



MANUAL

INSTALLATION OPERATION MAINTENANCE

REFRIGERATED COMPRESSED AIR DRYER

Coldspell Series

Contents

1.	Introduction	2
1.1	Design	
1.2	Description	
2.	Specifications	2
	Operational Details	
3.	Operating Principle	3
3.1	Pneumatic Section	
3.2	Refrigeration section	
3.3	Safety	
3.4	Schematic Diagrams	
4.	Electrical	6
4.1	Bar Indicating Controller - Operation / Setting	
4.2	LCD Controller - Operation / Setting	
4.3	Wiring Diagram	
5.	Installation	13
5.1	Storage	
5.2	Installation and Site Connections	
5.3	Electrical Connections	
5.4	Running the Installation	
6.	Operation	14
6.1	Operator	
6.2	How to stop the Dryer	
7.	Maintenance	15
8.	Condenser Cleaning	16
8.1	Air cooled condenser	
8.2	Water cooled condenser	
9.	Amount of Gas to be charged	16
10.	Repair Work	17
11.	Recommended spares list for 5 years	20

INSTRUCTION MANUAL - Coldspell

READ THIS MANUAL CAREFULLY BEFORE INSTALLING OR OPERATING THE EQUIPMENT



These symbols warn you of any dangers and the measures to be taken to prevent them.

The most important points for the correct operation of your dryer are printed in bold.

1. Introduction

1.1 Design

Coldspell refrigeration dryer eliminates any water vapour remaining in the compressed air coming at the outlet of the compressor house. The dryers have been designed for nominal standard inlet conditions as per ISO 7183 in order to obtain a dew point under pressure of +3°C to +7°C.

1.2 Description

The dryer consists of :

- Integrated Heat Exchanger
- Refrigerant Compressor
- Electronic controller
- Condenser Assembly
- Expansion Device
- Pressure switch*
- Refrigerant Suction & Discharge Pressure Gauges
- Hot gas bypass valve
- Auto drain valve
- Canopy

2. Specifications

Operational Details

Medium	: Compressed Air
Inlet condition	: Free of dirt, oil, condensate and corrosive substances.
Operating pressure*	: 7 Kg/cm ²
Inlet temperature*	: Max +45°C
Inlet humidity	: Saturated at specified conditions
Ambient temperature	: Max +38°C
Pressure dew point	: + 3°C to 7°C
Cooling system	: Air cooled / Water cooled
Max. Working pressure	: 16 Kg/cm ²
Refrigerant compressor	: Hermetic sealed

* *Optional*

3. Operating Principle

3.1 Pneumatic section

The moist compressed air (dirt, oil and water vapor) enters into the Air/Air section of Integrated Heat Exchanger where it is pre-cooled by the outgoing air and thereby conserving energy.

The compressed air next passes through the evaporator section of Integrated Heat Exchanger. It is cooled up to +3°C by the Refrigerant. At this sub-cooled temperature, the moisture present in the air is condensed and removed by the Demister section of Integrated Heat Exchanger.

The cool saturated air passes through the Air to Air section of Integrated Heat Exchanger where it pre-cools incoming air and gets heated up. Thus, this system provides clean dry air at the outlet. Efficient Filter and Automatic Drain Valve carry out the removal of moisture at Demister. The Integrated Heat Exchangers are designed in such a way that they are self-cleaning to maintain constant heat transfer rate.

3.2 Refrigeration section (Freon)

The Evaporator removes heat from compressed air by means of cold and low pressure freon. The heat removed from the system is dissipated to the atmosphere/water by the condenser. The high pressure refrigerant flows into the expansion valves where it changes into liquid phase at low pressure. The boiling of liquid refrigerant takes place in the Evaporator and cold air leaves the Evaporator. The low pressure, low temperature refrigerant passes into the compressor and the cycle repeats.

The Refrigeration Dryer senses the refrigerant suction pressure and accordingly varies the flow of hot gas bypass inside the system and maintains constant dew point at various heat loads.

3.3 Safety



Pressurised equipments may explode if used improperly. It is therefore essential to locate any pressurised equipment, in such a way that the risks relating to incorrect use are reduced to the absolute minimum.

The person responsible for the staff who are going to install, operate and maintain the machines described in this manual must make sure that they have read and understood these instructions.

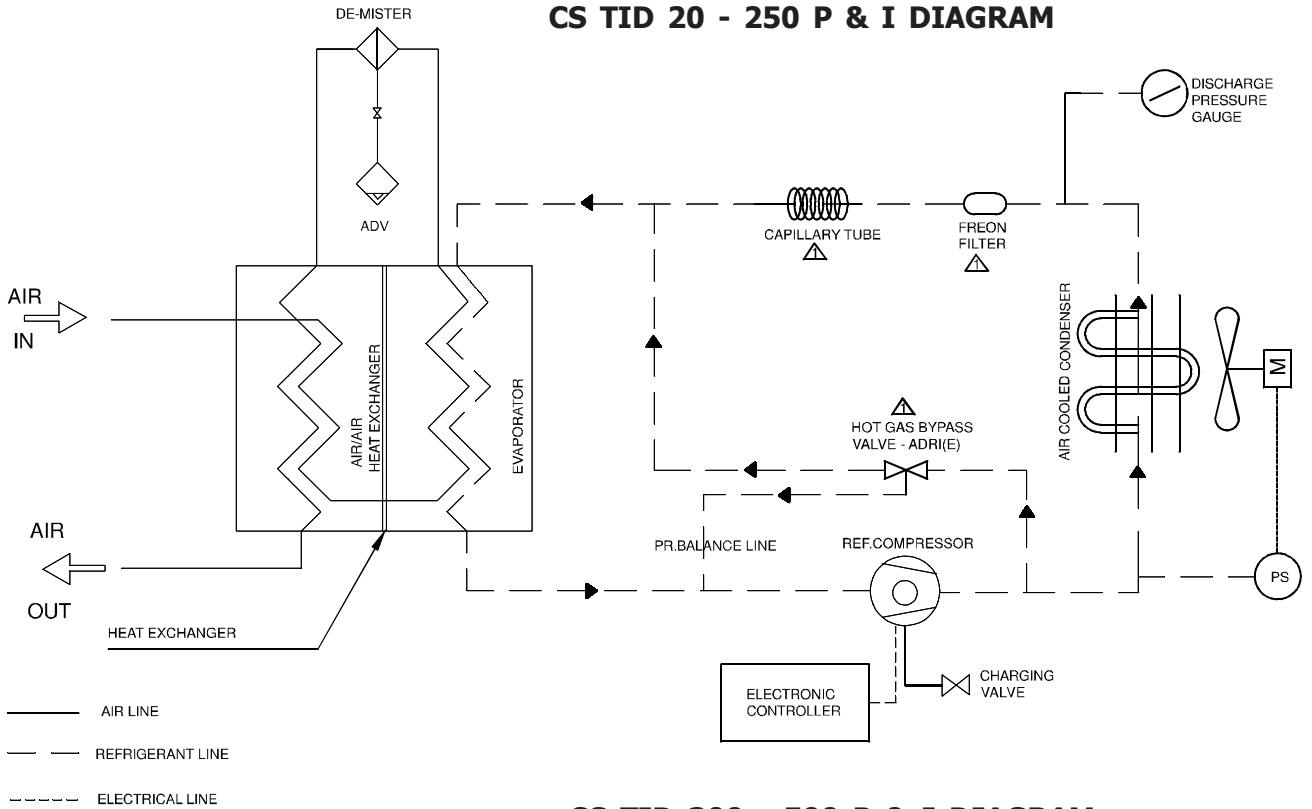
In particular, we draw your attention to the safety procedures which are described in this manual and which must be scrupulously adhered to. Observing these measures will allow you to install, operate and maintain your dryer without risk.

Coldspell dryers are intended for drying of compressed air. Under no circumstances should they be used to dry other gases before Trident has performed a preliminary study and provided special instructions.

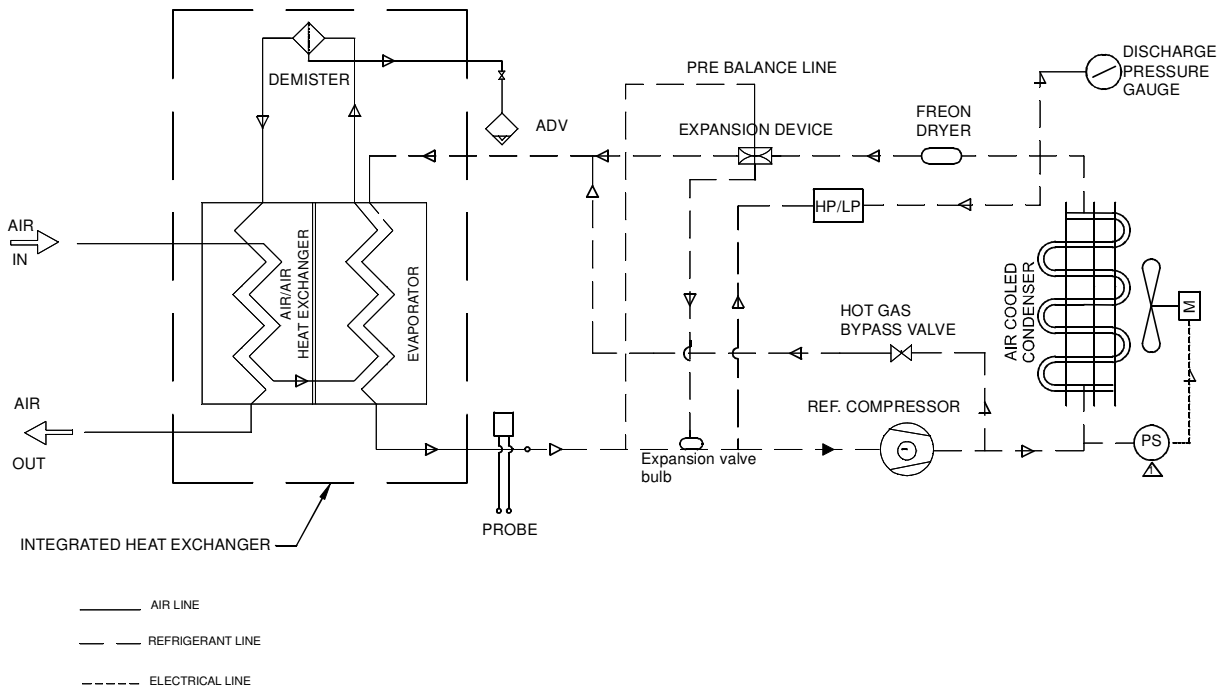
INSTRUCTION MANUAL - Coldspell

3.4 Schematic Diagrams

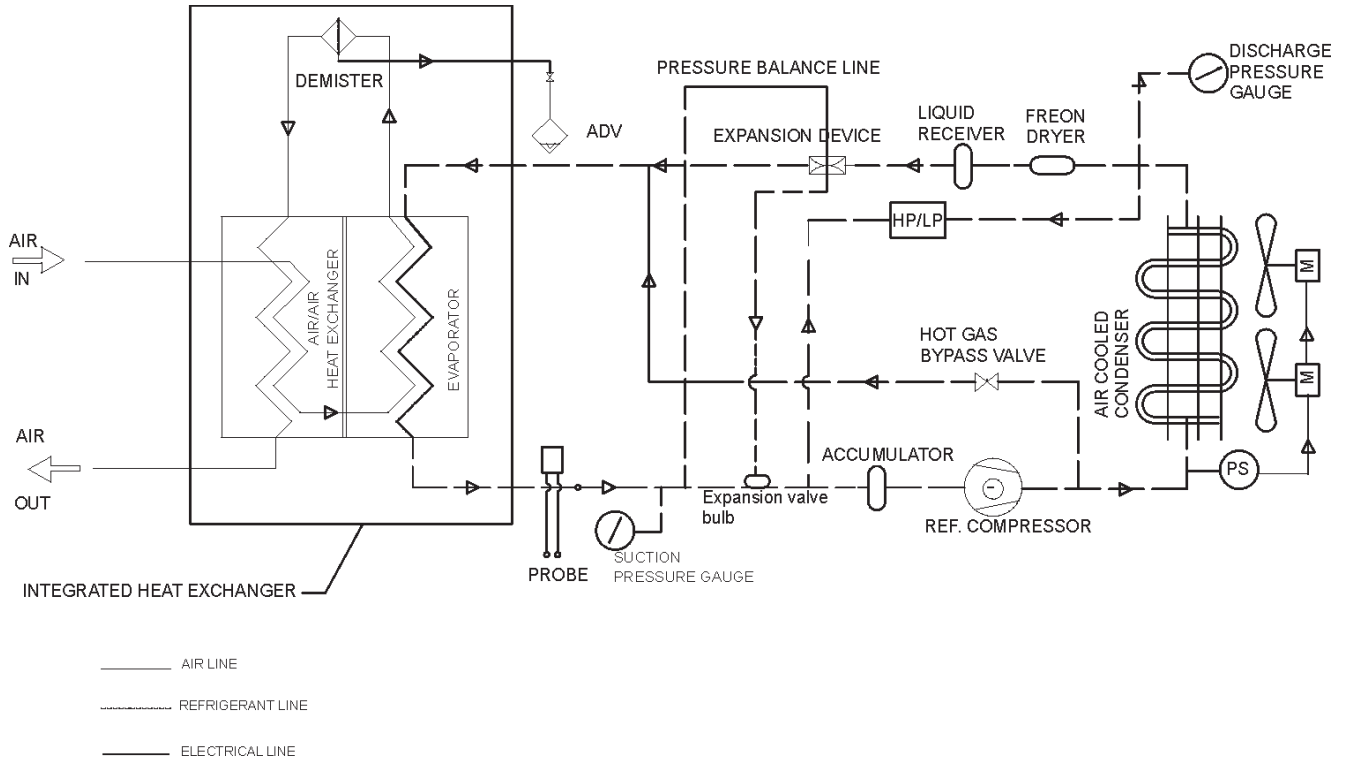
CS TID 20 - 250 P & I DIAGRAM



CS TID 300 - 500 P & I DIAGRAM



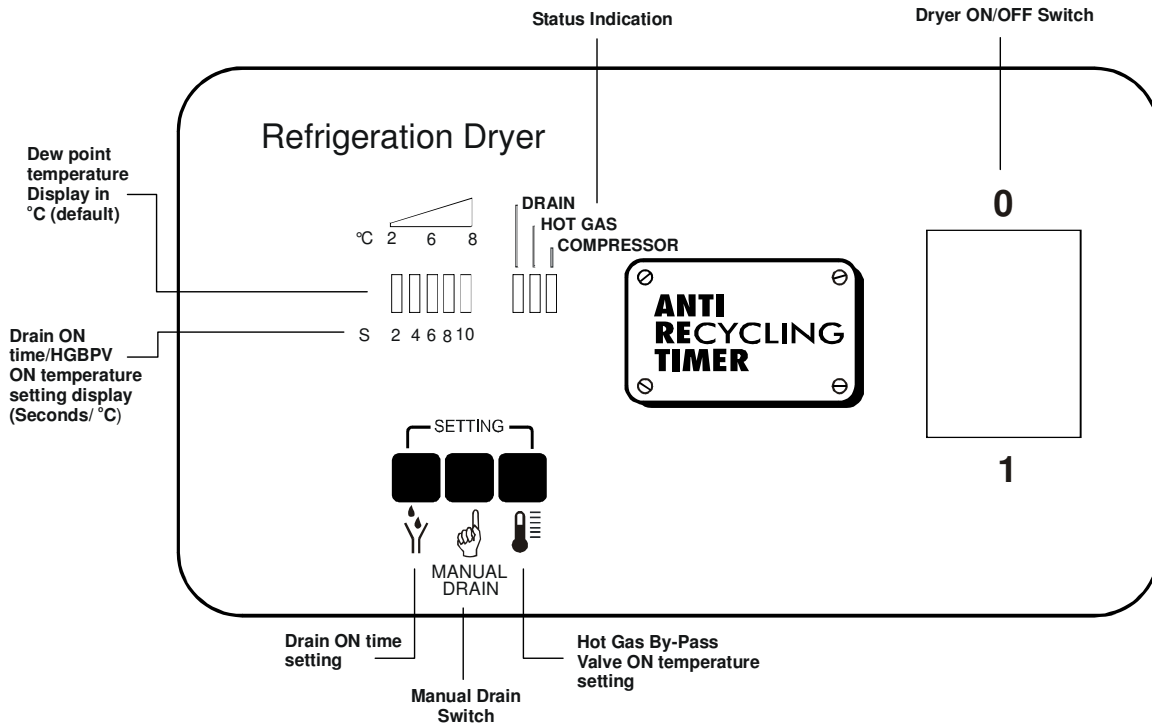
CS TID 650 - 2000 P & I DIAGRAM



INSTRUCTION MANUAL - Coldspell

4. Electrical

4.1 Bar Indicating Controller - Operation / Setting (Used upto model CS800)



Dryer ON/OFF:

The Air Dryer is switched ON/OFF using Dryer ON/OFF switch. The moment Dryer is switched ON, built in Anti-Recycling timer delays the Dryer switching ON by 2 minutes. After 2 minutes Refrigerant Compressor and Condenser Fan switches ON and Dryer starts functioning.

Status Indication:

The Status Indication LCDs shows Drain valve, Hot Gas By-Pass Valve & Compressor ON/OFF.

Dew point Indication:

The dryer dew point temperature is displayed in deg. C by default in increments of 2, starting from 2 deg C.

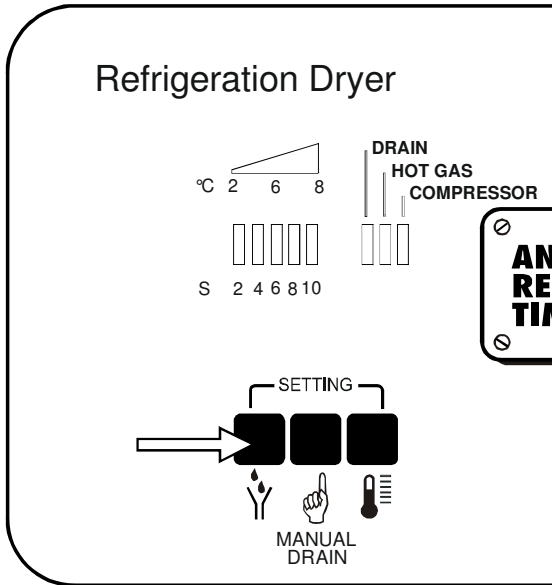
Safety Feature for Low Dew point:

The Controller comes with Built in Low dew point setting of 0°C, the moment dew point temperature reaches this lower level, the controller switches OFF the Refrigerant Compressor. After 2 minutes if the dew point temperature is greater than 0°C, refrigerant compressor switches ON automatically.

Manual Drain:

The drain valve can be manually switched ON by pressing the Manual Drain Switch. The Drain Valve will be ON till the Manual Drain Switch is released after pressing.

Drain ON time setting:



The drain valve ON time (opening period) can be set, by pressing drain ON time setting button as shown in figure, pressing once will show the current setting in seconds in the display, pressing again will shift the time in increments of 2 seconds, and can be seen in Drain ON time setting display in seconds. Drain valve cycles on a fixed time of 2 minutes. The moment Drain ON time setting switch is released, after few seconds the dryer display returns to normal function.

INSTRUCTION MANUAL - Coldspell

4.2 LCD Controller - Operation / Setting (For CS1000 and above)

Introduction:

The controller is used in Coldspell models from CS 1000 and above. The controller default display is dew point temperature, Inlet temperature of the compressed air, Compressor running hours.

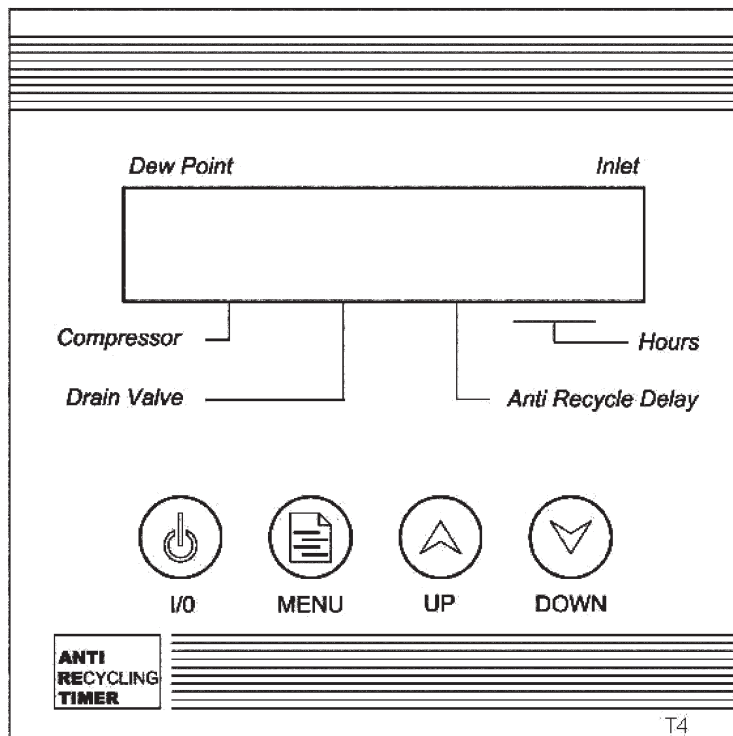
Available Keys:

I/O
MENU
UP
DOWN

- Default display is dew point temperature, inlet temperature of the compressed air.
- Compressor running hours are displayed at the right bottom corner of the display.

Menus available:

1. Drain valve ON/OFF cycle settings.
3. Compressor offset temperature settings.



How to ON/OFF the Dryer:

- Press I/O button for one second to ON the dryer/controller.
- The Refrigeration compressor will switch ON after 2 minutes due to Anti Recycle Timer.
- If the compressor trip occurs, the refrigeration compressor will switch ON after 2 minutes.
- Press I/O button for two seconds to switch OFF the dryer/controller.

Menu Setting:

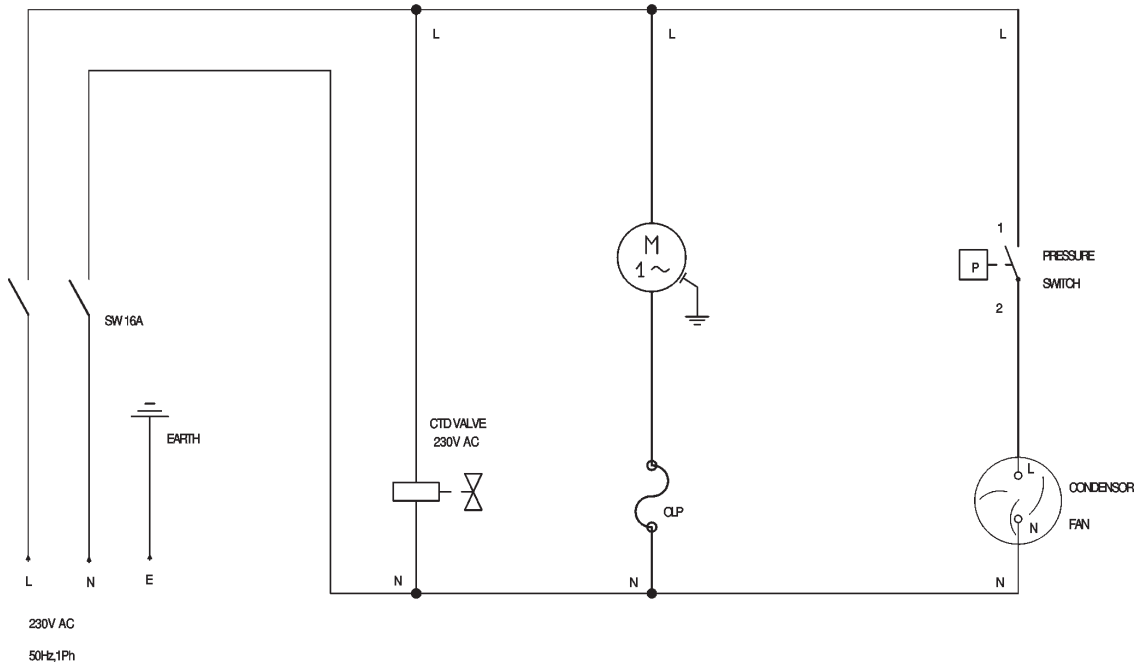
- To move from one menu to other, press MENU key.
- Press up & down keys to increase or decrease setting valves.

Features In Front Panel:

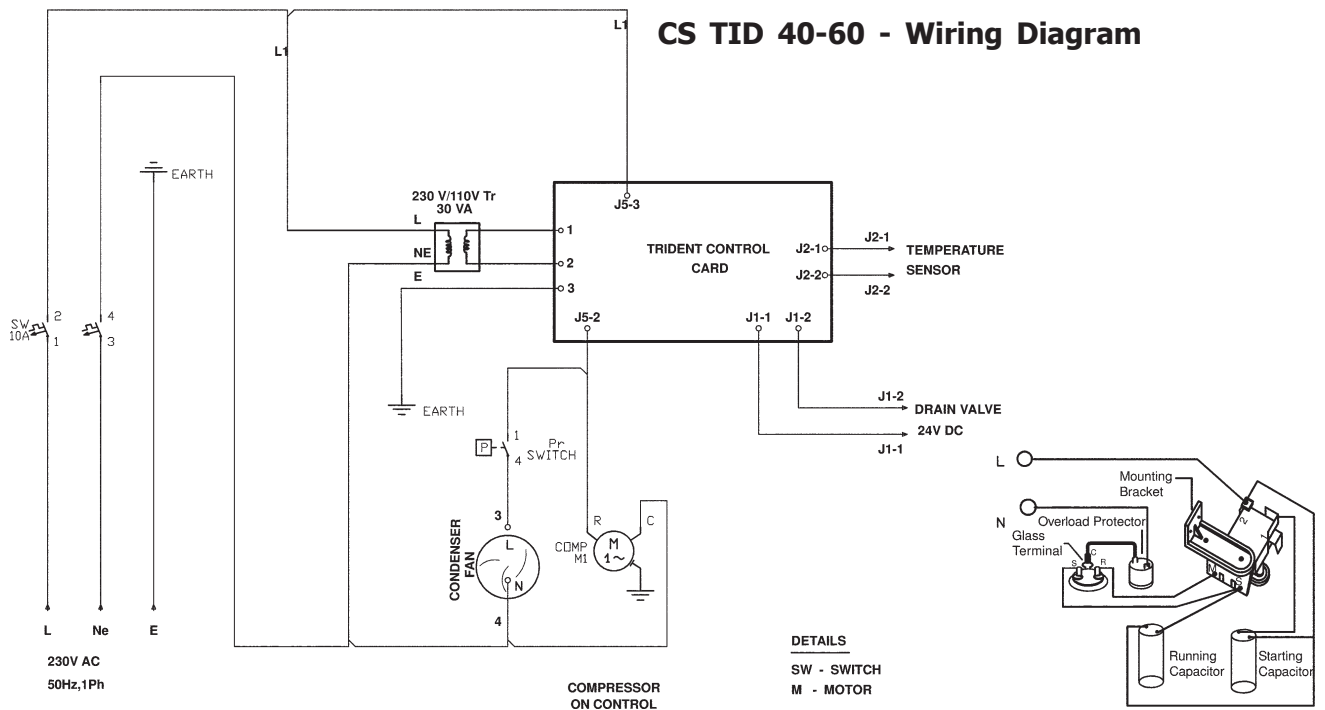
- Compressor ON
- Drain valve ON
- Anti Recycle Delay

4.3 Wiring Diagram

CS TID 20 - Wiring Diagram

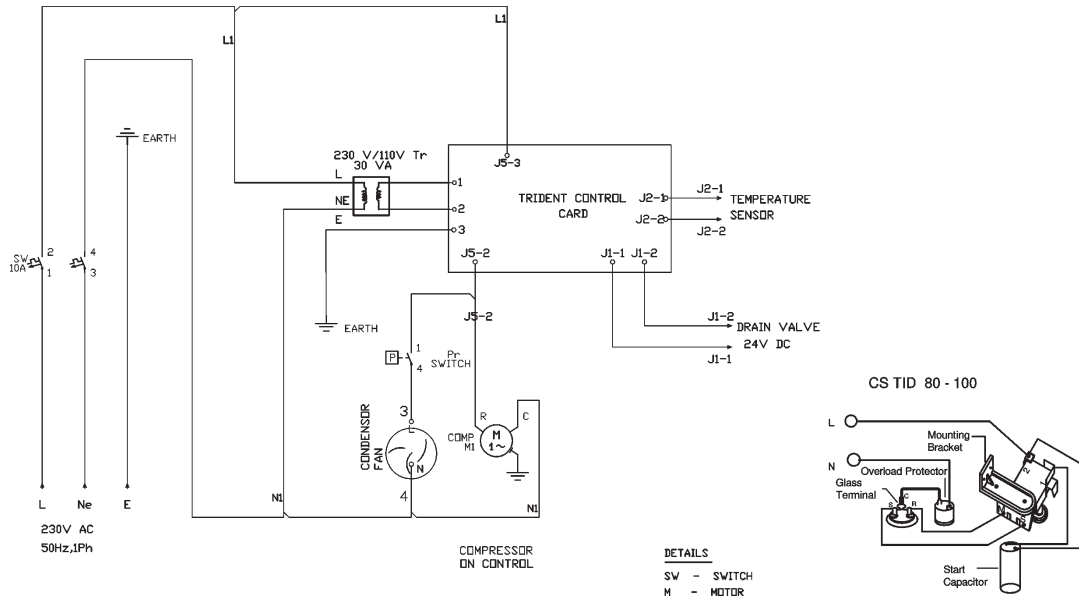


CS TID 40-60 - Wiring Diagram

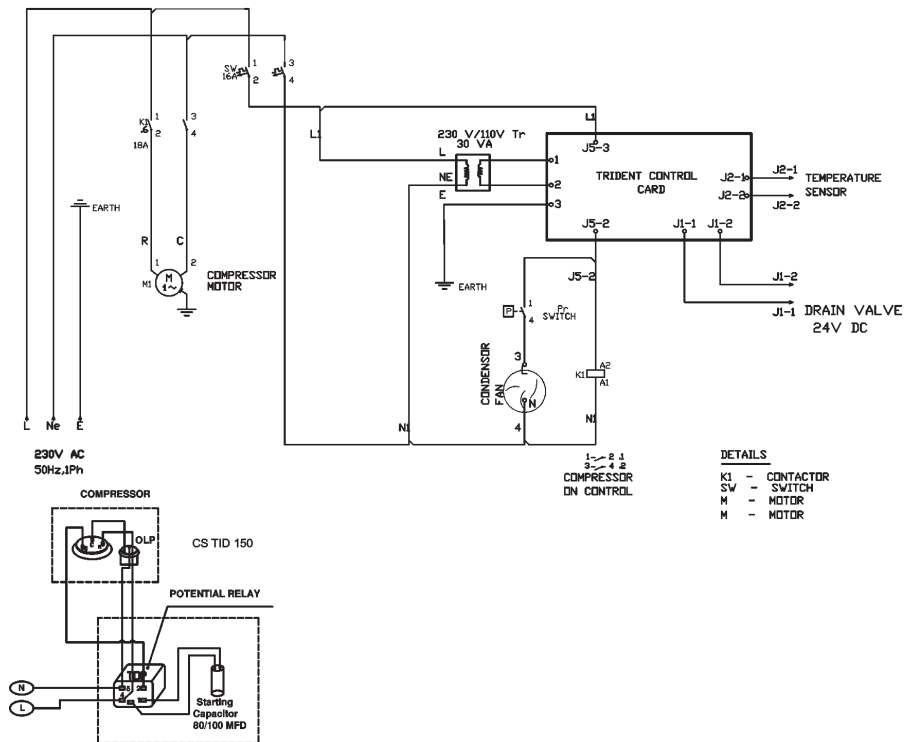


INSTRUCTION MANUAL - Coldspell

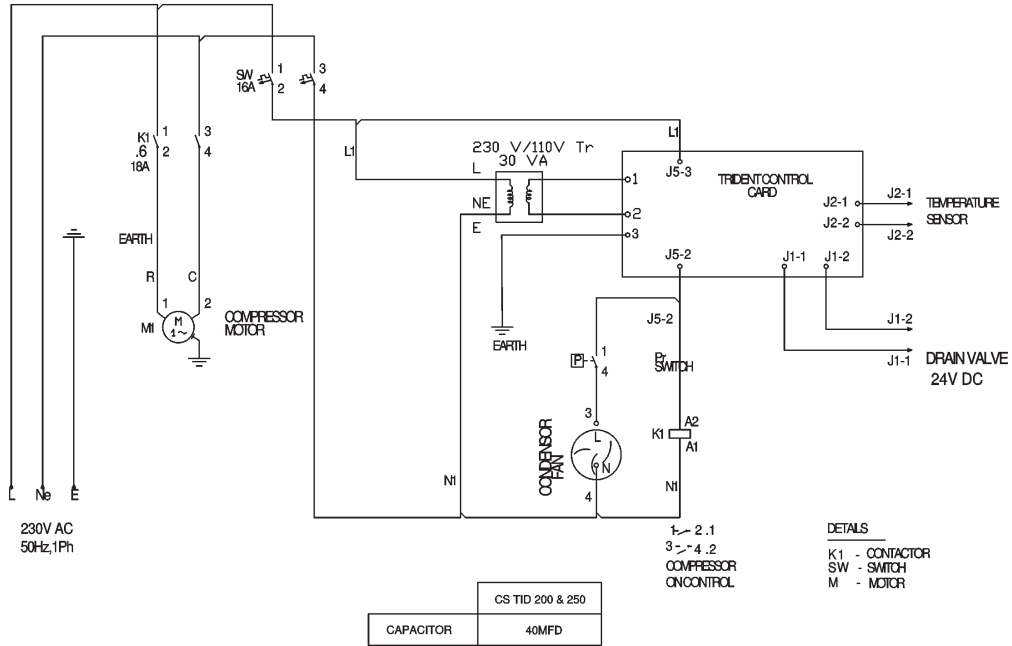
CS TID 80 - 100 - Wiring Diagram



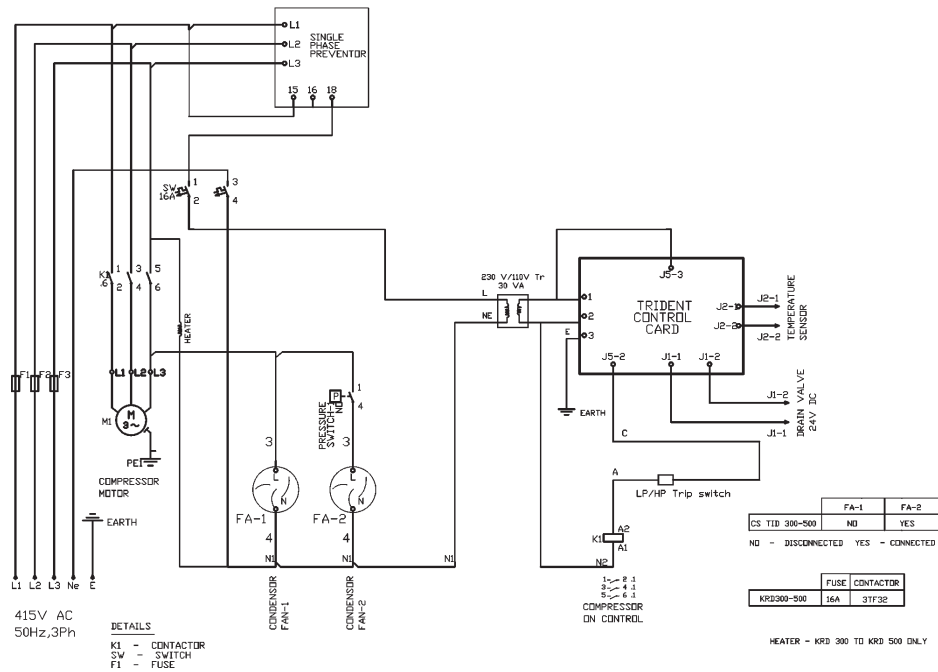
CS TID 150 - Wiring Diagram



CS TID 200 - 250 - Wiring Diagram

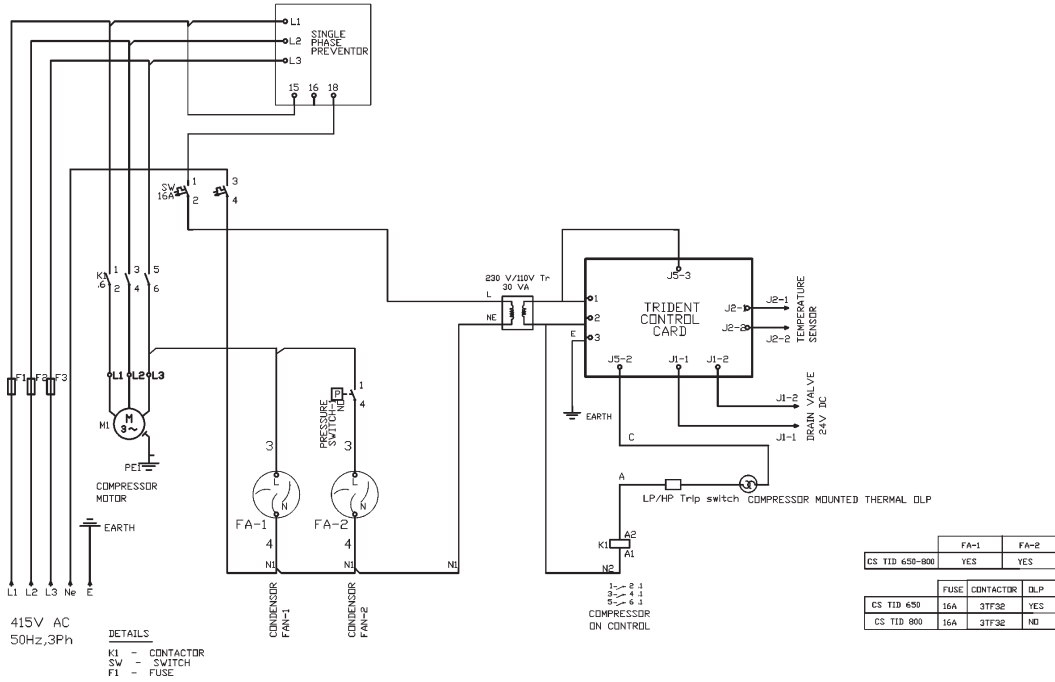


CS TID 300 - 500 - Wiring Diagram

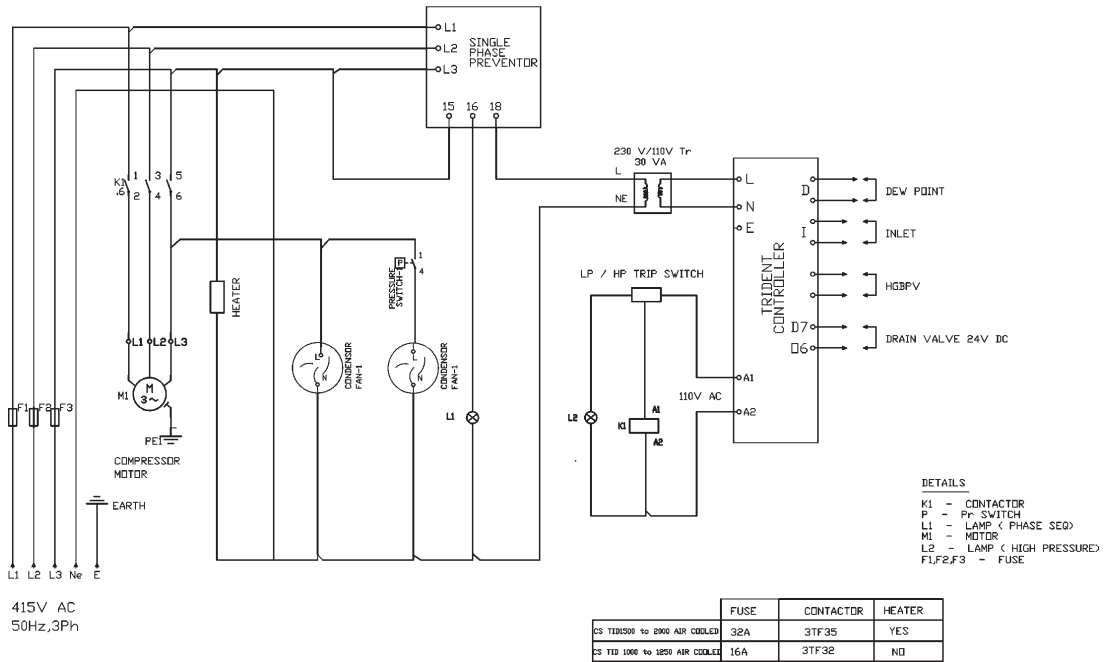


INSTRUCTION MANUAL - Coldspell

CS TID 650 - 800 - Wiring Diagram



CS TID 1000 - 2000 - Wiring Diagram



5. Installation



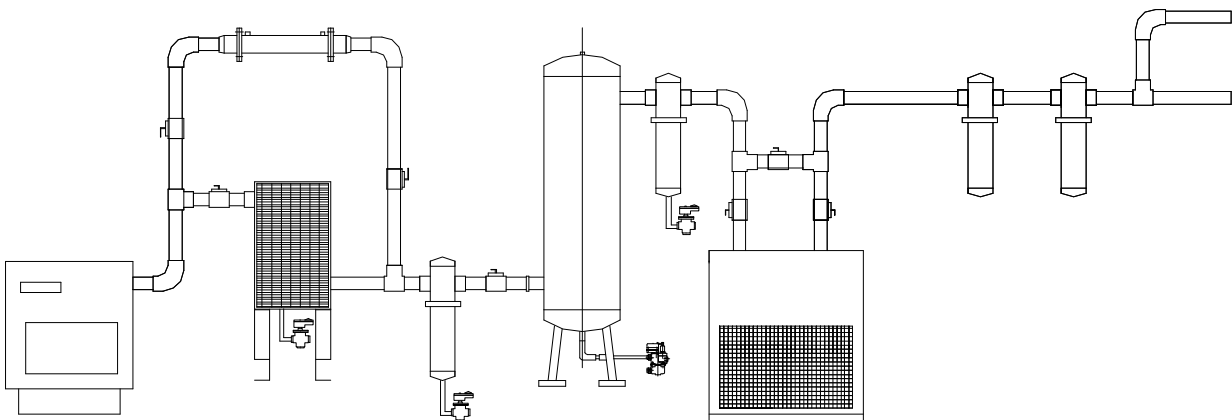
Various risks (crushing, explosion, projection, noise,...): The installation operations described in this chapter should be performed only by personnel qualified in the installation of electro-pneumatic systems. Follow the procedure described below with care in order to prevent exposing personnel to danger.

5.1 Storage

If your dryer is to be stored for a long time before installation and use, follow these instructions.

- If possible, let the dryer remain in its original packing (In particular, products fitted with marine packing with plastic film and dessicant).
- Check that air inlet and outlet are properly blocked in order to protect the system from foreign materials.
- Check that the machine is properly protected from atmospheric dust or water.
- Check that the store is frost protected.
- Make sure to archive correctly the attached documents.

5.2 Installation and site connections



1. Install the dryer in a closed, clean and dry room protected from frost. Access to the room should be restricted to personnel not qualified in unit maintenance and operation. The room must be adequately ventilated. The dryer must not be directly exposed to sources of heat. The temperature of the room must not exceed 38°C.
2. Make sure that the dryer is not near any equipment which does not comply with the electromagnetic compatibility directives and which may degrade dryer operation. There must be a minimum distance of 1 m between the dryer and any other equipment, which uses electricity. Yellow lines demarcating the area are preferred.
3. Ensure that the dryer is installed in vertical position and kept level.
4. Fix the anchor points if necessary.
5. Install a system of by-pass valves between the dryer inlet and outlet so as to be able to service the installation without having to interrupt the compressed air supply from the network. The upstream and downstream valves must be closed during installation.
6. Connect the compressed air for processing to the dryer inlet with rust-free pipes.
7. Connect a drain pipe to the drain valve part connection (1/2" F)

INSTRUCTION MANUAL - Coldspell

8. Connect the processed compressed air to the dryer output with rust-free pipes.
9. Check that all the connectors are airtight and that the fittings are tight.

5.3 Electrical Connections

Connect the electrical power cable to the supply as specified in this manual, ensure the supply is well grounded.



Risk of electrical shock: When connecting the machine, cut off the power at the connecting point.

5.4 Running the installation



Various risks (explosion, projection, noise, ...): Do not pressurise until the installation procedure has been completed.

For water-cooled condenser, ensure that the Water pump is switched on.

Switch ON the system with the ON/OFF switch provided in the front panel of the canopy.

6. Operation

6.1 Operator

Only a minimum level of experience in handling compressed air is necessary to operate a Coldspell refrigeration dryer and he should be familiar in the following terminologies :

- Pressure in Kg/cm²
- Flow in cfm
- Dew points in °C
- Components of a fluid network: compressor, valves, drains, taps, pressure gauges, filters, tanks,...

6.2 How to stop the dryer



Various risks (projection, explosion, noise,...) : Whenever working on the dryer, it is essential to disconnect it from the network. Follow the procedure below :

1. Open the by-pass valve
2. Close the upstream valve
3. Close the downstream valve
4. Switch off the Dryer
5. Vent the air inside the dryer

7. Maintenance



Various risks (projection, noise, ...) : This operation should be performed by professionals of Refrigeration.

Trident make Refrigeration dryers are robust, reliable machines. To ensure uninterrupted, problem-free operation, regularly perform the inspections below.

Type of inspection	Discharge pressure in refrigerant line	Drain valve	Air Cooled condenser surface cleaning	Water cooled condenser cleaning using dilute HCL	Inlet temperature	Dew point temperature
Visual	D	D	W	Y	D	D
Spares replacement	-	-	-	-	-	-
Cleaning	-	H/R	M	Y/R	-	-

D - Daily W - Weekly M - Monthly H - Half Yearly Y- Yearly R - As required

* Note : For water cooled condenser clean the condenser by recirculating dilute HCl if discharge pressure exceeds the value specified in Table 7.1.

Table 7.1

Freon	Discharge pressure in psig
R134a	160-200
R407c	240-320

INSTRUCTION MANUAL - Coldspell

8. Condenser cleaning

8.1 Air Cooled

- Switch OFF the dryer
- Open the side doors, so that all dust removed while cleaning can be vented out of dryer through the side doors.
- Using compressed air and an air gun clean the dust accumulated on the condenser fins from outside the dryer.
- Ensure that there is no dust inside the dryer and reassemble the doors.

8.2 Water Cooled

- Switch OFF the dryer
- Stop the water supply and close the inlet and outlet valves of the water supply
- Open the door covering the condenser.
- Drain the water completely.
- Pass dilute HCl solution in the tube side at pressure for more than 1 hour
- Reassemble all and switch ON the dryer.

9. Amount of Gas to be charged

Sl. No.	Model	Refrigerant	Quantity of refrigerant to be charged (in Kg)
1	20	R134a	0.5
2	40	R134a	0.75
3	50/60	R134a	0.75
4	80	R134a	1.0
5	100	R134a	1.0
6	150	R134a	1.4
7	200	R134a/R407C	1.9/2.2
8	250	R134a/R407C	1.9/2.2
9	300	R134a	3.2
10	400	R134a	3.4
11	500	R134a	3.7
12	650	R407C	7.0
13	800	R407C	7.2
14	1000	R407C	8.3
15	1250	R407C	9.0
16	1500	R407C	10.5
17	2000	R407C	11.0

This is for information only. If in doubt, contact Trident.

10. Repair work

Trouble	Root cause	Solution
GENERAL SECTION		
Dryer not Switching ON. (No indications on the controller)	<ol style="list-style-type: none"> 1. Loose Wiring Connections 2. Phase Preventer Trip (3 phase models) 3. Fuse Blown(3phase models) 4. Dryer ON/OFF switch failure. 	<ol style="list-style-type: none"> 1. Correct the wiring. 2. Check the input voltage,phase reversal. 3. Replace the fuse 4. Replace the Switch
Air Pressure Drop (>0.3barg). [Across the Dryer]	<ol style="list-style-type: none"> 1. Compressed air to the dryer IN/OUT interchanged. 2. Air Flow to the dryer exceeds its rated flow. 3. Ice formation happens at the Air path inside the heat exchanger due to freezing. 4. Drain Valve Clogged. 5. Heat Exchanger Clogged. 	<ol style="list-style-type: none"> 1. Make the connections correctly. 2. Operate the dryer below its rated load. 3. Increase the suction pressure of the refrigerant. 4. Clean the drain valve. 5. Flush the Heat Exchanger with compressed air.
Moisture carryover at the dryer outlet.	<ol style="list-style-type: none"> 1. Excess water enters at the dryer inlet than specified. 2. Drain Valve(Heat Exchanger) not working. 3. Excess load given to dryer than its rated specifications. 4. Air line bypass valve partially open. 5. Refrigeration Compressor not working. 	<ol style="list-style-type: none"> 1. Ensure Air receiver tank with drain valve installation before the dryer. 2. Check and repair the drain valve. 3. Operate the dryer below the its rated capacity. 4. Completely close the bypass valve. 5. Check and correct the compressor.
High Dewpoint Temperature (>7°C)	<ol style="list-style-type: none"> 1. Excess load to dryer than rated. 2. High Suction Pressure. 3. Refrigerant charge quantity is insufficient. 4. High Superheat setting on the expansion valve. 5. Temperature probe malfunction. 	<ol style="list-style-type: none"> 1. Operate the dryer below its rated capacity. 2. Reduce the suction pressure using HGBV. 3. Charge sufficient quantity of refrigerant. 4. Reduce the superheat setting in the expansion valve. 5. Replace the probe.
Low Dewpoint Temperature (<3°C)	<ol style="list-style-type: none"> 1. Low load to dryer. 2. Low Suction Pressure. 3. Low superheat setting on the expansion valve. 4. Temperature probe malfunction. 	<ol style="list-style-type: none"> 1. Operate the dryer below its rated capacity. 2. Increase the suction pressure using HGBV. 3. Increase the superheat setting in the expansion valve. 4. Replace the probe.
REFRIGERANT SECTION		
High Suction Pressure & High Discharge Pressure	<ol style="list-style-type: none"> 1. Refrigerant overcharge. 2. Excess load to the dryer. 3. Hot Gas Bypass Valve setting high. 4. Condenser coil is clogged. 5. Heat Exchanger Leak(internal). 	<ol style="list-style-type: none"> 1. Charge the refrigerant with reference to compressor current. 2. Operate the dryer below its rated capacity. 3. Adjust the HGBV setting to reduce the suction pressure. 4. Clean the condenser coil surface. 5. Replace the Heat Exchanger.

INSTRUCTION MANUAL - Coldspell

Trouble	Root cause	Solution
High Suction Pressure & Low Discharge Pressure	<ol style="list-style-type: none"> 1. Hot Gas Bypass valve setting High. 2. HGBV failure(always remains open). 3. Low Superheat setting. 4. Compressor Pumping failure. 	<ol style="list-style-type: none"> 1. Adjust the HGBV setting to reduce the suction pressure. 2. Replace the Valve. 3. Adjust the superheat setting(increase). 4. Replace the compressor.
Low Suction Pressure & Low Discharge Pressure	<ol style="list-style-type: none"> 1. Refrigerant Charge quantity less. 2. Expansion Valve bulb charge lost. 	<ol style="list-style-type: none"> 1. Charge sufficient quantity of refrigerant. 2. Replace the Expansion Valve.
Low Suction Pressure & High Discharge Pressure	<ol style="list-style-type: none"> 1. Hot gas bypass valve setting low. 2. Filter drier partially/fully clogged. 3. Expansion valve clogged. 4. Heat Exchanger (Ref Side) clogged. 	<ol style="list-style-type: none"> 1. Adjust the HGBV Setting(increase). 2. Replace the filter drier. 3. Clean the expansion valve with dry nitrogen and reuse. 4. Flush the HX with dry nitrogen.If problem exists replace the HX.
Compressor takes High Current	<ol style="list-style-type: none"> 1. Voltage imbalance or higher voltage exists. 2. Compressor relay,capacitor fails. 3. Refrigerant not reaches its idle pressure before starting(R407C). 4. Loose wiring. 5. Compressor failure. 	<ol style="list-style-type: none"> 1. Check and correct the voltage. 2. Replace necessary compressor accessories. 3. Allow the refrigerant to reach its idle pressure before the compressor starts. 4. Correct the wiring. 5. Replace the compressor.
Compressor takes Low Current	<ol style="list-style-type: none"> 1. Refrigerant charge quantity very less. 2. Compressor pumping failure 	<ol style="list-style-type: none"> 1. Charge sufficient quantity of refrigerant. 2. Replace the Compressor.
Compressor not starting.	<ol style="list-style-type: none"> 1. Loose wiring connection. 2. External OLP trip due to overheating(1phase models). 3. Internal OLP trip due to overheating (3phase models). 4. Relay,Capacitor.OLP failure. 5. Dewpoint Temperature lies between -3°C to 0°C. 6. HP/LP Switch trip. 	<ol style="list-style-type: none"> 1. Check and correct wiring. 2. Allow the compressor body temperature to cool until it reaches ambient. 3. Allow the compressor body temperature to cool until it reaches ambient 4. Replace 5. Adjust the HGBV to increase the dewpoint temperature to safe limit. 6. Reset the switches.
Compressor trips on LP Pressure switch	<ol style="list-style-type: none"> 1. Low suction pressure setting in the HGBV. 2. Trip pressure setting kept high in LP Switch. 3. No refrigerant gas inside the system. 	<ol style="list-style-type: none"> 1. Increase the Suction pressure using HGBV. 2. Set the trip pressure correctly. 3. Check and arrest the leak before charging the refrigerant in the system.
Compressor trips on HP Pressure switch	<ol style="list-style-type: none"> 1. Adjust the HGBV Setting (increase). 2. Replace the filter drier. 3. Clean the expansion valve with dry nitrogen and reuse. 4. Flush the HX with dry nitrogen.If problem exists replace the HX. 	<ol style="list-style-type: none"> 1. Check and correct it. 2. Replace the switch. 3. Clean the condenser surface. 4. Set the trip pressure correctly.

Trouble	Root cause	Solution
Compressor trips on OverLoad Protector (OLP) [compressor body too hot].	1. Compressor Internal winding overheated.	1. Allow the compressor body to cool until it reaches ambient temperature.
Compressor winding Overheated.	1. High current consumption by the compressor. 2. Liquid floodback to the compressor(Lubrication failure).	1. Check and correct it. 2. Check and adjust the superheat setting in the expansion valve.
Condenser Fan not running	1. Loose wiring. 2. Fan motor ronning capacitor failure. 3. Fan motor failure.	1. Check and correct it. 2. Replace the capacitor. 3. Replace the fan.
Pressure switches not working	1. Loose wiring connections. 2. No input supply to the switch. 3. Pressure switch failure.	1. Check and correct it. 2. Check and correct it. 3. Replace the switch.
Transformer not working	1. Loose wiring. 2. Wrong input supply. 3. Transformer failure due to manufacturing defect or higher voltage.	1. Check and correct it. 2. Check and correct it. 3. Replace the Transformer.
Drain Valve failure	1. Clogging due to no installation of Prefilter at dryer inlet(Dust entrainment). 2. Coil failure due to input voltage of manufacturing defect.	1. Ensure prefilter before the dryer,if the dryer environment is dusty. 2. Replace the coil.
Phase Preventer Trip	1. Loose Wiring. 2. Inputs to preventer wrongly connected. 3. Under voltage, Over voltage,phase reversal, phase loss exists. 4. Preventer problem.	1. Check and correct it. 2. Connect the inputs properly. 3. Check and correct it. 4. Replace the problem.

INSTRUCTION MANUAL - Coldspell

11. Recommended spares for 5 years trouble free operation

Recommended Spare List - CS TID 20 [PH191]

Sl.No	Part No	Description
1	CH113	Freon Drier 1/4"
2	CH004	Capillary Tube 0.055"
3	CC022	Pressure Gauge 0-500Psig
4	CE603	Dewpoint display
5	CE599	Rocker Switch (illumination)
6	AD1151	Integrated HX A5
7	CH238	Hotgas bpass valve-ADRIE (0-75)
8	CH321	Condenser Cover 11" X 10" X 2
9	CH211A	Compressor KCE419HAG
10	CH163	Switch Pressure (R134a)
11	CH387	Fan Motor
12	PE067	CTD 11B (4mm Orifice)

Recommended Spare List - CS TID 50 [PH193]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH458	Compressor KFE 444HAG/ECZ444HG
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD582	Integrated HX-Model A2
7	CH113	Freon Drier 1/4"
8	CH004	Capillary Tube 0.055"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH238	Expansion Valve-ADRIE (0-75)
12	CE646	Transformer 30VA

Recommended Spare List - CS TID 40 [PH192]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Switch Pressure (R134a)
3	CH457	Compressor KFE 432HAG/ECZ431HG
4	CE599	Rocker Switch
5	CE022	Pressure Gauge 0-500Psig
6	AD582	Integrated HX A2
7	CH113	Freon Drier 1/4"
8	CH004	Capillary Tube 0.055"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH238	Expansion Valve-ADRIE (0-75)
12	CE646	Transformer 30VA

Recommended Spare List - CS TID 60 [PH194]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH458	Compressor KFE 444HAG/ECZ444HG
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD582	Integrated HX-Model A2
7	CH113	Freon Drier 1/4"
8	CH004	Capillary Tube 0.055"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH238	Expansion Valve-ADRIE (0-75)
12	CE646	Transformer 30VA

11. Recommended spares for 5 years trouble free operation

Recommended Spare List - CS TID 80 [PH195]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CE514	Compressor KCJ467HAG
4	CH315	Fan Motor
5	CE599	Rocker Switch
6	CC022	Pressure Gauge 0-500Psig
7	AD581	Integrated HX-Model A0
8	CH113	Freon Drier 1/4"
9	CH004	Capillary Tube 0.055"
10	CE575	Bar Indicator Controller
11	CE459	NTC Dewpoint Probe
12	CH238	Expansion Valve-ADRIE (0-75)
13	CE646	Transformer 30VA

Recommended Spare List - CS TID 150 [PH197]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH072	Compressor KCJ498HAG
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD535	Integrated HX-Model B0
7	CH113	Freon Drier 1/4"
8	CE575	Bar Indicator Controller
9	CE459	NTC Dewpoint Probe
10	CH238	Expansion Valve-ADRIE (0-75)
11	CH004	Capillary tube 0.055"
12	CE646	Transformer 30VA
13	CD020	Ball Valve 1/2"
14	CE515	Contactactor 16Amps
15	CH359	Fan Motor
16	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 100 [PH196]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CE514	Compressor KCJ467HAG
4	CH315	Fan Motor
5	CE599	Rocker Switch
6	CC022	Pressure Gauge 0-500Psig
7	AD581	Integrated HX-Model A0
8	CH113	Freon Drier 1/4"
9	CH004	Capillary Tube 0.055"
10	CE575	Bar Indicator Controller
11	CE459	NTC Dewpoint Probe
12	CH238	Expansion Valve-ADRIE (0-75)
13	CE646	Transformer 30VA

Recommended Spare List - CS TID 200 [PH198]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH204	Compressor RE277VHSMT
4	CE564	Capacitor 40MFD 440V
5	CE599	Rocker Switch
6	CC022	Pressure Gauge 0-500Psig
7	AD535	Integrated HX-Model B0
8	CH215	Freon Drier 3/8"
9	CH004	Capillary tube 0.055"X2.2m
10	CE575	Bar Indicator Controller
11	CE459	NTC Dewpoint Probe
12	CH238	Expansion Valve-ADRIE (0-75)
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH250	Fan Motor
17	AD556	Drain Valve-1/2"

INSTRUCTION MANUAL - Coldspell

11. Recommended spares for 5 years trouble free operation

Recommended Spare List - CS TID 250 [PH199]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH204	Compressor RE277VHSMT
4	CE564	Capacitor 40MFD 440V
5	CE599	Rocker Switch
6	CC022	Pressure Gauge 0-500Psig
7	AD535	Integrated HX-Model B0
8	CH215	Freon Drier 3/8"
9	CH004	Capillary tube 0.055"X2.2m
10	CE575	Bar Indicator Controller
11	CE459	NTC Dewpoint Probe
12	CH238	Expansion Valve-ADRIE (0-75)
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH250	Fan Motor
17	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 400 [PH170]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH196	Compressor KCM519CAL
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD596	Integrated HX-Model C0
7	CH215	Freon Drier 3/8"
8	CE575	Bar Indicator Controller
9	CE459	NTC Dewpoint Probe
10	CH496	Expansion Valve-TEN 2
11	CH426	Expansion Valve Orifice 3mm
12	CH106	Hot Gas KVC-12
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH517	Fan Motor
17	CH491	Low Pressure Trip Switch-KP1
18	CH492	High Pressure Trip Switch-KP5
19	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 300 [PH169]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH508	Compressor KCM514CAL
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD596	Integrated HX-Model C0
7	CH215	Freon Drier 3/8"
8	CE575	Bar Indicator Controller
9	CE459	NTC Dewpoint Probe
10	CH496	Expansion Valve-TEN 2
11	CH426	Expansion Valve Orifice 3mm
12	CH106	Hot Gas KVC-12
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH278	Fan Motor
17	CH491	Low Pressure Trip Switch-KP1
18	CH492	High Pressure Trip Switch-KP5
19	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 500 [PH171]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH163	Pressure Switch (R134a)
3	CH196	Compressor KCM519CAL
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	AD596	Integrated HX-Model C0
7	CH215	Freon Drier 3/8"
8	CE575	Bar Indicator Controller
9	CE459	NTC Dewpoint Probe
10	CH496	Expansion Valve-TEN 2
11	CH426	Expansion Valve Orifice 3mm
12	CH106	Hot Gas KVC-12
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH517	Fan Motor
17	CH491	Low Pressure Trip Switch-KP1
18	CH492	High Pressure Trip Switch-KP5
19	AD556	Drain Valve-1/2"

11. Recommended spares for 5 years trouble free operation

Recommended Spare List - CS TID 650 [PH186]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH226	Compressor NE56YDNMT
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	CC468	Pressure Gauge-suction 0-300psig
7	AD596	Integrated HX-Model C0
8	CH382	Freon Drier 1/2"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH374	Expansion Valve-TEZ 2
12	CH431	Expansion Valve Orifice 4mm
13	CH106	Hot Gas KVC-12
14	CE646	Transformer 30VA
15	CD020	Ball Valve 1/2"
16	CE515	Contactora 16Amps
17	CH278	Fan Motor
18	CH491	Low Pressure Trip Switch-KP1
19	CH492	High Pressure Trip Switch-KP5
20	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 1000 [PH188]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH225	Compressor BE82YFEMT
4	CC022	Pressure Gauge 0-500Psig
5	CC468	Pressure Gauge suction 0-300Psig
6	CE599	Rocker Switch
7	AD596	Integrated HX-Model C0
8	CH308	Freon Drier 5/8"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH374	Expansion Valve-TEZ 2
12	CH427	Expansion Valve Orifice 5mm
13	CH125	Hot Gas KVC-15
14	CE646	Transformer 30VA
15	CD020	Ball Valve 1/2"
16	CE515	Contactora 16Amps
17	CH517	Fan Motor
18	CH491	Low Pressure Trip Switch-KP1
19	CH492	High Pressure Trip Switch-KP5
20	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 800 [PH187]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH225	Compressor BE82YFEMT
4	CE599	Rocker Switch
5	CC022	Pressure Gauge 0-500Psig
6	CC468	Pressure Gauge suction 0-300Psig
7	AD596	Integrated HX-Model C0
8	CH308	Freon Drier 5/8"
9	CE575	Bar Indicator Controller
10	CE459	NTC Dewpoint Probe
11	CH374	Expansion Valve-TEZ 2
12	CH427	Expansion Valve Orifice 5mm
13	CH125	Hot Gas KVC-15
14	CE646	Transformer 30VA
15	CD020	Ball Valve 1/2"
16	CE515	Contactora 16Amps
17	CH278	Fan Motor
18	CH491	Low Pressure Trip Switch-KP1
19	CH492	High Pressure Trip Switch-KP5
20	AD556	Drain Valve-1/2"

Recommended Spare List - CS TID 1250 [PH189]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH230	Compressor BE96YFEMT
4	CC022	Pressure Gauge 0-500Psig
5	AD596	Integrated HX-Model C0
6	CE599	Rocker Switch
7	CH308	Freon Drier 5/8"
8	CC468	Pressure gauge suction 0-300psig.
9	AH045	LCD Controller
10	CE459	NTC Dewpoint Probe
11	CH374	Expansion Valve-TEZ 2
12	CH427	Expansion Valve Orifice 5mm
13	CH125	Hot Gas KVC-15
14	CE646	Transformer 30VA
15	CD020	Ball Valve 1/2"
16	CE515	Contactora 16Amps
17	CH522	Fan Motor
18	CH491	Low Pressure Trip Switch-KP1
19	CH492	High Pressure Trip Switch-KP5
20	AD556	Drain Valve-1/2"

INSTRUCTION MANUAL - Coldspell

11. Recommended spares for 5 years trouble free operation

Recommended Spare List - CS TID 1500 [PH190]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH523	Compressor ZR108-KCE TFD-522
4	CC022	Pressure Gauge 0-500Psig
5	CC468	Pressure gauge suction 0-300psig.
6	AD596	Integrated HX-Model C0
7	CH308	Freon Drier 5/8"
8	AH045	LCD Controller
9	CE459	NTC Dewpoint Probe
10	CH377	Expansion Valve-TEZ 5
11	CH466	Expansion Valve Orifice 2mm
12	CH381	Hot Gas KVC-22
13	CE646	Transformer 30VA
14	CD020	Ball Valve 1/2"
15	CE515	Contactactor 16Amps
16	CH522	Fan Motor
17	CH491	Low Pressure Trip Switch-KP1
18	CH492	High Pressure Trip Switch-KP5
19	AD556	Drain Valve-1/2"
20	CE599	Rocker Switch

Recommended Spare List - CS TID 2000 [PH202]

Sl.No	Part No	Description
1	AD614	Solenoid valve-24V
2	CH265	Pressure Switch (R407C)
3	CH525	Compressor ZR144-KCE TFD-522
4	CC022	Pressure Gauge 0-500Psig
5	CC468	Pressure gauge suction 0-300psig.
6	AD596	Integrated HX-Model C0
7	CE599	Rocker Switch
8	CH308	Freon Drier 5/8"
9	AH045	LCD Controller
10	CE459	NTC Dewpoint Probe
11	CH377	Expansion Valve-TEZ 5
12	CH482	Expansion Valve Orifice 3mm
13	CH381	Hot Gas KVC-15
14	CE646	Transformer 30VA
15	CD020	Ball Valve 1/2"
16	CE515	Contactactor 16Amps
17	CH526	Fan Motor
18	CH491	Low Pressure Trip Switch-KP1
19	CH492	High Pressure Trip Switch-KP5
20	AD556	Drain Valve-1/2"

Date :

INSTALLATION & COMMISSIONING REPORT FOR COLDSPELL TID		
Customer Name & Address :		Dryer model :
		Dryer serial No :
Contact Person :	Phone :	
Designation :	Mail :	
Initial check		
Notes for the service engineer :		
1	The below parameters must be checked during installation & operation.	
2	If the answer for any of the below parameters are NO, then use the Troubleshooting chart for solution.	
S.No	Parameters	(Yes/No)
During installation		
1	Is the air from the outlet of the air compressor flowing to the dryer inlet?	
2	Is there an air tank/air receiver in between the air compressor outlet & dryer inlet?	
3	Is there any air leakage at the dryer inlet & outlet connections?	
4	Is proper electrical input supply provided to the dryer from the customer side?	
5	Has the refrigerant gas pressures been idealized before starting the dryer (Check the pressure gauges)?	
6	Is the drain valve outlet hose connected?	
7	Is the dryer provided with pre-filter? Is there 1000 metre minimum clearance provided around the dryer?	
During dryer operation		
1	Is the Controller/Display switched on? (Visual observation)	
2	Is the Contactor Switch energized during refrigeration compressor operation?	
3	Does the Phase preventer switch show LED indication (yellow & red) during operation of the dryer? (only for 3-phase models)	
4	Is the refrigeration compressor working?	
5	Is there any abnormal sound from the refrigeration compressor?	
6	Is the drain valve working?	
7	Are there any leakage in the drain valve hoses?	
8	Has the condenser fan cut-ON/cut-OFF at regular intervals?	
9	Are the condenser fins & tubes free from dust?	
Observations		
Notes for the service engineer:		
1	All the parameters mentioned below must be checked.	
2	Note the values of voltage in RY in case of 1-Phase.	
3	Note the values of amperage in R in case of 1-Phase.	
4	If measured values are out of range, then use the troubleshooting chart to find the root cause & take corrective actions.	

Date :

INSTALLATION & COMMISSIONING REPORT FOR COLDSPELL TID		
Customer Name & Address :		Dryer model :
		Dryer serial No :
Contact Person :	Phone :	
Designation :	Mail :	
Initial check		
Notes for the service engineer :		
1	The below parameters must be checked during installation & operation.	
2	If the answer for any of the below parameters are NO, then use the Troubleshooting chart for solution.	
S.No	Parameters	(Yes/No)
During installation		
1	Is the air from the outlet of the air compressor flowing to the dryer inlet?	
2	Is there an air tank/air receiver in between the air compressor outlet & dryer inlet?	
3	Is there any air leakage at the dryer inlet & outlet connections?	
4	Is proper electrical input supply provided to the dryer from the customer side?	
5	Has the refrigerant gas pressures been idealized before starting the dryer (Check the pressure gauges)?	
6	Is the drain valve outlet hose connected?	
7	Is the dryer provided with pre-filter? Is there 1000 metre minimum clearance provided around the dryer?	
During dryer operation		
1	Is the Controller/Display switched on? (Visual observation)	
2	Is the Contactor Switch energized during refrigeration compressor operation?	
3	Does the Phase preventer switch show LED indication (yellow & red) during operation of the dryer? (only for 3-phase models)	
4	Is the refrigeration compressor working?	
5	Is there any abnormal sound from the refrigeration compressor?	
6	Is the drain valve working?	
7	Are there any leakage in the drain valve hoses?	
8	Has the condenser fan cut-ON/cut-OFF at regular intervals?	
9	Are the condenser fins & tubes free from dust?	
Observations		
Notes for the service engineer:		
1	All the parameters mentioned below must be checked.	
2	Note the values of voltage in RY in case of 1-Phase.	
3	Note the values of amperage in R in case of 1-Phase.	
4	If measured values are out of range, then use the troubleshooting chart to find the root cause & take corrective actions.	

S.No	Parameters	Values	Units	Range
1	Input supply to the Dryer (from Customer side)		---	1Phase / 3Phase
2	Dryer input Voltage (RY) V Refer specification chart		V	
	Dryer input Voltage (YB)			
	Dryer input Voltage (RB)			
3	Dryer running hours		hrs	--
4	Refrigerant Used		---	R134a / R407C
5	Refrigerant idle pressure (Before switching on the dryer)		psi(g)	Refer specification chart
6	Dryer inlet air flow (Check air compressor's rated flow)		cfm	< Dryer capacity
7	Dryer inlet air pressure (measured by pressure gauge)		bar (g)	6 – 16
8	Pressure drop between dryer inlet & outlet (measured by pressure gauge)		bar (g)	< 0.3
9	Dryer inlet air temperature(measured using temperature gun or temperature probe)		°C	< 45
10	Ambient temperature		°C	< 40
11	Dewpoint temperature (from dryer display)		°C	3 – 7
12	Compressor Suction Pressure (measured by pressure gauge)		psi(g)	28-33 (R134a) & 60-70 (R407c)
13	Compressor Discharge Pressure (measured by pressure gauge)		psi(g)	140-180 (R134a) & 240-320 (R407c)
14	Compressor Amperage (R) (measured by clamp meter)		A	Refer specification chart
	Compressor Amperage (Y) (measured by clamp meter)			
	Compressor Amperage (B) (measured by clamp meter)			
15	Drain Valve ON/OFF ming (measured by stopwatch)		s	--
16	Phase preventer OV & UV Setting		%	OV=5%, UV=10%
Comments :				

Customer's name and signature :

Service engineer name and signature :

Name :

Name :

Customer Feedback	
1. Poor 2. Fair 3. Good 4. V. Good 5. Excellent	
1) Have we responded fast to your enquiry?	4) How is the quality of our packing?
2) Are you happy with our order processing method?	5) Does the dryer work as per your expectation?
3) Was the delivery as promised?	6) Suggestions _____
<hr/> <hr/>	

Release date: 30th Sep 2016

S.No	Parameters	Values	Units	Range
1	Input supply to the Dryer (from Customer side)		---	1Phase / 3Phase
2	Dryer input Voltage (RY) V Refer specification chart		V	
	Dryer input Voltage (YB)			
	Dryer input Voltage (RB)			
3	Dryer running hours		hrs	--
4	Refrigerant Used		---	R134a / R407C
5	Refrigerant idle pressure (Before switching on the dryer)		psi(g)	Refer specification chart
6	Dryer inlet air flow (Check air compressor's rated flow)		cfm	< Dryer capacity
7	Dryer inlet air pressure (measured by pressure gauge)		bar (g)	6 – 16
8	Pressure drop between dryer inlet & outlet (measured by pressure gauge)		bar (g)	< 0.3
9	Dryer inlet air temperature(measured using temperature gun or temperature probe)		°C	< 45
10	Ambient temperature		°C	< 40
11	Dewpoint temperature (from dryer display)		°C	3 – 7
12	Compressor Suction Pressure (measured by pressure gauge)		psi(g)	28-33 (R134a) & 60-70 (R407c)
13	Compressor Discharge Pressure (measured by pressure gauge)		psi(g)	140-180 (R134a) & 240-320 (R407c)
14	Compressor Amperage (R) (measured by clamp meter)		A	Refer specification chart
	Compressor Amperage (Y) (measured by clamp meter)			
	Compressor Amperage (B) (measured by clamp meter)			
15	Drain Valve ON/OFF ming (measured by stopwatch)		s	--
16	Phase preventer OV & UV Setting		%	OV=5%, UV=10%
Comments :				

Customer's name and signature :

Service engineer name and signature :

Name :

Name :

Customer Feedback	
1. Poor 2. Fair 3. Good 4. V. Good 5. Excellent	
1) Have we responded fast to your enquiry?	4) How is the quality of our packing?
2) Are you happy with our order processing method?	5) Does the dryer work as per your expectation?
3) Was the delivery as promised?	6) Suggestions _____
<hr/> <hr/>	

Release date: 30th Sep 2016

COLDSPELL REFRIGERATION DRYER DATA LOG SHEET

Date	Time (Hours:Mins)	Dryer Running Period (Hours)	Dew Point Temperature (3-7°C)	Air Inlet Temperature (Less than 45°C)	Air Inlet/Outlet Pressure	Suction Pressure (Psig)**		Discharge Pressure(Psig)**	Drain Valve Working Status	Voltage (Volts)	
						R134a (25-35)	R407C (55-65)			R134a (140-180)	R407C (240-320)
(DD:MM:YY)	(Hours:Mins)	(Hours)	°C	°C	Kg/cm ²	R134a (25-35)	R407C (55-65)	R134a (140-180)	R407C (240-320)	(YES/NO)	180 to 250 380 to 450

Note :

Recommended Observation : Minimum once in a day.

If any of the observed readings are either above or below the mentioned values,contact Service Executive for immediate solution.

**Must be checked,when the dryer is in operation.

WARRANTY

Products of Trident Pneumatics Pvt. Ltd. are guaranteed to be free from defects in materials and workmanship when installed and operated in accordance with the instructions outlined in the Instruction Manual.

Trident Pneumatics Pvt. Ltd.'s obligation under this warranty shall be limited to repair or replacement (at the discretion of Trident) of defective goods returned to Trident's plant within one (1) year from the date of commissioning or 18 months from the date of invoicing which ever is occurring earlier.

Product	:	
Model	:	Refer Name Plate
Serial No.	:	
	:	

Quality Assurance Dept.

Trident Pneumatics Pvt Ltd

5/232, K.N.G Pudur Road,
Coimbatore 641 108. Ph : 0422 2400492, 2401373
e-mail : sales@tridentpneumatics.com
Website : www.tridentpneumatics.com

Trident sales and service network

Trident Pneumatics Private Limited

5/232, KNG Pudur Road, Somayampalayam P.O.
Coimbatore 641108, India
Telephone : +91-422-2400492 extension 223
Fax : +91-422-2401376
E-mail : sales@tridentpneumatics.com

Sales

A. Anil Kumar

Territory Manager - Andhra Pradesh
Mobile : +91-9885445321
E-mail : a_anilkumar@tridentpneumatics.com

Syed Yusha

Territory Manager - Mumbai
Mobile : +91-9867367726
E-mail : s_yusha@tridentpneumatics.com

Ramesh Kumar Singh

Territory Manager - Railways
Mobile : +91-9811310726
E-mail : rk_rameshkumar@tridentpneumatics.com

T. Saravanakumar

Product Manager - Drain Valves
Mobile : +91-9994978928
Telephone : +91-422-2400492 extension 216
E-mail : t_saravana@tridentpneumatics.com

Ramesh Kumar Singh

Territory Manager - Delhi
Mobile : +91-9811310726
E-mail : salesdelhi@tridentpneumatics.com

J. Nandha Kumar

Territory Manager - Tamil Nadu/Kerala
Mobile : +91-9789480564
E-mail : j_nandhakumar@tridentpneumatics.com

Service

M. Ragunath

Service Executive
Mobile : +91-8870010565
Telephone : +91-422-2400492 extension 217
E-mail : service@tridentpneumatics.com

Other Range of Products

Compressed Air Condensate
Automatic Drain Valves



CTD



LDV



EDV-X

Filters



Cleansweep



VXD-2



Air Filters

Compressed Air Dryers



Dryspell Plus



Locodry

Custom Solution Products



DP Series



DH Series



DB Series

Medical Air & Gas Products



Medical Breathing
Dryer



Nitrogen
Generator



Onsite Oxygen
Plant

TRIDENT PNEUMATICS PVT LTD

5/232, K.N.G. Pudur Road, Coimbatore - 641 108, India.

Ph : +91-422-2400492 Fax : +91-422-2401376

e-mail : sales@tridentpneumatics.com Website : www.tridentpneumatics.com