For Lifelong Strength

HUR INSTALLATION AND MAINTENANCE

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CONTENT

1 HUR PRODUCTS

1. PREMIUM LINE
HUR´s most developed range, offering many features that enhance safety and facilitate rehabilitation, for example, range limiters, additional supports and specially designed equipment for wheelchair users. Model numbers 5xxx, 9xxx

2. ACTIVE LINE
Single and dual function models with pneumatic resistance and minimal adjustment points. Model numbers 3xxx.

3. MULTIFUNCTION
Multi-purpose equipment which combine separate essential HUR equipment into one. Model numbers 8xxx

4 RESEARCH LINE
Delivered complete with computer and test/ analyse software. Research Line users are top-athlete, university or any other use with high demands. These machines include lots of hi-tech electronics. Model numbers start with number 7, for example 7530.

5 HUR-SOFTWARE
HUR software family consists of wide range of testing and analysing programs.

6 SPECIAL TEST DEVICES
This category includes electronic devices like Performance Recorder, Balance- and Force Platforms.

2 REQUIRED TOOLS

For installation, service and repair of HUR products some basic tools and accessories are required. Service technician should always have these items when visiting HUR customers. Tools listed here should fit in all small size tool bags or carrying cases. The list includes only the most important tools. Additional items might be necessary, depending on application.

NOTE!
In case of air travelling, don't try to bring tools inside the cabin. Spray bottles (aerosols) are completely forbidden items on-board.

Basic tools for HUR service technician:

Wrenches:	8, 10, 11, 12, 13, 14, 16, 17, 19 and 21 mm spanners. Sockets with similar sizes for use with ½" ratchet also recommended.
Hex keys:	Multi tool with sizes 1.5–10 mm recommended.
Long type 10 mm Hex key to be used with ½" ratchet required for adjusting inner lever arms	
½" ratchet wrench	
Torque wrench:	With ½" adaptor. 110 Nm of capacity required.
Screwdrivers:	Assortment of small and normal sized regular and Phillips heads.
Tube cutters:	Camozzi PNZ-12 recommended.
Knife:	Mat cutting type recommended.
Hammer	
Rubber hammer	
Universal pliers	
Cutters	

Basic accessories recommended:

Lubricant:	Teflon based spray / white Vaseline / silicone free (Festo LUB-AL2) for low friction cylinders
Cleaning solvent	
Paper:	For cleaning hands and parts
Thread adhesive	Loctite or equivalent
2-sided tape	3M recommended
Cable ties:	Various sizes

SmartTouch specific accessories recommended:

Network switch
Network CAT 5/6 cable
Network RJ45 - RJ45 connector (Female-to-Female) for extending network reach

Service technician should also carry some tubing and basic pneumatic components like valves and connectors.

It's better to have 5 extra parts instead of 1 missing!

3 RECEIVING HUR DELIVERY

All the packages leave HUR factory in perfect shape. When receiving your HUR delivery, first thing is to visually check the packages for any damages. Transportation damages should be documented and reported to sender and company responsible for transportation before signing the delivery documents.

STORAGE CONDITIONS AND TRANSPORTING

HUR machines should be stored in dry conditions and protected from weather, concerning all transport stages and terminals.

The package should not be opened until at the final location to prevent scratches and other damages to the machine

Condensing humidity should be taken into account when the equipment is transferred to the destination from storage and the temperature change between the places is remarkable. It is recommendable to open the packages and let the equipment stand about 6 hours.

When installing stored touch screens, kiosk, software etc. always make sure they are up to date concerning software version, language and compatibility. Also inspect and estimate factors which might cause problems on site (for example attachment/mechanism). A Check-up done forehand is an easy way to ensure successful installation.

Removing product from the package:

- Cut the straps used to hold cardboard package together
- Remove top section of the package.

NOTE! The top cover has the written information of content of the package attached.

- Remove the box part by lifting it over the machine
- Remove additional packing material and plastic bag covering the product
- Cut the straps used to attach product to the pallet

Check the packing list to ensure that you have received all the items listed.

NOTE!
HUR cardboard package is completely recyclable. Follow local laws and regulations on disposal.

4 LAYOUT

Visual appearance is the first impression that customer gets when coming inside the gym.
After that things get even more critical. If the layout is messy or it is difficult and confusing to go around the gym, customer will complain. In worst case, they will not come back.

Therefore planning the layout is very important. Even if you have a pre-designed layout you don't have to use it as the law. Don't assume that the first layout that you make is the best one. Think about options. Luckily, moving HUR machines around is easy

You can use following list as a guideline:

1. Is there enough room around the machines?
    - Moving around the gym
    - Accessing machines
    - Older peoples view
    - Wheelchair users view
2. Is there enough room for each machine to be operated?
    - Whole range of movement
    - Walking by the machine if it is in use
3. Does the layout meet customer requirements?
    - Effective space usage
    - Grouping machines by muscle groups
4. Is the gym visually comfortable?
    - Straight lines are not always the best
    - Using layout to guide users around the gym
5. Compressor
    - Place in a cool, dry place
    - Avoid direct sunlight and heater pipes
    - Do not install compressor in near of water sources. It is an electronic device!
6. Pneumatic tubing
    - Tubing under floor / inside trunking
    - Keep distances short, estimate the need for circular tubing
7. Is there enough electric/network sockets available for all devices?
    - FCM / ST / Kiosk / Other devices
    - Plan how to position network switches and/or use long enough network cables

5 INSTALLATION

Before starting the installation, make sure you have all the accessories and tools required. Check also that correct installation kit is within delivered items if it is listed in delivery note.

Check the layout one more time. It is recommended to get customer approval for the layout before installation is started.

Each installation is different and characteristics vary, this manual gives a basic guideline based on our knowledge and experience,

NOTE!

Always make sure that each machine is connected with suitable power supply.

If compressor or any other electronic device has been stored or transported near or below 0 °C (32 °F), let it warm up in room temperature for at least half an hour before switching power ON.

5.1 INSTALLING COMPRESSOR

Always read compressor user manual before starting the installation. If you notice any differences on compressor related issues between the compressor user manual and HUR service manual, use information written in compressor manufacturer's manual.

Removing compressor from package:

1. Check package for damages
2. Open the package from the top
3. Remove packing material from top of compressor
4. Remove all additional items (documents, oil etc.) packed within the package

NOTE! Make sure that these items are forwarded to customer

5. Lift the compressor unit from the package (ask someone to help you, compressor is a heavy item)

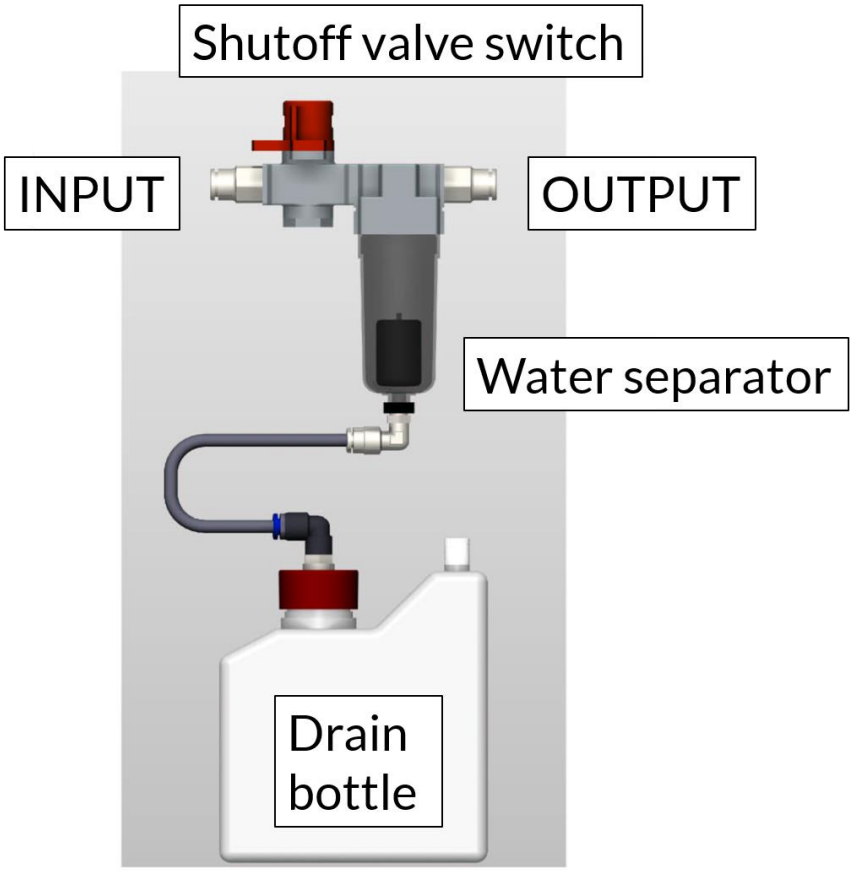
Preparing compressor for use:

1. Remove all the transportation related parts
    a. Cut the cable tie used to pack power cable
    b. Remove plugs from motor air intakes and install air filters in place
2. Check oil level, add if necessary
3. Check that the power cable has a correct plug
4. Set the power switch to OFF-position

Compressor is now ready to be placed in its final position. Refer to compressor user manual for selecting the place. Also make sure that compressor is not in walkways. It's good to place the compressor so that power switch, oil level checkpoints and water separator tank can be reached easily.

5.2 INSTALLING AND USING HUR PNEUMATIC CONTROL UNIT

Compressors without automatic drain system are delivered with HUR Pneumatic Control Unit that includes a circuit shutoff valve, an additional water separator and a drain bottle.



5.2.1 INSTALLING CONTROL UNIT

It is recommended that distance from compressor output to control unit input is at least 1 meter. Control unit should also be assembled, if possible, so that input of the control unit is located higher than output of the compressor. Always install control unit so that the water separator can points towards to the floor.

NOTE! Arrows indicate air flow direction. Connect tube from compressor Output to control unit Input. Connect the main pressure circuit tube to control unit Output.

5.2.2 USING CONTROL UNIT

Circuit shutoff valve

Red switch operates as a shutoff valve that is used to drain the main pressure circuit and close the air supply from compressor to main pressure circuit. This eliminates the possibility of compressor overheating due disconnected tube (for cleaning etc.).

Drain bottle

Water separator removes condensed water from pressurized air. Water is collected to separator cup which is drained automatically when water level reaches certain point. From the separator cup water is directed to drain bottle with tube.

When drain bottle water level reaches ½ - ¾ full, it should be emptied.
Do not remove the tube from water separator. If you want to remove the bottle and the cap from the system for emptying, disconnect the tube from the bottle cap connector.

5.3 INSTALLING MAIN PRESSURE CIRCUIT

The main pressure circuit delivers pressurised air from compressor to all of the machines. In case of multiple compressors to be used in the gym, connect one compressor to one pressure circuit.

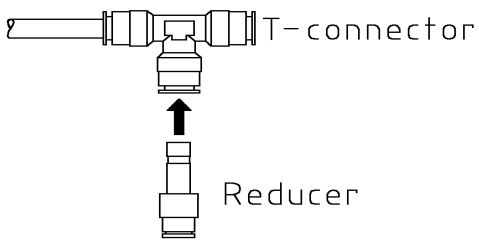
Start routing the main pressure circuit from the compressor. Make sure to leave extra length for being able to move compressor for service and cleaning purposes.

In case any tubing is to be routed through walls etc., drill and clean holes before routing the tubes. This is to keep all the dirt out of the tubes.
If tube is to be routed through the wall etc., cover the tube end with tape or equivalent. Make sure that no scratches or bends are made on tubing when routing.

NOTE! Any scratches and bends will cause pressure leakage. Damaged tube should be replaced immediately.

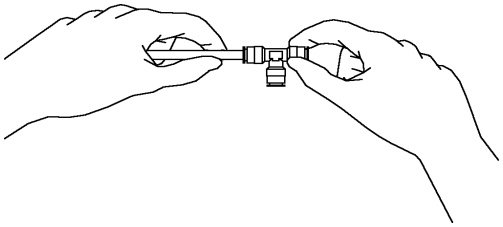
T-connector with reducer fitting is required for each machine. Placing the connection points depend on selected installation type. Simplest (analog installations), main pressure tubing can be attached to baseboard or routed using plastic channels/trunking (see chapter 5.4)

When routing over floor, machine connections can be done underneath. In this case, it is very important to check the clearance to moving parts underneath the machine.

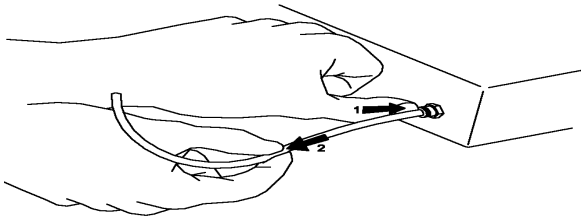


Make sure that all the cuts made for pneumatic tubing are straight. Use only special tube cutters developed for the work (see `Required tools´ on p. 4). Bad quality cuts will result leaking.

All the connectors are `push-in´ type. For connecting simply push the tube inside the connector. For disconnecting, push the locking ring of the connector and pull the tube out.



Pushing tube to connector



Disconnecting tube

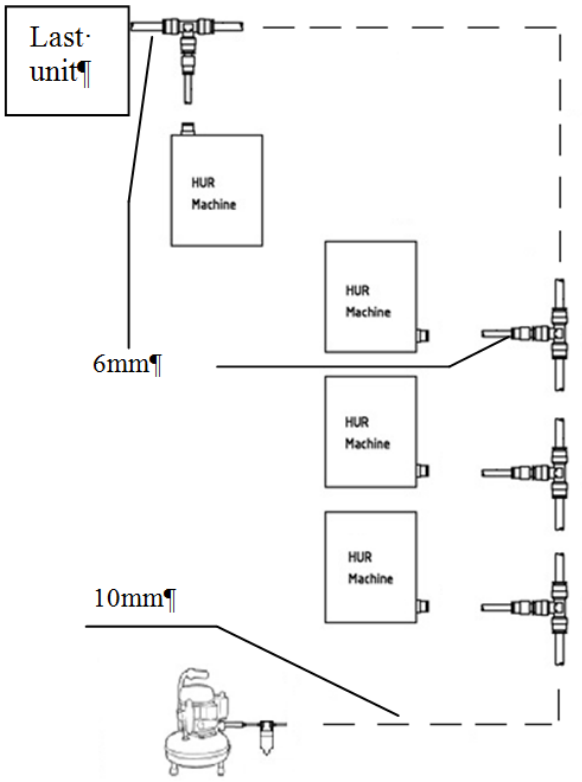
Cut a 6mm tube for each unit. This tube is for connecting the machine to main pressure circuit. Make sure to leave extra length for being able to tilt the machine for cleaning and service purposes without causing tension on the 6mm tube. Connect the 6mm tubes to reducers on the T-connectors, but not yet to machine inputs.

Before connecting machine air tubes, check that the shutoff valve switch on water separator is switched in closed-position. Switch the compressor on and observe the compressor output pressure gauge. When gauge reads 2-3 bar, open the shutoff valve switch for few seconds.

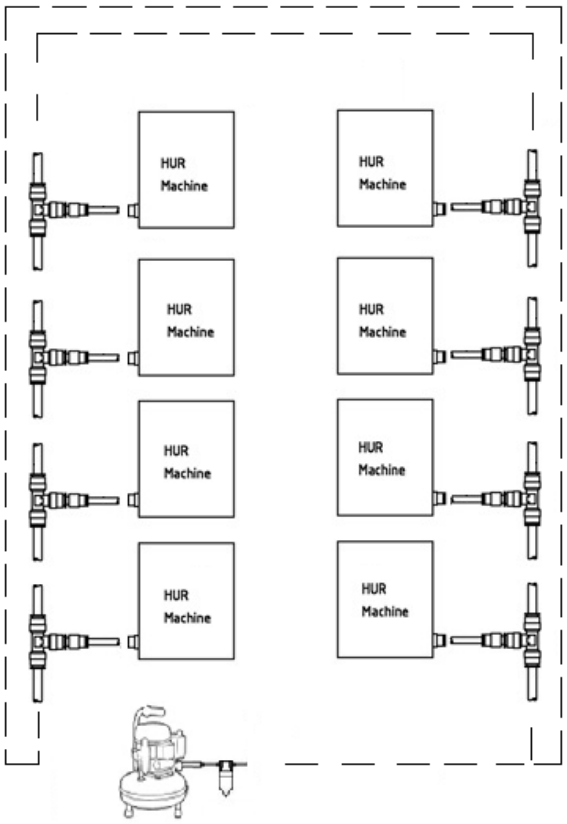
Connect the 6mm tubing to machine input. If connections are made underneath the machine, disconnect the bulkhead connector from machine frame and connect it underneath the machine.

It is recommended that you use as large overall diameter tubing for main pressure circuit as possible. This ensures faster response time when adjusting machine pressures. (Picture A)

When there are more than 4 machines connected to pressure circuit, it´s recommended either route the pressure line after last machine straight back to main line after compressor, or “double tube” the line back to compressor. (Picture B) This ensures adequate response to pressure adjustment for each machine.



Picture A



Picture B

5.4 INSTALLATION CHANNELS AND TUBES

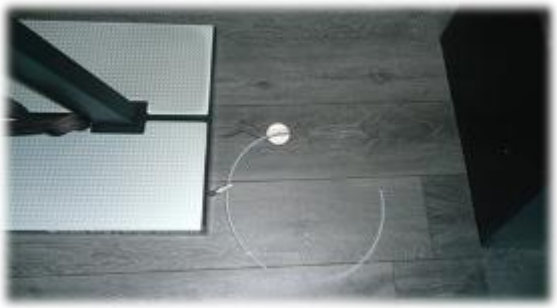
When installing on floor level, certain channels (trunking) can be used to cover all the tubing and wiring. Trunking itself, besides planning it, has significant effect on appearance, functionality, accessibility and customer satisfaction. Make sure you (are able to) purchase suitable channels, parts and accessories for the installation.

5.5 FLOORING FOR TUBES AND WIRES

HUR machines usually weigh less than 100 kg, so capacity of the flooring is not a problem. Pressure and electric connections can be integrated in the flooring material (as shown below). Pictures 5 and 6 show the pressure and electrics hidden under the floor. After the connections are made under the floor, each machine has its own inlet (picture 7, a hole made *before* installing the floor material). Before connecting machines, there should be extra length on connections for turning the machine afterwards (=cleaning or service).

Picture 3

Picture 4



Picture 5

Surface for the machines is easy to install even on existing floor. With suitable under material, the channels for tubing and wires can be built underneath (picture 7). Inlets are then made, *before* installing the laminate and the tube and wires are placed ready for the machine (picture 8). After this, the channel for tubing and wires is attached in front of baseboard (picture 9) and the connections made ready.

Picture 7

Picture 8

Picture 9

5.6 COMPLETING THE INSTALLATION

When a machine is connected to pressure circuit, make sure it is stable and steady and all the rubber feet are in contact to the floor. If necessary, washers can be installed between machine frame and the rubber feet.

- Turn the compressor ON.
- Listen for any sounds indicating leakage.
- Observe output pressure gauge on the compressor. (See compressor manual)
  The gauge indicates pressure of the main pressure circuit. This pressure **should not exceed** 9,9 bar. Output pressure is adjusted with pressure regulator located near the output connector. If pressure exceeds 9,9 bar, adjust the regulator.
- Wait until the compressor stops.
- Check the output pressure gauge. Adjust the pressure to maximum of 9,9 bar, if necessary.
- Test machines for proper operation.
- Make sure to test complete movement range.
- Test all the adjustments like pressure and range limiters for proper and smooth operation.

> NOTE! If a Pre-1995 HUR machine is connected to circuit, the output pressure must be limited to 8 bar. Old type valves are rated for lower maximum pressure and immediate failure will result if pressure is not limited.
>
> NOTE! Installation operative is responsible for correct compressor settings.

If everything is OK after all the tests, the installation is to be confirmed by customer representative.
It is recommended that basic training for machine use and maintenance is done with installation.

> NOTE! Make sure to clean up before leaving site. The target is that when you leave, users can start exercising.

6 MAINTENANCE AND TROUBLESHOOTING

Proper service and maintenance is important for keeping any product in use for long and trouble-free time.

For HUR-machines the list of maintenance and service procedures is reasonable and actually very short compared to many of the more complicated units in the market.

The following chart includes all the necessary routine maintenance procedures with HUR recommended timetable. Note that some of the routine maintenance procedures are required for validating warranty.

6.1 ROUTINE MAINTENANCE TIMETABLE

	MAINTENANCE PROCEDURE	ADDITIONAL INFORMATION
EVERY DAY	Wipe upholstery using soft cloth.	Normal daily routine for overall hygiene.
EVERY WEEK	Wipe upholstery using soft cloth damped with mild detergent and water. Check Water Extractor tank from Compressor (if equipped) or from HUR Pneumatic Control Unit. Check Oil level of Compressor motor(s).	Do not use too much water. Drain if ½ full or above. Add oil if necessary. See compressor manual for details.
EVERY MONTH	Tilt machines and clean floor surface underneath. Helping hand is recommended for tilting machine.	Wipe or use vacuum cleaner. Be careful not to cause too much tension on tubes/ electric wiring when tilting machine. Avoid hitting components installed underneath machine.
EVERY 6 MONTHS	ROUTINE SERVICE	Checking overall condition of machines. Cleaning and lubricating cylinder rods. Lubricating and adjusting rollers. Checking compressor.

See compressor manual for recommendations of compressor related maintenance and service.

6.2 DISCONNECTING MACHINE FROM PRESSURE CIRCUIT

For some services or repairs it is necessary to remove machine from pressure circuit. This must not be done before pneumatic system is depressurized.

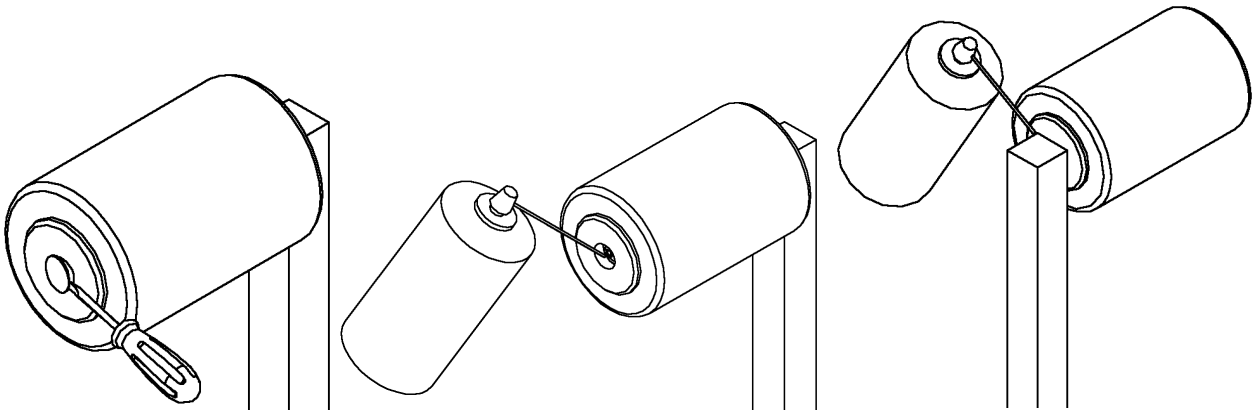
1. Switch the compressor OFF and close the main output valve if available. Never use pressure regulator adjustment for closing main output airflow. (See compressor manual)
2. Remove pressure from pneumatic system. Easiest way to do this is to use Shutoff valve on HUR Pneumatic Control Unit. If that is not available, press and hold + and – valve buttons simultaneously. This allows air to flow through machines pneumatic system. Hold buttons down until machine pressure gauge reading is near zero.
3. Disconnect the pressure tube from machine pressure input connector

6.3 LUBRICATING AND ADJUSTING ROLLERS

To ensure silent operation it is recommended to lubricate and adjust (if necessary) rollers every 6 months.

Basic lubrication of rollers:

1. Remove roller end plug carefully
2. Apply lubricant to both ends of the roller
3. Test for proper operation
4. Install roller end plug, replace if broken



If rollers need to be adjusted or replaced:

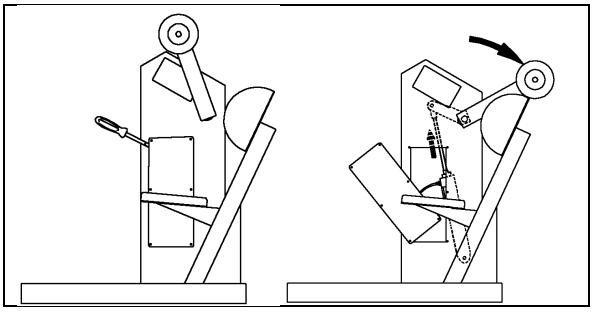
1. Remove roller end plug carefully
2. Remove roller bolt and washer
3. Remove roller assembly
   NOTE! Cover upholsteries before removing roller
4. Remove conical washer
5. Wipe roller axle and roller end cap contact surfaces clean
6. Lubricate contact surfaces of axle and end caps
   Lubricating complete axle surface is not necessary
7. Install new conical washer
8. Install roller assembly
9. Install roller bolt and washer
   NOTE! Make sure that the smooth surface of the washer is against the roller end cap
10. Use Loctite Green or equivalent for bolt threads
11. Tighten the bolt until rotating roller has a slight resistance
12. Check for proper operation
13. Install end plug, replace if broken
    NOTE!! Do not force plug in with hammer etc. This will alter roller adjustment and additional tightening might be necessary

6.4 LUBRICATING PISTON RODS

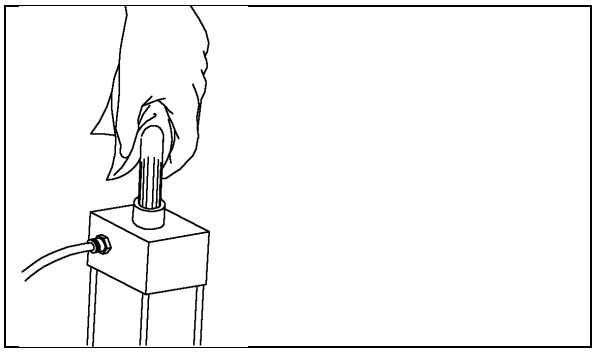
To maximize cylinders lifetime and to ensure silent and smooth operation it is recommended to lubricate piston rods every 6 months.

NOTE! This procedure is required for keeping warranty validated.

Locate the cylinders of the machine and move the outer lever so that the piston rod of the cylinder is fully extended.

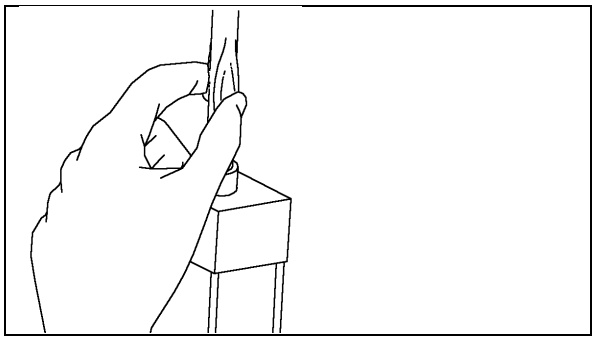


Wipe the piston rod using a soft dry cloth to clean away any dust accumulated.



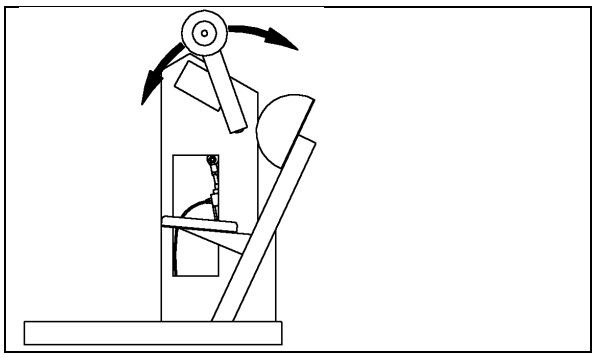
Apply Vaseline to the piston rod using fingertips.

NOTE! Use white Vaseline that has no chemicals.
(Festo LUB-AL2 for low friction cylinders recommended)



Contract and extend the piston rod a few times by moving the outer lever arm back and forth.

When tilting the machine, avoid causing tension on pressure tubing or electric wirings.



6.5 CHECKING FOR LEAKAGE

There will always be a little escaping air through the system that will not affect the way the machines work. However, excessive air leakage will not allow the machines to work at their full potential. There are few reasons why leakage may occur, such as fittings becoming loose, dry piston rod seals, corroding connectors and valve leakage.

Testing for leakage:

1. Set machine pressure to 50-70% of maximum level
    a. Adjust the pressure higher than your test pressure and set the correct pressure using minus valve
2. No visible pressure losses should occur in 5 minutes
    a. Do not use the machine that is on a pressure test

Dual Function units should be tested for both exercise directions.

In case of a pressure drop the leakage point should be located.

1. Listen for hissing noises from the machine.
2. Connectors can be tested by spraying soap water on them
    a. Do not soak the machine!
    b. Bubbles indicate leakage

In case of Dual Function unit dropping pressure on only other exercise direction:

- Check switch valve connectors
- Check OR-valve connectors
- Check 5/2-valve connectors
- Check cylinder for leaking through
    1. Remove non-pressure side tube
    2. Test leakage by spraying soap water on the connector that the tube was disconnected from.
        - Rotate connector so that opening is downwards for keeping water of getting inside the cylinder
    3. Bubbles indicate cylinder leaking through

Leakage in following components or connectors cause continuous leakage no matter of switch valve position:

- Pressure adjustment valves
- Pressure gauge
- Pressure tank (on pressurised side only)

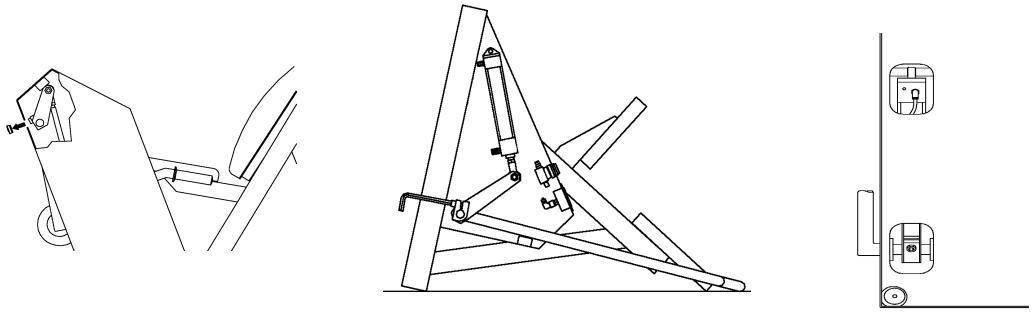
In case of leakage in tube connection, try to reconnect the tube first. Connections are sometimes loosened for miscellaneous reasons (tension on tubing etc.)

Damaged part that causes leakage should be replaced immediately.
Leakage can increase compressor runtime. This may cause excessive wear or even overheating related damage.

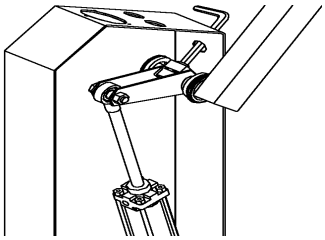
6.6 ADJUSTING INNER LEVER ARMS

The inner lever is designed to absorb any overload (or misuse) of the units. In case that the machine is misused the inner lever may adjust out of place preventing, for example, cylinder damage.
The basics of adjusting inner lever arm are the same in every machine:

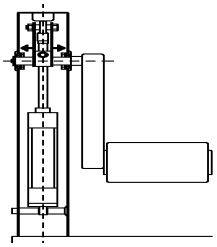
1. Set machine pressure to zero.
2. Inner lever arm can be found where torque arm axle enters the frame.



3. Loosen Inner lever arm bolt using a long type 10mm Allen key. Loosen until inner lever arm is able to slide freely along the torque arm.



4. The inner lever arm and the cylinder need to be in line with each other to ensure the smoothness of movement and minimum friction that will create the least amount of wear and tear. This is usually in the middle of the shaft BUT not necessarily



5. When arm is adjusted to correct position, tighten the Allen screw using torque wrench set to 110 Nm.
6. Check machine for proper operation and replace any removed plastic plugs.

6.7 TOUCH SCREEN MAINTENANCE

These guidelines for maintaining and cleaning Afolux LX series comply with the AFL-LX series user manual rev. 1.1

- Except for the LCD panel, never spray liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the Afolux LX series does not require cleaning. Keep fluids away from the interior.
- Be cautious of all small removable components when vacuuming the Afolux LX series
- Turn the Afolux LX series off before cleaning
- Never drop any objects or liquids through the openings of the display case
- Be cautious of any allergic reactions to solvents or chemicals used when cleaning the device
- Avoid eating, drinking and smoking within vicinity of the device

6.7.1 GENERAL SAFETY PRECAUTIONS

Please ensure the following safety precautions are adhered to at all times:

- Follow the electrostatic precautions outlined below whenever the Afolux LX series is opened.
- Make sure the power is turned off and the power cord is disconnected whenever the device is being installed, moved or modified
- Do not apply voltage levels that exceed the specified voltage range. Doing so may cause fire and/or an electrical shock
- Electric shocks may occur if the chassis is opened when device is turned on
- Do not drop or insert any objects into the ventilation openings of the device
- If considerable amounts of dust, water, or fluids enter the device, turn off the power supply immediately, unplug the power cord, and contact the Afolux LX series vendor
- Do not
    - drop the device against hard surface
    - strike or exert excessive force onto the LCD panel
    - touch any of the LCD panels with a sharp object
    - use the device in a site where the ambient temperature exceeds the rated temperature

6.7.2 ANTI-STATIC PRECAUTIONS

Failure to take ESD precautions during the installation of the Afolux LX series may result in permanent damage to the device and severe injury to the user. Electrostatic discharge (ESD) can cause serious damage to electronic components, including the Afolux LX series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the device is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband. Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding. Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use anti-static pad. When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- Only handle the edges of the electrical component. When handling the electrical component, hold it by its edges.

6.8 FCM (SmartCard) TROUBLESHOOTING

Startup problems

SYMPTOM	CAUSE	FIX
Machine starts to loop in between '**grey screen with cursor**' and '**black screen**' after splash screen (HUR logo).	False machine settings on Executive Module or incorrect positioning of Round switches → machine model unknown.	Check Executive Module Round Switches.
	Wrong Flash memory XML-file version.	Update computer or Change Flash.

Load adjustment problems

SYMPTOM	CAUSE	FIX
Machine doesn't adjust load when button is pressed. Buttons work like they should. No clicking sound heard from EM.	Executive Module dip switch nr.1 is set to "OFF" position.	Set dip switch nr.1 to "ON" position.
Pressure increases by itself when + button is released.	Particle in valve chamber	Pick valve apart and remove particle.

Rep. counter problems

SYMPTOM	CAUSE	FIX
Machine does not count repetitions.	Executive Module dip switch nr.2 is set to "OFF" position.	Set dip switch nr.2 to "ON" position.
	Faulty Rep counter(s).	Replace Rep counter(s).
	Rep counter positioning	Reposition Rep counte(s).
Machine counts too many repetitions.	Faulty Rep counter(s).	Check Rep counter. Replace if broken.
	Rep counter(s) too close to cylinder.	Add layer of 2-sided tape between Rep counter and cylinder.
	Incorrect Rep counter(s) positioning. Too close to the end of movement or similar location with other Rep counter.	Reposition Rep counter(s).

		QUICK FIX: Disconnect failed Rep counter from Executive Module.

Display problems

SYMPTOM	CAUSE	FIX
Strange symbols on display or missing machine name.	Executive Module and FCM software versions are not compatible.	Update FCM software. This will update EM software also.
Black screen. Touch screen is working.	Faulty display.	Replace panel PC.
Touch screen is not working.	Bad calibration of touch screen.	Use 4 Point Calibration card. Person's welcome name needs to be "4PCAL".

Other problems

SYMPTOM	CAUSE	FIX
Card Reader doesn't work. No reaction when card is inserted.	Reader is not connected	Reconnect the USB cable
	Faulty card reader unit.	Replace card reader.
	Faulty or worn out card.	Replace the card.

FCM device error messages

Error message	Caused by	Corrective Action
A Error- failed to initialize connection to Smart Card reader	1.Broken card reader 2.Corrosion on USB connector surfaces(C.reader) 3.Card reader cable damaged 4.Corrosion on USB connector surfaces(PC) 5.PC USB port defect	1.Replace card reader 2.Clean connector surfaces 3.Replace card reader 4. Clean connector surfaces 5.Replace PC
B Error-failed to initialize communication to Executive Module	1.EM electronic board defect 2.Contact failure EM USB connector 3.EM USB cable defect 4.Contact failure PC USB port 5.PC USB port defect	1.Replace EM electronic board 2.Clean EM USB connector 3.Replace USB cable 4.Clean PC USB connector 5.Replace PC
C Error- failed to load code to Executive Module! (EM-	1.Program version conflict 2.USB connection missing to EM	1.Check compability of software versions 2. Replace EM electronic board
D Error –getting settings for this machine from fcm _machines.xml failed!	1.Unknown machine ID 2.EM – dip switches defect 3.PC Compact Flash content corrupted	1.Check machine ID 2.Replace EM electronic board 3.Replace PC Compact Flash disk

6.9 FCM2 (SmartTouch) TROUBLESHOOTING

Software

Symptom	Cause	Action
Software freezes or appears frozen.	Slow or unreliable network connection.	Check network cabling and quality. Ensure that the connection to the server is working.
	USB connection to EAEM drops frequently.	Check the USB-cable and connectors. If the cable is okay replace the EAEM board.
Frequent network errors.	Slow or unreliable network connection.	Check network cabling and quality. Ensure that the connection to the server is working.
	Broken cable or connectors.	Check the network cable and connectors inside the machine, pay extra attention to the connector under the machine.
	Customers network is not working properly	Customer should check out their network with the help of their IT.
Software upgrade fails.	Not enough space left.	Make more space by running 'apt-get clean' and by removing log files from /var/log.
	Previous upgrade was interrupted.	Manually finish previous upgrade by following instructions from 'apt-get dist-upgrade'.
	Wrong repository address.	Set the correct repository address in /etc/apt/sources.list.
	The download is very slow	The upgrade packages need to be installed manually.
LIN repetition counter does not reset.	Repetition counter is not correctly configured.	Set FCM→Reps. counter to FCM in FCM2 Setup.
No connection to EM.	USB-cable is not connected.	Check USB-cable and connectors.
	EAEM board is broken.	Replace EAEM board.
Black or flashing screen	Not enough space left.	Make more space by running 'apt-get clean' and by removing log files from /var/log.
	Enough space but screen is still black or flashing	Broken display, needs to be replaced.

Hardware

Symptom	Cause	Action
RFID Reader doesn't work. No reaction when RFID is shown.	Reader is not connected	Reconnect the USB cable
	Faulty card reader unit.	Replace card reader.
	Faulty USB port on panel PC	Replace panel PC
Machine says "Could not connect to EM"	Executive Module is not connected to the panel PC	Check that the Executive Module is connected to the panel PC.
	USB-port on the panel PC is faulty	Check if the other USB port works and if it does, then replace the panel PC
	Faulty Executive Module	Replace the Executive Module
Pressure increases by itself when + button is released.	Particle in valve chamber	Pick valve apart and remove particle.
Machine does not count repetitions.	Faulty Rep counter(s).	Replace Rep counter(s).
	Rep counter positioning	Reposition Rep counte(s).
	Wrong repetition counter selected in setup	Set FCM→Reps. counter to FCM in FCM2 Setup.
	Old version of FCM2 (< 2.2.9), if LIN adapter is used	Upgrade the FCM2 software
Machine counts too many repetitions.	Faulty Rep counter(s).	Check Rep counter. Replace if broken.
	Rep counter(s) too close to cylinder.	Add layer of 2-sided tape between Rep counter and cylinder.
	Incorrect Rep counter(s) positioning. Too close to the end of movement or similar location with other Rep counter.	Reposition Rep counter(s).
		QUICK FIX: Disconnect failed Rep counter from Executive Module.
	Old EAEM firmware.	Upgrade firmware to version 3.30 or newer.
Actuator stuck in upper position.	Position signal from actuator missing.	Check actuator cabling and connector and replace as needed.
	Actuator stuck.	Manually try to unstuck the actuator by sending the 'decrease' and 'overc_checked' commands. Current_limit can also be increased while trying to move the actuator.
Actuator stuck in lower position	Actuator stuck.	Manually try to unstuck the actuator by sending the 'increase' and 'overc_checked' commands.

		Current_limit can also be increased while trying to move the actuator.
Machine reboots when trying to move the actuator.	Short circuit in actuator cables.	Check actuator cabling and connectors and replace as needed.
Black screen when turning on machine.	Display is broken.	Replace display.
Half of the display is different color	Display is broken	Replace display.
Actuators not resetting to lowest position on startup.	Incorrect current limit.	Set the correct current_limit depending on the actuator type.
	Missing calibration.	Calibrate all channels which have an actuator connected.
	Actuator stuck.	Manually try to unstuck the actuator by sending the 'increase' and 'overc_checked' commands. Current_limit can also be increased while trying to move the actuator.

Error Codes

Code	Description
1040	EAEM: EEPROM data is not valid.
1042	EAEM: Invalid command or parameters.
1084	EAEM: Invalid pressure reading.
10xx	See EAEM documentation.
2032	EADC: Hardware overcurrent detected.
2033	EADC: Software overcurrent detected.
2034	EADC: Overtemperature/Max working time reached.
2035	EADC: Target not reached when go_to_target was sent.
2038	EADC: Current not flowing when movement commands are issued.
2040	EADC: EEPROM data is not valid.
2041	EADC: Last position was not saved.
2042	EADC: Invalid command or parameters.
20xx	See EADC documentation.
2501	EADC: Movement was perfomed and target reached successfully.
4001	FCM2-INA: Could not connect to server.
4002	FCM2-INA: HTTP error.
4003	FCM2-INA: Request timeout.
4100	FCM2-INA: Unknown error.
5001	Init: Network initialization failed.
5002	Init: Incompatible EADC version.
5003	Init: Identify query to FCM2-INA failed.
5004	Init: Identify query to server failed.
5005	Init: Getting activities query to FCM2-INA failed.
5006	Init: Getting activities query to server failed.
5007	Init: Getting activities failed.
5008	Init: No connection to EM.
5100	Init: Unknown error in initialization.
5101	Init: Unknown error in initialization.
5102	Init: Unknown error in initialization.

6.10 FCM RELATED NOTES

FCM system is sensitive for bad connections. Abico-Connection that seems to be OK, might be bad. Always check connections thoroughly to be sure that wire is not loose inside the connector.

Service Technician should carry some Abico connectors in tool bag for being able to replace disconnected or bad connections.

> NOTE! For using Abico-connectors, special pliers are necessary. Do not use any other type of pliers with these connectors.

When working on FCM devices remember that they are computer related electronic devices. Connections are not made with welder and bolts so they cannot be handled with excessive force. Be careful. Take your time.

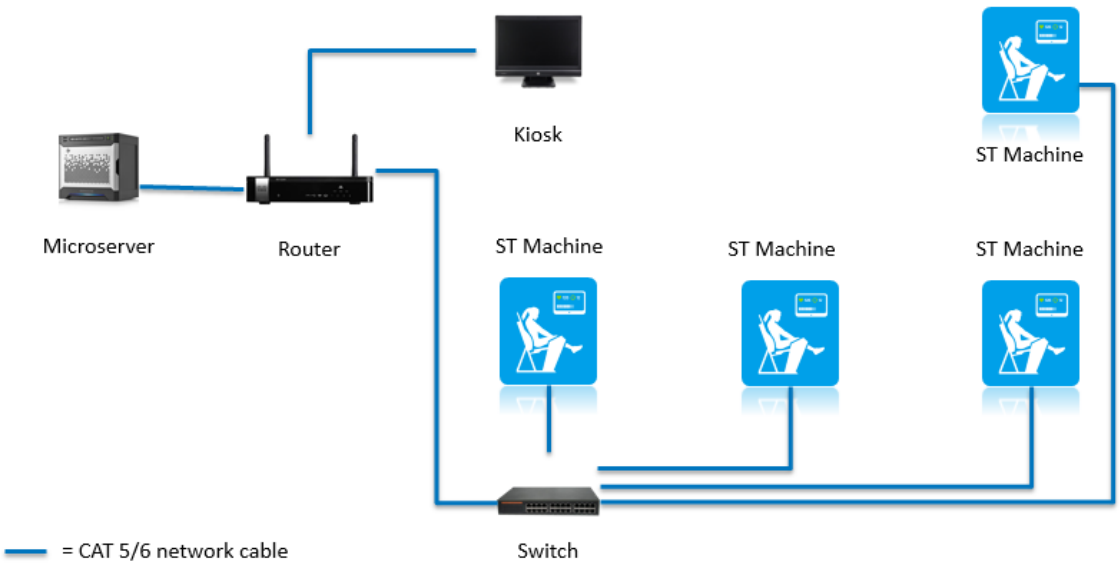
When checking or routing cables, make sure that no moving part or excessive heat source is too near of the cable. Use cable ties to attach cable securely.

> NOTE! Avoid cable ties within first 50mm from connection. Using cable tie too close of the connection may cause tension or bend which can cause bad connection related malfunction.

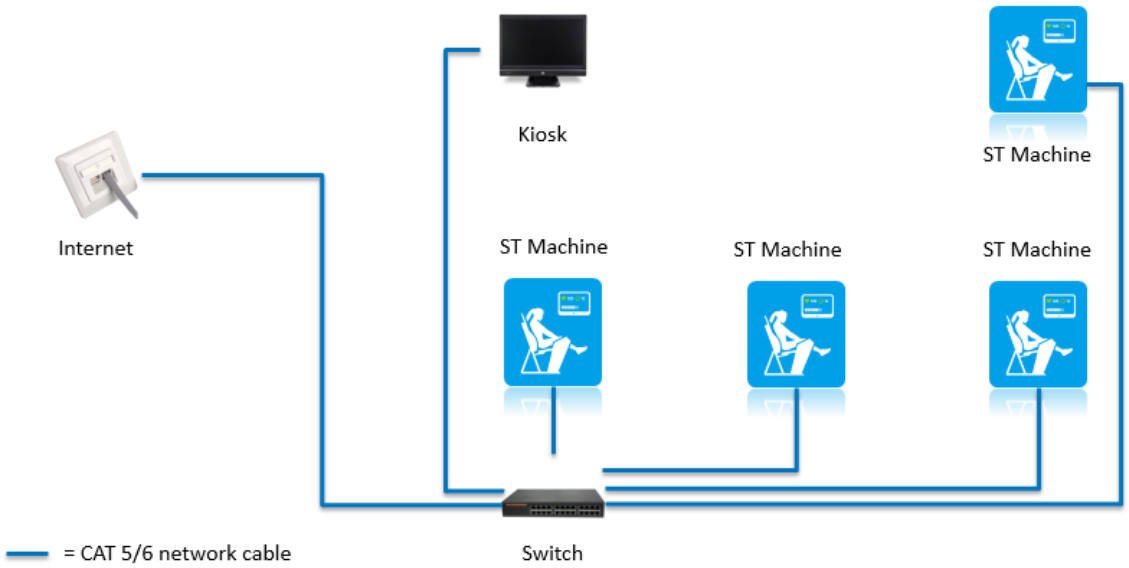
Always switch power off before performing any other operation than measuring the power cables. Voltages are low and might not cause any trouble to human but power spikes can damage computer or other electronic components. Lightning created by service technician also gives customer a bad picture of your skills.

7 NETWORKING

The HUR SmartTouch machines need to be connected to the HUR SmartTouch server, whether it is cloud or local.



Local HUR SmartTouch installation.



Cloud HUR SmartTouch installation.

Note!

- Connect the machines internal network cable to the middle port on the FCM2 touch screen display. It has the icon 

- Use the local microserver's port #1
- Use only router's LAN 1-4 ports. Do not use the WAN port for machines. If more machines need to be connected use switches.

7.1 NETWORK TROUBLESHOOTING

All machines are displaying  on the machine screen. As a result users cannot login to the machines.	• Is the server running? The local server can take time to boot up especially after it has been forced to shutdown. See if the light is green on the server. • Is the router turned on? • Are you connecting the micro server from LAN port 1 to the router's LAN port? Check the port connection lights on the router. • Are the machines connected to the router directly or through switches? Check the port connection lights on the router and on the switches. • Did you start the router before the server? If not, then restart the server to make sure it has correct network settings. • Network access controls (firewall/filtering) when using customer's own network. Please contact the customer's IT department.
One machine is displaying  on the machine screen. As a result users cannot login to the machine.	• Check the port connection light on the switch or on the router where the machine connects. If the color is red or there is no light, then there is likely a physical connection problem. If the color is green, then there is likely a setting problem. • Use the middle RJ45 LAN port on the display. • Machine's internal LAN cable. • Network connectors on the machine, on the router and on the switches. • Server settings in the machine setup. See if the server address is correct. • Network access controls (firewall/filtering) when using customer's own network. Please contact the customer's IT department.

Browser cannot find the server at https://10.5.100.100 and the admin software cannot be used.	• Make sure you are in the same network as the server • Is the server running? The local server can take time to boot up. • The web browser might complain about an untrusted connection. You can safely ignore the warning and continue to the page (add an exception if necessary).
Machine says that it cannot connect to the EM and can only enter the setup.	• Check that the USB cable from the EM card is connected to the panel PC. • Is the red light flashing on the EM card? If not, then check the power connection(s) to the card. • Contact HUR Service.

8 HUR WARRANTY TERMS

WARRANTY TERMS OF HUR OY

These Warranty Terms of HUR Oy (hereinafter "HUR") shall be applied to any device or accessory (hereinafter "Product") manufactured by HUR. The purchaser of Product (hereinafter "Purchaser") accepts these Warranty Terms and agrees to abide them by purchasing a Product from HUR. The Warranty will be void if the Purchaser does not comply with all the terms.

1 GENERALLY ABOUT THE PRODUCTS

All Products are developed and manufactured by HUR in Kokkola, Finland. HUR's manufacturing process includes welding, painting, assembly, final inspection and packing. HUR's quality control system is specially designed for the manufacturing process of fitness and rehab equipment and it is a part of HUR's certified ISO 9001, ISO 13485 Quality Management System. Despite continuous quality control, defects or malfunctions may occur in a single product or component.

2 WARRANTY

HUR warrants to the Purchaser that all Products are free from defects in material and workmanship for the Warranty Period as specified in the section 3. HUR will remedy all defects in material and workmanship of Products in accordance with these Warranty Terms. These Warranty Terms are the only warranty terms applicable for Products. These Warranty Terms are expressed in lieu of all other warranties or liabilities against defects or imperfections, hidden or otherwise, and any other obligation or liability arising on the basis of any kind of a defect in Products. The remedy subject to these Warranty Terms will be the sole, exclusive and only remedy available to the Purchaser. HUR will not in any case be liable for any other obligations or liabilities. HUR disclaims and excludes all other expressed or implied warranties, including, any warranty of merchantability or fitness for a particular purpose.

3 WARRANTY PERIOD

HUR Products' Warranty Periods are as follows: ten (10) years for the frame of the Product, three (3) years for all other Products excluding electronic components and upholstery, one (1) year for electronic components and three (3) months for upholstery (the applicable period hereinafter the "Warranty Period"). Warranty Period commences on the date when the Purchaser has purchased and received the product and approved the installation of the product by signing and dating the HUR Warranty Activation Form (hereinafter the "WAF") and when WAF has been returned to HUR. Any repair or replacement on the basis of these Warranty Terms does not extend the Warranty Period. HUR's liability on the basis of these Warranty Terms is limited to only such defects, which appear and are notified to HUR within the Warranty Period.

4 REMEDY

In the case of any defect covered by these Warranty Terms, HUR will remedy, repair or replace the defective Product, component or part of the Product, or at its discretion, refund the price of the defective Product to the Purchaser. A precondition for the remedy is that HUR's examination shows the Product or the component or the part of the Product to be defective. Any replaced Product, component or part of the Product will become HUR's property.
Unless otherwise agreed, HUR will not be liable for any cost, expense, loss or damage whether direct or indirect and whether consequential or not. HUR does not have any responsibility regarding the suitability of the Product to any purpose of the Purchaser. Unless otherwise agreed, the Purchaser will bear the cost of repair work and any other costs incurred in connection with the repair, replacement, dismantling, installation and transportation of any Product, component or part. If the defective Product, component or a part of Product will be transported to HUR, by HUR's will, for repair or replacement, HUR will also bear the cost and the risk of the transportation of the device from the Purchaser to HUR.

5 RESTRICTIONS

HUR's obligations on the basis of these Warranty Terms apply only to defects occurring during the Warranty Period. The Product should have been used in its particular purpose, as expressed in User Manual. All instructions for use, installation and maintenance should be complied with.
HUR's obligations do not apply to normal wearing of parts in any Product, component or part of the Product; parts in need of routine replacements or defects due to normal wear or deterioration. The warranty does not cover natural breakdown, normal wear and tear of parts and defects caused thereof. HUR's obligations do not apply to any defects due to reasons out of HUR's control, such as negligence or error in maintaining, handling or storing the Products; alteration or modification or addition to the Products without HUR's prior written consent; failure to follow HUR's instructions, wrong assembly, unsuitable use or unauthorized

repairs or repairs carried out improperly. Warranty does not cover equipment damage caused by maintenance service non-authorized by HUR. Personal injury or damage caused to a person or another object is not covered by these Warranty Terms. Instructions for the installation and maintenance of the Products are available in the separate HUR technical manual. HUR equipment may only be installed by an authorized HUR installer.
This limited Warranty is applicable only for the original Purchaser. The rights of Purchaser on the basis of these Warranty Terms cannot be transferred to any third party. The Purchaser shall return a duly filled file, WAF, to HUR in order to activate the Warranty within one (1) month since the date the Product was received. The Warranty is not applicable if WAF has not been duly filled and returned to HUR.

6 NOTIFICATIONS OF A DEFECT UNDER THIS WARRANTY

The Purchaser shall notify HUR in writing (HUR Claim Form recommended) of any defect covered by these Warranty Terms within two (2) weeks from the defect was detected. Such notifications are a precondition for any compensation and shall include at least the following details:

- type and serial number of the defective Product;
- date of the delivery of the Product to the Purchaser and the location of the Product;
- information about the use of the Product;
- detailed description of the defect.

The Purchaser shall promptly provide any additional information concerning the defect and its occurrence that HUR may reasonably request. On receiving the Purchaser's notification and the information referred above, HUR will remedy the Product, component or part. The Product, component or part shall, if so required by HUR, be returned to HUR for inspection together with the information referred above.

7 CONSUMER'S RIGHTS

A consumer can be entitled to legal rights in accordance with the applicable national legislation regarding consumer rights. Notwithstanding any provisions of these Warranty Terms, these Warranty Terms do not affect or prejudice the statutory rights of a consumer.

8 REVISIONS OF THE WARRANTY

HUR reserves the right to change these Warranty Terms at any time.

9 APPLICABLE LAW

These Warranty Terms shall be governed and interpreted in accordance with the laws of Finland. Any dispute arising shall be decided by the courts of Finland.

These Warranty Terms are valid from 1 January 2015.