

SECTION II INSTALLATION

2.1 UNPACKING AND REPACKING

Examine the shipping carton for damage before the equipment is unpacked. If the carton has been damaged, try to have the carrier's agent present when the equipment is unpacked.

After unpacking, check the contents of the shipping carton against the packing slip. Contact Watkins-Johnson Company, Gaithersburg, or your Watkins-Johnson representative with details of any shortage. Visually inspect all exterior surfaces of the equipment for dents and scratches. Then remove the top and bottom dust covers and check for loose connections, circuit boards, and plug-in items. If the equipment shows external damage, check also for possible internal damage. Retain the shipping cartons and padding material for inspection by the carrier if damage to the equipment is evident after it has been unpacked.

The unit was thoroughly inspected, tested, and adjusted at the factory prior to shipment. It is, therefore, ready to use upon receipt.

If the receiver must be prepared for reshipment, the packaging methods should follow the pattern established in the original shipment. The original packing materials, if retained, can be reused to a large extent or at least provide guidance for the repackaging effort.

Conditions during storage and shipment should be limited as follows:

- (1) Maximum humidity: 95% (no condensation)
- (2) Temperature range: -30° C to 85° C.

2.2 INSTALLATION

The receiver is designed for mounting in a standard 19-inch equipment rack. It occupies 5.25 inches of vertical rack space and extends approximately 19.5 inches into the rack to the tips of the rear protective handles. Critical dimensions are shown in Figure 2-1. Do not rely solely on front-panel mounting hardware to support the receiver. A brace extending along the sides from the front panel to the rear panel is preferred. The rack should allow a free flow of air into the rear panel air intake and out the right side panel, as well as around the outer surfaces of the instrument. Access to the rear panel should be allowed so that input and output connections can be conveniently made or changed if desired. Figures 6-1 and 6-2 are photographs of the front and rear panels showing the locations of the connectors, Table 2-1 lists the mating connectors, and the parameters following Table 2-1 describe the functions and input/output parameters of the connectors.

Table 2-1. Mating Connector Types

No.	Connector Nomenclature	Function	Mating Plug
J1	DIGITAL I/O	Remote Control Interface	Bendix JTG06RE12-22P (SR)*
J2	DIGITAL I/O	Spare - Used when asynchronous I/O option is installed	Bendix JTG06RE12-22P (SR)*
J3	1 MHz REF	External Clock In/Out	BNC Male
J4	TUNING VOLTAGE MONITOR	Maintenance Analog Frequency Indication Output	BNC Male
J5	RF INPUT	Antenna Input	BNC Male
J6	455 kHz SM OUTPUT	To Auxiliary Signal Monitor	BNC Male
J7	AM MONITOR	Maintenance AM Detector Output	BNC Male
J8	IF OUTPUT	Predetection 455 kHz	BNC Male
J9	FM MONITOR	Maintenance FM Detector Output	BNC Male
J10	AUDIO OUTPUT	USB, LSB, Line, and Phone (Variable) Audio Outputs	Bendix JTG06RE10-13P (SR)*
A24J1	OPTIONAL TUNING	Tuning Control Box Interface	Supplied with WJ-9588 Tuning Control Box
A28J1	PHONES	Headset Receptacle	Switchcraft type 440, MIL type PJ-055B, or equivalent. Normally supplied with headset.
J23	LOT VIDEO OUTPUT	To External Indicating Device	BNC Male

* Supplied with WJ-8888 in original shipment.

- (1) POWER CONNECTION. - Before making the power connection, check that the rear-panel line voltage selector slide switch is in the position indicating the line voltage to be used (115 or 220 V ac). Make sure that the POWER switch is in the off (out) position, then plug the power cord into the power-source receptacle. The "third" pin of the power source should provide a ground connection.
- (2) RF INPUT CONNECTOR (J5). - This is a BNC connector which accepts the output from the antenna. Nominal rf input impedance is 50 ohms over the specified frequency range (0.5 MHz to 30 MHz). Minimum signal level for AGC operation is listed in Table 1-2. Maximum rf level for linear output is -10 dBm.
- (3) AUDIO OUTPUT CONNECTOR (J10). - Four separate audio outputs are provided by this connector, these being balanced line audio, phone audio, and LSB and USB audio. All are compatible with 600 ohm loads.
 - (a) Balanced transformer-coupled line audio is available from pins 5 and 6. This output is always active and is driven by the demodulator selected by the front panel detection mode pushbuttons. In the ISB mode the output is that selected by the ISB selector switch on the front the front panel. The line audio can be monitored by the front panel meter if selected with the appropriate METER pushbutton. In the manual gain mode the output level is controlled by the RF GAIN control; in AGC modes the level will seek 0 dBm. Audio frequency range is 100 Hz to 15 kHz. This output is affected by the squelch control.
 - (b) The phones audio is an unbalanced adjustable version of the line audio. This output is available from pin 7 of the connector. The level is adjusted by the front panel LEVEL control. When headphones are plugged into the front panel jack, the phones audio output at J10 is disabled. Full scale output level is 10 mW minimum. This output is affected by the squelch control.
 - (c) The USB and LSB outputs are balanced transformer-coupled outputs available from pins 1-2 and 3-4, respectively. Each output is active when operating in the corresponding detection mode, and both are active when in the ISB mode. When controlled by the AGC loops, the individual output levels seek 0 dBm. These outputs are not affected by the squelch control.

NOTE

When the CW detection modes are used, the audio is present at the USB output as well as the line audio and phone outputs.

Pins 8 through 12 of J10 are spares, and pin 13 is ground. Pin 13 would normally be used as the ground conductor when using the pin-7 phones audio output.

- (4) 455 kHz SM OUTPUT CONNECTOR (J6). - This BNC connector provides a wideband 455 kHz IF signal output, suitable for application to a signal monitor such as the WJ-9188. Output bandwidth is at least 20 kHz, and impedance is 50 ohms.
- (5) IF OUTPUT CONNECTOR (J8). - A predetection 21.4 MHz center-frequency IF output, of a bandwidth indicated by the illuminated IF BANDWIDTH pushbutton, is available from this BNC connector. The IF output level is 50 mV rms minimum into 50 ohms for rf input signals above AGC threshold.
- (6) LOG VIDEO OUTPUT (J23 - Optional). - This jack provides an output proportional to the logarithm of the IF signal amplitude for use with an external monitor or video recorder. Maximum output is one volt dc into a 2 kilohm load.
- (7) 1 MHz REF CONNECTOR (J3). - If greater stability of the local oscillator is desired, the output of an external time base of the desired stability maybe applied to this connector, and the CLOCK select switch (S4) set to EXT. The reference signal supplied should be exactly 1 MHz at a level of at least 50 mV. When S4 is in the INT position a buffered TTL 1 MHz reference output is available at J3.
- (8) AM MONITOR CONNECTOR (J7). - This is an auxiliary AM detector output which serves primarily for a quick troubleshooting test. Output level is 2 V dc through 1 kilohm for rf input signals above AGC threshold.
- (9) FM MONITOR CONNECTOR (J9). - This is an auxiliary FM detector output which serves primarily for a quick troubleshooting test. Output level is at least 0.25 V per kHz of deviation, through 1 kilohm.
- (10) TUNING VOLTAGE MONITOR CONNECTOR (J4). - The local oscillator tuning voltage is available from this connector, isolated by 10 kilohms. Output range is approximately -10 V to +10 V. This output is used for test purposes.
- (11) PHONES JACK (A28J1 - Front Panel). - The output from this jack is identical to the rear panel phones audio output from J10 (see paragraph 2.2.3). When the headset is plugged into the front panel phones jack, the rear-panel phones audio output is disabled.

- (13) OPTIONAL TUNING CONNECTOR (A24J1 - Front Panel). - This connector provides interfacing with the optional WJ-9588 Tuning Control Box. The control box connector is simply plugged in, and the control box placed on a nearby desk or table top. Refer to the WJ-9588 manual for further instructions.
- (14) DIGITAL I/O CONNECTOR (J1). - This multi-pin connector provides interfacing with the remote control unit (computer or other such equipment). A serial synchronous I/O module is installed as standard equipment, or a serial asynchronous I/O module may be installed as an option. The following Table 2-2 lists the connector pin designations for the synchronous I/O. All outputs are driven by dual line drivers which provide complementary TTL levels through 180-ohm line-impedance matching resistors. All inputs are applied to differential line receivers. Differential input impedances are 170 ohms through 0.01 μ F. Inverting input resistance of each line receiver is 1.8 kilohms minimum; noninverting input resistance is 3.6 kilohms minimum. Maximum input levels are ± 20 V. Differential threshold is ± 0.5 V maximum with 0 V common-mode voltage; differential threshold is ± 1.0 V maximum with common-mode input between +15 V and -15 V. Refer to Sections III and IV of this manual for further information regarding the inputs and outputs indicated in Table 2-2.
- (15) DIGITAL I/O CONNECTOR (J2). - Spare connector - Used when asynchronous I/O option is installed. (Refer to the Supplement to this manual for information concerning the asynchronous I/O option.)

Table 2-2. Synchronous/Asynchronous I/O Connector (J1) Pin Designations

1+	}	Address In
2-		
3+	}	Remote Data In
4-		
5+	}	Remote Trigger In
6-		
7+	}	Data Out
8-		
9+	}	Monitor Clock Out
10-		
11+	}	Command Clock Out
12-		
13		Ground
14+	}	Local/Remote Status Out
15-		
16	}	Spares
17		
18		
19		
20		
21		
22		