

# Motorized Torque-Arm II Reliability Kit (Position D Only) Instruction Manual

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see [dodgeindustrial.com](http://dodgeindustrial.com) for updated instruction manuals.

**WARNING:** To ensure the drive is not unexpectedly started, turn off and lock-out, tag-out the power source before proceeding. Failure to observe these precautions could result in bodily injury.

**WARNING:** All products over 55 lbs (25 kg) are noted on the shipping package. Proper lifting practices are required for these products.

**NOTE:** This kit should only be used when mounting a Motorized Torque-Arm vertically in position D.

**WARNING:** Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance, and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to ensure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Dodge® nor are the responsibility of Dodge. This unit and its associated equipment must be installed, adjusted, and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

## INTRODUCTION

The Motorized Torque-Arm (MTA) Reliability Kit is an accessory package designed to improve asset reliability, simplify maintenance, and provide the user with an enhanced ability to understand the health of their installed asset. The kit is offered for the MTA reducer when it is mounted in position D. The OPTIFY™ Sensor is sold separately and can be added for remote condition monitoring of the MTA reducer.

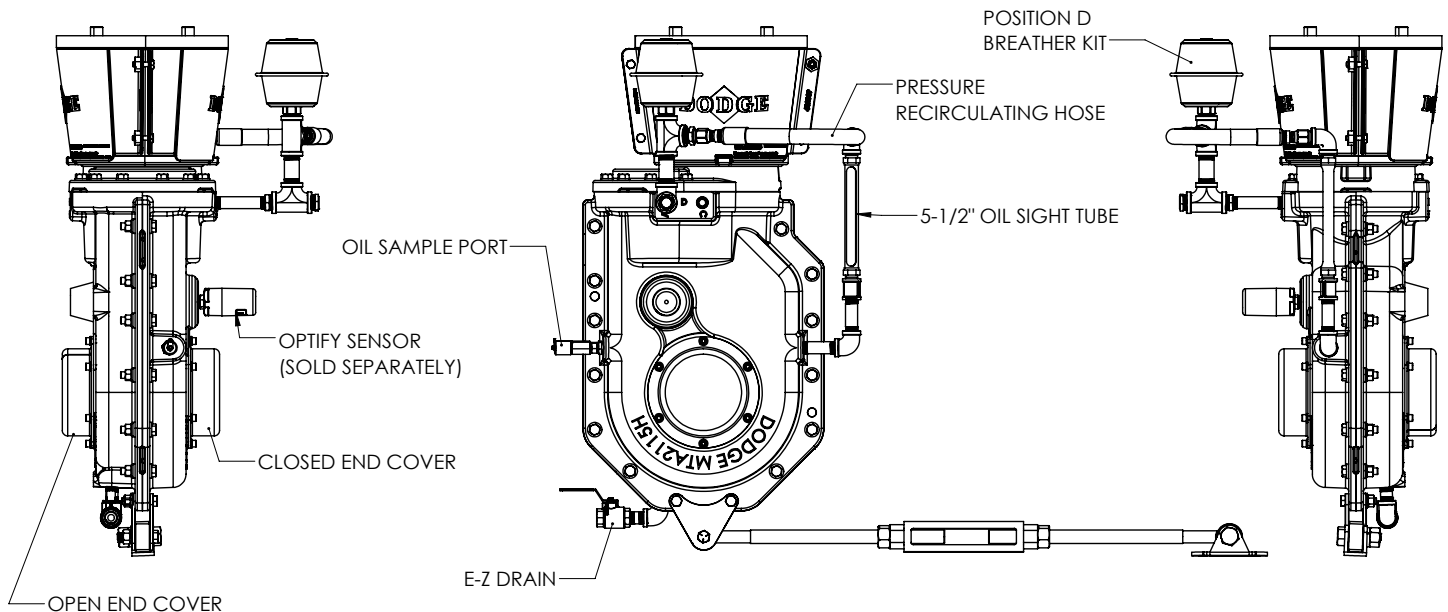


Figure 1 – Reliability kit components

## INSTALLATION SCHEMATICS

For installation schematics, go to back of this manual and review drawings from Table 1.

**Table 1 – List of installation schematics**

MTA2115H	M2RELIAKITS
MTA3203H	M3RELIAKITS
MTA4207H	M4RELIAKITS
MTA5215H	M5RELIAKITS
MTA6307H	M6RELIAKITS
MTA7315H	M7RELIAKITS
MTA8407H	M8RELIAKITS

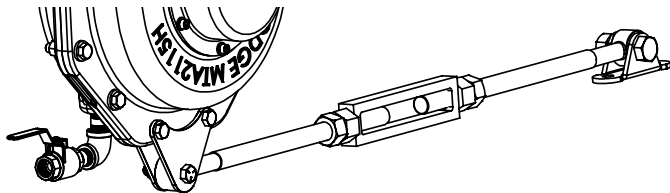
## INSTALLATION INSTRUCTIONS

Notes:

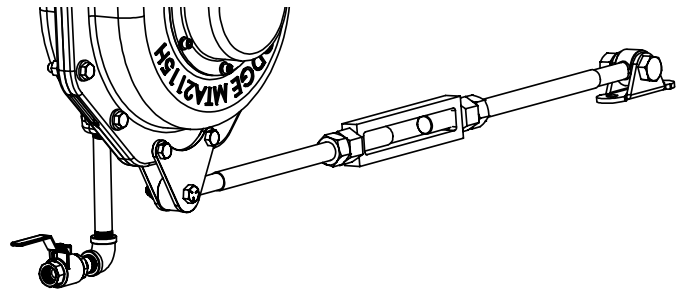
- Use pipe joint compound on all threaded connections that do not already have sealant on them.
- Tools required for installation: a combination of allen wrenches, pipe wrenches, crescent wrenches, and/or channel lock pliers to remove plugs and install pipe fitting from the kit. Tighten all connections so they are oil tight.
- Care must be taken when installing the brass sight tube and hose. Overtightening the fittings on the sight tube can cause damage.
- If the MTA is already in service, the oil must be drained prior to installing the reliability kit components.

### Installing E-Z Drain Components

The kit contains two options for E-Z drain installation, see Figure 2. The location or setup of the tie rod assembly and application location will dictate which drain can be used. If the short drain is being used, the components will have to be assembled onto the gearbox one piece at a time. If the application allows, the long-drain assembly can be assembled as a subassembly before installing onto the gearbox. The magnetic drain plug or another plug that was removed from the reducer can be reused in the end of the drain valve.



**Short Drain**

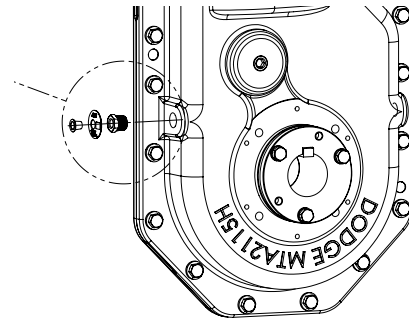


**Long Drain**

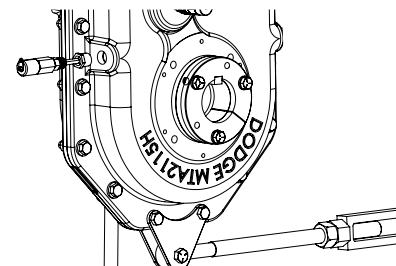
**Figure 2 – Drain Configurations**

### Installing Oil Sampling Pitot Tube Components

A precut pitot tube and a 1/4 inch NPT adapter are provided. MTA reducers manufactured 2020 and after will have a sensor adapter in the side hole of the reducer (older reducers will have a pipe plug). Remove the sensor adapter from the side hole of the reducer shown in Figure 3. This adapter can be reused if a sensor was purchased. Install both the 1/4 inch NPT adapter and the pitot tube in this hole, see Figure 4.



**Figure 3 – Sensor Adapter Removal**



**Figure 4 – Pitot Tube Installation**

The reliability kit includes a sampling port adapter that can be added to an existing sampling vacuum pump tubing. Oil sampling collection supplies are not included. When taking a sample this port adapter screws onto the end of the pitot tube.

Pitot tube and sampling port adapter are manufactured by Trico. Collection supplies can be ordered directly with them.

## Installing Sensor (Sold Separately)

Remove the appropriate plug and install the sensor blind hole adapter (that was removed earlier or a new adapter that was ordered). See Figures 5 and 6 for locations. The actual sensor can be installed either now or after the gearbox is filled with oil, just make sure the sensor adapter has been installed before filling the gearbox with oil. Finish the installation with instructions provided with the sensor or visit [dodgeindustrial.com](http://dodgeindustrial.com) for more information.

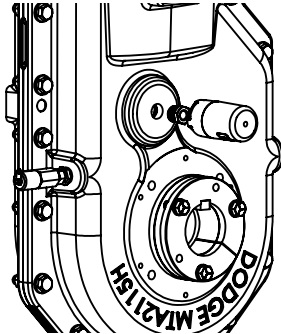


Figure 5 – Sensor Location (MTA2-6)

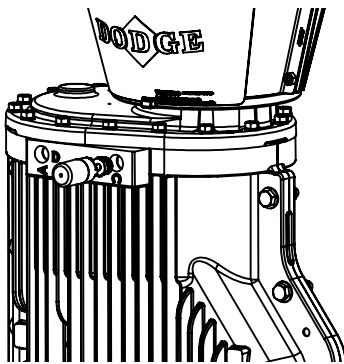
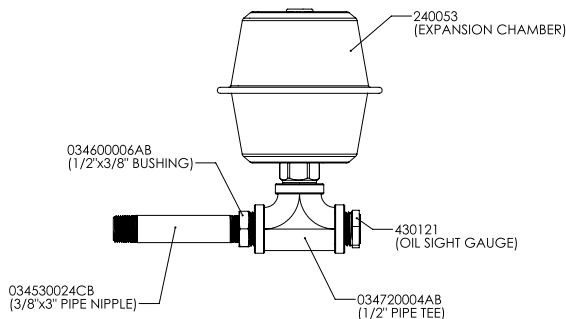


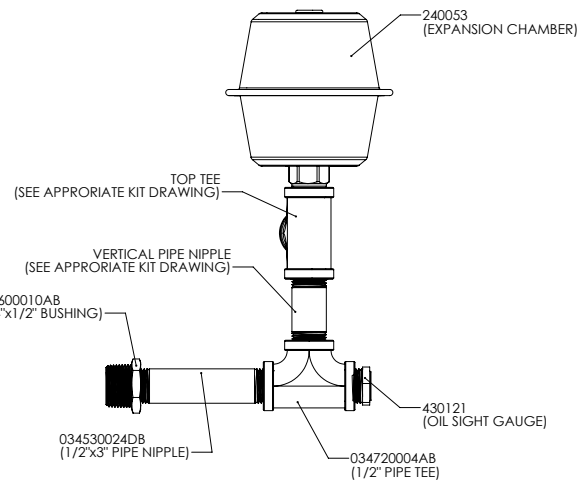
Figure 6 – Sensor Location (MTA7-8)

## Installing Position D Breather

Not including the vertical pipe nipple and top tee, the kit contains components for all size gearboxes. Select the correct components from the Position D Breather Kit included and assemble the breather for the size of MTA per Figure 7.



For MTA2-3



For MTA4-8

Figure 7 – Position D Breather Assembly

After removing the appropriate position D plug, install the breather assembly and ensure the top tee faces the side of the reducer in which the oil sight tube will be installed. Verify that breather is oriented as shown in Figure 8.

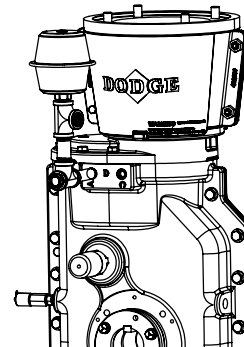


Figure 8 – Position D Breather Installation on MTA

## Installing Sight Tube and Hose Assembly

Remove the appropriate existing pipe plug, then install the horizontal pipe nipple, 90-degree elbow, vertical pipe nipple, and pipe coupling one piece at a time or as pre-assembled components as shown in Figure 9.

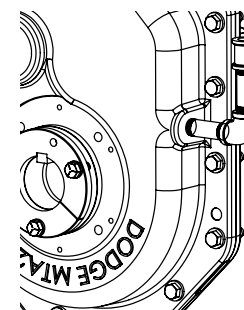
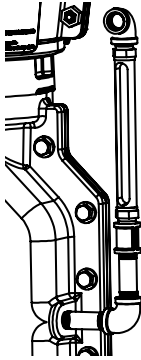


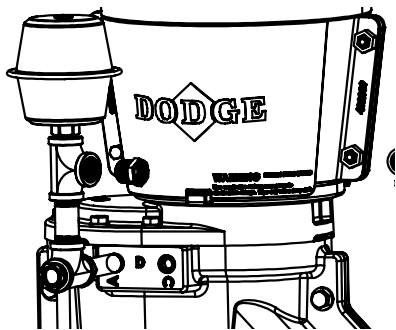
Figure 9 – Pipe Fitting for Sight Tube

Install the brass oil sight tube and top 90-degree elbow as shown. Use caution not to overtighten the sight tube or elbow. Orientate the sight tube where the window will be the most visible from a distance. The elbow will need to be adjusted to run the hose from the elbow to the tee below the breather. See Figure 10.



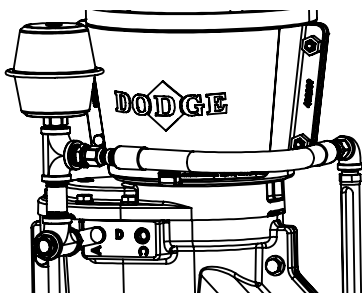
**Figure 10 – Installation of Oil Sight Tube and Top Elbow**

Install the 1/2 inch to 3/8 inch adapter in the top tee below the enclosed breather so the hose assembly can be connected to this tee. See Figure 11.



**Figure 11 – Hose Adapter Installation in Top Tee**

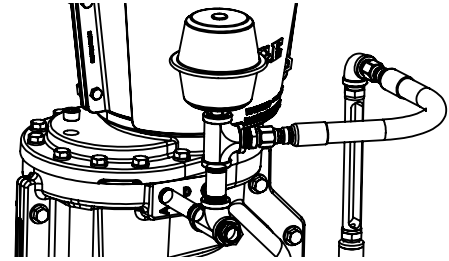
Assemble the hose to the 90-degree elbow and to the adapter in the top tee per Figure 12. Tighten the connection on the tee first, then tighten the fitting by the oil sight tube last.



**Figure 12 – Hose Installation**

Remove the pipe plug from the input adapter plate by the motor adapter per Figure 13. Fill the MTA reducer with the appropriate amount of oil (until it shows in the sight gauge on the breather kit and in the sight tube). Refer to the MTA manual or Torque-Arm catalog for approximate oil volume.

Reinstall the pipe plug. Verify there are no leaks.

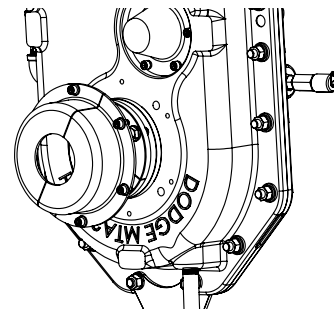


**Figure 13 – Oil Fill**

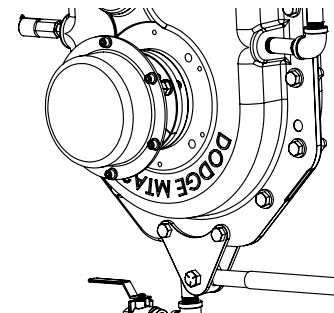
### **Bushing Covers**

Install the split bushing cover over the inboard tapered bushing by holding the cover up to reducer face and aligning the holes in the cover to the threaded holes in the reducer face. Insert bolts through the washers and then through the cover and into the holes of the reducer. Tighten bolts with torque wrench (25 in-lbs for MTA2-3, 30 in-lbs for MTA4, and 35 in-lbs for MTA5-8). See Figure 14.

Install the closed bushing cover over the outboard tapered bushing by holding the cover up to reducer face and aligning the holes in the cover to the threaded holes in the reducer face. Insert bolts through the washers and then through the cover and into the holes of the reducer. Tighten bolts with torque wrench (25 in-lbs for MTA2-3, 30 in-lbs for MTA4, and 35 in-lbs for MTA5-8). See Figure 15.

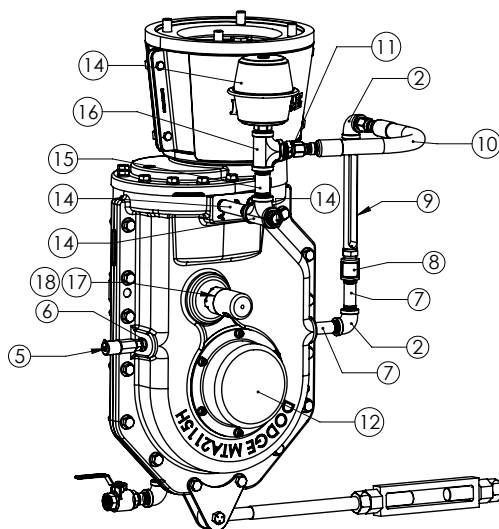
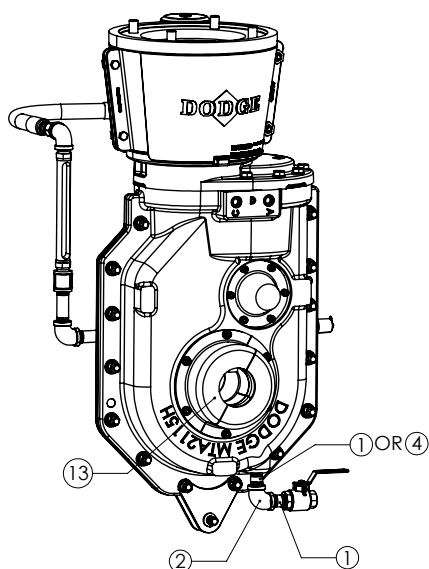
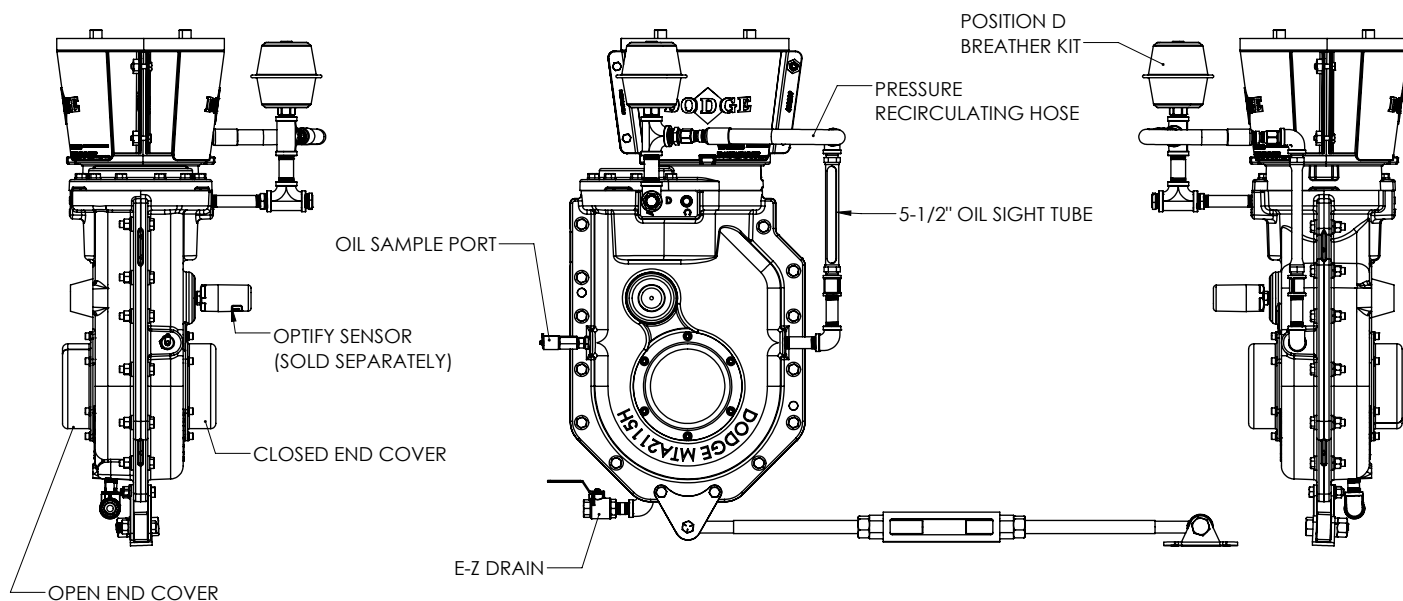


**Figure 14 – Split Bushing Cover Installation**



**Figure 15 – Closed Bushing Cover Installation**

## M2RELIAKITS



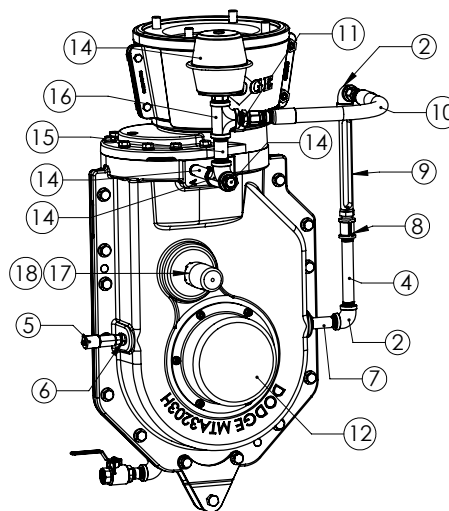
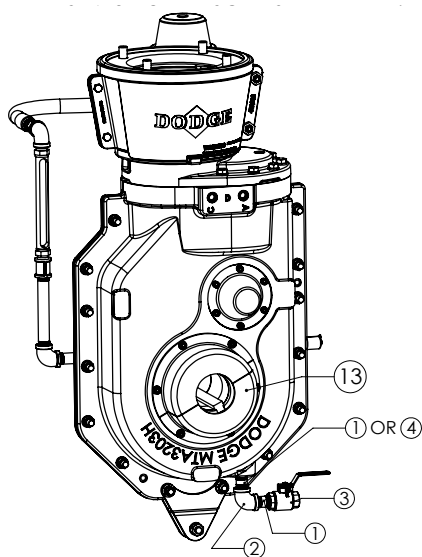
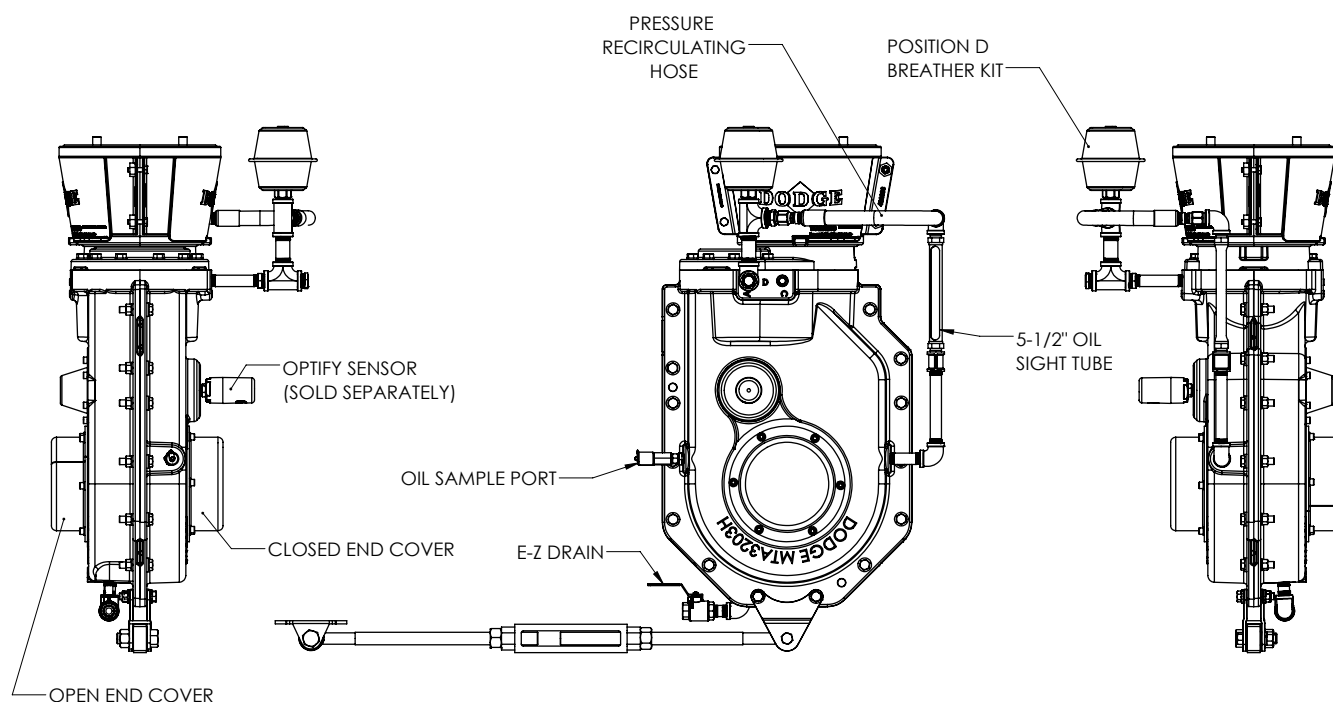
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	2
2	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	3
3	095780	3/8" BALL VALVE	1
4	034530040CC	3/8" X 5" PIPE NIPPLE (GALV)	1
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600003AC	3/8" TO 1/4" ADAPTER	1
7	034530020CC	3/8" X 2-1/2" PIPE NIPPLE (GALV)	2
8	034630003AC	3/8" PIPE COUPLING (GALV)	1
9	967051	MTA2-3 OIL SIGHT TUBE (3/8" TO 3/8")	1
10	454631-15	MTA HOSE ASSEMBLY	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034600006AB	1/2" TO 3/8" ADAPTER	1
12	902142	TA2115 ABS CLOSED COVER ASSY	1
13	902143	TA2115 ABS SPLIT COVER ASSY	1
14	472300	MTA2-8 POSITION D BREATHER KIT	1
15	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
16	034720004AB	1/2" PIPE TEE (GALV)	1
17	966905	SENSOR ADAPTER KIT	1
18	750000	OPTIFY SENSOR	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### Notes:

- Items 5 and 19 come from Trico. Sample collection supplies not provided.
- All details listed as 14 are supplied in 472300.
- Items 17 and 18 are sold separately.

## M3RELIAKITS



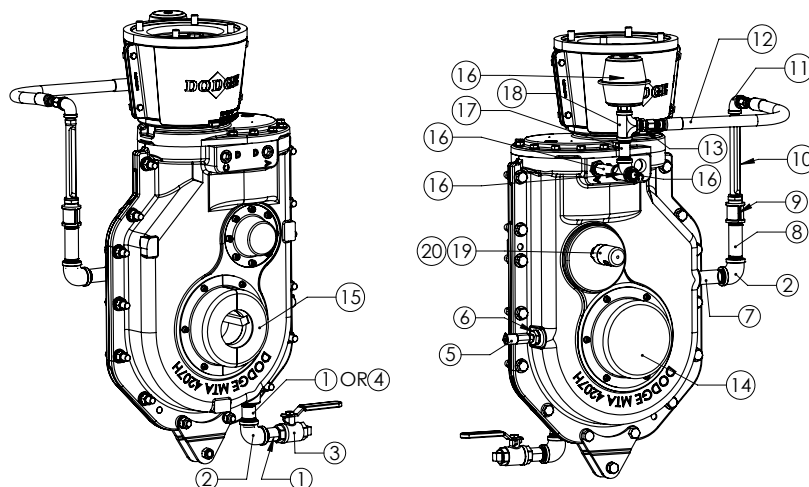
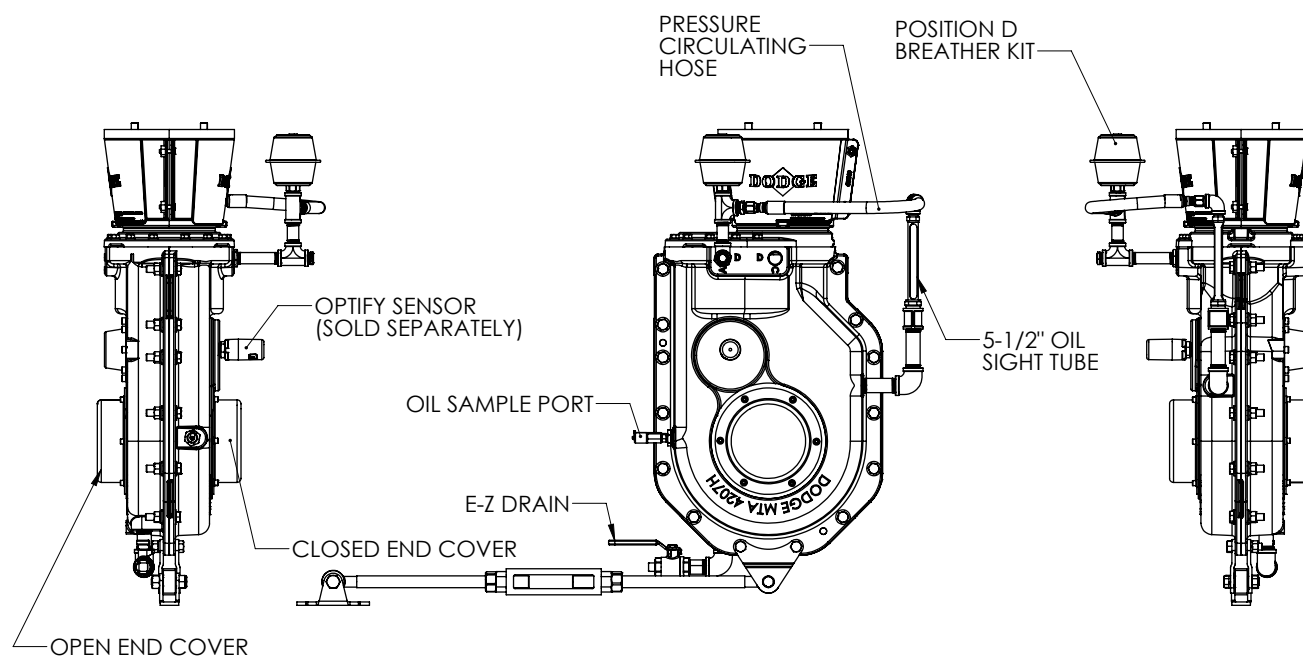
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	2
2	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	3
3	095780	3/8" BALL VALVE	1
4	034530040CC	3/8" X 5" PIPE NIPPLE (GALV)	2
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600003AC	3/8" TO 1/4" ADAPTER	1
7	034530020CC	3/8" X 2-1/2" PIPE NIPPLE (GALV)	1
8	034630003AC	3/8" PIPE COUPLING (GALV)	1
9	967051	MTA2-3 OIL SIGHT TUBE (3/8" TO 3/8")	1
10	454631-15	MTA HOSE ASSEMBLY	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034600006AB	1/2" TO 3/8" ADAPTER	1
12	903142	TA3203 ABS CLOSED COVER ASSY	1
13	903143	TA3203 ABS SPLIT COVER ASSY	1
14	472300	MTA2-8 POSITION D BREATHER KIT	1
15	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
16	034720004AB	1/2" PIPE TEE (GALV)	1
17	966905	SENSOR ADAPTER KIT	1
18	750000	OPTIFY SENSOR	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

- Items 5 and 19 come from Trico. Sample collection supplies not provided.
- All details listed as 14 are supplied in 472300.
- Items 17 and 18 are sold separately.

## M4RELIAKITS



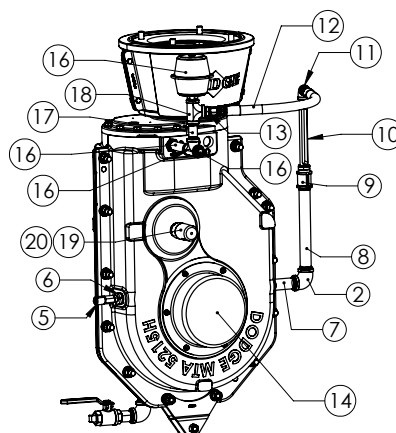
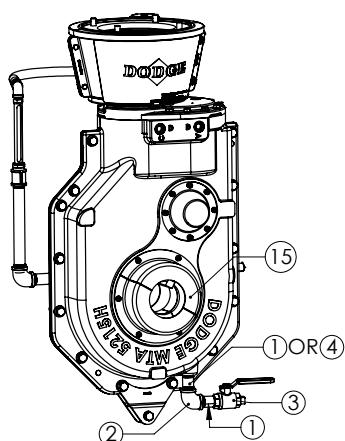
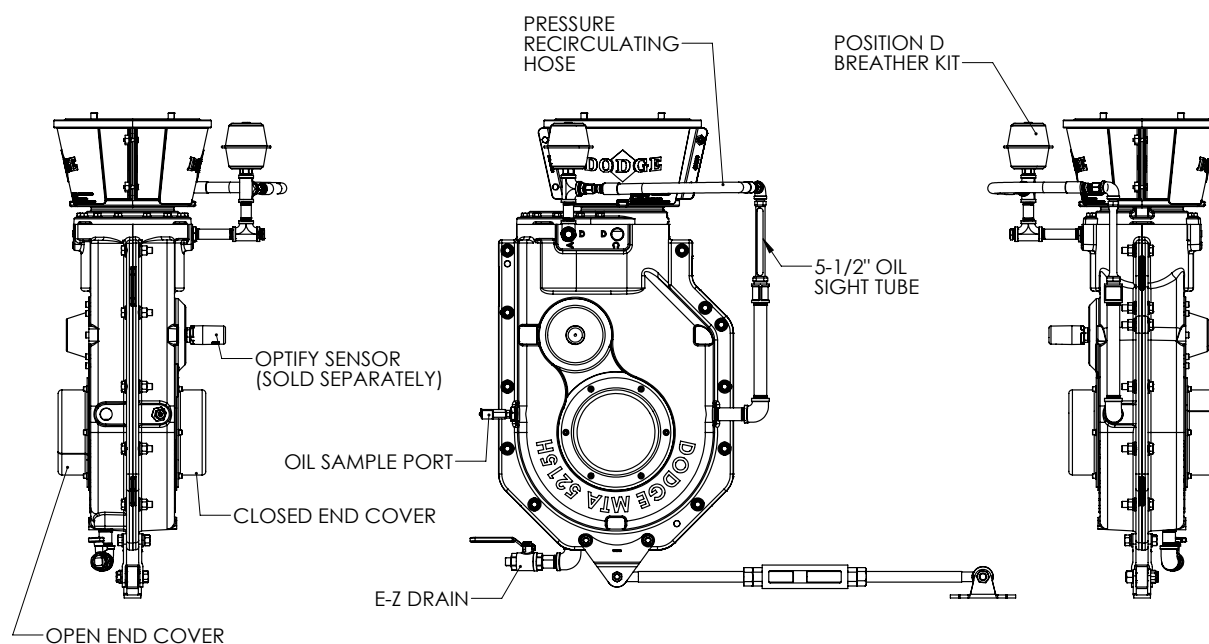
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530020EC	3/4" X 2-1/2" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530052EC	3/4" X 6-1/2" PIPE NIPPLE (GALV)	1
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600008AC	3/4" TO 1/4" ADAPTER	1
7	034530028EC	3/4" X 3-1/2" PIPE NIPPLE (GALV)	1
8	034530032EC	3/4" X 4" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	1
12	454631-20	MTA HOSE ASSEMBLY	1
13	034600006AB	1/2" TO 3/8" ADAPTER	1
14	904142	TA4207 ABS CLOSED COVER ASSY	1
15	904143	TA4207 ABS SPLIT COVER ASSY	1
16	472300	MTA2-8 POSITION D BREATHER KIT	1
17	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
18	034720004AB	1/2" PIPE TEE (GALV)	1
19	966907	SENSOR ADAPTER KIT	1
20	750000	OPTIFY SENSOR	1
21	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

- Items 5 and 21 come from Trico. Sample collection
- All details listed as 16 are supplied in 472300.
- Items 19 and 20 are sold separately.

## M5RELIAKITS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530020EC	3/4" X 2-1/2" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530052EC	3/4" X 6-1/2" PIPE NIPPLE (GALV)	1
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600008AC	3/4" TO 1/4" ADAPTER	1
7	034530028EC	3/4" X 3-1/2" PIPE NIPPLE (GALV)	1
8	034530072EC	3/4" X 9" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1

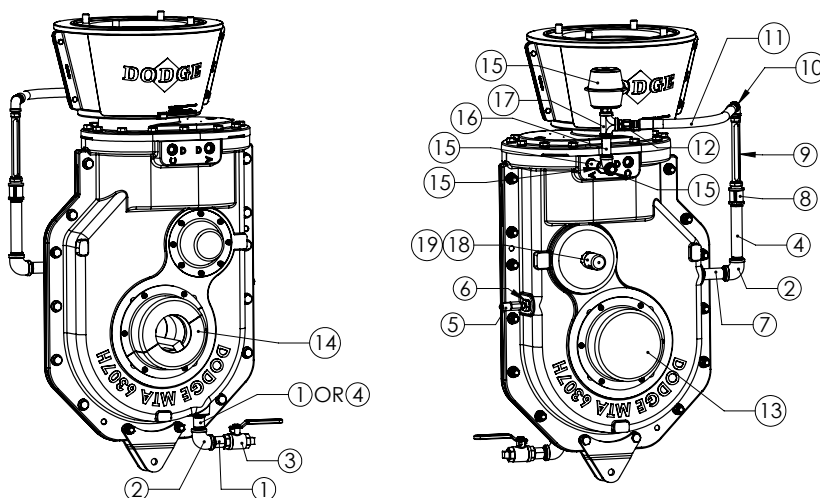
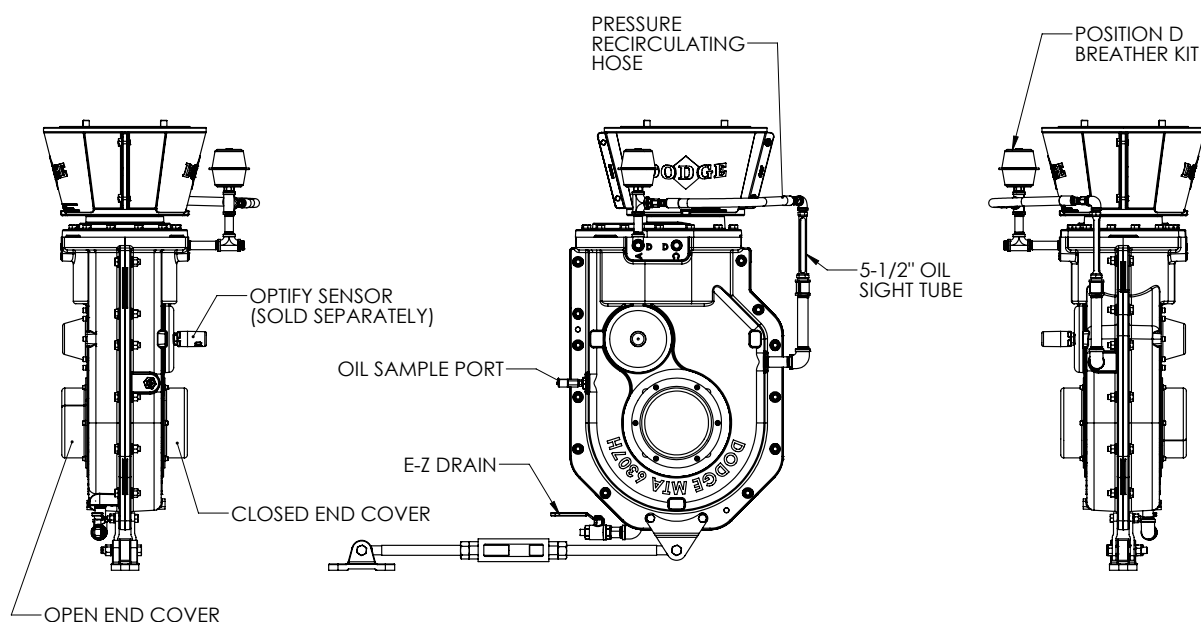
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	1
12	454631-20	MTA HOSE ASSEMBLY	1
13	034600006AB	1/2" TO 3/8" ADAPTER	1
14	905142	TA5/6 ABS CLOSED COVER ASSY	1
15	905143	TA5/6 ABS SPLIT COVER ASSY	1
16	472300	MTA2-8 POSITION D BREATHER KIT	1
17	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
18	034720004AB	1/2" PIPE TEE (GALV)	1
19	966907	SENSOR ADAPTER KIT	1
20	750000	OPTIFY SENSOR	1
21	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

- Items 5 and 21 come from Trico. Sample collection supplies not provided.
- All details listed as 16 are supplied in 472300.
- Items 19 and 20 are sold separately.



## M6RELIAKITS



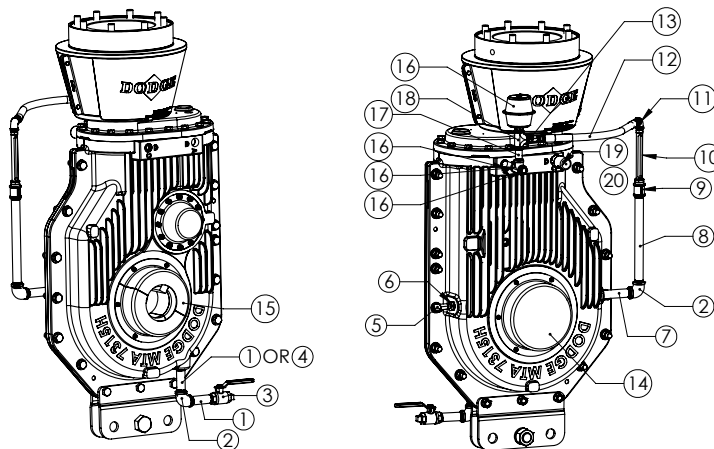
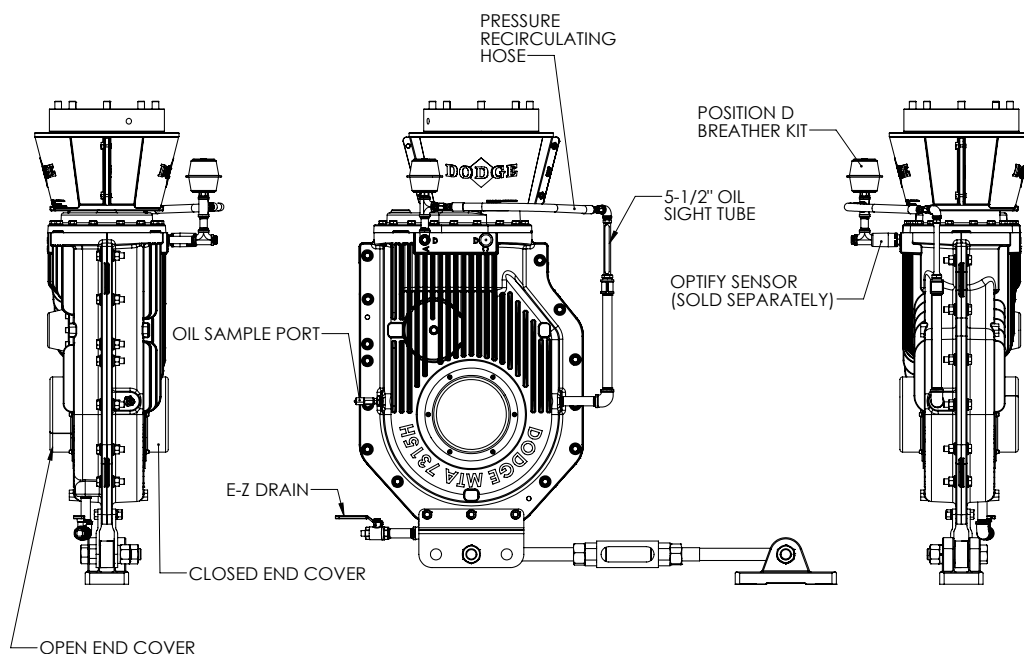
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530020EC	3/4" X 2-1/2" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530052EC	3/4" X 6-1/2" PIPE NIPPLE (GALV)	2
5	453303-3	OIL SAMPLING PITOT TUBE (3" TUBE)	1
6	034600008AC	3/4" TO 1/4" ADAPTER	1
7	034530028EC	3/4" X 3-1/2" PIPE NIPPLE (GALV)	1
8	034630005AC	3/4" PIPE COUPLING (GALV)	1
9	967052	MTA4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1
10	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	454631-20	MTA HOSE ASSEMBLY	1
12	034600006AB	1/2" TO 3/8" ADAPTER	1
13	905142	TA5/6 ABS CLOSED COVER ASSY	1
14	905143	TA5/6 ABS SPLIT COVER ASSY	1
15	472300	MTA2-8 POSITION D BREATHER KIT	1
16	034530024DB	1/2" X 3" PIPE NIPPLE (GALV)	1
17	034720004AB	1/2" PIPE TEE (GALV)	1
18	966907	SENSOR ADAPTER KIT	1
19	750000	OPTIFY SENSOR	1
20	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

- Items 5 and 20 come from Trico. Sample collection supplies not provided.
- All details listed as 15 are supplied in 472300.
- Items 18 and 19 are sold separately.

## M7RELIAKITS



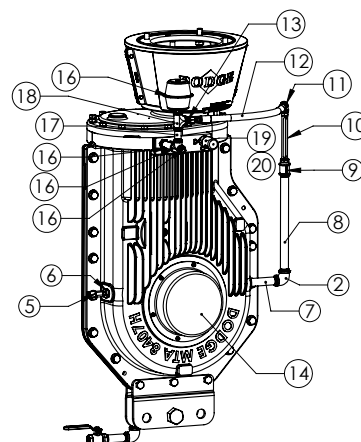
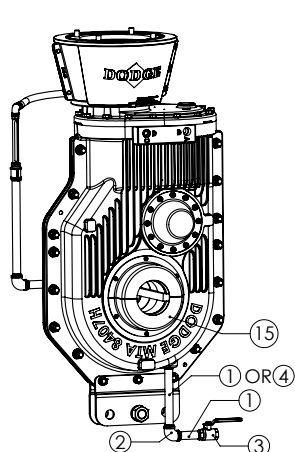
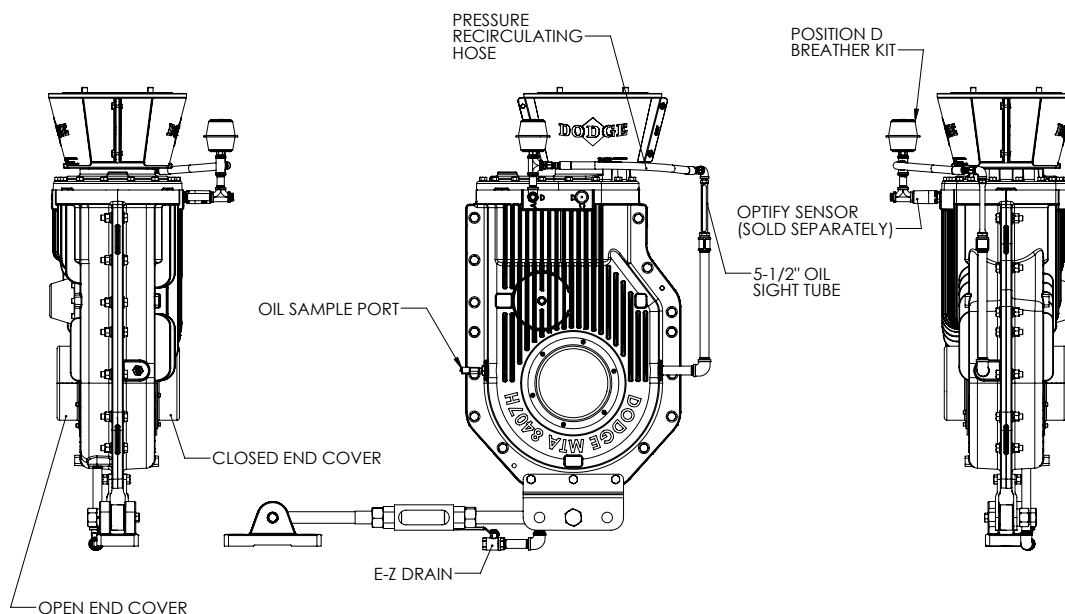
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530032EC	3/4" X 4" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530072EC	3/4" X 9" PIPE NIPPLE (GALV)	1
5	453303-3	OIL SAMPLING PITOT TUBE (3" TUBE)	1
6	034600008AC	3/4" TO 1/4" ADAPTER	1
7	034530040EC	3/4" X 5" PIPE NIPPLE (GALV)	1
8	034530096EC	3/4" X 12" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	1
12	454631-22	MTA HOSE ASSEMBLY	1
13	034600006AB	1/2" TO 3/8" ADAPTER	1
14	907142	TA7315 ABS CLOSED COVER ASSY	1
15	907143	TA7315 ABS SPLIT COVER ASSY	1
16	472300	MTA2-8 POSITION D BREATHER KIT	1
17	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
18	034720004AB	1/2" PIPE TEE (GALV)	1
19	966907	SENSOR ADAPTER KIT	1
20	750000	OPTIFY SENSOR	1
21	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

- Items 5 and 21 come from Trico. Sample collection supplies not provided.
- All details listed as 16 are supplied in 472300.
- Items 19 and 20 are sold separately.

## M8RELIAKITS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530032EC	3/4" X 4" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530072EC	3/4" X 9" PIPE NIPPLE (GALV)	1
5	453303-3	OIL SAMPLING PITOT TUBE (3" TUBE)	1
6	034600008AC	3/4" TO 1/4" ADAPTER	1
7	034530040EC	3/4" X 5" PIPE NIPPLE (GALV)	1
8	034530112EC	3/4" X 14" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	1
12	454631-22	MTA HOSE ASSEMBLY	1
13	034600006AB	1/2" TO 3/8" ADAPTER	1
14	908142	TA8407 ABS CLOSED COVER ASSY	1
15	908143	TA8407 ABS SPLIT END COVER ASSY	1
16	472300	MTA2-8 POSITION D BREATHER KIT	1
17	034530020DB	1/2" X 2-1/2" PIPE NIPPLE (GALV)	1
18	034720004AB	1/2" PIPE TEE (GALV)	1
19	966907	SENSOR ADAPTER KIT	1
20	750000	OPTIFY SENSOR	1
21	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1

### NOTES:

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- Items 19 and 20 are sold separately.

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