

# I/S-2K quick reference for APQS machines with REV2.3 software

## POWER UP

When the power is turned on with the main power switch on the back of the machine a needle positioning cycle is made. Before turning the power on check that there is nothing in the way of the needle.

## DUAL CONTROL

All the controls are active on both sides of the machine, you can make a single stitch, position the needle, turn on/off the channel lock and the laser from both sides. However, when the black start/stop switch is pushed on one side, the controls on the other side will be disabled, with the exception of the black start/stop switch that acts as an emergency stop. The stitching starts in a mode that was set by the dial on the side where the start/stop switch was pushed.

## NEEDLE POSITIONER

Hitting the button marked DOWN on the control panel will toggle between up and down needle positions. The green light above the button is turned on when the needle is at the down position. The needle will return to the position that was set before starting stitching when the stitching is stopped with the black start/stop switch. If the needle is at the down position when the start switch is pressed, it will be pulled up before the stitching starts. NOTE that you should wait with moving the arm until the pull-up is complete to avoid needle flexing and breakage.

## LASER CONTROL

The button marked LASER on the control panel toggles the laser light on and off. The red light above the button is turned on when the laser is on.

## SINGLE STITCH

A single stitch can be made by pushing the red switch on the front or rear handle. If the switch is held down, the single stitch will be repeated until the switch is released. NOTE that when the needle positioner is set in the down position, the single stitch is inhibited and a beep will sound when the single stitch switch is pushed.

## ACCIDENTAL START PREVENTION

The machine is protected from accidental starts triggered by a noise spike on the power line, or an accidental hit of the start switch. The start switch should be held down for about one sixteenth of a second to start either the constant speed or stitch regulator mode.

## CONSTANT SPEED MODE

The constant speed mode is selected when the selector dial is set anywhere between the 0 and 100% speed range at the moment when the black start/stop switch is pushed. NOTE that turning the dial to the stitch regulator side after starting will not switch to the stitch regulator mode, it will keep the lowest speed setting instead.

## STITCH REGULATOR MODE

The stitch regulator mode is selected when the selector dial is set anywhere between the B1 and 12 SPI markers at the moment when the black start/stop switch is pushed. NOTE that turning the dial to the constant speed side after starting will not switch to the constant speed mode, it will keep the 12 SPI setting instead.

NOTE that although the selector dial is continuous, there are only six discreet settings in the stitch regulator mode. The notch on the dial should be aligned with the SPI marker lines. If the notch is set, for example, between the 10 and 12 markers, the setting will NOT be 11 SPI, but 10 or 12, depending on which marker is closer to the notch. Similarly, if the notch is set between the stitch regulator and the constant speed scales, no selection will be made and a beep will sound indicating that the notch on the dial is not at a definite position.

In stitch regulator mode the motor will not start when the start/stop switch is pushed. The green RUN light will be turned on instead, indicating that the machine is "armed". The motor will start when the arm starts moving, and will continue to "fire" stitches according to the preset stitch length until the arm is stopped, or the start/stop switch is pushed again. If the start/stop switch is not pushed, but the arm movement stops, the needle will be pulled up and the machine will stay armed for about 8 seconds and the motor will start again when the arm is moved again. You can exit the stitch regulator mode by pushing the start/stop switch. Then the needle will return where it was set before the stitching started.

## NEEDLE PULL-UP

In those rare cases in the stitch regulator mode when the needle stays in the fabric when the arm movement abruptly stops, the I/S controller automatically pulls up the needle after about 1/2 second. NOTE that you should wait with moving the arm until the pull-up is complete to avoid needle flexing and breakage.

## LONG STITCH INDICATION

The stitch regulator keeps the stitches at the selected length within wide arm movement speed range. However, the stitches will get longer when the arm moving speed approaches the speed limit of the motor. Every time a given stitch gets longer than twice the selected length, the red FAIL light will be turned on and a beep will sound. NOTE that the long stitch indication is turned on not only when the arm movement is way too fast, but when there is a sudden speed or direction change, usually at corners of points of the patterns. The technique of slowing down when approaching and gradually start out when leaving these critical points should be practiced.

The long stitch beep can be turned on/off by holding the DOWN key down while turning the power on. NOTE that this programming needs to be done only when you want to change the enabling of the long stitch alert beep.

## MOTION DETECTOR FEATURE

A motion detector feature was added to the constant speed mode. When it is enabled, the motor will not start when the start/stop switch is pushed. The green RUN light will be turned on instead, indicating that the machine is "armed". The motor will start when the arm is moved more than 1/16" in any direction, and will run with the preset constant speed, until the arm stops (does not move more than 1/16") for about 1/10 of a second, when the motor stops and the needle is pulled out of the fabric automatically. NOTE that the needle will be pulled up even if the down position was set before the stitching started. The machine will stay armed for about 8 seconds and the motor will start again when the arm is moved again. You can stop the motor and exit the motion detector mode by pushing the start/stop switch again. Then the needle will return where it was set before the stitching started.

The motion detector feature can be turned on/off with a simple programming step. Holding the black start/stop switch down while the power turned on to the machine will change the motion detector enabling. NOTE that this programming needs to be done only when you want to change the enabling of the motion detector. The status of the motion detector enable is indicated by sound when the power is turned on: ONE beep indicates that the motion detector disabled, TWO beeps indicate that it is enabled.

## BASTING MODE

If the selector dial is at the B1 or B2 setting when the black start/stop switch is pushed, the machine will make 1" or 1/2" long basting stitches. NOTE that in the basting mode the arm should be moved carefully, watching the flexing of the needle. NOTE that the proper take up lever position is critical in the basting mode, if it is not high enough to release the thread from the hook between stitches, the needle return position should be readjusted.

## PRECISION QUILTING MODE

The Precision Quilting mode was added to the stitch regulator mode to smoothen the needle movements when slow speed quilting is necessary, like when stitching in the ditch, outlining, etc. To start the PQ mode the start/stop switch must be "double clicked", i.e. hit twice within 1/2 second. A beep at the second hit indicates that the PQ mode is active. NOTE that in the PQ mode the arm should be moved slowly, otherwise longer stitches will occur.

## NEEDLE JAM DETECTION AND RECOVERY

If there is any minor obstruction against the needle movement (tighter spot in batting, seam under the needle, etc) that would cause the needle to slow down or stop moving, a slightly more powerful pulse will be applied by the motor to move the needle out of the jam. If after four such attempts the needle still does not move, the power will be removed from the motor and the red FAIL light and alarm sound will be turned on. Usually this is the indication that a bigger problem exists (thread trapped in the bobbin case, needle flexing, etc.), so the power should be turned off and the cause of the jam should be found and eliminated before the machine is turned on again.

## SETUP DATA SECURITY

The setup data (motor speed and needle positions) are stored in the memory of the controller. This memory retains the data even if the power is turned on. However, in very rare cases, environmental effects (lightning, power surge) may damage the data. Every time the machine is turned on a data validity test is performed and the machine will go into normal operation only when the setup data are not corrupted. If a data integrity error is detected four beeps will sound together with the red FAIL light blinking, and the machine goes into setup mode with default settings on all setup items. NOTE that in order to ensure that all the setup data were entered correctly, after the "four beep start" at least one adjustment (increase or decrease) should be performed on each of the setup items. Even if a default setting for an item (e.g. needle up position) seems to be correct, you have to make one incrementing and one decrementing step to tell the controller that you verified the setting while keeping it the same as the default. Failure to make at least one adjustment on every item will result another "four beep start".