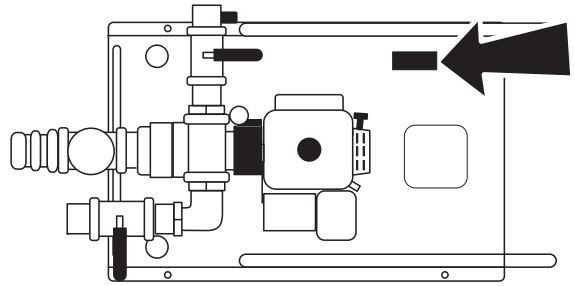
SERVICE

SERIAL NUMBER

Record the serial numbers and date of purchase of your equipment in the spaces below.



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Date of manufacture:	
Date of purchase:	
Fluid mixing unit serial number:	

FM13 - SERVICE **1**
SERIAL NUMBER

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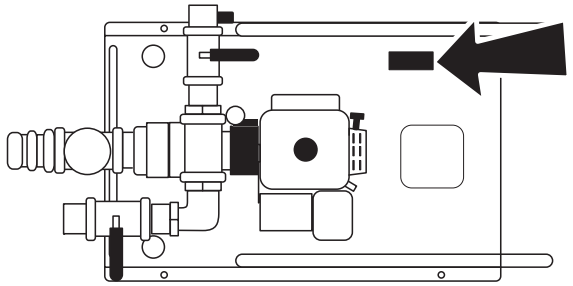

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Date of manufacture:	
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SUPPORT PROCEDURE

Notify your dealer immediately of any malfunction or failure of Ditch Witch equipment.

Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase.

Return damaged parts to dealer for inspection and Warranty consideration if in warranty time frame.

Order genuine Ditch Witch replacement or repair parts from your authorized Ditch Witch dealer. Use of another manufacturer's parts may void warranty consideration.

RESOURCES

Publications

Contact your Ditch Witch dealer for publications and videos covering safety, operation, service, and repair of your equipment.

Ditch Witch Training Center

For information about on-site, individualized training, contact your Ditch Witch dealer.

2
FM13 - SERVICE
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FOREWORD

This manual is an important part of your equipment. It provides safety information and operation instructions to help you use and maintain your Ditch Witch equipment.

Read this manual before using your equipment. Keep it with the equipment at all times for future reference. If you sell your equipment, be sure to give this manual to the new owner.

If you need a replacement copy, contact your Ditch Witch dealer. If you need assistance in locating a dealer, visit our website at **www.ditchwitch.com** or write to the following address:

The Charles Machine Works, Inc.
Attn: Marketing Department
PO Box 66
Perry, OK 73077-0066
USA

The descriptions and specifications in this manual are subject to change. The Charles Machine Works, Inc. reserves the right to improve equipment. Some product improvements may have taken place after this manual was published. For the latest information on Ditch Witch equipment, see your Ditch Witch dealer.

Thank you for buying and using Ditch Witch equipment.

FM13 - FOREWORD *3*

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Operator's Manual
FM 13

Issue No. 1.0/OP-10/00
Part Number 054-072

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by The Charles Machine Works, Inc.,
Perry, Oklahoma

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4 FM13 - FOREWORD

Operator's Manual
FM 13

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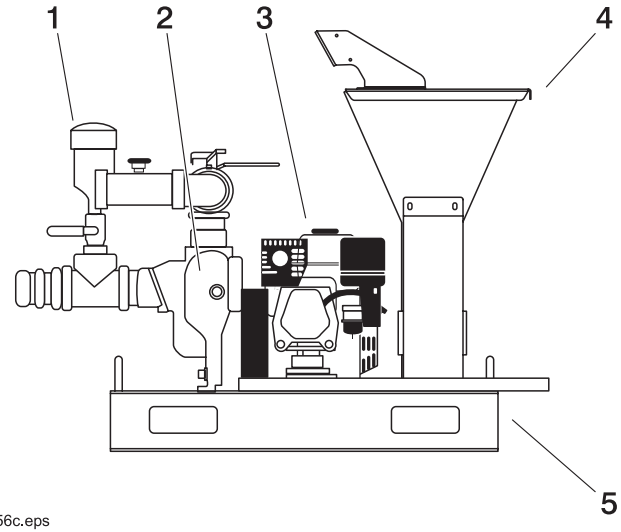
OVERVIEW

The FM13 is a platform mounted venturi mixing system which mixes drilling fluid quickly and efficiently. It transfers drilling fluid for use with directional drilling systems. The FM13 comes with two drilling fluid mixing tank sizes: 500 gal (1892 L) and 1000 gal (3785 L).



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1. liquid chemical hopper
2. pump
3. engine
4. dry chemical hopper
5. platform

FM13 - OVERVIEW 7

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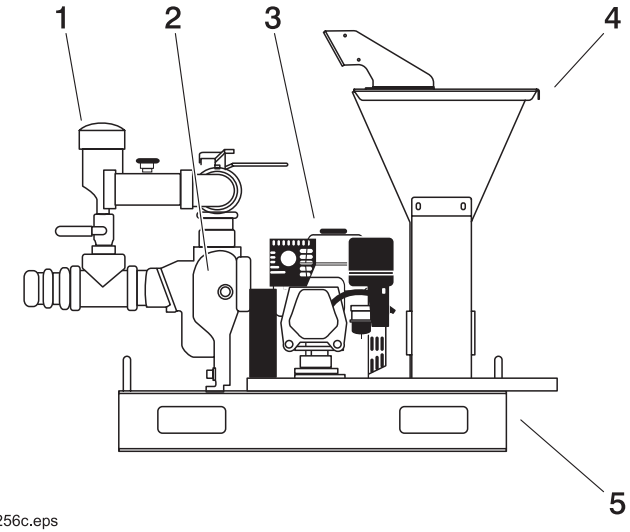

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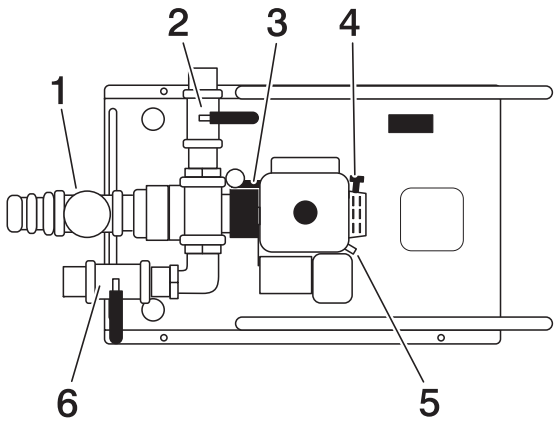
8 FM13 - OVERVIEW

CONTROLS

OVERVIEW



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1. liquid chemical hopper valve
2. discharge valve
3. tachometer/hourmeter
4. rope start
5. throttle
6. mixing jet valve

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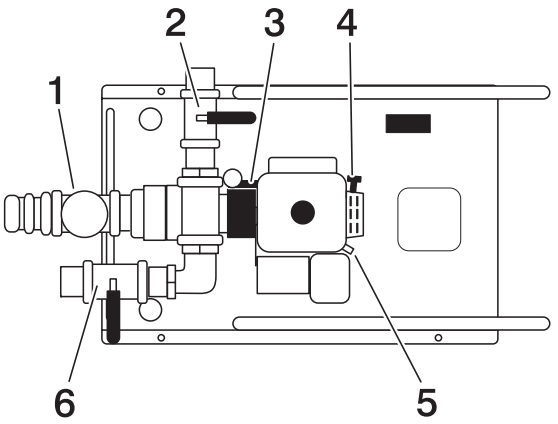
OVERVIEW

CONTROLS

OVERVIEW



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1. liquid chemical hopper valve
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DESCRIPTIONS

Liquid Chemical Hopper Valve

This valve controls the flow of polymers or wetting agents to the mixing system.

- Pull handle up to open hopper valve.
- Push handle down to close hopper valve.

Discharge Valve

This valve controls the flow of drilling fluid from mixing tank to drilling unit.

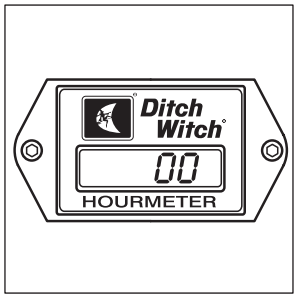
- Pull handle in to open discharge valve.
- Push handle out to close discharge valve.

Tachometer/Hourmeter

This gauge records engine operating time. Use these times to schedule lubrication and maintenance.

When engine is operating, engine rpm is displayed.

When engine is not operating, engine operating time is displayed.



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10 FM13 - CONTROLS
DESCRIPTIONS

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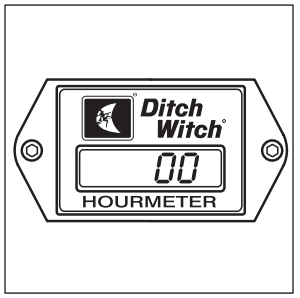

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Rope Start

This rope is used to start engine.

- Pull rope to start engine.

Throttle

This lever adjusts engine speed during mixing process.

- Move lever to the right to increase engine speed.
- Move lever to the left to decrease engine speed.

Mixing Jet Valve

This valve controls the flow of mixing agents from dry hopper to the tank.

- Pull valve handle down to open valve.
- Pull valve handle up to close valve.

FM13 - CONTROLS **11**
DESCRIPTIONS

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12 FM13 - CONTROLS
DESCRIPTIONS

SAFETY

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator’s manual before using equipment.
- Contact One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call. Have all underground pipes and cables located and marked before operating equipment. If you damage a utility, contact utility company.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- Wear personal protective equipment.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins. Safety videos are available from your Ditch Witch dealer.
- Replace missing or damaged safety shields and safety signs.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.
- Do not operate unit where flammable gas is present.
- Contact your Ditch Witch dealer if you have any question about operation, maintenance, or equipment use.

FM13 - SAFETY 13

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ACCESSORIES

Fire Extinguisher

If required, a fire extinguisher should be mounted near the power unit but away from possible points of ignition. The fire extinguisher should always be classified for both oil and electric fires. It should meet legal and regulatory requirements.

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FM13 - SAFETY
ACCESSORIES

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SAFETY ALERT CLASSIFICATIONS

These classifications and the icons defined on the following pages work together to alert you to situations which could be harmful to you, jobsite bystanders or your equipment. When you see these words and icons in the book or on the machine, carefully read and follow all instructions. YOUR SAFETY IS AT STAKE.

Watch for the three safety alert levels: **DANGER**, **WARNING** and **CAUTION**. Learn what each level means.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Watch for two other words: **NOTICE** and **IMPORTANT**.

NOTICE can keep you from doing something that might damage the machine or someone's property. It can also alert you against unsafe practices.

IMPORTANT can help you do a better job or make your job easier in some way.

FM13 - SAFETY **15**
SAFETY ALERT CLASSIFICATIONS

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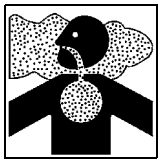
SAFETY ALERTS

⚠ DANGER Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.



⚠ DANGER Deadly gases. Lack of oxygen or presence of gas will cause sickness or death. Provide ventilation.


⚠ WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.


⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

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FM13 - SAFETY
SAFETY ALERTS

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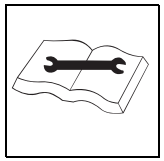
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

WARNING Fire or explosion possible. Fumes could ignite and cause burns. No smoking, no flame, no spark.

WARNING Moving traffic - hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.



WARNING Improper control function could cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.

CAUTION Hot parts may cause burns. Do not touch until cool.

FM13 - SAFETY 17
SAFETY ALERTS

WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

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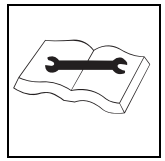

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⚠ CAUTION Exposure to high noise levels may cause hearing loss. Wear hearing protection.

⚠ CAUTION Fall possible. Slips or trips may result in injury. Keep area clean.

⚠ CAUTION Improper handling or use of chemicals may result in illness, injury, or equipment damage. Follow instructions on labels and in material safety data sheets (MSDS).

18
FM13 - SAFETY
SAFETY ALERTS

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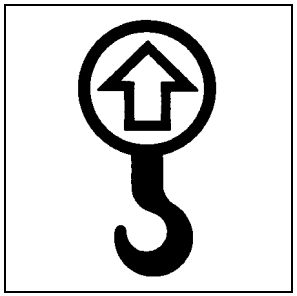
LIFT

WARNING Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

LIFT

Points

Lifting points are identified by lifting decals. Lifting at other points is unsafe and can damage machinery.

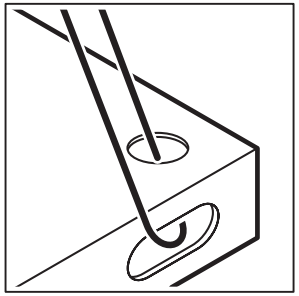


Platform

Lift platform by attaching chains to designated lift points on sides of platform.

Bolt platform to truck or trailer bed using provided holes.

If mounting without a platform, ensure coupler is covered.



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FM13 - LIFT 19
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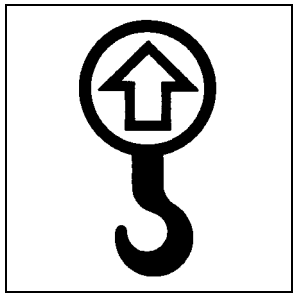

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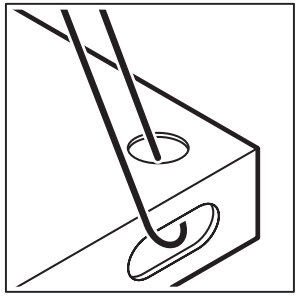

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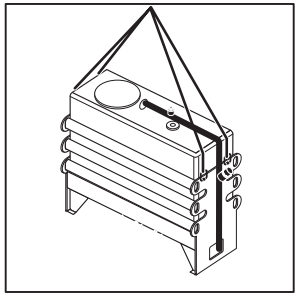
Tank

500 gal (1893 L) tank

Lift fluid tank by attaching sling to lift points located on side of tank.

IMPORTANT: Empty tank before lifting.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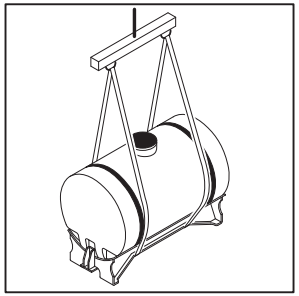
1000 gal (3785 L) tank

Lift fluid tank by attaching sling to lift points located on side of tank.

IMPORTANT: Empty tank before lifting.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20 FM13 - LIFT
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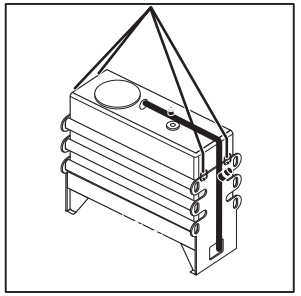
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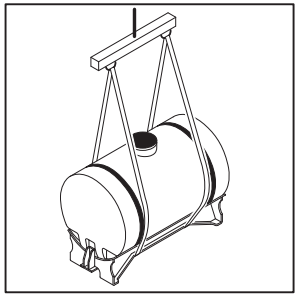
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PREPARATION

CHECK EQUIPMENT

Check the following before starting each day's work. Refer to **LUBRICATION AND MAINTENANCE** for additional information and locations.

- General appearance of equipment
- Safety sign location and readability
- All guard and shield locations. Replace if missing or worn.
- Condition of all wear items such as strainers, filters, hoses, and clamps
- Drilling fluid hoses, and electric cables for signs of leakage, wear, or other damage.
- Engine crankcase oil level. Keep oil level at the highest line on dipstick. Do not overfill.
- Fuel level. Fuel tank should be filled at the end of the day to reduce condensation.
- All nuts and bolts. Tighten if necessary.

FM13 - PREPARATION *21*
CHECK EQUIPMENT

PREPARATION

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- All nuts and bolts. Tighten if necessary.

SELECT DRILLING FLUID

For productive drilling and equipment protections, use these recommended Baroid® products, availiable from your Ditch Witch Dealer.

- Quik-Gel™ dry powder bentonite (p/n 259-804)
- E-Z Mud™ liquid polymer (p/n 259-805)
- Liqui-Trol™ liquid polymer suspension (p/n 259-808)
- Quik-Trol™ dry powder polymer (p/n 259-809)
- Bore-Gel™ drilling fluid (p/n 259-807)
- Con-Det™ water-soluble cleaning solution (p/n 259-810)

Guidelines

Match drilling fluid to soil type. Although specific conditions at each josbsite vary, use the following guidelines when selecting a drilling fluid.

If soil is...	**use...**
Smooth, flowing sand	Bentonite + medium chain polymer
Coarse sand or light soil	Bentonite
Heavy clay	Long chain polymer
Swelling clay	Long chain polymer
Rock	Bore-Gel

For recommended mixture to reach desired drilling fluid viscosity or thickness, contact your Ditch Witch Dealer.

22 FM13 - PREPARATION
SELECT DRILLING FLUID

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For recommended mixture to reach desired drilling fluid viscosity or thickness, contact your Ditch Witch Dealer.

Bentonite

Bentonite is a dry powder. When properly mixed with water, it cakes on bore walls, lubricating the bore, keeping it open, and holding fluid in the bore.

Some things to remember when mixing bentonite:

- Use clean water free of salt, calcium, or excessive chlorine.
- Use water with pH level between 7.5 and 10.
- Do not use bentonite containing sand.
- Mix bentonite thoroughly or it will settle in tank.
- Do not mix bentonite to a funnel viscosity of over 50.

For information on measuring funnel viscosity, read “Measuring Funnel Viscosity” in **OPERATION**.

Polymer

This drilling fluid additive provides excellent lubrication and increases viscosity in average soils and heavy clay. In swelling clay, polymer can reduce swelling that traps pipe in the bore.

There are two types of polymer:

- Long chain such as Baroid EZ-Mud
- Medium chain such as Baroid Quik-Trol

Mixtures

Bentonite does not mix well in water containing polymer. To use both, mix bentonite first, then add polymer.

Bore-Gel contains premixed bentonite, polymer, and soda ash. Use 15 lb/100 gal (6.8 kg/378.5 L) in normal drilling conditions, up to 45 lb/100 gal (20.4/378.5 L) in sand or gravel and up to 50 lb/100 gal (22.6/378.5 L) in rock.

FM13 - PREPARATION **23**
SELECT DRILLING FLUID

Bentonite

Bentonite is a dry powder. When properly mixed with water, it cakes on bore walls, lubricating the bore, keeping it open, and holding fluid in the bore.

Some things to remember when mixing bentonite:

- Use clean water free of salt, calcium, or excessive chlorine.
- Use water with pH level between 7.5 and 10.
- Do not use bentonite containing sand.
- Mix bentonite thoroughly or it will settle in tank.
- Do not mix bentonite to a funnel viscosity of over 50.

For information on measuring funnel viscosity, read “Measuring Funnel Viscosity” in **OPERATION**.

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Planning Drilling Fluid Requirements

1. Determine drilling conditions and choose appropriate drilling fluid mix.
2. Estimate amount of supplies needed and check availability.
   - Drilling fluid
   - Water supply. If more water than can be carried with the unit will be needed, arrange to transport additional water.
   - Bentonite and/or polymer
3. Check water quality.
   - Visually perform pH test on water. If pH is below 5.0, add 1 cup (.25 L) soda ash per tank. Test and repeat unitl pH is between 7.5 and 10.

24 FM13 - PREPARATION
SELECT DRILLING FLUID

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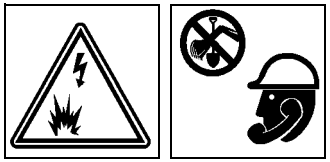
OPERATION

This section covers basic operation. For questions about specific situations, contact your Ditch Witch dealer.



⚠WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

NOTICES:

- Wear personal protective equipment including hard hat, safety eye wear, and hearing protection.
- Do not wear jewelry or loose clothing.

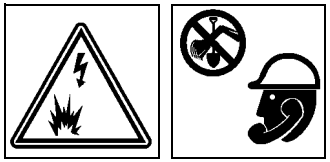
MIX DRILLING FLUID

1. Fill fluid tank with water.
2. Start engine and run at full throttle.
3. Open valve to mixing jets.
4. Check that metering plate located inside of dry chemical hopper is seated.
5. Open bentonite sack using bag ripper located inside dry chemical hopper and shake bentonite into hopper. Polymer and other liquid additives should be added at the liquid chemical hopper.
6. Remove liquid chemical hopper inlet cap, pour in desired amount of additive and then open valve.
7. Mix well.

FM13 - OPERATION **25**
MIX DRILLING FLUID

OPERATION

This section covers basic operation. For questions about specific situations, contact your Ditch Witch dealer.



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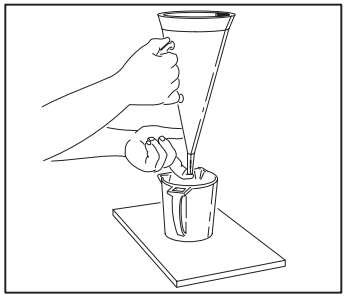
Measuring Funnel Viscosity

Viscosity is the measure of internal resistance of a fluid to flow; the greater the resistance, the higher the viscosity. Viscosity of drilling fluids must be controlled.

To determine viscosity, you will need a Marsh funnel and a measuring cup, available from your Ditch Witch Dealer.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1. Take a fresh sample from the drilling fluid tank. The sample must be more than 1 qt (.95 L).
2. Hold funnel over 1 qt (.95 L) measuring cup and place a finger over outlet.
3. Pour test sample into top of funnel through screen to ensure no large particles enter the funnel that might alter the measurement. Fill to screen.
4. Remove finger and time flow. Count the number of seconds necessary for 1 qt (.95 L) of fluid to pass through funnel. The number of seconds is the viscosity.

26
FM13 - OPERATION
MIX DRILLING FLUID

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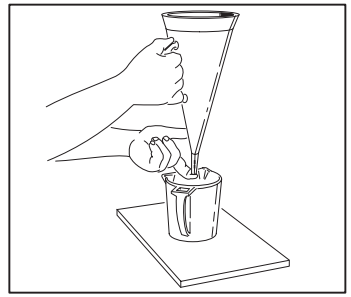
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PUMP FLUID TO DRILLING UNIT

DANGER Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.

NOTICE: If electrical strike occurs while fluid hose is connected to drilling unit, fluid system will also become electrified.

1. Connect mixing pump hose to drilling unit.
2. Open discharge valve of mixing pump and adjust throttle to give desired flow rate to drilling unit (approximately half throttle).
3. Adjust mixing jet valve.

FM13 - OPERATION *27*
PUMP FLUID TO DRILLING UNIT

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3. Adjust mixing jet valve.

28 FM13 - OPERATION

LUBRICATION AND MAINTENANCE

WARNING Fluid under pressure can pierce skin and cause injury or death. Stay away.

NOTICES:

- Before using system, check that all connections are tight and all lines are undamaged.
- Fluid leaks can be hard to detect. Use a piece of cardboard or wood, rather than hands, to search for leaks.
- Wear protective clothing and eye protection.
- If you are injured, seek immediate medical attention.

WARNING Crushing weight. If load falls or moves, death or serious injury can result. Use proper procedures and equipment or stay away.

NOTICE: Unless otherwise instructed, all service in this chapter should be performed with the engine(s) shut off.

FM13 - LUBRICATION AND MAINTENANCE 29

LUBRICATION AND MAINTENANCE

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OVERVIEW

Interval	Task	Page no.
daily	check engine oil	31
50 hours	grease pump	32
100 hours	change engine oil	31
	change air filter element	32

Lubricant chart:	
GEO	Gasoline engine oil (see chart for appropriate SAE viscosity rating) meeting API engine service classification SD
NLGI #1	Polyurea based NLGI #1

30 FM13 - LUBRICATION AND MAINTENANCE
OVERVIEW

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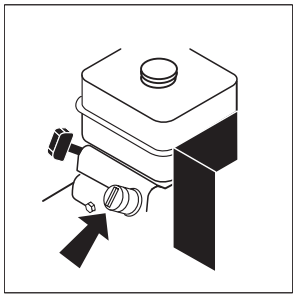
ENGINE OIL

Check

Check engine oil at dipstick before each operation. Add GEO at fill neck as necessary to keep oil level at highest line on dipstick.



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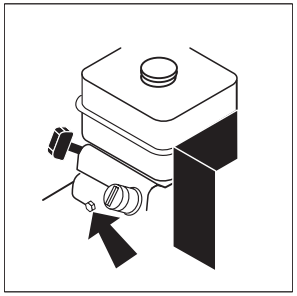
Change

- Change oil every 100 hours with GEO.
- Pull drain plug and drain crankcase while oil is still warm.
- Refill at fill neck with 2.3 pt (1.1 L) of GEO.



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FM13 - LUBRICATION AND MAINTENANCE 31
ENGINE OIL

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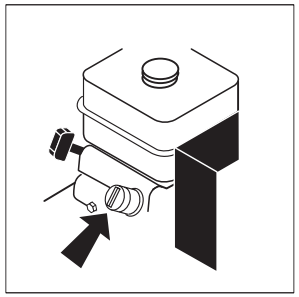

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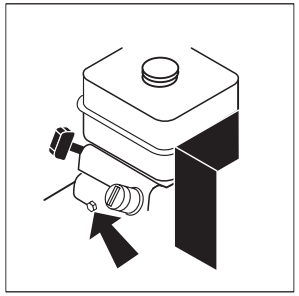

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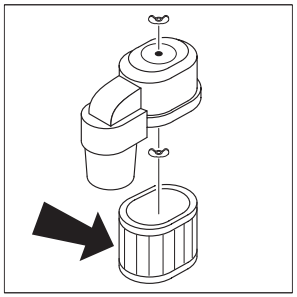
AIR FILTER

Change foam air filter element every 100 hours. Do not allow dirt to fall into carburetor.



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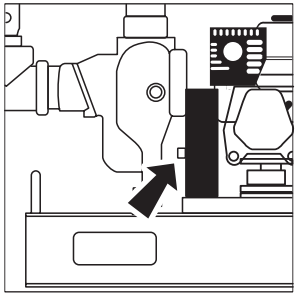
PUMP

Lube grease fitting with NLGI #1 every 50 hours.

Grease cavity is full when grease escapes from grease cylinder relief valve.



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32 FM13 - LUBRICATION AND MAINTENANCE
AIR FILTER

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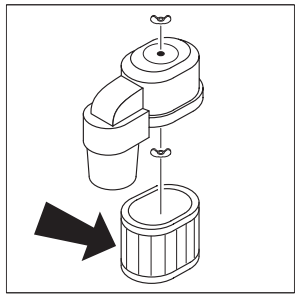

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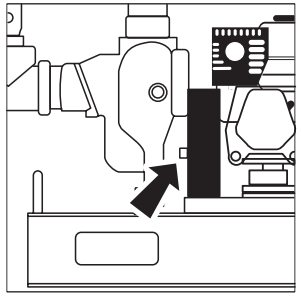

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TROUBLESHOOTING

The FM13 has a metering plate in the bottom of the dry chemical hopper sized to match material flow to fluid volume going through venturi. This plate helps each unit maintain the approximate time required to feed 50 lb (22.7 kg) of material into tank when engine is running at full speed. Changing material flow rate by removing or resizing plate will affect mixing results.

Problem	Possible solutions
Slow feed rate from hopper	Run engine at full speed
	Place control valves in recommended mixing positions.
	Clear obstructions from metering plate and check that screen is in place.
	Remove build-up from venturi chamber.
	Clean plugged hoses and fittings. Repair or replace damaged hoses and fittings.
	Remove hopper from venturi tee, clean off old sealant, place liberal bead of silicone on bottom of hopper, and replace hopper on tee.
	See pump instructions for procedure on checking flow.
Poor drilling fluid mix characteristics	Test water pH and treat if necessary (see **PREPARATION** for instructions).
Clumps in drilling fluid tank	Check feed rate.

FM13 - TROUBLESHOOTING **33**
PUMP

TROUBLESHOOTING

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Poor drilling fluid mix characteristics	Test water pH and treat if necessary (see **PREPARATION** for instructions).
Clumps in drilling fluid tank	Check feed rate.

Problem	Possible solutions
Low yield properties	Check feed rate.
	Make sure screen is in strainer.
	Check water pH.
	Try different brand of drilling fluid.
	Add polymer to drilling fluid tank only after bentonite has been yielded out.
Hourmeter does not work.	Replace hourmeter. Contact your local Ditch Witch dealership for replacement parts. • Mount with provided screws. Plastic magnets, velcro or double sided tape will also work. • Wrap pick-up wire around spark plug wire no more than four times. Ensure that pick-up wire does **not** come in contact with spark plug and is not near a heat source (i.e. muffler). • Attach ground wire to an engine block bolt. **Important:** Ensure that hourmeter is not placed too close to a sound source other than the engine. Failure to do so will result in inaccurate readings.

34 FM13 - TROUBLESHOOTING
PUMP

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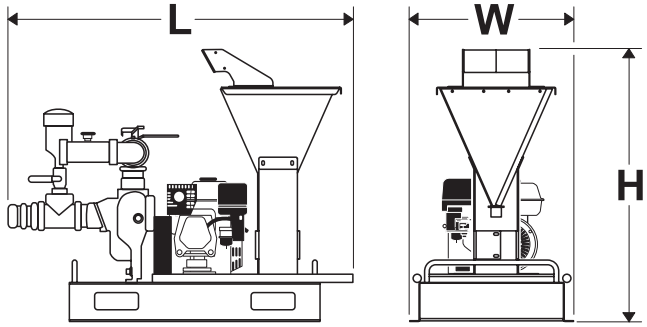
SPECIFICATIONS

FM13



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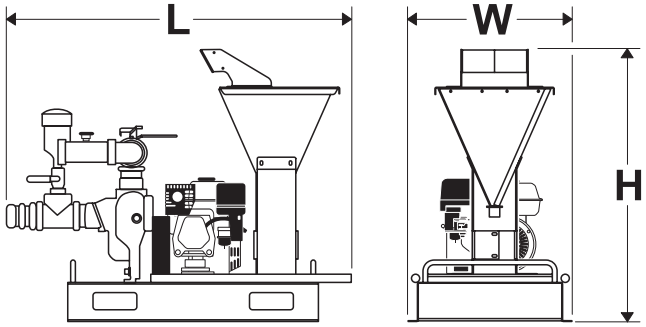
Dimensions	**U.S.**	**Metric**
Length	60 in	1.5 m
Height	43 in	1.1 m
Width	26 in	660 mm
Weight	390 lb	177 kg
Drilling fluid system	**U.S.**	**Metric**
Maximum flow rate at 26 viscosity	300 gpm	1135 L/m
Mixing hopper capacity	1.0 cu ft	28 L
Liquid chemical hopper capacity	1.0 qt	.9 L
Drilling fluid/mixing tank	500/1000 gal	1892/3785 L
Mixing time for 50 lb (22.7 kg)	1 min	1 min
Mixing time for 100 lb (45 kg)	2 min	2 min
Fluid capacites	**U.S.**	**Metric**
Fuel tank	1.6 gal	6.1 L
Engine oil	2.3 pt	1.1 L

FM13 - SPECIFICATIONS **35**
FM13

SPECIFICATIONS

FM13



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Fluid capacites	**U.S.**	**Metric**
Fuel tank	1.6 gal	6.1 L
Engine oil	2.3 pt	1.1 L

Engine	U.S.	Metric
Engine: Honda GX390		
Fuel: gasoline		
Cooling medium: air		
Number of cylinders: one		
Displacement	23.7 cu in	389 cu cm
Bore	3.53 in	90 mm
Stroke	2.52 in	64 mm
Gross power @ 3600 rpm	13 hp	9.7 kW

Noise Level:

Operator 89 dbA sound pressure per ISO 6394.

Exterior 103 dbA sound power per ISO 6393.

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FM13

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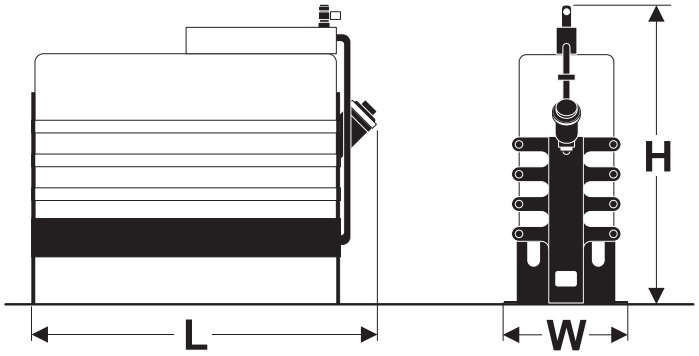
DRILLING FLUID TANKS

500 gal (1893 L) tank



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Dimensions	U.S.	Metric
Length	83 in	2.1 m
Height	84 in	2.1 m
Width	32 in	800 mm
Weight (empty)	450 lb	204 kg
Weight (full of water)	4625 lb	2098 kg

FM13 - SPECIFICATIONS 37
DRILLING FLUID TANKS

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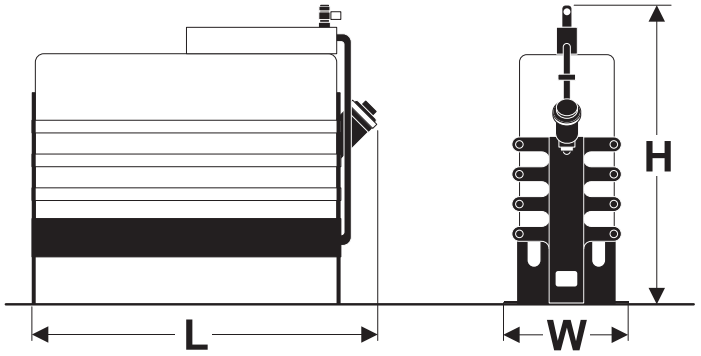
500 gal (1893 L) tank



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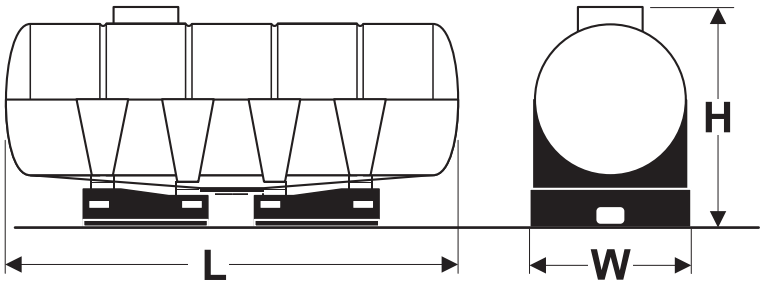

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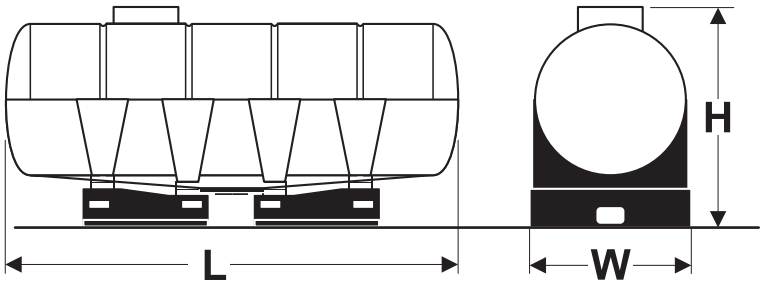
Dimensions	U.S.	Metric
Length	148 in	3.8 m
Height	79 in	2 m
Width	50 in	1.3 m
Weight (empty)	1350 lb	612 kg
Weight (full of water)	9700 lb	4400 kg

38
FM13 - SPECIFICATIONS
DRILLING FLUID TANKS

1000 gal (3786 L) tank



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WARRANTY

Ditch Witch Equipment and Parts Limited Warranty Policy

Subject to the limitations and exclusions herein, free replacement parts will be provided at any authorized Ditch Witch dealership for any Ditch Witch equipment or parts manufactured by The Charles Machine Works, Inc. (CMW) that fail due to a defect in material or workmanship within one (1) year of first commercial use (Exception: 2 years for all SK500 attachments). Free labor will be provided at any authorized Ditch Witch dealership for installation of parts under this warranty during the first year following initial commercial use of the serial-numbered Ditch Witch equipment on which it is installed.

Exclusions from Product Warranty

- Wear-related failure of parts subject to ground contact including, but not limited to, digging teeth, digging chains, sprockets, backhoe buckets, plow blades, drill pipe, drill bits, backreamers, and swivels.
- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse, abuse, improper installation, alteration, neglect, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All engines and engine accessories (these are covered by original manufacturer's warranty).
- Tires, belts, and other parts which may be subject to another manufacturer's warranty (such warranty will be available to purchaser).
- All implied warranties not expressly stated herein, including any warranty of fitness for a particular purpose and merchantability.

IF THE PRODUCTS ARE PURCHASED FOR COMMERCIAL PURPOSES AS DEFINED BY THE UNIFORM COMMERCIAL CODE, THEN THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF AND THERE ARE NO IMPLIED WARRANTIES OF ANY KIND WHICH EXTEND TO A COMMERCIAL BUYER. ALL OTHER PROVISIONS OF THIS LIMITED WARRANTY APPLY INCLUDING THE DUTIES IMPOSED.

FM13 - WARRANTY 39

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- Wear-related failure of parts subject to ground contact including, but not limited to, digging teeth, digging chains, sprockets, backhoe buckets, plow blades, drill pipe, drill bits, backreamers, and swivels.
- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse, abuse, improper installation, alteration, neglect, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All engines and engine accessories (these are covered by original manufacturer's warranty).
- Tires, belts, and other parts which may be subject to another manufacturer's warranty (such warranty will be available to purchaser).
- All implied warranties not expressly stated herein, including any warranty of fitness for a particular purpose and merchantability.

IF THE PRODUCTS ARE PURCHASED FOR COMMERCIAL PURPOSES AS DEFINED BY THE UNIFORM COMMERCIAL CODE, THEN THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF AND THERE ARE NO IMPLIED WARRANTIES OF ANY KIND WHICH EXTEND TO A COMMERCIAL BUYER. ALL OTHER PROVISIONS OF THIS LIMITED WARRANTY APPLY INCLUDING THE DUTIES IMPOSED.

Ditch Witch products have been tested to deliver acceptable performance in most conditions. This does not imply they will deliver acceptable performance in all conditions. Therefore, to assure suitability, products should be operated under anticipated working conditions prior to purchase.

Defects will be determined by an inspection within thirty (30) days of the date of failure of the product or part by CMW or its authorized dealer. CMW will provide the location of its inspection facilities or its nearest authorized dealer upon inquiry. CMW reserves the right to supply remanufactured replacements parts under this warranty as it deems appropriate.

Extended warranties are available upon request from your local Ditch Witch dealer or CMW.

Some states do not allow exclusion or limitation of incidental or consequential damages, so above limitation of exclusion may not apply. Further, some states do not allow exclusion of or limitation of how long an implied warranty lasts, so the above limitation may not apply. This limited warranty gives product owner specific legal rights and the product owner may also have other rights which vary from state to state.

For information regarding this limited warranty, contact CMW's Product Support department, P.O. Box 66, Perry, OK 73077-0066, or contact your local Ditch Witch dealer.

First version: 1/91; Latest version: 1/03

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A Note To Ditch Witch Equipment Owners:

If your equipment was purchased through a Ditch Witch dealer, there is no need to read further.

However, if you purchased from any other source, please fill out the form on the reverse side and return it to us.

This will enable you to receive updates on this equipment as well as information on new products of interest.

Thanks for using Ditch Witch equipment.

(Please Fold Along This Line And Seal At Bottom With Tape)

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO 23 PERRY OKLAHOMA

POSTAGE WILL BE PAID BY

The Charles Machine Works, Inc.
P.O. Box 66
Perry, Oklahoma 73077-9989

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Ditch Witch® Registration Card

Please Type or Print All Information

Purchaser's Company Name

Attention

Street Address or P.O. Box

City County

State Zip Nation

( )

Phone Number With Area Code

Model Serial Number

Attachments/Accessories Serial Numbers

Attachments/Accessories Serial Numbers

Attachments/Accessories Serial Numbers

Name of Ditch Witch Dealership

Your Signature

Ditch Witch® Registration Card

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Your Signature

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