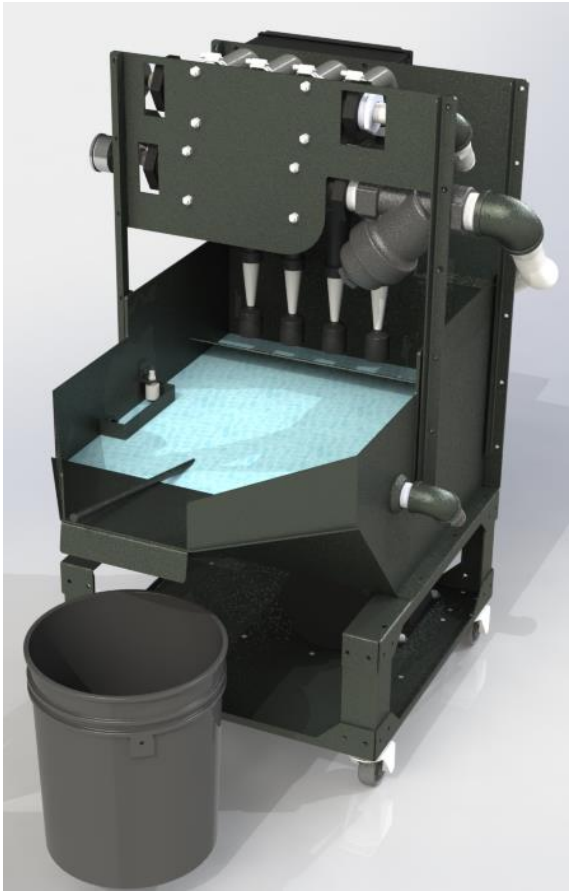
INSTALLATION, OPERATION, & MAINTENANCE MANUAL

Cyclonic Debris Removal Series



Pump Serial Number: _____

Date: 7/3/2025

Revision: 09

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MP SYSTEMS is committed to delivering quality products and providing maximum productivity and uptime. Our engineering team is diligent in eliminating high maintenance issues associated with machine tool accessories, to allow better performing equipment for your business.

Thanks to our quality components, dedicated engineers, sales team and manufacturing personnel, MP SYSTEMS high pressure coolant systems & accessories are low maintenance and longer lasting. MP SYSTEMS prides itself on building and supporting a dependable product.

Our team works closely with CNC machine tool manufactures, distributors and customers to provide excellent customer service. These relationships facilitate superior application experiences. Our goal is to help make you more productive with less downtime, decreased cycle times, improved tool life and more parts out the door.

CDR SERIES INSTALLATION, OPERATION, MAINTENANCE MANUAL			
DOCUMENT PART #: B CDR OPERATOR			
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01	Original	8/25/2020	K. Quintin
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03	• Added quick start guide components, • updated with more information.	4/26/2021	K. Quintin
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08	• Updated quick start guide and installation info • Updated Spare Parts List • Updated Considerations & Explanations	2/12/2024	K. Quintin
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1. Introduction

This manual contains instructions for installation, operation, and maintenance of the CDR Cyclonic Debris Removal System, as well as indicating residual risk associated with it. This manual has been specifically compiled and produced to enable easy and safe use by appropriate personnel.

All associated rights, in particular the rights of reproduction, publication, and translation, are retained by the producer in accordance with authors rights.

MP SYSTEMS does not accept responsibility for any inaccuracies contained in this manual, whether due to errors in printing or transcription. It furthermore reserves the right to carry out such modifications to its products as it considers necessary and/or useful, without compromising their essential characteristics.

MP SYSTEMS does not accept responsibility for improper use of the equipment, unauthorized modifications, or non-observance of the instructions contained in the manual. This manual must be kept in a safe place and made available to personnel qualified to use and maintain CDR Systems.

1.1. Symbology

Symbology contained in this manual.

	DANGER: Indicates possible danger. Failure to heed this warning carries a risk of accident or injury.
	DANGEROUS VOLTAGE: Indicates dangerous voltage. Failure to heed this warning carries a risk of injury or death.
	WARNING: Indicates a possible danger situation. Failure to heed this warning carries a risk of injury.
	INFORMATION: Indicates important information or advice on the use of the machine.
	FLAMMABLE: Indicates possible flammable material.
	LOCK-OUT/TAG-OUT: Lock-Out/Tag-Out CDR Series before service can be done.

2. Safety Measures

MP SYSTEMS disclaims all responsibility for non-observance of the instructions and advice contained in this manual. It furthermore disclaims all responsibility for damage caused by improper or inappropriate use of the machine or by modifications made without authorization.

These safety instructions contain all the general rules that must be observed during commissioning, operations, and all periods of attendance to the machine.

It is essential that these instructions are supplied and always available to the installer, competent operators, and authorized maintenance personnel.

The following basic instructions must be observed when using the CDR Series:

- Operation and maintenance must be carried out only by qualified personnel following the instructions contained in this manual.
- Always keep a copy of this manual near the machine.
- Carry out routine maintenance operations with great care; have worn or damaged parts replaced by qualified personnel and use original parts or those recommended by MP SYSTEMS.
- To function correctly, and for operator security, the CDR Series must be operated with all panels in place and secured.
- Dangerous voltage contained within CDR Series. Before carrying out any operations on CDR Series, ensure that the electrical supply has been switched off.
- Operating CDR Series with safety protection removed is strictly forbidden.
- Before installing CDR Series ensure operating conditions are suitable for intended use.

	MP SYSTEMS disclaims all responsibility for damage to person(s) or things resulting from non-standard assembly of the machine or from re-use of its individual components. Unauthorized replacement or removal of one or more parts of the machine is forbidden.

2.1. General Rules

The CDR Series has been designed and constructed in such a way to minimize any possible cause of danger to the operator and their surroundings. However, residual risk remains and can arise through improper use of the machine and can be of various types:

- Risk due to escaped coolant/cutting fluid.
- Risk due to excessive noise caused by operating outside permitted limits.
- Risk of accidents caused by scraping against edged sheet metal profiles.

2.2. Prevention of Mechanical Risks

In operation, the CDR Series contains some moving parts. These parts constitute a possible source of danger to the operator, therefore to avoid any possible danger it is necessary to observe the following operational rules:

- Before removing any panels/guards, ensure electrical supply to the machine has been switched off.
- Never start the CDR Series with any panel/guards removed.
- The additives present in coolant/cutting fluid may have a corrosive action that can irritate the skin and eyes.
    - Always wear gloves & eye protection when handling coolant/cutting fluid.

2.3. Prevention of Electrical Risks

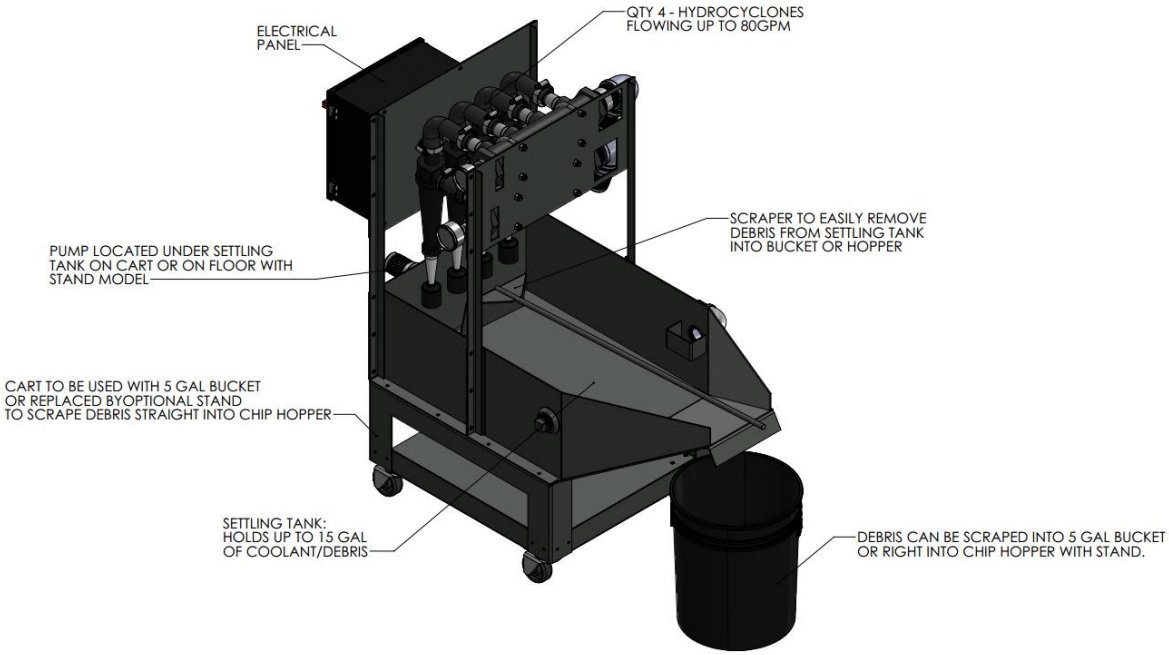
When power to the machine is switched on, the machine is a source of danger, especially if the basic safety rules are not followed. To avoid any possible danger, it is necessary to observe the following basic operation rules:

- When making electrical connections to the CDR Series, observe state and federal electrical codes or those otherwise in force. Observe the technical & electrical supply conditions imposed by the power supply companies.
- Before carrying out any work on the CDR Series, switch off the electrical supply at the main isolator.
- Work on the CDR Series must only be carried out by authorized personnel.
- Always replace worn out or defective components.
- Before working on electrical equipment always read the manual that contains the machines circuit diagram.
- Always make sure there is no electric power to the equipment.
- Check to ensure the machine is earthed before powering on the CDR Series.
- Check all electrical connections and connecting cables are well insulated and replace any cables that are evidently worn or damaged.
- Be sure to use power cables supplied by MP SYSTEMS or that have been approved by *MP SYSTEMS*.

3. Intended Uses

The CDR filtration system is intended to be used on high volume machines cutting castings, forgings, and other hot finished materials that typically create hard sharp fines that stay in suspension in the coolant and damage the machine over time. It works best filtering material with a specific gravity of 2 or higher out of water-based coolants. It is not intended to replace a filtering conveyor, but to be used as secondary, finer filtration to prevent hard sharp fines from contaminating and damaging the machine.

There must be a suitable place in the coolant tank to install the CDR suction dip tube(s) where there are no fines larger than 1/32" (800um). Sometimes this is right after a filtering conveyor. Other times this may be further away from the conveyor output to avoid large chips that would plug the CDR system. These large chips typically settle to the bottom of the tank as they enter and do not typically pose a threat to the machine tool. Be sure the machine's chip conveyor is in proper working condition before installing a CDR. A properly working conveyor is the best way to automatically remove a large amount of the chips being produced by most machining operations.



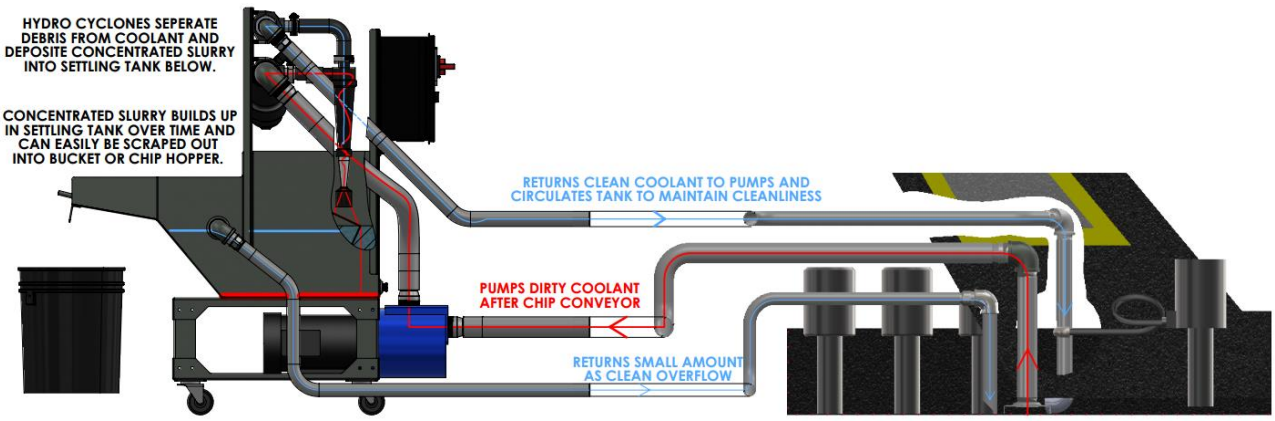
3.1. Features & Benefits

CDR Features:

- 80 GPM (gallons per minute) constant flow rate
- Filtration down to 3um (depending on density and shape)
- Full flow filtration system to circulate coolant in tank.
- Quick and convenient cleanout
- Easy Installation with complete parts kit
- Status Indicator light and HMI Screen
- 3 Phase breaker and wiring kit to easily pull power from machine.
- Auto start on power up feature or scheduled clock run function
- Hour counters for filter run time vs machine run time (optional)
- Cleanable pre-filter
- Low Maintenance
- 2 Year Parts Warranty*

CDR Benefits:

- Clean coolant lasts significantly longer
- Less wear & tear on machine and components
- Greatly extend time between tank cleanouts
- Prevent unexpected coolant related shutdowns
- Overall cleaner machining environment
- Improved part quality
- Improved tool life
- Improved pump wear components life



3.2. Considerations and Explanations

- The CDR is not intended to be a replacement for filtering conveyors.
- The CDR is intended for machines running water-based coolants only.
- As for cuttings oils. Depending on the viscosity, the efficiency of the CDR may be reduced to 50% in lighter oils or even as low as 15% in thicker oils. Flow rate may also be reduced by 15-30% depending on viscosity.
- The CDR uses a 3HP centrifugal pump and will increase the heat load on the coolant system. Use external run signal or scheduled timer to reduce run time and heat input.
- The CDR installation kit comes with a 5 gallon bucket that Is intended to be used for measuring volume of debris accumulated in settling tank.
- The settling tank has up to a 10 gallon sludge capacity.
- The settling tank is designed to not be cleaned until an appreciable amount of volume of sludge accumulates in it. This volume will vary depending on material.
- The settling tank is intended to be scraped directly into a chip hopper or other large liquid tight waste container.
- High volume machining centers running multiple shifts should get a filtering conveyor.
    - A shift is considered 2000 hours/year, 2 Shifts would be 4000 hours/year, etc
- The CDR is intended to filter out fines/debris smaller than 1/32" (thickness of a credit card)
    - An easy way to determine this is to take samples from the tank and run the debris through a 20mesh sieve. All fines should wash through the sieve.
- The CDR is not intended to pick up or filter large chips. Large chips tend to settle to the bottom of the tank rapidly and once the debris begins to pile up, it will stay there until manually removed. Particles must stay in suspension long enough to get sucked up by the pump.
- The CDR does a great job at capturing and filtering "snow" like debris that spreads evenly throughout the machine tank.
- The CDR is for use with materials that have a specific gravity of 2x water or higher, or a density 2g/cm^3 or higher. (Cast Iron, Aluminum, Steel, Alloys)
- The CDR is typically located alongside the machine's coolant tank where space will allow. 15' length hoses are provided to allow for positioning the CDR system where it makes the most sense.
- The tank must be configured to allow proper circulation to ensure that a high percentage of debris is removed over time and the tank eventually reaches an equilibrium of debris being deposited, to debris being removed, maintaining an acceptable PPM in the machine's coolant tank.
- Hydro cyclones work based on centrifugal forces separating the denser debris from the lighter fluid and concentrating that debris into the discharge area while the lighter fluid is carried back through the return to tank.
    - The high fluid velocities create high centrifugal forces that "pull" the denser particles towards the walls of the cyclone cone. The velocity and forces increase as the cone narrows towards the bottom. The heavier concentrated

debris is discharged through the bottom apex. The lighter fluid exits the top of the cyclone via the vortex finder and returns to the machine coolant tank.

- The CDR uses polypropylene hydrocyclones with ceramic apex cones for abrasion resistance.
- Performance on this type of technology is rated by the D50 cutoff point.
    - D50 cutoff means depending on several variables, 50% of the debris of a certain size will be removed from the coolant and report to the settling tank, while the other 50% of the debris will return back to the tank to be circulated and filtered again.
- Cyclonic filtration works on the idea that the coolant will be constantly circulated and re-filtered every time is passes through the CDR.
    - Example, each time coolant passes through the cyclones, 50% of 5µm particles are removed. The remaining 50% is then recirculated through the tank and filtered again, removing 50% of it, and thus returning 25% of the initial debris back to tank. On the 3rd pass, it will return 12.5% and so on.
- The CDR has a flowrate of 80 GPM, meaning it can circulate and filter tanks at a quick rate. Examples are as follows.
    - Tank = 80 gallons, CDR is 80GPM, tank is circulated once every 1 minute.
    - Tank = 100 gallons, CDR is 80GPM, tank is circulated once every 1 min 15 sec.
    - Tank = 200 Gallons, CDR is 80GPM, tank is circulated once every 2 min 30 sec.
- The system should always be on and filtering when machining. There are several ways to run the filter system, most do not require any additional wiring. Factory settings are to start/stop the CDR by pressing the buttons on the HMI display. A setting can also be enabled to allow the CDR to run automatically when powered up. Another option is to run the filter on a scheduled Real time clock timer. Refer to the quick start guide and PLC settings section for more information.
- The alarm circuit interface with the machine is not typically required but is available if desired. Typically, customers will rely on the status indicator light on the control box to tell them when the CDR requires maintenance. This works for most customers but if wanted, an alarm signal can be interfaced with the machine tool. Refer to the interface drawing for more explanation.
- For machines currently running, there is a quick way to determine debris load that accumulates in the tank so it can be compared to how much debris is removed by the filter over time. Carefully vacuum only the liquid coolant from one corner of the tank and leave all sludge and debris remaining in the tank. Take several measurements around the tank of how deep the layer of sludge is. Calculate the average level. Calculate the volume of debris by measuring the area of tank and multiplying by the average height of the debris. If measuring in “inches”, then divide the total area of cubic inches by 231 to calculate total gallons of debris in the tank. Then simply divide the number of gallons by the number of days it took to accumulate. This will result in “X” gallons per day of material deposited into the machine tank. This number can then be compared to the number of gallons that are removed by the filter daily.

- Severe Duty models use an additional filter vessel containing a perforated screen basket that can be manually emptied, cleaned, and re-used. The purpose of this vessel is to capture particles larger than 1/16” that would normally be automatically removed by a filtering conveyor. The basket will hold up to 1.5 gallons of chips before it needs to be emptied.
- Be sure to inspect conveyor filter(s) before installing CDR. Wearing appropriate gloves or using a scoop, take a sample of debris from the machine tank, dry through a coffee filter, and spread out across a piece of paper. There should be no individual particles larger than 1/32” (the thickness of a credit card). If there is, this indicates a tear in the filter screen, or the screen(s) are plugged, and the coolant level in conveyor is piling up too high and debris is bypassing the conveyor. These issues will need to be addressed before adding secondary filtration. A properly working filtering conveyor is the best way to automatically remove a large amount of the chips being produced by most machining operations.
- CDR typical installation time required: 4 Hours
- A full installation kit is provided to adapt to most tank configurations.
- Low pressure plumbing kit includes inlet, return, and overflow dip tubes, hoses, and clamps.
- 3 Phase power kit w/circuit breaker provided to pull power directly from machine.
- CDR can be set to automatically run when powered on, or with scheduled run clock.
- Status indicator light and HMI screen removes need for alarm interface with machine.
- May require hole saws to modify tank, see appendix in back for more information.
- The CDR requires roughly 24” x 48” of floor space that is located next to the coolant tank.
- The Severe Duty “SD” model requires roughly 34” x 50” of floor space to include filter.

4. Specifications

*All specifications are subject to change.

All MP Systems equipment ships with identification label. The label is located by main disconnect on front of the system.

The label contains

- **Pump Type**
- **Serial Number**
- **Build Date**
- **Operating voltage (***208-230VAC***)** (optional 480V)
- **FLA/ Largest Load for determining power service requirements**

4.1 Electrical Specifications

All power for motors and hydraulics is derived from CDR Series power input source.
Main Power: 3 Phase @ 60Hz

Model	FLA @ 208-230 VAC	FLA @ 480 VAC	kVA
CDR80	8.5*	4.0*	3.2

Motor	HP	RPM	208-230 VAC	460 VAC
Feed Pump	3	3450	8.5A	4.0

Control Power	Control Signal	Alarm Circuit
208-230 VAC	24vdc	NC (Normally Closed) NO (Normally Open)

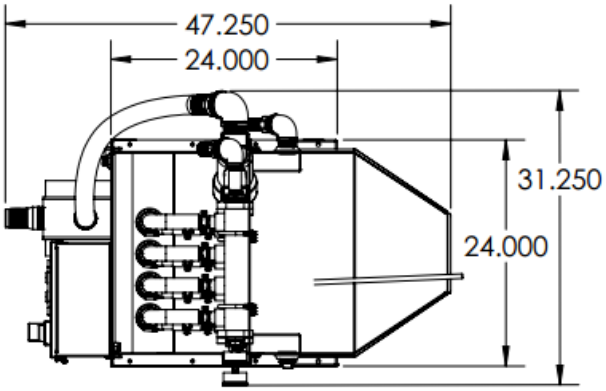
4.2 Mechanical Specifications

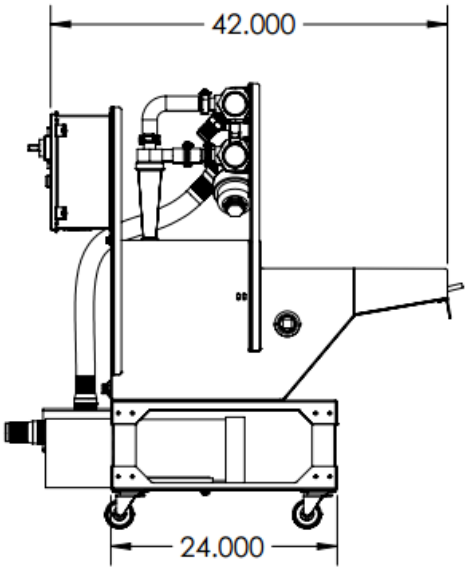
Model	CDR80	CDR80 SD
Flow Rate	80 GPM	80 GPM
Length	48”	50”
Width	24”	34”
Height	48” (Standard), 66” (Tall)	48” (Standard), 66” (Tall)
Weight	500 lbs	650lbs
Capacity	15 gal (settling tank)	15 gal (settling tank) 5 gal (filter tank)

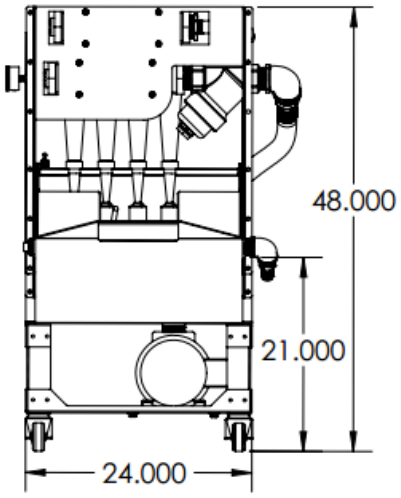
Filter	Volume	Dimensions	Rating
Y Strainer Screen	38 in^3	2 5/8” x 7”	20 Mesh (1/32”)
“SD” Extra Capacity Vessel	365 in^3 (1.5 gallons) #1 Size Basket	6.5” X 11”	12 Mesh (1/16”)

4.3 Floor Layout

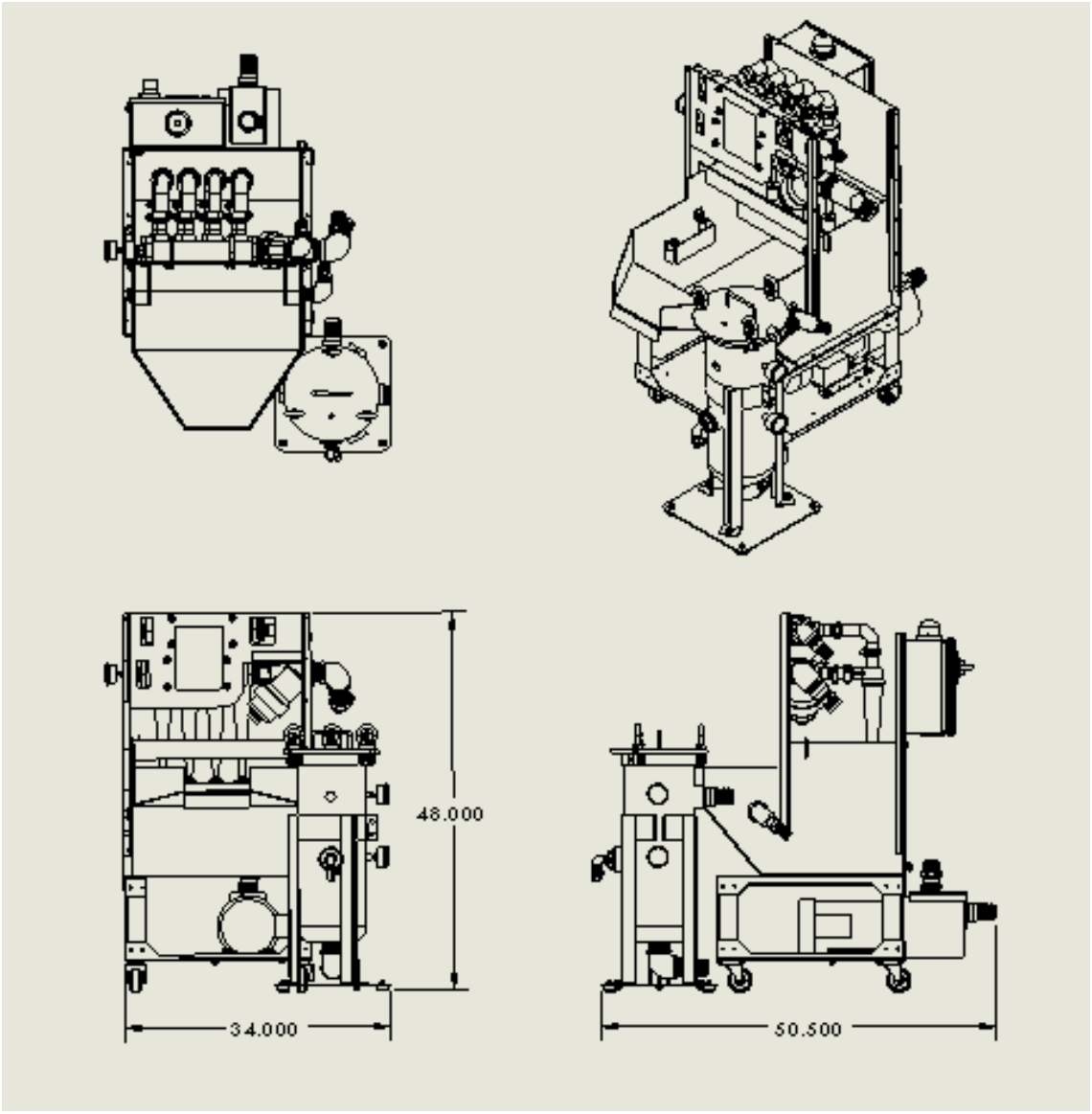
Standard CDR Dimensions





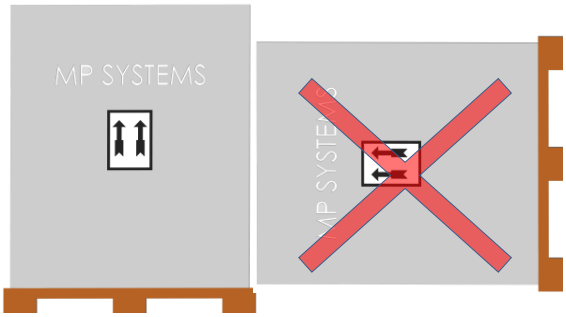


“Severe Duty” Models Only – Extra Capacity Pre-Filter Dimensions



5. Moving & Storage

5.1 Delivery Checks



When taking delivery of a machine, ensure that the machine has been transported in the correct position. Carefully check the physical condition of the box for any signs of external damage. If there is evidence of damage, remove the packaging to ensure there is no damage to the contents of the skid. In case of damage, **DO NOT accept the goods** and immediately inform *MP SYSTEMS.* If you are unsure if there is damage to the contents and accept delivery, you **must write "Damaged" on the delivery receipt**. In the event of irregularities during transit, the freight company will bear the full responsibility for any damage suffered.

5.2 Transport & Carriage

The machine must be transported in a vertical position, as shipped. The tank **MUST BE EMPTY** before moving. The CDR Series has been constructed to be moved by fork truck. The machine must be moved in such a way as to avoid the risk of damage. Do not attempt to lift the machine with equipment that is inadequate or unsuitable, especially with equipment that is too small for overall weight of machine. Refer to **Section 4.2. Mechanical Specifications** for unit weight. Only trained and licensed Fork Truck operators may transport this machine. *MP SYSTEMS* is not responsible for any damage caused by unauthorized use.

		WARNING: Do not transport machine with fluid in tank.

5.3 Storage

The CDR Series must be stored in a cool and dry environment, avoiding all extreme conditions including freezing conditions. All coolant must be drained from machine before being stored. If utilizing water-based coolants, the system must be flushed before storage, please refer to the coolant manufacturer for correct flushing agent. Removing all coolant from the system will ensure coolant does not become contaminated while in the system. Contaminated coolant may lead to malfunctions.

	Not properly draining/flushing CDR Series before storage can lead to bacterial growth, which will contaminate any coolant it comes into contact with. Contaminated coolants effectiveness is also greatly reduced.

6. Installation

WARNING – PUMP STARTS AUTOMATICALLY. TURN OFF BEFORE SERVICING

WARNING – PUMP MUST BE PRIMED BEFORE USE

The CDR filtration system is intended to be used on high volume machines cutting castings, forgings, and other hot finished materials that typically create hard sharp fines that stay in suspension in the coolant and damage the machine over time. It works best filtering material with a specific gravity of 2 or higher out of water-based coolants. It is not intended to replace a filtering conveyor, but to be used as secondary, finer filtration to prevent hard sharp fines from contaminating and damaging the machine.

There must be a suitable place in the coolant tank to install the CDR suction dip tube(s) where there are no fines larger than 1/32" (800um). Sometimes this is right after a filtering conveyor. Other times this may be further away from the conveyor output to avoid large chips that would plug the CDR system. These large chips typically settle to the bottom of the tank as they enter and do not typically pose a threat to the machine tool. Be sure the machine's chip conveyor is in proper working condition before installing a CDR. A properly working conveyor is the best way to automatically remove a large amount of the chips being produced by most machining operations.

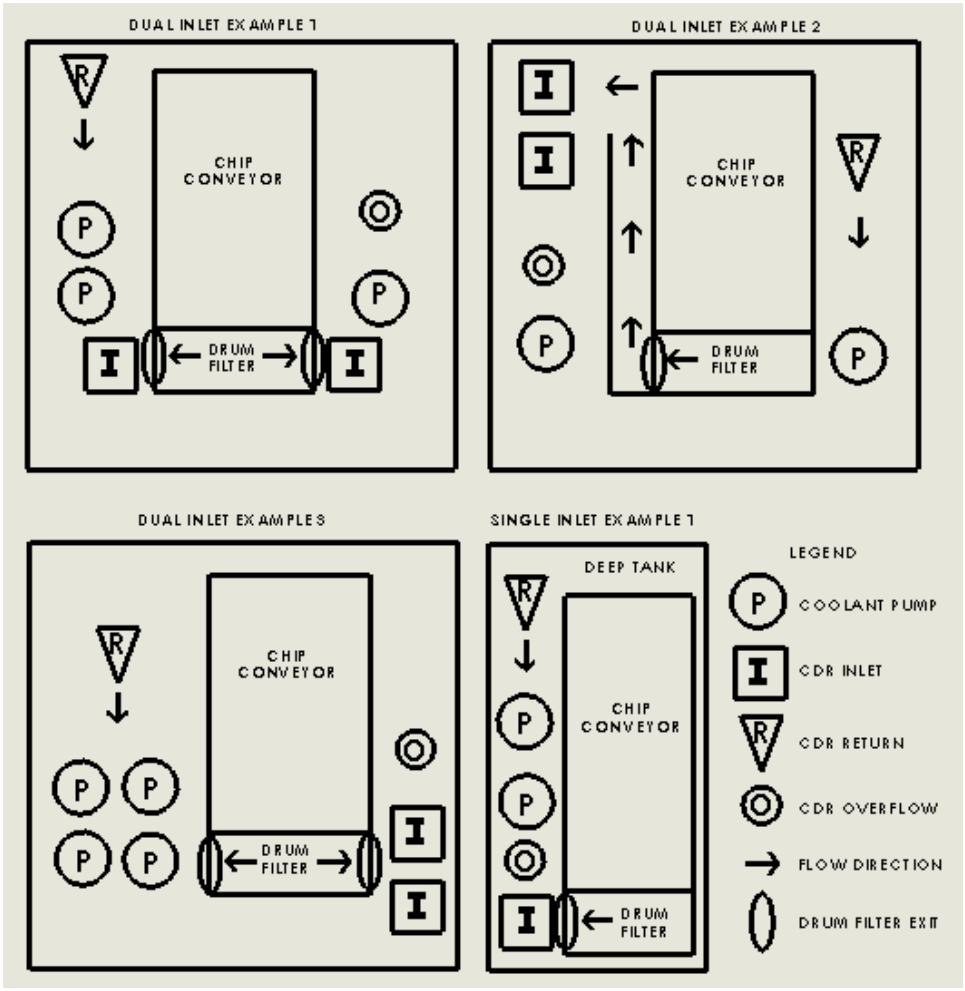
The Severe Duty Add-On uses an additional filter vessel containing a perforated screen basket that can be manually emptied, cleaned, and re-used. The purpose of this vessel is to capture particles larger than 1/16". The basket will hold up to 1.5 gallons of chips before it needs to be emptied.

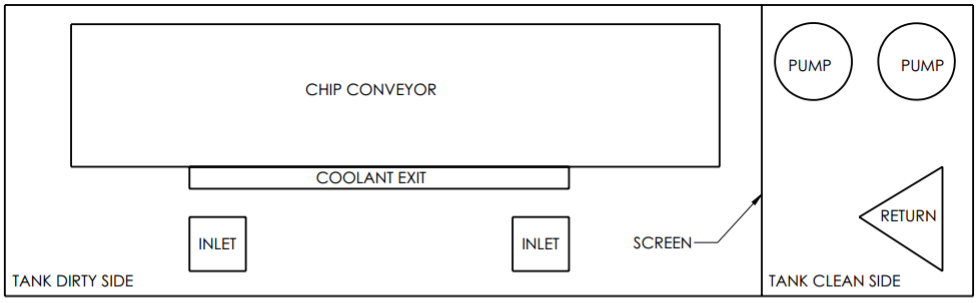
- CDR typical installation time required: 4 Hours.
- A full installation kit is provided to adapt to most tank configurations.
- Low pressure plumbing kit includes inlet, return, and overflow dip tubes, hoses, and clamps.
- 3 Phase power kit w/circuit breaker provided to pull power directly from machine.
- CDR can be set to automatically run when powered on, or with scheduled run clock.
- Status indicator light and HMI screen removes need for alarm interface with machine.
- May require hole saws to modify tank, see appendix in back for more information.
- The CDR requires roughly 24" x 48" of floor space that is located next to the coolant tank.
- The Severe Duty "SD" model requires roughly 34" x 50" of floor space to include filter.
- System adds up to 3HP of heat to coolant. Some applications may require a chiller.
    - Use external run signal or scheduled timer to reduce run time and heat input.

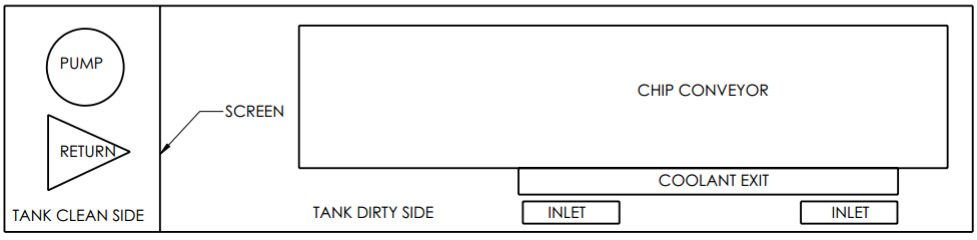
Understand tank and debris layout. Then clean tank before beginning installation.

- Remove power completely from the chip conveyor and machine.
- Remove any access panels on the tank that will allow for a view or feel of the tank.
- Understanding the tank layout is easiest when there is no coolant present.
    i. Suck coolant from one corner ok tank and leave all fines/chips behind.
- First, identify how many coolant outlets the conveyor has, and their locations.
- Next, feel around the tank for any baffles, walls, and screens.
- Draw a simple “top down” view of the tank and conveyor on a piece of paper.
- In this drawing, include all conveyor outlets, baffles, walls, screens, coolant pumps, etc.
- Draw the flow path of coolant in the tank after it leaves the conveyor.
- Use the provided 20 mesh sieve to find a spot in the tank to place suction dip tube(s).
    i. Inlet dip tubes should be placed where no fines larger than 1/32” are present.
    ii. Refer to Inlet Dip Tube installation section for more info.
- Clean all chips and fines out of the coolant tank, pumps, hoses, and nozzles.
- Doing all this will help identify the best possible place to locate the suction, return, and overflow dip tubes. It will also help identify which direction the return flow should be pointed to get optimal tank circulation.
- Refer to the drawings below as examples only. Exact tank configurations may vary.
- Existing screens and baffles in the tank may need to be removed to allow proper tank circulation between CDR return flow and inlet(s).

Refer to examples below for plumbing configurations. Actual layouts will vary from diagrams above, be sure to understand each tank layout before installing.







6.1 Install Kit Components

PART DESCRIPTION	MP PART NUMBER	QTY
CDR OPERATOR MANUAL	B CDR OPERATOR	1
2” INLET DIP TUBE (Single Inlet Kit Only)	AM DIP TUBE LL 2” X 16”	1
1 ¼” MAGNET INLET BASE (Dual Kit Only)	AM MLLDT 1 ¼”	2
1 ½” RETURN DIP TUBE	AM DIP TUBE RT 1.5” X 14”	1
1 ¼” OVERFLOW DIP TUBE	AM DIP TUBE 1.25”	1
2” DIP TUBE CLAMP (Single Inlet Kit Only)	HPC 32 WELD CLAMP	1
1 ¼” DIP TUBE CLAMPS (Dual Kit Only)	HPC 20 WELD CLAMP	3
1 ½” DIP TUBE CLAMP	HPC 24 WELD CLAMP	1
1 ¼” DIP TUBE CLAMP (Single Kit Only)	HPC 20 WELD CLAMP	1
2” DIP TUBE MOUNTING BRACKET	SM-1049B	1
1 ½” DIP TUBE MOUNTING BRACKET	SM-2049B	1
2” HEAVY HOSE CLAMP (Single Kit Only)	HC 2” TS HOSE CLAMP	2
1 ½” HEAVY DUTY HOSE CLAMP	HC 2” X 5/8” HOSE CLAMP	2
1 ¼” HOSE CLAMP (Single Inlet Only)	HC 1 ¼” X 5/8” HOSE CLAMP	2
1 ¼” HOSE CLAMP (Dual Kit Only)	HC 1 ¼” X 5/8” HOSE CLAMP	6
SELF TAPPING SCREWS	FT ¼-14X1 HSD	6
14” HEAVY DUTY ZIP TIES	FTR BLACK TY 14”	10
7” ZIP TIPES	FTR BLACK TY	10
2” NITRILE BLACK HOSE (Single Kit)	HH 2” NITRILE HOSE	14FT
1 ¼” POLYWIRE HOSE (Double Kit)	HH 14FT 1 ¼” POLYWIRE	3
1 ½” NITRILE BLACK HOSE	HH 1 ½” NITRILE HOSE	16FT
1 ¼” NITRILE BLACK HOSE (Single Kit Only)	HH 1 ¼” NITRILE HOSE	14FT
5 GALLON BLACK BUCKET FOR DEBRIS	SH BUCKET – 5 GALLON	1
SETTLING TANK DEBRIS SCRAPER	SM-2055	1
2” PUMP INLET BARB (Single Kit)	HB 32B X 32N	1
2 – 1 ¼” INLET TEE ASSM (Double Kit)	AH 3HP DUAL INLET	1
20 AMP CIRCUIT BREAKER & WIRING	AK CB20 KIT	1 KIT
10GA CABLE AND TWIST LOCK PLUG	AE GEN PWR 20AMP 25FT	25FT
MACHINE SIDE SIGNAL HARNESS	AE CDR SGNL HARN	1

6.2 Recommended Tools for Installation

- Phillips Head Screwdriver
- Flat Blade Screwdriver
- Drill & 7/8” Step Drill or Hole Saw
- 3/8” Socket, Wrench, or Nut Driver
- Multiple Size Adjustable Wrenches
- 12” Pipe Wrench (Minimum)
- Metric Hex Keys
- Teflon Pipe Tape / Liquid Pipe Sealant
- Knockout or Hole saws (optional)
    - 1.75”, 2.00”, 2.50”

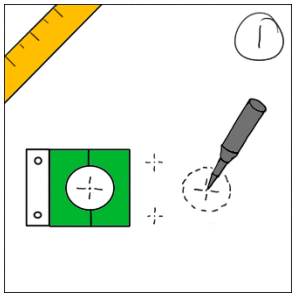
When installing MP Systems products, the correct location of the dip tubes is important to a successful install. The best way to do this is to use a preexisting hole in the tank can be used to pass the various pipes through the tank top. This is not only quick and easy, but also gives you a perfect window to be able to see what is going on in your tank for troubleshooting. Sometimes, this is simply not an option, and a hole must be drilled in the tank.

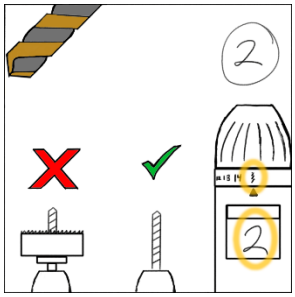
If you find yourself in a pinch, most hardware stores like Home Depot or Lowes will have the required hole saws available, you will want to find a **bi-metallic hole saw** like a Milwaukee or Lenox depending on which store you go to. These tend to be the best option in a hurry, however they will wear out, so if you have a lot of holes to drill, it may be wise to purchase more than one.

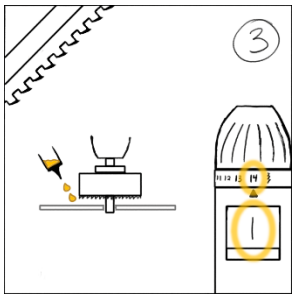
If you know ahead of time that you will need them, then they can be ordered from McMaster, or MP Systems stocks and can ship a kit with all the necessary components.

HIGH PRESSURE	PURGE	CDR	PIPE SIZE	HOLE SAW	McMaster	MP Systems
X	X	X	1 1/4"	1 3/4"	3789A29	AK HOLE SAW KIT
		X	1 1/2"	2"	3789A33	AK HOLE SAW KIT
		X	2"	2 1/2"	3789A39	AK HOLE SAW KIT
	X		2 1/2"	3"	3789A45	AK HOLE SAW KIT
X	X	X	ALL	ARBOR	3789A61	AK HOLE SAW KIT
X	X	X	ALL	PIN 3/16 X 2	97395A618	AK HOLE SAW KIT

Cutting a hole in sheet metal seems like a common task, however doing it right will not only be safer, but can also improve tool life, cut speed, and cut quality (clean vs. jagged edges).







1. Start by measuring twice. Use the green pipe clamp for the dip tube you are installing to help layout where the hole needs to be drilled, as well as where the fasteners will need to go for the clamp. Use a center punch to locate the holes and prevent drill drift.
2. Use the appropriate size drill to make a pilot hole in the center of the cut. *NOTE* Only the drill should be used at this point, do not use the drill bit while attached to the hole saw. When the drill breaks through, you can damage the hole saw by “punching” the sheet metal and breaking or bending the teeth.
3. Install the blank pin in the arbor, then thread on the hole saw. (In a pinch, an old drill bit installed backwards can work as a guide too) Be sure to set your drill to low speed and change from drilling to torque mode.
4. Apply cutting fluid and begin cutting, feathering the trigger to maintain a moderate speed.
5. Be sure to continuously add cutting fluid to keep the hole saw cool and lubricate the cut.

6.3 Electrical Installation

Before connecting electrical power, pay close attention to the electrical data on machine plate. Ensure that the voltage of the power supply is compatible with that specified on plate. All installation work must be carried out by qualified personnel. Always consult machine tool wiring diagram before connecting power.

	LOCK OUT/TAG OUT any and all power disconnect switches before performing any work on equipment.

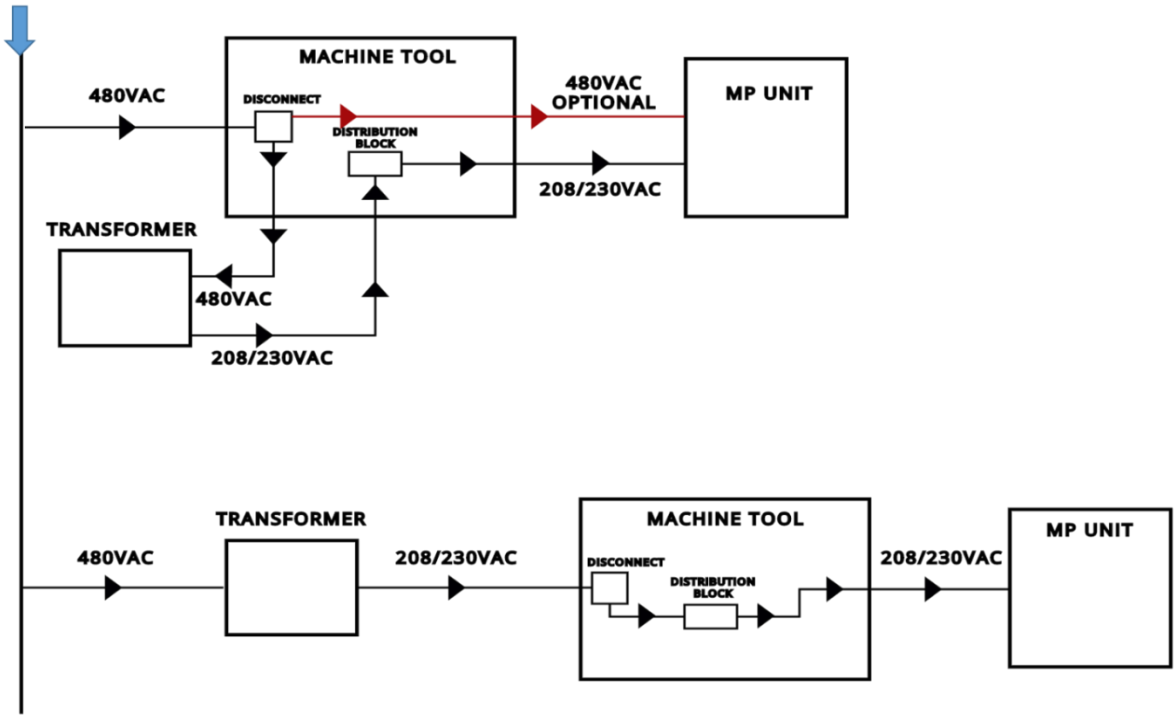
	Be sure to observe local and federal electrical codes in effect. Observe the technical supply conditions imposed by the power supply company.

6.3.1 Selecting Voltage

Many large industrial facilities run on 480v 3phase @ 60Hz electricity. Most machine tools in the United States require a step down transformer as the machine tools, typically, run on 200 +/- 10% VAC. **208-230v is the standard voltage for MP Systems units.** (Optionally, 480V units can be purchased, voltage cannot be changed in the field)

Utilizing machine tool voltage makes lockout/tag-out far easier and allows it to comply with most local regulations.

Power can either be pulled from a separate drop, or from the machine tool using the provided circuit breaker in the installation kit if the machine tool breaker allows.



6.3.2 Power Harness Installation

CDR kit contains power cable, circuit breaker, twist lock plug, and all necessary connectors.

1. Route supplied power harness and hardware into machine electrical panel.
   - Be sure to leave enough cable leading outside the machine for twist lock plug to reach CDR electrical panel.
   - If ¾" conduit plug is not available, knock out hole and use supplied cord grip.
2. Following local electrical codes, install 3phase power to 208-230VAC line (480V optional).
   - The CDR is phased Red, White, Black.
   - Wire power cable in parallel with machine tool power.
   - Be sure to leave enough cable to properly ground the unit.
3. Locate proper grounding point. Attach using supplied ring terminals.
4. Connect twist lock plug into receptable on bottom of CDR electrical panel.
   Warning, pump may auto start when CDR disconnect is turned on

	3 phase power installation should only be performed by qualified personnel.

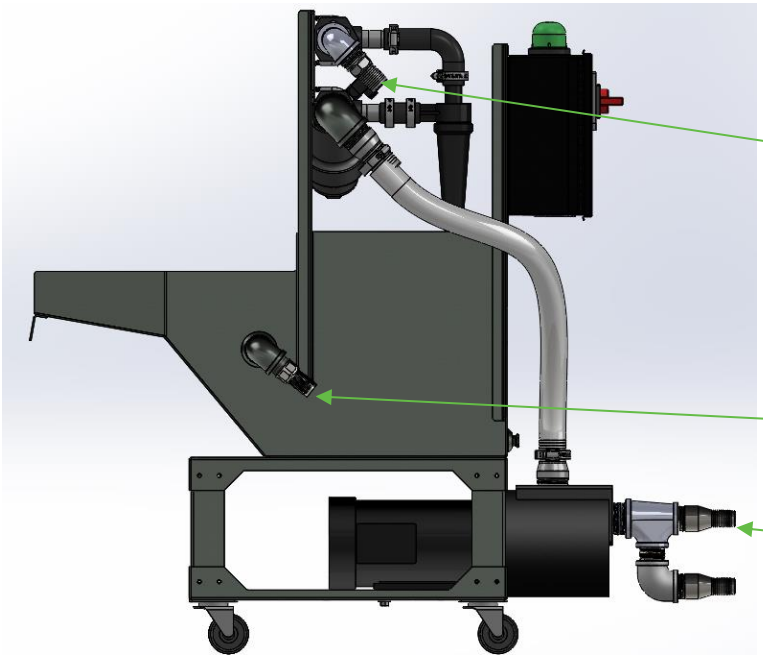
6.3.3 Control Signal Installation (Optional-Not Required)

Using machine tool control signals is not recommended by *MP SYSTEMS*. If required for your application, please contact *MP SYSTEMS* for more information.

- The CDR can be automatically turned on and off by connecting to a machine signal.
- This signal will also keep track of machine run time vs CDR run time.
- Identify a device or signal in the machine that will turn on whenever the machine is in a “ready” or “running” state. DO NOT connect to the E-stop circuit.
- MP Systems recommends connecting into the Green Tower Light 24vdc signal.
- This signal is always on when the machine is running in auto mode.
- Install the provided multiconductor cable into the machine cabinet and ensure there is enough length of cable to reach the CDR electrical panel.
- Connect the two ends of the 14pin connector together beneath the CDR e-panel.
- Locate the green light output from the machine. Cut wire and crimp female tab onto output wire close to output connect. Connect MP wire #1 (CDR Run Signal) along with green light wire into male tab. Connect both tabs together. Connect MP Wire #5 (0v) to the light’s 0v reference source.
- If using external signal, function will need to be enabled on PLC.
- To configure, enter PLC settings by pressing buttons 1 & 2 on PLC keypad.
- Enter pass “0515” and press enter button to cycle through screens.
- On the external signal screen, change the setting from 0 to 1 and press enter.
- *Warning, pump may auto start*
- The screen will now display “AUTO” and the function is now enabled.
- Note: Other signal(s) may be used. Wires #9 (MP +24v) & #1 (Pump On) can be wired across normally open dry contacts if available.

6.4 Plumbing Installation

Overview: There are three dip tubes and hoses that will need to be installed.



6.4.1 Dip Tubes Installation

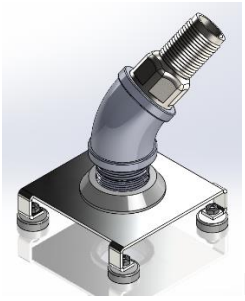
Some pipe fittings are sent loose, and extra fittings are included to allow for optimal configurations. Use quality pipe sealant/tape when installing. Tighten fittings securely.

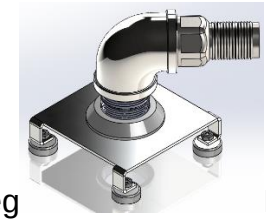
1. **Install Pump Inlet Fittings(s)**
    - The CDR is shipped with no pump inlet fitting(s) installed. They can be found in the kit.
    - For Dual Inlet configurations, install the assembled 2" NPT X 1 ¼" Barbs fittings into the front of the pump using appropriate pipe sealant and ensure it is fully tightened.
    - For Single inlet configurations, install the 2" NPT by 2" Barb. See photos for reference.

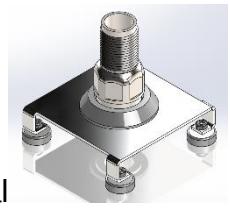
Dual 1 ¼" Inlets Assembly > Single 2" Inlet Hose Barb >

2. **Install Inlet Suction Dip Tube(s)**

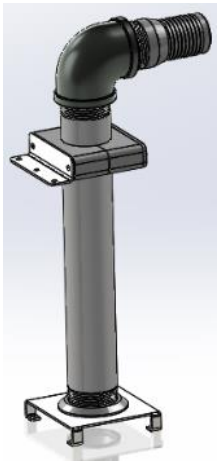
- Install inlets downstream from the conveyor outlets, in the path of coolant flow.
- The idea is to be able to filter out all fine particles that stay suspended in the coolant, not the larger chips that settle to the bottom as soon as they fall into the tank.
- If fines larger than 1/32” are present near conveyor output, simply place the inlet(s) further downstream in an area where no large chips are present.
- In some scenarios, the two suction inlets will be installed in different areas of the tank.
- In other scenarios, it is okay to locate the two suction inlets near each other.
    - Be sure to provide some space (2” at least) between the two low level plates.
- For dual inlets, configure plumbing to allow for proper hose routing depending on the location of the inlet plates. Most installs will use the 45-degree fitting with barb. Ex 1.

Ex 1. 45-Deg 

Ex 2. 90-Deg 

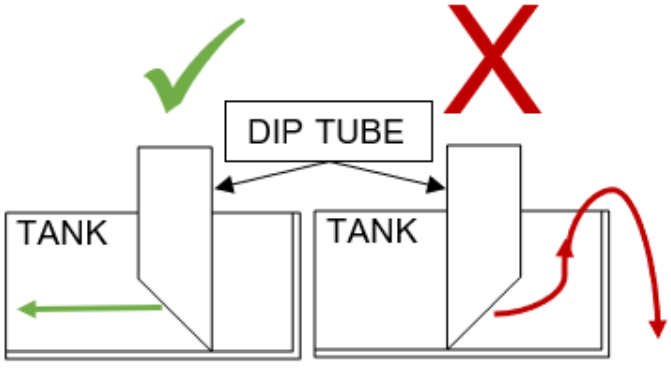
Ex 3. Vertical 

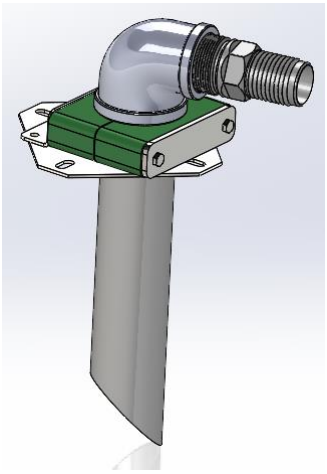
- For single 2” inlet, assemble the supplied dip tube pipe components and green clamp to fasten to tank top. ----------→
    - Ensure that the bottom of plate touches the bottom of tank.



3. Install Return Dip Tube

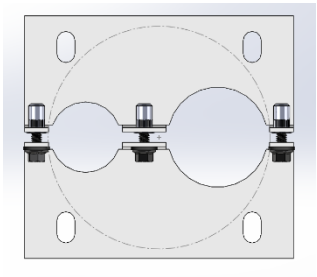
- Install on opposite side of tank from the Inlet(s) to create counterflow back to inlet and circulate the tank. Usually installed near existing coolant pumps in tank to provide an excess of clean coolant to the pumping area.
- Do not point towards tank wall or directly at coolant pump inlet.
- The 45 cut 2” pipe is shipped not assembled on purpose.
    i. You will want to decide which direction you want the 45-cut facing to direct return coolant flow properly.
- Important – Be sure to aim return flow appropriately.
    i. Mark the top of dip tube with an arrow indicating which direction the bottom is pointing to help ensure it is aimed properly once installed in tank.
    ii. Be sure to tighten fittings so that when the hose and bracket are installed, the 45 cut is still facing the proper direction.
- Optional – If more tank circulation is needed, a 2” pipe nip of the appropriate length and 2” elbow installed on the bottom can be used to replace the 45 deg cut pipe and provide better directional flow. These parts can be found at most hardware stores.
- An adapter plate with a pre-cut hole is provided if installing the return dip tube into a spare coolant pump opening in tank.
- Do not restrict return flow. This will cause severe loss in filtration efficiency.

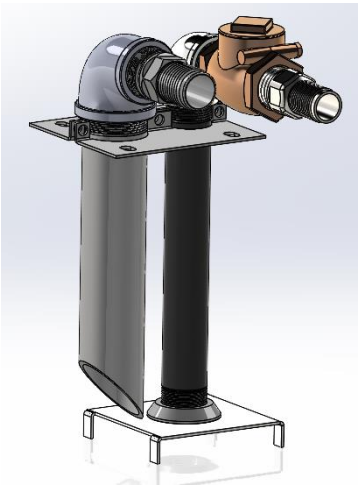




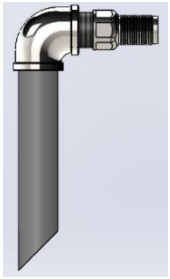
- **(If using HPC) Install Return Dip Tube & 1 ¼" High Pressure Coolant Pump Inlet**

    - Follow the same guidelines as above.
    - Use provided brackets shown below to install both dip tubes into spare coolant opening.
    - Can also be used to install settling tank overflow dip tube instead of HPC inlet.





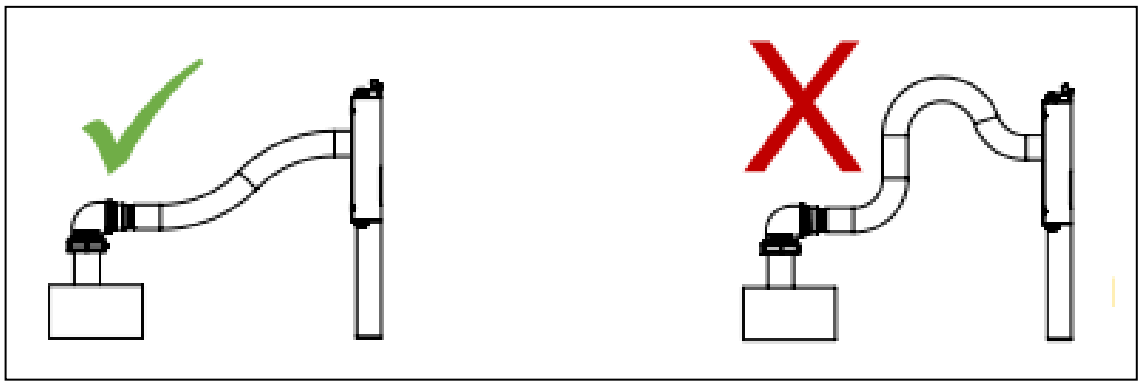
4. 1 ¼" Overflow



- Overflow is low flow (3gpm) and gravity fed from CDR settling tank port.
- Dip tube must be lower in height than the CDR settling tank overflow port.
- Usually placed on same side of tank as inlet but not on top of inlet.
- If no space available near inlet, place in most convenient location.
- Use green clamp to secure to top of tank.

6.4.2 Hoses and Clamps Installation

- All hoses should be carefully routed and cut as short as the layout allows.
- Use supplied green clamps to secure dip tubes or hoses to tank.
- Attach inlet hose(s) to pump inlet(s) and tighten clamp(s).
- If using dual magnetic low-level plates, attach hose(s), tighten clamps then install one in tank.
    - Leave one magnetic low level out of the tank to use as a funnel for priming pump.
- If using single 2” dip tube, wait to attach inlet hose to dip tube until after priming.
- 1 ½” Return hose should be routed and attached to return dip tube in a way that ensures the proper flow direction on the bottom of return tube. Reference the directional mark on top.
- 1 ¼” Overflow hose should be short and have a direct, gradual slope down into the tank.
    - Overflow hose MUST NOT be positioned higher than overflow port on settling tank.
    - Overflow port on settling tank MUST BE higher than overflow dip tube in machine tank.



- **80GPM to 60GPM conversion. (Optional – Contact MP Systems)**
  For smaller tanks, 80GPM may be too high of a flow rate and cause coolant spillover. The flow can be reduced to 60GPM easily with parts provided in installation kit.

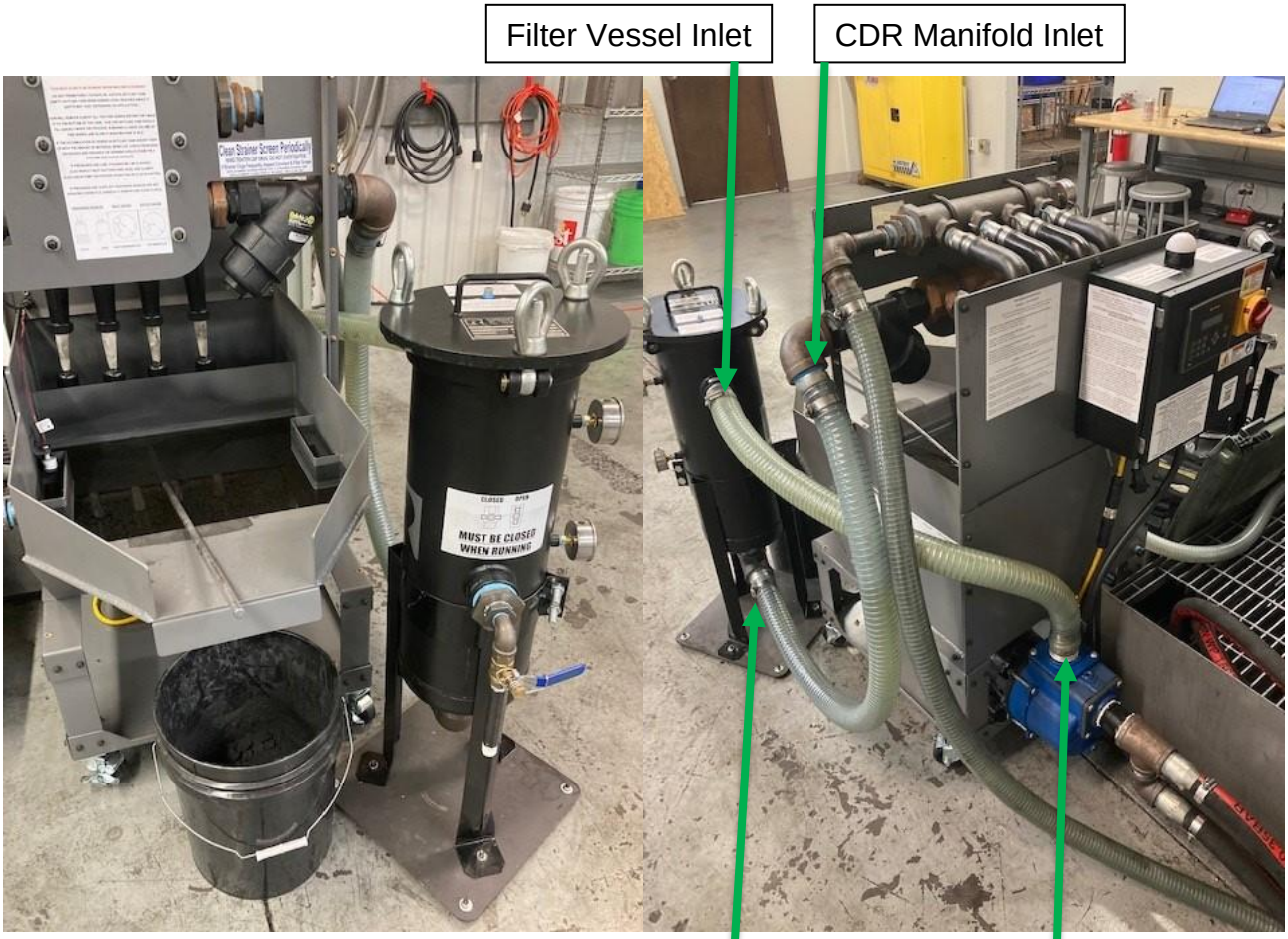
1. Simply remove one hydro-cyclone and its hose barbs from the manifold assembly and install the provided 1” NPT plugs into the manifolds in place of the hose barbs.

2. Next, a pipe restriction will need to be installed on the clean return plumbing to compensate for the reduced flow rate and prevent a syphon through the cones.
    - Remove the 1 ½” hose barb on the clean return manifold outlet.
    - Install the provided reducer bushing, ¾” pipe nip, and reducer coupling.
    - Re-install the 1 ½” hose barb into the end of the reducer coupling.

1. Remove Cyclone and Plug Ports.

2. Install 60GPM bushing, nip, and coupling.

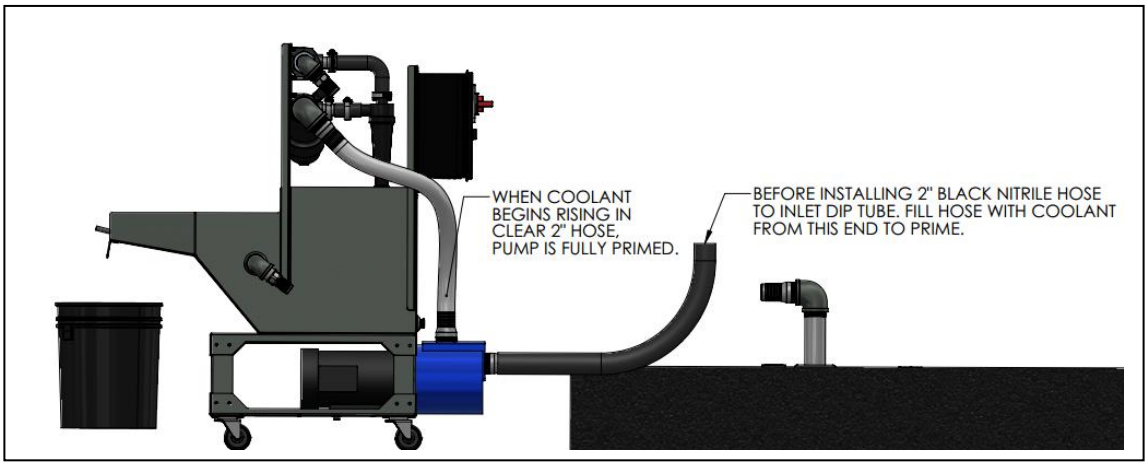
- **Severe Duty “SD” models only:**
- For Severe Duty models, there is an additional filter vessel that will need to be installed between the CDR pump outlet, and the CDR inlet manifold. Longer hoses are provided in the installation kit. The purpose of this vessel is to capture all particles larger than 1/16” but allow all the fine particles to flow through and be removed by the hydro-cyclones. There is a #1 size 1/16” perforated screen basket that can be manually emptied, cleaned, and re-used.
- IMPORTANT – Be sure to set filter life timer in CDR software to alert operator when to empty the filter basket. See label on side of CDR electrical panel for instructions or refer to manual. If timer is not set, or setting is too long, the basket will overfill, and hoses/pump will clog.
    1. Remove the 2” hose connecting outlet of CDR pump to cyclone inlet manifold.
    2. Position filter vessel near front corner of CDR settling tank. See image below.
    3. Install 2” hose from CDR pump outlet to filter vessel inlet.
    4. Install 2” hose from filter vessel bottom outlet to CDR cyclone manifold inlet.
    5. Make sure all hose clamps are tightened securely using the provided 5/16” nut driver.
- IMPORTANT – Filter vessel drain valve must be kept CLOSED while running.



6.4.3 Prime Pump & Fill Settling Tank.

Before turning the system on and checking motor rotation, the pump must first be primed. Failure to do this will result in damage to the pump's mechanical seal.

- Ensure inlet hose(s) are attached to the inlet of pump and the clamps are tightened securely.
- Fill the inlet hose from the dip tube end, so coolant fills both the hose and pump casting completely from inlet side. (Do not fill from outlet of pump as there is a check valve)
- Filling one hose and holding it higher than pump inlet fittings will cause fluid to fill the second inlet hose for dual inlet setups.
- Fill the CDR settling tank reservoir with coolant until fluid begins to drain back to machine tank through overflow hose. (Roughly 15 gallons of coolant will be required)



7. Operation

7.1 Start Up Checklist

After priming the CDR there are a few things to inspect before running the machine. MP Systems recommends running the system with the manual start (#9) and stop (#0) buttons when first turning the system on.

1. Motor Rotation – The pump in the CDR Series must run clockwise from back side. Backwards rotation will not only be noisy but will have very poor performance and the system will not function correctly. Using a flashlight, inspect the fan rotation on the back side of the motor. Fan should be spinning clockwise.

2. Inlet Pressure – Allow the system roughly 30 seconds to fully build and stabilize pressure. Check the inlet pressure gauge located on the side of the bottom manifold on the filters. Gauge should read between 18-25 PSI when operating correctly. 22PSI is an average pressure for the 4-filter system. The pressure is also displayed on the HMI screen but should always be checked against gauge pressure to ensure accuracy.

3. Return Pressure – Again, allow the system roughly 30 seconds to stabilize. Check the outlet pressure gauge located on the side of the top manifold of the filters. Pressure should be between 4-8 PSI. Outlet pressure should always be close to atmospheric pressure, with just a bit of back pressure to eliminate the syphoning effect caused by the outlet hose height, ensuring that air is not pulled into the system and returning to tank.

4. Filter Discharge – The apex of the filters all have a plastic “skirt” to direct flow downwards. There should always be a steady low pressure ring of fluid discharging around the circumference of the bottom of skirt. If one of more of the discharge skirts does not have a steady flow around the perimeter, this usually indicates low pressure/flow through the system on startup, or a plugged apex if the system has been running for a while. Refer to maintenance section for information on how to clean apex.

5. Overflow Hose – Ensure that the settling tank overflow hose and dip tube in machine tank are lower than the settling tank overflow port. This overflow return flow relies on the settling tank overflow port being higher than the machine tank coolant level. Air may become trapped in this house upon startup. If this occurs and the CDR alarms out due to the tank float, check to make sure that the hose is running along the floor and not higher than the overflow port, and make sure the dip tube connection and machine tank fluid level are lower than the port as well. Usually removing the air can be resolved quickly by letting the system turn off and fluid levels settle, then restarting the system and allowing the air pockets to work their way out.

6. Tank Circulation - Ensure proper circulation of tank flow from return dip tube back to inlet dip tube. Cyclonic filtration works based on the idea that it constantly circulates and re-filters the fluid to maintain cleanliness. By creating a depression of fluid height near the

inlet dip tube, and an excess of coolant height near the return dip tube, it will create a counterflow back towards the inlet dip tube.

7. Check run signal functionality. If using auto start, scheduled start, or an external signal, be sure to verify the system functions as intended.

7.2 Set Mode of Operation

A. Manual Operation using On/Off Buttons on PLC. (Factory Default)

- The pump can be manually turned on/off by pressing the #9 (ON) and #0 (OFF) buttons.

B. Auto Start When Powered On (Optional)

- The pump can be set to automatically turn on when the unit is powered up.
- To configure, enter PLC settings by pressing buttons 1 & 2 on PLC keypad.
- Enter pass “0515” and press enter to cycle through screens.
- On the auto start screen, change the setting from 0 to 1 and press enter.
- Cycle power off, then on to begin using auto start function.
- *Warning, pump will auto start*
- The screen will now display “AUTO” and the function is now enabled.
- #9 ON/#0 OFF buttons will still function to override auto controls; however, it will automatically START when power is cycled back on.

C. Scheduled Start/Stop RTC function (Optional)

- The CDR can be started and stopped by a scheduled RTC timer. Ex. 6am-6pm
- The CDR must be powered on for this function to work.
- To configure, enter PLC settings by pressing buttons 1 & 2 on PLC keypad.
- Enter pass “0515” and press enter to cycle through screens.
- Once you reach the appropriate screen, Set current time. Set current date.
- Enable scheduled run by entering “1” *Warning, pump may auto start*
- Set weekday start run time and end run time. *Warning, pump may auto start*

D. Install External Run Signal (Optional)

    - The CDR can be automatically turned on and off by connecting to a machine signal.
    - For wiring instructions, refer to section 6.3.3.
    - If using external signal, the function will need to be enabled on PLC.
- To configure, enter PLC settings by pressing buttons 1 & 2 on PLC keypad.
- Enter pass “0515” and press enter button to cycle through screens.
- On the external signal screen, change setting from 0 to 1 and press enter.
- *Warning, pump may auto start*
    - The screen will now display “AUTO” and the function is now enabled.

7.3 PLC & Alarm Displays

<table>
<tr><td><u>MAIN SCREEN</u>
PRESS “9” TO TURN ON
PRESS “0” TO TURN OFF
= SLEEP MODE ON/OFF
= RUNNING STATUS ON/OFF
= AUTO ENABLE/DISABLED
= RUN MODE
= INLET PRESSURE</td><td rowspan="2">
</td></tr>
<tr><td><u>Run Mode:</u>
MNL = MANUAL MODE ON/OFF
SCH = SCHEDULED RUN MODE
SIG = MACHINE SIGNAL RUN MODE</td></tr>
<tr><td colspan="2"><u>ALARM DISPLAYS</u></td></tr>
<tr><td>LOW PRESSURE</td><td>▪ Machine tank low on coolant – add coolant.
▪ Filter inlet pressure below set pressure.
▪ Clean CDR Y Strainer
▪ Clean CDR SD Filter Basket.
▪ Poor inlet pump conditions.</td></tr>
<tr><td>SETTLE TANK FAULT</td><td>▪ Settling tank level too high.
▪ Settling tank may be full.
▪ Scrape debris form settling tank
▪ Overflow hose improperly routed
▪ Air trapped in overflow hose</td></tr>
</table>

7.4 PLC Settings

	Caution: Modifying PLC settings may result in malfunction. Please contact *MP SYSTEMS* before modifying PLC settings.

MAIN DISPLAY BUTTONS

- Press **"i"** button to access program version screen.
- Press ↓ and ↑ to access alarm history.
- Press → and ← to access run time hour counters. Hours/Days/Months

USER SETTINGS MENU

From the main PLC HMI screen, press buttons 1 & 2 simultaneously and release to prompt menu password.

- User Settings Password = 0515
- Press enter ↵ button to cycle through screens or input setting(s).
- Press **"i"** button to go back to previous screen.

AUTO START – When turned on, this feature will allow the system to automatically run whenever powered on. To enable, change the setting from 0 to 1 and press enter. After feature is turned on, power must be cycled off then on again to auto run. The main screen will now display "AUTO" and the function is now enabled.

TIME – This screen is used to set the current time for the real time clock (RTC). Enter current time in 24hr. Format is HH:MM:SS

DATE – This screen is used to set the current date for the RTC. Enter current date in DD/MM/YY format.

SCHEDULED RUN – When turned on, this feature can be used to automatically run the system during a set time of the day. To enable, change the setting from 0 to 1 and press enter. The following screen will be used to enter the desired time frame for the system to automatically run. The main screen will now display "AUTO" and the function is now enabled.

START-STOP TIME – If using the scheduled run function, this screen will be used to set the start and stop time of day to run the system. Enter desired start time in 24hr format and press enter. Enter desired stop time in 24hr format and press enter. When the RTC reaches the desired scheduled run time, the system will automatically start, and the main display will say "SCH" indicating that it is running in its scheduled time.

EXTERNAL SIGNAL – (Only functions when external interface signal with machine tool is connected). When turned on, this feature will allow the system to run automatically whenever an external 24vdc signal is received from the machine tool. To enable, change the setting from 0 to 1 and press enter. The main screen will now display “AUTO” and the function is now enabled. When the external signal is received, the main screen will also display “SIG” indicating that it is receiving a signal to run.

FILTER ALARM – (Optional) This feature can be used to alert the operator when the CDR requires maintenance based on an elapsed amount of time in hours. To enable, change the setting from 0 to 1 and press enter. The hour timer can be configured on the following screen.

FILTER LIFE – This will be the set amount of time that the system runs before alarming out and flashing the red light indicating that the system requires maintenance. Time will vary depending on application, material removal rate, pre-filtration, etc. We recommend starting at a low time (ex 20 hours), and increasing time as needed depending on full the system is. Enter the desired time in hours and press enter. There is also a filter warning percentage that can be programmed on the next screen to alert the operator that the system requires maintenance but will continue to run the system until the total filter life expires.

FILTER WARNING – This will be the percentage of the total “Filter Life” time that the system will send the operator a warning message on the HMI indicating that maintenance will be required soon. The status light will switch between green and red flashing indicating that the system is still running but will require maintenance soon. Once maintenance is finished, press and hold the enter button for 5 seconds to reset the timer and begin running again. (Ex, if “Filter Life” is set to 100 hours, and “Filter Warning” is set to 25%, the system will send a warning at 75 hours.)

DEFAULTS – To revert to factory default settings, input 1234 and press enter.

FACTORY SETTINGS MENU

For the following menus, please contact MP Systems before changing settings.

From the main PLC HMI screen, press buttons 1 & 2 simultaneously and release to prompt menu password.

- User Settings Password = 3434
- Press enter button to cycle through screens or input setting(s).
- Press **"i"** button to go back to previous screen.

ALARM LATCH – (Optional – Only applicable if an external signal harness to the machine control is installed). The alarm output from the CDR can be configured to be either latching or pulse for 5 seconds. To change from latching to pulsing, change the setting from 1 to 0 and press enter.

LOW PRESSURE ALARM – This setting is used to detect when there is not sufficient pressure at the inlet of the hydrocyclones and shut the unit down. This setting should not be changed unless discussed with MP Systems. When operating properly, the system inlet pressure should always exceed 20PSI. To change setting, enter new pressure in PSI and press enter.

PRESSURE ALARM DELAY – This is the amount of time in seconds that the system pressure can be below the low-pressure alarm set point before the system alarms out. This setting should not be changed unless discussed with MP Systems. To change setting, enter new time in seconds and press enter.

FLOAT ALARM DELAY – If the CDR settling tank fluid height gets too high and the tank float rises, it will begin a timer before alarming out and shutting the system down. This setting should not be changed unless discussed with MP Systems. To change setting, enter new time in seconds and press enter.

FEED PUMP SLEEP CYCLE – (experimental) In order for small particles to settle to the bottom of the settling tank, it requires time and laminar flow. This feature can be used to shut the CDR system down for a set amount of time and allow particles to settle easier in settling tank. It was programmed in as a theoretical idea but is not recommended to be used unless discussed directly with MP Systems. To enable, change the setting from 0 to 1 and press enter. Cycle time off/on can be adjusted on the following screens.

FEED PUMP CYCLE OFF – Amount of time in minutes that the CDR system will turn off to allow debris to settle. Input time in minutes and press enter.

FEED PUMP CYCLE ON – Amount of time in hours/minutes that the CDR system will run before it shuts down for sleep cycle. Input time in hours/minutes and press enter.

ALARM SOUND – There is an optional buzzer sound that can be set to alert the operator whenever the system is in alarm. To enable, change the setting from 0 to 1 and press enter.

OFF DELAY TIME – (Only applicable if using external signal harness to run CDR). When using an external signal to run the system, there is an off delay that will continue to run the pump for a set amount of time after the external signal is removed. This is done so the CDR can continue to run for a while and clean up the tank after a part cycle is finished. The time is set in minutes and the default time is 5 minutes. To change, input new time in minutes and press enter.

8. Maintenance

General maintenance for CDR Series consists of scraping debris from settling tank, periodically cleaning Y strainer before inlet of spin filters, and in some cases cleaning out the discharge apex of spin filters. The settling tank should only be scraped when a reasonable amount of debris has built up to the point where large quantities can be removed at a time. DO NOT AGITATE SETTLING TANK UNNECESSARILY.

CLEANING Y STRAINER:

The CDR system is meant to filter coolant that has already passed through some type of filtering conveyor. The Y strainer is there as a pre-caution to ensure large debris does not make its way into the spin filters.

1. Turn CDR system off by pressing button 0, then turning off all power with disconnect.
2. Allow system 30 seconds for any fluid above Y strainer height to drain.
3. Carefully remove Y strainer cap, let fluid drain into settling tank, and pull strainer screen out.
4. Using proper PPE, knock any loose chips into chip hopper.
5. Clear screen using compressed air or water hose.
6. Reinstall Y strainer screen and cap and hand tighten only.

CLEANING FILTER VESSEL BASKET: (SEVERE DUTY MODELS ONLY)

For machines that do not have a filtering conveyor, a “Severe Duty” CDR is required that includes the additional of a filter vessel with a cleanable mesh basket.

1. Turn CDR system off by pressing button 0, then turning off all power with disconnect.
2. Open drain valve on filter vessel and allow system to drain.
3. Open lid on filter vessel and allow more time to drain if fluid level is above top of basket.
4. Carefully remove basket and empty chips into hopper.
5. Basket screen may need to be cleaned before re-installing.
6. Reinstall basket carefully and make sure it’s seated properly.
7. Clean O-ring and mating surfaces on top of filter vessel.
    a. If O-ring is damaged, replace with a new one.
8. Reinstall filter lid and tighten all bolts snug. Tools are not generally required to get a proper seal.
9. CLOSE DRAIN VALVE BEFORE TURNING SYSTEM BACK ON.

CLEANING SPIN FILTER DISCHARGE APEX ORIFICE:

Depending on the application and debris load, particles or layers of debris may build up causing the discharge apex of the spin filter to clog and not properly deposit the concentrated slurry into the settling tank. Cleaning is quick and easy.

1. Turn CDR system off by pressing button 9, then turning off all power with disconnect.
2. Allow system 1-2 minutes for fluid to drain out of spin filters.
3. Using a rag in hand, unthread the bottom nut to remove the ceramic apex cone, being careful not to damage or lose o-ring.
4. Use a nylon bore brush, carefully clean out the ¼" apex opening to remove any debris that may be built up.
5. Reinstall filter cone, ensuring o-ring is properly seated, onto the spin filter. Hand tighten with rag.
6. Turn system back on, let pressure stabilize, and visually inspect the discharge skirt, making shirt there is an even ring of fluid around the edges.

REPLACING WORN HYDRO CYCLONES:

Depending on the abrasive nature of the particles going through the filters, they may wear down over time and need to be replaced. The filters are assembled from modular parts that can be replaced as needed. Contact MP Systems for more information and to purchase replacement components.

9. Spare Parts

Part	Part Number #
Y Strainer Screen – 20 Mesh	HF 2” STRAINER SCREEN 20M
Y Strainer O-Ring	M ORING .188 X 3.250 75A
“SD” Perforated Filter Basket	HF FILTER BASKET 1/16” PERF #1
“SD” Filter Vessel O-Ring	M ORING MPA
Hydro-Cyclone Inlet Chamber	SF EN65 FEED CHAMBER
Hydro-Cyclone Main Cone	SF EN65 CONE
Hydro-Cyclone Ceramic Cone Assembly	SF APEX ASSY
Hydro-Cyclone Inlet-Cone O-Ring	M ORING .125 X 2.25 75A
Hydro-Cyclone Ceramic Cone O-Ring	M ORING .062 X 1.000 75A
5 Gallon Bucket Black	SH BUCKET - 5 GALLON BLACK
3HP Feed Pump Inlet Gasket	P SP 3HP INLET GASKET W/FLAP
3HP Feed Pump Outlet Gasket	P SP 3HP OUTLET GASKET
3HP Feed Pump Mechanical Seal	P SP PUMP SEAL SCO
Inlet Manifold Gauge	H GAUGE 60PSI BK 1/4
Return Manifold Gauge	H GAUGE 30PSI BK 1/4
Settling Tank Float	ES VERT FLOAT SW X 2N
Inlet Manifold Pressure Sensor	ES 4-20 50 X 4N

10. Warranty Information

CDR Series equipment comes standard with a 2 year parts warranty. Warranty is void if proper installation, specification, and operational procedures are not followed. Contact MP Systems directly for warranty claims.

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