

Cleaning

When you clean the printer, use one or more of the following supplies that best suits your needs:

CLEANING SUPPLIES
Cleaning pens (12)
Cleaning swabs (25)
Cleaning cards, 4-in wide (25)
Save-a-Print Head film, 4-in wide (3)

The cleaning process takes just a couple of minutes using the steps outlined below.

Printer Part	Method	Interval
Print head	Let the print head to cool for one minute, then use a new cleaning pen to swab the print elements (the thin gray line on the print head) from end to end. NOTE: <i>You do not have to turn off the printer to do this.</i> If print quality remains poor after cleaning, try the Save-a-Print Head cleaning film to remove buildup without damaging the print head. Call your authorized reseller for more information.	As necessary or after every five rolls of media
Platen roller	Manually rotate the platen roller. Clean it thoroughly with 70% isopropyl alcohol and a cleaning swab, cleaning card, or lint-free cloth.	
Peel bar	Clean it thoroughly with 70% isopropyl alcohol and a cotton swab.	As needed
Tear bar		
Exterior	Water-dampened cloth	
Interior	Brush or air blow	
Cutter	Use tweezers to remove scraps	

Adhesives and coatings of media can over time transfer onto the printer components along the media path including the platen and print head. This build-up can accumulate dust and debris. Failure to clean the print head, media path and platen roller could result in inadvertent loss of labels, label jams and possible damage to the printer.

Print Head Considerations



Always use a new cleaning pen on the print head (an old pen carries contaminants from its previous uses that may damage the print head).

Media Path Considerations

Use a cleaning swab or pen to remove debris, dust or crust that has built-up on the holders, guides and media path surfaces.

1. Use the alcohol in the cleaning swab or pen to soak the debris so that it breaks up.
2. Wipe the area with the cleaning swab or pen to remove the debris.
3. Discard the cleaning swab or pen after use.

Cleaning Card Considerations

Use a cleaning card to remove debris that has built-up on the platen. Avoid scrubbing or vigorously rubbing the platen; otherwise, the surface could be damaged.

1. Open the printer and remove labels.
2. Place the cleaning card into the label path so that it is under the guides and it extends between the print head and platen roller.
3. Close and latch the printer.
4. With the power switch on, press the feed switch to move the cleaning card through the printer.
5. Discard the card after use.

Platen Considerations

The standard platen (drive roller) normally does not require cleaning. Paper and liner dust can accumulate without effecting print operations.

Contaminates on the platen roller can damage the print head or cause the media to slip when printing. Adhesive, dirt, general dust, oils and other contaminants should be cleaned immediately off the platen.

Keep a new platen available as a spare and install it whenever the printer has significantly poorer performance, print quality or media handling. If sticking or jamming continues even after cleaning, you must replace the platen.

The platen can be cleaned with a fiber-free swab (such as a Texpad swab) or a lint free, clean, damp cloth very lightly moistened with medical grade alcohol (70% pure or better).

1. Open the media door and remove the media.
2. Clean the platen surface with the alcohol moistened swab. Rotate the platen while swabbing. Repeat this process two to three times with a new swab to remove residual contaminants. Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.
3. Discard the cleaning swab or pen after use.

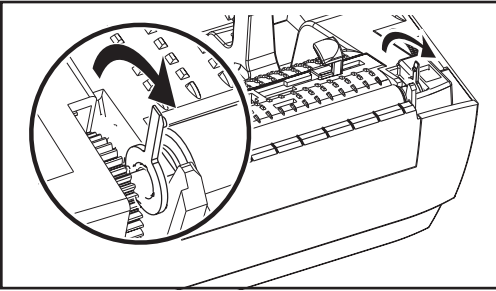
Allow the printer to dry for one minute before loading labels.

Lubrication



No lubricating agents of any kind should be used on this printer! Some commercially available lubricants, if used, will damage the finish and the mechanical parts inside the printer.

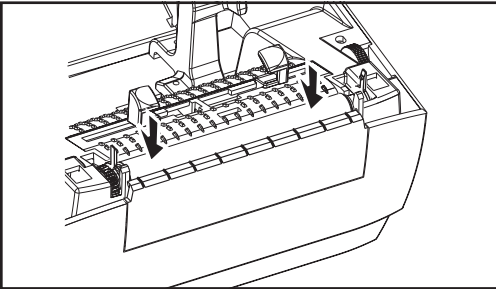
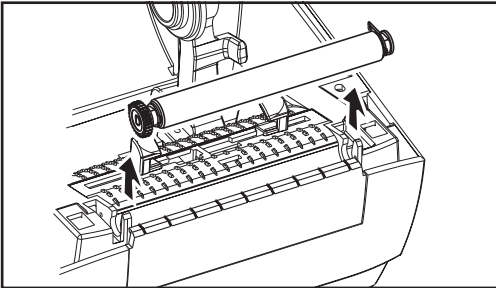
Replacing the Platen



Removal

Open the printer and remove any media.

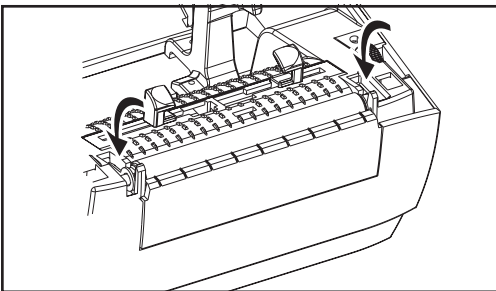
1. Using a pointed stylus (such as tweezers, small slot-head screwdriver, or razor-knife), unhook the tabs on the right and left sides. Then rotate them forward.
2. Lift the platen out of the printer's bottom frame.



Assembly

Make sure the right bearing is on the shaft of the platen.

1. Align the platen with the gear to the left and lower it into the printer's bottom frame.
2. Rotate the tabs back and snap them into place.



Replacing the Print Head



In the event you need to replace the print head, read the procedure and review the removal and installation steps before actually replacing the print head.

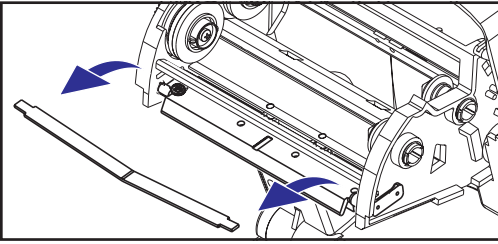


Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

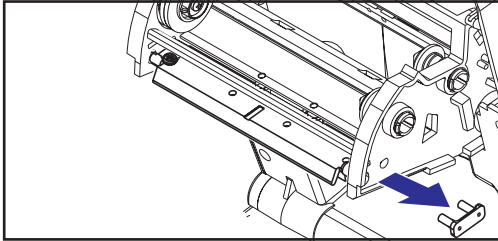


CAUTION • Turn the printer power off and unplug the power cord before replacing the print head.

Thermal-Transfer TLP Model

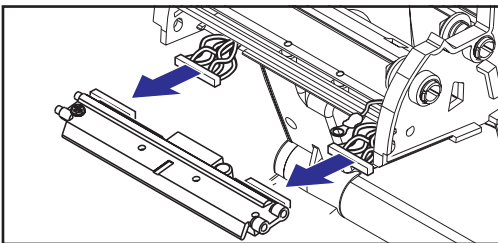
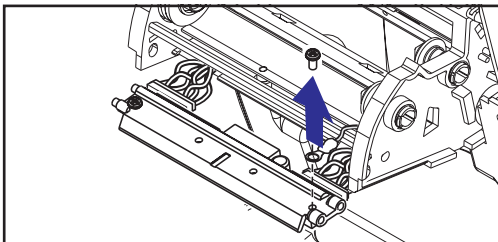
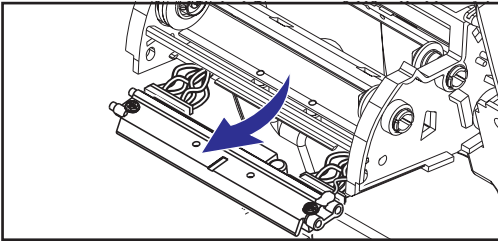


Before following the steps in this procedure, open the printer by pulling the release latches forward then lifting the top cover. Remove any ribbon from the carriage.



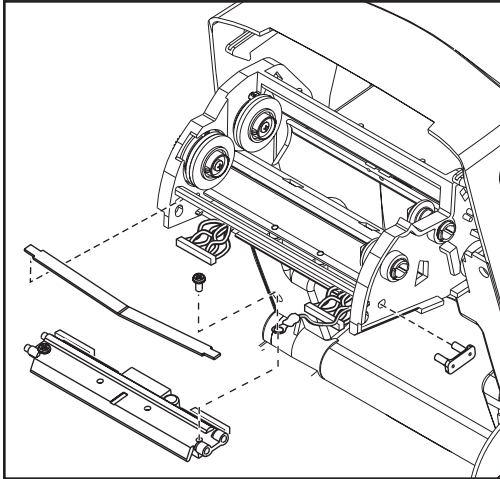
Removal

1. Grasp the print head spring and pull it to the left; then, slide it free of the carriage.
2. Use the spring to pry the print head clip off the right side of the carriage.
3. Pull the print head and bracket forward.
4. Use a #2 Phillips driver to remove the screw that holds the ground wire.
5. Unplug both bundles of print head wires from their connectors.



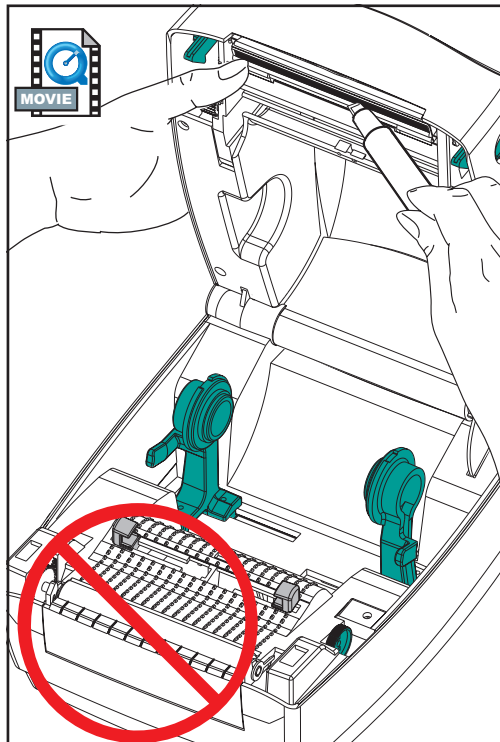
Replacing the TLP Print Head (Continued)

Assembly

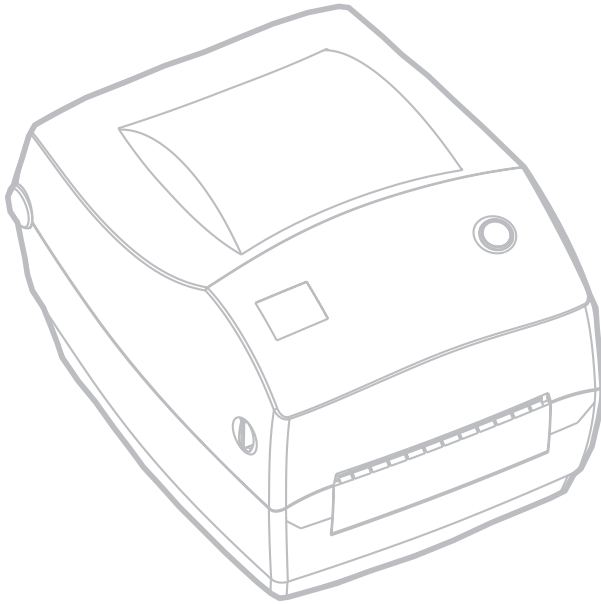


The new print head comes with the clip and ground screw attached.

1. Align the print head and bracket to plug the left and right connectors into the black and white wire bundles.
2. Attach the ground wire and secure it with the screw. Use a #2 Phillips driver to tighten it.
3. Insert the bracket pegs into the left side of the carriage.
4. Align the right side of the bracket and insert the print head clip through the right side of the ribbon carriage into the bracket.
5. Slip the left end of the print head spring into the left side of the ribbon carriage; then slide the right end into the other side. The angle of the “V” fits into the indent on top of the print head bracket.
6. Clean the print head with the cleaning pen.



Reload media and ribbon. Plug in the power cord. Print a status report to ensure proper function.



Troubleshooting

What the Status Light is Telling You		
Status LED Condition and Color	Printer Status	For a Resolution, Refer to number:
Off	Off	1
Solid Green	On	2
Flashing Yellow	Stopped	3
Flashing Green	Normal Operation	4
Flashing Red	Stopped	5
Double Flashing Green	Paused	6
Solid Yellow	Various	7
Alternately Flashing Green and Red	Needs Service	8

Resolutions

1. The printer is not receiving power.

- Have you turned on the printer power?
- Check power connections from the wall outlet to the power supply, and from the power supply to the printer.

2. The printer is on and in an idle state.

- No action necessary.

3. The printer has failed its power on self test (POST).

- If this error occurs right after you turn on the printer, contact an authorized reseller for assistance.

There is a shortage of memory.

- If this error occurs after you have been printing, turn the printer power off and on. Then, resume printing.

4. The printer is receiving data.

- As soon as all of the data has been received, the status LED will turn green; then, the printer will automatically resume operation.

5. Either the media or ribbon is out.

- Load a roll of media, following the instructions in “Loading the Media” on page 9. Then, press the feed button to resume printing.
- Load a roll of ribbon, following the instructions in “Loading the Ribbon” on page 12. Then, press the feed button to resume printing.

The print head is open.

- Close the top cover. Then, press the feed button to resume printing.

6. The printer is paused.

- Press the feed button to resume printing.

7. The print head is under temperature.

- Continue printing while the print head reaches the correct operating temperature.

The print head is over temperature.

- Printing will stop until the print head cools to an acceptable printing temperature. When it does, the printer will automatically resume operation.

8. FLASH memory is not programmed.

- Return the printer to an authorized reseller.

Print Quality Problems

No print on the label.

- You must use the correct media for the method of printing you require. When printing without a ribbon, you must use direct thermal media. When using ribbon, you must use thermal transfer media. The printer's ribbon sensor detects motion of the supply spindle.
- Is the media loaded correctly? Follow the instructions in “Loading the Media” on page 9.

The printed image does not look right.

- The print head is dirty. Clean the print head according to the instructions on page 59.
- The print head is under temperature.
- Adjust the print darkness and/or print speed. Refer to the six-flash sequence in “Feed Button Modes” on page 70, or the **^PR** and **~SD** commands in the *ZPL II Programming Guide*.
- The media being used is incompatible with the printer. Be sure to use the recommended media for your application, and always use Zebra-approved labels and tags.

There are long tracks of missing print (blank vertical lines) on several labels.

- The print head is dirty. Clean the print head as shown on page 59.
- The print head elements are damaged. Replace the print head (see “Replacing the Print Head” on page 58).

The ribbon sensor settings did not print.

- The printer is set for direct thermal printing; use the **^XA^MTT^XZ** command to reset the printer for thermal transfer printing and calibrate again.

The printing does not start at the top of the label, or misprinting of one to three labels.

- The media may not be threaded under the media guides. Refer to “Loading the Media” on page 9.
- The printer needs to be calibrated. Refer to “Auto Calibration” on page 14.
- The correct media sensor may not be activated. Manual calibration selects the media sensing method for the labels being used (refer to the **^MN** command in the *ZPL II Programming Guide*).
- Verify that the Label Top (**^LT**) command is correctly set for your application (consult the *ZPL II Programming Guide*).

A label format was sent to, but not recognized by, the printer.

- Is the printer in pause mode? If so, press the feed button.
- If the status LED is on or flashing, refer to “What the Status LED is Telling You” on page 61.
- Make sure the data cable is correctly installed.
- A communications problem has occurred. First, make sure that the correct communications port on the computer is selected. Refer to “Communicating with the Printer” on page 18.

RFID Symptoms

External reader cannot confirm RFID tags are programmed.

- Is the printer set up correctly? Print a configuration label to verify RFID version. See “Auto Calibration” on page 14.
- Check if supported RFID media is loaded correctly.

VOID messages are printed across media.

- Verify tag type is properly selected in ZPL II. Use RFID media with supported tag type. Edit ZPL II to select proper tag type or increase retries.
- ZPL II is attempting to write to a non-existent block. Some tags’ blocks are identified as 0-7. If ZPL II attempts to write to block “8,” it will fail.
- Check voided tag on external reader. If this is a media problem, discard or return bad tags.
- Media's transponder is out of range from printer's antenna. Contact Zebra for the latest media and transponder specifications.

Nothing is printed.

- See if the correct media is loaded or load new, fresh media.
- See if tags can be read/programmed using other hardware.
- Verify ZPL II RFID commands. Debug the printing program.
- Tag is out of reach of the antenna or too close. Verify tag alignment.
- Wrong type of tag was selected. Check ZPL II.
- Block is write protected. Ensure that the tag is not write protected.
- Aluminum and other metals within tag may interfere with read/write. Make sure media meets requirements.
- Increase the number of retries in the ZPL II commands.
- Time out may have occurred during internal communication. Cycle power and try printing label again.

Call a service technician if you have been unsuccessful in getting your expected print out and data.

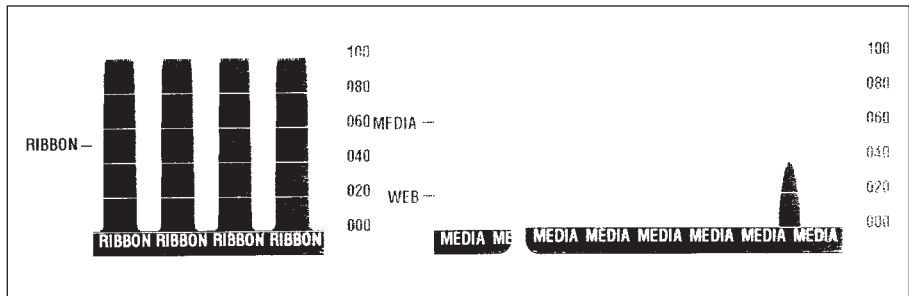
Manual Calibration

Manual calibration is recommended whenever you are using pre-printed labels (or label backing) or if the printer will not correctly auto calibrate.

1. Turn on the printer power.
2. Remove approximately 4" (102 mm) of labels from a section of backing material. Load the media so that only the backing material is threaded through the printer and under the print head.
3. Press and hold the feed button until the green status LED flashes once, then twice. Release the feed button.
4. The printer will set the media sensor for the label backing being used. After it is done making this adjustment, the roll will automatically feed until a label is positioned at the print head.
5. A profile of the media sensor settings (similar to the example below) will print. Upon completion, the printer will save the new settings in memory and the printer is ready for normal operation.
6. Press the feed button. One entire blank label will feed. If this does not happen, try defaulting (refer to the four-flash sequence in "Feed Button Modes" on page 70) and recalibrating the printer.



NOTE • Performing a manual calibration disables the auto calibration function. To return to auto calibration, default the printer (see the four-flash sequence in "Feed Button Modes" on page 70).



Troubleshooting Tests

Printing a Configuration Label

To print out a listing of the printer's current configuration, refer to the one-flash sequence in "Feed Button Modes" on page 70.

Recalibration

Recalibrate the printer if it starts to display unusual symptoms, such as skipping labels. See "Auto Calibration" on page 14.

PRINTER CONFIGURATION	
Zebra Technologies ZTC R2844-Z-200dpi	
+10.....	DARKNESS
+000.....	TEAR OFF
TEAR OFF	PRINT MODE
NON-CONTINUOUS.....	MEDIA TYPE
WEB.....	SENSOR TYPE
THERMAL-TRANS.....	PRINT METHOD
104 0/8 MM	PRINT WIDTH
1248.....	LABEL LENGTH
39.0IN 988MM	MAXIMUM LENGTH
NOT CONNECTED	USM COMM.
PARALLEL.....	PARALLEL COMM.
RS232	SERIAL COMM.
8600.....	BAUD
8 BITS	DATA BITS
NONE.....	PARITY
XON/XOFF.....	HOST HANDSHAKE
NONE.....	PROTOCOL
000.....	NETWORK ID
NORMAL MODE	COMMUNICATIONS
<> 7EH	CONTROL PREFIX
<^> 5EH	FORMAT PREFIX
<,> 2CH	DELIMITER CHAR
ZPL II	ZPL MODE
FEED.....	MEDIA POWER UP
FEED.....	HEAD CLOSE
DEFAULT.....	BACKFEED
+020.....	LABEL TOP
+0000.....	LEFT POSITION
029.....	WEB S.
068.....	MEDIA S.
050.....	RIBBON S.
050.....	MARK S.
001.....	MARK MED S.
062.....	MEDIA LED
000.....	RIBBON LED
081.....	MARK LED
CS.....	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL	RESOLUTION
SP.814.B <-	FIRMWARE
V2.2.6.98.C.....	HARDWARE ID
CUSTOMIZED.....	CONFIGURATION
1024.....	R: RAM
0768.....	E: ONBOARD FLASH
NONE.....	FORMAT CONVERT
.....	TWINAX/COAX ID
NONE.....	OPTION
NONE.....	ZEBRA NET II
OEM400:Ver. 2.4F	RFID VERSION

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

Resetting the Factory Default Values

Sometimes, resetting the printer to the factory defaults solves some of the problems. Follow the four-flash sequence instructions in “Feed Button Modes” on page 70.

Communications Diagnostics



If there is a problem transferring data between the computer and printer, try putting the printer in the communications diagnostics mode. The printer will print the ASCII characters and their respective hexadecimal values (a sample is shown below) for any data received from the host computer. To find out how, refer to the power off mode procedure in “Feed Button Modes” on page 70.

```
^FS^F0394 , 25^AA
5E 46 53 5E 46 4F 33 39 34 2C 32 35 5E 41 41








N , 18 , 10^FDC(0000
4E 2C 31 38 2C 31 30 5E 46 44 28 30 30 30 30

)999-9999^FS
29 39 39 39 2D 39 39 39 39 5E 46 53 0D 0A

^F00 , 50^AAN , 18 ,
5E 46 4F 30 2C 35 30 5E 41 41 4E 2C 31 38 2C

10^FDCENTER STA
31 30 5E 46 44 43 45 4E 54 45 52 20 53 54 41
```

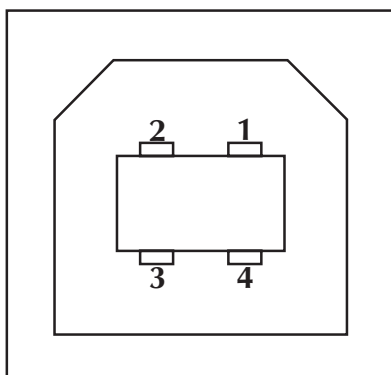
Feed Button Modes

Power Off Mode (Communications Diagnostics Mode)	
<p>With the printer power off, press and hold the feed button while you turn on the power. The printer prints out a listing of its current configuration (see Figure 22). After printing the label, the printer will automatically enter a diagnostic mode in which the printer prints out a literal representation (see Figure 23) of all data subsequently received. To exit the diagnostic mode and resume printing, turn off and then turn on the printer.</p>	
Power On Modes	
<p>With the printer power on and top cover closed, press and hold the feed button for several seconds. The green status LED will flash a number of times in sequence. The explanation at the right (Action) shows what happens when you release the key after the specific number of flashes.</p>	
Flash Sequence	Action
* 	A configuration label prints.
* ** 	The media sensor calibrates and a media sensor profile prints (see “Manual Calibration” on page 67).
* ** **** 	To reset the communication parameters. Press and release the feed button while the LED rapidly flashes yellow and green. For autobaud synchronization: Send a ZPL II format to the printer while the LED rapidly flashes yellow and green. When the printer and host are synchronized, the LED changes to solid green. NOTE: No labels will print during autobaud synchronization.
* ** *** **** 	Resets the factory defaults, auto calibrates, and saves settings into memory.
* ** *** **** ***** 	The print width calibrates. While the status LED alternately flashes green and yellow, a series of stacking rectangles print on the label. When the rectangle prints to the outer edges of the label, press and release the feed button. The label width and current communication parameters will be saved into memory.
* ** *** **** ***** ***** 	The print darkness calibrates. A series of nine samples print, starting with the lightest and ending with the darkest image. When the desired print darkness is achieved, press and release the feed button. The print darkness will be saved into memory.
 If the feed button remains pressed after a 7-flash sequence, the printer will ignore the button when it is released.	

Interfaces

Universal Serial Bus (USB) Connector

The figure below displays the cable wiring required to use the printer's USB interface.



Pin	Signal
1	Vbus - N/C
2	D-
3	D+
4	Ground
Shell	Shield/ Drain Wire

For printer supported operating systems and drivers, see the software and documentation CD or visit the Zebra printer web site at:

<http://www.zebra.com>

For information on the USB interface, go to the USB web site at:

<http://www.usb.org>

Parallel Interface Technical Information

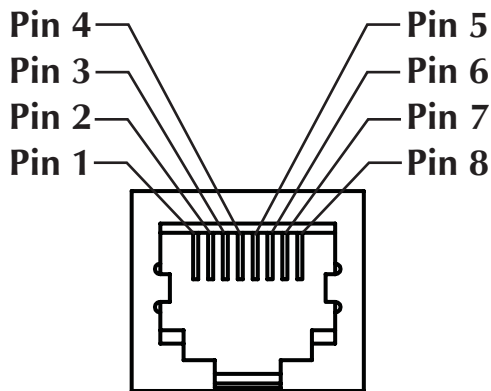
The maximum current available through the interface port is not to exceed a total of 0.75 amps.

Pin No.	Description
1	NStrobe/Host Clk
2-9	Data Bits 1-8
10	nACK/PtrClk
11	Busy/Per Busy
12	PError/ACK Dat Req.
13	Select/Xflag
14	NAuto Fd/Host Busy
15	Not Used
16-17	Ground
18	+5 V @ 0.75 A Fused
19-30	Ground
31	nInit
32	NFault/nData Avail.
33-34	Not Used
35	+5 V through 1.8 K Ohms Resistor
36	NSelectin/1284 active

ZebraNet® PrintServer II for Ethernet Networks

This interface uses an RJ-45 straight-through cable type. The table below provides the pinout assignments.

Signal	Pin	Pin	Signal
Tx+	1	1	Tx+
Tx-	2	2	Tx-
Rx+	3	3	Rx+
---	4	4	---
---	5	5	---
Rx-	6	6	Rx-
---	7	7	---
---	8	8	---



Looking into the Printer's RJ-45 Modular Connector

You can refer to the *ZebraNet® PrintServer II™ for Ethernet Networks Installation and Operation Guide* for details regarding this interface.

Serial (RS-232) Connector

Pin No.	Description
1	Not used
2	RXD (receive data) input to the printer
3	TXD (transmit data) output from the printer
4	DTR (data terminal ready) output from the printer -- controls when the host may send data
5	Chassis ground
6	DSR (data set ready) input to the printer
7	RTS (request to send) output from the printer -- always in the ACTIVE condition when the printer is turned on
8	Not Used
9	+5 V @ 0.75 A fused

The maximum current available through the serial and/or parallel port is not to exceed a total of 0.75 Amps.

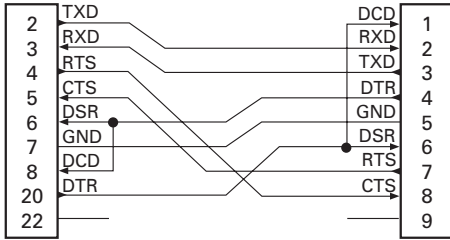
When XON/XOFF handshaking is selected, data flow is controlled by the ASCII control codes DC1 (XON) and DC3 (XOFF). The DTR control lead will have no effect.

Interconnecting to DTE Devices —The printer is configured as data terminal equipment (DTE). To connect the printer to other DTE devices (such as the serial port of a personal computer), use an RS-232 null modem (crossover) cable.

Interconnecting to DCE Devices —When the printer is connected via its RS-232 interface to data communication equipment (DCE) such as a modem, a STANDARD RS-232 (straight-through) interface cable must be used.

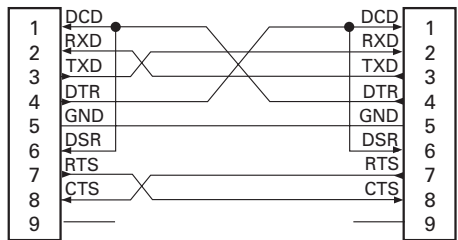
Connecting the Printer to a DTE Device

DB-25S
Connector
to DTE Device (PC)



DB-9P
Connector
to Printer

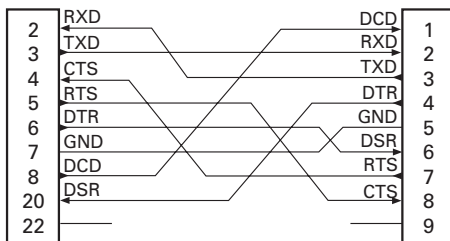
DB-9S
Connector
to DTE Device (PC)



DB-9P
Connector
to Printer

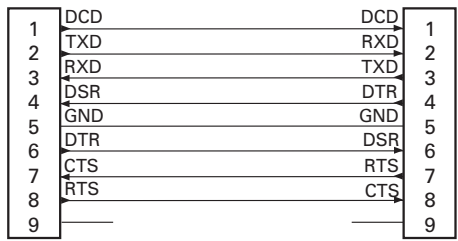
Connecting the Printer to a DCE Device

DB-25S
Connector
to DCE Device

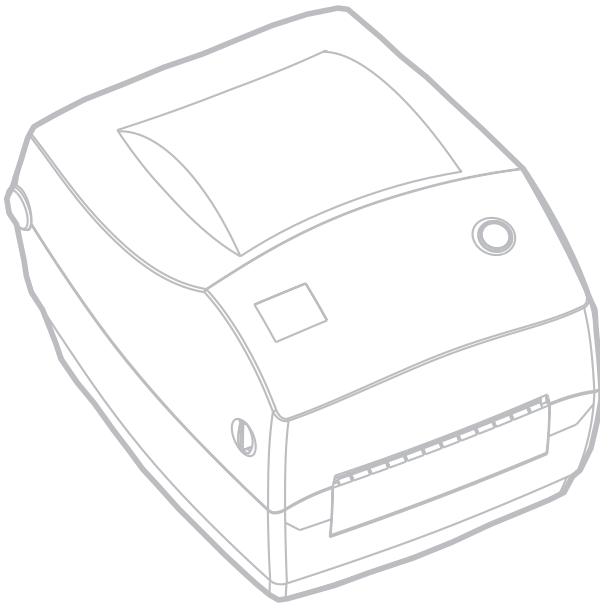


DB-9P
Connector
to Printer

DB-9S
Connector
to DCE Device



DB-9P
Connector
to Printer





Zebra Technologies Corporation