



**MOTOROLA**

# ANTENNA RELAY MODULE

**Model CLN6680**

## 1

### DESCRIPTION

Model CLN6680 provides an Antenna Relay module for use with the MTR2000 station. This section provides a general description, option complement, identification of inputs/outputs, and functional theory of operation. The information provided is sufficient to give service personnel a functional understanding of the module, allowing maintenance and troubleshooting to the module level. (Refer also to the Maintenance and Troubleshooting section of this manual for detailed troubleshooting procedures for all modules in the station.)

#### General Description

This Antenna Relay module allows a single antenna to be used for both transmit and receive functions (base station applications only). The Antenna Relay is controlled by a signal from the Station Control Module to connect the antenna to either the Power Amplifier Module (transmit) or Receiver Module (receive). The Antenna Relay module is mounted on a flange provided on the rear of the Power Supply Module.

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INPUTS AND OUTPUT CONNECTIONS

Figure 1 shows the Antenna Relay module input and output connections.

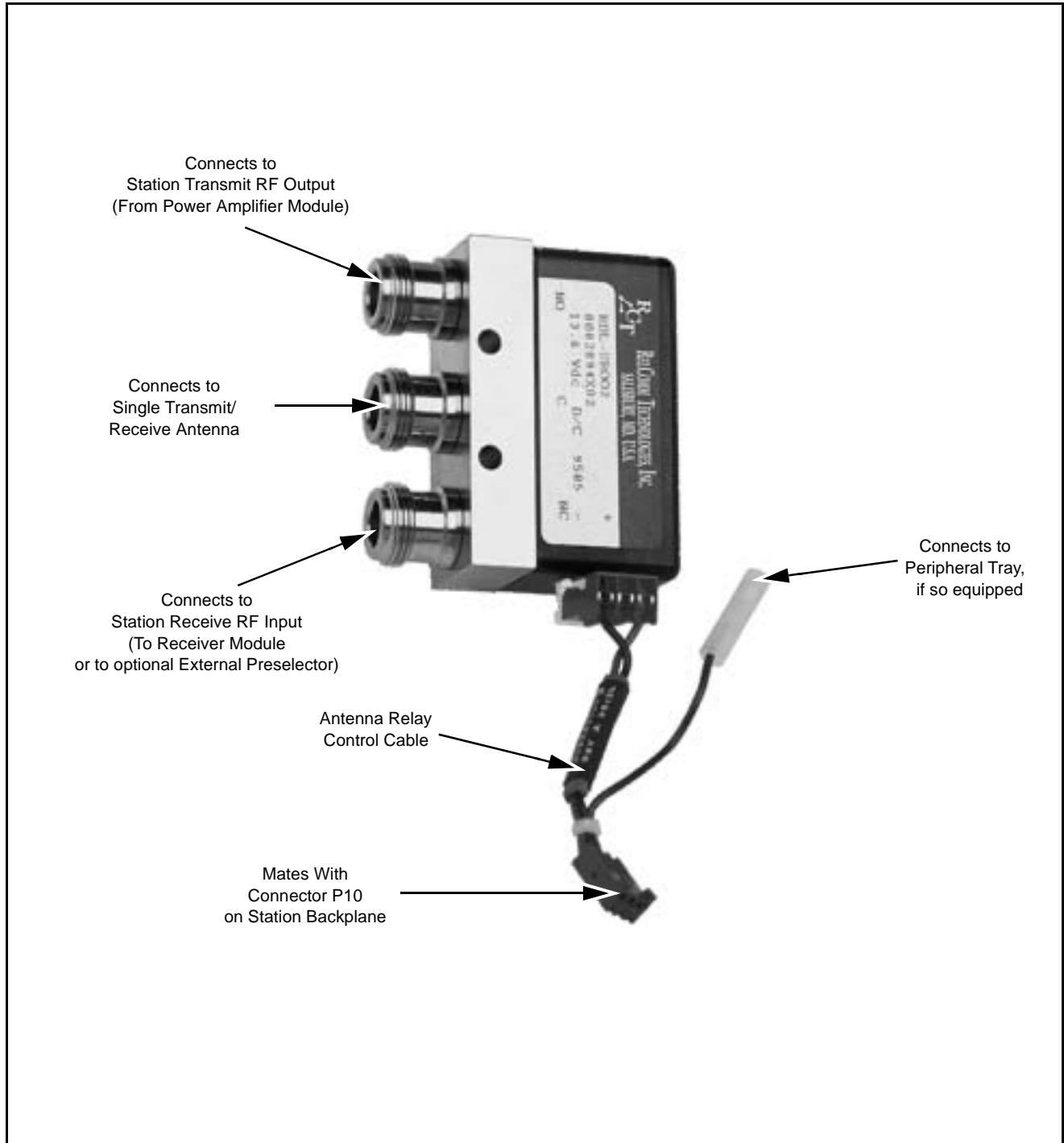


Figure 1. Typical Antenna Relay Module – Inputs/Outputs

## Cables

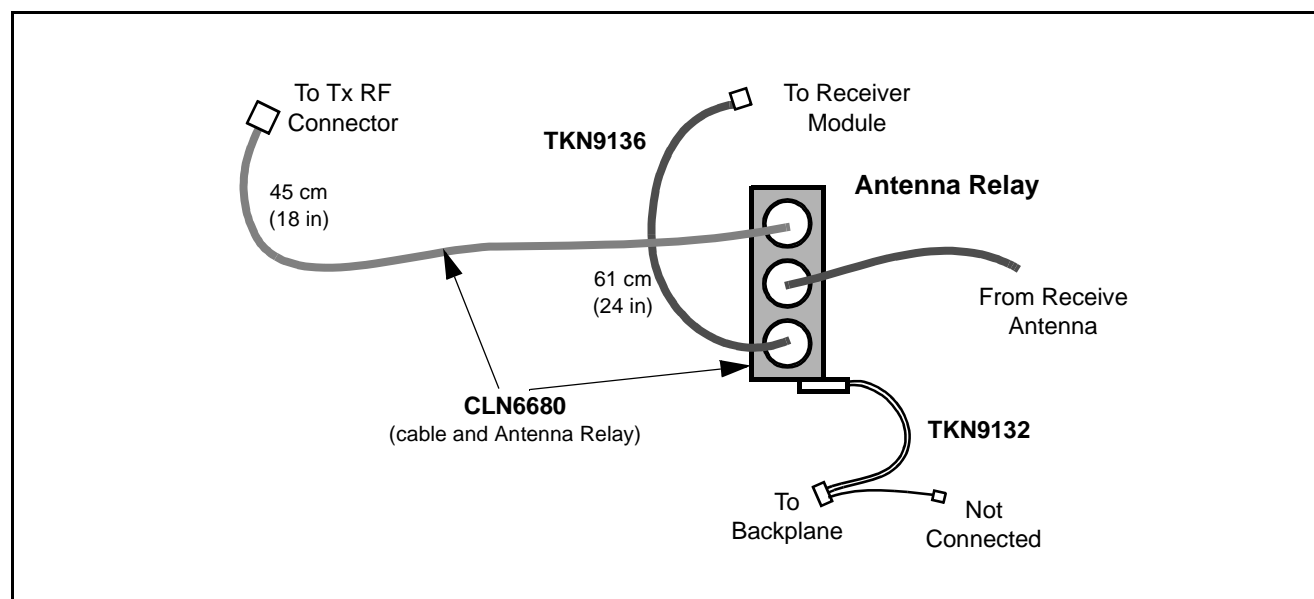
The set of cables used to connect an Antenna Relay to the MTR2000 station depends on what ancillary equipment is connected to the station.

A station can be configured with the following ancillary equipment:

- an Antenna Relay only.  
Figure 2 shows the kits required when only an Antenna Relay is installed on a station.
- an Antenna Relay and an External Preselector.  
Figure 3 shows the kits required when an Antenna Relay and an External Preselector are installed on a station.
- an Antenna Relay and an External Double Circulator.  
Figure 4 shows the kits required when an Antenna Relay and External Double Circulator are installed on a station.
- an Antenna Relay, an External Preselector, and an External Double Circulator.  
Figure 5 shows the kits required when an Antenna Relay, External Preselector, and External Double Circulator are installed on a station.



Some of the ancillary equipment listed above is not available on all stations. For example, an External Preselector is not available for 800 or 900MHz stations.



**Figure 2. Antenna Relay Only – Cable Kits**

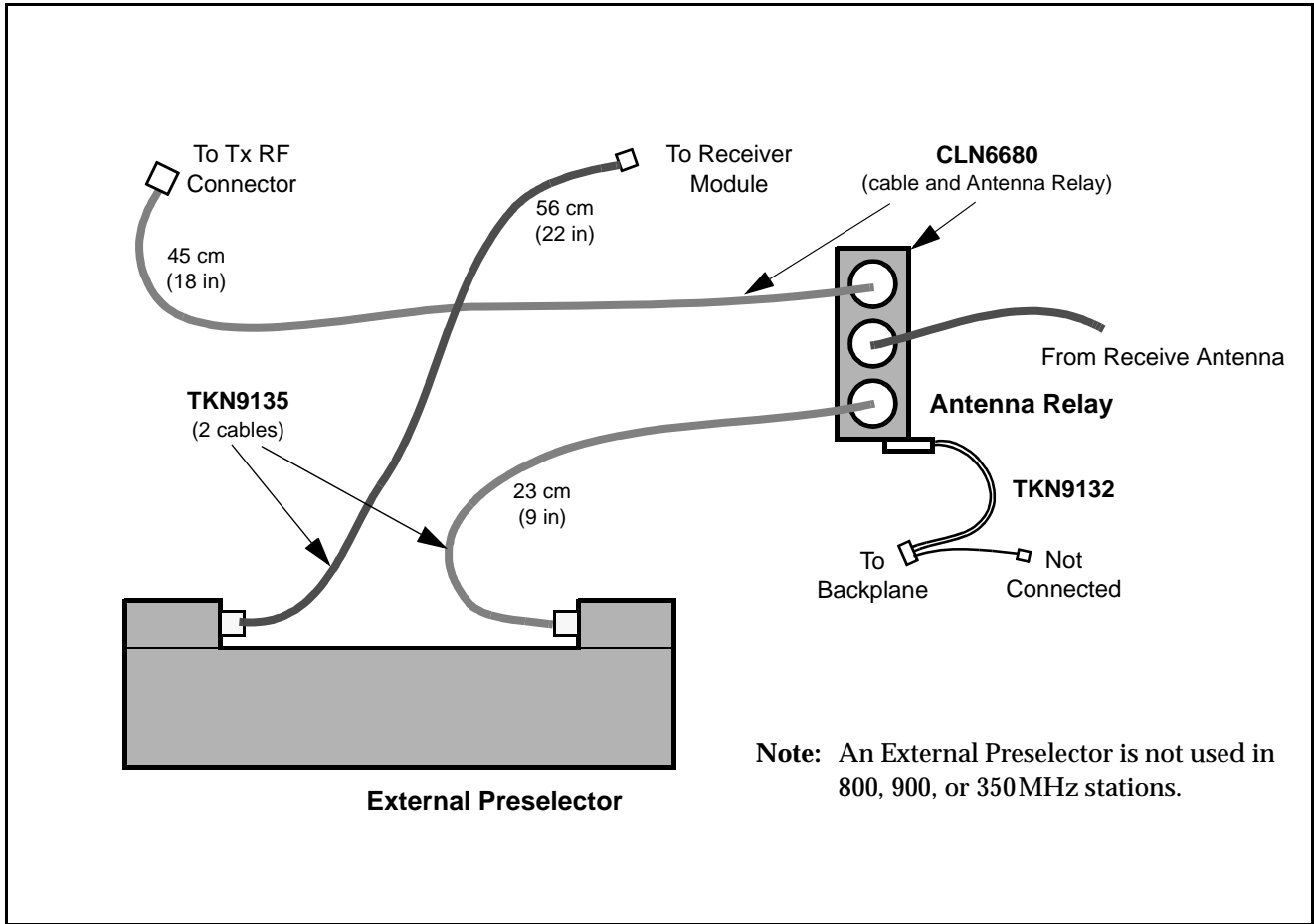
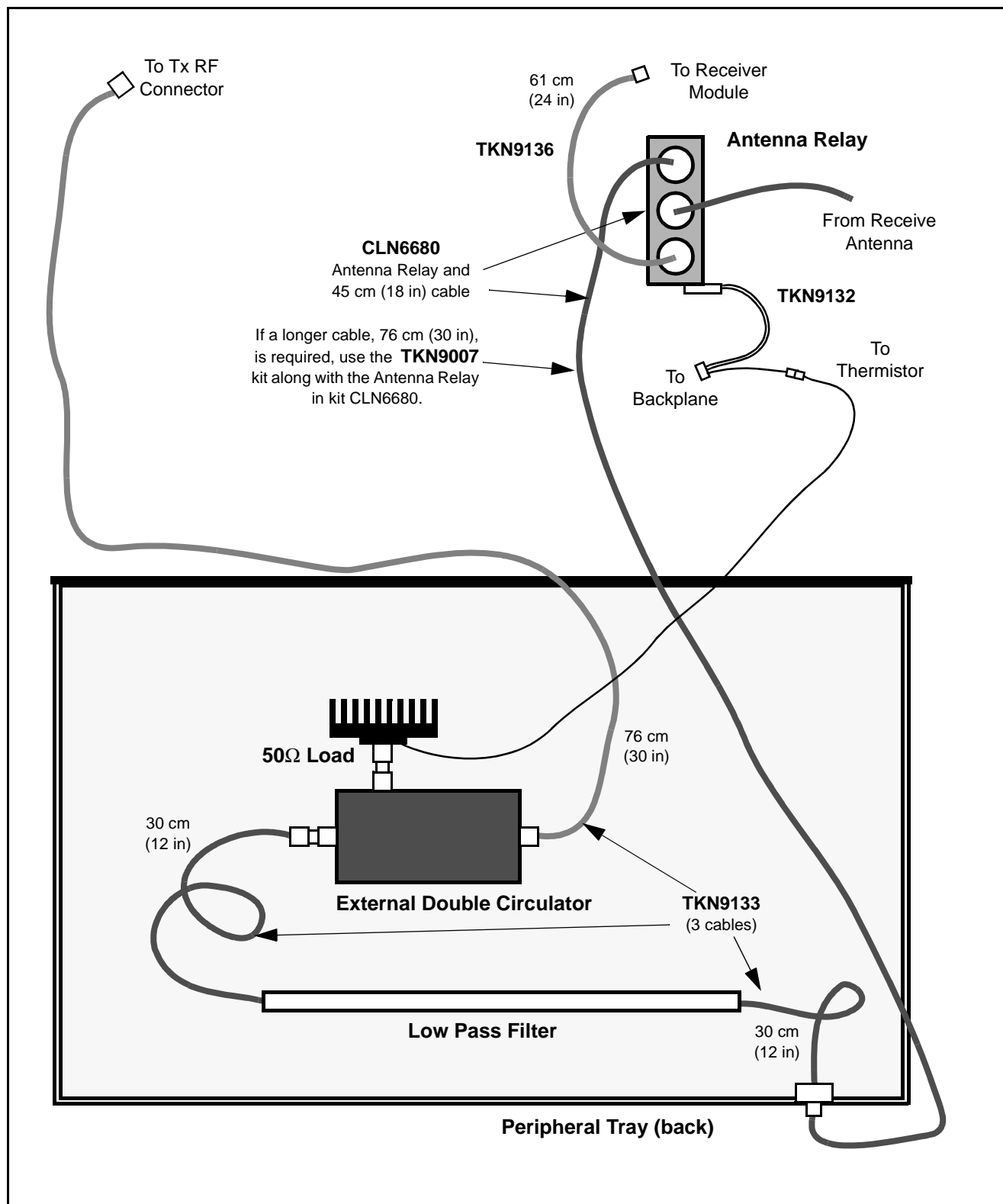


Figure 3. Antenna Relay and External Preselector – Cable Kits



**Figure 4. Antenna Relay and External Double Circulator- Cable Kits**

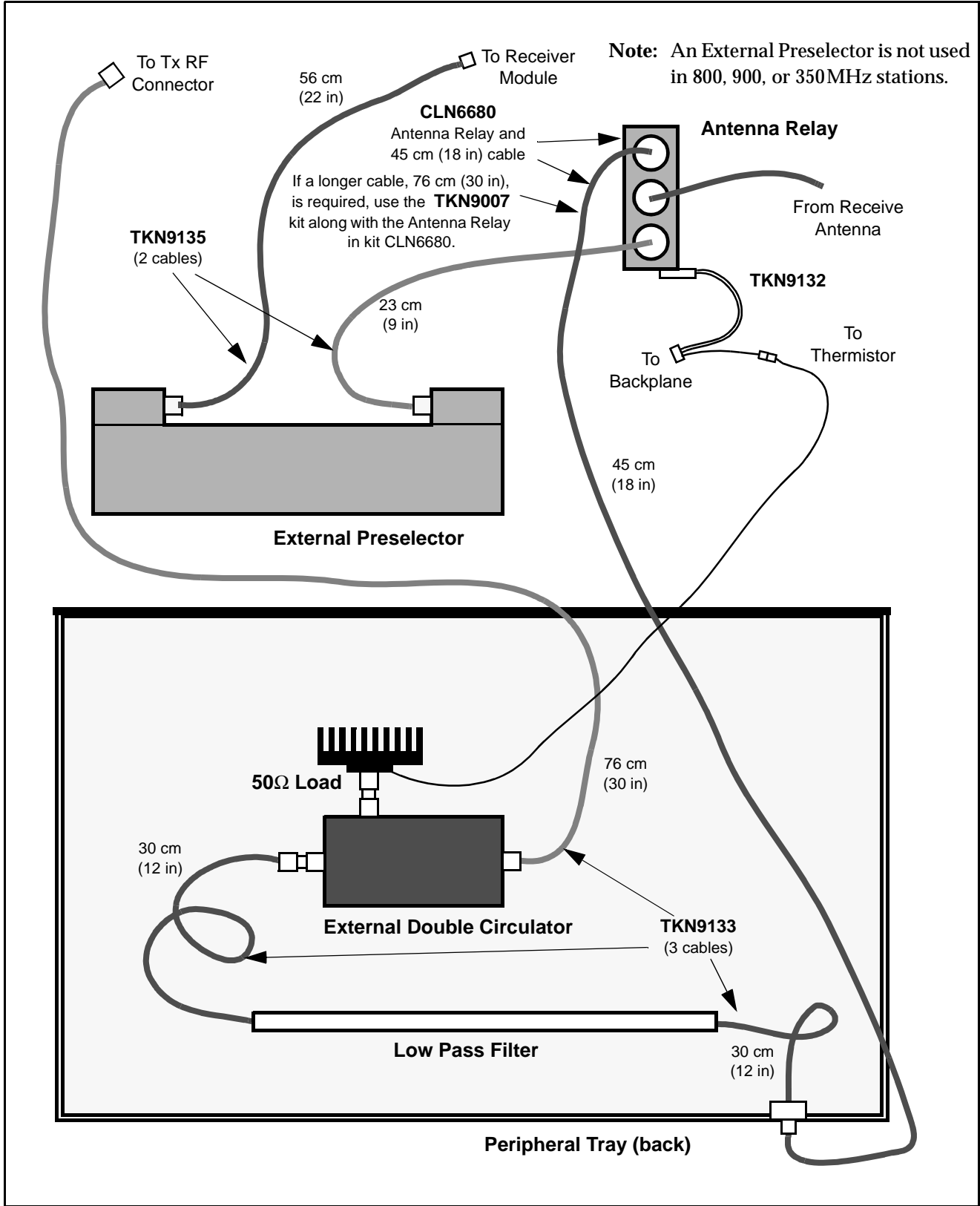


Figure 5. Antenna Relay, External Preselector, and External Double Circulator- Cable Kits

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## OPTION COMPLEMENT

Table 1 shows the contents for the Option X371AG Antenna Relay module.

### Option Complement Chart

**Table 1. Antenna Relay Option X371AG Complement**

Description	Motorola Part No.
Antenna Relay Module	8082894X02
Control Cable	0112004B03
Mounting Screws (2)	0312016A26

## 4

## PERFORMANCE SPECIFICATIONS

Table 2 shows the electrical performance specifications for the Antenna Relay used in Model CLN6680.

### Performance Specifications

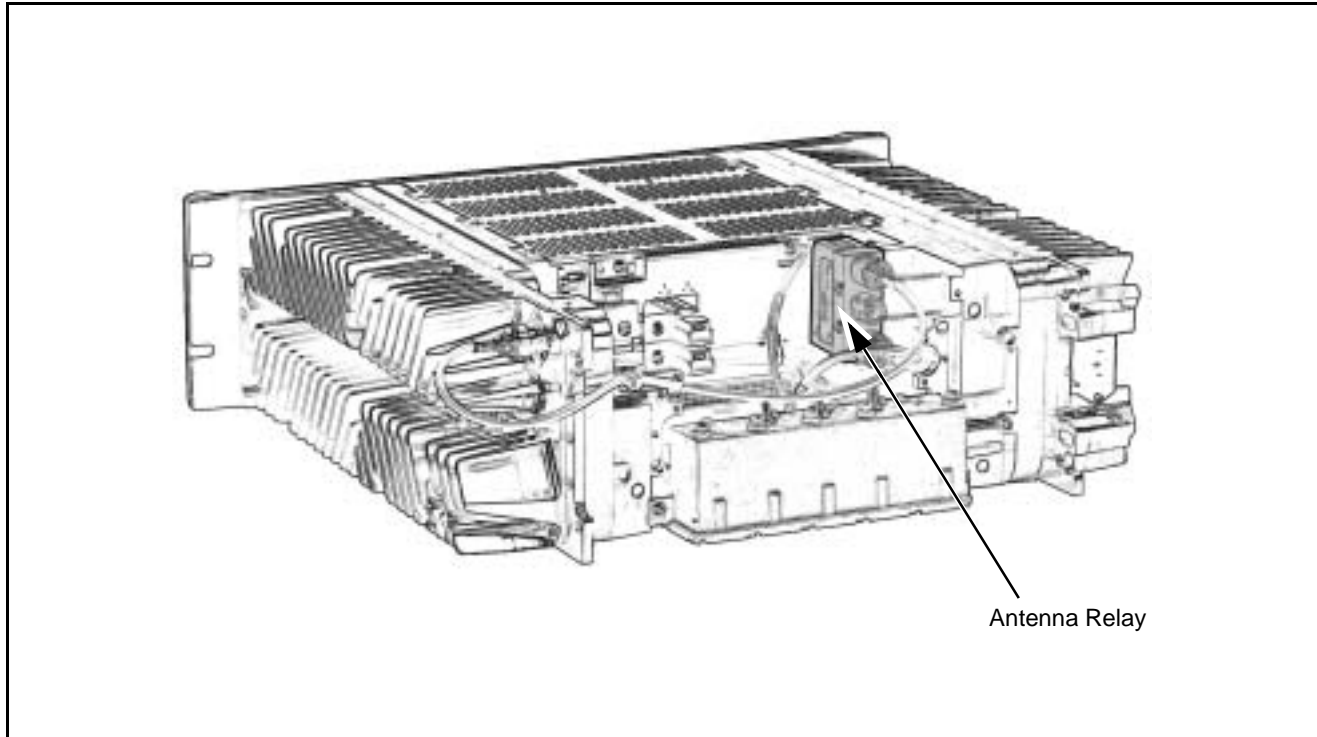
**Table 2. Performance Specifications for Antenna Relay**

Parameter	Specifications
Operating Frequency	DC to 4 GHz @ 20° C
Maximum Input Power	500 W @ 1 GHz
Coil Specifications: Pull-in voltage Drop-out voltage Resistance	9.5 Vdc maximum ≥ 2 Vdc 100 Ω ±10% @ 20° C
Contact Specifications: Type Actuation Pull-in time Drop-out time	SPDT Failsafe (break before make) 20 ms maximum @ 20° C 10 ms maximum @ 20° C
Insertion Loss	0.3 dB maximum
Isolation	70 dB minimum
VSWR Maximum	1.3:1
Temperature Range	-30° C to +80° C
Terminations	Female N-Type
Input and Output Impedance	50 Ohms

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## MOUNTING LOCATION

The Antenna Relay Module is installed on a flange on the rear of the Power Supply Module. Stations equipped with the Antenna Relay module option are shipped with the antenna relay module installed as shown in Figure 6, allowing the RF cables to be routed out from the back of the cabinet or rack.



**Figure 6. Mounting Position for Antenna Relay Module**



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## FUNCTIONAL THEORY OF OPERATION

The following theory of operation describes the operation of the Antenna Relay Module at a functional level. The information is presented to give the service technician a basic understanding of the functions performed by the module in order to facilitate maintenance and troubleshooting to the module level. Refer to Figure 7 for a block and interconnect diagram of the Antenna Relay Module.

The Antenna Relay Module contains a relay with a set of normally open and normally closed contacts. The relay coil is controlled by the Antenna Relay signal from the Station Control Module to connect either the Receiver Module or the Power Amplifier Module to a single transmit/receive antenna.



With the relay de-energized, the antenna is connected to the Receiver Module. To connect the antenna to the Power Amplifier Module, the Station Control Module must energize the relay (one side of which is connected to +14.2 Vdc) by grounding the Antenna Relay signal.

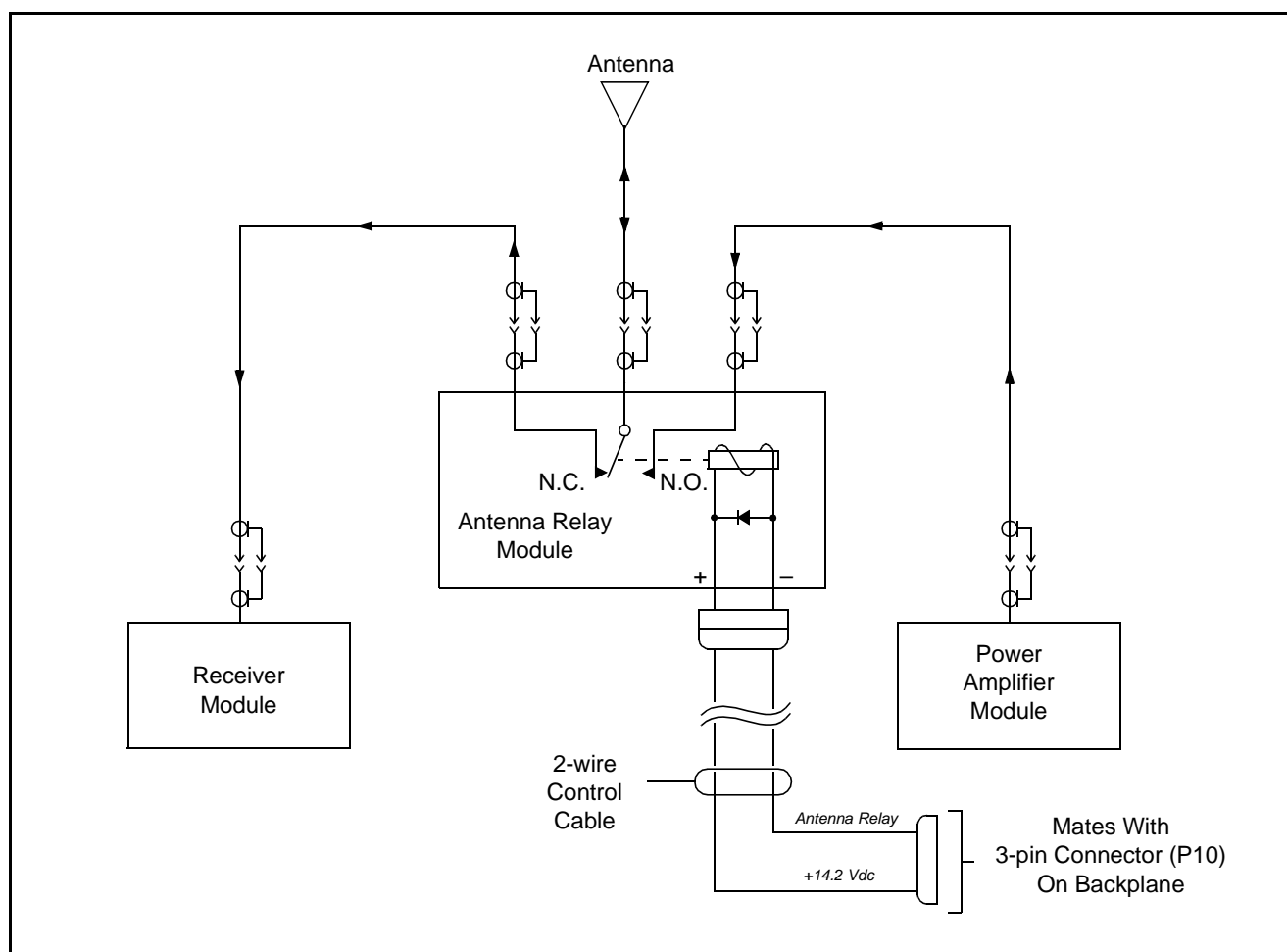


Figure 7. Functional Block and Interconnect Diagram for Antenna Relay Module