



Descriptive Bulletin
41-077INTL

Effective: February 2004

Supersedes DB 41-077, dated January 2004

Flexitest™ Switch Type FT-1 and FT-1X

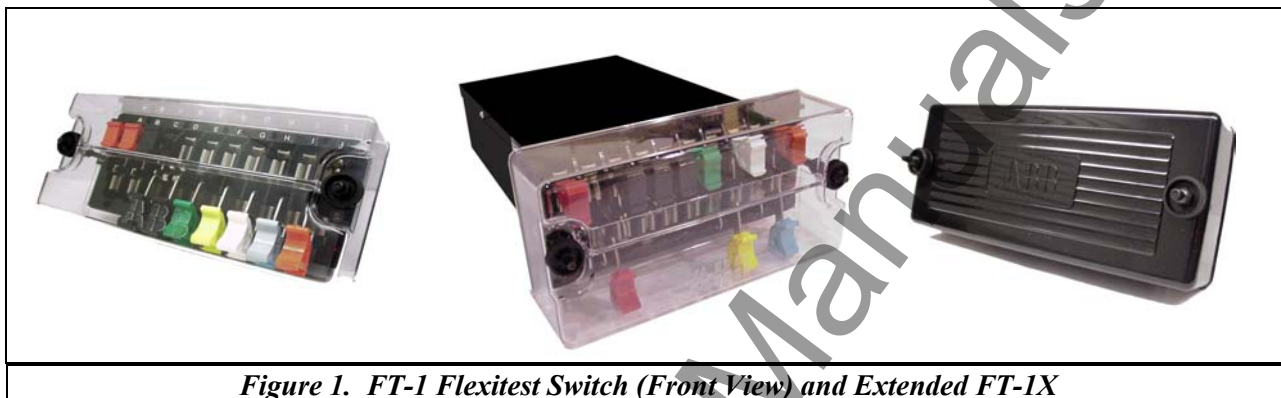


Figure 1. FT-1 Flexitest Switch (Front View) and Extended FT-1X

APPLICATION

The ABB Type FT-1 and FT-1X Flexitest Switches and Test Plugs provide a safe, simple, fast and reliable method to isolate and service installed equipment.

Advantages

The Flexitest Switches and Test Plugs have all the features necessary for applications involving the measurement of individual currents and voltages to facilitate testing of substation instrumentation and protection devices. The make before break current short circuit feature also allows test personnel to quickly and safely isolate equipment from current transformer (CT) circuits. The Extended FT-1X test switch brings the rear terminal connections to the same depth as most panel mounted protective relays and equipment.

Safe and Convenient

All measurements and tests can be performed at the front of the switchboard without taking any devices out of service.

Quality

The quality of ABB products comes from years of experience and vigorous quality testing programs.

Fast and Reliable

When Test Plugs are used, any number of circuits may be tested in rapid succession. One plug properly connected can test all instruments or meters of a particular type.

Maximum Flexibility

The FT-1 and FT-1X Switch is built with a maximum of ten individual poles, or switch units. The switches can be assembled in a variety of different arrangements, to match customer requirements.

ABB Test Plugs are used in conjunction with the FT Switches to enable easy measurement, calibration, verification or maintenance of relays, meters and instruments.

Voltage measurements can also be made directly on the FT Switch without disturbing existing connections. There is a test clip located on the top of each pole that allows connection with standard spring clip test leads.

Security

With the cover in place, a meter type lead seal can be placed through either of the cover studs of the FT Switch to prevent unauthorized access to the switch. As an additional feature, a clear cover is available that can also be installed and locked with the switchblades in the open or closed position.

SPECIFICATIONS

Ratings

The standard FT-1 switch is rated at 600 volts and 30 amps. The extended version FT-1X switch is rated at 300 volts 30 amps. Both switches meet or exceed all requirements of ANSI/IEEE Standard C37-90.

Mounting

FT-1 Switches are designed for semi-flush mounting on the front of switchboard panels, facilitating inspection and accessibility.

Weight	Net Lbs. (kg)	Shipping Lbs. (kg)
FT-1 Switch	1.75 (.79)	3 (1.4)
FT-1 Switch Extended	2.7 (1.25)	3.75 (1.7)
In Service Series Test Plug	1.5 (.68)	3 (1.4)
Separate Source Test Plug	1.5 (.68)	3 (1.4)
Individual Current Circuit Test Plug	0.1 (.045)	1 (0.45)

FT-1 Switch Construction

The base of the FT-1 Flexitest Switch is made of a molded polycarbonate material, which provides a tough, insulated enclosure. Barriers are molded into the base (front and rear) to separate the switch units from one another. The barriers provide insulation between poles, and also ample wiring space between terminals. The FT-1X is extended 8.25," 10.25" or 12.25" and the extended enclosure is black anodized aluminum.

Cover

Flexitest Switch covers provide a tough insulated enclosure for the switch and are made from a polycarbonate material. FT-1 and FT-1X styles come with a black opaque cover or clear cover. The clear cover affords the user the unique option of intentionally leaving switch handles in the open position and replacing the cover while maintaining the provision for a meter seal when some or all switch handles are in the open position. This feature allows the user to service electrical equipment while still complying with OSHA tag and lockout procedures. The clear cover can be ordered separately for retrofit to existing FT-1 Switches. Users will maintain the same ease of accessibility as with the black opaque cover. The cover thumbnut has been modified so that a 1/4" nut driver can be used to loosen & tighten the thumbnut. This is the same size nut driver that is used on the hex head terminal screws of the standard FT-1 Switch.

Poles

FT-1 and FT-1X Switches are available in combinations of 1 to a maximum of 10 individual poles or switch units. Each pole is identified by a letter (A to J), which is visible along the top of the base from left to right. The individual switch units are of a knife blade type. There are two different types of switch units available: potential poles and current poles. Potential poles (P), are configured as single, non-shorting knife blades for use in potential, trip, or control circuits. Current poles are typically configured in sets of two, (C-C), for use with current circuits; and consist of a current test jack, a shorting spring, a shorting blade, and a non-shorting blade. (See Fig. 2.) The positions of the short circuit springs are visible from the front of the switch.

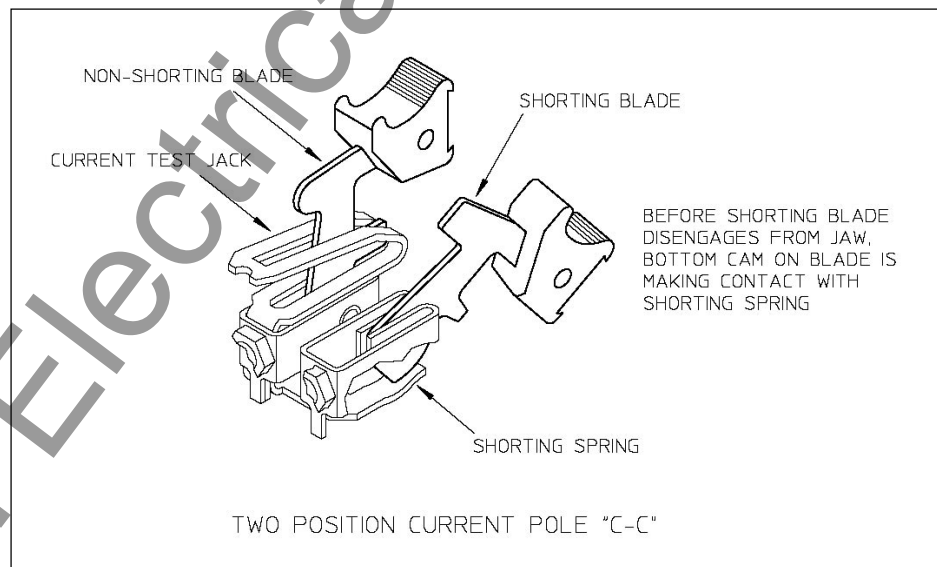


Figure 2. Blade assembly of two position pole "C-C"(Rear View, outside of base)

Switch Handles

Switch handles are made of a molded phenolic material, and are typically black for potential and current circuits, and red for trip circuits. They are also available in a variety of different colors.

For color potential switch handles replace the "P" with "T"=Red, "G"=Green, "Y"=Yellow, "Z"=Blue, "W"=White, "O"=Orange.

For color current switch handles replace the "C" in any position with "R"=Red, "5"=Green, "6"=Yellow, "7"=Blue, "8"=White, "9"=Orange

Each handle has a dovetail indentation to hold a circuit identification label. Knife blade switches can be operated independently, or ganged together with a horizontal interlocking bar, to suit testing needs. (See Fig. 3)

A hole runs through the middle of each switch handle to allow insertion of interlocking bars that can mechanically tie 2, 3, 4, 5, 6 or 10 switch handles together. Interlocking Bars are sold separately. (See "ACCESSORIES – ORDERING INFORMATION" on page 11.)

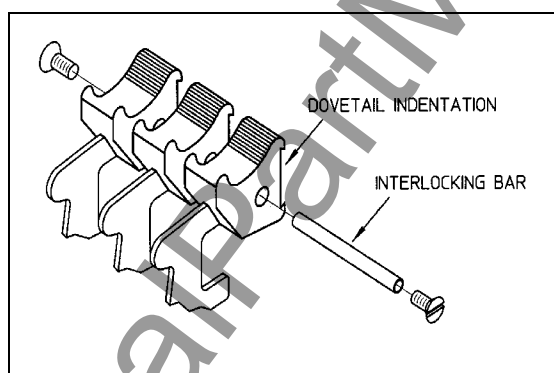


Figure 3. Switch Handles

Terminals

Connection terminals are located at the rear of the switch. Terminals are numbered 1 to 20 for easy identification (rear view). Each pair of numbered terminals is associated with a matching pole designated by a letter on the front of the switch. (See Fig. 4.)

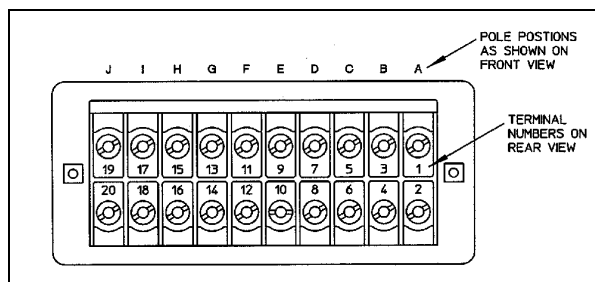


Figure 4. FT-1 Switch (rear view)

TEST PLUGS



When using an Individual Current Circuit Test Plug for current measurements, connections from the Test Plug to the measuring instruments must be made before inserting the Test Plug in place

In-Service Series Test Plug

The “In-Service” Series Test Plug with a maximum of 10 positions is designed to match the pole configurations of specific styles of FT Flexitest devices (either FT-1 Switches, FT-1X or FT case relays). Not every switch or relay pole configuration is suitable to accept an In-Service Series Test Plug. For available styles, See Table 3, page 12, “TEST PLUG.”

This Test Plug is typically used to connect devices measuring the currents and voltages being applied to the switchboard relays, meters and instruments without interrupting or short-circuiting the circuit. Only the current test switches with the current jack must be opened before inserting the Series Test Plug. Connections to the test plug must be made before inserting the test plug into the FT Switch. (See Figure 5.)

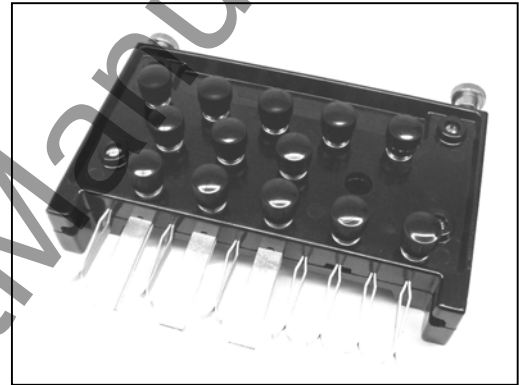


Figure 5. In-Service Series Test Plug

Individual Current Circuit Test Plug

The Individual Current Circuit Test Plug allows in service current measurement with an ammeter. It can be inserted in the current test jack of FT Flexitest devices after opening the knife blade switch. This plug consists of two conducting strips separated by an insulating strip. The ammeter is connected to these strips by terminal screws and leads carried out through holes in the back of the insulated handle. (See Figures 6 and 7.)



Figure 6. Individual Current Circuit Test Plug



Figure 7. Individual Current Plug inserted into Flexitest Case

The test plug inserts into the current test jack with the red part of the handle facing up allowing the alignment nipple and tab to guide the connector into the test jack.

Separate Source Test Plug



Provision is made only on current poles with shorting springs to automatically short-circuit current transformer circuits when the knife switches are opened prior to inserting the Test Plug.

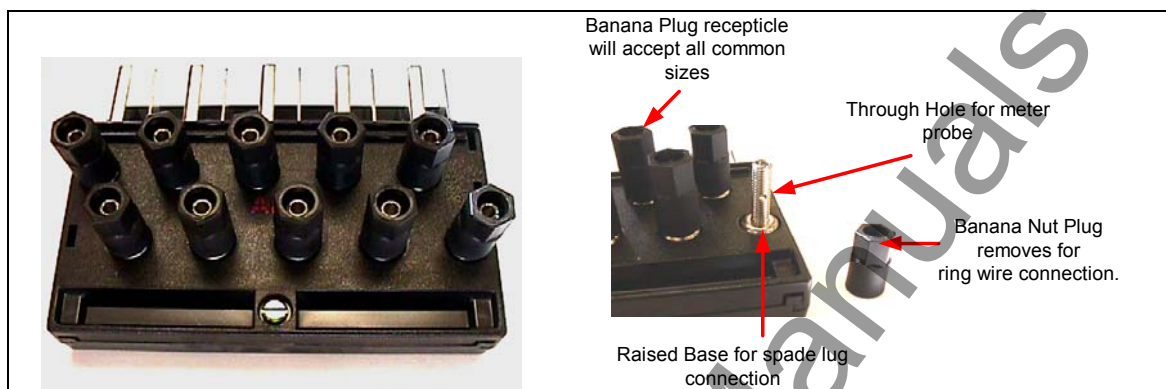


Figure 8. Separate Source Test Plug, Style # 1164046

The 10 Position Separate Source Test Plug isolates the external connections from the relay or equipment under test (See Fig. 8). The test plug accepts all common size banana plugs, ring wire connectors, spade lugs and has a through hole for meter probe or wire connection. This test plug provides quick circuit testing, by fitting into the stationary contact jaws of any Flexitest Type FT Case, or FT Switch. The L-shaped test blades assure quick, accurate alignment between the Test Plug and the stationary contact jaws. The blades connect the relay inputs and outputs to a set of binding banana posts on the top of the Test Plug. An insulated barrier along the bottom of the blades isolates the relay circuits from the external connections (ct, pt, trip, etc.). The external test circuits can then be connected to these binding posts, which are staggered for easy accessibility.

Before inserting the Separate Source Test Plug, all switchblades must be placed in the full open position. In a Flexitest Type FT Case, the plug is inserted in the bottom switch jaws with the binding posts up and in the top test switch jaws with the binding posts down. (See Figure 9.)



Figure 9. Banana test plug into relay front view

Ordering Information

FT-1 and FT-1X Switches are ordered by style number. The FT-1 Selection Guide, (Table 3, pages 12-18) provides a comprehensive selection guide of existing styles. FT-1 and FT-1X Switches are available in any combination of 1 to 10 poles. For a breakdown of Current and Potential poles by style number see Table 4, pages 19-21. A Typical FT-1 Switch Connection Schematic is given in Figure 12 on page 22. Refer to page 10 for example of FT-1 and FT-1X ordering information and ordering options.

The ordering information in Table 3, FT-1 Switch Selection Guide is developed by potential and current pole quantity's. The table begins with a single potential pole configuration and ends with the 10 pole configurations. To order a full compliment 10 pole FT switch, go to the 10 pole section of the table and select the desired potential and or current pole positions then select the style number. (Example: P P P P P C-C-C-C = 670B197G28.)

An FT-1 or FT-1X Switch with black cover and screw terminals will be supplied when ordering the standard style number as listed in Table 3, (Example: 129A501G01). An optional clear cover will be supplied instead of the black cover by using style number prefix "C," (Example: C129A501G01). The optional FT-1X extended switch with clear cover will be supplied using prefix "C" and suffix "X08," "X10" or "X12" depending on length required. (Example C129A501G01X08.)

The optional stud and nut terminals are available for the FT-1 only. For this option use style number prefix "S," (example: S129A501G01) and for optional clear cover, stud and nut terminals use style number prefix "CS." (Example: CS129A501G01.)

For FT-1 and FT-1X Switch requirements not matching an existing style number in Table 3, select the style number that comes closest to the desired configuration and indicate this in the ordering information as similar to the style number chosen. Also define the necessary requirements for the new switch configuration. Customers may also place an order by providing a complete switch arrangement definition. (Example: P P P C-C C-C C-C P.)

Switch Arrangement

Pole positions are identified from left to right on the front view of the switch by the letters "A" through "J" and pole designations are used to identify each type of pole. To develop a complete Switch Arrangement that describes a unique FT-1 or FT-1X Switch, arrange pole designation sequentially from left to right (A-J). (See Figure 10.)

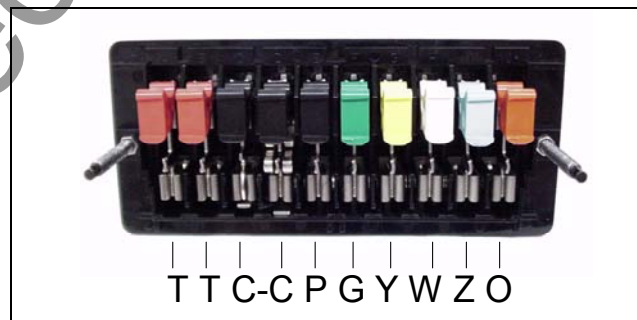


Figure 10. Color Handles with pole designation Identifier

Potential Poles

P = Potential or control Circuit Black Handle. For color potential switch handles replace the "P" with "T"=Red, "G"=Green, "Y"=Yellow, "Z"=Blue, "W"=White, "O"=Orange.

Current Poles

C = Current Circuit Non-Shorting Black handle. C-C, C-C-C, C-C-C-C = Current Shorting (make before break). For color current switch handles replace the “C” in any position with “R”=Red, “5”=Green, “6”=Yellow, “7”=Blue, “8”=White, “9”=Orange.

Every pole position has to be defined by a “Pole Designation” (“X” defines an empty pole position). Current poles can span more than one pole position. (Example: P P P P C-C-C-C T).

A space is the delimiter between potential pole designations and current poles not requiring the shorting bar, (example: P P P C-C C-C C-C P) is the complete switch arrangement definition for style number 129A514G01.

For a listing of available Pole Designations and their definitions see Tables 1 & 2 on page 9. All switch arrangements developed or ordered should be checked for adequate current transformer shorting when applied to current transformer circuits.

Terminals

All required terminal hardware is supplied with each FT-1 Switch. Screw Terminals are provided with standard FT-1 Switch styles. They require customer connections be made with a hex washer head screw. (See Fig. 11.) Stud and Nut Terminals is an optional feature and connections are made with two washers and a nut. (See Fig. 11.) A special nut driver can be purchased from ABB to connect to stud terminals. Note: The FT-1X screw terminations are #8 Phillips/slotted and the only option provided for extended version FT-1X. (See “FT Switch ordering Information” on page 11.)

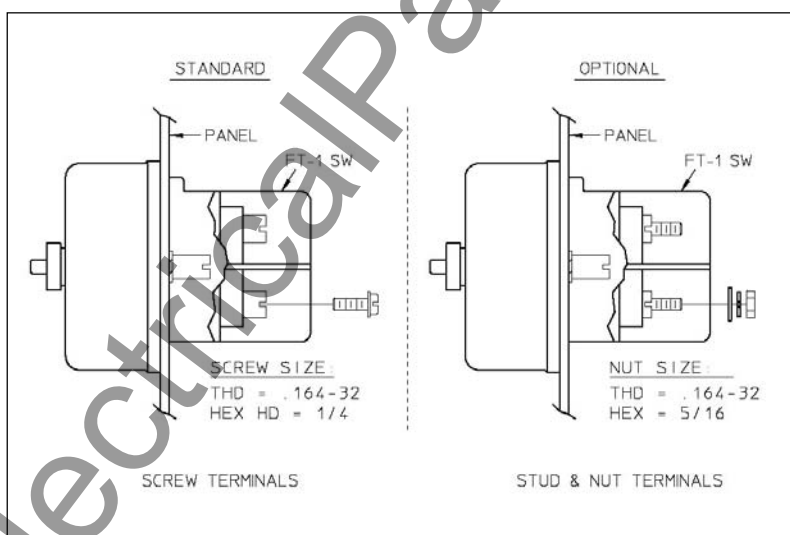


Figure 11. Standard and Optional Terminals

Accessories

In order to assure that switches are opened simultaneously a locking bar can be installed for 2 pole positions or all pole positions.

Banana type safety patch cord plugs are available for connecting equipment to the test plugs. The plug incorporates a retractable sleeve that isolates the user from connections. The patch cords are available in a set of 1 red and 1 black patch cord. These patch cords are highly flexible and durable and rated for 32 volts AC at 32 amps and 300 volts AC at 9 amps. (See “Accessories Ordering Information” on page 11.)

Table 1 – Current Poles

POLE DESIGNATIONS	HANDLE COLOR	SCHEMATIC DIAGRAM	DESCRIPTION
C[†]	BLACK		NON-SHORTING, WITH TEST JACK
R[†]	RED		
C-C^{‡*}	BLACK		CURRENT, SHORTING, WITH CURRENT TEST JACK
R-R[*]	RED		
C-A	BLACK		CURRENT, SHORTING, WITHOUT CURRENT TEST JACK
C-B	BLACK		CURRENT, SHORTING, WITHOUT CURRENT TEST JACK, WITHOUT JAW OR BLADE AT 'B'
C-D	BLACK		CURRENT, SHORTING, WITH CURRENT TEST JACK, WITHOUT BLADE AT 'D'
C-E	BLACK		CURRENT, SHORTING, WITH CURRENT TEST JACK, WITH SHORTING BLADE ALSO AT 'E'
C-C-C^{††*}	BLACK		CURRENT, SHORTING, WITH CURRENT TEST JACK, (2 POSITION SHORTING SPRING)

[†] = Current Poles C and R are special Pole Designation developed for test circuits. They are not intended for use in current transformer circuits.

[‡] = Typical Pole Designations

^{††} = Also available as C-C-A, C-C-B...up to C-C-C-C

* = Also available with color combinations BLACK

RED

GREEN

YELLOW

WHITE

BLUE

ORANGE

BLUE WHITE

C-C

R-R

5-5

6-6

8-8

7-7

9-9

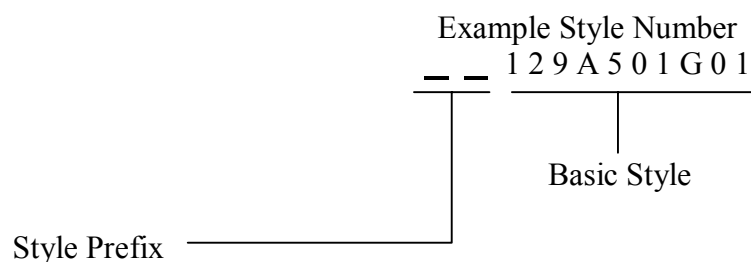
8-7

Mix & match is available

Table 2 – Potential Poles

POLE DESIGNATIONS	HANDLE COLOR	SCHEMATIC DIAGRAM	DESCRIPTION
P[‡]	BLACK		POTENTIAL, NON-SHORTING BLADE
T[‡]	RED		
G	GREEN		
Y	YELLOW		
Z	BLUE		
W	WHITE		
O	ORANGE		
L	BLACK		POTENTIAL, LONG BLADE
S	---	---	FIXED SHORTING STRAP
J	---	---	CURRENT JAW, NO BLADE
N	---	---	TERMINAL STUD IN BLADE LOCATION, NO JAW
U	---	---	STUD AND TEST CLIP
X	---	---	EMPTY POLE POSITION

[‡] = Typical Pole Designations

FT-1 Ordering Information

Null = Black Cover with screw terminals

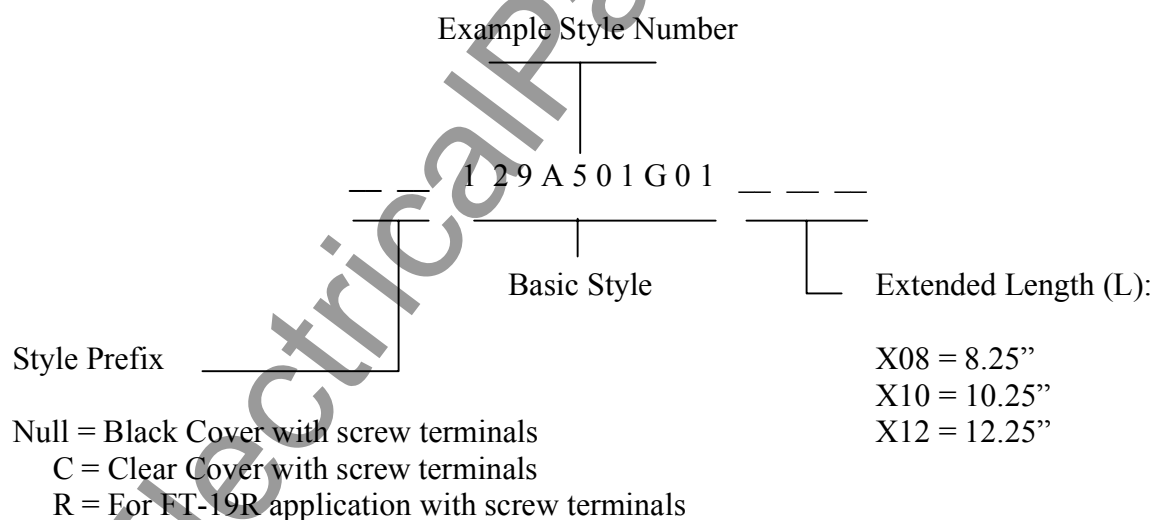
S = Black cover with stud and nut terminals

C = Clear Cover with screw terminals

CS = Clear cover with stud & nut terminals

R = For FT-19R application with screw terminals

RS = For FT-19R application with stud & nut terminals

FT-1X Extended Ordering Information

Note: Stud and nut terminations are not available for FT-1X.

FT SWITCH ORDERING INFORMATION

Style Number Prefix	Style Number	Description	Photo
None (Standard)	See Table 3	Black Cover Screw Terminals	
S	See Table 3	Black Cover Stud & Nut Terminals	
C	See Table 3	Clear Cover Screw Terminals	
CS	See Table 3	Clear Cover Stud & Nut Terminals	
R, RS	For FT-19R Applications Only (See DB 41-078)		
Suffix For extension X08 = 8.25 X10 = 10.25 X12 = 12.25	Suffix extension added to style in Table 3	Clear Cover or Black Cover Screw Terminals	

TEST PLUGS & ACCESSORIES – ORDERING INFORMATION

Description	Style Number	Photo
In-Service Series Test Plug (Order to match Flexitest FT relay case or FT-1 Switch arrangement)	See Table 3	
Individual Current Circuit Test Plug (Leads not included)	7B4618G04	
Separate Source Test Plug (10 position)	1164046	
Safety Patch Cords, 1 Red and 1 Black 6.5 ft long, with safety insulators	9688A68G01	
Clear Cover with Thumb Nuts	9676A32G01	
Black Cover with Thumb Nuts	128A973G01	
Nut Driver (For Stud & Nut Terminals only, Prefix “S”)	877A821G01	
Interlocking Bar 2 Position	1270574	
Interlocking Bar 3 Position	1164048	
Interlocking Bar 4 Position	02C9834G03	
Interlocking Bar 5 Position	02C9834G04	
Interlocking Bar 6 Position	02C9834G06	
Interlocking Bar 8 Position	02C9834G07	
Interlocking Bar 10 Position	02C9834G05	

Table 3 – FT-1 Switch Selection Guide

POTENTIAL	CURRENT	A B C D E F G H I J	STYLE	TEST PLUG
1 Pole		A B C D E F G H I J		
1	0	P	774B542G09	129A062G10
2 Pole		A B C D E F G H I J		
2	0	 P . P	291B954G15	129A062G10
2	0	. . . P . . P . .	129A534G01	129A062G10
2	0	P P	291B954G13	129A062G10
2	0	T T	291B954G14	129A062G10
2	0	T T	291B954G16	129A062G10
2	0	Z Z	9676A38G01	129A062G10
0	2	 C-C .	291B954G12	129A062G01
0	2	 C-C . .	129A531G01	129A062G08
0	2	. C-C	498A026G01	129A062G07
3 Pole		A B C D E F G H I J		
3	0	 P P P	716B871G11	129A062G10
3	0	. . . P P P . . .	716B871G09	129A062G10
3	0	P . . . P . . . P	716B871G12	129A062G10
1	2	C-C T	9663A78G01	(1)
0	3	. . . C C C . . .	716B871G10	(1)
4 Pole		A B C D E F G H I J		
4	0	. . . T P T P . . .	9676A26G01	129A062G10
4	0	. . . T T T P . . .	9676A27G01	129A062G10
4	0	. . P P P P . . .	129A524G01	129A062G10
4	0	. . T . T . T . T	291B956G31	129A062G10
4	0	. . T T T T . . .	1586C39G01	129A062G10
4	0	. . T T T T . . .	291B956G32	129A062G10
4	0	P P P P	129A506G01	129A062G10
4	0	P . . P . . P . . P	291B956G24	129A062G10
4	0	P . . P P P . . .	291B956G25	129A062G10
4	0	P P P P	129A538G01	129A062G10
4	0	P P P P	498A022G01	129A062G10
4	0	P P P T	9663A80G01	129A062G10
4	0	P P P P	9672A73G01	129A062G10
4	0	T P P T	763A166G01	129A062G10
4	0	T T T T	498A012G01	129A062G10
4	0	T . T T . T	862A584G01	129A062G10

POTENTIAL	CURRENT	A B C D E F G H I J	STYLE	TEST PLUG
4	0	T T T T	1586C39G02	129A062G10
3	1	P P C P	291B956G26	(1)
2	2	O O C-C	9688A25G01	(1)
2	2	P C-C P	129A507G01	129A062G01
2	2	P P C-C .	291B956G18	129A062G01
2	2	P P C-C	291B956G30	(1)
2	2	T C-C P	9671A05G01	129A062G01
2	2	T T C-C .	9676A36G01	129A062G01
2	2	W W C-C .	9688A03G01	129A062G01
1	3	. . . C C C . . . P	291B956G28	(1)
0	4	 C-C C-C .	291B956G13	129A062G02
0	4	. C C C C	291B956G23	(1)
0	4	. C-C . . C-C . . .	763A109G01	(1)
0	4	. C-C C-C	498A027G01	129A062G09
0	4	C C C C	291B956G27	(1)
0	4	C-C C-C	291B956G29	(1)
0	4	C-C-C-C	837A087G01	(1)
5 Pole		A B C D E F G H I J		
5	0	P P P P P	129A505G01	129A062G10
5	0	P P P P P	291B957G15	129A062G10
5	0	T T T T T	9676A37G01	129A062G10
3	2	P C-C P P	129A508G01	129A062G07
3	2	P P C-C P	129A533G01	129A062G01
3	2	P P . . C-C . . . P	291B957G17	(1)
3	2	P P P C-C	291B957G16	(1)
3	2	T P C-C T	291B957G09	129A062G01
1	4	. C C . C . C . P .	498A002G01	(1)
0	5	C . C . C . C . C .	129A555G01	(1)
6 Pole		A B C D E F G H I J		
6	0	. . . P P P P P P .	188A416G01	129A062G10
6	0	P P P P P P	837A889G01	129A062G10
6	0	P P . . P P . . P P	629A568G01	129A062G10
6	0	P P P P P P	129A504G01	129A062G10
6	0	P P P P P P	129A550G01	129A062G10
6	0	P P P P P P	291B958G25	129A062G10
6	0	P P T T T T	1586C40G01	129A062G10
6	0	T T T T P P	9683A81G01	129A062G10

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
6	0	T T T T T T	291B958G33	129A062G10
6	0	T T T T T T	9676A65G01	129A062G10
6	0	W W . . P P . . W W	9688A04G01	129A062G10
4	2	P P P C-C P	129A509G01	129A062G01
4	2	P P P P R-R	9667A02G01	(1)
4	2	T T . . . P P . C-C	9672A03G01	(1)
3	3	P P C C C P	291B958G24	(1)
3	3	P P C C-C P	129A543G01	129A062G02
3	3	P P P . . . C C C .	9676A19G01	(1)
2	4	. . . C-C C-C P P .	291B958G30	129A062G12
2	4	P C-C C-C P	129A537G01	129A062G02
2	4	P P C-C C-C	291B958G31	(1)
2	4	P . . C C C C . . P	291B958G27	(1)
0	6	 C-C C-C C-C	9672A72G01	(1)
0	6	 R-R 8-8 7-7	9688A30G01	(1)
0	6	. . . C C C C C C .	188A454G01	(1)
0	6	. . . C-A C-A C-A .	291B958G26	(1)
0	6	. . . C-A C-A C-C .	291B958G29	(1)
0	6	. . . C-B C-B C-B .	498A017G01	(1)
0	6	. . . C-C C-C C-C .	129A516G01	292B319G23
0	6	. . . R-R R-R R-R .	291B958G28	292B319G23
0	6	. . C C C C C C . .	129A523G01	(1)
0	6	. C-C . C-C . C-C .	498A014G01	(1)
0	6	. C-C C-C C-C . . .	9683A76G01	(1)
0	6	C . C . C . . C C C	188A304G01	(1)
0	6	C-C C-C C-C	9660A97G01	(1)
7 Pole		A B C D E F G H I J		
7	0	. P P P P P P P . .	129A526G01	129A062G10
7	0	P . . P P P . P P P	129A503G01	129A062G10
7	0	P . . P P P P P . P	291B959G19	129A062G10
7	0	P P P . . . P P P P	129A547G01	129A062G10
7	0	P P P . . . P P P P	291B959G30	129A062G10
7	0	P P P P . . P P P .	498A013G01	129A062G10
7	0	P P P P P P . . . T	9663A79G01	129A062G10
7	0	P P P P P P P . . .	291B959G28	129A062G10
7	0	T . . P P P . P P T	763A168G01	129A062G10
7	0	T T P . . . P P P P	291B959G33	129A062G10
5	2	P C-C P . . . P P P	188A261G01	129A062G07
5	2	P P . . . C-C P P P	129A510G01	129A062G08
5	2	P P P P P . . . C-C	291B959G27	(1)
5	2	P P P P P . . C-C .	291B959G18	129A062G01
5	2	T P . . . P P C-C T	188A622G01	129A062G01

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
5	2	T T . . . R-R T T T	9667A17G01	129A062G08
4	3	P P C . C . C . P P	188A477G01	292B319G24
3	4	P C C . C . C . P P	188A618G01	(1)
3	4	P P . . . C-C C-C P	129A511G01	129A062G02
3	4	P P P . . C-C C-C .	498A008G01	129A062G02
3	4	T C-C T C-C T . . .	291B959G26	(1)
3	4	T T T . . . C C C C	291B959G32	(1)
3	4	T T T . . C-C C-C .	291B959G20	129A062G02
3	4	T T T . C-C . . C-C	9676A79G01	(1)
1	6	. . . C-C C-C C-C T	498A003G01	292B319G23
1	6	C-C C-C C-C . . . T	9663A77G01	(1)
1	6	P C-C C-B C-B . . .	129A540G01	(1)
0	7	. . C C-C C-C C-C .	291B959G29	292B319G22
0	7	C-C C-C C-C C . . .	9676A24G01	(1)
8 Pole		A B C D E F G H I J		
8	0	. P P P P P P P .	291B960G37	129A062G10
8	0	P . . P P P P P P P	129A549G01	129A062G10
8	0	P P P . . P P P P P	719B591G09	129A062G10
8	0	P P P . P P . P P P	291B960G39	129A062G10
8	0	P P P P . . P P P P	129A502G01	129A062G10
8	0	P P P P . . P P P T	129A536G01	129A062G10
8	0	P P P P P . . P P P	129A546G01	129A062G10
8	0	P P P P P . . P T T	719B591G14	129A062G10
8	0	P P P P P P . . T T	9683A80G01	129A062G10
8	0	P P P P P P P . . .	719B591G10	129A062G10
8	0	T T T T . . T T T T	9683A10G01	129A062G10
8	0	T T T T T . . T T T	719B591G12	129A062G10
6	2	O O C-C . . Z Z Z Z	9683A71G01	(1)
6	2	P P P . . C-C P P P	291B960G26	129A062G08
6	2	P P P P P . . C-C P	188A632G01	129A062G01
6	2	P P P P P P . . C-C	291B960G36	(1)
6	2	T . . P P P P C-C T	763A167G01	129A062G01
4	4	. . P P P C-C C-C P	629A315G01	129A062G02
4	4	C-C C-C . . P P P P	719B591G13	(1)
4	4	C-C C-C . P P P P .	719B591G11	(1)
4	4	P C-C P . . P C-C P	129A512G01	129A062G06
4	4	P P . C C C C . P P	498A016G01	(1)
4	4	P P . C-C C-C . P P	129A530G01	129A062G12
4	4	P P P P . C-C C-C .	129A544G01	129A062G02
3	5	T P . . C C-C C-C T	291B960G27	292B319G23
2	6	. C C C C C C . P P	9667A21G01	(1)
2	6	. C-C C-C C-C . P P	129A521G01	129A062G09

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
2	6	. C-C C-C C-C . T T	9683A22G01	129A062G09
2	6	. C-C C-C C-C P P .	129A525G01	129A062G09
2	6	C-B C-B C-B . . P P	291B960G38	(1)
2	6	T T . . C-C C-C C-C	9668A69G01	(1)
1	7	C . . C-B C-B C-B P	498A018G01	(1)
1	7	P . C C-C C-C C-C .	498A019G01	292B319G22
0	8	. C C C C C C C C .	498A004G01	(1)
0	8	. C-C C-C C-C C-C .	129A517G01	292B319G22
0	8	. C-C-C-B . C-C-C-B	498A029G01	(1)
0	8	. C-C-C-B C-C-C-B .	291B960G20	(1)
0	8	. C-C-C-C C-C-C-C .	291B960G33	(1)
0	8	. R-R R-R R-R R-R .	9660A84G01	292B319G22
0	8	C C C C . . C C C C	188A229G01	(1)
0	8	C-C . . C-C C-C C-C	9672A10G01	(1)
0	8	C-C C-C C-C . . C-C	1586C41G01	(1)
0	8	C-C-C-A . . C-C-C-A	9683A93G01	(1)
0	8	C-C-C-A C-C-C-B . .	837A099G01	(1)
0	8	C-C-C-B . . C-C-C-B	498A025G01	(1)
0	8	C-C-C-C C-C-C-B . .	837A098G01	(1)
9 Pole		A B C D E F G H I J		
9	0	P P . P P P P P P P	129A548G01	129A062G10
9	0	P P P P . P P P P P	129A551G01	129A062G10
6	3	P P P C C C P P P .	291B961G23	(1)
6	3	P P P P P . C C C P	291B961G30	(1)
6	3	P P P P P . C C-C P	129A552G01	129A062G02
6	3	P P P P P . C-C C P	629A483G01	(1)
5	4	P P P P . C-C C-C P	188A633G01	129A062G02
5	4	P P P P P . C-C C-C	291B961G22	(1)
5	4	P P P P P C C C C .	291B961G28	(1)
5	4	P P P P P C-C C-C .	129A545G01	129A062G02
4	5	P P P P . C C-C-C-B	498A028G01	(1)
3	6	. T C-C T C-C T C-C	9663A34G01	(1)
3	6	P C-C P C-C P C-C .	861A551G01	(1)
3	6	P P . C-C C-C C-C P	129A515G01	292B319G23
3	6	P P P . C-C C-C-C-B	498A024G01	(1)
3	6	P P P C-C C-C . C C	291B961G27	(1)
3	6	P P P C-C C-C C-C .	291B961G29	292B319G23
3	6	T T . C-C C-C C-C T	9663A74G01	292B319G23
3	6	T T T C-C C-C C-C N	291B961G25	(1)
2	7	P P . C-B C-B C-B S	291B961G26	(1)
1	8	. C-C C-C C-C C-C T	498A009G01	292B319G22
1	8	T . C-C C-C C-C C-C	9668A70G01	(1)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
0	9	. C C-B C C-B C C-B	498A023G01	(1)
0	9	C C-C C-C C-C C-C .	498A021G01	(1)
0	9	C-C C-C C-C C . C-C	9676A25G01	(1)
10 Pole		A B C D E F G H I J		
10	0	G G G G G Y Y Y Y Y	9688A26G01	129A062G10
10	0	G G G G G Z Z Z Z Z	9683A88G01	129A062G10
10	0	G G G G Y Y Y Y Y Y	9683A69G01	129A062G10
10	0	O G O P P P P P P P	9688A13G01	129A062G10
10	0	O O O O O O O O O	9672A97G01	129A062G10
10	0	O O O O O Y Y Y Y Y	9688A08G01	129A062G10
10	0	O O T T T T P P P P	9683A61G01	129A062G10
10	0	O W Z Z G W Y Y W W	9683A18G01	129A062G10
10	0	P P P P P P P P P P	129A501G01	129A062G10
10	0	P P P P P P P P P T	774B430G19	129A062G10
10	0	P P P P P P P P T P	9676A88G01	129A062G10
10	0	P P P P P P P P T T	1586C42G23	129A062G10
10	0	P P P P P P P P Z Z	9671A94G01	129A062G10
10	0	P P P P P P P T T P	9672A77G01	129A062G10
10	0	P P P P P P P T T T	1586C42G25	129A062G10
10	0	P P P P P P T P P P	1586C42G29	129A062G10
10	0	P P P P P P T P P T	9676A08G01	129A062G10
10	0	P P P P P P T P T P	9672A75G01	129A062G10
10	0	P P P P P P T P T T	1586C42G30	129A062G10
10	0	P P P P P P T T T P	9672A98G01	129A062G10
10	0	P P P P P P T T T T	9672A71G01	129A062G10
10	0	P P P P P P Z Z Z Z	9671A95G01	129A062G10
10	0	P P P P P T P T P T	9676A97G01	129A062G10
10	0	P P P P P T T T T T	1586C42G24	129A062G10
10	0	P P P P P T T T T T	670B197G21	129A062G10
10	0	P P P P T P P P P P	9688A16G01	129A062G10
10	0	P P P P T P P T P P	9667A06G01	129A062G10
10	0	P P P P T P T T T T	1586C42G28	129A062G10
10	0	P P P P T T T P P P	9676A14G01	129A062G10
10	0	P P P P T T T T P P	9688A28G01	129A062G10
10	0	P P P P T T T T T P	9688A15G01	129A062G10
10	0	P P P P T T T T T T	670B197G26	129A062G10
10	0	P P P P W W T T T T	9683A95G01	129A062G10
10	0	P P P T T T T T T P	9672A74G01	129A062G10
10	0	P P T P P P P P P P	9676A90G01	129A062G10
10	0	P P T P T P P P P P	1586C42G15	129A062G10
10	0	P P T T T T T T T T	670B197G24	129A062G10
10	0	P T P P P P P P T T	9688A19G01	129A062G10

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
10	0	P T P P T P P T P P	9668A27G01	129A062G10
10	0	P T P P T T P P T P	9667A03G01	129A062G10
10	0	P T P T P P T P T P	9670A98G01	129A062G10
10	0	P T T P P P P P P P	9671A69G01	129A062G10
10	0	P T T P P P P T T T	9688A18G01	129A062G10
10	0	P T T T P P T T P P	9676A53G01	129A062G10
10	0	P T T T T T T T T T	9688A17G01	129A062G10
10	0	P T W Z P P T W Z P	9683A97G01	129A062G10
10	0	T G T Z Z Z Z Z Z Z	9688A12G01	129A062G10
10	0	T P P P P P P P P P	1586C42G31	129A062G10
10	0	T P P P P P P P P T	670B197G36	129A062G10
10	0	T P P P P T P P P P	9667A93G01	129A062G10
10	0	T P P T P P P P P P	9670A35G01	129A062G10
10	0	T P P T P P T P P P	9670A34G01	129A062G10
10	0	T P P T P P T P P T	9670A97G01	129A062G10
10	0	T P T P P P P P P P	1586C42G06	129A062G10
10	0	T P T P P P P T P T	1586C42G46	129A062G10
10	0	T P T P T P P P P P	9676A87G01	129A062G10
10	0	T P T P T P T P P P	9676A89G01	129A062G10
10	0	T P T P T P T P T P	9668A54G01	129A062G10
10	0	T P T T T P T P T P	9676A34G01	129A062G10
10	0	T T G T T T T T T T	9676A72G01	129A062G10
10	0	T T O O Y Y T T G G	9688A10G01	129A062G10
10	0	T T P P P P P P P P	1586C42G45	129A062G10
10	0	T T P P P P P P P T	9667A78G01	129A062G10
10	0	T T P P P P P P T T	1586C42G41	129A062G10
10	0	T T P P P P T T P P	9660A92G01	129A062G10
10	0	T T P P P T T P P P	9671A68G01	129A062G10
10	0	T T P P T T P P T T	9667A86G01	129A062G10
10	0	T T T P P P P P P P	9676A84G01	129A062G10
10	0	T T T P P P P T T T	9663A25G01	129A062G10
10	0	T T T T P P P P P P	670B197G31	129A062G10
10	0	T T T T T P P P P P	9671A13G01	129A062G10
10	0	T T T T T T P P P P	716B562G10	129A062G10
10	0	T T T T T T T T P P	1586C42G44	129A062G10
10	0	T T T T T T T T T T	129A539G01	129A062G10
10	0	T T T T T T Y Y Y Y	9683A03G01	129A062G10
10	0	T T T T T T Z Z Z Z	9672A02G01	129A062G10
10	0	T T T T T Z Z Z Z Z	9683A06G01	129A062G10
10	0	T T T Y Y P P P P P	9676A74G01	129A062G10
10	0	T T Y Y P P P P P P	9676A73G01	129A062G10
10	0	W W W W W W W W W	9676A93G01	129A062G10
10	0	W Y Z Z Y Y G T T T	9683A17G01	129A062G10
10	0	W Y Z Z Y Y O W W W	9683A19G01	129A062G10

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
10	0	Y G Y G Y Y Y W W W	9688A14G01	129A062G10
10	0	Y Y Y Y Y T T T T T	9688A09G01	129A062G10
10	0	Y Y Y Y Y Y Y G G	9688A24G01	129A062G10
10	0	Y Y Y Y Y Y Y Y Y	9683A01G01	129A062G10
10	0	Z Z G G G G G W W	9683A75G01	129A062G10
10	0	Z Z G G G G W W Y	9683A70G01	129A062G10
10	0	Z Z G G W W W W W	9688A23G01	129A062G10
10	0	Z Z W W W W W Y Y	9683A02G01	129A062G10
10	0	Z Z Y Y Y Y Y G W	9663A41G01	129A062G10
10	0	Z Z Z Z Z Z Z P P	9676A81G01	129A062G10
10	0	Z Z Z Z Z Z Z W W	9676A91G01	129A062G10
10	0	Z Z Z Z Z Z Z Z Z	9676A94G01	129A062G10
9	1	C P P P P P P P P P	498A011G01	(1)
9	1	C T T T T T T T T T	1586C42G39	(1)
8	2	C-A P P P P P P P P	714B325G31	(1)
8	2	C-C P P P P P P P P	837A665G01	(1)
8	2	C-C T T P P P P P P	9676A86G01	(1)
8	2	C-C T T P P T T P P	9688A07G01	(1)
8	2	C-C T T T T T T P P	9683A72G01	(1)
8	2	C-C T T T T T T T T	1586C42G20	(1)
8	2	P C C P P P T P P P	1586C42G32	(1)
8	2	P P C-C P P P P P P	670B197G33	(1)
8	2	P P P C-C P P P P P	716B562G21	(1)
8	2	P P P P P P C-C P P	9663A60G01	(1)
8	2	P P P P P P P C-C P	129A542G01	129A062G01
8	2	P P P P P P P C-C T	1586C42G38	129A062G01
8	2	P P P P P P P C-A	714B325G30	(1)
8	2	P P P P P P P C-C	716B562G26	(1)
8	2	P P P P P P R-R P	9676A15G01	129A062G01
8	2	P P P P T T P C-C P	716B562G35	129A062G01
8	2	T P P P P P P C-C P	9672A83G01	129A062G01
8	2	T P P P P P P C-C T	1586C42G26	129A062G01
8	2	T T C-C P G Y W Z O	9676A04G01	(1)
8	2	T T T T C-C T T T T	1586C42G33	(1)
8	2	T T T T T T T C-C T	1586C42G47	129A062G01
8	2	T T T T T T T R-R T	670B197G17	129A062G01
8	2	T T T T T T T C-C	9672A89G01	(1)
7	3	P P P P P P C-C P	129A553G01	(1)
6	4	C C P P P P P C C	716B562G20	(1)
6	4	C-A C-A P P P P P P	714B325G27	(1)
6	4	C-C C-C P P P P P P	498A015G01	(1)
6	4	C-C C-C P P P P T T	1586C42G13	(1)
6	4	C-C C-C P P P T T T	9672A80G01	(1)
6	4	C-C C-C P P T T T T	9676A06G01	(1)
6	4	C-C C-C T T T T T T	9663A31G01	(1)

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG	POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
6	4	C-C P P C-C P P P P	716B562G17	(1)	4	6	C-C T P C-C-C-C P T	1586C42G10	(1)
6	4	C-C P P P P C-C P P	716B562G19	(1)	4	6	C-C-C-C C-C P P P P	774B430G09	(1)
6	4	C-C P P P P P P C-C	877A077G01	(1)	4	6	C-C-C-C C-C P T P T	9676A98G01	(1)
6	4	C-C-C-A T T T T T T	9683A94G01	(1)	4	6	C-C-C-D P L C-C T T	9683A98G01	(1)
6	4	C-C-C-C P P P P P T	1586C42G11	(1)	4	6	L L L L C-E C-E C-E	9660A96G01	(1)
6	4	C-C-C-C P P P P T T	1586C42G12	(1)	4	6	O G T W C-C C-C C-C	9676A99G01	(1)
6	4	C-C-C-C T T T T T T	9672A99G01	(1)	4	6	O Y Z 8-9 8-6 8-7 P	9683A05G01	292B319G23
6	4	C-C-C-E T T T T T T	9672A87G01	(1)	4	6	P C-C C-C C-C P P P	716B562G37	129A062G09
6	4	P C-C C-C P P P P P	716B562G36	(1)	4	6	P C-C C-C C-C P P P	774B430G10	129A062G09
6	4	P C-C P P P P C-C P	129A513G01	129A062G06	4	6	P C-C P C-C P C-C P	129A528G01	(1)
6	4	P C-C P P P P C-C T	629A735G01	129A062G06	4	6	P G T C-C 5-5 R-R W	9676A58G01	292B319G23
6	4	P C-C P P P T C-C P	1586C42G22	129A062G06	4	6	P P C C C C C C P P	774B430G21	(1)
6	4	P C-C P P T T C-C T	1586C42G27	129A062G06	4	6	P P C C C C C C P P	714B325G19	(1)
6	4	P C-C-C-C P P P P P	836A867G01	(1)	4	6	P P C-C P P C-C C-C	716B562G18	(1)
6	4	P P C-A C-A P P P P	714B325G28	(1)	4	6	P P P C C C C C C P	9670A05G01	(1)
6	4	P P C-C P P C-C P P	716B562G15	(1)	4	6	P P P C-A C-A C-A P	9688A22G01	292B319G23
6	4	P P P C-C P P C-C P	129A520G01	129A062G05	4	6	P P P C-A P C-C-C-A	714B325G17	(1)
6	4	P P P P C-A C-A P P	714B325G29	(1)	4	6	P P P C-C C-C C-C P	129A514G01	292B319G23
6	4	P P P P C-C C-C P P	670B197G19	(1)	4	6	P P P C-C C-C C-C T	670B197G32	292B319G23
6	4	P P P P C-C P P C-C	670B197G34	(1)	4	6	P P P C-C C-C C-C Z	9671A93G01	292B319G23
6	4	P P P P P C-C C-C P	129A532G01	129A062G02	4	6	P P P C-C C-R C-R T	1586C42G34	292B319G23
6	4	P P P P P C-A C-A	714B325G16	(1)	4	6	P P P C-C P C-C-C-C	670B197G27	(1)
6	4	P P P P P C-C-C-A	714B325G18	(1)	4	6	P P P G R-R R-R R-R	9688A01G01	(1)
6	4	P P P P P C-C-C-C	670B197G28	(1)	4	6	P P P P C-A C-A C-A	714B325G24	(1)
6	4	P P T P P C-C C-C P	9676A09G01	129A062G02	4	6	P P P P C-C C-C C-C	1586C42G05	(1)
6	4	P P T P T P C-C-C-C	1586C42G14	(1)	4	6	P P P P C-C C-C C-C	670B197G18	(1)
6	4	P T P R-C P P R-C P	9676A71G01	129A062G05	4	6	P P P P C-C C-C C-C	1586C42G37	(1)
6	4	R-R R-R T T T T T T	670B197G25	(1)	4	6	P P P P P P C-C C-C	670B197G23	(1)
6	4	T P C P C P C P C P	670B197G37	292B319G22	4	6	P P P P R-R R-R R-R	9660A85G01	(1)
6	4	T P P C-C P P C-C P	9660A91G01	129A062G05	4	6	P P P R-R R-R R-R P	1586C42G03	292B319G23
6	4	T P P C-C T P P C-C	9676A05G01	(1)	4	6	P P T C-C C-C C-C T	1586C42G48	292B319G23
6	4	T P P P P C-C C-C T	849A307G01	(1)	4	6	P R-R P R-R P R-R P	9676A17G01	(1)
6	4	T T T R-R T T R-R T	861A670G01	129A062G05	4	6	P T Z C-7 8-7 7-C P	9676A55G01	292B319G23
5	5	P P C C-C P C-C P P	670B197G20	(1)	4	6	P T Z C-8 R-8 7-8 W	9676A68G01	292B319G23
4	6	C C C C C C P P P P	774B430G18	(1)	4	6	R-B R-B R-B T T T T	714B325G20	(1)
4	6	C C-C C-C C T T T T	1586C42G21	(1)	4	6	R-R R-R R-R T T T T	9688A11G01	(1)
4	6	C-C C-C C-C G T T T	9683A15G01	(1)	4	6	T C-C C-C C-C P P P	9676A60G01	129A062G09
4	6	C-C C-C C-C O O W W	9683A21G01	(1)	4	6	T C-C T C-C T C-C T	188A523G01	(1)
4	6	C-C C-C C-C O Y W W	9683A20G01	(1)	4	6	T P C-C C-C C-C P P	1586C42G18	(1)
4	6	C-C C-C C-C P P P P	774B430G20	(1)	4	6	T T C-C C-C C-C T T	9667A22G01	(1)
4	6	C-C C-C C-C P P P T	1586C42G36	(1)	4	6	T T P C-C C-C C-C T	9667A80G01	292B319G23
4	6	C-C C-C C-C P P T T	9671A70G01	(1)	4	6	T T P P C-C C-C C-C	9672A90G01	(1)
4	6	C-C C-C C-C T T P P	9683A73G01	(1)	4	6	T T T C-C C-C C-C P	9667A69G01	292B319G23
4	6	C-C C-C C-C T T T T	774B430G24	(1)	4	6	T T T C-C C-C C-C T	714B325G32	292B319G23
4	6	C-C P P C-C P P C-C	716B562G16	(1)	4	6	T T T C-C C-C C-C W	9676A35G01	292B319G23

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
4	6	T T T P C-C C-C C-C	9676A80G01	(1)
4	6	T T T R-R R-R R-R T	774B430G13	292B319G23
4	6	T T T T C-C C-C C-C	498A010G01	(1)
4	6	T T T T C-C C-C C-C	9676A10G01	(1)
4	6	T W Z G R-R 8-8 7-7	9683A07G01	(1)
4	6	T W Z R-R 8-8 7-7 P	9683A04G01	292B319G23
4	6	Z Z Z C-C C-C C-C Z	9672A01G01	292B319G23
4	6	Z Z Z Z C-C C-C C-C	9676A95G01	(1)
4	8	W W W W C-C C-C C-C	9688A02G01	(1)
3	3	P P P U C U C U C U	1485B70G09	(1)
3	6	L L L U C-E C-E C-E	1485B70G10	(1)
3	6	P P P C-B C-B C-B S	716B562G30	(1)
3	6	P P P S C-C C-C C-C	774B430G16	(1)
3	6	T T T C-C C-C C-C U	1485B70G11	(1)
3	7	9-C 6-C 7-C 8 P G P	9683A96G01	(1)
3	7	C-C C-C C-C C P P P	1586C42G43	(1)
3	7	C-C P C-C P C-C P C	714B325G22	(1)
3	7	P G T C-C 5-5 R-R 8	9676A76G01	(1)
3	7	P P C C-C C C-C C P	716B562G12	(1)
3	7	P P C C-C C-C C-C P	129A535G01	292B319G22
3	7	P P C C-C C-C C-C T	9672A86G01	292B319G22
3	7	P P P C C C C C C C	1586C42G17	(1)
3	7	P P P C C-C C-C C-C	9671A26G01	(1)
3	7	P P P C-C C-C C-C C	1586C42G19	(1)
3	7	P P P C-C C-C C-C C	714B325G11	(1)
3	7	P P P C-C C-C C-C C	714B325G25	(1)
3	7	P T C C-C C-C C-C T	670B197G22	292B319G22
3	7	T T C C-C C-C C-C T	670B197G35	292B319G22
3	7	T T T C-C C-C C-C C	9663A59G01	(1)
2	7	P S P R-R R-R R-R C	9676A83G01	(1)
2	8	5-5 5-5 5-5 5-5 G G	9683A87G01	(1)
2	8	7-7 7-7 7-7 7-7 Z Z	9683A89G01	(1)
2	8	C-A P P C C-C C C-C	714B325G21	(1)
2	8	C-C C-C C-C C-C P P	837A407G01	(1)
2	8	C-C C-C C-C C-C P T	9672A95G01	(1)
2	8	C-C C-C C-C C-C T P	9676A11G01	(1)
2	8	C-C C-C C-C C-C T T	774B430G22	(1)
2	8	C-C C-C C-C C-C W W	9683A16G01	(1)
2	8	C-C C-C P C C C C P	837A664G01	(1)
2	8	C-C P P C C-C C C-C	716B562G24	(1)
2	8	C-C T C-C C-C C-C T	9667A68G01	(1)
2	8	C-C C-B C-C C-B P P	498A031G01	(1)
2	8	C-C C-C C C C-C P P	716B562G38	(1)
2	8	C-C C-C C-C C-C P P	714B325G15	(1)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
2	8	C-C-C-C C-C-C-B P P	837A101G01	(1)
2	8	C-C-C-C C-C-C-B T T	1586C42G42	(1)
2	8	C-C-C-C C-C-C-C P P	774B430G11	(1)
2	8	C-C-C-C C-C-C-C P T	1586C42G09	(1)
2	8	C-C-C-C C-C-C-C T P	9671A22G01	(1)
2	8	C-C-C-C P C-C-C-C P	9672A94G01	(1)
2	8	C-C-C-C T C-C-C-C T	9676A01G01	(1)
2	8	C-C-C-D C-C-C-B P P	498A032G01	(1)
2	8	C-C-C-D C-C-C-D P P	714B325G13	(1)
2	8	C-C-C-D C-C-C-D P P	774B430G12	(1)
2	8	C-C-C-E C-C-C-E T T	9672A23G01	(1)
2	8	C-C-C-E T C-C-C-E T	9672A88G01	(1)
2	8	C-C-E C C-C C-C P P	716B562G39	(1)
2	8	P C C C C C C C C P	129A519G01	(1)
2	8	P C C C C P C C C C	716B562G27	(1)
2	8	P C-C C-C C-C C-C P	129A518G01	292B319G22
2	8	P C-C C-C C-C C-C T	1586C42G08	292B319G22
2	8	P C-C C-C C-C C-C T	837A616G01	292B319G22
2	8	P P C-C C-C C-C C-C	716B562G25	(1)
2	8	P P C-C-C-C C-C-C-C	9676A96G01	(1)
2	8	P R-R R-R R-R R-R P	9683A99G01	292B319G22
2	8	R-B R-B R-B R-B T T	714B325G12	(1)
2	8	R-C R-C R-C R-C T T	716B562G11	(1)
2	8	T C C C C C C C C P	9671A04G01	(1)
2	8	T C C C C C C C C T	9671A12G01	(1)
2	8	T C C C-C C-C C-C T	876A157G01	(1)
2	8	T C-C C-C C-C C-C P	670B197G38	292B319G22
2	8	T C-C C-C C-C C-C T	849A513G01	292B319G22
2	8	T C-C C-C C-C C-C Y	9676A75G01	292B319G22
2	8	T R-R R-R R-R R-R T	716B562G28	292B319G22
2	8	T T C-C C-C C-C C-C	1586C42G16	(1)
2	8	T T C-C C-C C-C C-C	774B430G28	(1)
1	9	C C C C C C C C C P	129A541G01	(1)
1	9	C C C C C C C C C T	188A286G01	(1)
1	9	C C C C-C C-C C-C P	670B197G16	(1)
1	9	C-C C-C C-C C-C C P	1586C42G40	(1)
1	9	C-C C-C C-C C-C C T	1586C42G35	(1)
1	9	P C-C C C-C C C-C C	714B325G23	(1)
1	9	P C-C-C-B C C-C-C-B	498A030G01	(1)
0	10	C C C C C C C C C C	129A529G01	(1)
0	10	C C C C C C C C C C	774B430G17	(1)
0	10	C C C C-C C-C C-C C	9676A18G01	(1)
0	10	C C-B C C-B C C-B C	716B562G14	(1)
0	10	C C-C C-C C-C C-C C	716B562G13	(1)

Table 3 – FT-1 Switch Selection Guide (continued)

POTT	CUR	A B C D E F G H I J	STYLE	TEST PLUG
0	10	C-C C-C C C C-C C-C	714B325G26	(1)
0	10	C-C C-C C-C C-C C C	774B430G15	(1)
0	10	C-C C-C C-C C-C C-C	498A020G01	(1)
0	10	C-C C-C C-C C-C R R	9676A23G01	(1)
0	10	C-C C-C C-C C-C-C-C	9676A20G01	(1)
0	10	C-C-C-A C-A C-A C-A	9683A92G01	(1)
0	10	C-C-C-A C-C C-C C-A	774B430G14	(1)
0	10	C-C-C-B C-C C-C-C-B	498A001G01	(1)
0	10	C-C-C-C C-C C-C C-C	714B325G14	(1)
0	10	C-C-C-C C-C-C-C C-C	774B430G23	(1)
0	10	C-D C-D C-D C-D C-D	9676A07G01	(1)
0	10	C-E C-E C-E C-E C-E	714B325G09	(1)
0	10	J J J J J J J J J J	291B962G31	(1)
0	10	R-B R-B R-B R-B R-B	714B325G10	(1)
0	10	R-C R-C R-C R-C R-C	716B562G09	(1)
0	10	R-R R-R R-R R-R R-R	9663A33G01	(1)

Table 4 FT-1 Switch Selection by Style

POTENTIAL	CURRENT	STYLE
10	0	129A501G01
8	0	129A502G01
7	0	129A503G01
6	0	129A504G01
5	0	129A505G01
4	0	129A506G01
2	2	129A507G01
3	2	129A508G01
4	2	129A509G01
5	2	129A510G01
3	4	129A511G01
4	4	129A512G01
6	4	129A513G01
4	6	129A514G01
3	6	129A515G01
0	6	129A516G01
0	8	129A517G01
2	8	129A518G01
2	8	129A519G01
6	4	129A520G01
2	6	129A521G01
0	6	129A523G01
4	0	129A524G01
2	6	129A525G01
7	0	129A526G01
4	6	129A528G01
0	10	129A529G01
4	4	129A530G01
0	2	129A531G01
6	4	129A532G01
3	2	129A533G01
2	0	129A534G01
3	7	129A535G01
8	0	129A536G01
2	4	129A537G01
4	0	129A538G01
10	0	129A539G01
1	6	129A540G01
1	9	129A541G01
8	2	129A542G01
3	3	129A543G01
4	4	129A544G01
5	4	129A545G01
8	0	129A546G01

POTENTIAL	CURRENT	STYLE
9	0	129A548G01
8	0	129A549G01
6	0	129A550G01
9	0	129A551G01
6	3	129A552G01
7	3	129A553G01
0	5	129A555G01
3	3	1485B70G09
3	6	1485B70G10
3	6	1485B70G11
4	0	1586C39G01
4	0	1586C39G02
6	0	1586C40G01
0	8	1586C41G01
0	10	1586C42G02
4	6	1586C42G03
4	6	1586C42G05
10	0	1586C42G06
2	8	1586C42G08
2	8	1586C42G09
4	6	1586C42G10
6	4	1586C42G11
6	4	1586C42G12
6	4	1586C42G13
6	4	1586C42G14
10	0	1586C42G15
2	8	1586C42G16
3	7	1586C42G17
4	6	1586C42G18
3	7	1586C42G19
8	2	1586C42G20
4	6	1586C42G21
6	4	1586C42G22
10	0	1586C42G23
10	0	1586C42G24
10	0	1586C42G25
8	2	1586C42G26
6	4	1586C42G27
10	0	1586C42G28
10	0	1586C42G29
10	0	1586C42G30
10	0	1586C42G31
8	2	1586C42G32
8	2	1586C42G33

POTENTIAL	CURRENT	STYLE
4	6	1586C42G34
1	9	1586C42G35
4	6	1586C42G36
4	6	1586C42G37
8	2	1586C42G38
9	1	1586C42G39
1	9	1586C42G40
10	0	1586C42G41
2	8	1586C42G42
3	7	1586C42G43
10	0	1586C42G44
10	0	1586C42G45
10	0	1586C42G46
8	2	1586C42G47
4	6	1586C42G48
0	8	188A229G01
5	2	188A261G01
1	9	188A286G01
0	6	188A304G01
6	0	188A416G01
0	6	188A454G01
4	3	188A477G01
4	6	188A523G01
3	4	188A618G01
5	2	188A622G01
6	2	188A632G01
5	4	188A633G01
0	2	291B954G12
2	0	291B954G13
2	0	291B954G14
2	0	291B954G15
2	0	291B954G16
0	4	291B956G13
2	2	291B956G18
0	4	291B956G23
4	0	291B956G24
4	0	291B956G25
3	1	291B956G26
0	4	291B956G27
1	3	291B956G28
0	4	291B956G29
2	2	291B956G30
4	0	291B956G31
4	0	291B956G32

POTENTIAL	CURRENT	STYLE
3	2	291B957G09
5	0	291B957G15
3	2	291B957G16
3	2	291B957G17
3	3	291B958G24
6	0	291B958G25
0	6	291B958G26
2	4	291B958G27
0	6	291B958G28
0	6	291B958G29
2	4	291B958G30
2	4	291B958G31
6	0	291B958G33
5	2	291B959G18
7	0	291B959G19
3	4	291B959G20
3	4	291B959G26
5	2	291B959G27
7	0	291B959G28
0	7	291B959G29
7	0	291B959G30
3	4	291B959G32
7	0	291B959G33
0	8	291B960G20
6	2	291B960G26
3	5	291B960G27
0	8	291B960G33
6	2	291B960G36
8	0	291B960G37
2	6	291B960G38
8	0	291B960G39
5	4	291B961G22
6	3	291B961G23
3	6	291B961G25
2	7	291B961G26
3	6	291B961G27
5	4	291B961G28
3	6	291B961G29
6	3	291B961G30
0	10	291B962G31
0	10	498A001G01
1	4	498A002G01
1	6	498A003G01
0	8	498A004G01

Table 4 FT-1 Switch Selection by Style (continued)

POTENTIAL	CURRENT	STYLE
3	4	498A008G01
1	8	498A009G01
4	6	498A010G01
9	1	498A011G01
4	0	498A012G01
7	0	498A013G01
0	6	498A014G01
6	4	498A015G01
4	4	498A016G01
0	6	498A017G01
1	7	498A018G01
1	7	498A019G01
0	10	498A020G01
0	9	498A021G01
4	0	498A022G01
0	9	498A023G01
3	6	498A024G01
0	8	498A025G01
0	2	498A026G01
0	4	498A027G01
4	5	498A028G01
0	8	498A029G01
1	9	498A030G01
2	8	498A031G01
2	8	498A032G01
4	4	629A315G01
6	3	629A483G01
6	0	629A568G01
6	4	629A735G01
1	9	670B197G16
8	2	670B197G17
4	6	670B197G18
6	4	670B197G19
5	5	670B197G20
10	0	670B197G21
3	7	670B197G22
4	6	670B197G23
10	0	670B197G24
6	4	670B197G25
10	0	670B197G26
4	6	670B197G27
6	4	670B197G28
10	0	670B197G31
4	6	670B197G32

POTENTIAL	CURRENT	STYLE
8	2	670B197G33
6	4	670B197G34
3	7	670B197G35
10	0	670B197G36
6	4	670B197G37
2	8	670B197G38
0	10	714B325G09
0	10	714B325G10
3	7	714B325G11
2	8	714B325G12
2	8	714B325G13
0	10	714B325G14
2	8	714B325G15
6	4	714B325G16
4	6	714B325G17
6	4	714B325G18
4	6	714B325G19
4	6	714B325G20
2	8	714B325G21
3	7	714B325G22
1	9	714B325G23
4	6	714B325G24
3	7	714B325G25
0	10	714B325G26
6	4	714B325G27
6	4	714B325G28
6	4	714B325G29
8	2	714B325G30
8	2	714B325G31
4	6	714B325G32
0	10	716B562G09
10	0	716B562G10
2	8	716B562G11
3	7	716B562G12
0	10	716B562G13
0	10	716B562G14
6	4	716B562G15
4	6	716B562G16
6	4	716B562G17
4	6	716B562G18
6	4	716B562G19
6	4	716B562G20
8	2	716B562G21
2	8	716B562G24

POTENTIAL	CURRENT	STYLE
2	8	716B562G25
8	2	716B562G26
2	8	716B562G27
2	8	716B562G28
3	6	716B562G30
8	2	716B562G35
6	4	716B562G36
4	6	716B562G37
2	8	716B562G38
2	8	716B562G39
3	0	716B871G09
0	3	716B871G10
3	0	716B871G11
3	0	716B871G12
8	0	719B591G09
8	0	719B591G10
4	4	719B591G11
8	0	719B591G12
4	4	719B591G13
8	0	719B591G14
0	4	763A109G01
4	0	763A166G01
6	2	763A167G01
7	0	763A168G01
4	6	774B430G09
4	6	774B430G10
2	8	774B430G11
2	8	774B430G12
4	6	774B430G13
0	10	774B430G14
0	10	774B430G15
3	6	774B430G16
0	10	774B430G17
4	6	774B430G18
10	0	774B430G19
4	6	774B430G20
4	6	774B430G21
2	8	774B430G22
0	10	774B430G23
4	6	774B430G24
2	8	774B430G28
1	0	774B542G09
6	4	836A867G01
0	4	837A087G01

POTENTIAL	CURRENT	STYLE
0	8	837A098G01
0	8	837A099G01
2	8	837A101G01
2	8	837A407G01
2	8	837A616G01
2	8	837A664G01
8	2	837A665G01
6	0	837A889G01
6	4	849A307G01
2	8	849A513G01
3	6	861A551G01
6	4	861A670G01
4	0	862A584G01
2	8	876A157G01
6	4	877A077G01
0	8	9660A84G01
4	6	9660A85G01
6	4	9660A91G01
10	0	9660A92G01
4	6	9660A96G01
0	6	9660A97G01
10	0	9663A25G01
6	4	9663A31G01
0	10	9663A33G01
3	6	9663A34G01
10	0	9663A41G01
3	7	9663A59G01
8	2	9663A60G01
3	6	9663A74G01
1	6	9663A77G01
1	2	9663A78G01
7	0	9663A79G01
4	0	9663A80G01
4	2	9667A02G01
10	0	9667A03G01
10	0	9667A06G01
5	2	9667A17G01
2	6	9667A21G01
4	6	9667A22G01
2	8	9667A68G01
4	6	9667A69G01
10	0	9667A78G01
4	6	9667A80G01
10	0	9667A86G01

Table 4 FT-1 Switch Selection by Style (continued)

POTENTIAL	CURRENT	STYLE
10	0	9667A93G01
10	0	9668A27G01
10	0	9668A54G01
2	6	9668A69G01
1	8	9668A70G01
4	6	9670A05G01
10	0	9670A34G01
10	0	9670A35G01
10	0	9670A97G01
10	0	9670A98G01
2	8	9671A04G01
2	2	9671A05G01
2	8	9671A12G01
10	0	9671A13G01
2	8	9671A22G01
3	7	9671A26G01
10	0	9671A68G01
10	0	9671A69G01
4	6	9671A70G01
4	6	9671A93G01
10	0	9671A94G01
10	0	9671A95G01
4	6	9672A01G01
10	0	9672A02G01
4	2	9672A03G01
0	8	9672A10G01
2	8	9672A23G01
10	0	9672A71G01
0	6	9672A72G01
4	0	9672A73G01
10	0	9672A74G01
10	0	9672A75G01
10	0	9672A77G01
6	4	9672A80G01
8	2	9672A83G01
3	7	9672A86G01
6	4	9672A87G01
2	8	9672A88G01
8	2	9672A89G01
4	6	9672A90G01
2	8	9672A94G01
2	8	9672A95G01
10	0	9672A97G01
10	0	9672A98G01

POTENTIAL	CURRENT	STYLE
6	4	9672A99G01
2	8	9676A01G01
8	2	9676A04G01
6	4	9676A05G01
6	4	9676A06G01
0	10	9676A07G01
10	0	9676A08G01
6	4	9676A09G01
4	6	9676A10G01
2	8	9676A11G01
10	0	9676A14G01
8	2	9676A15G01
4	6	9676A17G01
0	10	9676A18G01
3	3	9676A19G01
0	10	9676A20G01
0	10	9676A23G01
0	7	9676A24G01
0	9	9676A25G01
4	0	9676A26G01
4	0	9676A27G01
10	0	9676A34G01
4	6	9676A35G01
2	2	9676A36G01
5	0	9676A37G01
2	0	9676A38G01
10	0	9676A53G01
4	6	9676A55G01
4	6	9676A58G01
4	6	9676A60G01
6	0	9676A65G01
4	6	9676A68G01
6	4	9676A71G01
10	0	9676A72G01
10	0	9676A73G01
10	0	9676A74G01
2	8	9676A75G01
3	7	9676A76G01
3	4	9676A79G01
4	6	9676A80G01
10	0	9676A81G01
2	7	9676A83G01
10	0	9676A84G01
8	2	9676A86G01

POTENTIAL	CURRENT	STYLE
10	0	9676A87G01
10	0	9676A88G01
10	0	9676A89G01
10	0	9676A90G01
10	0	9676A91G01
10	0	9676A93G01
10	0	9676A94G01
4	6	9676A95G01
2	8	9676A96G01
10	0	9676A97G01
4	6	9676A98G01
4	6	9676A99G01
10	0	9683A01G01
10	0	9683A02G01
10	0	9683A03G01
4	6	9683A04G01
4	6	9683A05G01
10	0	9683A06G01
4	6	9683A07G01
8	0	9683A10G01
4	6	9683A15G01
2	8	9683A16G01
10	0	9683A17G01
10	0	9683A18G01
10	0	9683A19G01
4	6	9683A20G01
4	6	9683A21G01
2	6	9683A22G01
10	0	9683A61G01
10	0	9683A69G01
10	0	9683A70G01
6	2	9683A71G01
8	2	9683A72G01
4	6	9683A73G01
10	0	9683A75G01
0	6	9683A76G01
8	0	9683A80G01
6	0	9683A81G01
2	8	9683A87G01
10	0	9683A88G01
2	8	9683A89G01
0	10	9683A92G01
0	8	9683A93G01
6	4	9683A94G01

POTENTIAL	CURRENT	STYLE
10	0	9683A95G01
3	7	9683A96G01
10	0	9683A97G01
4	6	9683A98G01
2	8	9683A99G01
4	6	9688A01G01
4	8	9688A02G01
2	2	9688A03G01
6	0	9688A04G01
8	2	9688A07G01
10	0	9688A08G01
10	0	9688A09G01
10	0	9688A10G01
4	6	9688A11G01
10	0	9688A12G01
10	0	9688A13G01
10	0	9688A14G01
10	0	9688A15G01
10	0	9688A16G01
10	0	9688A17G01
10	0	9688A18G01
10	0	9688A19G01
10	0	9688A20G01
4	6	9688A22G01
10	0	9688A23G01
10	0	9688A24G01
2	2	9688A25G01
10	0	9688A26G01
10	0	9688A28G01
0	6	9688A30G01

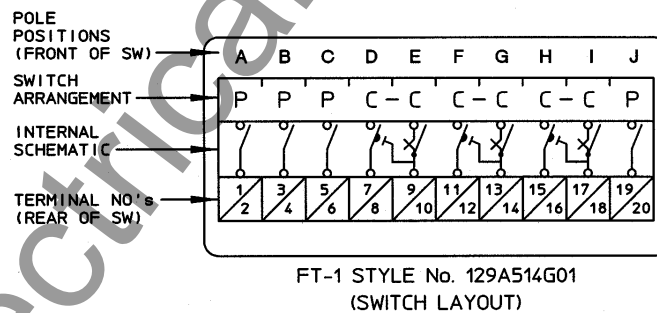
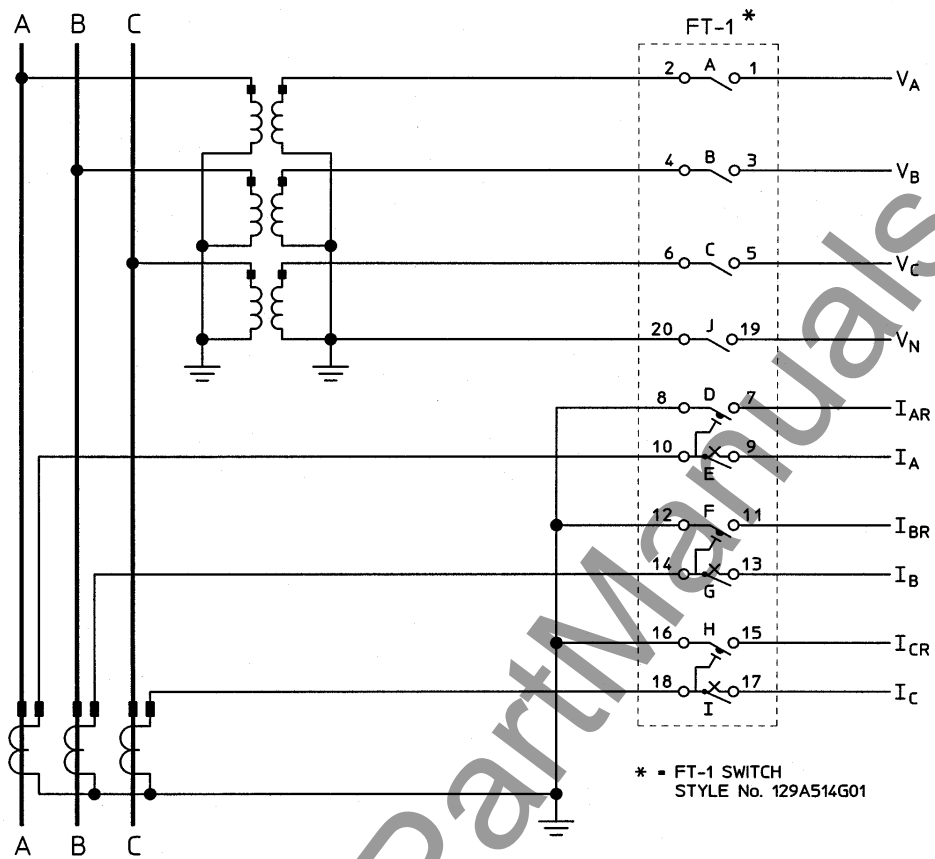


Figure 12. Typical FT-1 Switch Connection Schematic

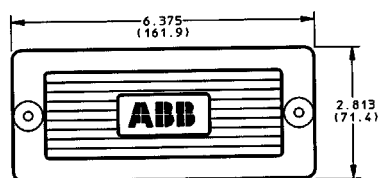


FIG. 1 STANDARD - BLACK COVER

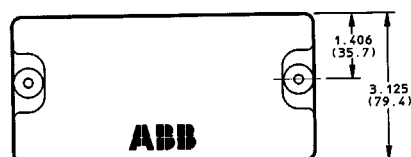
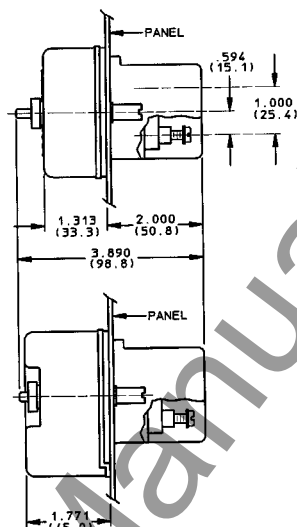
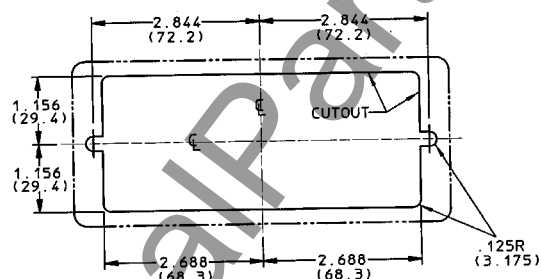


FIG. 2 OPTIONAL - CLEAR COVER

(OTHERWISE SAME AS FIG. 1)



DRILLING PLAN



Extended Length - "L"

X08 = 8.25"

X10 = 10.25"

X12 = 12.25"

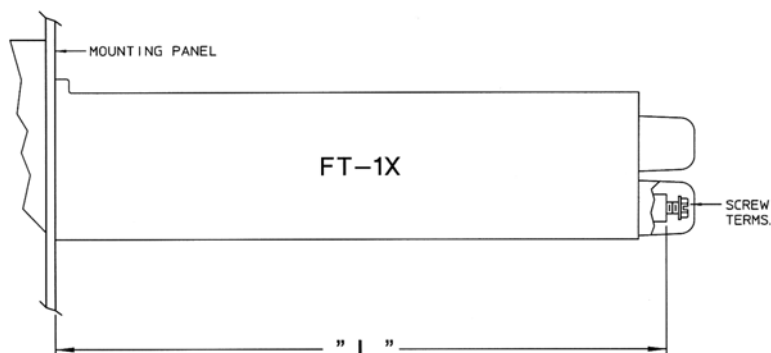


Figure 13. FT-1 Switch, Outline and Drilling Plan, with Standard Black Cover or Optional Clear Cover

NOTES



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