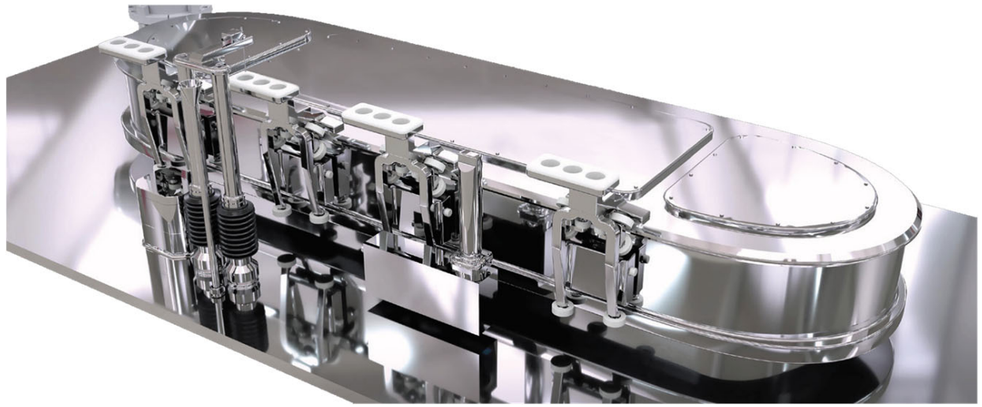
# SuperTrak PHARMA8™ Conveyance Platform Design Considerations

This document provides design considerations to keep in mind when incorporating the SuperTrak CONVEYANCE™ platform into a machine or system. It covers features, options, special requirements, and important general information for new users. This document is designed to be a quick reference. More details can be found in the Operations and Maintenance Manual (OMM), Component Data Sheets, and Design Package.

Contents:



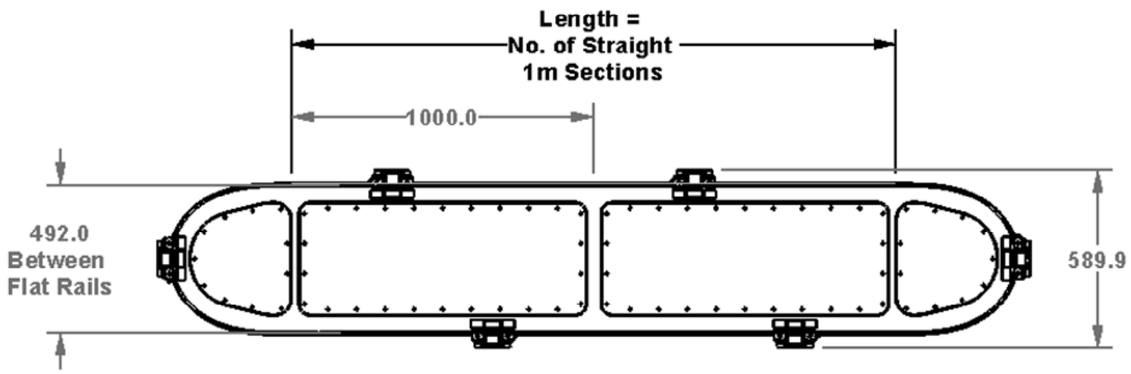


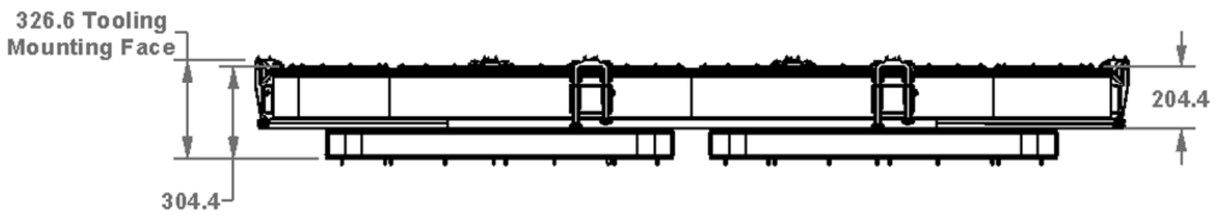
For further information, please contact us at: SuperTrak_support@supertrakconveyance.com

Other Resources:

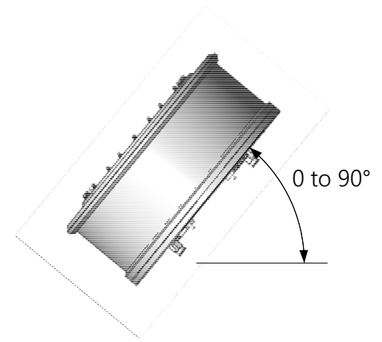
- SuperTrak PHARMA8™ Operations and Maintenance Manual
- SuperTrak PHARMA8™ Component Data Sheets
- SuperTrak PHARMA8™ Design Package – 2024-08.zip
- Ask about our SuperTrak Academy™ training program

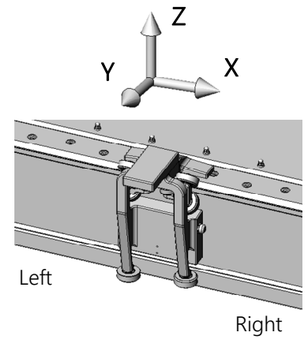
# 1. System




System Limitations:
Max Number of Shuttles: as many as physically fit
Max Payload: 8.5kg
Max Shuttle Tooling Width: 1000mm

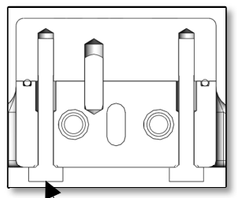



Note: All dimensions are for reference only. Consult the SuperTrak Design Package for dimensions and tolerances. All dimensions in millimeters unless otherwise noted.

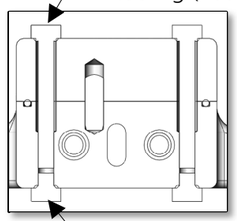
# 2. Shuttle

Tooling Mounted from Below
(Standard)



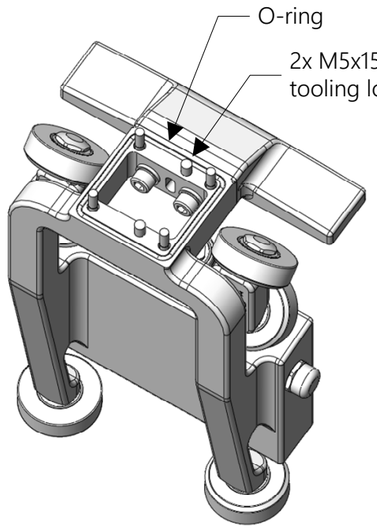
4x M5 screws to mount tooling

Tooling Mounted from Above



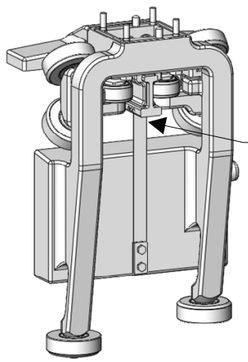
4x M5 screws to mount tooling (not supplied)

4x M5 screws to plug hole (not supplied)

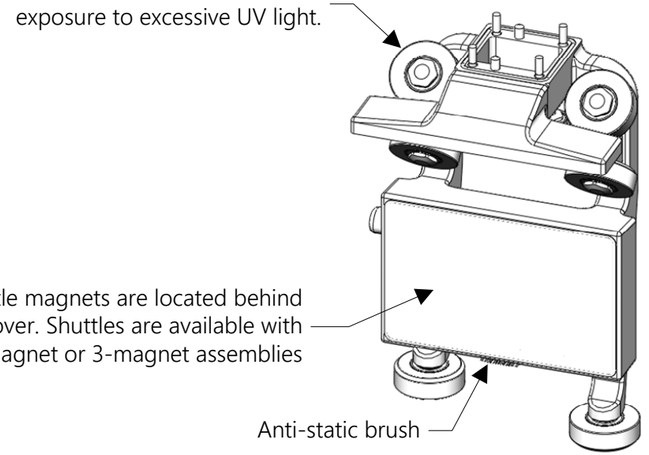


O-ring

2x M5x15mm dowel for tooling location



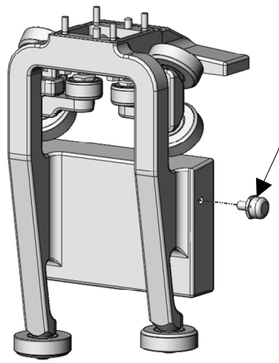
Lubrication assembly with Teflon block



Wheels should be out of direct exposure to excessive UV light.

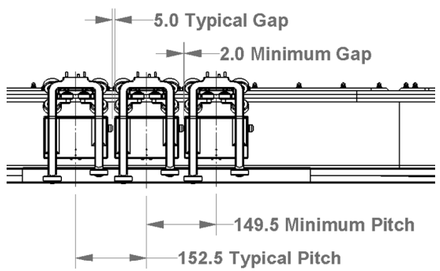
Shuttle magnets are located behind this cover. Shuttles are available with 2-magnet or 3-magnet assemblies

Anti-static brush

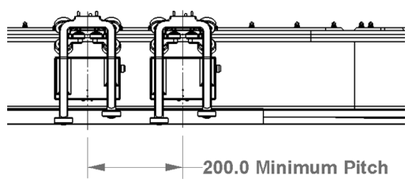


Standard bumpers prevent shuttle or tooling collisions due to shuttles being moved manually. Standard bumpers can be replaced by custom extended bumpers to protect wide tooling.

2-Magnet Shuttles




3-Magnet Shuttles




Part Numbers:

| | Standard | With Dry Lube |
|---|---|---|
| 2 Magnet | 125918725 | 125979554 |
| 3 Magnet | 125822409 | 125979555 |

**Magnetic Field Strength:**
Although the shuttles contain powerful magnets, the field is well contained. For most applications, no special provisions are required.

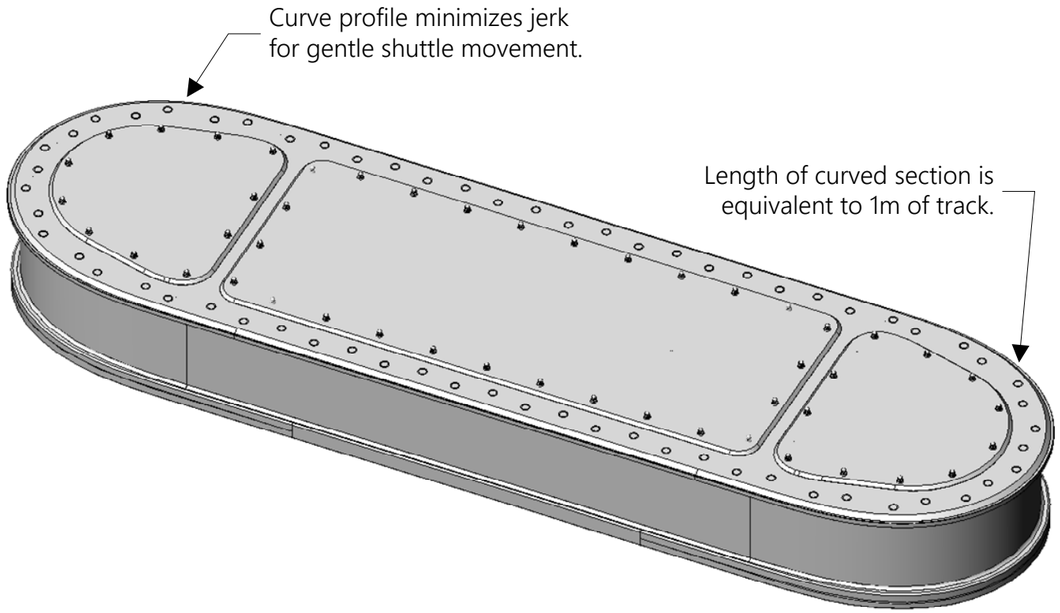
When a shuttle is removed from the track, a keeper plate is used to contain the magnetic field.

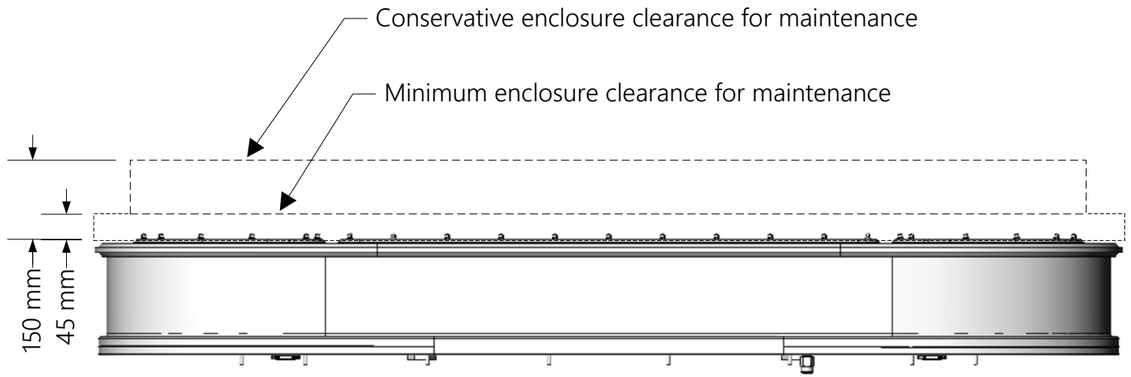
Note: Shuttles may also be referred to as “pallets” in some documentation.

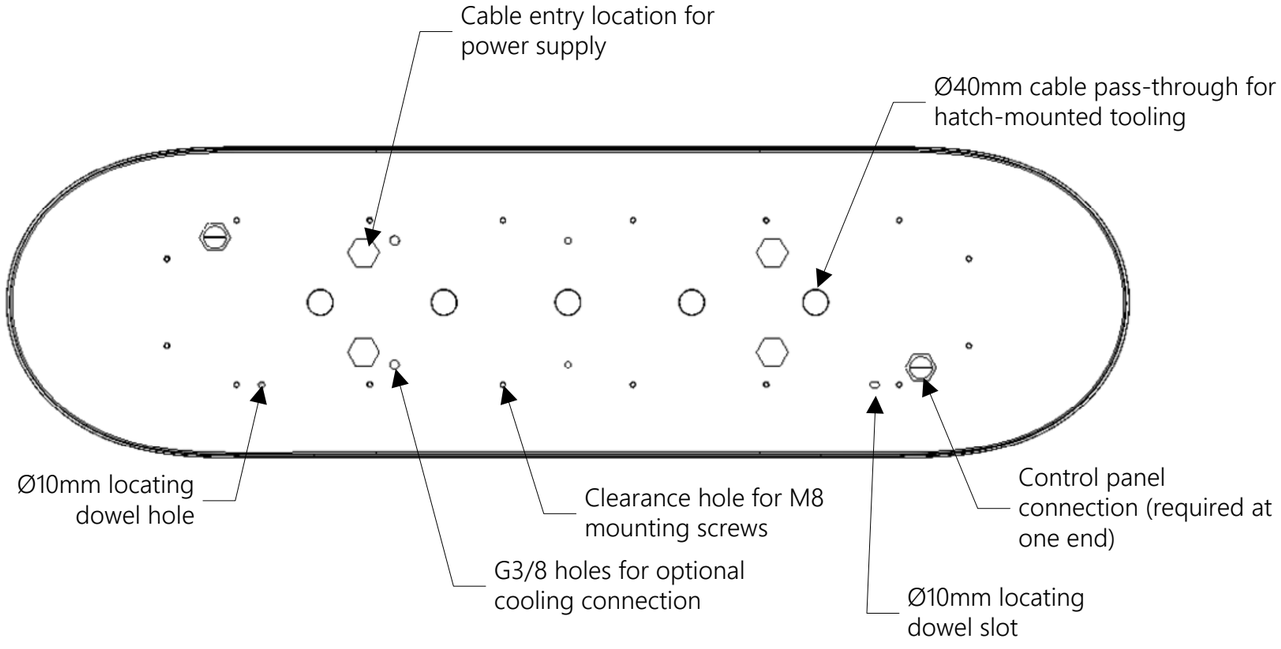


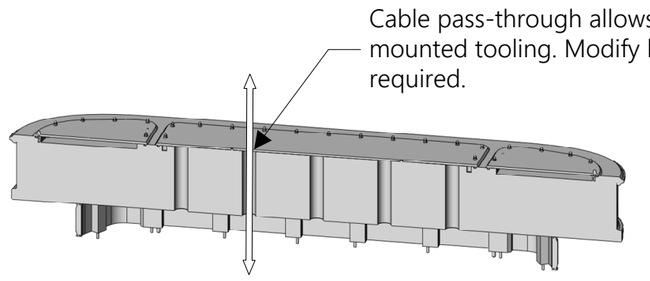
SuperTrak™ CONVEYANCE

# 3. Base System



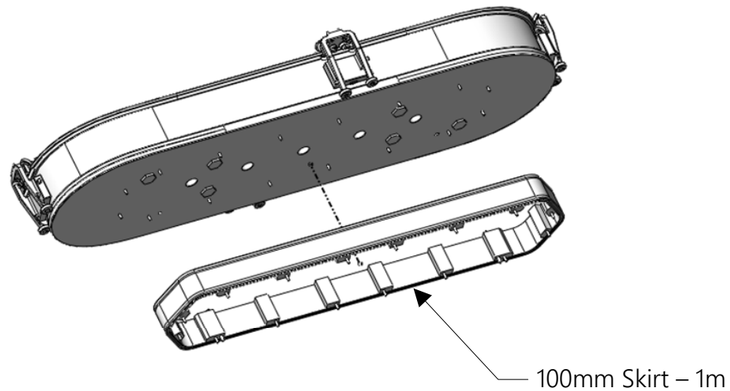



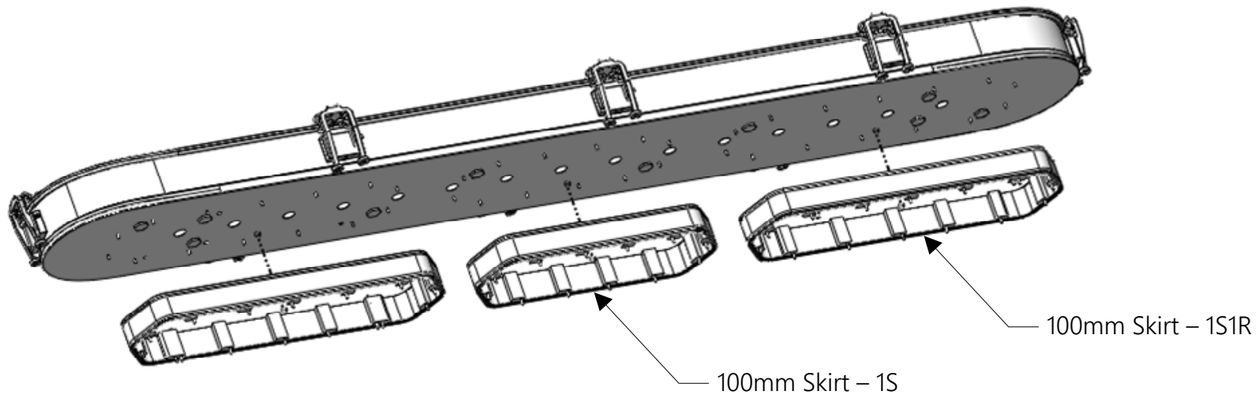



# 4. Skirts

**Part Numbers:**

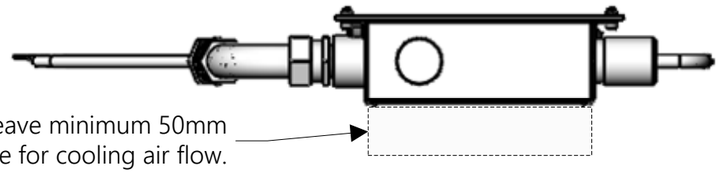
| | |
|---|---|
| PHARMA - 100MM SKIRT KIT - 1M | 126000410 |
| PHARMA - 100MM SKIRT KIT - 1S1R | 126002743 |
| PHARMA - 100MM SKIRT KIT - 1S | 126003636 |



# 5. Power Supply

Top View



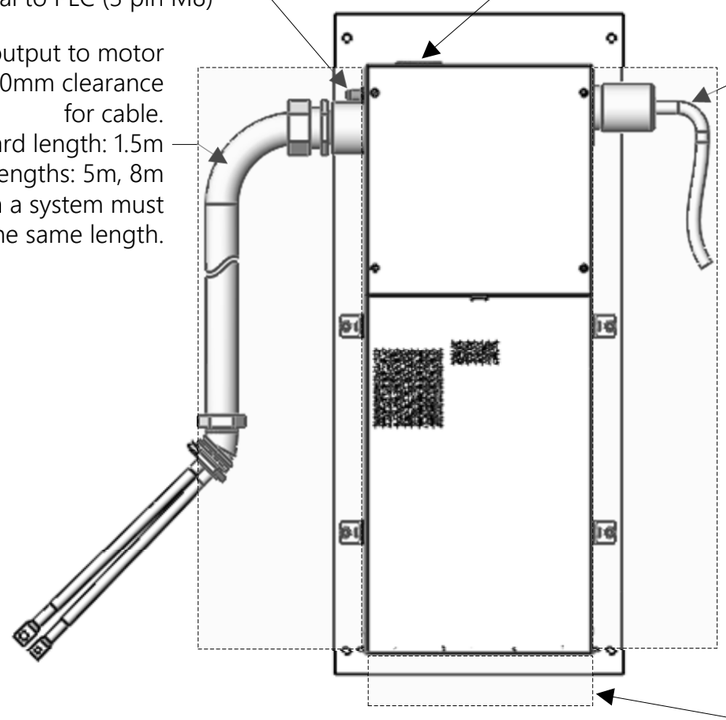
Leave minimum 50mm clearance for cooling air flow.

Output for "Power Supply OK" 24V signal to PLC (3 pin M8)

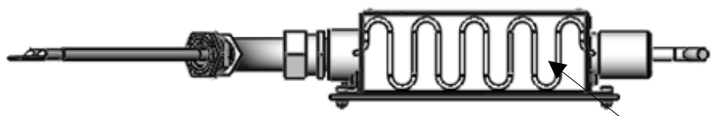
Alternate DC cable orientation

DC power output to motor section— allow 140mm clearance for cable.
Standard length: 1.5m
Optional lengths: 5m, 8m
All cables on a system must be the same length.

AC power input from control panel—allow 100mm clearance for cable.

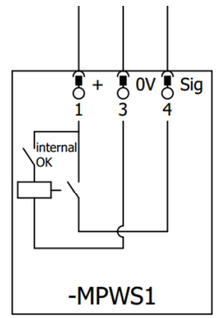


Leave minimum 50mm clearance for cooling air flow and filter replacement.



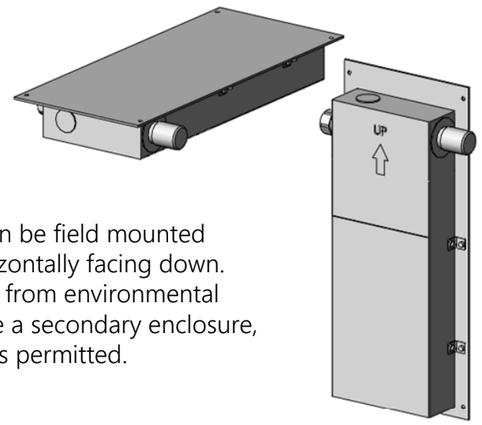
Filter to be replaced when dirty

Bottom View




"Power Supply OK"

24V signal

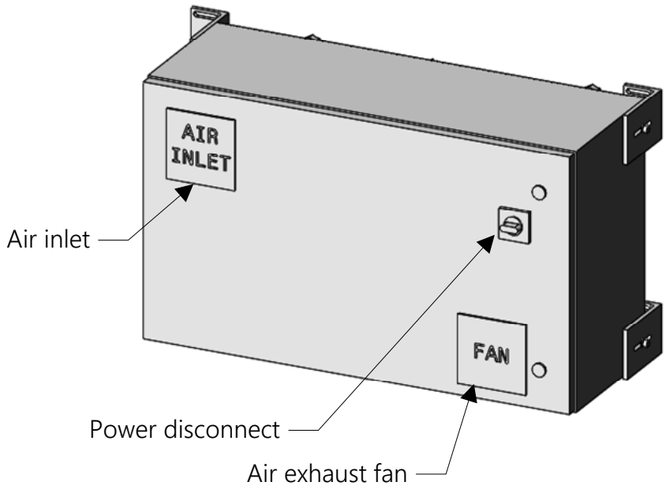


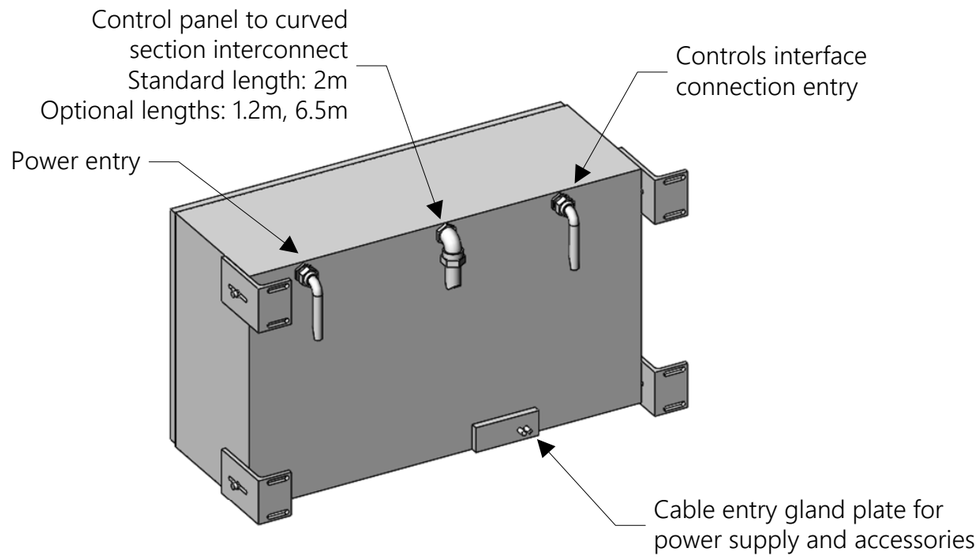

Power supply can be field mounted vertically or horizontally facing down. When protected from environmental conditions inside a secondary enclosure, any orientation is permitted.

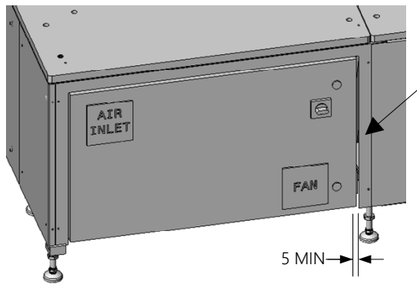
Part Numbers:

| | |
|---|---|
| Motor Power Supply with Mount Plate | 25195828 |
| Motor Power Supply | 25270337 |

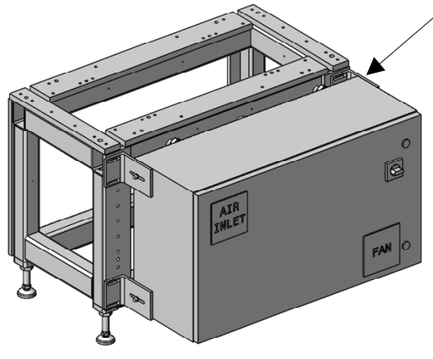
# 6. Control Panel




The control panel can be mounted flush with table skirting. Allow a minimum of 5mm between the control panel and the skirt.




Standard mounting brackets attached to the control panel allow mounting to frames. They may be removed for alternate mounting.

## Interconnect Part Numbers:

| | |
|---|---|
| 1.2m Control Panel to E-Turn Interconnect | 25240470 |
| 2m Control Panel to E-Turn Interconnect | 125362696 |
| 6.5m Control Panel to E-Turn Interconnect | 25221246 |

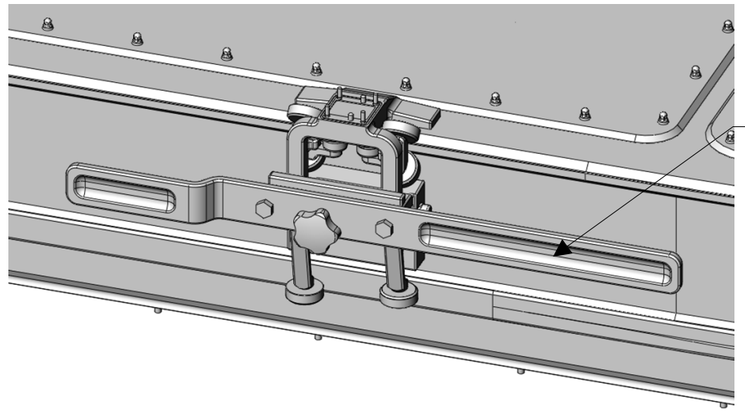
## Control Panel Part Numbers:

| | | | | | |
|---|---|---|---|---|---|
| 25202161 | X | X | X | X | |
| | EU | 400Y230VAC 50/60Hz | | | |
| | NA | 208Y120VAC 50/60Hz | | | |
| | | EC | EtherCAT | | |
| | | N | PowerLink | | |
| | | EI | Ethernet/IP | | |
| | | PR | PROFINET | | |
| | | | I3 | I3 processor | |
| | | | I5 | I5 processor (obsolete) | |
| | | | | (blank) | supports up to 6 power supplies |
| | | | | E3 | supports up to 9 power supplies |
| | | | | E6 | supports up to 12 power supplies |

# 7. Accessories and Tools

## Shuttle Removal Tool

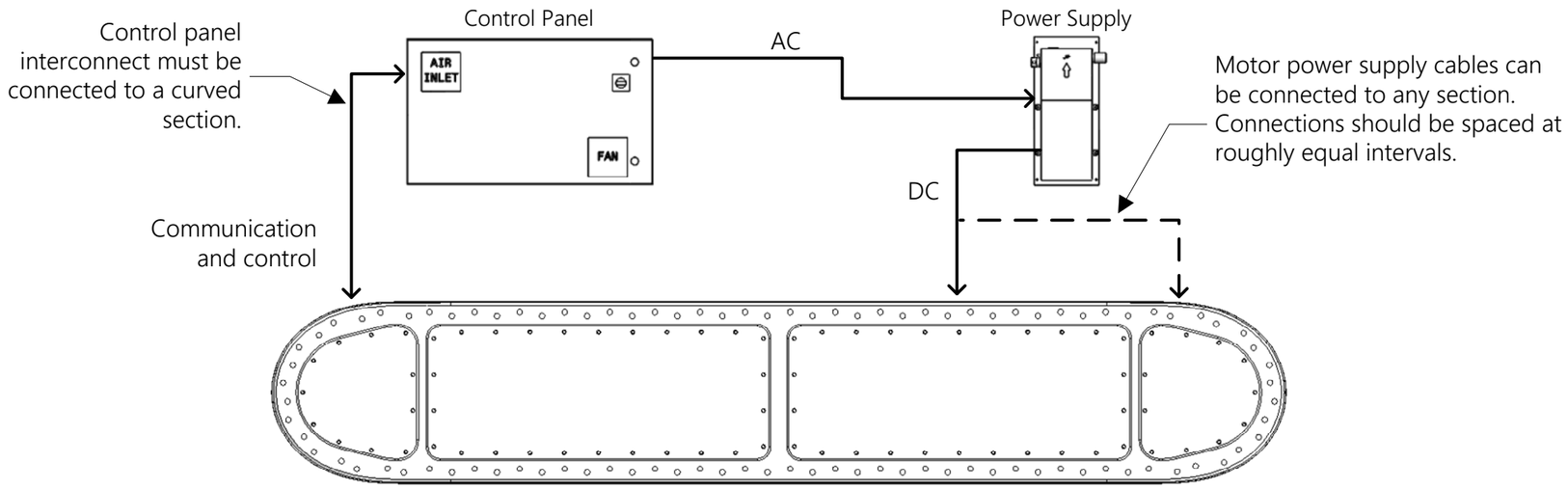
The shuttle removal tool attaches securely to the front of the shuttle, allowing for quick and easy removal and placement of shuttles at any point along straight or curved sections.

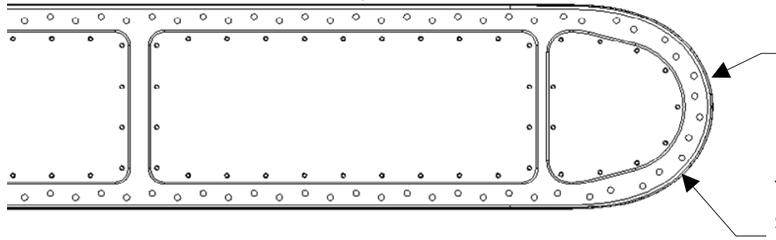



Part Numbers:

| | |
|---|---|
| Pharma Shuttle Removal Tool | 125788550 |

# 8. Power and Performance




Improving Shuttle-to-Shuttle Repeatability:

- Add RFID tags to the shuttles and program unique offsets for each shuttle.
- When using vision systems, add fiducials to the tooling plate.

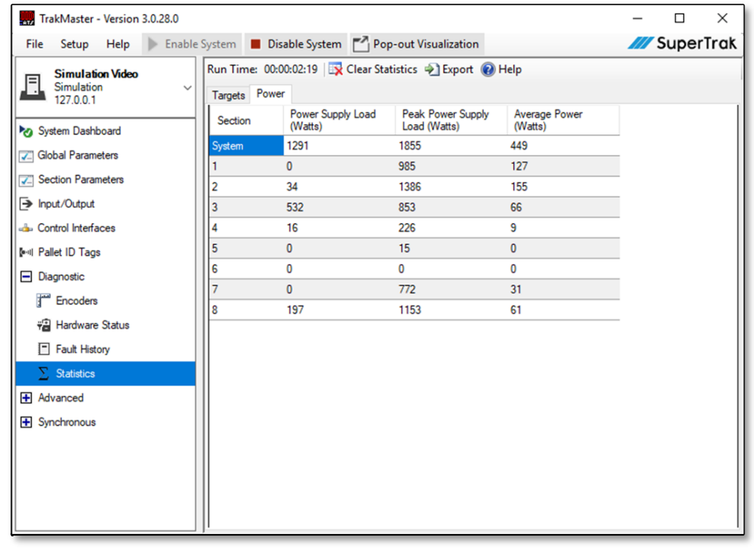
Thermal Considerations:

- SuperTrak PHARMA8™ has been engineered to minimize error due to thermal variations. However it may warp slightly during thermal cycling.
- Preheat the sections before fine adjustments and before operation.
- Use different calibration values for a cold vs. a warm section.

Power Supply Information:

- Input: 200-240VAC Single Phase 50/60Hz (110-120VAC 50/60Hz – limited power, lab testing only) FLA 10Amps
- Supply voltage is to be removed during operator interaction with the track/shuttles.
- Supply voltage on/off/on period should be longer than 2 seconds.
- If the system is designed with an extra power supply, the machine can continue running if a power supply faults. The PLC will provide a warning.
- Standard DC cable length is 1.5m. Longer cables are available as an option. All power supplies on a system must have the same length cable to maintain balance.

TrakMaster™ software estimates load and peak load for each section and for the total system.

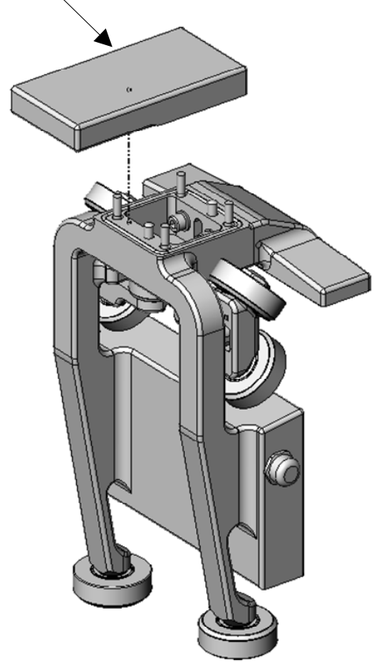



| Section | Power Supply Load (Watts) | Peak Power Supply Load (Watts) | Average Power (Watts) |
|---|---|---|---|
| System | 1291 | 1855 | 449 |
| 1 | 0 | 985 | 127 |
| 2 | 34 | 1386 | 155 |
| 3 | 532 | 853 | 66 |
| 4 | 16 | 226 | 9 |
| 5 | 0 | 15 | 0 |
| 6 | 0 | 0 | 0 |
| 7 | 0 | 772 | 31 |
| 8 | 197 | 1153 | 61 |

# 9. Reference Designs

Reference designs can be found in the SuperTrak PHARMA8 Design Package.

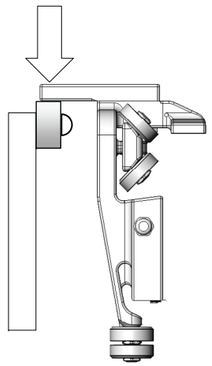
A reference tooling plate with recommended mounting features and tolerances is provided in the Design Package.



# 10. Example Solutions

## Backups

Backups can be added to support the tooling shelf or parts during pressing operations so that the maximum force and moment are not exceeded.



Fixed backup - load is transferred from shuttle to backup only when the shuttle is deflected slightly. It is recommended to use a grindable striker plate with lead-in and a cam follower. Grind each plate to reduce variation across shuttles. The cam follower should be adjusted with a slight air gap (0-0.1mm) on all shuttles.

Active backup - backup extends and is configured to suit applied force.

Isolated product - product is supported by auxiliary tooling such that the load is transferred through the auxiliary tooling, not the shuttle.

# 11. Simulation Considerations

A simulation can help to:

- Identify areas requiring additional shuttle queueing
- Determine the correct number of shuttles required to achieve the desired throughput
- Validate the number of required power supplies
- Determine the number of shuttles per minute that the machine will achieve
- Provide feedback regarding shuttle move times or shuttle exchange times
- Identify the machine bottlenecks
- Create a visualization of the working machine

A simulation requires the following inputs:

- Desired machine throughput (parts per minute)
- Payload (includes product and shelf/product fixture)
- Shelf/product fixture width (in the direction of product flow)
- Number of parts per shuttle
- Pitch between the parts on the shuttle
- Shuttle flow direction (CCW or CW)
- Machine layout showing process station locations
- Process station information for each station, including:
  - Number of identical parallel stations (for example, a shuttle only needs to stop at one of the parallel stations)
  - Number of parts worked on at a time
  - ON shuttle working time (how long the shuttle must be stationary for the process to complete)
  - OFF shuttle working time (the time required between shuttles for the station to prepare for the next shuttle)