



MK18 Automatic button shank wrapping machine



Service manual for:
Serial No. 18 - 300 onwards

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Button securing system

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9 Safety Instructions

1. Do not operate the machine without all safety guards and doors in place.
2. This machine must only be operated by persons who have been fully instructed to do so.
3. This machine must only be used for the purpose it was designed for.
4. When carrying out any maintenance work or exchanging any parts ensure that the electricity and air supply to the machine are disconnected wherever possible. In certain cases it is helpful to check parts or settings with the power on – **TAKE CARE NOT TO BURN YOURSELF ON THE HEATING FORK – IT IS VERY HOT !**
5. Maintenance work must only be carried out by suitably trained and qualified people.

10 Introduction

10.1 Important notes

To avoid any possible damage to the machine or trouble with it, the following instructions must be followed:

1. Before connecting the machine to the electrical supply ensure that the supply voltage is single phase between 100 and 240 v.
2. Before connecting the machine to the pneumatic supply, ensure that the air is free of excess water and is able to supply at least 1 metre cubed/hour (0.7 cfm) at 5 bar minimum.
3. Check that all parts appear to be in good condition.
4. Check that all necessary parts are lubricated.

10.2 Routine Maintenance

In order for the mk.18 to work efficiently the heating fork requires regular cleaning. The frequency of this depends upon the number of buttons wrapped per day but as a guide this should be done every 10,000 cycles (approximately once a week). To do this disconnect the power from the machine and remove the top cover and then the front stainless steel cover. The heating fork will still be hot but this will aid the cleaning process TAKE CARE NOT TO BURN YOURSELF! Clean up the front and rear faces of the fork and also the internal faces of the bonding nose. The residue can be scraped off using a metal object such as a small screwdriver.

The only parts that require lubrication are:

Linear bearings that carry the heater and the wrapping assembly - Lightly oil once every two months.

The only other routine maintenance that should be required is cleaning. Every 10,000 cycles (or every week) remove top and front covers and remove any excess thread waste pieces that may not have been removed by the venturi. At this time clean all working parts and check their condition. Any worn parts should be replaced immediately.

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2.3 Installation

The MK18 machine is designed to be used either as a freestanding unit or as a tandem installation incorporated next to a button sewing machine.

Freestanding installation – place the machine onto the table in the desired position. Disconnect the power from the machine and remove the top cover. Locate the two holes in the base of the machine and secure through these. Brackets are available from MMS to fit the machine into a table top so that the button entry position is on a level with the sewing position of a button sewing machine.

2.4 Thread type

MMS UK button securing machines have been developed to use heat seal TF elastomeric thread. So that the optimum speed, button security and efficiency is achieved during each cycle it is recommended that the original MMS TF thread is used. The use of other thread may cause performance problems and damage to components. For these reasons the warranty may be void if non MMS thread is used.

Heat sealed button security

The shank of the button attachment is the most stressed part of the garment and therefore to prevent button loss this shank must be reinforced.

TF (TF = thermofusion) thread is specially designed for button wrapping with securing effect. The unique elastomeric gripping force and the heat sealing are the key to button loss prevention as the thread permanently squeezes the attaching threads. The button is secured and the slim button shank prevents the button holes from bulging and the button has a clean finish and tail free shank

The MMS TF thread

Strong heat - sealing layer

- Bonds wrapping threads together
- Eliminates loose ends and tails
- Prevents loosening during use

Coloured component

- Increases overall strength
- No colour fading due to washing
- 60 colours

Flexible elastane core

- High flexibility
- Unmatched grip
- Resistant to washing fatigue
- High internal strength
- 330% elasticity

3 Control System

The control system has been specifically designed for the MK18 and therefore provides a versatile method of selecting the desired variables in order to achieve a perfectly wrapped shank..

3.1 Display / select button

The machine is fitted with a small touch screen display which is also a button for activating the automatic threading, resetting the batch counter, selecting the number of wraps or selecting the button style. In the run mode the screen will display the button style and under this the left the number of wraps. On the right is the batch counter. To reset the batch counter open the hatch. The screen will then display 'C' and the count number. Pressing the screen will reset the counter. Close the cover to return to the run menu.

To increase the number of wraps open the hatch then press the wrap start lever to access the screen which shows a button and a question mark. Press the screen (the colour changes) then press the screen again to increase the wrap number. To decrease the number of wraps press and hold down the start switch lever and then press the screen button. To return to the run menu close the cover.

To alter the button style open the hatch then press the start lever repeatedly until the preferred button style is displayed. Select this style by pressing the display. The selection will be confirmed by the change of colour. To return to the run menu close the cover.

3.2 App

The machine is capable of connecting to a mobile phone or tablet via a blue tooth connection.

To connect first download the MMS controller app from the app store onto the device. Once this is loaded turn on the machine and then press the 'connect' button on the app home screen. A list of available blue tooth devices will then be displayed from which the relevant machine should be selected. Each device is identified with a number and the correct one can be selected by matching the last three digits with the number on the label at the back of the machine. The device and machine will then connect automatically and the home screen will be displayed.

On the home screen the following is displayed :

Button – next to this is a number and scrolling either up or down will select a different wrap number.

Temperature gauge – this indicates the current temperature of the heating fork in the machine. Once the needle reaches the green section the machine will run.

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Numerical display top left of screen – this is an indication of the cycle time. After a button has been wrapped the actual cycle time will be displayed here. This time will alter depending upon the number of wraps and the heating time.

Numerical display top right of screen – this is the batch counter. It counts every cycle and can be reset simply by touching it.

Buttons **1** to **3** -These buttons are used to select any of the three available preset programs.

Three dots at top right of screen – pressing these will access the following functions:

Diagnostics - pressing this will access the MMS diagnostics menu. The initial screen that appear shows a graphic of the heating fork mechanism. Touching the screen in the various positions of the cylinders will cause the movement to take place. Swiping the screen across will access other diagnostics pages.

Programs – pressing this will access the list of the 3 programs. Touching on any of the programs will allow changing of the wrap value.

Settings – pressing this will access the following settings –

Heater seal time – this can be varied from 0.5 to 1 second (0.6 is standard)

Lock screen – ticking this box will lock the machine screen so that it cannot be tampered with.

Counter – this is the total machine cycle counter (non resettable).

4 Operating Instructions

4.1 Switching On The Machine

To switch on the machine first turn on the air supply switch. This is the blue headed twist switch mounted on the right hand side machine

The power should then be switched on by pressing the switch that is mounted on the back face of the machine. The machine will then be in warm up mode and the display flash between blue and red to indicate that the warming up process is taking place (App will show the temperature guage needle moving).

The machine will not run until it has warmed up to the required running temperature which is indicated by the screen turning to solid green. For maintenance purposes the machine can be run before the optimum temperature is reached by pressing the display button.

4.2 Threading Procedure

Before wrapping a button shank for the first time it is necessary to check that the machine is correctly threaded up and also that the desired wrap number is selected

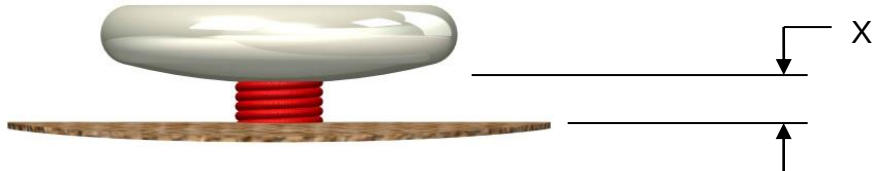
Insert the cone of thread in the holder and pass the end through the smoothing device. Take the end of the thread and hold it with enough spare between the hand and the end to comfortably pass from the back of the machine to the front. Press the display switch and hold this down whilst at the same time floating the end of the thread over the thread entry nipple. Allow the thread to be sucked into the machine until your hand reaches the top of the machine then release the button. If enough thread was being blown out of the front of the machine the hook will automatically catch the thread. Finally take hold of any loose end hanging out of the front of the machine and break it off in an upward direction (being careful not to actuate the start switch).

To unthread the machine take hold of the thread where it enters the entry nipple and then press and hold down the display button. Pull the thread out.

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4.3 Shank Length

In order to achieve a consistently high standard of button shank wrapping it is essential that the shank length is of sufficient length as failure to achieve this will reduce the yield per cone and render the wrapping less effective in securing the button. This is a simple setting on most button attaching machines.



With reference to the above diagram the minimum shank lengths before wrapping are as follows :

Shirt, blouse	2.5mm
Casual trousers, trouser, jacket front	3mm
coat	4mm

Note – if the button support is being used (shank or long shank program) add 1mm to these shank lengths.

4.4 Number of wraps

The number of wraps is a variable that can be adjusted to suit the design of the garment or personal taste. The fewer the wraps the slimmer the shank and the more wraps the thicker the shank. There are two methods of changing the wrap number.

The display on the machine shows the current setting of the number of wraps in the particular selected program. To change this value without the phone or tablet open the hatch and press the screen. The wrap number will increase. To decrease the number of wraps, with the hatch still open, press down the start switch arm and then press the screen. When the desired number of wraps has been set close the hatch.

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Changing the wrap number from the APP

With a phone or tablet paired with the machine the wrap number can be changed by sliding up or down on the number which is displayed on the home screen. This value can also be set through the 3 dots then the program tab at the top of the screen.

Garment type	Shank Length (before wrapping)	Number of Wraps
shirt	2.5mm	7 - 10
Trouser / jacket	3mm	14 - 18
coat	4mm	20 - 30

4.5 Altering the button type

The MK 18 has three different program options as follows :



standard short shank



shank button



long shank

Any of these options can be pre set into each of the machine programs by accessing the program menu of the APP (press on the 3 dots top right of the screen then 'program'). From there access the desired program by swiping the screen across. The button type can be selected as can the wrap number. If the shank button option is selected then via the settings option a start delay can be programmed which will allow the button to settle in the button support prior to starting. These programs can also be selected from the display button on the machine (follow instructions in section 3.1).

4.6 Wrapping a shank

Once all the options have been entered and saved into a program it is then possible to select a program and wrap a shank. First select the program by pressing the relevant button. Then insert the shank to be wrapped into the slot in the whipping plate. When the shank reaches the bottom of the slot the start switch will be actuated and the machine will automatically start. If the long shank or blazer button features have been selected then the button support hook will be activated. This hook supports the button during the wrapping cycle which is essential on long shanks and on blazer type shank buttons. When using these features ensure that the weight of the garment is supported or it is held in such a way that there is no tension on the button as the button is supported with

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low force during the wrapping cycle from inside the machine and any undue pulling force could alter the result. When wrapping shanks without backing buttons which are attached to very lightweight cloth a different operating technique should be used to prevent the cloth being pulled through the slot during wrapping. One technique that can be used is to press the cloth against the plate at the bottom of the slot with a thumb.

5 Settings

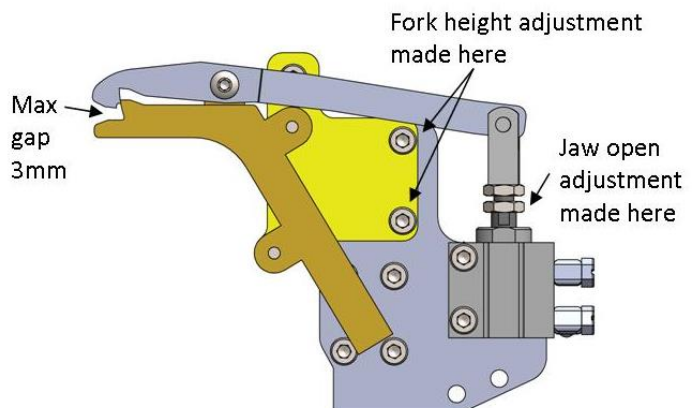
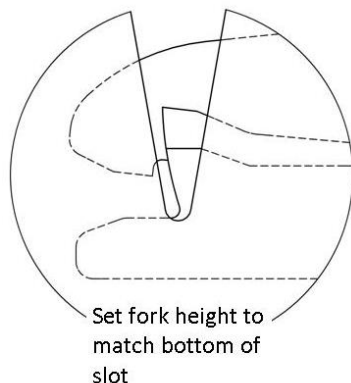
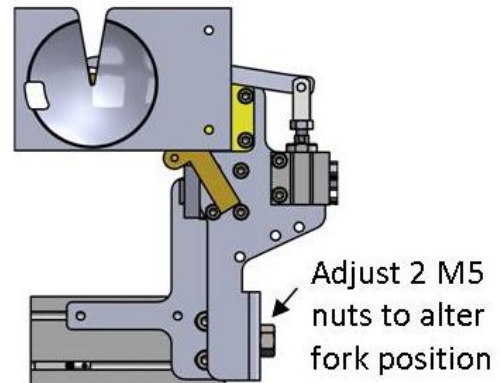
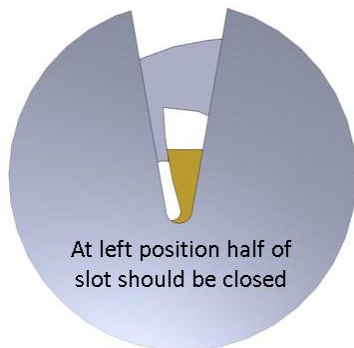
5.1 Removing the covers

For some of the maintenance tasks it is necessary to remove one or more of the main machine covers. Before this is done power should be disconnected from the machine and it should be left for at least 10 minutes to for the heater to cool down. Then the screws holding the relevant panel can be unscrewed.

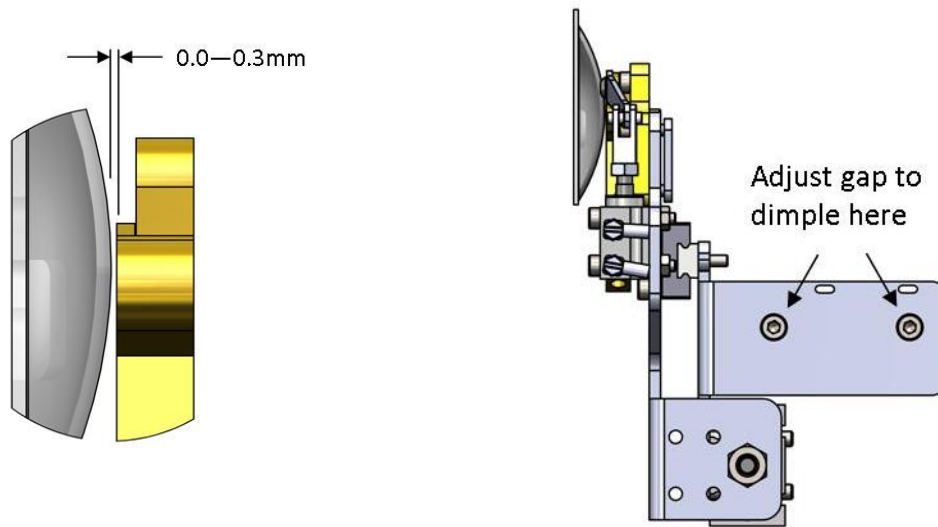
Caution – some settings need to be carried out with the power on – take care as the heating fork is very hot!

The easiest way to check the machine settings is via the diagnostics app on a mobile phone or tablet. Using this each component can be moved into its second position. If the app is not used then the air and power need to be switched off and the components need to be moved into their second position by hand.

5.2 Heater



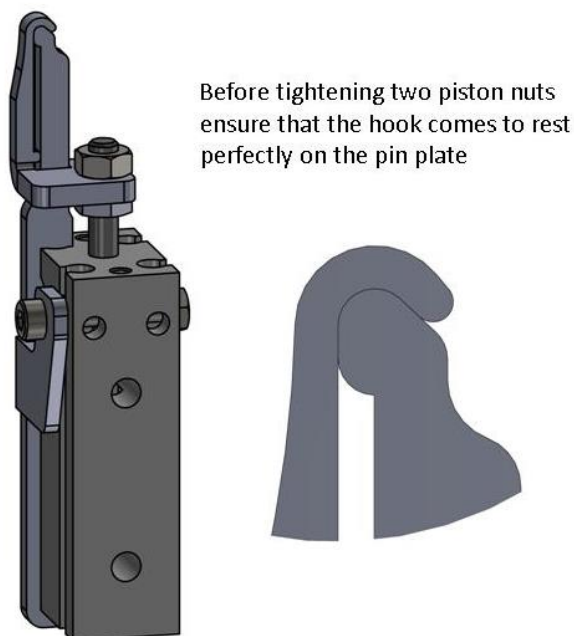
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The heating fork settings can be checked either via the diagnostics in the APP or using the manual override buttons on the pneumatic valves.

5.3 Hooks

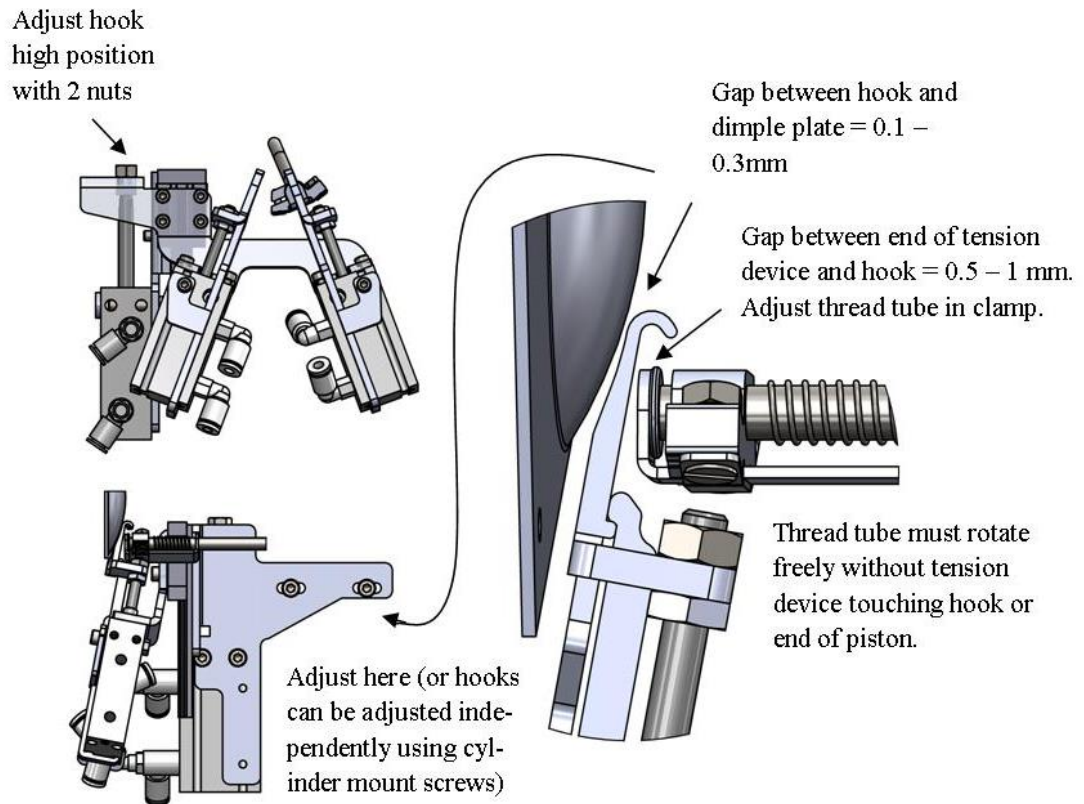
In order for the catcher hooks to work efficiently they must be in perfect condition, free from any sharp edges and be set so that they make a good clamping contact with the stop post. The hooks must be highly polished. If the hooks are damaged and a good clamping contact on the thread cannot be achieved then they must be replaced.



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The two lock nuts on the hook cylinder piston clamp the hook. These must be adjusted together to ensure that when they are clamped onto the hook the cylinder movement is stopped 1mm short of the end of its 'in' stroke. This will ensure that the thread is clamped against the post.

To check that the hook is working perfectly place a piece of thread in it and close it against the stop (either by hand with the air off or via the APP). The thread should be 100% clamped and not slip when pulled. If it does slip then try readjusting it or replacing it.



Each hook should be raised to their top position to check the setting against the inside of the whipping plate. The edge of the hooks should be just clear of the inside of the whipping plate (max gap 0.3mm). The position of each hook can be set by loosening the two M3 screws which clamp the hook cylinder to the bracket. They can then be moved forward or backwards to achieve the desired setting. Alternatively both hooks can be moved together by adjusting the position of the main bracket.

5.4 Flag

In order for the machine to be able to count the number of wraps and stop in the correct position, it is fitted with a photocell and flag to provide rotational information to the controller. This flag must be set correctly so that the machine hooks can catch the thread reliably.

To check the stopping position run the machine once and then observe the position at which the thread guide tube stops. It should stop at the 8 O' clock (lowest) position when viewed from the front of the machine. If it does not then remove the top cover and locate the aluminium flag which is mounted on the centre tube. Loosen the grub screw and then hold the flag whilst rotating the centre tube until the thread guide is in the 8 O'clock position. Ensure that the flag is pressing the bearing and the centre tube is pushed back against its collar (to prevent axial movement of the centre tube) and then tighten the grub screw. Replace the cover and run the machine to check the setting. This setting is important as it also ensures that the thread tube stops exactly at the 12 o'clock position when the automatic threading is operated. If this is incorrect then the tension device will not be pushed through the slot in the whipping plate. Fine adjustment to the flag setting may be required to achieve this correct setting.

5.5 Motor/Gearhead/Encoder

The motor, gearhead and encoder should give reliable service if all conditions are correct. Should any part become faulty then the complete motor unit including the bracket and pulley must be replaced. To do this first remove the top cover then undo the two screws which hold the motor bracket to the whipping carriage. Unplug the motor and encoder wires from the circuit board and remove the motor assembly. Reverse this procedure in order to fit the new motor/gearhead assembly. After reassembly of the machine check that the motor is rotating the correct way. When viewed from the front of the machine the thread tube should rotate clockwise. If it does not then reverse the motor wires where they connect to the circuit board.

5.6 Belt Tension

The drive belt should be tensioned so that it has a between 2 and 5mm of free play at mid distance between the two pulleys. Adjustment can be made by loosening the two 4mm screws that hold the motor bracket in place and rotating it in its slot.

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5.7 Tension Device

The tension device fitted to the MK11 is a robust unit that should give trouble free service. To ensure this good service the parts of the assembly must be kept clean and free from any rough edges or faces. **Note – it is essential that the from face of the tension device is square to the pipe end cap in both directions. If this is bent or damaged then the Mk 18 will not perform correctly.**

Tension Adjustment

The tension adjustment is very sensitive and should only be adjusted a small amount (approx. 0.5mm movement of locking collar) each time. Testing the tension should be done by wrapping a button shank as the tension is slightly different at full wrapping speed.

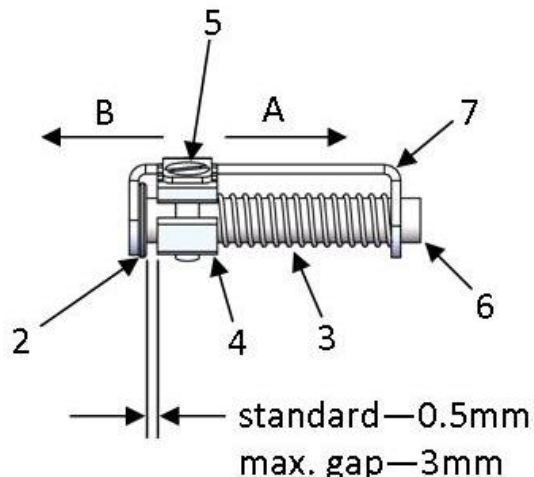
To increase the tension first loosen the locking screw (5) then carefully slide the slide clamp in direction “A” and tighten screw (5). Take care not to overtighten the locking screw as the tube could be distorted. To decrease the tension carry out the same procedure except move the slide clamp (4) in direction “B”. **Note – too much tension will result in thread breakage.**

Removal of a damaged tension device

To remove a tension device first loosen locking screw (5) and then pull the slide clamp (4) in direction “B” until the pipe end cap (2) is forced off the end of the thread tube (6). Then the complete assembly can be slid off the tube.

Refitting of a new tension device

1. Ensure that the lock screw(5) in the slide clamp(4) is loosened and fit the tension cap slide assembly(7) over the thread tube(6) together with the spring (3) as shown.
2. Press the pipe end cap(2) into the end of the thread tube. If it is a loose fit then remove it and carefully squeeze the end of the tube with a pair of pliers so that when it is refitted it is a tight fit.



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5.8 Thread load venturi

The venturi is mounted on the back of the whipping carriage its purpose being to blow the thread through the thread tube when threading the machine up. To work efficiently it must be clean and free from any sharp edges inside.

Occasionally the venturi or thread tube may become clogged with thread (especially if the machine is run with thread in but no button). To clear it out remove the rear cover and locate the venturi which is fastened by 3 screws behind the centre tube. Loosen these 3 screws and remove the venturi for cleaning.

5.9 Waste ejection blowers

The Mk.18 is fitted with two blowers that eject the waste thread through the waste tube out of the back of the machine. The blower manifold has some movement left to right by loosening the two mount screws. The blowers should be positioned centrally between the hooks.

5.91 Thread Tube

The thread tube must be in good condition without bends and set the correct distance from the front dimple plate. If it is bent out of shape it may be possible to bend it to its original shape. If it is beyond repair then it must be replaced. To achieve the correct distance from the hook set the hooks to their up position and rotate the tension device until it is in-between the hook and the stop post. The front face of the tension device must be just clear of the face of the hook (max gap 0.3mm). If adjustment is required then loosen the thread tube clamp screw and move the tube.

5.92 Carriage

The carriage is moved forward and backwards by the cylinder mounted to the left of the wrapping assembly. The speed of this movement is determined by the flow controls on the cylinder. Adjustment of these is trial and error to achieve the desired wrapping result on a long shank button wrap.

5.93 Button support

The important setting for the button support is that it just touches the whipping plate when it is in its forward position. Before making any adjustment first check that the position of the nylon pusher on the cylinder which pushes the button support forward is correct. There should be between 0.5 and 1mm of clearance between the nylon and

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the pusher (103660). If this is not the case then loosen the locknut on the cylinder piston (102025) and rotate the nylon pusher until the setting has been achieved. Lightly retighten the locknut.

To adjust the position of the button support set the button support out (via the diagnostics in the APP) and then check that the button support has a minimal clearance between it and the whipping plate. If adjustment is required loosen and adjust the 2 nuts on the cylinder piston that moves the carriage.

The button support assembly is mounted onto the end of the thread tube. Behind this is the thread tube clamp which clamps onto the thread tube and acts as a bearing for the button support pusher and also as a support for thread tube. In order that the button support works efficiently it is imperative that the pusher slides freely inside the bronze bearing. To achieve this the clamp must be aligned with the slots on each side of the metal centre tube so that the metal pusher rod does not bind in the slot when it is pushed. To alter this setting loosen the locking screw and twist the centre tube inside the clamp until the desired setting is achieved.

6 Pneumatics

The machine is equipped with state of the art pneumatics which should prove to be extremely reliable under normal conditions. To achieve this reliability the supply to the machine should be a minimum of 5 bar. and a maximum of 10 bar. This air supply should be relatively free of moisture. A filter regulator is mounted inside the machine which will drain off a certain amount of excess moisture. Note – the filter cannot drain large amounts of water and using air supply that is too wet will damage the machine.

6.1 Valves

The MK18 is fitted with eight 24v spring solenoid valves. They are mounted inside the machine to the right hand side. As viewed from the front of the machine the valves functions are as follows :

Valve 8	=	Hook -left
Valve 7	=	Hook - right
Valve 6	=	Hook holder – up/down
Valve 5	=	Threading up blower
Valve 4	=	Heating fork - in/out
Valve 3	=	Heating fork clamp
Valve 2	=	Carriage
Valve 1 (closest to the front of machine)	=	Button support

Each valve can be manually overridden by switching the plastic cover on the valve to the left to reveal A B then pressing the blue button on the specific valve (ensure that the electrical power is switched off when carrying out this test).

6.2 Air Pressure Control

The main air pressure is pre-set in the factory to 5 bar. This can be checked by viewing the pressure gauge on the back of the machine. If it is incorrect then first turn off the electrical power to the machine and leave it until the heating element has cooled down. Remove the top machine cover and locate the pressure regulator. Lift up the black plastic knob and turn it until the 5 bar is showing on the gauge.

7 Electric's

7.1 Supply Voltage

The supply voltage should be between 100 and 240 volts (50-60Hz) single phase. The machine is equipped with a high quality in line filter to reduce any effect from electrical spikes. This filter however cannot cope with extreme surges therefore the supply to the machine should be relatively "clean". It is also important that the ground is connected.

7.2 Reed Switches

Seal Cylinder

So that the thread is bonded for the exact amount of time that is programmed, a reed switch is fitted to the seal cylinder. This switch should be positioned on the cylinder so that it switches at the end of its stroke (red LED lit).

Hook down

A reed switch is fitted at the lower end of the pneumatic cylinder which moves the hook holder up and down. This switch gives the signal to the controller to open the hooks so that the thread is ejected. It should be mounted so that the red LED lights when the hooks reach there bottom position.

Hook up

A reed switch is fitted at the upper end of the pneumatic cylinder which moves the hook holder up and down. The switch should be mounted onto the cylinder so that the red LED lights up when the hooks are in the top position.

Carriage

A reed switch is fitted to the cylinder that moves the whipping head carriage forward and backwards. This is mounted towards the front of the cylinder and should be set so that the red LED is lit up when the carriage is at rest in the front position.

7.3 Fuse

The main voltage fuse is situated under a flap in the filter (where the power lead plugs into the machine). The rating of this fuse is 2 amp.

7.4 Heating Element

The heating element has a life of approximately one year. This can be less if the machine is run for 2 or 3 shifts per day or the power is left on overnight. To change the element turn off the power to the machine and allow it to cool (10 minutes). Remove the machine covers to gain access to the element. Loosen the screws in the terminal block that hold the element harness and cut of the tie wraps that secure it. With all of the securing tie wraps removed slide out the heating element. Reverse this procedure to fit a new element.

7.5 Thermal Sensor

A thermal sensor is fastened to the insulated heating fork holder. This sensor is constantly checked by the control system to ensure that the temperature of the heating element remains above the recommended sealing temperature. If it requires changing then first turn off the power and wait for the element to cool for at least 10 minutes. Then remove the right hand front cover to gain access to the fork assembly. Loosen the screws in the terminal block that hold the switch harness and cut of the tie wraps that secure it. Unscrew the sensor from the insulator and remove it. Replace it with a new assembly and reverse the procedure for reassembly.

7.6 Installing New Software

New versions of software are developed to provide improvements to existing features, new features or correction of software errors. Each program is held in a memory chip on the circuit board which can be overwritten by downloading the new software through the APP. To do this follow the instructions on the APP.

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8 Trouble Digest

Fault	Cause	Solution
Machine is not running when start switch is pressed	No electrical power to machine. Faulty power supply. Faulty start switch. Faulty motor or motor supply. Jammed gearbox, belt etc. Faulty photocell.	Check supply and main fuse. Check 24v power supply. Check start switch via. Input check. Check 24v motor supply and then motor. Check for free spinning of mechanism Check photocell and its connections.
Hooks are not catching thread	Motor stopping position incorrect Hooks damaged or set incorrectly.	Check flag settings (section 4) Check hook settings (section 4)
Thread breaks during wrapping.	Thread supply not free. Sharp edges on the tube rim, tension cap or hooks.	Check cone and routing of thread. Remove any sharp edges and polish.
Thread not caught by the hooks at the end of the cycle	Stopping position of thread tube incorrect. Hooks not clamping the thread correctly. Waste thread not ejecting	Adjust the flag (section 4) Check hook condition and setting (section 4) Clean hooks, check down switch position and venturi performance /setting (section 4)

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Fault	Cause	Solution
Thread not bonding.	Heating fork setting incorrect. Heating fork dirty or worn. Final wraps not next to the whipping plate (only possible in variable long shank program). Hook assembly travelling down too quickly.	Check setting and readjust (section 5). Clean fork/replace if worn. Adjust the number of wraps or the return position in the program (section 4). Readjust (section 5).
Thread wrapping tension not satisfactory.	Tension device worn or set incorrectly. Tension device bent so that no pressure is applied to the critical point Thread supply not free.	Check condition of tension device and replace if necessary. Set correctly (section 5). Check that the angle of the tension device is exactly 90 degrees. Bend to suit or replace with new part. Check cone and routing of thread.
Tails left on the shank	Tension device not square to front of pipe end cap. Hook not clamping thread effectively. Hook assembly down speed incorrect. Heating fork set too far from dimple plate.	Change tension device. Reset or replace hook. (section 5). Adjust flow controls. Adjust fork position (section 5).

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Error Messages – MK.18

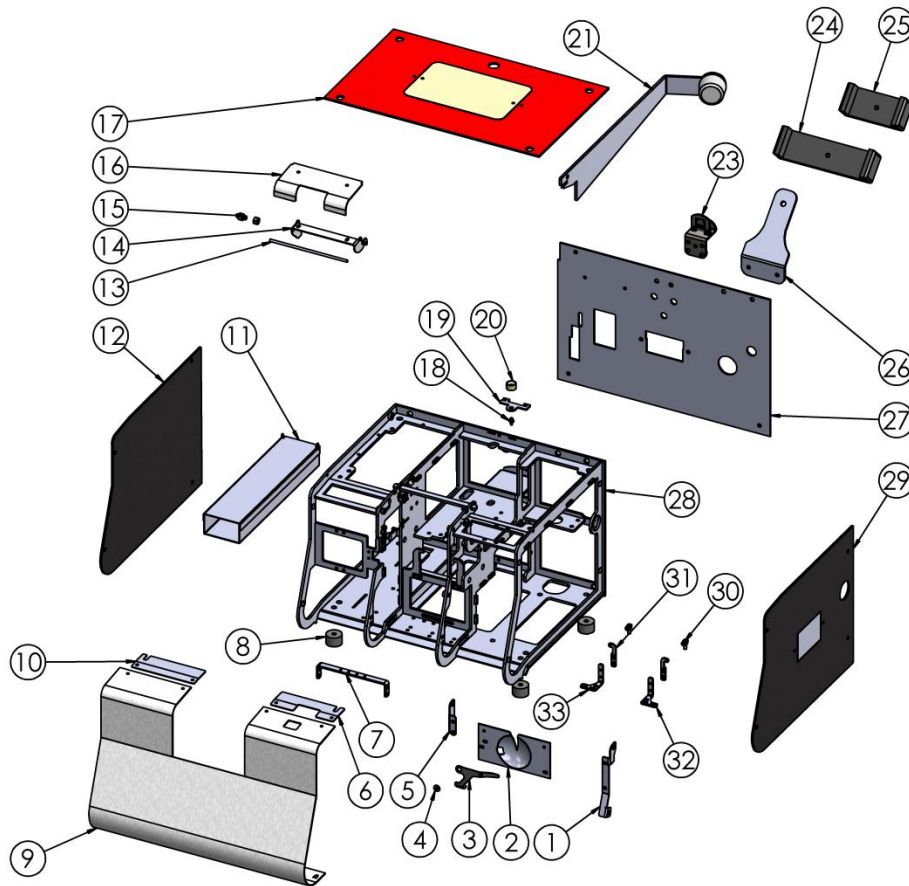
Error No.	Cause	Parts or settings to check
1	No signal is coming from the photocell	Check that the wires into the plug on the circuit board are making good connections. If they are good then in the system test check if the photocell is working. If the photocell is working then the fault must be that flag is not turning which could be due to a faulty motor or the centre tube being jammed.
2	No signal from temperature sensor	Check the sensor wiring at the circuit board. If this is correct then replace the temperature sensor.
3	No signal from seal cylinder reed switch	When the heating fork moves towards the button the reed switch on the cylinder should light up 2mm before the fork touches the button shank. In order to check this though the light does need to come on therefore check the wiring at the circuit board plug. If this is correct then replace the reed switch. If the reed switch is working and in the correct position then check the free movement of the fork mechanism, the air supply and the relevant pneumatic valve.
4	No signal from the hook up reed switch	First check the position of the reed switch at top of the hook up cylinder. The light should come on 2mm before the end of the cylinder stroke. In order to check this though the light does need to come on therefore check the wiring at the circuit board plug. If the reed switch is working and in the correct position then check the free movement of the hook mechanism, the air supply and the relevant pneumatic valve.
6	Not receiving the hook holder down signal	First check the position of the reed switch at bottom of the hook up cylinder. The light should come on 2mm before the end of the cylinder stroke. In order to check this though the light does need to come on therefore check the wiring at the circuit board plug. If the reed switch is working and in the correct position then check the free movement of the hook mechanism, the air supply and the relevant pneumatic valve.
7	The hook assembly down reed switch is on when it should not be	Check the position of the reed switch on the hook up / down cylinder. This should be set towards the bottom of the cylinder so that it comes on 2mm before the cylinder reaches the bottom of its stroke. If this is correct check the wiring of the reed switch, the free movement of the assembly, the air supply and the relevant pneumatic valve..
8	The seal cylinder switch is on when it should be off	First check the position of the reed switch at towards the end of the fork cylinder. The light should come on 2mm before the end of the cylinder stroke. In order to check this though the light does need to come on therefore check the wiring at the circuit board plug. If the reed switch is working and in the correct position then check the free movement of the fork mechanism, the air supply and the relevant pneumatic valve.
9	Thread tube not reaching it's rest position.	Check that the thread is running freely into the machine and also free movement of the thread tube, motor and wiring, pulley wheels and belt.
10	Touch screen fault	Make sure nothing is touching the screen which may hold it down. Also check the wiring. If these are correct then it could be a screen or circuit board fault
11	Start lever jammed	Ensure that the start switch is completely free to move up and

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	down	down. In the rest position the start switch should not be activated. If this is correct then check the start switch or its wiring.
17	Motor jammed during first revolution	Ensure that the centre tube can rotate freely without the tension device touching anything. If this is correct then ensure the belt is in good condition and the pulleys and the flag are secure. If these are correct then the fault will lie with the motor or circuit board.
19	Motor jam while wrapping short shank	Ensure that the centre tube can rotate freely without the tension device touching anything. If this is correct then ensure that the belt is in good condition and the pulleys and the flag are secure. If these are correct then the fault will lie with the circuit board or motor.
20	Motor jam while decelerating	Ensure that the centre tube can rotate freely without the tension device touching anything. If this is correct then ensure that the belt is in good condition and the pulleys and the flag are secure. If these are correct then the fault will lie with the circuit board or motor.
21	Motor jam when either hook is set	Ensure that the thread tube or tension device is not touching the hooks when they are out. The hooks may be loose or their top position may be too low. Thread tube may have become distorted and may need bending back to shape. Two different motors have been fitted to the Mk 18 and the software needs setting up correctly for motor type on the machine. When the machine is powered up the software number is displayed with either M or G after it. M motor type is 26 mm diameter and G motor is a smaller 22mm diameter. Consult MMS for details of how to change this option in the software.
22	Motor jammed at the time the heating fork moves to button	Free running of the centre shaft. Check that the hooks do not touch the thread tube. Check that the speed restrictors are present in the air tubes to the heating fork cylinder.
23	Motor jammed	Check that the centre tube revolves freely. Ensure tension device or thread tube are not touching anything. Motor should be free.

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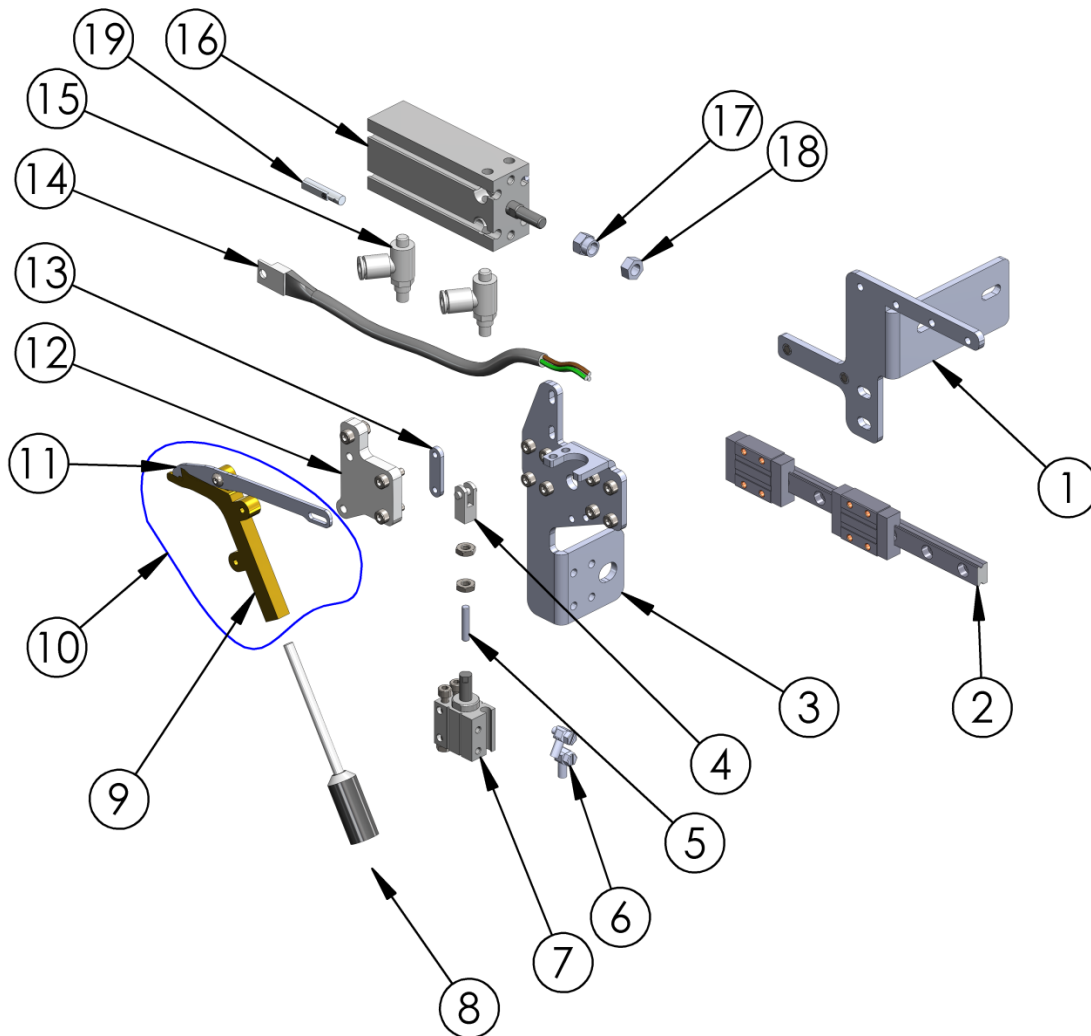
9.1 Main chassis assembly



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	133495	Whipping plate mount RH	1	18	102150	Barb straight fitting	1
2	133101	Whipping plate	1	19	134141	Nipple bracket	1
3	109445	Start switch actuator	1	20	102150	Thread entry nipple	1
4	102130	Start switch pivot - plastic	1	21	133141	Cone holder asm - universal	1
5	133494	Whipping plate mount LH	1	22			
6	134185	Cover mount plate RH	1	23	134143	Thread smoother assy	1
7	134106	Blower mounting bracket	1	24	134147	Tablet holder	
8	109870	Foot	4	25	133139	Phone holder	
9	133187	Front cover	1	26	134142	Holder bracket	
10	134186	Cover mount plate LH	1	27	133712	Back panel	1
11	134166	Waste tube	1	28	134130	Chassis	1
12	133202	Side panel LH	1	29	133201	RH side panel assy	1
13	133216	Hatch pivot pin	1	30	109729	Thread blow fitting	2
14	133713	Hatch pivot bracket	1	31	134167	Blower bracket	2
15	109295	Spring plunger 5	1	32	143172	Blower angle bracket RH	1
16	133715	Hatch	1	33	134168	Blower angle bracket LH	1
17	133200	Top plate assembly	1				

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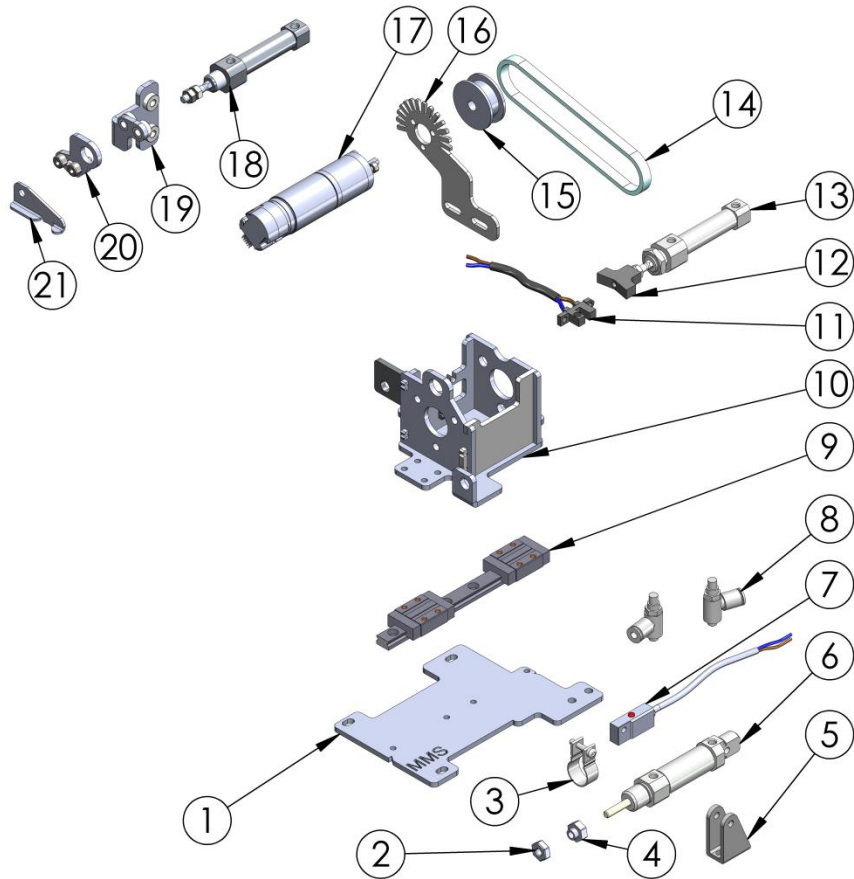
9.2 Heating fork assembly



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	134184	Fork main bracket	2	10	134525	Heating fork assembly	1
2	134520	Linear double bearing	1	11	133179	Fork clamp arm	1
3	134180	Fork moving bracket	1	12	133198	Fork insulator	1
4	109815	Clevis assembly	1	13	133196	Fork nut clamp	1
5	133107	Clevis threaded stud	1	14	133277	Temperature harness	1
6	109729	Thread blow fitting	2	15	10025	Flow control out	2
7	133535	Thread clamp cylinder	1	16	133530	Fork cylinder	1
8	133278	Heating element harness	1	17	133178	Cylinder nut shouldered	1
9	133218	Heating fork standard	1	18	133169	Cylinder nut	1
				19	134205	Reed switch	1

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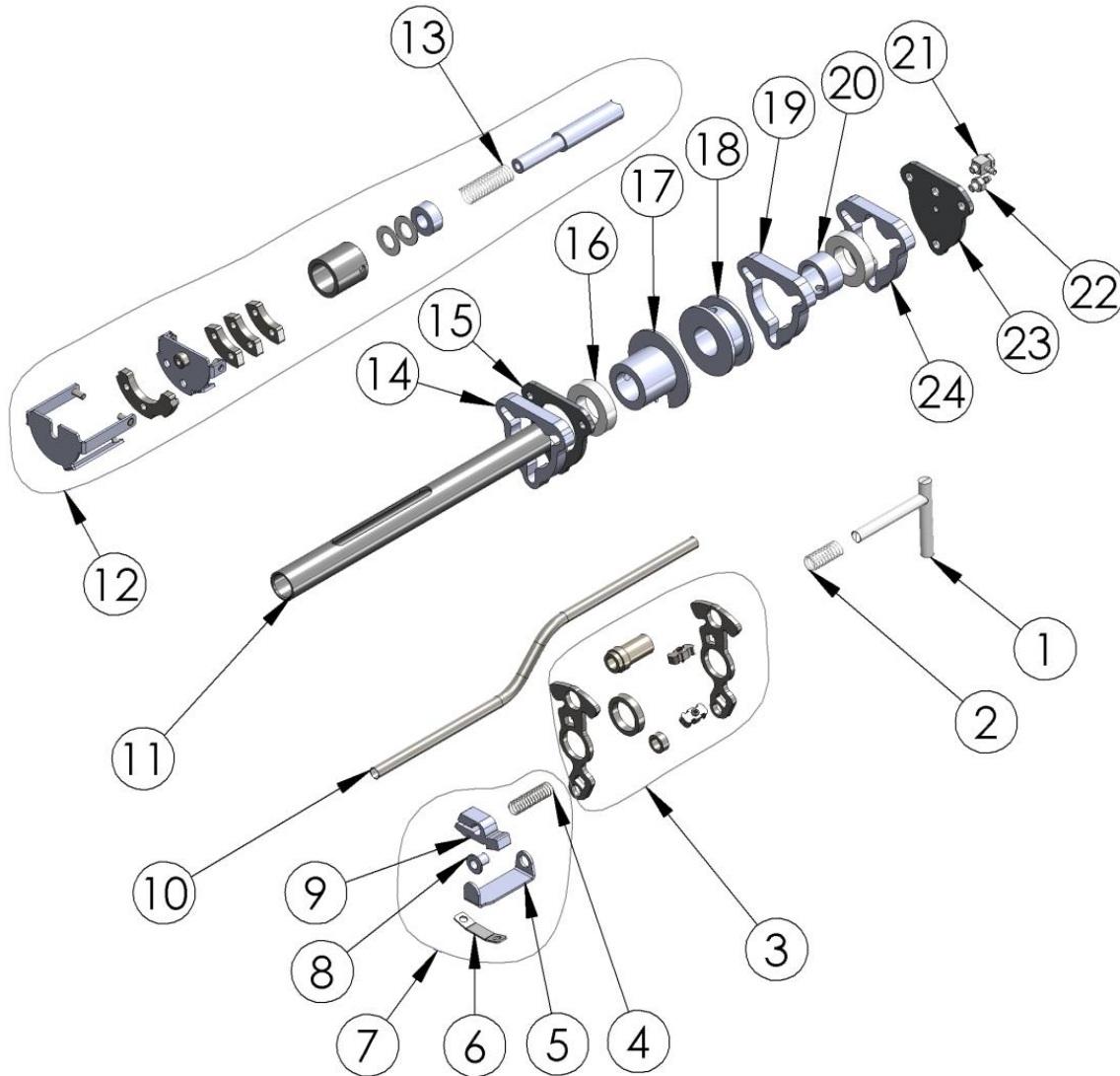
9.3 wrapping head assembly



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	134412	Carriage base plate	1	13	10187	Cylinder	1
2	134171	Nut M4	1	14	134414	Belt	1
3	102030	Switch band - 10	1	15	109720	Motor pulley - M	1
4	134170	Shoulder nut - M4	1	16	134415	Motor bracket - M	1
5	109710	Clevis	1	17	109624	Motor - M	1
6	102025	Wrap variation cylinder	1	18	10186	Cylinder	1
7	102035	Reed switch	1	19	133518	Opener main bracket	1
8	10025	Flow control out	1	20	133519	Opener cylinder bracket	1
9	134520	Carriage linear bearing	1	21	133517	Tension pusher	1
10	134411	Carriage	1				
11	102350	Photocell	1				
12	103670	Nylon pusher	1				

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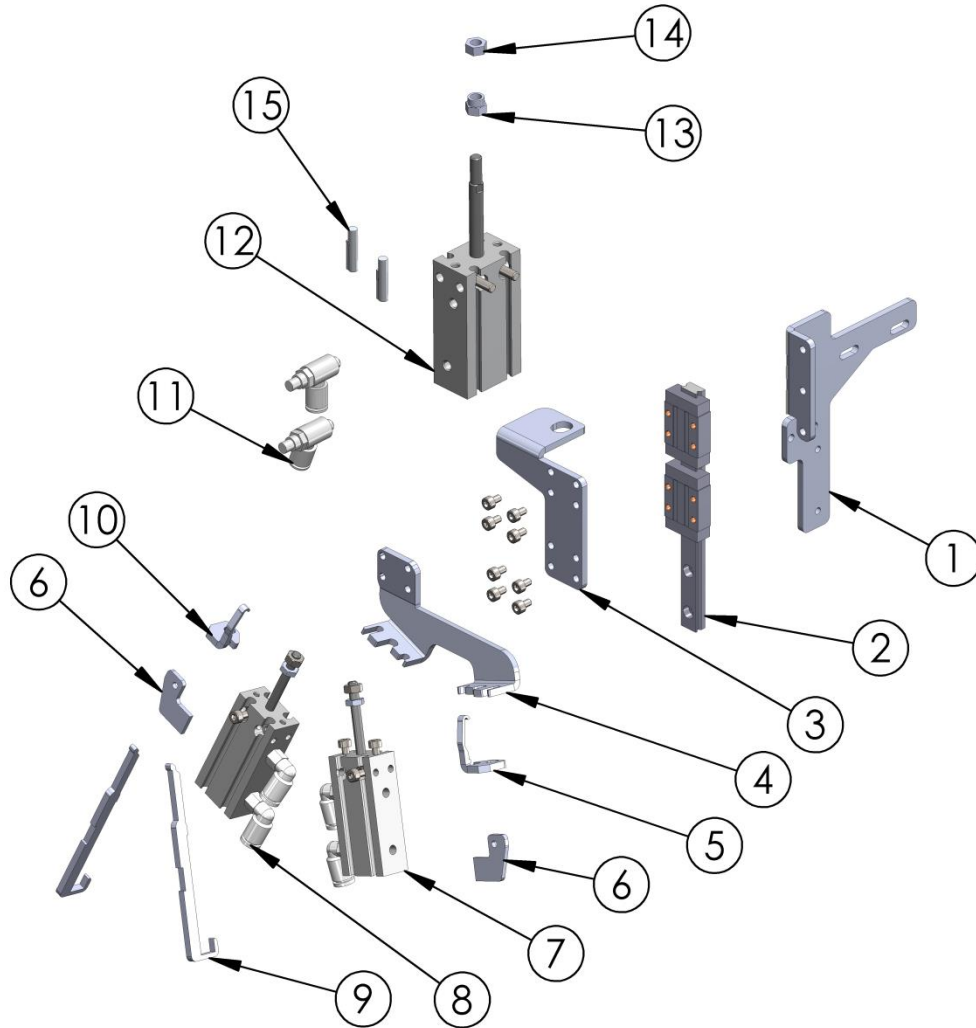
9.4 Centre tube assembly



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	134169	pusher	1	13	103652	spring	1
2	103653	spring	1	14	109543	bearing housing front	1
3	133545	thread tube clamp - U	1	15	109544	bearing securing plate	1
4	101390	spring	1	16	109617	bearing	2
5	102160	tension device spine	1	17	109618	flag	1
6	102170	tension device top plate	1	18	101750	pulley wheel small	1
7	101226	tension device assembly	1	19	109542	venture bearing housing	1
8	103645	pipe end cap	1	20	133267	spacer	1
9	102165	tension device adjust block	1	21	109729	elbow barb fitting	1
10	133582	thread tube	1	22	102155	nipple fitting	1
11	134263	centre tube	1	23	109540	venture back plate	1
12	134510	button support	1	24	109541	venture spacer	1

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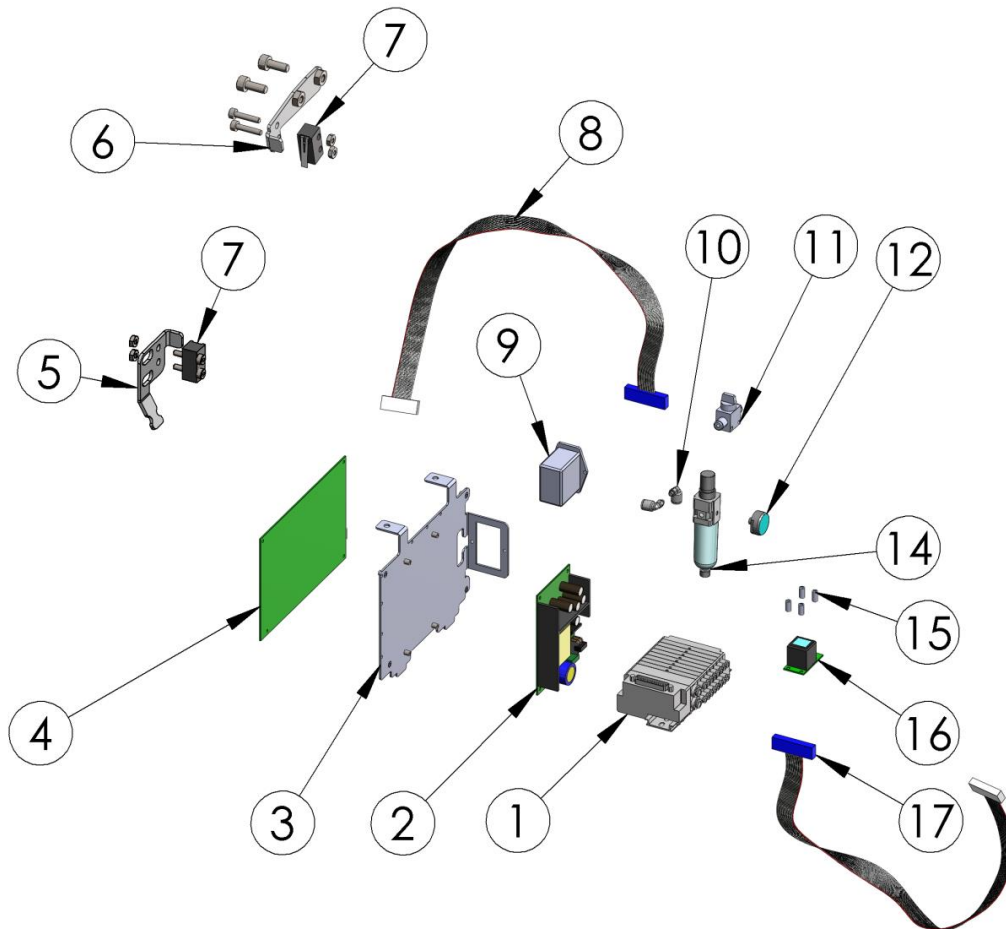
9.5 hook assembly



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	134183	Cylinder bracket	1	9	133021	Pin post	2
2	134520	Linear double bearing	1	10	133026	Hook LH	1
3	134182	Carriage bracket	1	11	10025	Flow control out	2
4	134183	Hook cylinder bracket	1	12	133525	Hook up cylinder	1
5	133007	hook RH	1	13	133178	Cylinder nut shouldered	1
6	133018	pin post clamp plate	2	14	133169	Cylinder nut	1
7	133515	hook cylinder	2	15	134205	Reed switch	2
8	10010	elbow fitting	4				

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9.6 electronic and pneumatic components



ITEM	PART NO.	DESCRIPTION	QUAN TITY	ITEM	PART NO.	DESCRIPTION	QUAN TITY
1	109920	Air manifold assembly	1	9	103917	Switch unit - mains	1
	109921	End block	1		103916	Fuse 2A	1
	109922	End block – d connector	1	10	10011	Elbow fitting	1
	109923	Exhaust block	1	11	10056	Finger valve	1
	109924	Solenoid valve	8	12	10100	Air gauge	1
	109925	Din rail	1	13			
2	102452	Power supply	1	14	10095	Filter regulator	1
3	134135	Circuit board mount plate	4	15	134200	Display spacer	4
4	134161	Circuit board –bt	1	16	134500	Switch display	1
5	133714	Cover switch bracket	1	17	134198	Switch display harness	1
6	133136	Start switch bracket	1				
7	109882	Switch harness	1				
8	134197	Manifold harness	1				