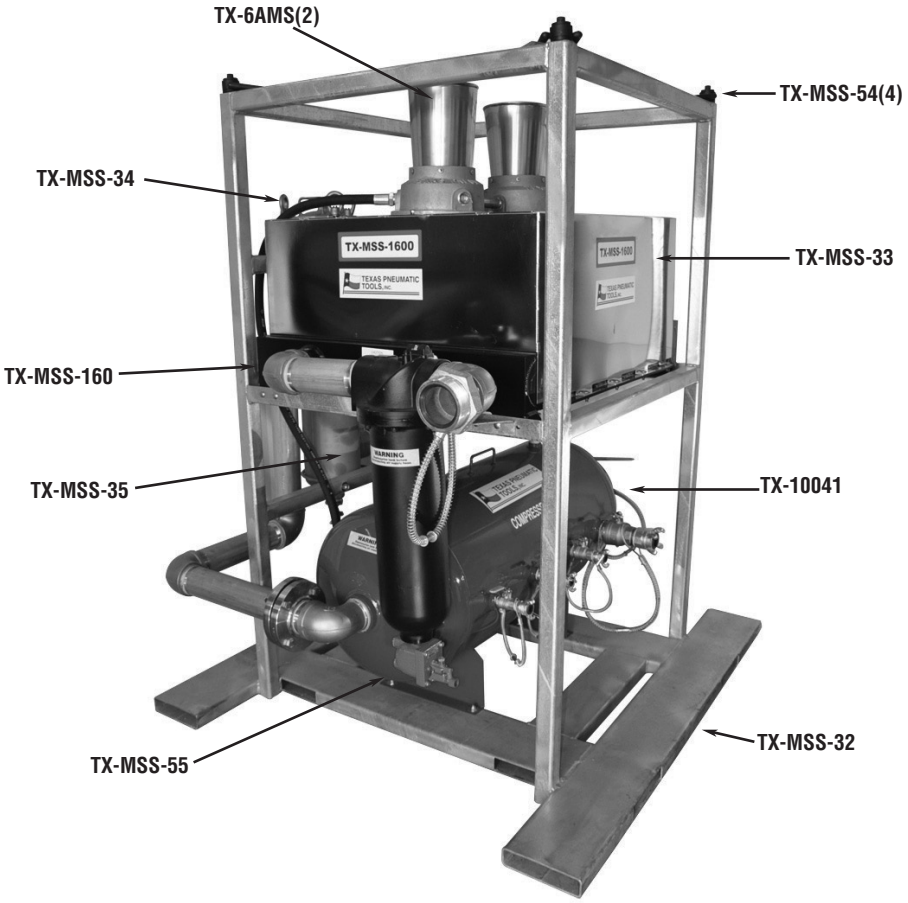
TEXAS PNEUMATIC TOOLS, INC.

Service, Operation AND Parts Manual

MOISTURE SEPARATING SYSTEM



TX-MSS-1600

SPECIFICATIONS

MODEL #	CAPACTY	WEIGHT	HEIGHT	LENGTH	WIDTH	TANK DIAMETER	INLET SIZE	MAX CFM	WORKING PRESSURE	TEST PRESSURE	CONNECTOR DETAILS*
TX-MSS-1600	60 Gallon 227 Liters	1235 lbs 560 kg	74" 188 cm	69" 175 cm	49" 125 cm	20" 508 mm	3" 76 mm	1600 45,307 l/min	200 psi 14 Bar	260 psi 18 Bar	INLET: 3" "BOSS" wing nut thread. OUTLETS: Safety auto exhaust ball valve w/ locking handle & 2-Prong crowfoot, 4-Prong crowfoot & 3" "BOSS" wing nut thread.

(*) Safety lock cable included with all Inlet / Outlet connections.

~ Made in U.S.A. ~

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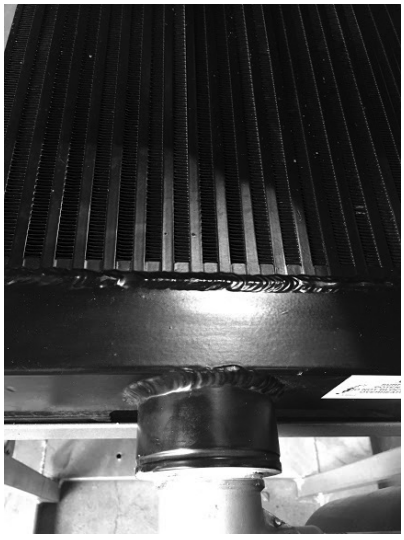
Service and Operations

The Texas Pneumatic Moisture Separating System (TX-MSS-1600) utilizes four levels of moisture separation to remove condensation from compressed air lines. It is a simple system that requires little to no maintenance. Once the compressed air has passed through the system, the hot compressed air has been significantly cooled and purged of moisture.

During the air compression process, humidity in the atmosphere gets compressed along with the air. The compression process heats the air which keeps the moisture (humidity) in a gaseous state. Higher atmospheric humidity levels will create higher levels of moisture in compressed air lines. As compressed air travels through the compressed air hoses towards the areas where it is being used, the surface area of the hose acts as a radiator and the compressed air will cool down. As moisture vapor cools, the vapor will condense to water. The velocity of air running through the hose will push any water toward the outlet. A Texas Pneumatic Moisture Separating System is used to rapidly cool compressed air, remove condensation (water) and eliminate the problems it causes with air tools or equipment like sand blast pots or air powered paint sprayers. It's portability allows it to be located away from compressors and closer to the actual point of consumption. Moisture Separators are most efficient when located away from air compressors. There are forklift pockets in the galvanized steel frame (TX-MSS-32) to easily move the unit about the jobsite or Lifting Eye Bolts (TX-MSS-54) to hoist the unit to upper areas.

PICTURE 1

The first level of filtration is a particulate filter (TX-MSS-35). This filter is designed to remove any incoming moisture and any particulates (dirt or debris) that may be in the air line. The filter has an automatic float drain (TX-MSS-55) that will purge water buildup that accumulates in the bottom of the filter. This filter is the only component in the system that will require occasional maintenance. A gauge (DP-2) on the top of the filter has three color coded zones. If the filter is clean and in good condition, the indicator will be in the green zone. When the indicator is in the yellow or red zone, the sintered bronze element has lost its efficiency and should be cleaned or replaced. The sintered bronze element can be cleaned in a solvent or with soap and water, and it is possible to do this procedure several times before it will need replacing. Replace the element with FRP-95-508 Element Kit. The element is replaced by removing the bowl from the housing. There are 8 bolts holding the element housing to the filter body. It is <u>not</u> necessary to remove the filter body from the system in order to change the element. See picture 1 on the right.



PICTURE 2

The second and primary level for moisture separation is the Aftercooler (TX-MSS-160) which works much like a radiator on an engine. In this case, hot compressed air flows through the interior of the aftercooler (radiator) and ambient air is pulled through the cooling fins by the air movers (TX-6AMS). The cooling fins draw heat from the hot compressed air which significantly reduces the compressed air temperature. See picture 2 on the left.

Unlike most moisture separators on the market that use fan blades with air motors to push ambient air through the aftercooler, this Texas Pneumatic Moisture Separating System uses a Double Chamber Cooling Effect. Texas Pneumatic Air Movers (TX-6AMS), which are essentially fans with no moving parts are mounted on top of the Stainless Shroud (TX-MSS-33). The Shroud is divided into two chambers and each air mover works specifically for its chamber. Air Movers are compressed air driven and operate on the venturi principle where small amounts of high pressure compressed air is used to create a low pressure zone that induces ambient air through the unit. See picture 3 on the right.

PICTURE 3

When compressed air starts to flow through the Moisture Separating System, a small portion of the compressed air is used to operate the Air Movers. A low pressure zone is created within each chamber of the Stainless Shroud (TX-MSS-33) and ambient air is drawn through the aftercooler from the bottom and into the chambers created by the shroud. The Air Movers continually exhaust their chambers which creates the draw across the cooling fins of the aftercooler. As the hot compressed air travels from the inlet side of the aftercooler to the outlet side, the temperature is significantly lowered. The rapid drop in temperature causes

moisture vapor to condense into water droplets. The droplets are pushed by the velocity of the compressed air flow where they collect on the outlet side of the aftercooler and follow the air flow to the bottom of the Deliquescent Filter Housing (TX-MSS-34).

PICTURE 4

The Deliquescent Filter Housing is the third level of moisture separation and performs two functions. The first function is to expel water that was condensed from the compressed air by the aftercooler. There is a ½" ball valve (AMIS14-1) at the bottom of the Deliquescent Filter Housing. This ball valve should be kept in a slightly open position to continually allow water to drain from the system. See picture 4 on the right.

PICTURE 5

The ball valve is an auto exhaust type valve. There is a small hole in the bottom of the valve that allows pressure to escape. If the valve is partially open, compressed air will escape from the auto exhaust opening as well as the outlet of the valve. Please Note, this valve only needs to be open a very small amount. The compressed air will hiss and a visible plume of moisture will be seen from the side and bottom of the valve. See picture 5 on the left.

Do not close the valve and allow water to collect in the bottom of the Deliquescent Filter Housing (TX-MSS-34). If closed, the high velocity of air moving through the system will allow droplets of the collected water to travel up through the Filter Housing and to the Manifold Tank (TX-10041). Droplets will also dissolve the Deliquescent Desiccant (TX-MSS-05) which is the other function of the Deliquescent Filter Housing. Deliquescent Desiccant is a water soluble pellet. Any moisture vapor that hasn't condensed from the compressed air through the first two levels of moisture separation will be absorbed at this level. The compressed air travels up through the Deliquescent Desiccant, and moisture vapor is absorbed by the desiccant pellets. As the pellet's surface absorbs moisture, the moisture will start to form droplets. Once the droplet is large enough, it will fall to the bottom of the filter housing and be expelled with the water coming from the aftercooler. The desiccant is a form of salt and is environmentally friendly. The water can be drained directly onto the ground. If the amount of water draining on the ground creates a muddy worksite, it is possible to connect a hose to the outlet of the Ball Valve (AMIS14-1). The hose can be of any length necessary to keep a clean worksite.

PICTURE 6

The Deliquescent Desiccant will periodically need to be replenished. A mesh bag containing 10 pounds of desiccant pellets (TX-MSS-05) can be ordered and inserted in the top of the Filter Housing through the hinged lid. The Deliquescent Filter Housing will hold up to three - 10 pound bags. The TX-MSS-1600 is shipped with three bags, but two is typically enough for most operations. See picture 6 on the right.

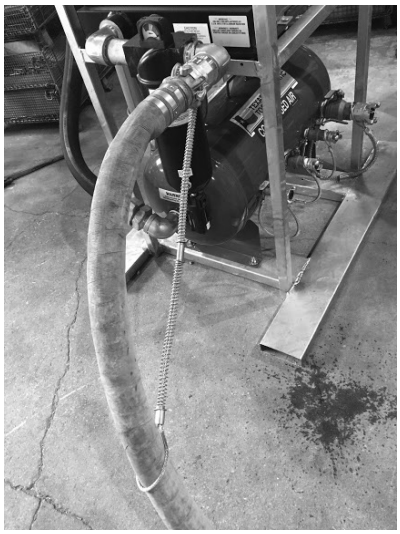
After traveling through the desiccant in the Filter Housing, compressed air flows into the Manifold Tank which is the fourth and final level of moisture separation. At this point, the majority of moisture in the form of water or vapor has been removed from the air stream. The Manifold Tank is primarily for distribution purposes. However, when the compressed air expands as it enters the tank, the expansion process causes additional rapid cooling of the air. The last traces of vapor condense and fall out of the air stream. The condensation will collect in the bottom of the Manifold Tank. The Drain Cock (TX-10005) should be kept slightly open to allow any moisture that makes it to the final level to be expelled. See picture 7 on the left.

PICTURE 7

A slight hiss from the Drain Cock much like an air leak is all that is required. If more than a few drops of moisture are noticed below the Manifold Tank, check to see if the Ball Valve (AMIS14-1) is open enough so water is not backing up in the Deliquescent Filter Housing. Open the Ball Valve and allow all water to be expelled. Close the valve and adjust as previously explained. The Manifold Tanks have numerous outlets. Each outlet, when shipped from the factory, comes with a Safety Lock Cable (TX-SLC1 or TX-SLC2). See picture 8 on the right.

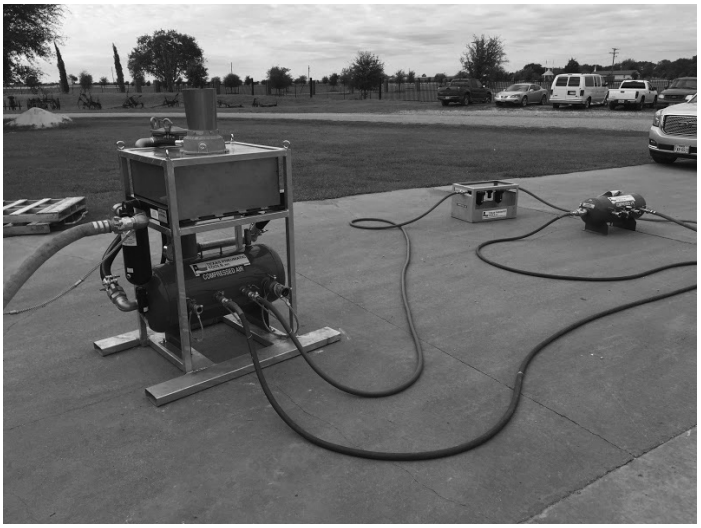
PICTURE 8

Safety Lock Cables are designed to help restrain and minimize the effects of an erratic hose from whipping about if the air connectors should be disconnected while under pressure. To ensure proper protection, one end of the Safety Lock Cable should be around the air connector attached to the valve and the other end slid down the hose as far as it can reach. A Safety Lock Cable (TX-SLC2) is also included, when shipped from the factory, on the inlet of the Moisture Separating System. Due to the size of the hose needed to run this system (3 inch), the Safety Lock Cable is of extreme importance on the inlet connector to the system. If accidentally disconnected, serious injury or death could occur from an erratic hose with a metal connector swinging wildly about as high pressure and high volume compressed air is being expelled. The Safety Lock Cable is designed to limit the travel of an erratic hose so injuries can be avoided. See picture 9 on the left.



PICTURE 9

Other Texas Pneumatic Manifolds or Portable FRL Systems can be used in conjunction with Moisture Separating Systems. Connect appropriate size hoses to the outlets of the Moisture Separating Systems and place the additional Manifolds or FRL Systems in convenient areas for multiple workers. Portable Filter Systems such as TX-3/4 FRDD can be used with paint spray equipment to ensure oil free, moisture free compressed air. Other portable filter systems are available for breathing air or to run critical equipment that requires an extreme level of filtration. See picture 10 above right.



PICTURE 10

Portable FRL Systems from 1/2” to 1-1/2” NPT