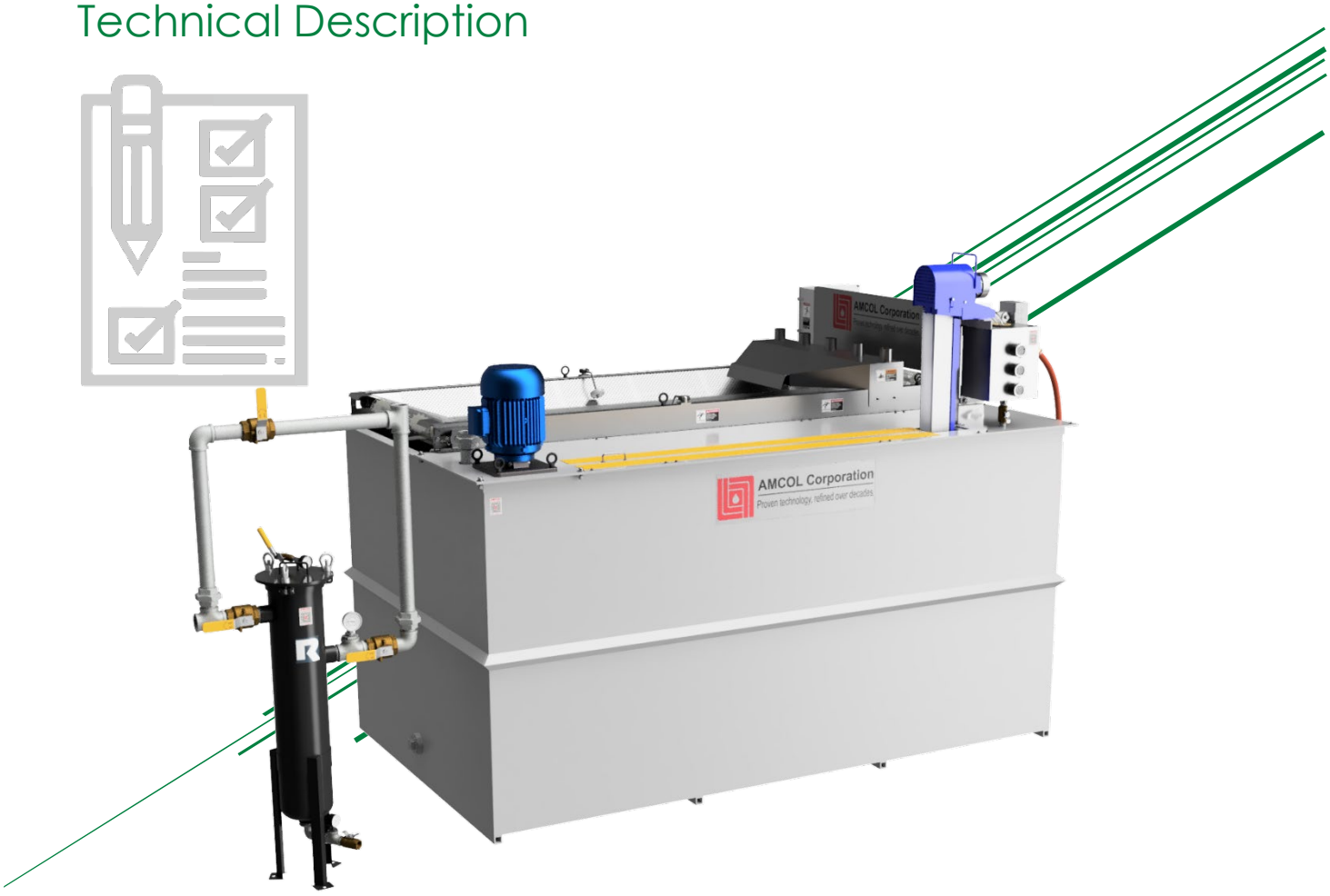
AMCOL CORPORATION

# 3076 COOLANT PURIFICATION SYSTEMS

## Technical Description



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**AMCOL Corporation**

| 21435 Dequindre, Hazel Park, MI 48030 | 248-414-5700 | fax: 248-414-7489 | www.amcolcorp.com |
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# 1 Introduction

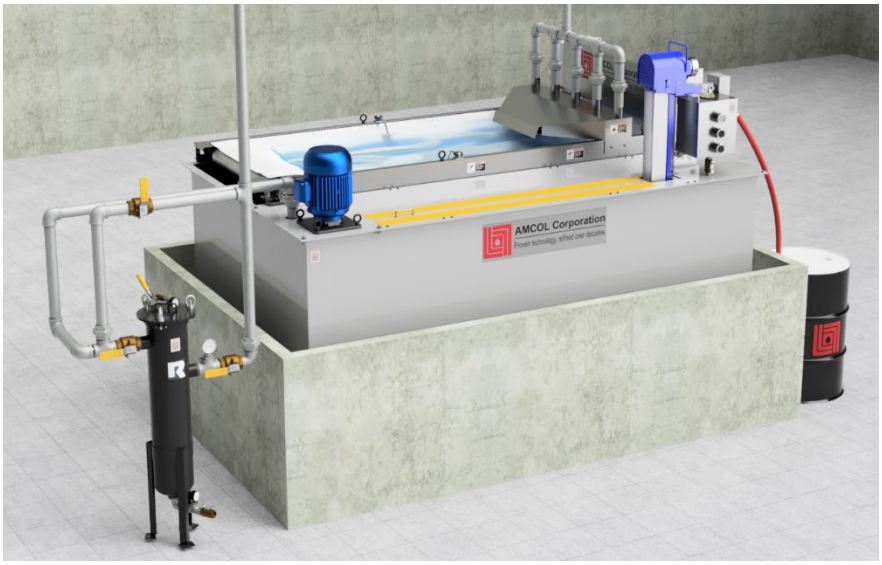
AMCOL has been formulating CHARCOOL tube and roll forming mill coolants for more than 60 years. This experience has given a unique perspective to design a complete coolant sump, filtration, and oil skimming package. The AMCOL 3076 Coolant Purification System is designed to enhance the performance benefits of CHARCOOL mill coolants.

CHARCOOL mill coolants set the industry standard with superior rust protection and tool life, reduced roll marking and build up, and maximum useable sump life. These coolants are typically flooded over tooling to wash scale and other contaminants back to the filtering and skimming operation. When filtered properly, CHARCOOL provides excellent results while also providing the maximum sump life possible.

In order to best utilize a CHARCOOL coolant, or any other mill coolant, AMCOL developed the 3076 Coolant Purification System. The 3076 combined with CHARCOOL coolants will:

- Maximize sump life.
- Wash contaminants away from the mill tooling and remove them through purification.
- Improve cooling capacity with solids and tramp oil removed.
- Reduce costs by separating coolant from purified tramp oil.

With the best-in-class CHARCOOL coolant and the properly designed 3076 Coolant Purification System, you can maximize productivity, quality, and profits.



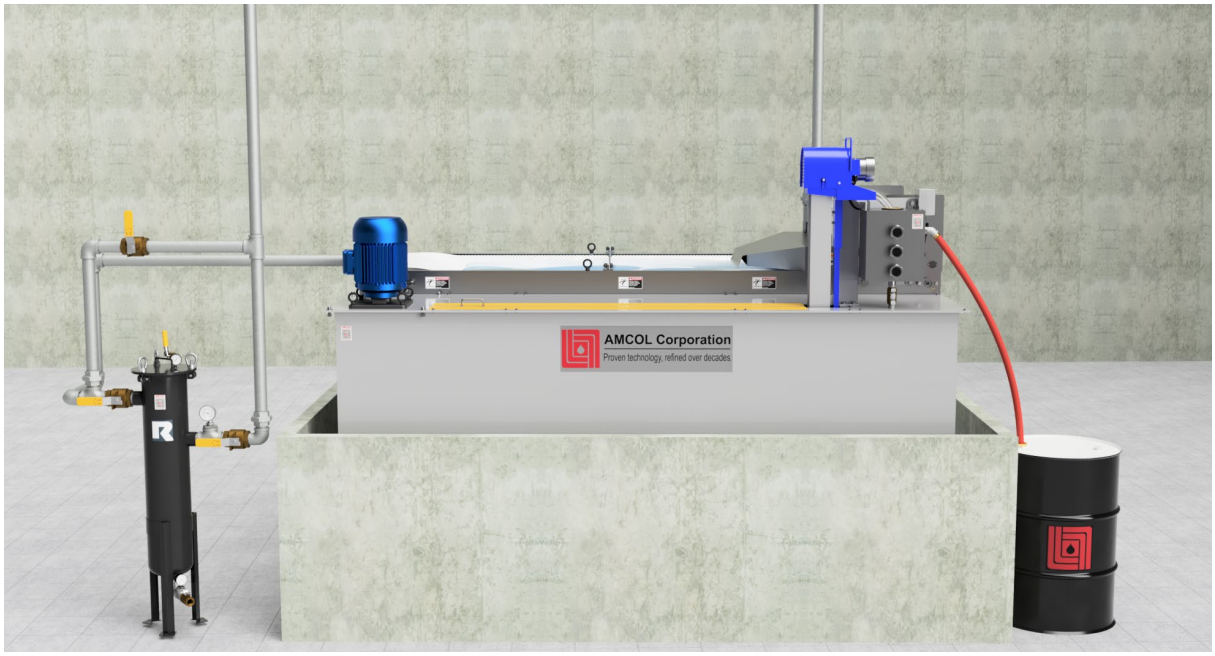
# 2 System Overview

The AMCOL 3076 Coolant Purification System is designed specifically for cold roll forming and welded steel tube mills. These systems are designed to remove various contaminants from the coolants used in tube forming, such as:

- Solid particles created by the cold rolling process
- Tramp oils removed from the coil
- Leaks from the machinery generated in high production processes

Four standard configurations are designed to cover a range of mill sizes and required flow rates.

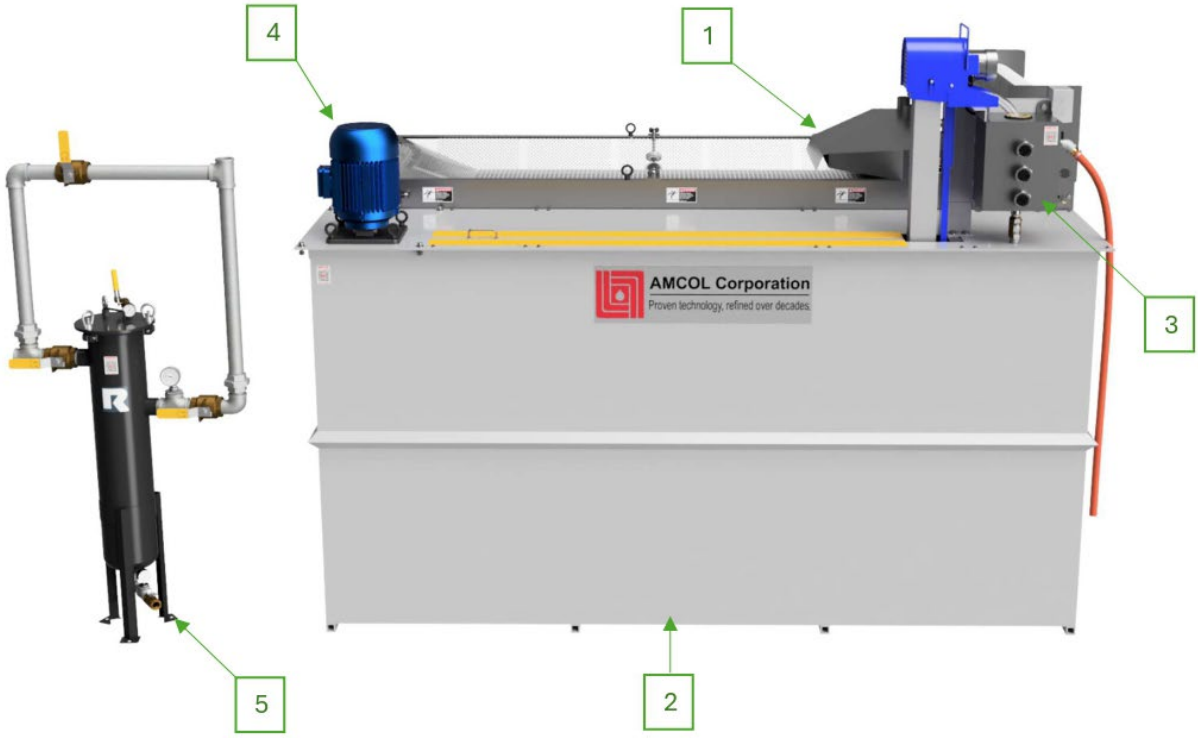
The AMCOL 3076 Coolant Purification System is designed to be a self-contained, fully integrated component of the mill system. Used coolant from the mill and after the forming process is either pumped from area sumps or is gravity fed to this system. Coolant is then purified through various filtration and separation methods before being pumped back over the tools. The 3076 is designed to be installed as a closed loop, integral system that filters all the mill coolant.



# 3 Description of Components

Each 3076 comes standard with the following components:

1. Automatically Indexing Media Filter (AIMF)
2. Coolant Reservoir
3. Oil Skimming with Decanting Tank
4. Transfer Pump
5. In-line Bag Filter



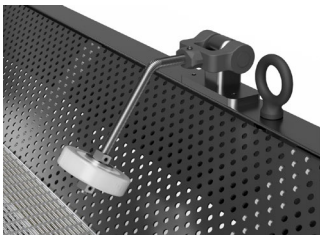
# 4 System in Detail

## *Automatically Indexing Media Filter (AIMF)*

CHARCOOL tube and roll forming coolants are formulated to flush metal fines and other solid contaminants from the forming process and carry them away. AMCOL Automatic Indexing Media Filters are used to filter out sludge and solids from circulating coolant in tube mills and roll forming machines as it is recirculated back into the holding tank. These gravity bed filtration systems are designed to allow for virtually unattended removal of solid contaminants from the mill coolant.

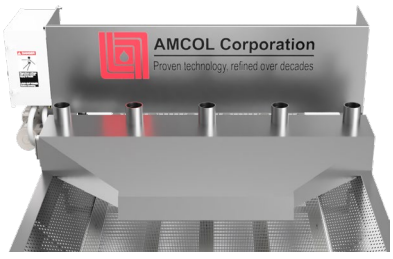



A rolled, disposable 40-micron media filter fabric is slowly advanced over an open bowl using a flat wire conveyor belt to support and move the filter underneath the coolant. As the fabric becomes loaded with solids, flow through the fabric slows. This causes the coolant level in the bowl to rise and activate a float switch, allowing the drive motor to advance the conveyor and fabric. When enough clean fabric is advanced, the float deactivates and stops the conveyor until the level rises again.



Fabric is held in place with roller guides located on the sides of the bowl, is centered with end caps located near the clean roll of fabric, and is held close to the conveyor with a rod located on the fabric. Used fabric is collected in a customer supplied hopper. Perforated panels allow for directed overflow with system failure.

A diffuser located above the fabric bed and bowl is included with 3" pipe connections for coolant return from sump pumps or gravity fed systems on or in the mill. This diffuser slows and directs an even coolant flow in the direction of the fabric and into the bowl.




The surface area of the bed determines the rate of coolant filtration. Three standard AIMF sizes are available for different flow requirements: 75, 105, and 150 gallons per minute.

# *Coolant Reservoir*

| Transfer Pump Capacity (GPM) | AIMF Flow Rate (GPM) | Coolant Reservoir Capacity (gal.) |
|---|---|---|
| 75 | 75 | 1000 |
| 105 | 105 | 2000 |
| 75 x 2 | 150 | 3000 |
| 150 | 150 | 3000 |

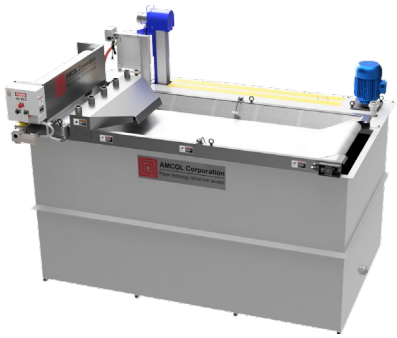
After being filtered through the AIMF, coolant is contained in a carbon steel reservoir designed to hold a specific volume of coolant before it is pumped back to the mill. These reservoirs are framed and sized to fit the AIMF, oil skimmer with decanter, transfer pump, and in-line bag filter. Standard capacities for each AIMF can be seen in the table. The 3000-gallon reservoir is capable of purifying coolant from one large mill and retuning it at approximately 150 GPM, or it can be used to return coolant to two smaller mills at approximately 75 GPM each.

An included coupling is standard on the lower side of the reservoir that can be used to connect additional components, such as a backup pump or heat exchanger. Another coupling on the top of the reservoir is included to avoid overfilling of the tank, which should be connected to a backup containment reservoir with a volume no less than two-thirds of the coolant reservoir capacity.

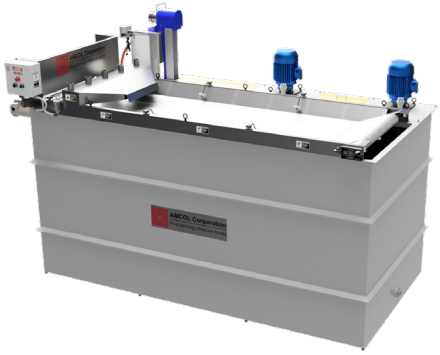
75 GPM, 1000 gal.



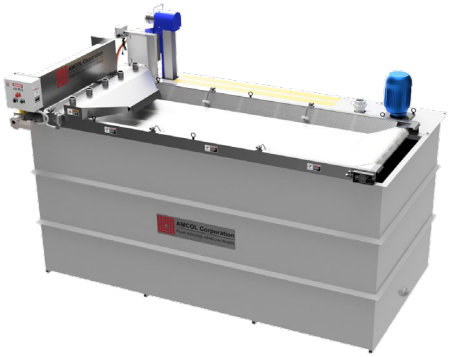
105 GPM, 2000 gal.



75 x 2 GPM, 3000 gal.

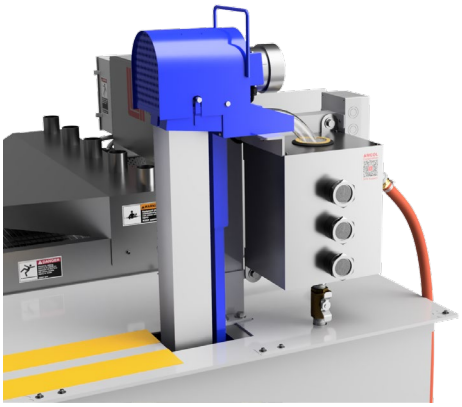


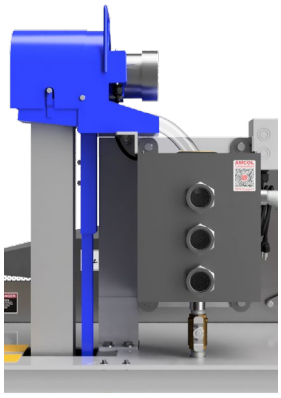
150 GPM, 3000 gal.



## *Oil Skimmer with Decanting Tank*

The constant flow from the AIMF tends to force floating tramp oils to one corner of the reservoir, which can be removed with a stainless-steel belt skimmer. Collected oils are transferred through a sieve to a 5-gallon decanting tank where the oil can separate from the coolant before being transferred to a customer supplied waste oil container.





Coolant content in the decanting tank can be viewed through sight windows at three levels. Coolant should be drained back to the coolant reservoir after reaching the bottom window and must be drained after reaching the middle.

If tramp oil is generated below the skimmer's capacity (20 GPH), a timer is utilized to ensure the skimmer is only on when tramp oil is present.

## *Transfer Pump*

A close coupled end suction vertical centrifugal pump is used to generate coolant flow and pressure back to the mill. Generally, pump capacity is designed to generate a 30 PSI discharge pressure at approximately the flow limitations of the AIMF bed filter. The pump is supplied with the longest available extension so the impeller and impeller housing are immersed in the coolant as often as possible. When the coolant level is below the impeller, the intake is hard piped to the bottom of the reservoir to allow for continuous fluid flow, regardless of coolant level. This close coupled design utilizing an immersed impeller means that there are no seals that could fail and require replacement. The pump is installed with union connections and eye bolts for hoisting to allow for quick disassembly when inspection, maintenance, and repairs are needed.



## *In-line Bag Filter*

CHARCOOL coolants quickly and effectively eliminate suspended particulates. An in-line bag filter is installed after the pump to polish coolant to 5 micron before returning to the mill tooling. This bag filter can filter coolant to a smaller particle size than the AIMF or any other form of mechanical separation could.





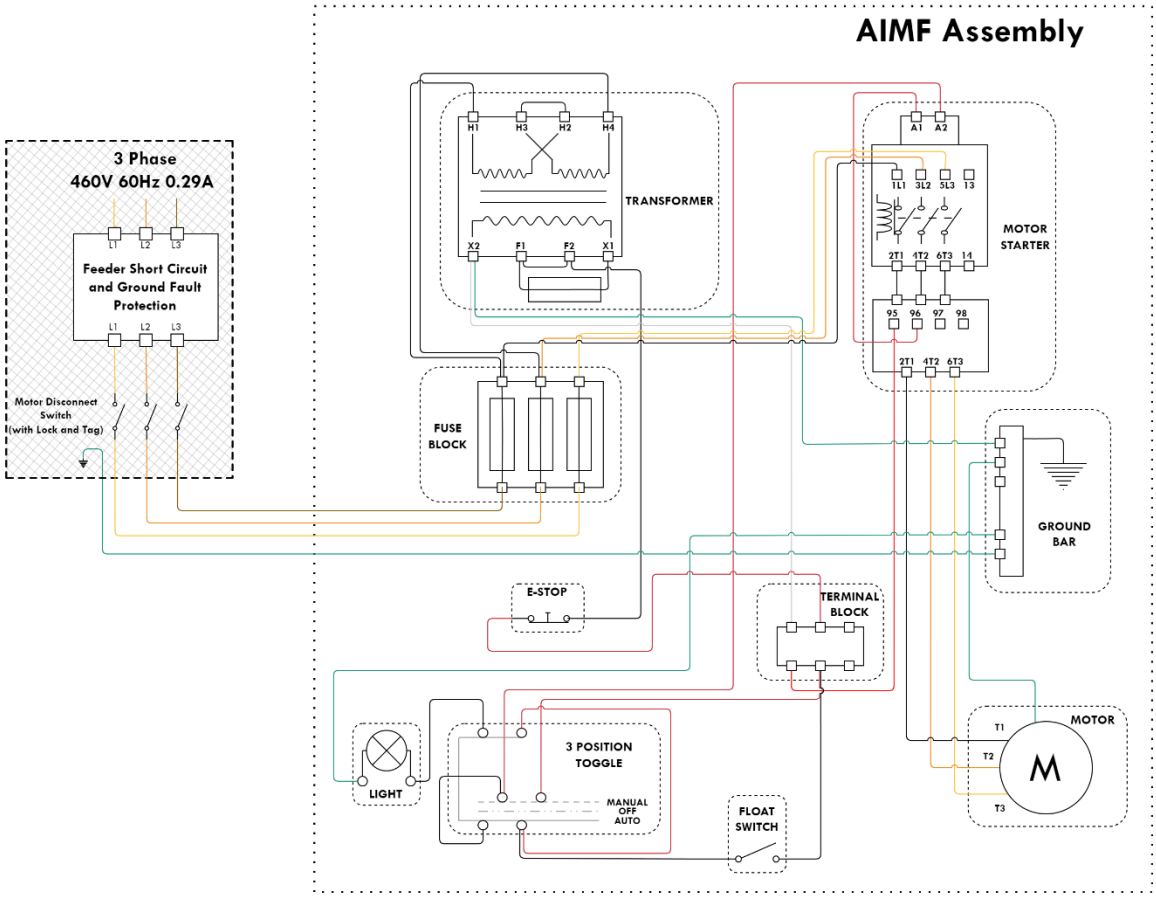
The in-line bag filter includes inlet and outlet pressure monitors and a thermometer to monitor coolant pressure and temperature as it returns to the mill. These pressure gauges can also be used to monitor the condition of the bag filter. The in-line bag filter features a durable Viton lid gasket. Additionally, a filter bypass includes lock and tag compatible ball valves on the entry and exit ports to ensure a safe working environment during maintenance and repair.

# 5 2200 CHARCOOL Coolants



2200 CHARCOOL is a series of water-miscible synthetic coolant concentrates used to cool, lubricate, and prevent corrosion in the forming and fabricating of welded tubes and cold roll formed profiles. 2200 CHARCOOL is exceptional at cleaning equipment and finished products. 2200 CHARCOOL contains excellent tramp oil rejection properties and is filterable to 5 micron to maintain a long and stable sump life. 2200 CHARCOOL is compatible with multiple metals commonly seen in the welded tube and roll forming industry. AMCOL offers a variety of CHARCOOL products based on your needs and desired benefits. When combined with a 3076, CHARCOOL can be used to its maximum potential. Contact an AMCOL Sales Representative for more information about CHARCOOL.

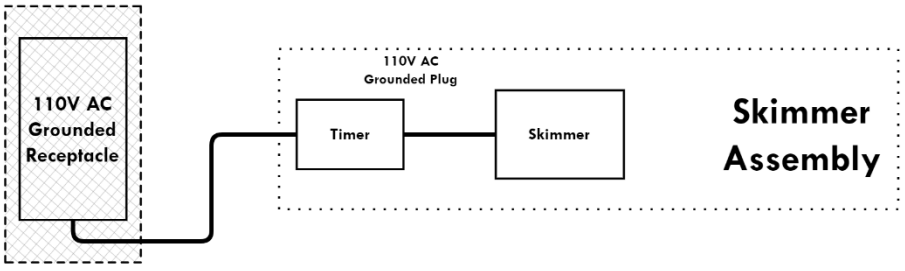
# 6 Installation Requirements




**AMCOL 3076**
**AIMF**
**ELECTRICAL DIAGRAM**

= Included with Complete System

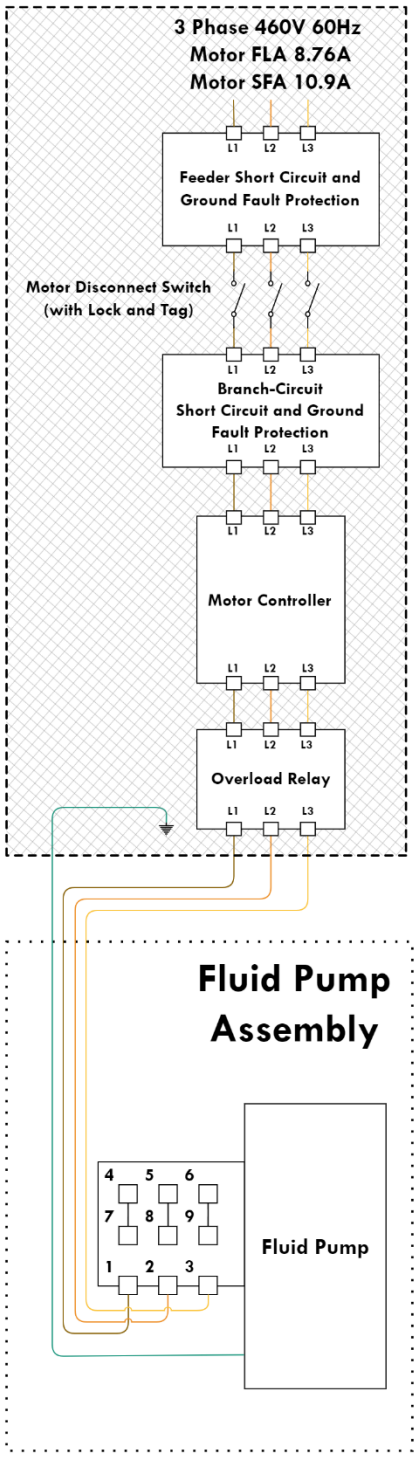
= Customer Supplied




**AMCOL 3076**
**SKIMMER**
**ELECTRICAL DIAGRAM**

= Included with Complete System

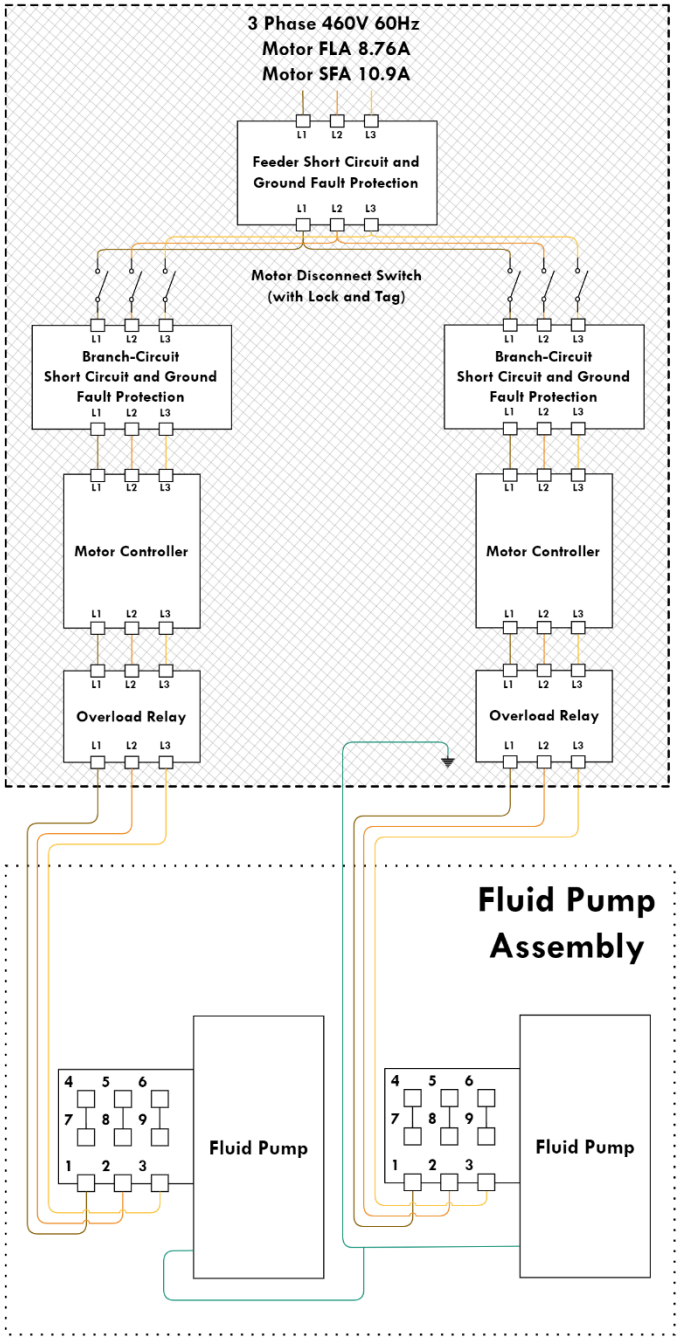
= Customer Supplied




**AMCOL 3076 SINGLE PUMP ELECTRICAL DIAGRAM**

= Included with Complete System

= Customer Supplied




**AMCOL 3076**
**DUAL PUMP**
**ELECTRICAL DIAGRAM**

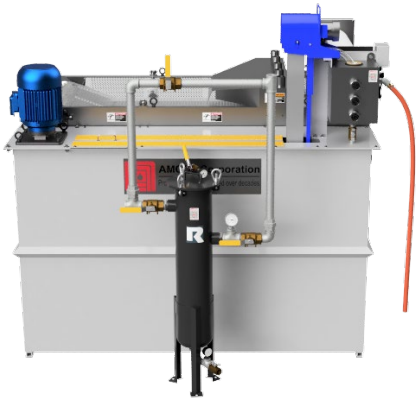
= Included with Complete System

= Customer Supplied

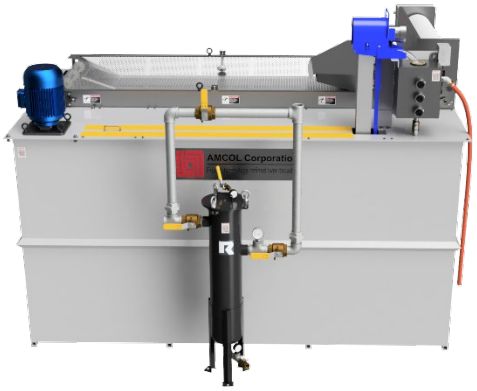
*****Plumbing to inter-connect the pumps to the filters are not included. These are customer supplied.**

# 7 How to Order

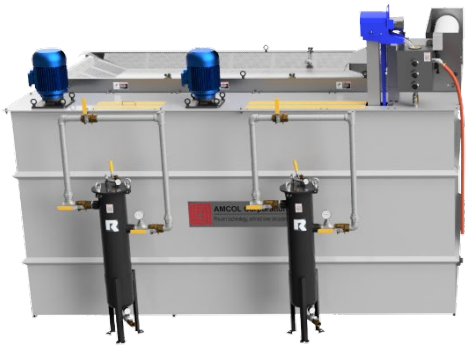
To determine which 3076 system to purchase, the only required information is the flow rate of the mill. This will allow us to specify which reservoir and AIMF will work best for your mill. Additionally, each of the main components may be purchased separately to retrofit existing systems. Contact your AMCOL sales representative for any questions or to place an order for the system.



3076B-1K75S-75-1B



3076C-2K105S-105-1B



3076D-3K150S-75X2-2B



3076D-3K150S-150-2B

Individual Components:

| Flow Rate | Automatically Indexing Media Filter | In-Line Bag Filter | Transfer Pump | Oil Skimming with Decanting Tank | Reservoir |
|---|---|---|---|---|---|
| 75 GPM | AIMF 75A | 3076-ILBF-R15 | 19-PA-3076B | 19-OST-4-60 | 17-3076B-R-1000 |
| 105 GPM | AIMF 105A1 | 3076-ILBF-R20 | 19-PA-3076C1 | 19-OST-4-60 | 17-3076C1-R-2000 |
| 150 GPM | AIMF 150A | 3076-ILBF-R30 | 19-PA-3076D | 19-OST-4-60 | 17-3076D-R-3000 |
| 75 GPM x 2 | AIMF 150A | 2 x 3076-ILBF-R15 | 2 x 19-PA-3076B | 19-OST-4-60 | 17-3076D-R-3000 |

For information regarding installation, operation, and maintenance please refer to the AMCOL 3076 Coolant Purification Systems Operator's Manual.

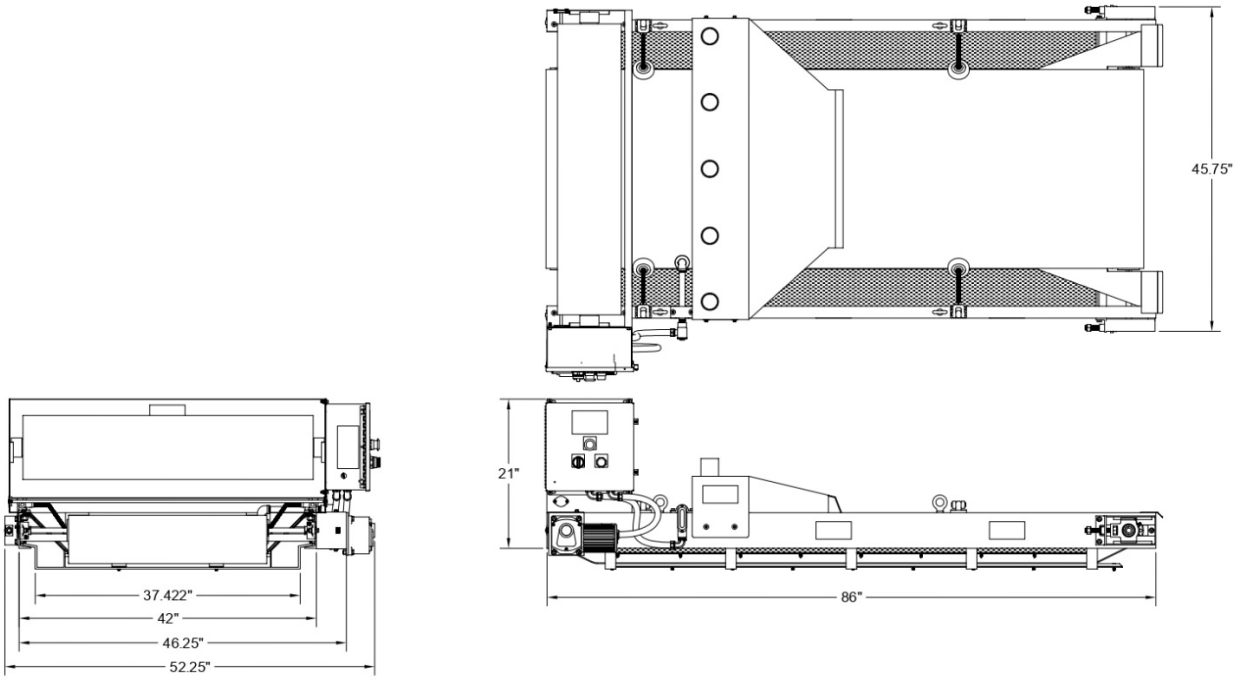
AMCOL Corporation

3076 Support

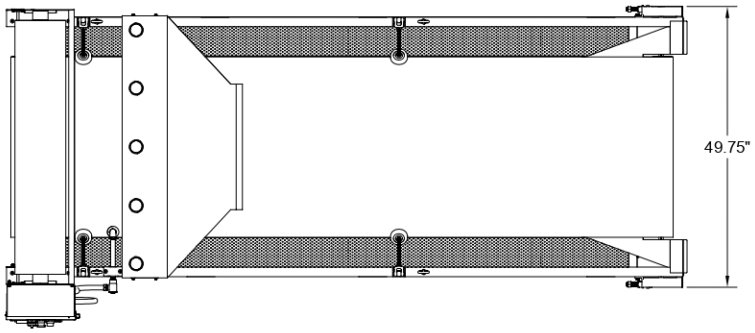
# 8 Technical Drawings

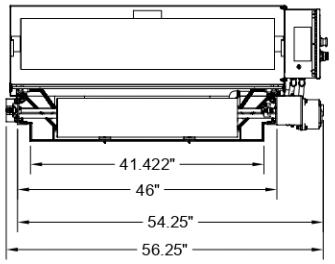
## *Automatically Indexing Media Filter (AIMF)*

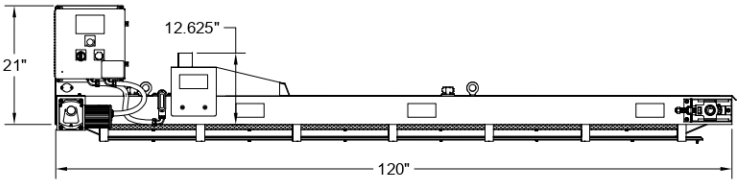
AIMF 75A Approx 475 lbs.



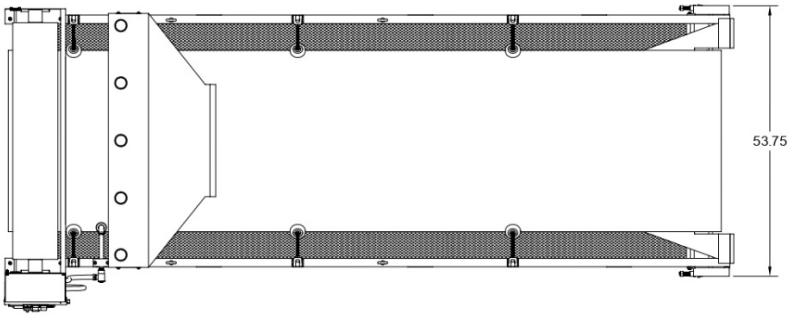
AIMF 105A1 Approx 619 lbs.

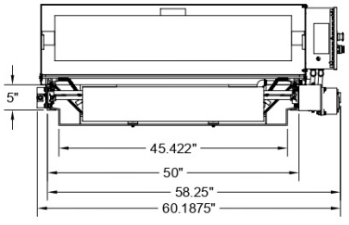


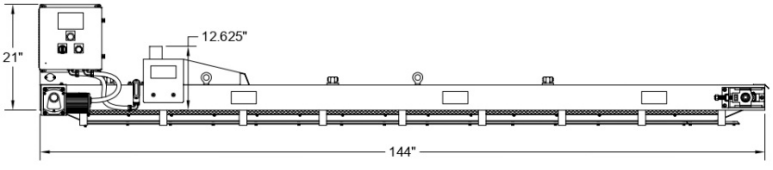




AIMF 150A Approx 700 lbs.

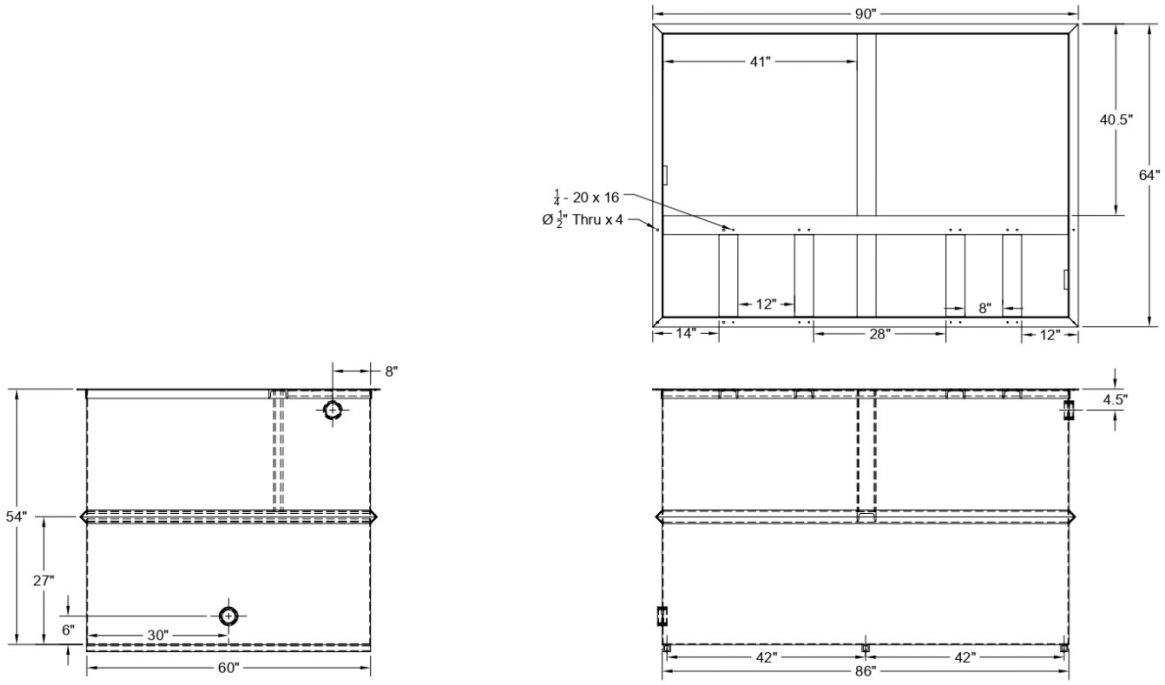


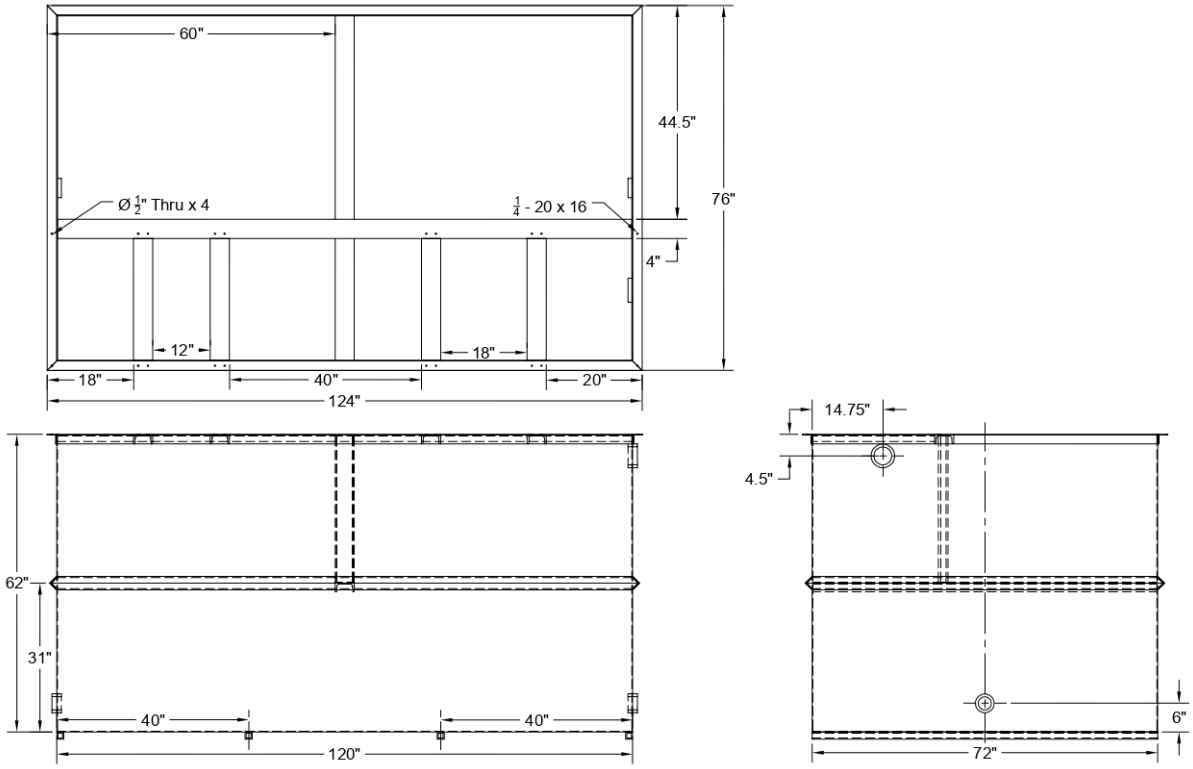



# *Coolant Reservoir*

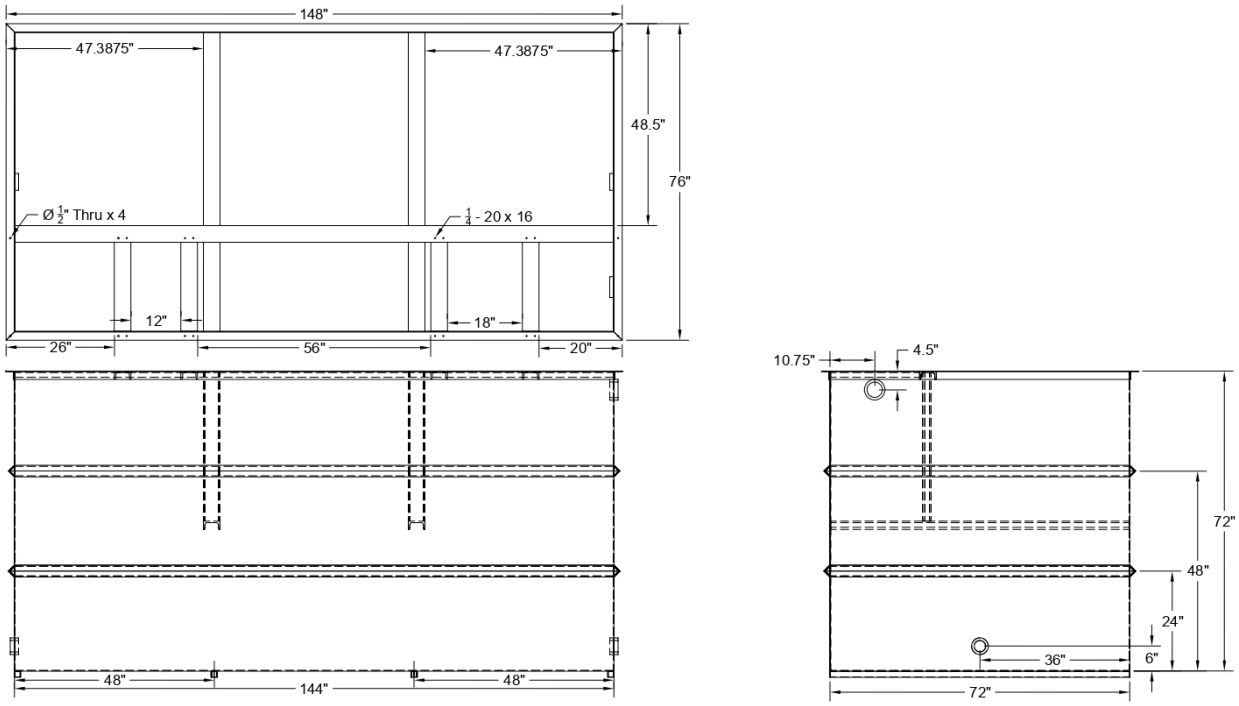
17-3076B-R-1000 (1000 Gallon) Approx 1550 lbs.




17-3076C1-2000 (2000 Gallon) Approx 2400 lbs.

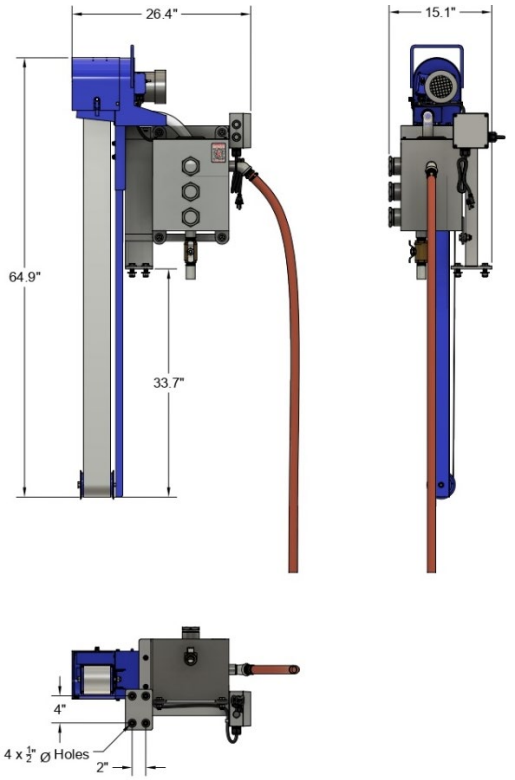


17-3076D-R-3000 (3000 Gallon) Approx 3250 lbs.

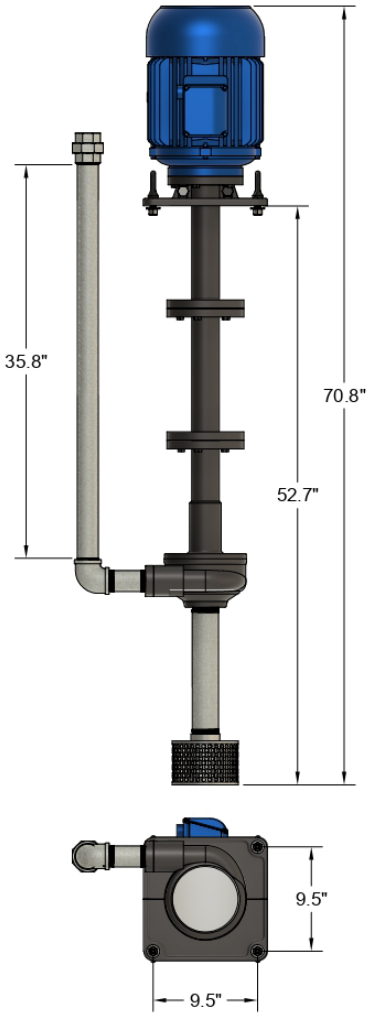



## *Oil Skimmer with Decanting Tank*

19-OST-4-60 Approx 95 lbs.

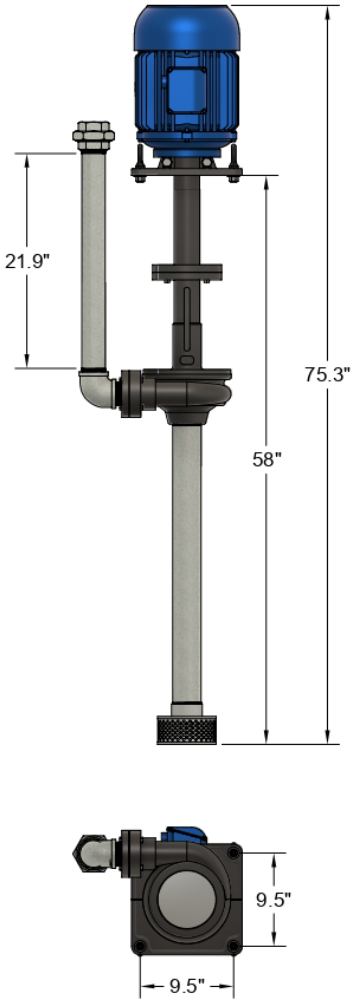


# *Transfer Pump*



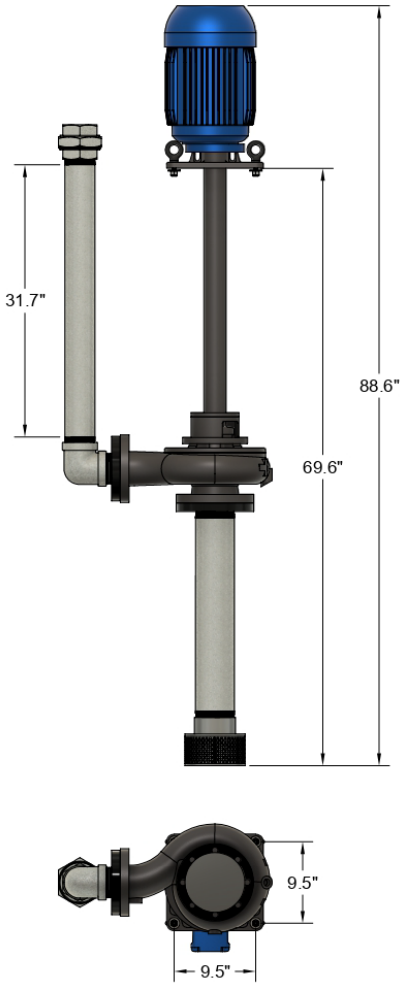

19-PA-3076B

Approx 280 lbs.




19-PA-3076C1

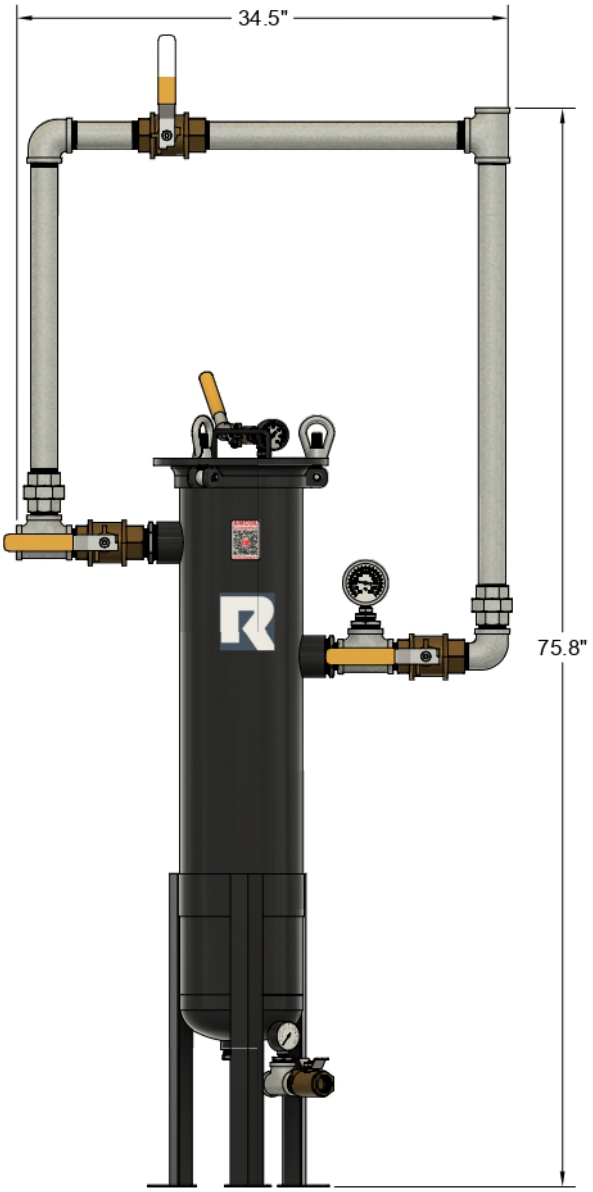
Approx 320 lbs.




19-PA-3076D

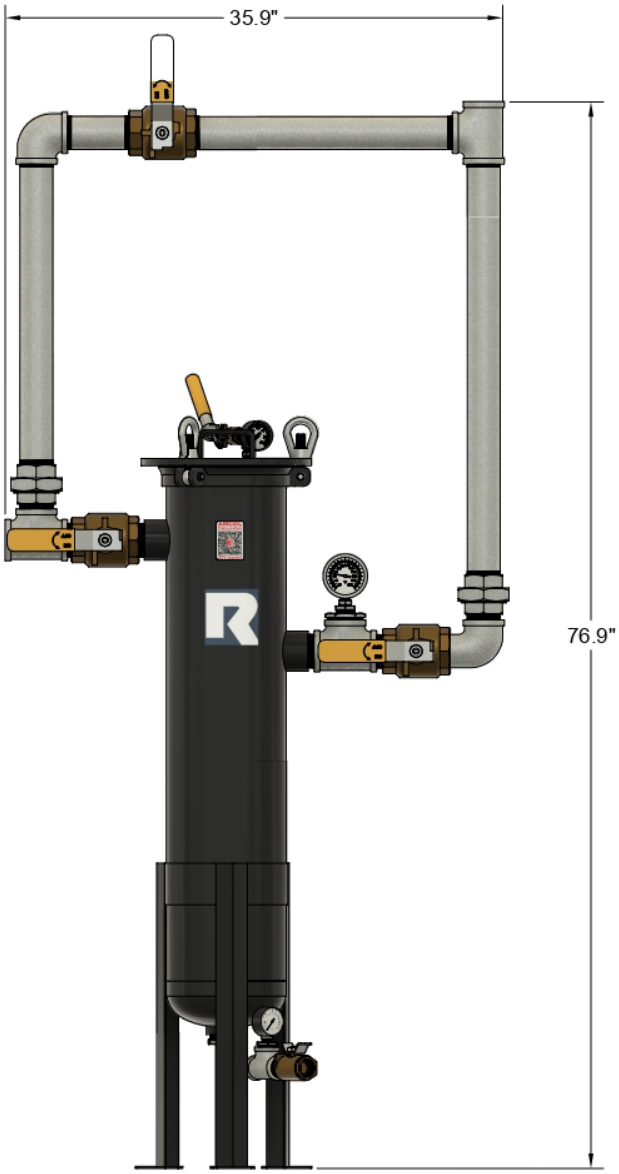
Approx 430 lbs.

# *In-Line Bag Filter*



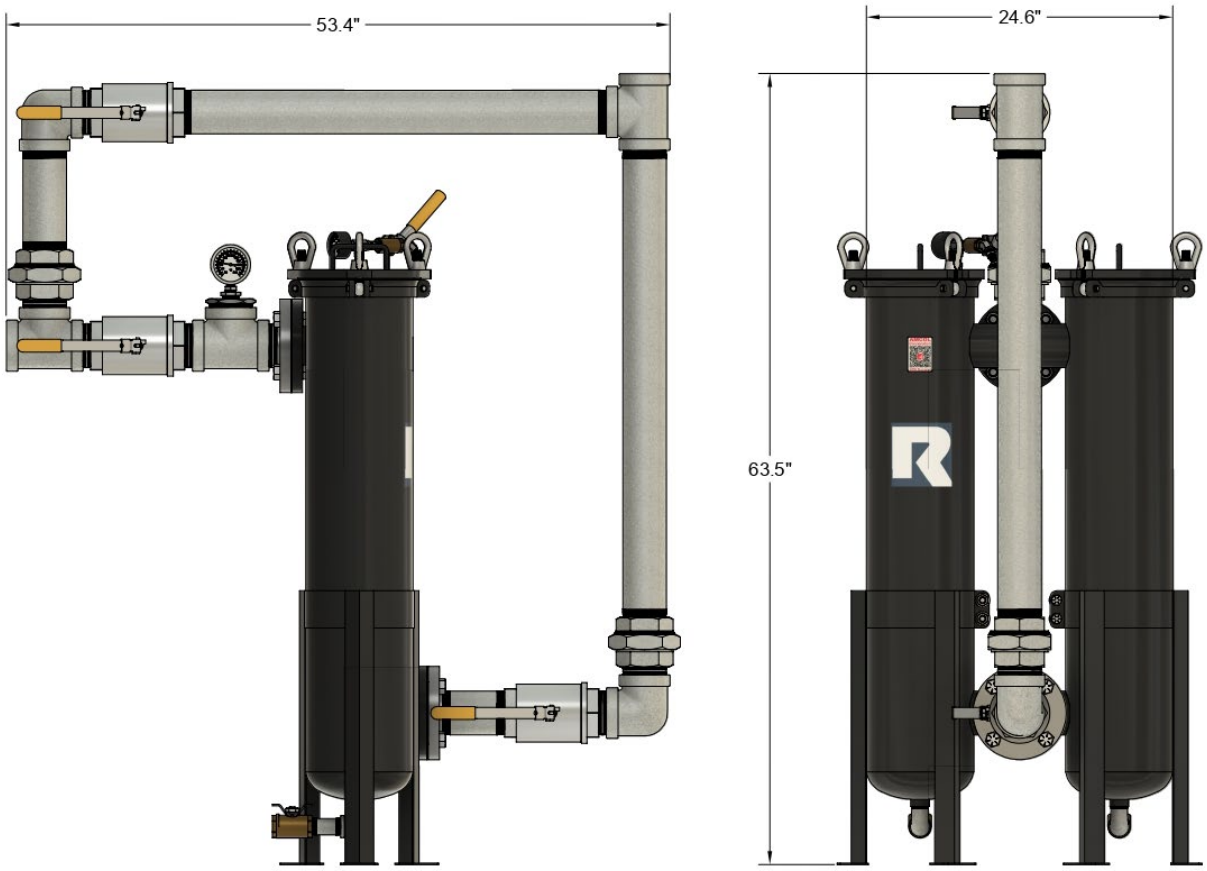

3076-ILBF-R15

Approx 182 lbs.




3076-ILBF-R20

Approx 210 lbs.




3076-ILBF-R30

Approx 438 lbs.

MADE IN THE USA

**AMCOL Corporation**


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|---|---|---|---|