SAMSON® Samson Corp. Swannanoa, NC-USA	**1060 DIGITAL FLUID CONTROLLER – SINGLE PRODUCT** **1060 REGULADOR DEL LÍQUIDO DE DIGITAL - SOLO PRODUCTO** **1060 CONTRÔLEUR DE FLUIDE DE DIGITAL - PRODUIT SIMPLE**	
	Parts and Technical Service guide Guía de servicio técnico y recambio Guide d'instructions et pièces de rechange	Ref.: **1060** **Single Product DFC** **24VAC System**

Description/ Descripción/ Description

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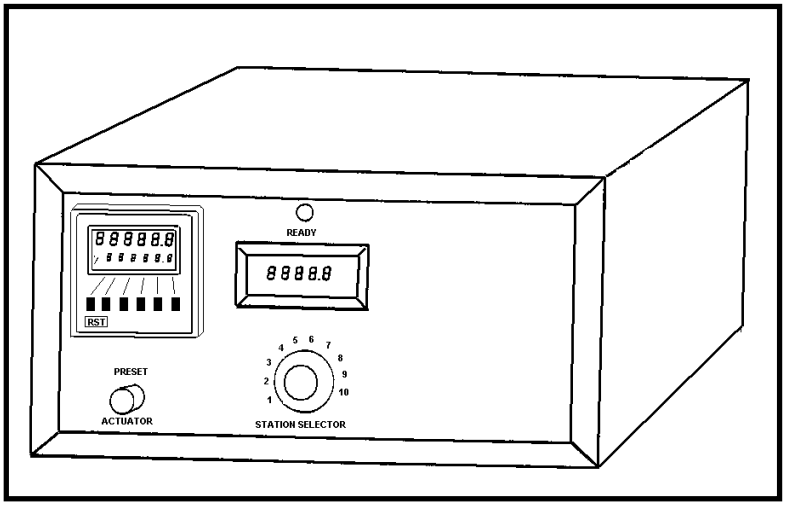
Low Voltage (24VAC) Digital Fluid Controller for Single product usage. The DFC Inventory Control System is designed for use as a central positive control of a variety of fluids such as Motor Oil, Gear Oil, and ATF. Includes both a pre-set counter and a non-resettable totalizer. This unit is capable of dispensing pre-set amounts of fluid to any one of the ten available stations.



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Regulador flúido Digital de la baja tensión (24VAC) para el solo uso del producto. El sistema de control de inventario de DFC se diseña para el uso como un control positivo central de una variedad de líquidos tales como aceite del motor, aceite del engranaje, y ATF. Incluyes un contador preestablecido y un totalizador no-restaurable. Esta unidad es capaz de dispensar cantidades preestablecidas de líquido de las diez estaciones disponibles.

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Contrôleur liquide de Numérique de la basse tension (24VAC) pour l'utilisation simple de produit. Le système de vérification de l'inventaire de DFC est conçu pour l'usage comme une commande positive centrale d'une variété de fluides tels que l'huile de moteur, l'huile de vitesse, et ATF. Incluses un compteur préréglé et un totalisateur non-réglable. Cette unité est capable de distribuer des quantités préréglées de fluide à n'importe quel un des dix stations disponibles.

Operation/ Modo de empleo/ Mode d'emploi

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- Determine the amount of product to be dispensed.
- Press and hold the 'PRESET ACTUATOR' button located in the lower left corner of the face of the unit.
- While continuing to hold the 'PRESET ACTUATOR' button use the numbered buttons located under the preset display to enter the amount desired. Button #1 is tenths, #2 is ones, #3 is tens, etc.
- When the correct amount is shown on the bottom section of the preset display, release the 'PRESET ACTUATOR' button.
- Rotate the 'STATION SELECTOR' knob to the desired station.
- Simultaneously depress the 'PRESET ACTUATOR' button and the 'RST' button (RST is located at the lower left corner on the face of the preset display) to energize the selected station.
- The DFC ready light (located above the totalizing counter) will illuminate, the upper section of the preset display will reset to 0.0, and the selected station is ready to dispense product.
- The pre-set meter counts UP as the product is dispensed. When the pre-set amount has been dispensed, the ready light will extinguish and the solenoid at the station will close. The unit is ready for the next dispense operation.
- If the technician does not take the entire authorized dispense, the ready light will not extinguish. The unit can still be reset for the next dispense following the above procedure.
- This unit will accept a preset of 0.0 but this will not cancel the dispense.

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- Determine la cantidad de producto que se dispensará.
- Presione y sostenga el "PRESET ACTUATOR' abotone situado en la esquina izquierda más baja de la cara de la unidad.
- Mientras que continúa sosteniendo el 'PRESET ACTUATOR' el uso del botón los botones numerados situados debajo de preestableció la exhibición para incorporar la cantidad deseada. El botón #1 es un décimo, #2 es unos, #3 es diez, etc.
- Cuándo la cantidad correcta se demuestra en la sección inferior del preestableció la exhibición, lanza el 'PRESET ACTUATOR' botón.
- Rote el 'STATION SELECTOR' perilla a la estación deseada.
- Presione simultáneamente el 'PRESET ACTUATOR' abotone y el 'RST' abotone (RST está situado en la esquina izquierda más baja en la cara del preestableció la exhibición) para energizar la estación seleccionada.
- La luz lista (situada sobre el contador que totaliza) iluminará, la sección superior del preestableció la exhibición reajustará a 0,0, y la estación seleccionada es lista dispensar el producto.
- El metro preestablecido cuenta PARA ARRIBA mientras que se dispensa el producto. Cuando se ha dispensado la cantidad preestablecida, la luz lista extinguirá y el solenoide en la estación se cerrará. La unidad es lista para el siguiente dispensa la operación.
- Si el técnico no toma el entero autorizado dispense, la luz lista no extinguirá. La unidad se puede todavía reajustar para el siguiente dispensa después del procedimiento antedicho.
- Esta unidad no aceptará preestableció de 0,0.

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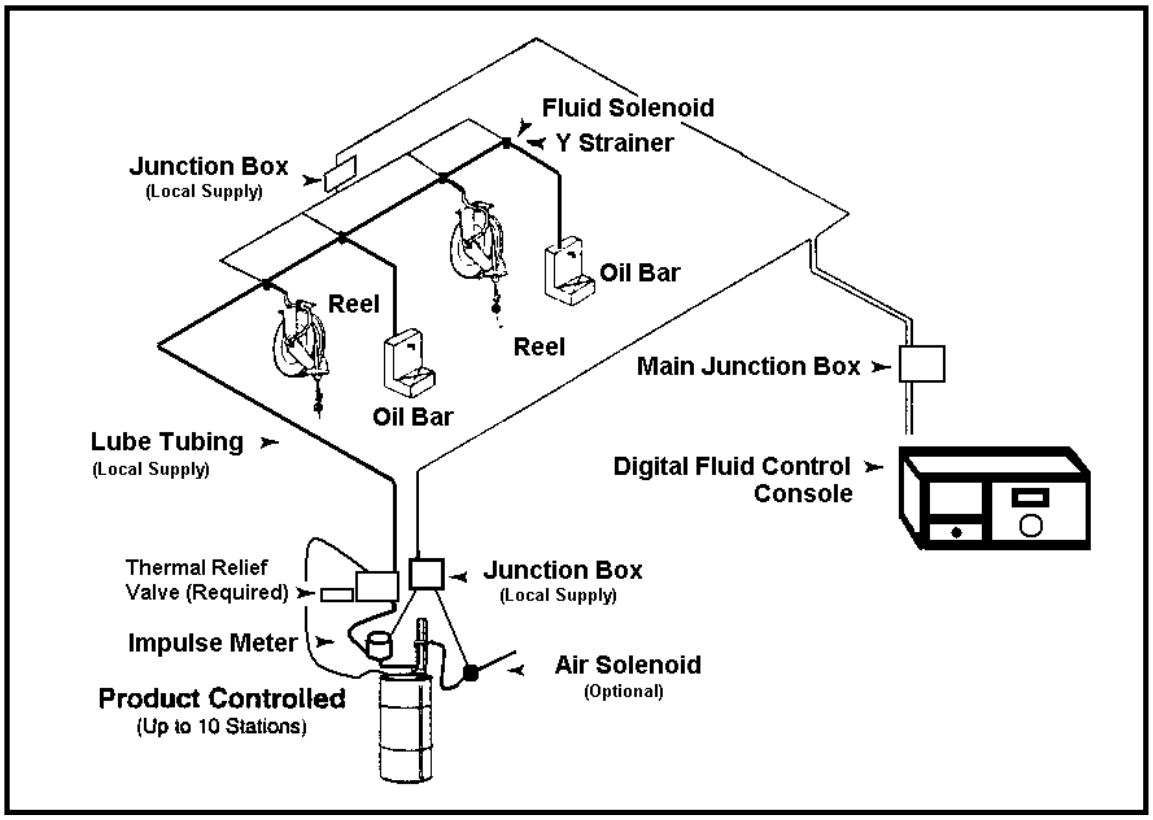
- Déterminez la quantité de produit à distribuer.
- Serrez et tenez le 'PRESET ACTUATOR' boutonnez situé dans le coin gauche inférieur du visage de l'unité.
- Tout en continuant à tenir-le 'PRESET ACTUATOR' l'utilisation de bouton les boutons numérotés situés sous a préréglé l'affichage pour écrire la quantité désirée. Le bouton #1 est un dixième, #2 est ceux, #3 est des dix, etc...
- Quand est-ce que la quantité correcte est-elle montrée sur la section inférieure du a préréglé l'affichage, libèrent-le 'PRESET ACTUATOR' bouton.
- Tournez-le 'STATION SELECTOR' bouton à la station désirée.
- Enfoncez simultanément le 'PRESET ACTUATOR' boutonnez et le 'RST' boutonnez (RST est situé au coin gauche inférieur sur le visage du a préréglé l'affichage) pour activer la station choisie.
- La lumière prête (située au-dessus du compteur de totalisation) illuminera, la section supérieure du a préréglé l'affichage remettra à zéro à 0,0, et la station choisie est prête à distribuer le produit.
- Le mètre préréglé compte VERS LE HAUT pendant que le produit est distribué. Quand la quantité préréglée a été distribuée, la lumière prête s'éteindra et le solénoïde à la station se fermera. L'unité est prête pour le prochain distribuent l'opération.
- Si le technicien ne prend pas l'entier autorisé distribuez, la lumière prête ne s'éteindra pas. L'unité peut encore être remise à zéro pour le prochain distribuent après le procédé ci-dessus.
- Cette unité n'acceptera pas a préréglé de 0,0.

Typical Installation/Instalación Típica



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First, determine the location for all of the System components and make a simple map of the shop showing these locations:

- ✓ **DFC Console** Typically mounted on or at the parts service counter.
- ✓ **Impulse Meter** Located at the fluid outlet of the pump.
- ✓ **Thermal Relief Valve** (Required) Located immediately downstream of the Impulse Meter at the fluid outlet of the pump.
- ✓ **Air Solenoid** (Optional) Located at the air inlet of the pump.
- ✓ **Fluid Solenoid(s)** Located at each dispense point – assign station numbers on map.
- ✓ **Y Strainer(s)** Located at each dispense point (Station).
- ✓ **Ready Light(s)** (Optional) Located at each dispense point (Station).

Second, choose the cable. For cable runs under 400 feet use 18 gauge stranded multi-conductor, for runs over 400 feet and up to 600 feet use 16 gauge stranded multi-conductor. Use the indicated Belden numbers or an equivalent product.
△CAUTION: Do not use 'Telephone Cable' unless the total run is less than 50 feet.

Number of Dispense Points (Stations)					
With AIR Solenoid	**Without AIR Solenoid**	**Wire Size**	**Belden #**	**# Conductors**	**MAX Run**
N/A	Up to Two	18-Stranded	**8465**	5	400 Feet
Up to Two	Up to Four	18-Stranded	**8467**	7	400 Feet
Up to Four	Up to Six	18-Stranded	**8469**	9	400 Feet
Up to Seven	Up to Nine	18-Stranded	**8466**	12	400 Feet
Up to Ten	Up to Twelve	18-Stranded	**8468**	15	400 Feet
N/A	One	16-Stranded	**8620**	4	600 Feet
Up to Two	Up to Four	16-Stranded	**8621**	7	600 Feet
Up to Seven	Up to Nine	16-Stranded	**8622**	12	600 Feet

Third, connect the wires using the following color codes for the pigtail (provided) of the DFC:

DFC Pigtail Cable Color ⇔ Belden Cable Color		Connection
Solid Red		Impulse Meter – Not Polarized
Red/White Tracer		Impulse Meter – Not Polarized
Solid Black		Common Ground for all Fluid Solenoids and Ready Lights
Green/Black Tracer		Station #1 Solenoid and Ready Light
Orange/Black Tracer		Station #2 Solenoid and Ready Light
White/Black Tracer		Station #3 Solenoid and Ready Light
Red/Black Tracer		Station #4 Solenoid and Ready Light
Blue/Black Tracer		Station #5 Solenoid and Ready Light
Solid Blue		Station #6 Solenoid and Ready Light
Solid White		Station #7 Solenoid and Ready Light
Solid Orange		Station #8 Solenoid and Ready Light
Solid Green		Station #9 Solenoid and Ready Light
Black/White Tracer		Station #10 Solenoid and Ready Light
Green/White Tracer		Optional Air Solenoid
Blue White Tracer		Optional Air Solenoid

Special Wiring Notes:

- The Belden (or equivalent) wire colors will probably not be the same as the wire colors in the provided DFC pigtail. Use the crossover chart above indicating which color DFC pigtail wire is connected to a particular color wire in the Belden (or equivalent) cable to help connect the System during installation and also to help diagnose the System if there are any problems.
- The wires connected to the Impulse Meter are not polarized. There are three spade terminals located on the micro-switch mounted inside the Impulse Meter; connect the wires to the two outside terminals, leaving the middle terminal blank. It does not matter which Impulse Meter wire is connected to either of the two outside terminals, since they are not polarized.
- Wire the Fluid Solenoid and the Ready Light in a *PARALLELL CIRCUIT.* Take one lead from the Fluid Solenoid and one lead from the Ready Light and connect both wires to the Black (Fluid Solenoid Ground) wire with a wire nut (three wires total). Take the other lead from the Fluid Solenoid and the other lead from the Ready Light and connect them using a wire nut to the appropriately colored station wire using the chart above and the previously prepared map of the shop.
- Connect the two wires indicated in the chart above to the optional Air Solenoid, if it is used. Do not connect the Air Solenoid to any other wires. If the Air Solenoid itself is equipped with three wires, connect the solid green wire to the building ground and use the other two wires to connect to the DFC.
- Do not let any wires ground to the building or short to each other.
- Double-check all wire connections for accuracy and tightness prior to powering up the System.

Special Plumbing Notes:

- The Impulse Meter is located at the pump. The meter should be plumbed as indicated on the instruction sheet included with it; the flow path is into the base of the meter and out the side of the meter. Impulse Meters are available in different units of measure (marked on the aluminum housing of the meter). This System uses 10 Pulse per Unit Meters; the units of measure (1066-Liters, 1062-Pints, 1061-Quarts, 1059-Gallons) are determined by the model number of the meter – use the correct meter for the units desired for the System.
- △**CAUTION:** Do not use regular Impulse Meters on water-based fluid; contact the factory for special internally coated meters for use with Windshield Wash Fluid and Anti-Freeze.
- The Thermal Relief Valve (Adjustable Pressure Relief Valve) is located at the outlet of the Impulse Meter. Use the instruction sheet included with the valve for correct installation.
- △**CAUTION:** There are two different versions of the Thermal Relief Valve; Model 1063 is for oil products (0-900PSI), and Model 1070 is for water base products (0-250PSI).
- The optional Air Solenoid is installed between the Air /Filter Regulator and the air inlet of the pump. Use the instruction sheet included with the Model 1064 Air/Water Solenoid for correct installation. The Air Solenoid is optional, it provides an added level of security by disabling the pump when there are no dispenses authorized. It also provides an added level of safety by disabling the pump when dispenses are not authorized - in the event of a product line break or a component failure the pump will not empty the tank onto the floor.
- Y-Strainers are located at each dispense point (Station) immediately upstream of the Fluid Solenoid. Use the instruction sheet included with the Model 1069 Y-Strainer for correct installation.

- Fluid Solenoids are installed at each dispense point (Station). Use the instruction sheet included with the Fluid Solenoid for correct installation. For reels, mount the Fluid Solenoid next to the reel and connect the side hose to the fluid outlet of the Solenoid, for Oil Bars mount the Fluid Solenoid above arms reach on the wall (to prevent intentional short circuiting by the end user and possible system damage).
- ⚠**CAUTION:** There are two different versions of the Fluid Solenoid, Model 1065 is for Oils (0-3000PSI) and Model 1064 is for water base products - Windshield Wash Fluid and Anti Freeze (0-250PSI).

Technical Data/ Datos Técnicos

Input Voltage/Amperage	Voltaje/Amperaje De Entrada	120 VAC/10AMPS (minimum)
Input Fuse	Fusible De la Entrada	2.25 Amps
Output Voltage	Voltaje De la Salida	24VAC
Output Amps	Salida Amperios	2.25 Amps (fused)
Transformer Rating	Grado Del Transformador	40VA
Maximum Stations Controlled	Estaciones Máximas Controladas	10
Maximum Pre-Set Quantity	El Máximo Preestableció Cantidad	99999.9 Units
Minimum Pre-Set Quantity	El Mínimo Preestableció Cantidad	.1 Units
Maximum Totalizer Value	Valor Máximo Del Totalizador	9999999.9 Units (Rolls over to Zero – not externally resettable)
Maximum Fluid Pressure (Oil)	Presión de fluido máxima (Aceite)	180 bar (3000 PSI)
Maximum Fluid Pressure (H20)	Presión de fluido máxima (H20)	15 bar (250 PSI)
Minimum Flow	Flujo Mínimo	1 l/min (¼GPM)
Maximum Flow	Flujo Máximo	26 l/min (6 GPM)

Troubleshooting

Symptoms	**Possible Reasons**	**Solutions**
No Power. DFC Ready Light OFF. Station Ready Light OFF. No Product flow at any Dispense Point.	120VAC Power input cord unplugged.	Plug the Power Cord into a properly grounded outlet.
	Main Circuit Breaker Tripped at building Panel.	Unplug the DFC console and find the cause of the fault and rectify before resetting Circuit Breaker.
	External Fuse on back of DFC Blown.	Find the cause of the fault and rectify before replacing the fuse.
	Dispense not Authorized.	Authorize a dispense using the Operation section of this manual.
	DFC Defective.	Replace DFC.
DFC Ready Light ON. Ready Light at Station OFF. No Product flow at Dispense Point.	Station Selector in wrong position.	Rotate the switch to the correct Station.
	Output Fuse Blown.	Find the cause of the fault and rectify before replacing the fuse.
	Station wires connected incorrectly.	Trace wire routing and connections and repair.
	Station wires defective, shorted or grounded internally and/or externally.	Trace and Repair.
	Station wires defective, broken internally or disconnected.	Trace and Repair.
	Ready Light defective.	Test for continuity and Repair.
	Ready Light and Fluid Solenoid wired in Series Circuit.	Rewire in Parallel Circuit.

Symptoms	Possible Reasons	Solutions
DFC Ready Light ON. Ready Light at Station ON. No Product flow at Dispense Point.	Y-Strainer clogged with debris.	De-pressurize the system and clean the screen.
	Fluid Solenoid clogged CLOSED with debris.	De-pressurize the system and clean the screen.
	Ready Light and Fluid Solenoid wired in Series Circuit.	Rewire in Parallel Circuit.
	Impulse meter inlet screen clogged.	De-pressurize the system and clean the screen.
	Control Handle inlet screen clogged	De-pressurize the system and clean the screen.
	Pump not operating properly.	Check air supply to pump.
		Bleed air from product piping.
		Check function and wiring of Air Solenoid, if used.
		Diagnose pump using the proper troubleshooting manual.
	No product in bulk tank or drum.	Fill bulk tank or replace drum.
DFC Ready Light ON. Ready Light at Station ON. Product flow at Dispense Point will not stop.	Pre-Set amount too high.	Re-Authorize a dispense using the Operation section of this manual.
	Wiring from DFC to Impulse Meter.	Trace and Repair.
	Wire connections at Impulse Meter	Check for tightness, continuity and that the correct terminals on the Impulse meter are used.
	Impulse Meter incorrectly plumbed.	IN the bottom, OUT the side.
	Impulse Meter micro-switch out of adjustment.	Readjust and test.
	Impulse Meter micro-switch defective.	Test and replace.
	Impulse Meter rotary cam set screw loose – cam not turning.	Tighten the setscrew.
	Impulse Meter defective.	Replace.
	Fluid Solenoid incorrectly plumbed.	IN the side, OUT the bottom.
	Fluid Solenoid clogged OPEN with debris.	De-pressurize the system and clean the valve parts and screen.
	Fluid Solenoid defective.	Replace.
All Stations always deliver too much product before shutting off.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	System Accuracy limitations.	See the Special Diagnostic Procedures on accuracy below.
	Wiring to Impulse Meter.	Check for tightness and continuity.
	Impulse Meter micro-switch out of adjustment.	Readjust and test.
	Impulse Meter micro-switch defective.	Replace.
	Impulse Meter rotary cam set screw loose – cam turning intermittently.	Tighten the setscrew.
	Impulse Meter defective.	Not likely – see the special diagnostic procedures below. If defective replace.
	DFC Console defective.	Not likely – see the special diagnostic procedures below. If defective replace.
One or Some of the Stations always delivers too much product.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	System Accuracy limitations.	See the Special Diagnostic Procedures on accuracy below.
	Impulse Meter rotary cam set screw loose – cam turning intermittently.	Tighten the setscrew.
	Fluid Solenoid action impaired by debris.	De-pressurize the system and clean the valve parts and screen.
All Stations always do not deliver enough product before shutting off.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	Wiring to Impulse Meter.	Check for tightness and continuity.
	Impulse Meter micro-switch out of adjustment – double clicking.	Readjust and test.
	Air leaks in Pump suction.	Reseal Pump suction tube.
	Foot valve on Pump missing, not sealed or defective.	Replace, Reseal, or Repair.

Symptoms	Possible Reasons	Solutions
One or Some Stations always do not deliver enough product before shutting off.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	Fluid Solenoid action impaired by debris.	De-pressurize the system and clean the screen.
	Ready Light and Fluid Solenoid wired in Series Circuit.	Rewire in Parallel Circuit.
	Control Handle inlet screen clogged	De-pressurize the system and clean the screen.
	Pump not operating properly.	Check air supply to pump.
		Bleed air from piping.
		Check function and wiring of Air Solenoid, if used.
		Diagnose pump using the proper troubleshooting manual.
One or Some Stations intermittently delivers too much product.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	Pre-Set amount too high.	Re-Authorize a dispense using the Operation section of this manual.
	Wiring to Impulse Meter.	Trace and Repair.
	Wire connections at Impulse Meter	Check for tightness, continuity and that the correct terminals on the Impulse meter are used.
	Impulse Meter incorrectly plumbed.	IN the bottom, OUT the side.
	Impulse Meter micro-switch out of adjustment.	Readjust and test.
	Impulse Meter micro-switch defective.	Test and replace.
	Impulse Meter rotary cam set screw loose – cam not turning.	Tighten the setscrew.
	Impulse Meter defective.	Replace.
	Fluid Solenoid incorrectly plumbed.	IN the side, OUT the bottom.
	Fluid Solenoid clogged OPEN with debris.	De-pressurize the system and clean the valve parts and screen.
	Fluid Solenoid defective.	Replace.
One or Some Stations intermittently do not deliver enough product.	Operator Error.	Check Pre-Set function - test delivery and re-train operator.
	System Accuracy limitations.	See the Special Diagnostic Procedures on accuracy below.
	Wiring to Impulse Meter.	Check for tightness and continuity.
	Impulse Meter micro-switch out of adjustment.	Readjust and test.
	Impulse Meter micro-switch defective.	Replace.
	Impulse Meter rotary cam set screw loose – cam turning intermittently.	Tighten the setscrew.
	Impulse Meter defective.	Not likely – see the special diagnostic procedures below. If defective replace.
	DFC Console defective.	Not likely – see the special diagnostic procedures below. If defective replace.
The Fluid Solenoid is hot.	Normal Condition.	Samson Fluid Solenoids are rated for a 110% duty cycle – this means that they can remain energized indefinitely without damage *at the rated voltage*. They do get very hot to the touch after a couple of minutes ON.
Pump runs when all dispense points (Stations) are closed.	Thermal Relief Valve (Adjustable Pressure Relief Valve)	Adjust or replace if defective.

Special Diagnostic Procedures

System Accuracy:

- The Impulse Meter and the DFC Console are not adjustable for accuracy; the maximum *possible* System error is –10% on a single unit dispense. The *possible* System error factor decreases significantly with each increase in dispense units, at five units the maximum *possible* System error is –2%. The real world System accuracy is usually much better than the *possible* error factor indicates. Repeatability and accuracy is best when a completed dispense is followed by another completed dispense.
- Advertised meter accuracy is ±0.65%.

Testing the DFC Console:

- If there are two or more DFC Consoles at the facility, try unplugging the Pigtails and swapping the Consoles, this will show if the problem is with the Console or with the Wiring/Impulse Meter/Solenoid(s).
- To check that the DFC Console is counting properly, remove the pigtail plug at the back of the console and plug in a spare pigtail. Authorize a ONE UNIT (1.0) (Quart/Liter/Pint/Gallon) dispense and then touch the to Impulse Meter wires (Solid Red and Red/White Tracer) together ten times. If the DFC Console is functioning properly the Pre-Set counter will advance one digit each time the wires are touched together and on the tenth contact the DFC ready light will extinguish and the Pre-Set counter will read 1.0. If a spare pigtail is not available, disconnect the Solid Red and the Red/White Tracer wires at the Junction Box adjacent to the DFC Console to perform the test with the original pigtail plugged into the Console.
- If the DFC Console continually blows fuses, the System is most likely mis-wired or less possibly a Solenoid or Ready Light is defective.
- To check the voltage output to the solenoids and the station selector knob, remove the pigtail plug at the back of the console and plug in a spare pigtail. Authorize a dispense on the DFC Console and using a multi-meter check the voltage from the color coded station wire to the Solenoid ground wire (Black). Check each station in turn, the color codes on the list should match the Station Selector knob position and the reading on the multi-meter should be 24 Volts AC at each station indicated by the Station Selector knob, and zero at the others.

Testing the Impulse Meter:

- Make a mark on the top of one of the lobes of the cam on the Impulse Meter and a corresponding mark on the body of the Impulse Meter. Authorize a dispense of ONE UNIT (1.0) at the DFC Console and then pump the product. The mark should have made one complete revolution and returned very closely to the original position marks.
- Disconnect the wire terminals at the Impulse Meter and attach a multi-meter to the two outside spade terminals at the micro-switch. Authorize a dispense at the DFC Console, open the dispense point and while the product is being pumped monitor the action of the micro-switch. There should be clean contact shown on the multi-meter as each lobe of the cam passes the micro-switch. The micro-switch is mounted on a plastic adjusting base; if the pulses are uneven adjust it appropriately in or out until the Impulse Meter pulses perfectly. Reconnect the wires at the Impulse Meter and then disconnect the Impulse Meter wires at the junction box adjacent to the DFC Console. Perform the same test to see if there is a defect in the wires running from the DFC Console to the Impulse Meter.

Testing the Solenoid(s):

- Model 1065 does not test properly with a conventional multi-meter. It is internally rectified and shows infinite resistance normally. A steady resistance reading in the range of 0Ω to 50Ω indicates a shorted coil. When the DFC console energizes the Fluid Solenoid assembly, there is an audible 'CLICK'.
- Model 1064 shows a resistance reading of ≈4.1Ω when disconnected from the System. When the DFC console energizes the Solenoid assembly, there is an audible 'CLICK'.

Monday Morning Syndrome:

Any Pump suction tube longer than two feet must be equipped with a foot valve for the DFC System to function properly. If the System performs erratically sometimes, giving a one or a few dispenses that are under the authorized amount and then mysteriously returns to normal, the cause can often be traced to the Pump rather than the System. Even with a perfectly sealed suction tube, extended periods of idle time can allow a gas pocket to form at the top of a long suction tube not equipped with a foot valve – the negative pressure of the column of oil inside the suction tube allows the lighter fractions of the oil (and any air dissolved in the oil) to 'evaporate' out of the oil and create a gas pocket at the top of the suction tube under the foot valve at the base of the stub pump. When this pocket of gas is pumped through the Impulse Meter it 'zings' the meter, giving a false reading and an under-delivery of oil on that dispense; the System then returns to normal. This condition worsens as the oil level in the tank drops, a full tank may mask the condition for a period of time until the tank level drops again. Once the gas pocket enters the system piping, it is not unusual for the gas to re-dissolve back into the oil (since the oil is under pressure from the pump) and not show up as foaming or 'spitting' at the Dispense Point (Station), making this condition very difficult to diagnose in the field. An improperly sealed suction tube causes this problem with quite a bit of frequency, and generally shows up as 'spitting' or foaming at the Dispense Point (Station).