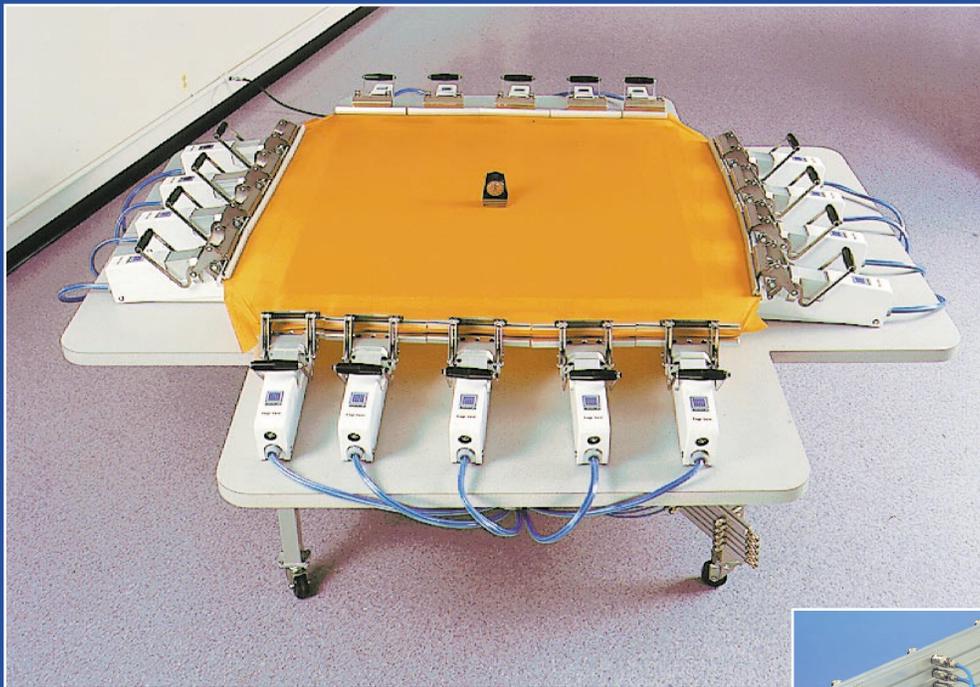


SAATI CLAMPS

The Saati Pneumatic Clamp provides optimum pneumatic screen tensioning. This highly advanced, yet easy to use system achieves the highest recommended tensions more uniformly, without over-tensioning the corners. Provides the greatest stability of any system available. Among the most notable features of this premier stretching system is its independent and simultaneous warp/weft tensioning capability.



Pneumatic Clamp Stretching System Manual

STEP-BY-STEP INSTRUCTION FOR SET-UP

Thank you for purchasing the Saati Top Ten Stretching Systems, featuring an unmatched, patent-pending “movable, off-contact” design. This advanced and technically superior stretching system achieves the highest recommended tension levels more uniformly, without over-tensioning the corners. The Saati system pre-stresses the frame while simultaneously eliminating mesh contact with the frame surface during stretching. Its many performance and safety features and benefits will soon be apparent when you put your new Saati Clamps into production.

Although the system has been designed for easy installation and operation, we are providing this step-by-step guide to further facilitate the convenient and proper use of these clamps. Our technical department is on call at 800 • 431 • 2200 if you have any further questions.

AIR PRESSURE:

The system operates optimally at 85-90 p.s.i. MAXIMUM. If your air source exceeds 90 p.s.i., a pressure regulator MUST BE placed in line to reduce the pressure.

AIR QUALITY:

Clean, dry air is required. If there is any question of moisture in the lines, a water separator is required. Attach the control panel (using appropriate hardware) to the underside of the tabletop in a convenient location, and place the manifold(s) on the table shelf underneath (either in the center, or on a diagonal if preferred). As an alternative, the manifold can be suspended from the underside of the tabletop using the groove along its spine. Next, connect your air line to the valve located behind the E-Stop (See Control Panel Internal Connections diagram, page 6).

Connect the control panel to the end of the manifold by inserting the tube marked #1 into the quick connect at the bottom of the manifold. The connection is made by simply pressing the pin of each pipe into the respective socket till it "clicks" in. To remove, if necessary, pull back the ring of the socket which will, eject the pipe automatically. All connections on this system are based on this principle. The unoccupied sockets remain inactivated until connected to a pipe. As both sides of the manifolds are used, place them in the center of the table base or if you wish in a diagonal position.

Then connect the tube marked #2 to the quick connect second from the bottom on the manifold. Finish connecting all the tubes in the same manner. (See the Control Panel to Manifold Connections diagram, page 9).

Assemble the clamp jaws. (See the Clamp Assembly diagram, page 11.) **Warning:** Be careful not to cross thread the lower jaw housing (Part 25) when inserting the screws (Part 27). Place each frame support/leveling bolt in the appropriate threaded hole. Install the metal safety pin at the front of each clamp or install the safety cable if your system requires one (refer to your packing list). Each clamp is supplied with four air lines (numbered 1 to 4) bundled into a single tube for protection and user convenience. Each clamp's set of individual air lines needs to be connected to the corresponding set of quick disconnect ports on the manifold in numerical sequence, depending on the type of tensioning required. (See page

9) *However, please note:* The connection of the clamps to the manifold from left to right DOES NOT have to be in any specific order.

At the end of each line, the male connector snaps easily into the quick disconnect port in the manifold. Simply press the connector into the port until it “clicks” in. To make sure the connection is true, pull on the line gently. To remove, if necessary, pull back the ring of the QUICK CONNECT PORT, which will eject the air line automatically. (Any unoccupied ports are inactive until they are connected to the air line).

Format size will determine whether independent or simultaneous tensioning of the warp and weft is the optimum choice. Normally, the simultaneous option is appropriate for square format sizes up to approximately 60” x 60”. (In some cases, however, a rectangular format that’s slightly under 60” may benefit from the independent tensioning of warp and weft.) The independent option is appropriate for format sizes above 60” x 60”. For these larger sizes, this is to assure optimum tension uniformity, recommended tension level and fabric stability.

For simultaneous tensioning of the warp and weft, connect the four air lines to the first four ports, starting with #1 at the bottom. (See the Airline to Manifold Connections Assembly diagram, page 7.)

For independent tensioning of the warp and weft, connect the clamps in the warp direction the same as you would for simultaneous tensioning. For the clamps in the weft direction, connect air lines # 1-3 to ports # 1-3, and air line #4 to port #5 (at the top). (See the Airline to Manifold Connections Assembly diagram, page 9.)

Arrange the clamps on the table to meet your frame/tool plate requirements. *Please Note:* If your set-up includes the smaller 150mm clamps, make sure you position them in the middle of the clamp row. Align the jaws along the edge of the frame/tool plate so that there are no gaps between them.

Adjust the height of the frame using the frame support/leveling bolt situated at the front of each clamp. Make sure that the clamps are all set to the same height to assure a level screen. Depending on frame type and profile, we recommend that the frame project 1/8” to 1/4” (maximum) above the frame push plate (located just behind the frame support/leveling bolt).

Raise the clamps using the lift/lower valve (See Control Panel diagram Page 3). Then begin to align the mesh as square to the clamps as possible. Use the “selvedge” or fabric roll edge as a straight edge to guide the alignment of the mesh. Be sure to place enough mesh into the clamping mechanism to allow for corner adjustment. (See page 4)

FABRIC LOADING PROCEDURE

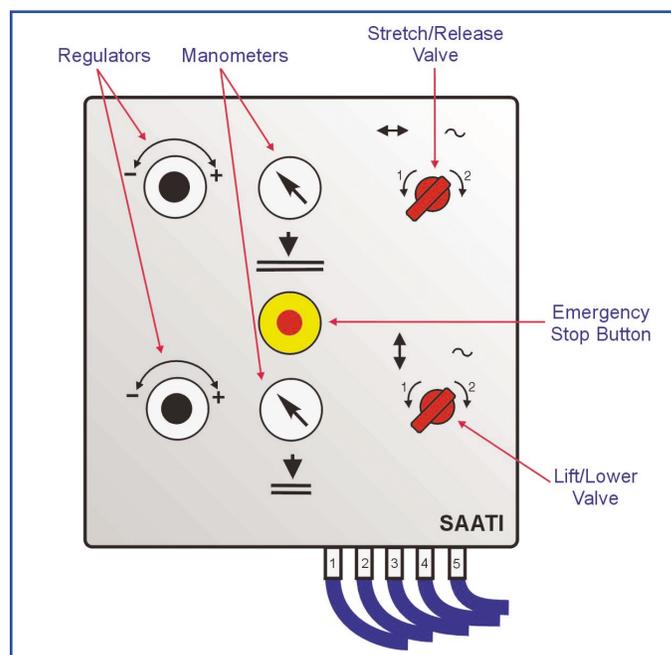
Care in mesh handling, loading and tensioning directly affect how well the screen printing fabric will perform throughout its production life cycle. All woven screen materials have unique properties and working characteristics that need to be understood in order to reap the benefits from their intended use. By following the mesh manufacturer’s recommended tension levels and procedures, optimum print control and performance can be achieved.

There is no single definitive tension level recommendation that covers the several different

synthetic materials available, along with the many mesh counts and thread diameters. Therefore, through extensive research and development, SaatiPrint has listed the safe working tension ranges for each of their screen mesh specifications. Each type of thread material and diameter size has a specific “yield point”. This yield point is the maximum tension/elongation point a material reaches before it loses its “memory”, or recuperative properties. The improper handling or tensioning of mesh could exceed the material’s yield point and result in the mesh breaking during screen making, printing or even while sitting idle. Working within the recommended tension levels will control on-press variables, including print registration and ink release.

Prior to tensioning, raise the clamps by using the lift/lower valve and load the fabric. (See Control Panel diagram on page 3.) With the Saati Clamps, tensioning is conducted with all the clamps in the raised position so the fabric is not touching the frame surface. However, when the clamps are lowered (just prior to gluing), make sure the fabric is in contact with the entire frame surface. *Please Note:* Once the clamps have been lowered with the fabric under tension, they **SHOULD NOT** be lifted again without reducing the given tension by 4 N/cm.

Whether stretching the warp and weft independently or simultaneously, begin tensioning the fabric gradually*, yet continuously, until the target tension level has been reached. (* The target tension level should be reached within the first five minutes of tensioning.) To regulate the tension during independent warp and weft tensioning, use the top and bottom pressure regulator (turning clockwise). Use the top pressure regulator only (turning clockwise) when tensioning the warp and weft simultaneously. In both instances, the air pressure will be indicated on the pressure gauge. (When using the dual regulators, be sure to alternate evenly between warp and weft fabric directions.)



Control Panel Lift/Lower Valve

Check that each jaw holds the fabric firmly. The pressure of the clamp jaws are pre-set at the factory. If, however, adjustments are necessary, loosen the 2 outer locking bolts on part #5 turn the center adjustment set screw counter clockwise slightly and relock the outer bolts. This will increase the jaw pressure. Repeat if necessary.

To maximize mesh stabilization after the desired tension level has been reached, we recommend waiting approximately 15-30 minutes before lowering the clamps and adhering the fabric to the frame.

SaatiPrint strongly recommends the use of a quality tension meter to assure screen-to-screen consistency, screen tension uniformity and accuracy. We suggest implementing a 5-point

checking system (with most format sizes) across the screen area to guarantee uniform tension, and also to alert you to any excessive corner tensions. The five points would include the center and the four corners. *Please Note:* When checking the tension in the screen corners, the meter should be no closer than a gauge base width away from the I.D. frame edge.

A larger format size may require a 9-point checking system. This would entail checking the tension in "three rows of three", again making sure that the meter is never closer than a gauge base width away from the I.D. frame edge.



Photo 1: Draw Alignment Marks

STEP 1

Start on one side and lock the mesh into all the clamps in that row. Make sure that there are no wrinkles or pinching between clamps, which could later bind or possibly fracture the mesh during tensioning.

STEP 2

Now lock in the fabric on the opposite side. Be sure the mesh is square, and that there are no wrinkles or waves in the mesh as you lock it in. Start at one end and begin locking the clamps one at a time while holding the fabric somewhat taut and at a slight angle away from the previous clamp.

STEP 3

Lock in the third row with the fabric in a relaxed state. Again, from one end, lock the clamps one at a time, making sure that there are no wrinkles or pinch points. Once the third side is completed, move to the last side and repeat step #2. When using fine mesh counts, elevated tension levels or large format frames, it may be necessary to adjust the fabric corners in the stretching set-up. This adjustment compensates for any excessive corner tensions, which could result in inconsistent tension from the screen center to corner, or in fabric fracture. (The main cause for fabric breakage, especially during tensioning, is due to excessive corner tension.)



Photo 2: Make Lateral Angle Adjustments



Photo 3: Clamp into Position

If after following any of the following troubleshooting tips, your problem still exists, or if your particular problem is not listed, please call our technical department at: 800-431-2200 for assistance.

STEP 4

Draw alignment markings: Using the corner clamp edge as a straight edge, draw a line that's approximately 6" in length. (See photo 1) Repeat at all corner clamps.

STEP 5

Make lateral angle adjustments: Release the corner clamps, and while keeping the fabric taut, move laterally inward on an angle. (See photo 2) The length of inward adjustment is based on format size. For example, a 40" x 40" format size requires an approximate 3/8" adjustment.

STEP 6

Clamp into position: Once the proper angle adjustment has been made, clamp down, locking the fabric into position. (See photo 3) Make sure both corner clamps have been adjusted evenly. Also, check that no wrinkles are clamped in, and avoid any fabric pinching between clamps.

TROUBLE SHOOTING

PROBLEM: Air leaking from control panel

ACTION: Check the air line connections. To determine which row of quick disconnects is responsible, hand crimp each air line individually (between the control panel and manifold). When the air leakage stops, then you've found the row along the manifold that is responsible. Disconnect and re-connect these lines.

PROBLEM: Mesh breakage

ACTION: a) Check for burrs on the frame or tool plate. b) Review the fabric loading and tensioning process instructions.

PROBLEM: Mesh slippage

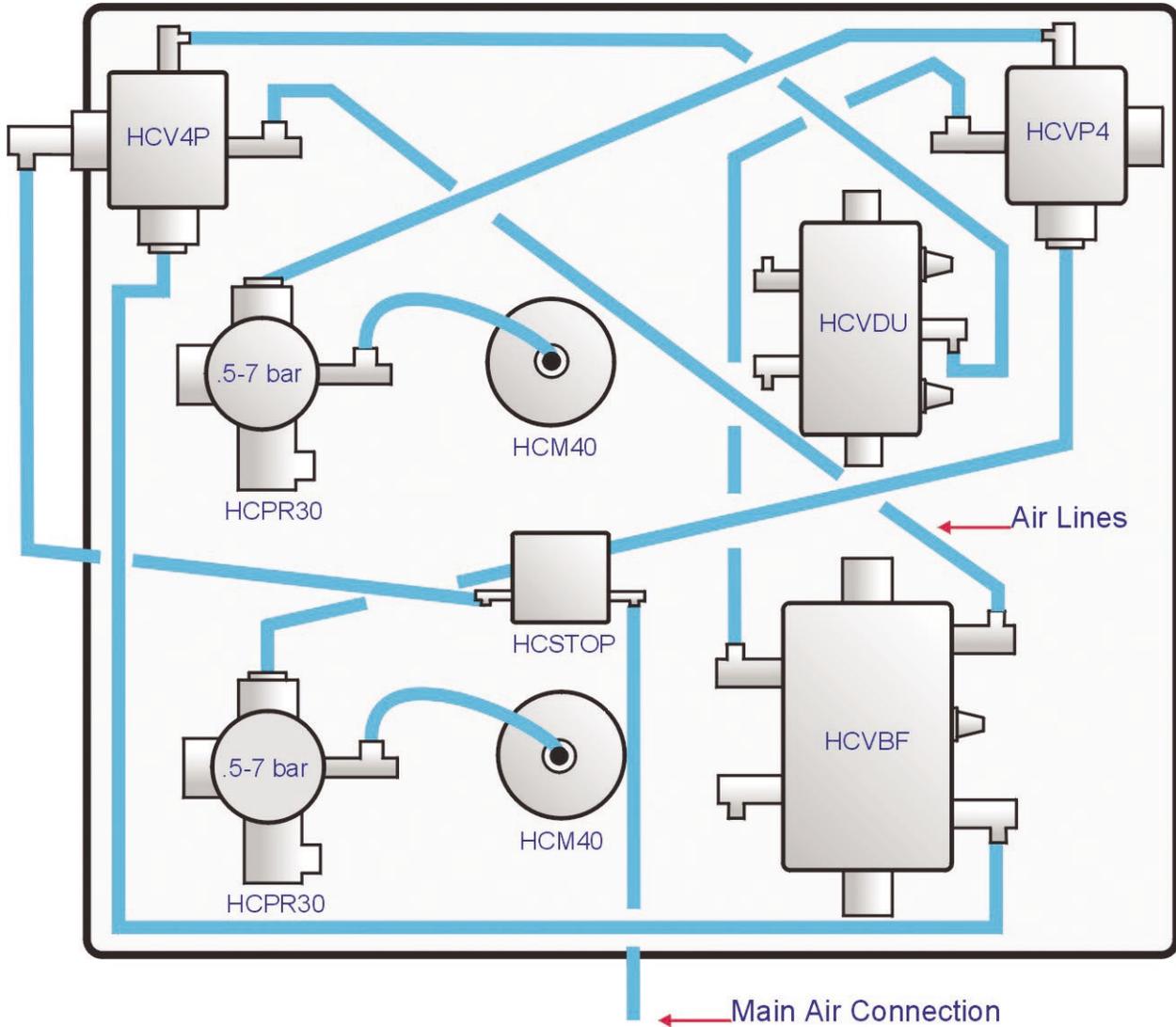
ACTION: Tighten the jaws. (See the Loading The Fabric Procedure, page 3). For older systems, inquire about our handle rebuild kits, #4 handle kits.



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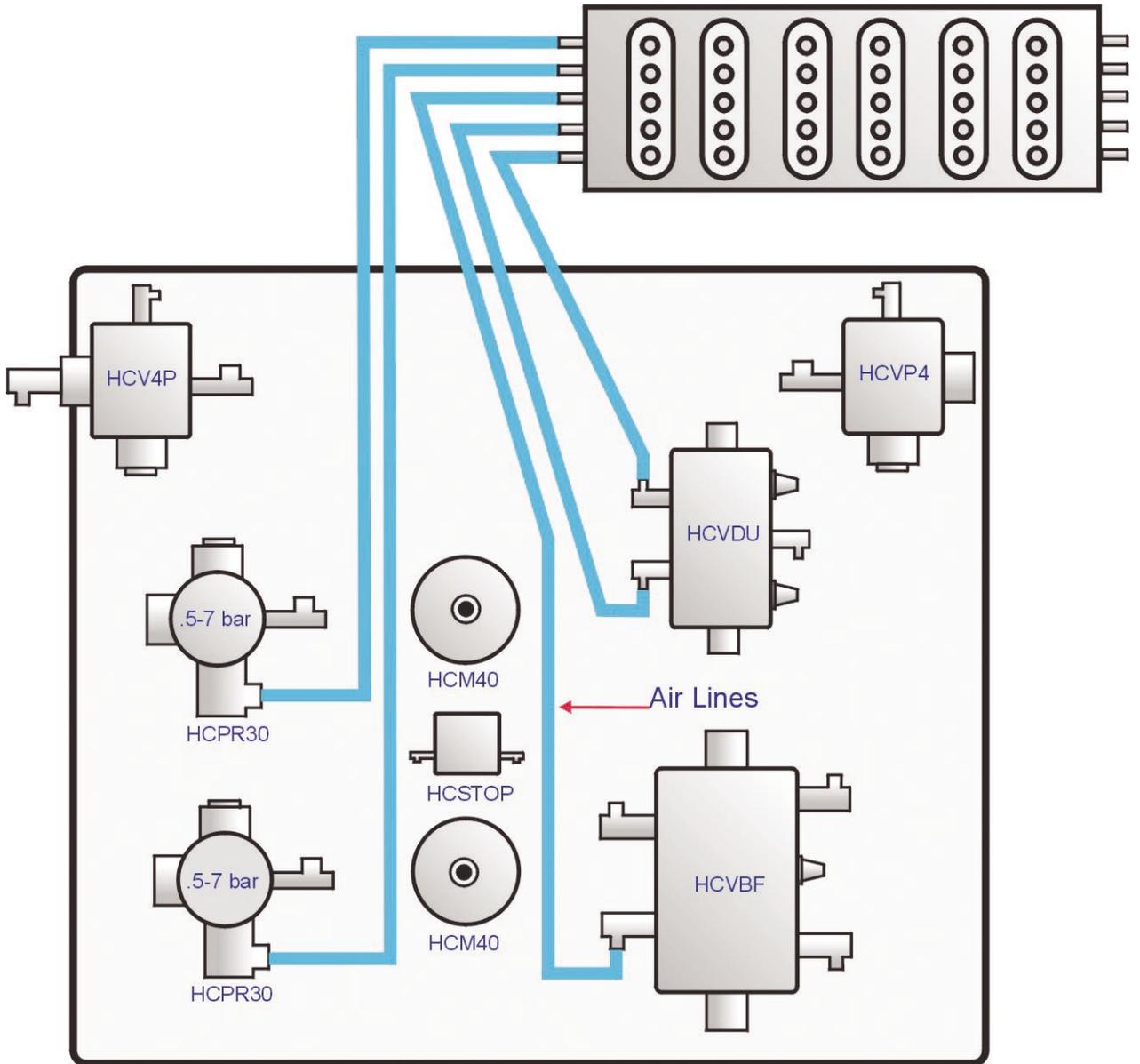
SAATI CLAMPS

CONTROL PANEL INTERNAL CONNECTIONS



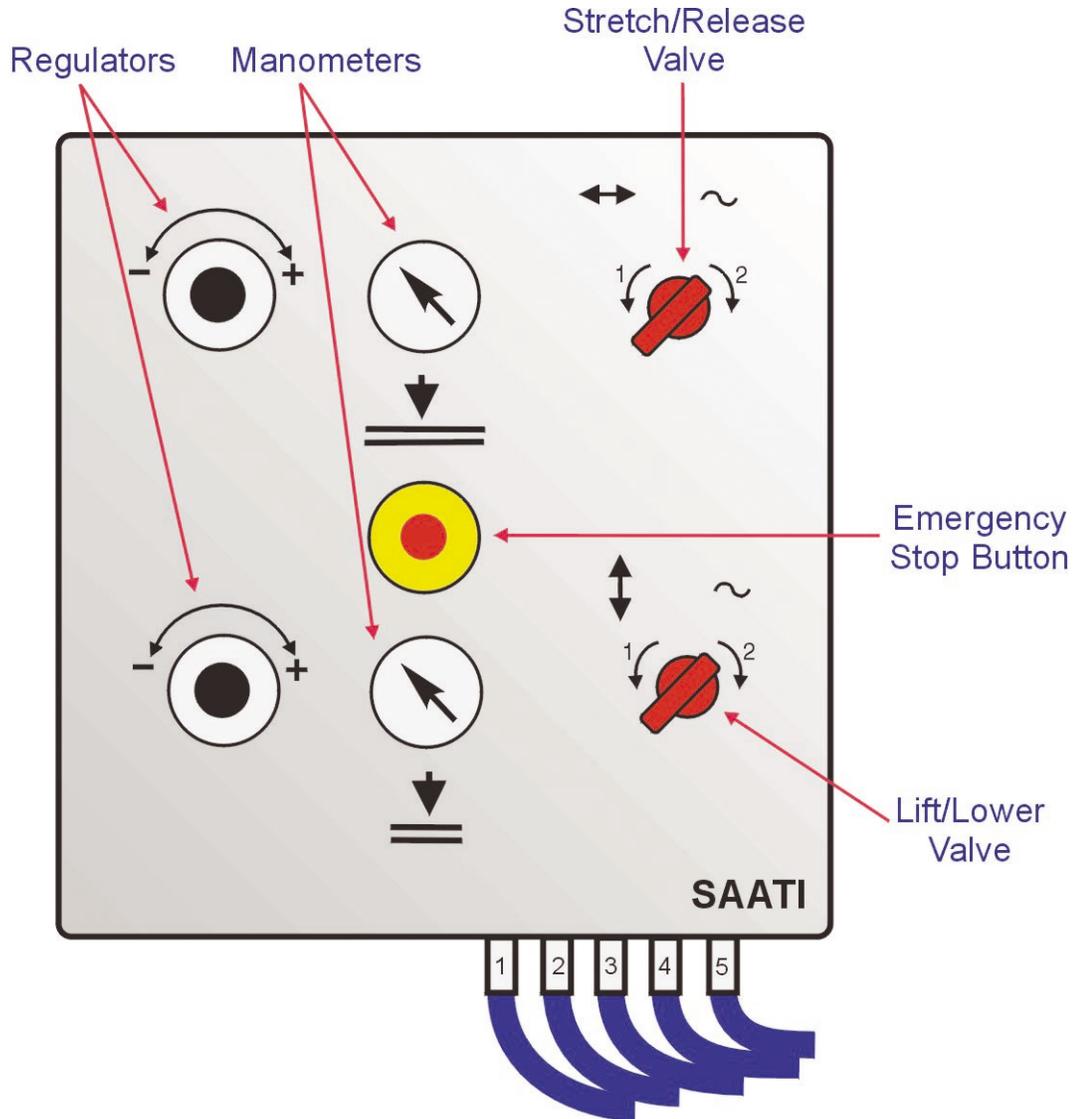
SAATI CLAMPS

CONTROL PANEL EXIT CONNECTIONS TO MANIFOLDS



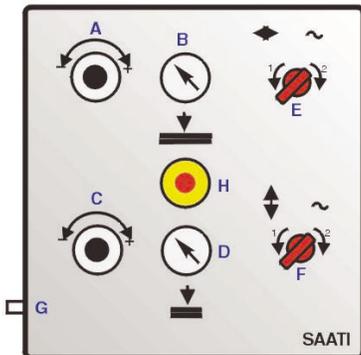
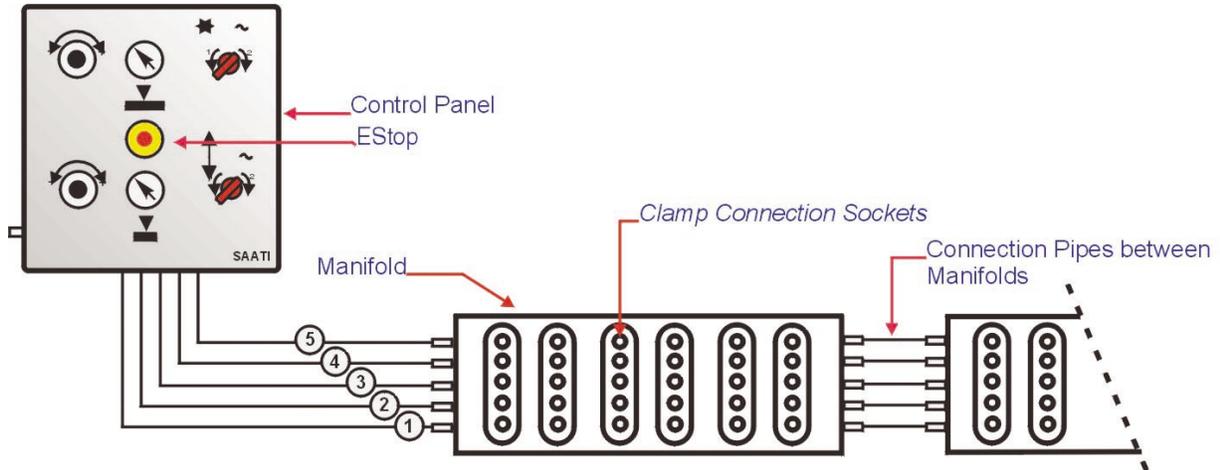
SAATI CLAMPS

CONTROL PANEL (85-90 PSI REQUIRED)



SAATI CLAMPS

ASSEMBLY DIAGRAM

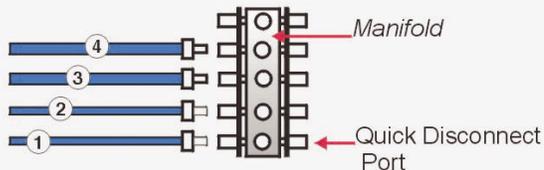


CONTROL PANEL

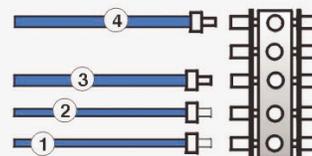
- A. Pressure regulator for four way tensioning.
- B. Pressure gauge.
- C. Pressure regulator for two/four way tensioning.
- D. Pressure gauge
- E. Switch for clamp operation.
1 Forward - 2 Backwards.
- F. Switch for clamp operation.
1 Lowering - 2 Raising.
- G. Air inlet
- H. Emergency Stop

1-4 AIR LINES FROM CLAMP

Clamp air-line connection to manifold for simultaneous tensioning of warp & weft.



Clamp air line connection to manifold for independent tensioning of warp & weft.



#	Description		Qty
1	Plastic handle grip	Maniglia Elea SI. 134/105-10	1
2	Handle locking screw	Vite T.C. UNI 5931-M6x16	2
3	Handle locking pin	Perno ø10x108	1
4	Handle	Leve per maniglia	2
5	Jaw tensioning bar	Trversino aggancio leve	1
6	'C' ring	Anello el. per alberi (Seeger) 14 UNI 743	2
7	Locking screw	Vite T.C. UNI 5931-M822	6
8	Positioning set screw	Grano UNI 5923-M12x20	1
9	Handle cam	Leva a "s"	4
10	Rocker pin #1	Perno ø8x16.5	2
11	'C' clip	Anello el. Benzing cava 7 UNI 7434-75	8
12	Rocker pin #2	Perno ø8x23	2
13	Bushing #1	Distanziale per leve	2
14	Upper jaw housing	Frontalino	1
15	Rocker pin #3	Perno ø10x130	1
16	'C' clip	Anello el. Benzing cava 8 UNI 7434-75	12
17	Cylinder guide	Corpo intermedio	1
18	n/a	Molla ø4.5x16	1
19	n/a	Sfera ø5.75	1
20	Upper jaw housing	Ganascia superiore	1
21	Upper jaw profile (set of 2)	Gomma ø8	2
22	Nut	Dado UNI 5588-M5	2
23	Set Screw	Grano UNI 5923-M510	2
24	Lower jaw profile	Gomma 30x10	1
25	Lower jaw housing	Ganascia inferiore	1
26	Lower jaw/cylinder mount	Corpo base	1
27	Allen head screw	Vite T.C. UNI 5931-M6x22	2
28	n/a	Tasselli in Nylon	2
29	n/a	Vite T.C. UNI 5931-M6x16	2
30	Main housing - upper	Capello	1
31	Bushing #2	Rondella di regolazione	1
32	Stretching cylinder	Cilindo di tensionamento	1
33	Cylinder locking nut	Dado autofrenante M12x1.25	1
34	6/4 mm quick connect	Raccordo M7	2
35	Cylinder mounting screws	Vite T.C.C.E. M7x25	4
36	Locking pin for housing - rear	Perno ø10x70	2
37	Main housing - lower	Base	1
38	Locking pin - up/down cylinder	Perno ø10x60	1
39	Up/down cylinder	Cilindro di abassamento	1
40	Cam - up/down cylinder	Leve di fulcro	4
41	Cam mount - up/down cylinder	Fulcro quadro	1
42	6/4 mm quick connect	Racc. Dirtto 1/8" + girevole per tubo ø6	2
43	Cam mount locking nut - up/down cyl.	Dado basso UNI 5589-M10x1.25	1
44	Locking pin for housing - front	Perno ø10x60	1
45	Safety pin	Spina ø12x100 UNI 1707-toll.h8	1
46	n/a	Bussola non filettata	1
47	Frame support locking nut	Dado Basso UNI 5589-M12x1.25	1
48	Frame support	Vite T.E. M12x60 UNI 5725-65	1
49	n/a	Bussola filettata	1
50	n/a	Spina ø8x60 UNI 1707-toll.h8	1

SAATI CLAMPS

EXPLODED VIEW OF CLAMPS

