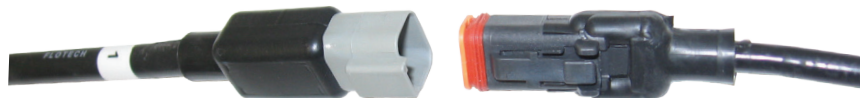# Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill/Retain Plug-n-Play System

Application:	The reason for many overfill system breakdowns is failed or poor wiring connections. The required amperage within the overfill system is so low that any poorly wired or corroded wiring connections tend to fail (the low current cannot pass through corrosion or poor connections). To remove the possibility of wiring system problems, Dixon® has introduced the FloTech™ Plug-n-Play system, all the wire connections are prewired and tested at the factory using high quality weather proof cables and plugs. Plug-n-Play system installation takes a fraction of the time to install when compared to conventional systems, just mount all the components and simply plug them all together.
Standards:	Manufactured to American Petroleum Institute standard API RP-1004, which allows for interchangeability.
Materials:	Dependent upon the component, see each product section for materials
Features & Benefits:	• Prewired cables and plugs on sensors, wiring harnesses, onboard monitor and sockets, make it simple to install our Plug-n-Play system in much less time than conventional systems. • Secure and weather tight connections all the time remove the possibility of poor wiring connections. Sealed connectors pass IP67 and DIN40050 salt spray tests. • Easy installation: literally Plug-n-Play, just mount the components and plug them all together. • Biofuel compatible up to E100 (100% Ethanol) and B100 (100% bio diesel)

Monitors with Integrated Dual Sockets

Features & Benefits:	• Integrated Optic and Thermistor dual sockets with onboard monitor all in one aluminum case • Takes less space than utilizing separate sockets and monitor • Prewired and factory tested with Plug-n-Play cabling and plugs, eliminates hours of manual crimped wire connections and removes the problems and worries associated with connection problems. • Includes water-tight integrated fuse holder, all stainless steel hardware and terminal blocks prevent corrosion • Built-in configurable high current relay output for pump or signal control • Color coded display shows well on trailers • Sockets come standard with Flotech™ unique guaranteed for life stainless steel wear rings. **Available Integrated Options:** • Top (overfill) only monitoring, or both top (overfill) and bottom (retain) monitoring • Pre-wired ground bolt • Pre-wired pressure sensor which can be used to interlock brakes or vapor vents • Pre-wired Trailer Identification Module • Pre-wired dual male pin power cord

Part #	Plug-n-Play Connections		Available Accessories Installed					Sockets	
	Top Overfill Detection	Bottom Retain Detection	Ground Bolt	Pressure Sensor Switch	Trailer ID Module	Dual Male Pin - Power Cord	Stainless Steel 'Guaranteed for Life' Wear Rings	Optic	Thermistor
FT208-390							✓	6 contact pins, 3 J-slots	10 contact pins, 4 J-slots
FT208-390G			✓				✓		
FT208-390GS			✓	✓			✓		
FT208-390GST			✓	✓	✓		✓		
FT208-390GT			✓		✓		✓		

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com

Biofuel Compatible

Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill/Retain Plug-n-Play System Monitors with Integrated Dual Sockets (continued)

Part #	Plug-n-Play Connections		Available Accessories Installed					Sockets	
	Top Overfill Detection	Bottom Retain Detection	Ground Bolt	Pressure Sensor Switch	Trailer ID Module	Dual Male Pin - Power Cord	Stainless Steel 'Guaranteed for Life' Wear Rings	Optic	Thermistor
FT208-390P	✓						✓	6 contact pins, 3 J-slots	10 contact pins, 4 J-slots
FT208-390PG	✓		✓				✓		
FT208-390PGS	✓		✓	✓			✓		
FT208-390PGST	✓		✓	✓	✓		✓		
FT208-390PGT	✓		✓		✓		✓		
FT208-390PGSO	✓		✓	✓		✓	✓		
FT208-390PGSTO	✓		✓	✓	✓	✓	✓		
FT208-390PP	✓	✓					✓		
FT208-390PPG	✓	✓	✓				✓		
FT208-390PPGS	✓	✓	✓	✓			✓		
FT208-390PPGST	✓	✓	✓	✓	✓		✓		
FT208-390PPGT	✓	✓	✓		✓		✓		
FT208-390PPGSO	✓	✓	✓	✓		✓	✓		
FT208-390PPGSTO	✓	✓	✓	✓	✓	✓	✓		
FT208-391P	✓						✓	6 contact pins, 4 J-slots	10 contact pins, 4 J-slots
FT208-391PG	✓		✓				✓		
FT208-391PGS	✓		✓	✓			✓		
FT208-391PGST	✓		✓	✓	✓		✓		
FT208-391PGT	✓		✓		✓		✓		
FT208-391PP	✓	✓					✓		
FT208-391PPG	✓	✓	✓				✓		
FT208-391PPGS	✓	✓	✓	✓			✓		
FT208-391PPGST	✓	✓	✓	✓	✓		✓		
FT208-391PPGT	✓	✓	✓		✓		✓		

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com

Biofuel Compatible

Overfill Products

Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill/Retain Plug-n-Play System Stand Alone Monitors

Features & Benefits:

- Prewired and factory tested with Plug-n-Play cabling and plugs, eliminates hours of manual crimped wire connections, and removes the problems and worries associated with connection problems.
- Includes water-tight integrated fuse holder, all stainless steel hardware and terminal block within the aluminum housing.
- High tech color coded display shows well on trailers
- Monitors include advanced diagnostic capabilities as well as signal translation abilities for all socket types (optic, thermistor or float). The system offers true load at any rack compatibility.

Available Integrated Options:
- Top (overfill) only monitoring, or both top (overfill) and bottom (retain) monitoring

monitor

FT295

Part #	Checkmate Monitor with Plug-N-Play Connectors
FT208P	top overfill protection only
FT208PP	top overfill and bottom retain detection
FT208PPC	top overfill and bottom retain detection, for canadian 'b' trains
FT208PSS	dual pressure switches
FT208LCM	Checkmate load control monitor
FT295	alarm interface module assembly

See page 140 for repair kits and replacement parts.

Stand Alone Socket Assemblies

Features & Benefits:

- Pre-wired and factory tested with Plug-n-Play cables and plugs, eliminates hours of manual crimping, and removes the problems and worries associated with connection problems.
- Aluminum housings, with either aluminum hardcoat or stainless steel wear rings, stainless steel contact pins.
- Dual and triple socket assemblies *take less space* than multiple single sockets.

Available Integrated Options:
- Pre-wired internal ground wire (dual or triple socket assemblies)
- Pre-wired Trailer Identification Module (dual or triple socket assemblies)
- FT300P and FT301P sockets are available with Flotech™ unique guaranteed for life stainless steel wear rings as options. Plug-n-Play dual and triple sockets come standard with guaranteed for life stainless steel wear rings.

FT390PG-20

Part #	Socket	API Optic	Thermistor	Optic J560	Internal Ground Wire
FT300P	single socket	6 contact pins and 3 J-slot	---	---	---
FT300PG	single socket	6 contact pins and 3 J-slot	---	---	✓
FT301P	single socket	---	8 contact pins and 4 J-slot	---	---
FT306P	single socket	---	---	✓	---
FT390PG-20 [1]	dual socket, 20 ft cable	6 contact pins and 3 J-slot	8 contact pins and 4 J-slot	---	✓
FT394P [1]	triple socket	6 contact pins and 3 J-slot	10 contact pins and 4 J-slot	✓	---
FT394PG [1]	triple socket	6 contact pins and 3 J-slot	10 contact pins and 4 J-slot	✓	✓
FT394VP [1]	triple socket vertical arrangement	6 contact pins and 3 J-slot	10 contact pins and 4 J-slot	✓	---
FT394VPG [1]	triple socket vertical arrangement	6 contact pins and 3 J-slot	10 contact pins and 4 J-slot	✓	✓
FT395P-20 [2]	triple socket, 20' cable	6 contact pins and 4 J-slot	10 contact pins and 4 J-slot	✓	---
FT395PG-20 [2]	triple socket, 20' cable	6 contact pins and 4 J-slot	10 contact pins and 4 J-slot	✓	✓
FT391P-20	dual socket, 20 feet of Plug-n-Play cable, 4 J-slot				
FT391PG-20	dual socket, 20 feet of Plug-n-Play cable, 4 J-slot, internal ground wire				

[1, 2] Guaranteed for life stainless steel wear rings included (U.S. [1], Canada [2])

See pages 141 - 146 for repair kits and replacement parts.

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com

Biofuel Compatible

Overfill Products

Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill/Retain Plug-n-Play System Overfill Sensors

| Features & Benefits: | • Overfill detection sensors are intended to detect a pending overfill condition inside the fuel tank compartment. When they are wetted (come in contact with the fuel) they signal the fuel loading rack to close the fuel supply control valve, to prevent a spill of product. |

Features & Benefits:

- Overfill detection sensors are intended to detect a pending overfill condition inside the fuel tank compartment. When they are wetted (come in contact with the fuel) they signal the fuel loading rack to close the fuel supply control valve, to prevent a spill of product.
- Prewired and factory tested with Plug-n-Play cabling and plugs, eliminates hours of manual crimped wire connections, and removes the problems and worries associated with connection problems. Easy to install, just mount the housing into the tank and plug the cables together.
- Trouble free probes: FloTech™ brand probes incorporate a double elastomer design which seals and secures the sensitive glass optic prism tip. The elastomer seals are flexible allowing thermal expansion and resistance to steam cleaning and petroleum chemical attack.
- Custom lengths available upon request
- The FT151P series sensor housing contains a Plug-n-Play probe in a cast aluminum housing. The sensor housing has a 2" NPT mounting thread, heavy duty stainless steel hardware, and FKM probe seal. Install into either a 2" NPT threaded port or a 2⅜" diameter tank opening using the gasket and locking nut provided. All screws and rings are heavy duty stainless steel for easy assembly and long life.

Part #	Description	Replacement Probes
FT151P	housing with 7" Plug-n-Play overfill detection probe, with Plug-n-Play harness connector	FT150P
FT151P-12	housing with 12" Plug-n-Play overfill detection probe, with Plug-n-Play harness connector	FT150P-12
FT151P-18	housing with 18" Plug-n-Play overfill detection probe, with Plug-n-Play harness connector	FT150P-18

See page 147 and 149 for repair kits and replacement parts.
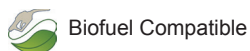
Retain Sensors

Features & Benefits:

- Retain sensors inform the loading terminal if the tank compartments are empty, or if there is product left in the tank prior to re-loading the tank (product has been retained).
- Prewired and factory tested with Plug-n-Play cabling and plugs, eliminates hours of manual crimped wire connections, and removes the problems and worries associated with connection problems. Easy to install, just mount the housing into the tank and plug the cables together.
- Trouble Free Probes: FloTech™ brand probes/sensors incorporate a double elastomer design which seals and secures the sensitive optic prism tip. The elastomer seals are flexible allowing thermal expansion and resistance to steam cleaning and petroleum chemical attack.
- The FT152 sensor is a bottom retain detection sensor. Sensor is shipped with a ½" NPT weld-on aluminum half coupling for mounting. The main sensor portion is stainless steel to prevent galling in the tank. The wiring box is plastic to prevent corrosion.

Part #	Description
FT152P	housing with Plug-n-Play retain probe, with Plug-n-Play harness connector

See page 148 and 150 for repair kits and replacement parts.

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com

Biofuel Compatible

877.963.4966

Fuel Tanker Overfill Detection
FloTech™ Checkmate Overfill/Retain Plug-n-Play System
Wiring Harnesses

Features & Benefits:
- Pre-wired and factory tested with Plug-n-Play cabling and plugs, eliminates hours of manual crimped wire connections, and removes the problems and worries associated with connection problems. Easy to install, just mount all the components (sensors, sockets, monitors) onto the tank and plug them into the pre-configured harness.
- Plug-n-Play cable harnesses come pre-configured for the type of tank (truck mounted tanks or for full length tank trailers) the number of tank compartments, standard harnesses have been designed to fit most standard tank configurations.
- Custom length harnesses are available.
- Secure and weather tight connections all the time, remove the possibility of poor wiring connections. Sealed connectors pass IP67 and DIN40050 salt spray tests.

Part #	Description
overfill detection Plug-n-Play cable harnesses for full length tank trailers	
FT20801	one compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
FT20802	two compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
FT20803	three compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
FT20804	four compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
FT20805	five compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
FT20806	six compartment tank trailer. Overfill detection (top) cable harness with Plug-n-play connections
retain detection Plug-n-Play cable harnesses for full length tank trailers	
FT20801S	one compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
FT20802S	two compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
FT20803S	three compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
FT20804S	four compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
FT20805S	five compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
FT20806S	six compartment tank trailer. Retain (bottom) cable harness with Plug-n-play connections
overfill detection Plug-n-Play cable harnesses for truck mounted tanks	
FT20801TWS	one compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
FT20802TWS	two compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
FT20803TWS	three compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
FT20804TWS	four compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
FT20805TWS	five compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
FT20806TWS	six compartment truck mounted tank. Overfill detection (top) cable harness with Plug-n-play connections
monitor to harness extensions	
FT20800-EXT-2FT	2 ft monitor to harness extension
FT20800-EXT-8	8 ft monitor to harness extension
FT20800-EXT-25	25 ft monitor to harness extension
FT20800-EXT-36	36 ft monitor to harness extension

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com
Biofuel Compatible

Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill Detection (Black & White 2 Wire) Systems (Top Detection Only)

Features & Benefits:	• FloTech™ brand overfill system kits provide everything needed to install a new overfill system on your tank. One to eight compartment kits are available from our inventory. Systems include: 1 FT208 monitor, 1 FT151 overfill sensor per compartment, FT404 cable and FT402 strain reliefs (cable glands). • Other probe lengths are available

Part #	Description
FT2801	Checkmate, 1 compartment system (top only) - 7" probes
FT2802	Checkmate, 2 compartment system (top only) - 7" probes
FT2803	Checkmate, 3 compartment system (top only) - 7" probes
FT2804	Checkmate, 4 compartment system (top only) - 7" probes
FT2805	Checkmate, 5 compartment system (top only) - 7" probes
FT2806	Checkmate, 6 compartment system (top only) - 7" probes
FT2807	Checkmate, 7 compartment system (top only) - 7" probes
FT2808	Checkmate, 8 compartment system (top only) - 7" probes
FT2801-12	Checkmate, 1 compartment system (top only) - 12" probes
FT2802-12	Checkmate, 2 compartment system (top only) - 12" probes
FT2803-12	Checkmate, 3 compartment system (top only) - 12" probes
FT2804-12	Checkmate, 4 compartment system (top only) - 12" probes
FT2805-12	Checkmate, 5 compartment system (top only) - 12" probes
FT2806-12	Checkmate, 6 compartment system (top only) - 12" probes
FT2807-12	Checkmate, 7 compartment system (top only) - 12" probes
FT2808-12	Checkmate, 8 compartment system (top only) - 12" probes

Please refer to chart on pages 70 thru 73 for cross references to other manufacturer part numbers.

FloTech™ Checkmate Overfill Detection (Black & White 2 Wire) Systems (Top and Bottom)

Features & Benefits:	• FloTech™ brand overfill system kits provide everything needed to install a new overfill system on your tank. One to eight compartment kits are available from our inventory. Systems include: 1 FT208 monitor, 1 FT151 overfill sensor and 1 FT152 retain sensor per compartment, FT404-150 cable and FT403 strain reliefs (cable glands). • Other probe lengths are available

Part #	Description
FT2811	Checkmate, 1 compartment system (overfill & retain) - 7" probes
FT2812	Checkmate, 2 compartment system (overfill & retain) - 7" probes
FT2813	Checkmate, 3 compartment system (overfill & retain) - 7" probes
FT2814	Checkmate, 4 compartment system (overfill & retain) - 7" probes
FT2815	Checkmate, 5 compartment system (overfill & retain) - 7" probes
FT2816	Checkmate, 6 compartment system (overfill & retain) - 7" probes
FT2817	Checkmate, 7 compartment system (overfill & retain) - 7" probes
FT2818	Checkmate, 8 compartment system (overfill & retain) - 7" probes
FT2811-12	Checkmate, 1 compartment system (overfill & retain) - 12" probes
FT2812-12	Checkmate, 2 compartment system (overfill & retain) - 12" probes
FT2813-12	Checkmate, 3 compartment system (overfill & retain) - 12" probes
FT2814-12	Checkmate, 4 compartment system (overfill & retain) - 12" probes
FT2815-12	Checkmate, 5 compartment system (overfill & retain) - 12" probes
FT2816-12	Checkmate, 6 compartment system (overfill & retain) - 12" probes
FT2817-12	Checkmate, 7 compartment system (overfill & retain) - 12" probes
FT2818-12	Checkmate, 8 compartment system (overfill & retain) - 12" probes

Please refer to chart on pages 70 thru 73 for cross references to other manufacturer part numbers.

Fuel Tanker Overfill Detection

FloTech™ Checkmate Overfill/Retain (Black & White 2 Wire) System Replacement Parts

Checkmate Onboard Monitors

Features & Benefits:	• Easy to follow programming guide for up to eight compartments top only or top and bottom service with the same monitor • Monitor can be programmed up to 100,000 times without sending it back to the factory • Stainless steel terminal blocks resist rusting of contacts • Stainless steel hardware is used on all products • Powder coated color matched components for exceptional appearance • Auxiliary input for Hobbs type switches • Power control relay output • Drop-in compatibility with competitors products, see compatibility chart on pages 61 - 64. • Wide input power 12-24 VDC • Monitors include advanced diagnostic capabilities as well as signal translation abilities for all socket types (optic, thermistor or float). The system offers true load at any rack compatibility. **Available integrated options:** • Optional FloTech™ feature (patent pending) is only available on Checkmate model onboard monitors. Data Link™ gives maintenance staff the ability to download the performance and diagnostic history of the overfill system. Plug the FloTech™ hand-held diagnostic terminal, into the Checkmate monitor and download to your PC. A time and date stamped report is generated, showing the history of every wetted or failed sensor, rack connection, auxiliary input and load/unload data.

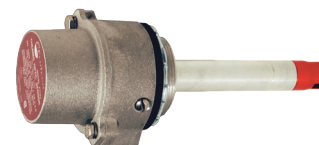| Part #	Description
FT208	Checkmate programable monitor and housing
FT207	Checkmate programable replacement monitor only (no housing)

See page 153 for repair kits and replacement parts.
Please refer to chart on pages 70 thru 73 for cross references to other manufacturer part numbers.

FT208

Overfill Detection Sensors

Features & Benefits:	• The FloTech™ thermo-optic 2 wire probe is electronically and mechanically compatible for drop-in replacement of other commonly used 2-wire probes with black and white wires. Providing the fast response and reliability of optic technology in a thermistor application. • Custom probe lengths available upon request • The sensor housing contains a black and white 2 wire probe in a cast aluminum housing. The sensor housing has a 2" NPT mounting thread, heavy duty stainless steel hardware, and FKM probe seal. Install into either a 2" NPT threaded port or 2⅜" diameter tank opening using the gasket and locking nut provided.

Part #	Description	Replacement Probes
FT151	housing with 7" black and white 2 wire overfill detection probe	**FT150**
FT151-12	housing with 12" black and white 2 wire overfill detection probe	**FT150-12**
FT151-18	housing with 18" black and white 2 wire overfill detection probe	**FT150-18**

FT151

Retain Sensors

Features & Benefits:	• Retain sensors inform the loading terminal if the tank compartments are empty, or if there is product left in the tank prior to re-loading the tank (product has been retained). • Sensor is shipped with a ½" NPT weld-on aluminum half coupling for mounting. The main sensor portion is stainless steel to prevent galling in the tank. The wiring box is nylon to prevent corrosion and is removable to facilitate installation. Our three port housing design is compatible with previous inline and parallel dual port housing.

Part #	Description
FT152	housing with black and white 2 wire retain probe

See page 150 and 152 for repair kits and replacement parts.

Product instruction sheets and technical data can be viewed on our website at dixonvalve.com

Biofuel Compatible

FT152