



All Machines

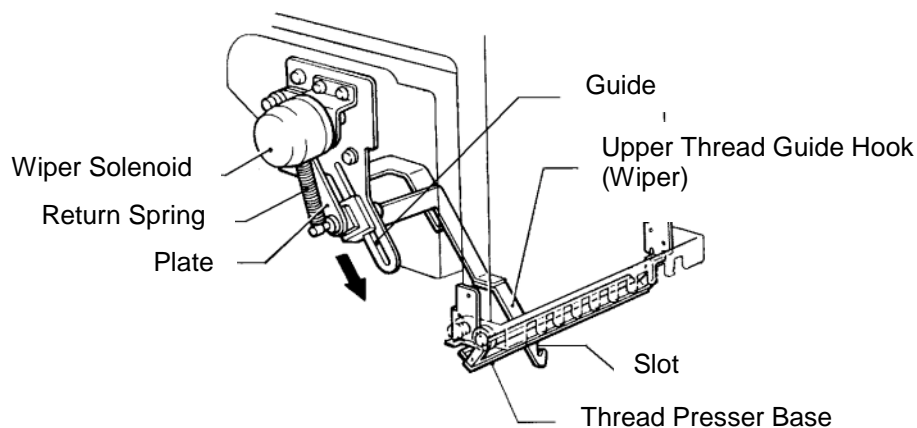
For Technical Assistance Please Call Toll Free 1-877-4BROTHER

Wiper Problems

There is a popular misunderstanding that the wiper actually cuts the thread. This is not true at all. If it did, how would it cut the bobbin thread as well? Another name for the wiper is "Upper thread guide hook" which is a better nomenclature for this part because that's exactly what it does. It hooks the upper thread after a trim and pulls it up out of the material into the thread presser base. The knives located just under the needle plate do the actual cutting of the threads. So if the knives don't cut the thread, then the wiper will not retract all the way giving you a wiper out error. So if after a trim you get a wiper out error and the thread is still in the fabric. Run your finger between the bottom of the presser foot and the fabric to grab the upper thread and see if it will come out easily. If it does then your upper thread tensions maybe to loose or tail length set to long. If the upper thread is still stuck in the fabric then the knives did not cut it and you don't have a wiper problem but a knife problem.

Sometimes it helps a little to understand the "theory of operation" of a working part to better troubleshoot it. So this is what happens with the wiper assembly during a trim.

After the knives have cut the upper and lower threads the wiper solenoid energizes briefly and pushes down on the connecting rod in the direction of the arrow. The wiper assembly moves down the guide causing the wiper to extend downward through the upper thread holder. As the wiper gets down to the bottom of its travel the upper thread passes to the right of the wiper and gets hooked by the slot of the wiper. The solenoid then de-energizes and the return spring pulls the wiper assembly back up into the retracted position. The wiper then actually stops above the upper thread holder and the upper thread is held by the two pieces of magic tape contained in the upper thread holder. There is also a wiper sensor on the machine that tells it that the wiper had retracted all the way. This way if it does stick out then the needle or presser foot won't come down and damage it.



When addressing problems with the wiper. There are five scenarios that can happen provided that the thread is actually cut by the knives. Please refer to the appropriate problem area.

Wiper error when turning on the machine or after a trim and the wiper extended caught the thread and retracted all the way

- Upper arm cushion is cracked; missing or the screw has broken off causing the solenoid sensor plate to be past the sensor. (See Wiper Assembly Parts Breakdown)
- Wiper solenoid arm setscrews on the solenoid are loose or missing. (See Wiper Assembly Parts Breakdown)
- Sensor needs adjustment or is no good. (See checking solenoid sensor alignment.)

Wiper will not operate at all

- Blown fuse on power supply circuit board. (Refer to Instruction Manual)
- Wiper solenoid is defective. (See checking the wiper solenoid)
- Circuit board is bad. (See checking the voltage to the wiper solenoid)

Wiper only moves a little

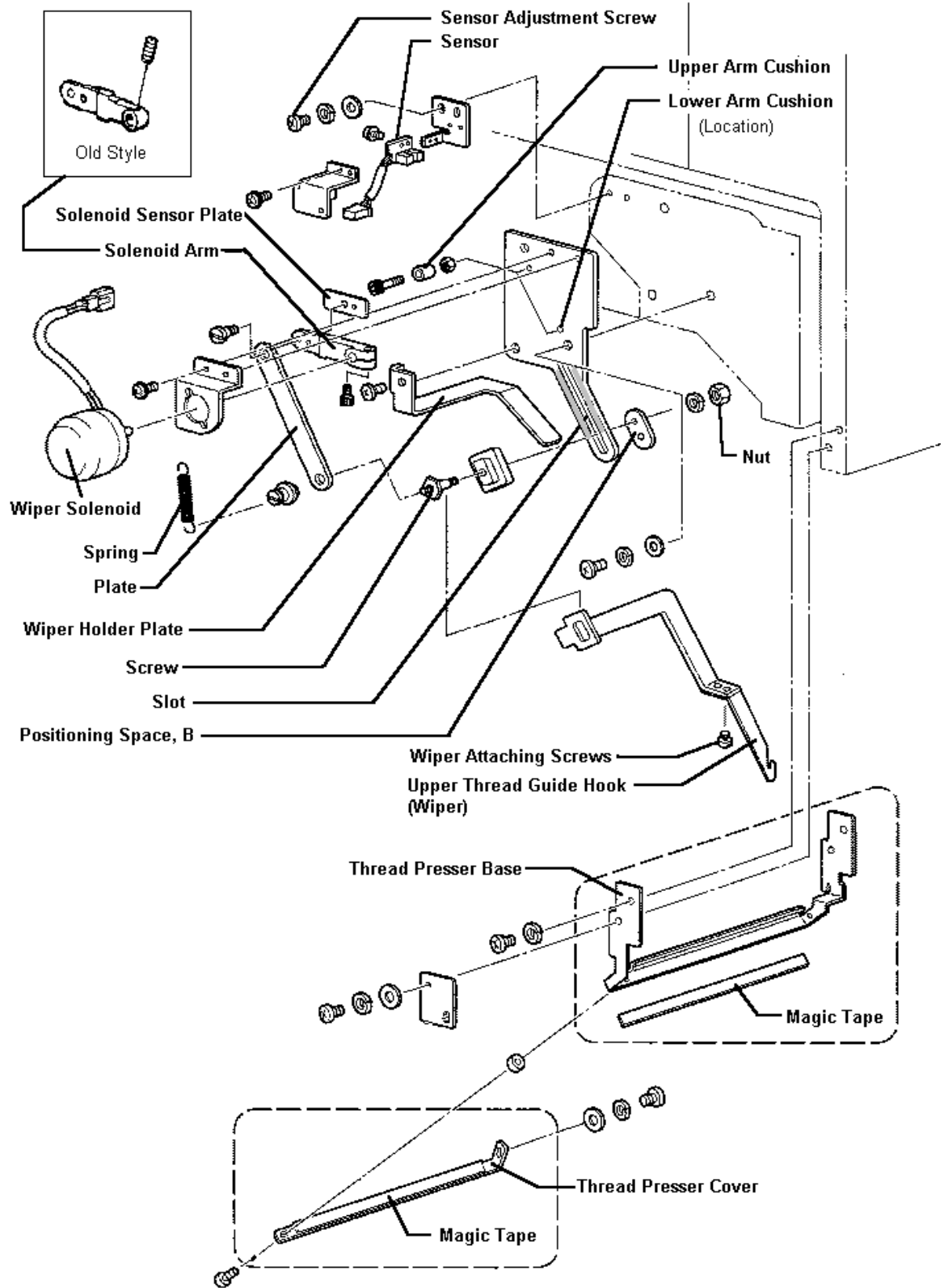
- Wiper solenoid arm screws are loose or missing. (See Wiper Assembly Parts Breakdown)
- Nut on positioning spacer, B is either loose or missing. (See Wiper Assembly Parts Breakdown)
- Thread presser base misadjusted or bent. (See checking thread presser base and cover alignment)
- Thread guide solenoid base needs adjusting. (See checking thread guide solenoid base)
- A magic tape in thread presser base is either missing or damaged. (See Wiper Assembly Parts Breakdown)
- Upper thread guide hook is bent. (See Wiper Assembly Parts Breakdown)
- Wiper holder plate is bent or not adjusted correctly. (See checking thread presser base and cover alignment)

Wiper comes down but does not retract

- Slot in thread guide solenoid bracket base needs to be lubricated. Apply black grease in the shaded area of the Wiper Assembly Parts Breakdown.
- Magic tapes in thread presser base assembly are either missing or damaged. (See Wiper Assembly Parts Breakdown)
- Thread presser base misadjusted or bent. (See checking thread presser base and cover alignment)
- Spring is stretched, missing or not hooked correctly. (See Wiper Assembly Parts Breakdown)
- Nut on positioning spacer, B is either loose or missing. Apply thread adhesive to thread to prevent nut from coming off. (See Wiper Assembly Parts Breakdown)
- Thread guide solenoid bracket base is misaligned or scratched at the bottom of the slot. (See checking thread guide solenoid base)
- Lower arm cushion is cracked, missing or the screw has broken off causing the positioning spacer, B to damaged the bottom of the thread guide solenoid bracket base. (See Wiper Assembly Parts Breakdown)
- Bent presser foot
- Wiper holder plate is bent or not adjusted correctly. (See checking wiper holder plate)

Wiper comes down and retracts but does not grab the upper thread.

- Nut on positioning spacer, B is either loose or missing. (See Wiper Assembly Parts Breakdown)
- Upper thread guide hook is not adjusted correctly. (See Wiper holder plate adjustment)



Wiper Assembly Parts Breakdown

Checking the wiper solenoid

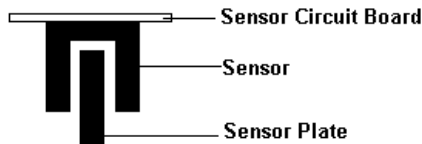
Disconnect the wiper solenoid from the machine by following the cable out of the solenoid and unplugging at the connector on the machine. With an ohmmeter measure the resistance across the two pins of the solenoid connector that go to the solenoid. A good solenoid will measure approximately 23 ohms.

Checking the voltage to the wiper solenoid

Disconnect the wiper solenoid from the machine by following the cable from the solenoid and unplugging at the connector on the machine. Using a voltmeter set up to read a least +60 VDC. Connect it to the two pins of the connector from the machine. Press the trim button on the machine and it will read approximately +60VDC for about a second.

Checking solenoid sensor alignment.

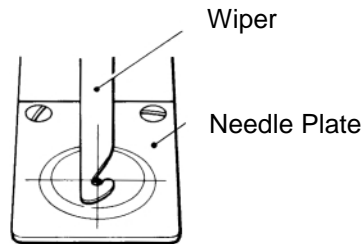
Looking at the solenoid sensor, orientation will vary from machine type; you should see something that looks like this.



If the sensor plate does not line up correctly then either the sensor or solenoid sensor plate needs to be adjusted until the alignment is as illustrated above.

Checking upper thread guide hook (wiper) alignment.

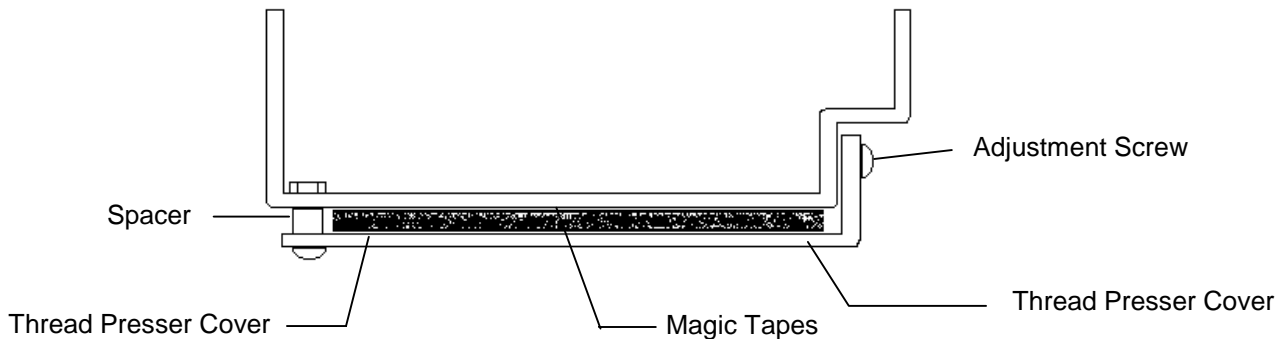
Color change machine to the highest needle bar number, 9 or 12, and lower presser foot. Manually lower the wiper down by pulling down on the screw that the bottom part of the return spring mounts to. The wiper should look as illustrated below in relation to the hole in the needle plate. If adjustment is required, loosen the two screws on the wiper and move it until it is correct. Recheck after adjustment.



Checking thread presser base and cover alignment.

First you want to make to inspect the thread presser cover to make sure it is straight and not bent. You should see an even spacing all the way across where the magic tape strips are. If not loosen the adjustment screw on the right and adjusted the thread presser cover until the spacing is the same all the way across.

Thread Presser Base Assembly



Checking the thread guide solenoid base, thread presser base, and wiper holder plate.

- **Thread Guide Solenoid Base**

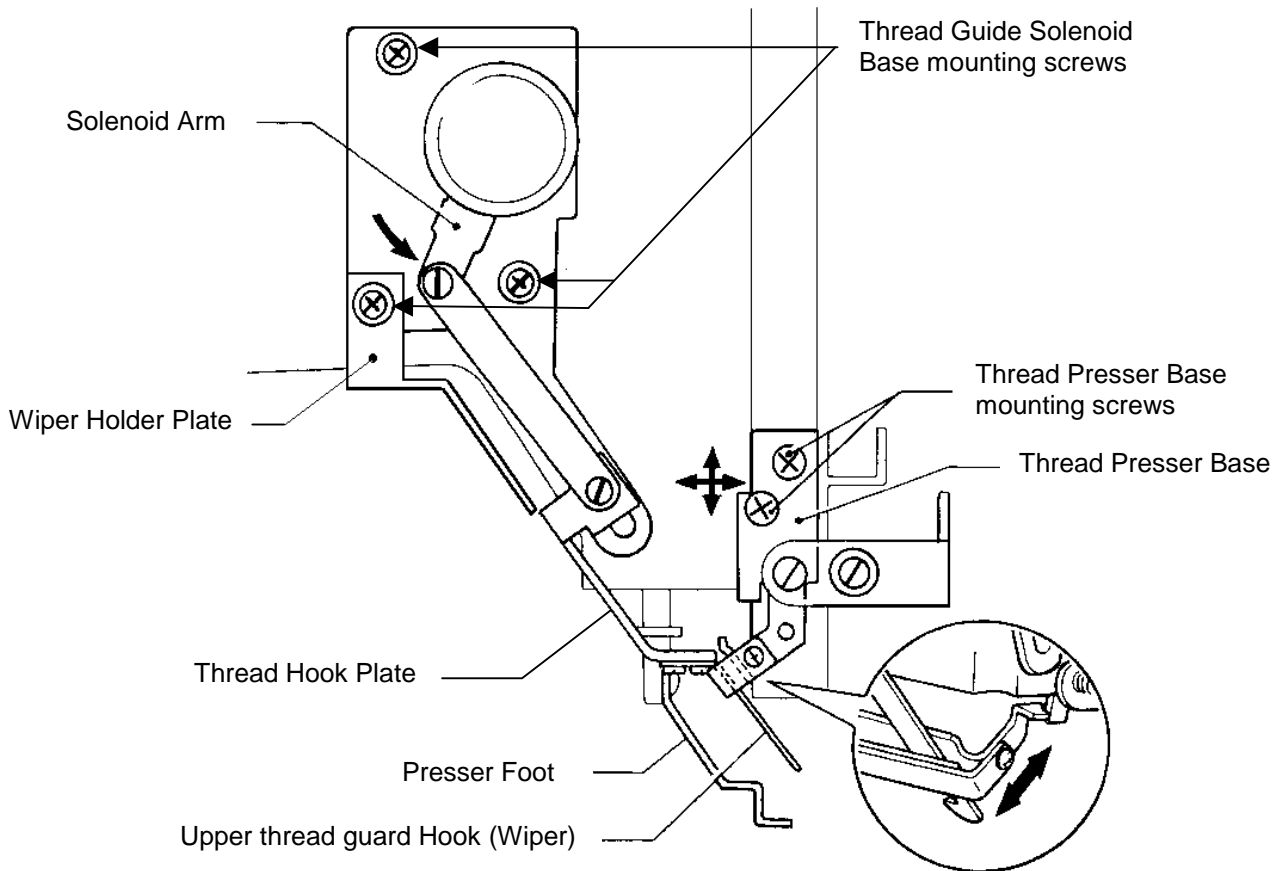
Move the solenoid arm in the direction of the arrow with your finger. The upper thread guard hook (wiper) should move easily. If not loosen the three mounting screws and rotate the thread presser base until it does. Will need to go back and adjust the wiper holder plate after finishing.

- **Thread Presser Base**

If the first or last needle, 9 or 12, cause the upper thread guard hook (wiper) to stick at one end then loosen the two screws at that end and adjust the thread presser base until the wiper moves freely in and out. After adjusting make sure that the presser foot does not touch the thread presser base after adjustment.

- **Wiper Holder Plate**

First in inspect the wiper holder plate to make sure that it is not bent. Then check that it very lightly touches the thread hook plate with the wiper in the up position. If not, loosen the screw that attaches it to the machine and adjust as necessary.



Checking thread guide solenoid base

Check for a deformed pin on the positioning spacer, B. Also check the thread guide solenoid base at the very bottom to see if it has a bump. A damaged or missing lower arm cushion usually causes this. If the positioning spacer, B, is damaged or deformed it will need to be replaced. If the thread guide solenoid base is damaged or deformed sometimes it can be filed at the bottom to remove the bump in the metal or it can be replaced as well.

