?????

http://www.pcguide.com/ref/hdd/if/sc...nectors-c.html
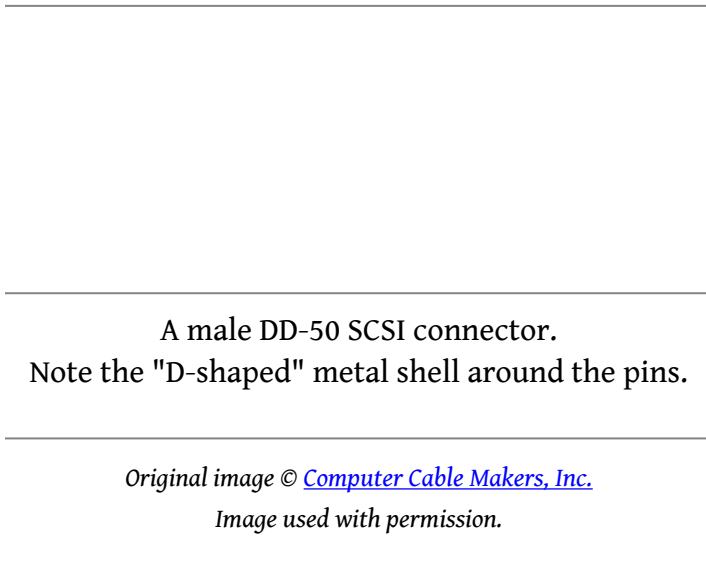
Connectors are of course the physical devices that are used to attach a SCSI cable to a SCSI device. Several different types of SCSI connectors are used to construct SCSI cables. This is in itself unfortunate in a way; whenever there are multiple types of connectors for an interface, this means the potential exists for mismatched connectors between devices. Different connector types have evolved over the years as the SCSI interface has matured. In particular, the desire for *miniaturization* has been a driving force in the creation of new connector types--the oldest SCSI connectors were large, and creating smaller connectors improves the usability of SCSI cables and devices.

Below are the connector types most commonly seen used with SCSI cables in the PC world. Note that this list is not exhaustive, in part because there are several obscure variations used for some proprietary SCSI implementations. However, most of the cables you will find in the SCSI world use one of these connector types. The SCSI standards call different connector types "alternatives" (not really a good name since the "alternatives" describe different devices types and not really "choices" as that word implies). Since external and internal cables generally use different connectors, each has four different "alternatives". I'll begin with external connector types:

- **D-Shell (D-Sub, DD):** The earliest SCSI standard, SCSI-1, defined a 50-pin *D-shell* connector for narrow SCSI implementations. The name of this connector comes from the "D-shaped" metal shell that goes around the pins on the male half of the connector. The design is identical to the 25-pin and 9-pin D-shell connectors used for parallel and serial connections on PCs, but bigger. This connector type was very large and cumbersome, never really caught on. However, an alternative 25-pin version of the D-shell was widely used in the Apple hardware world. (Apple "stripped out" the 25 signal return and ground wires that normally would be paired with the true SCSI signals, to save cost). This also never became a standard in the PC world and is not generally seen unless you go looking for it.

A male DD-50 SCSI connector.
Note the "D-shaped" metal shell around the pins.

Original image © Computer Cable Makers, Inc.
Image used with permission.

Warning: The Apple DB-25 SCSI connector is mechanically identical to a PC's parallel port connector. Be sure not to accidentally connect a DB-25 SCSI device to a PC's parallel port or something might be damaged.

- **Centronics:** The other external connector type defined by the SCSI-1 standard is a 50-pin connector that is commonly called a *Centronics* connector, after a formerly-popular printer that first used this type of connector. In Centronics connectors, instead of thin pins, two rows of flat contacts are used. Two latches on either side are used to hold the connector in place. Centronics connectors are still used for PC printer cables, on the end that attaches to the printer; SCSI Centronics connectors are the same, just with a different number of pins. These 50-pin connectors are still present in the current SCSI specification and are called "Alternative 2" external connectors.

Male (above) and female 50-pin Centronics connectors.
As you can see, there are no pins; the contacts are flat.
Note the tabs on the sides of the male connector and the
latches on the sides of the female connector, which snap
into the tabs to secure the connector in place.

Original images © Computer Cable Makers, Inc.
Images used with permission.

- **High-Density (HD):** The D-shell connectors defined in the SCSI-1 standard were replaced by newer, *high-density* shielded connectors in SCSI-2. These are really not all that different from the older D-shell connectors, but the space between pins was reduced, making the connectors smaller, cheaper to make and easier to use. The narrow, 50-pin version is called "Alternative 1", and the wide, 68-pin version "Alternative 3". These connectors use a "squeeze to release" latching mechanism instead of Centronics-style latches, and are still used by hardware devices today.

Male 50-pin (above) and 68-pin
external high density connectors.

Original images © [Computer Cable Makers, Inc.](#)
Images used with permission.

- **Very High Density Cable Interconnect (VHDCI):** To further improve the flexibility of SCSI hardware, a new type of external connector was defined as part of the [SPI-2 standard](#). This connector is wide only (68 pins) and is sometimes called a "micro-Centronics" connector, because it uses the same design as the Centronics connectors, only with the contacts *much* smaller and closer together. This is "Alternative 4" for external connectors and is growing in popularity because of its small size. One way that VHDCI is useful; for example, is that two of these connectors can be squeezed side-by-side within the width of a single SCSI host adapter's back edge (expansion slot insert). This doubles the number of external connectors that can be crammed onto a high-end SCSI [host adapter](#).

A male 68-pin VHDCI connector.

Original image © [Computer Cable Makers, Inc.](#)
Image used with permission.

OK, now let's look at internal (unshielded) connectors:

- **Regular Density:** The SCSI-1 standard defined a single connector type for internal narrow (8-bit) devices. This is a rectangular connector with two rows of 25 pins. This connector type is very similar to [that used for IDE/ATA devices](#), except that there are five extra pins in each row. It is most often seen in older devices and also some newer, slower drives. It is called unshielded "Alternative 2" in the current SCSI standards.

Male (above) and female 50-pin regular density internal connectors.
Note the gap in the plastic shield around the male connector,
and the tab on the female connector, for keying.

Original images © [Computer Cable Makers, Inc.](#)
Images used with permission.

- **High Density:** [SCSI-2](#) defined two new connector types, which are both called *high density* because their pin spacing is half that of the older SCSI-1 connectors, making them much smaller. These are the most common SCSI connectors used today within the PC box. The narrow, 50-pin version is unshielded connector "Alternative 1" and the 68-pin version is "Alternative 3".

A male, internal, high-density 68-pin connector.
The 50-pin connector is the same, just narrower.
(It is much less common than the 68-pin version.)

- **Single Connector Attachment (SCA):** "Alternative 4" in the SCSI standards for unshielded connectors doesn't actually refer to cable connectors, but the connector used for the *single connector attachment* system for backplane-connection of SCSI drives. [See the section on SCA for more details](#).

A female 80-pin SCA connector. This is the
connector that would be found on a backplane
designed for SCA SCSI drives.