



DR10 Installation Manual

Version: 1.0

Table of contents

| | |
|---|----|
| INTRODUCTION | 3 |
| IMPORTANT: READ FIRST | 3 |
| PARTS CHECKLIST | 4 |
| PROCESS FLOW DIAGRAM | 5 |
| UNBOXING AND SETUP VIDEO | 6 |
| INSTALL & CONNECT ANCILLARY EQUIPMENT | 7 |
| OIL HEATER | 7 |
| Mokon Oil Heater | 7 |
| Sterling Oil Heater | 10 |
| CHILLER | 14 |
| VACUUM PUMP | 14 |
| MIXER | 16 |
| VARIABLE FREQUENCY DRIVE | 17 |

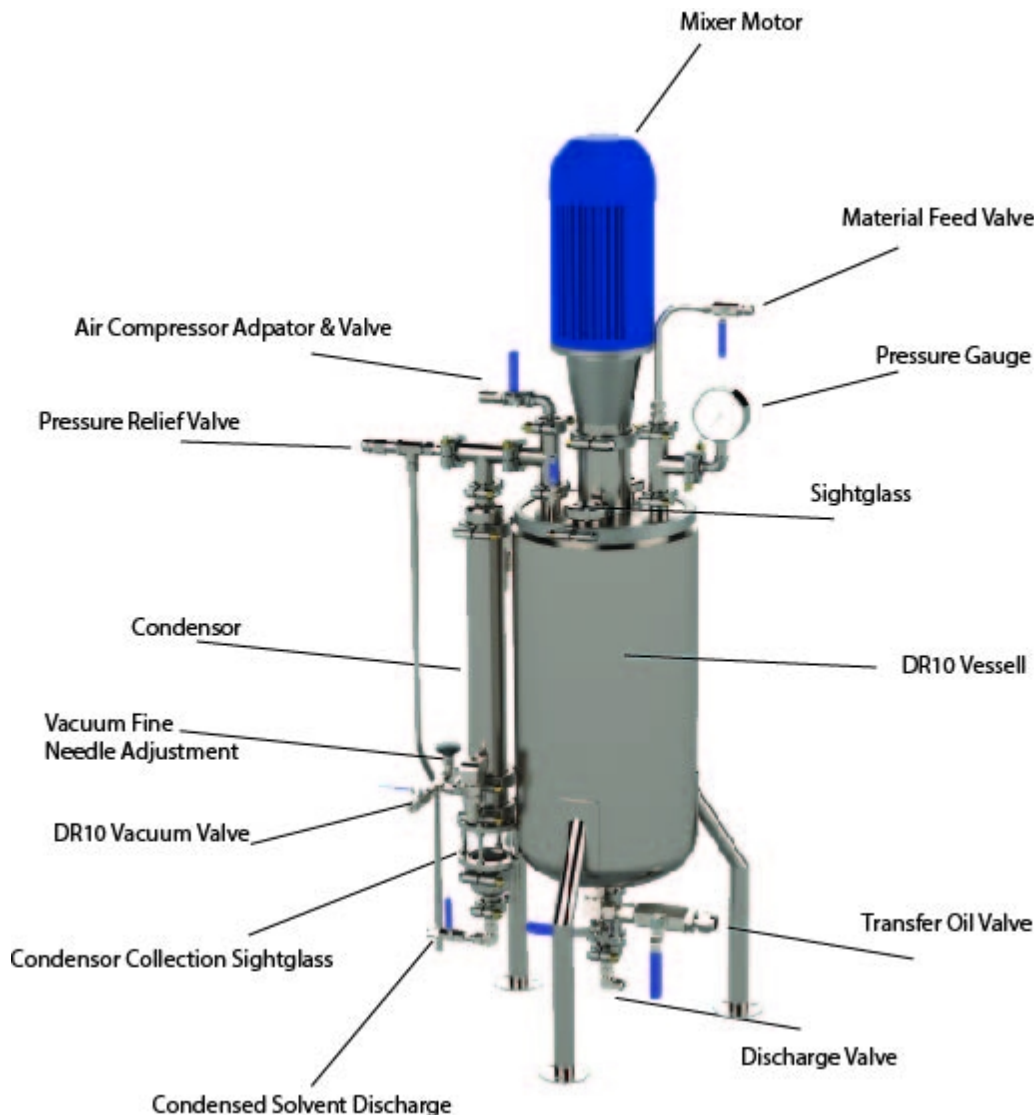
INTRODUCTION

The DR-10 Decarboxylation Reactor is capable of devolatilizing and decarbing up to 10 gallons of material per run.

Material is heated and mixed while under a low vacuum. Non-desirables will evaporate and exit from the exchanger “arm”.

The jacketed vessel is heated with an oil heater which pumps hot transfer oil through the vessel jacket. The crude material is mixed by the motor/shaft/prop set on top of the vessel. The condenser arm is cooled by a chiller unit. The system is under vacuum.

Dimensions: 36"W x 36"D x 55"H



IMPORTANT: READ FIRST

Please note that as of January 2020, TruSteel does not perform on-site installations of DR10 units. TruSteel will provide full phone and video support to help get your DR10 up and running. TruSteel will also provide guidance for operating the DR10.



The information in this packet, along with videos and manuals provides good

TruSteel maintains this packet to provide general guidance to our customers. The recommendations expressed herein represent the views only of our professional staff. They have not been reviewed or approved by any organization that developed the local electrical, fire, and plumbing codes or standards. These recommendations are based upon the best available information at the time they were written and are not intended to and do not constitute professional electrician or plumbing advice or official interpretations of any code or code provision.

Local building, fire, and energy codes govern legal requirements at the state, county, and municipal levels. They vary widely from jurisdiction to jurisdiction and can change frequently. Those local codes take precedence over TruSteel floor plans. Please consult the applicable edition of your local codes.

TruSteel expressly disclaims any liability resulting from reliance upon the recommendations or opinions expressed in this packet and makes no representations, warranties, or claims of any kind concerning the accuracy or completeness of the information presented in this packet.

PARTS CHECKLIST

☐ DR10 VESSEL ASSEMBLY

- Kevlar Cover
- Feed Assembly w/ Pressure Gauge
- Condenser Blowoff Assembly
- 1.5" Ball valve w/ Discharge Spout
- 1" Ball Valve for Heater Line

☐ CONDENSER ASSEMBLY w/ SLEEVE

☐ VACCUM BALL VALVE ASSEMBLY

☐ DISCHARGE BALL VALVE ASSEMBLY

☐ VACUUM PUMP

☐ STEEL BRAIDED LINES

- 48" x 3/4" MNPT W/ BALL VALVE
- 72" x 3/4" MNPT W/ BALL VALVE
- 60" x 1/2" TUBE STUB

☐ 3/8" BRAIDED SILICONE HOSE (10ft)

☐ (x2) 5 GAL HEATER OIL

☐ VFD w/ REMOTE

☐ 4" MIXER MOTOR



☐ MIXER SHAFT w/ PROP

☐ DATA LOGGER

☐ SMALL PARTS BOX

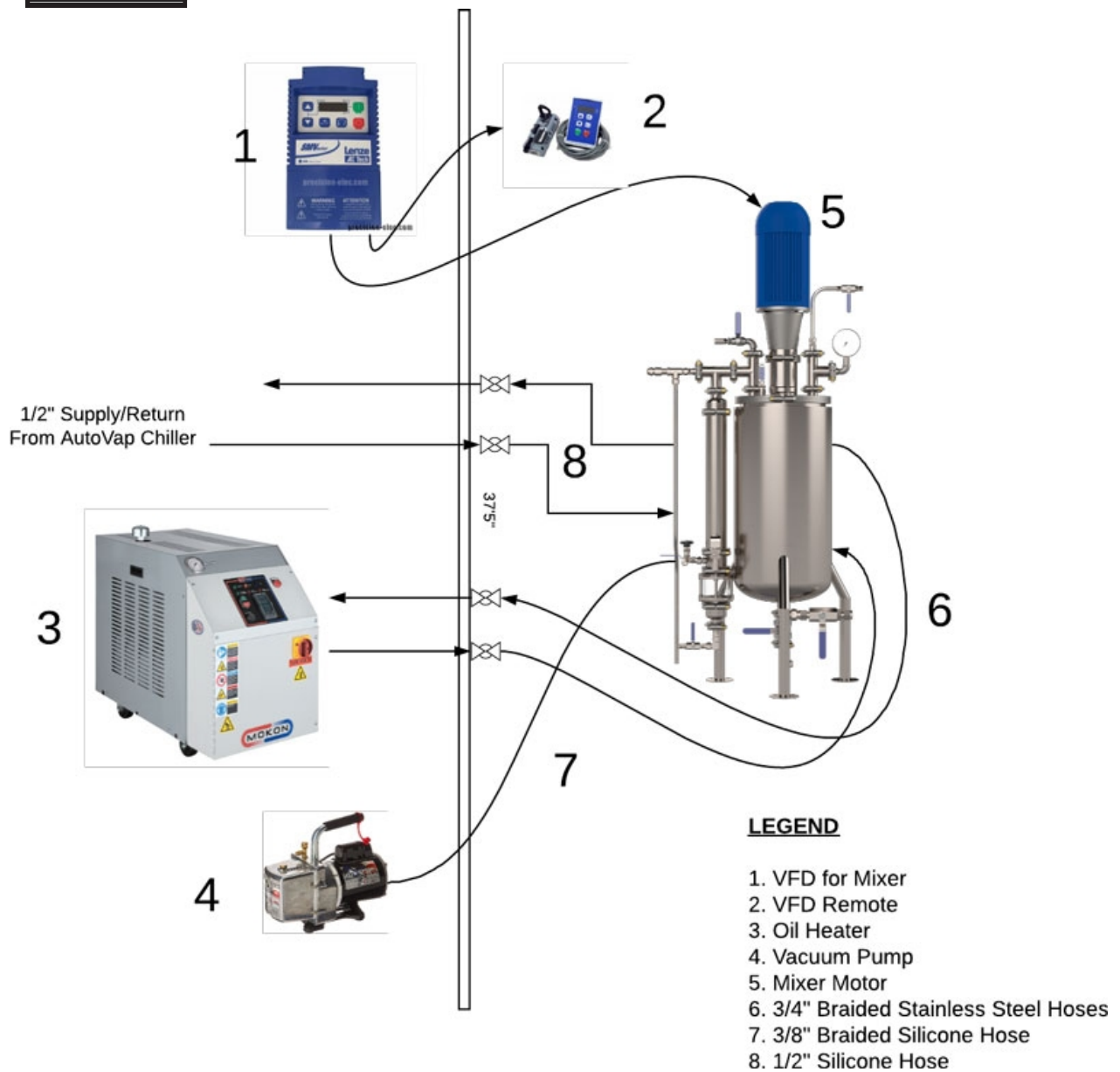
- (x6) 1/2"-1" HOSE CLAMPS
- (x1) 1 1/2" TRI CLAMPS (for condensing arm)
- (x3) 1 1/2" GASKETS
- (x1) 4" TRI CLAMPS
- (x1) KEVLAR BURN SLEEVE
- (x2) 3" GASKETS
- (x2) 4" GASKETS
- 10' THERMO COUPLE WIRE

☐ OIL HEATER

Note: Some orders may come with a separate chiller for the DR10. The Chiller may be shipped separate.

☐ CHILLER

PROCESS FLOW DIAGRAM



UNBOXING AND SETUP VIDEO



[LINK TO VIDEO \(DR10 UNBOXING AND SETUP\)](#)

INSTALL & CONNECT ANCILLARY EQUIPMENT

OIL HEATER

The DR10 has come with various models of oil heaters. All models work well with the DR10. Please verify the model issued with your DR10:

[Mokon](#)[Sterling](#)

Mokon Oil Heater

| Heater | | |
|---------------|---------------------|---------------------------|
| MODEL | ELECTRICAL | DIMENSIONS LxWxH (inches) |
| Mokon-HTF-350 | 230V/3Ph/25.40 Amps | 32 x 17 x 27 |
| Mokon-HTF-350 | 4600V/3Ph/12.7 Amps | 32 x 17 x 27 |

Technical Documents

[Mokon Install Manual](#)

Parts List

1. Oil Heater
2. 10 gallons of Mineral Oil
3. (1) 72" long 3/4" diameter braided stainless steel hose with fittings and valves
4. (1) 48" long 3/4" diameter braided stainless steel hose with fittings and valves

Setup Required by Customer

1. Determine the placement of the heater unit.
2. Plumbing setup from heater to the wall. Use 3/4" copper with NO FLUX and NO PIPE DOPE. Place the Check Valve supplied on the outlet run of the copper plumbing. See images below for a better view of the plumbing.
3. Run the 3 phase electric required to the heater.

NOTE: The DR-10 unit should close enough to the wall so that the supplied braided stainless hoses reach the unit from the wall. Please do not try to extend these hoses.

Helpful Images

Note: Pictured is a different model oil heater, but the setup is similar. No check valve is necessary with the Mokon Oil Heater.



This is a front view look at the hot mineral oil heater. Note that it is placed very close to the wall.



This is the view of the plumbing coming into the DR-10 room. The valves and braided stainless lines are provided by TruSteel.



This is the view of the plumbing on the back of the heater. Note: this models requires the check valve, the Mokon does not.

Sterling Oil Heater

| Heater | | |
|---|--|--------------------------|
| MODEL | ELECTRICAL | DIMENSIONS |
| M2B-2016-M Single Zone Midsize Hot Oil Temperature Control Unit | 230V/3Ph/60Hz Operation 33.70 amps @ 230 volt | 54"H X 18.25"W X 36.75"D |



Technical Documents

- [Specifications Manual](#)
- [Heater Drawing](#)

The heater is a hot mineral oil heater.

Parts List

1. Oil Heater
2. 10 gallons of Mineral Oil
3. 3/4" inline Check Valve
4. (1) 72" long 3/4" diameter braided stainless steel hose with fittings and valves
5. (1) 48" long 3/4" diameter braided stainless steel hose with fittings and valves

Setup Required by Customer

1. Determine the placement of the heater unit. Note: With the check valve used in the outlet line, the unit can sit on the floor. Without the check valve, the unit will need to sit on a table about 3-4 feet high.
2. Plumbing setup from heater to the wall. Use 3/4" copper with NO FLUX and NO PIPE DOPE. Place the Check Valve supplied on the outlet run of the copper plumbing. See images below for a better view of the plumbing.
3. Run the 3 phase electric required to the heater.

NOTE: The DR-10 unit should close enough to the wall so that the supplied braided stainless

hoses reach the unit from the wall. Please do not try to extend these hoses.

Helpful Images



This is a front view look at the hot mineral oil heater. Note that it is placed very close to the wall.



This is the view of the plumbing on the back of the heater. Note the check valve on the outlet side of the heater.





This is the view of the plumbing coming into the DR-10 room. The valves and braided stainless lines are provided by TruSteel.

CHILLER

NOTE: ONLY USE THIS SECTION IF YOU ARE NOT USING THE AUTOVAP CHILLER TO COOL THE DR10.

The chiller unit is used to cool the condenser “arm”.

| Chiller | | | | |
|---------------------|----------------------|-------------------------------|-----------------------------|--------------------------|
| MODEL | ELECTRICAL | DIMENSIONS L xWxH (inches) | Document | Document |
| TAEvo TECH Mini M10 | 230V/1- Phase/12A | 26 × 19 × 34 | User Manual | Brochure |

The chiller unit is used to cool the condenser “arm”.

Parts List

1. Chiller Unit
2. Connection tubing included (1/2” silicone)

Not Included:

- 1 gallon of glycol
- 10 feet of 1/2” silicone tubing (for plumbing inside room)
- Insulation for silicone tubing
- All copper plumbing and 1/2” hose barbs

Setup Required by Customer

1. Have either a plug, or a 110V wall switch (recommended) to power the chiller
2. Run copper plumbing to the 1/2” hose barbs
3. Make sure you have enough silicone hose inside the room to reach your DR-10 unit

Note: The chiller run inside the room should not be more than 5 feet.

VACUUM PUMP

| Vacuum Pump | | |
|-------------|-----------------|-------------------|
| MODAL | ELECTRICAL | DIMENSIONS |
| DV-4E-250 | 115V/1-Phase/4A | 12 × 9 × 9 inches |



Technical Documents

- [Product Brochure](#)

The Vacuum pump should be placed OUTSIDE your C1D2 room, along with your other ancillary equipment.

Parts List

1. Vacuum Pump
2. Vacuum Pump Oil (in vacuum pump box)
3. 10 feet of 1/2" braided silicone hose

Not Included:

Copper plumbing and hose barbs to go through the wall.

Setup Required by Customer

1. Have either a plug, or a 110V wall switch (recommended) to power the vacuum pump
2. Run copper plumbing to the 1/2" hose barbs

[Helpful Images](#)



A top view of the vacuum pump with braided silicone hose going to a hose barb on the wall.



Vacuum pump hose(1/2" braided silicone hose) coming into DR-10 room

MIXER

| MODEL | ELECTRICAL |
|-------------|----------------------|
| MXTCMTSDR10 | 208-230/460V, 3Phase |

This is the C1D2/C1D1 Compliant Mixer that sits on top of the DR-10 vessel.

Parts List



1. Mixer Motor
2. Shaft
3. (2) Props

Setup Required by Customer

Mount the Mixer and set up the VFD w/remote

VARIABLE FREQUENCY DRIVE

Controls the Mixer

| Variable Drive for Mixer | | |
|--------------------------|---|-----------------------|
| MODEL | ELECTRICAL | DIMENSIONS |
| ESV751NO2YXC | 200/240V – 1 or 3Ø Input (3Ø Output) – 4.2A | 3.4"H x 2.2"W x .72"D |
| ESV751N04TXB | 400/480V – 3Ø Input (3Ø Output) – 2A | 3.4"H x 2.2"W x .72"D |

The VFD (Variable Frequency Drive) supplies power to, and controls, the mixer motor. The VFD requires single phase wiring from your electrical panel to the VFD, then 3 phase wiring from the VFD to the mixer motor. TruSteel suggests placing a J-Box when containing the 3 phase wiring conduit through the wall.

Parts List

1. Lenze VFD
2. Remote Control (includes 8 feet of CAT5)

Setup Required by Customer

1. Mount VFD to wall inside NON-C1D2 room
2. Run single phase electric into the VFD.
3. Run 3 phase electric to a j-box on the wall
4. Continue 3 phase electric from j-box to where mixer will "live"
5. On day of install, electrician will be required to land wires to mixer motor



Technical Documents

Drive

- [AC Tech Lenze SMVector NEMA 4X Flyer](#)
- [AC Tech Lenze SMVector Brochure](#)
- [AC Tech Lenze SMVector Datasheet](#)
- [AC Tech Lenze SMVector Wiring Tutorial](#)
- [Lenze SMV Frequency Inverter Operating Instructions](#)
- [AC Tech Lenze SMVector 1HP CAD Drawing](#)
- [AC Tech Lenze Keypad Installation Instructions](#)
- [AC Tech Lenze SMVector EMP Programmer Operating Instructions](#)

Remote

- [SMVector Remote Keypad Installation Guide](#)
- [SMVector Flyer](#)
- [SMVector Instruction Manual](#)
- [SMVector Manual](#)