small / Long Nut Adapter - 1980 and Newer)



-Green-

M14 x 1.5 [F]

#941825- Hose #75
(Mates with #65)

Swivel O-ring
(Jeep Cherokee, Ford Escort - 1980-1986)

ADAPTERS



#940328- 1/2" Adapter



#940329- 3/8" Adapter



#940334- 5/16" Adapter



#R-942162- Quick Disconnect Tool



#R-942163- GM Adapter



#R-942165- Step Fitting



#R-940769- Air Pneumatic Female coupling (Master Connector)



#R-940813- Male Nipple (Master Connector)

APPENDIX B - MAINTENANCE

NOTE: *The SUN MFX Xtreme requires a minimal amount of maintenance.*

CAUTION

- Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.
- The use of any other accessories not specified in this manual may create a hazard.
- Read, understand and follow Safety Instructions in the front pages of this manual.

MAINTENANCE PROCEDURES

- ***Replace Canister Filters (on manifold) every 50 exchanges, or as needed***

Remove service door using appropriate allen-wrench. Use a standard filter band clamp tool to unscrew old filters, and replace them with new filters. Make sure new filters are on tight.

- ***Clean Filter Screen (PSX) every 50 exchanges, or as needed***

Remove service door using appropriate allen-wrench. Open filter screen housing by unscrewing the top. Use a sharp pick to remove screen from housing. Clean using degreaser and brush, and blow out with air compressor. Put screen back in housing.

- ***Clean Used Fluid Screen (Located in bottom of recessed hose tray area)***

This helps eliminate surface tension caused by debris and contamination from the air.

Using a sharp pick, remove screen. Clean using degreaser and brush, and blow out with air compressor.

- ***Inspect Sensor Tubes for fluid accumulation***

Remove service door using appropriate allen-wrench, and inspect bottom end of sensor tubes. If either sensor tube contains fluid, drain the appropriate tank **completely** (*see Special Functions*). Remove BOTTOM END of hose and allow oil to drip out. DO NOT detach top end of hose from sensor! When finished, make sure sensor tubes are pushed completely back into fittings.

- ***Wipe Down Exterior using a soft, damp cloth.***

APPENDIX C - PARTS

CAUTION

- Do not replace worn parts individually. If parts become worn, only replace with replacement parts specified by SUN.
- The use of any other accessories not specified in this manual may create a hazard.
- Read, understand and follow Safety Instructions in the front pages of this manual.

REPLACEMENT PARTS

Part #	Description
942155	Shur-flo Pump (130psi)
940551	Shur-flo Pump (Fill PSX)
942130	Shur-flo Pump (Drain PSX)
940461	Manifold
940843	Pressure Switch (Factory preset to 6 psi)
940838	3/2 Solenoid Valve (Size 8)
940839	3/2 Solenoid Valve (Size 8)
940840	3/2 Solenoid Valve (Size 10)
940841	Coil with Spade Connector (Size 8)
940842	Coil with Spade Connector (Size 10)
940832	Electronic Board w/Control Panel & Label
940789	Wire Harness
940775	Hose Kit
941801	Hose #51 (Mates with #52) 5/8"-18 [Female] SAE 45° Flare - Swivel <i>(Chrysler- 1993 and Newer)</i>
941802	Hose #52 (Mates with #51) 5/8"-18 [Male] SAE 45° Flare <i>(Chrysler)</i>
941803	Hose #53 (Mates with #57) 5/8"-18 [Male] SAE 45° Flare - Swivel <i>(General Motors with 3/8" Tube Diameter Lines- All Years)</i>
941805	Hose #55 (Mates with Step Fitting) 3/8" Diameter [Female] Open End Hose w/Clamp <i>(Import- 1987 and Newer)</i>

941807	Hose #57 (Mates with #53) 5/8"-18 [Female] SAE 45° Inverted (General Motors with 3/8" Tube Diameter Lines- 1997 and Newer)
941808	Hose #58 1 1/16"-18 [Male] SAE 90° Inverted (BMW O-Ring Adapter- 1987 and Newer)
941809	Hose #59 (Mates with Step Fitting) 1/2" Diameter [Female] Open End Hose w/Clamp (Import)
941813	Hose #63 (Mates with Step Fitting) 5/16" Diameter [Female] Open End Hose w/Clamp (Import)
941815	Hose #65 (Mates with #75) 1/4"-18 [Male] NPTF (Jeep Cherokee- 1980-1986)
941816	Hose #66 (Mates with #67) 1/2"-20 [Female] SAE 45° Inverted (Chrysler, Ford Aerostar, Jaguar, Mercedes, & Cadillac- 1985 and Newer) * Needs Ford Slide Tool 940140 for Aerostar / Windstar
941817	Hose #67 (Mates with #66) 1/2"-20 [Male] SAE 45° (Chrysler-Ford)
941818	Hose #68 (Mates with #69) 5/8"-18 [Male] SAE Inverted - Swivel (Ford With Large Nut Adapter- 1980 and Newer)
941819	Hose #69 (Mates with #68) 5/8"-18 [Female] SAE Inverted (Ford)
941820	Hose #70 (Mates with #71) 1/2"-20 [Male] SAE 90° Inverted - Swivel (General Motors with 5/16" Tube Diameter Lines- All Years)
941821	Hose #71 (Mates with #70) 1/2"-20 [Female] SAE Inverted (General Motors)
941822	Hose #72 (Mates with #73) 1/2"-20 [Female] SAE Inverted (Ford)
941823	Hose #73 (Mates with #72) 1/2"-20 [Male] SAE 90° Inverted - Swivel (Ford 5/16" Small/Long Nut Adapter- 1980 and Newer)
941825	Hose #75 (Mates with #65) M14 x 1.5 [Female] Swivel O-ring (Jeep Cherokee, Ford Escort- 1980-1986)

940328	1/2 Adapter
940329	3/8 Adapter
940334	5/16 Adapter
942162	Quick Disconnect Tool
942163	GM Adapter
942165	Step Fitting
940785	Service Hose Black
940786	Service Hose Red
940787	Service Hose Black PSX
940788	Service Hose Red PSX
940834	Pendant Assembly
940663	Pendant Switch
940750	Chassis
940751	Console
940572	Top Sink
940573	Tank Red New
940574	Tank Red Used
942113	Tank Cap
940830	Battery Cables Assembly
942150	Screen - Used Fluid
940831	Master Hose Connector
940769	Air Pneumatic Female Coupling (Master Connector)
940813	Male Nipple (Master Connector)
942118	Locking Caster
942137	Caster
940667	Magnet 2"
940676	Pipe Clip
940796	Filter
940833	Service Door with Label
940847	Operations Manual
940844	Adapter Instruction Sheet
940845	Operational Overview/ Hose Chart

ORDERING REPLACEMENT PARTS

To order replacement parts for your SUN MFX Xtreme, call

1-800-225-5786

NORCO INDUSTRIES LIMITED WARRANTY

All Norco Industries products and parts are warranted against defects in materials and workmanship for thirteen months from the date of manufacture. Use items (i.e. service hoses, adapter hoses, and loose fittings) shall be covered for no more than 90 days.

Norco Industries warranty is expressly limited to persons who lease or purchase Norco Industries products or parts for the purpose of resale or use in the ordinary course of the buyer's business. This warranty does not cover any product or part that has been abused, neglected, heated, ground or otherwise altered, used for a purpose other than that which it was intended, or used in a manner inconsistent with any instructions regarding its use.

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