

Dodge® Motorized Torque-Arm II™ (MTA) Reliability Kits (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 for updated instruction manuals.

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

WARNING: All products over 25 kg (55 lbs) 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 assure 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 Dodge MTA Reliability Kit is an accessory 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 in two levels and is only available when the MTA reducer is mounted in Position D. The level 1 kit includes: position D breather kit, closed and split bushing covers, oil sampling tube, E-Z drain, and extended oil sight tube. The Level 2 kit includes all items in level 1 kit, plus a smart sensor.

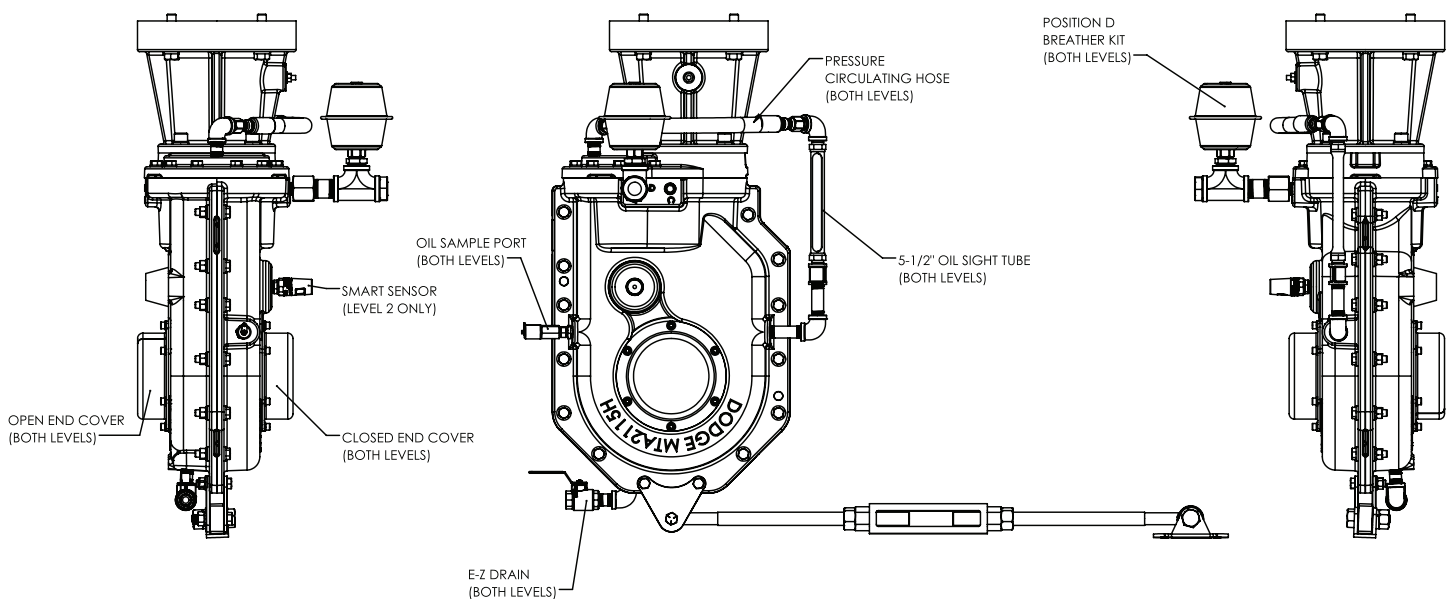


Figure 1: Reliability Kit Components

INSTALLATION SCHEMATICS:

For Installation Schematics, go to back of this manual and review drawings from Table 1.

Table 1 - List of Installation Schematics

Size	Drawings
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 that 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/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.

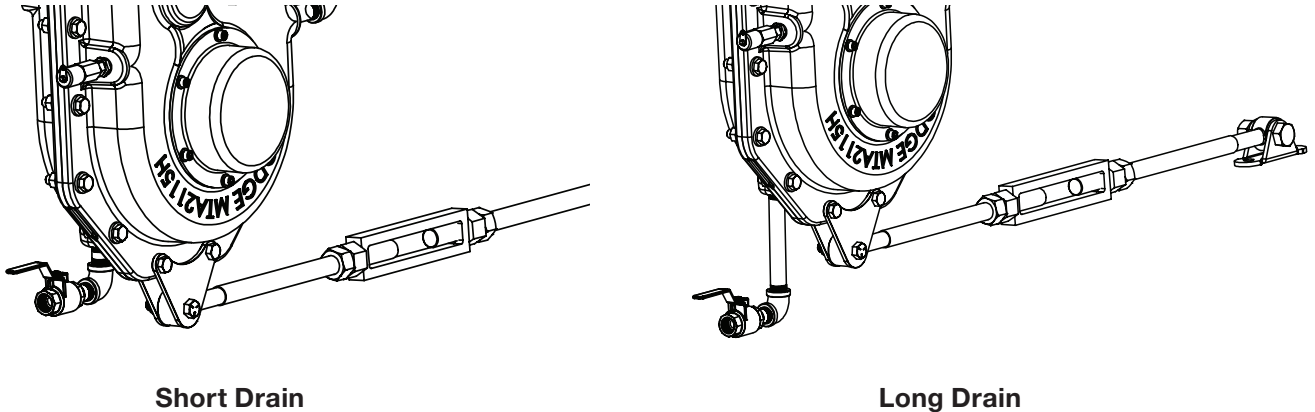


Figure 2 - Drain Configurations

Installing Oil Sampling Pitot Tube Components:

A precut pitot tube and a 1/4" NPT adapter are provided. MTA reducers manufactured 2020 and after will have a Smart Sensor Adapter in the side hole of the reducer (Older reducers will have a pipe plug). Remove the smart sensor adapter from the side hole of the reducer shown in Figure 3. This adapter can be reused if a Level 2 reliability kit was purchased. Install both the 1/4" NPT adapter and the pitot tube in this hole, see Figure 4.

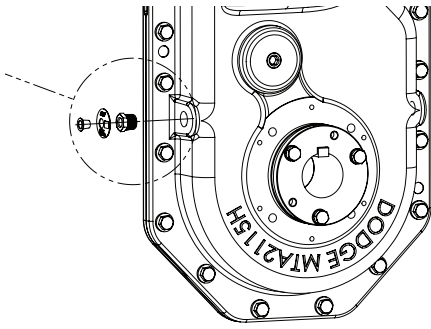


Figure 3 - Smart Sensor Adapter Removal

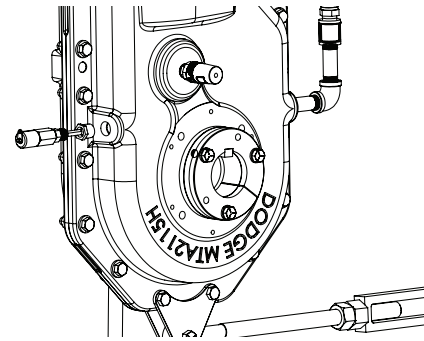


Figure 4 - Pitot Tube Installation

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 Smart Sensor (Level 2 Only):

Remove the appropriate plug and install the smart sensor blind hole adapter (that was removed earlier, or a new adapter is included in the kit). See Figures 5 and 6 for locations. The actual smart sensor can be installed either now or after the gearbox is filled with oil, just make sure the smart sensor adapter has been installed before filling the gearbox with oil.

Finish the installation with instructions (9AKK107296) provided with the smart sensor or visit dodgeindustrial.com.

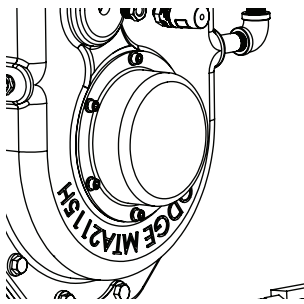


Figure 5 - Smart Sensor Location (MTA2-6)

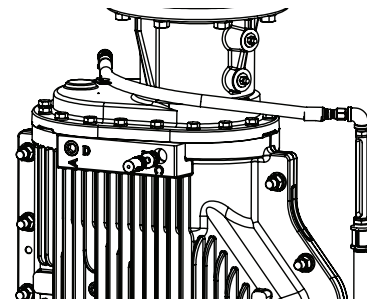


Figure 6 - Smart Sensor Location (MTA7-8)

Installing Position D Breather:

The kit contains components for all size gearboxes, select the correct components from the Position D Breather Kit (472300) included and assemble the breather for the size of MTA per Figure 7.

472300

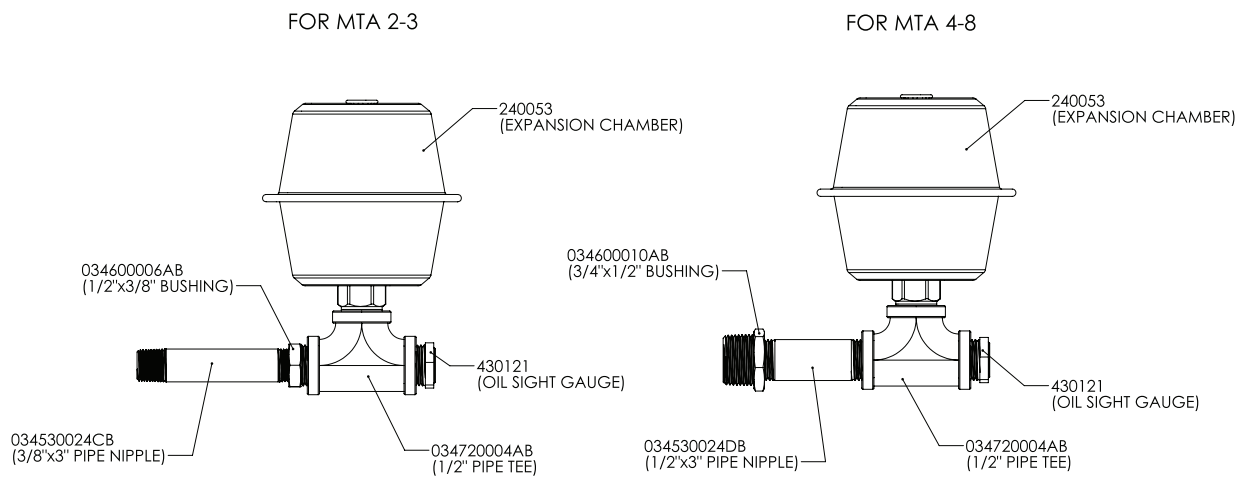


Figure 7 - Position D Breather Assembly

After removing one of the Position D plugs, install the breather assembly. Note that sizes MTA7 and 8 will use the other Position D hole for the smart sensor (Level 2 only). Verify that breather is orientated as shown in Figure 8.

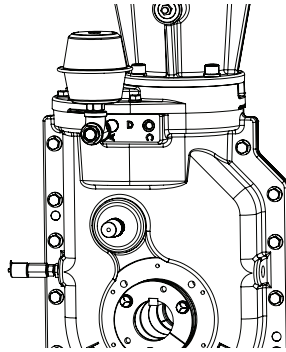


Figure 8 - Position D Breather Installation on MTA

Installing Sight Tube and Hose Assembly:

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

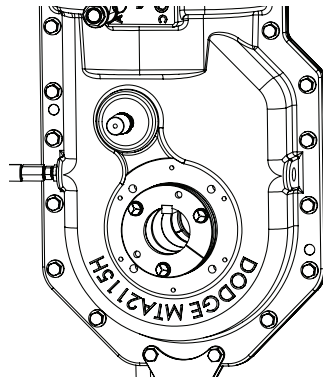


Figure 9 - Pipe Fitting for Sight Tube

Install the brass oil sight tube and top 90° 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 have some angle so that the hose can be installed around the motor adapter. See Figure 10.

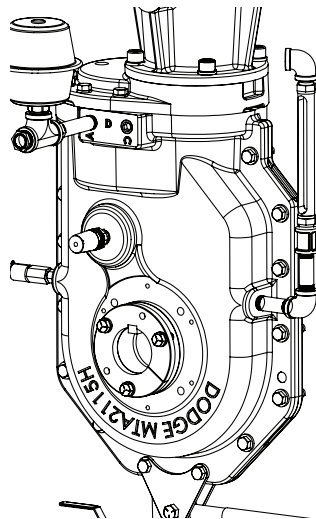


Figure 10 - Installation of Oil Sight Tube and Top Elbow

Remove the pipe plug from the input adapter plate by the motor adapter per Figure 11. Fill the MTA gearbox with the appropriate amount of oil (till it shows in the sight gauge on the breather kit and in the sight tube). Refer to the MTA manual or Torque-Arm reducer catalog for approximate oil volumes. Verify that there are no leaks.

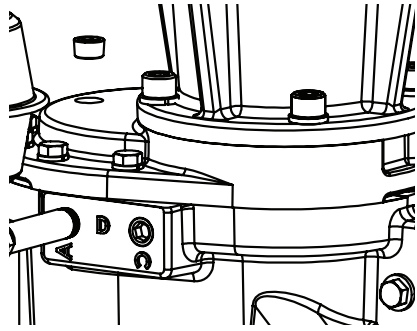


Figure 11 - Removal of Oil Fill Plug

When gearbox has been filled with oil, install threaded adapter (if required), pipe nipple, and 90° elbow in this same hole per Figure 12. The elbow will have to be adjusted with some angle so the hose can go around the motor adapter.

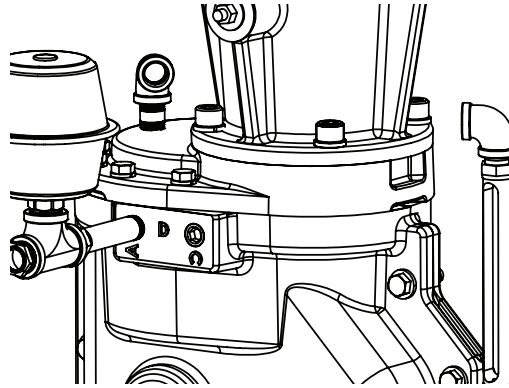


Figure 12 - Installation of Pipe Nipple and Other Elbow

Assemble the hose to the two 90° elbows per Figure 13. Tighten the connection on the adapter plate first, then tighten the fitting by the oil sight tube last.

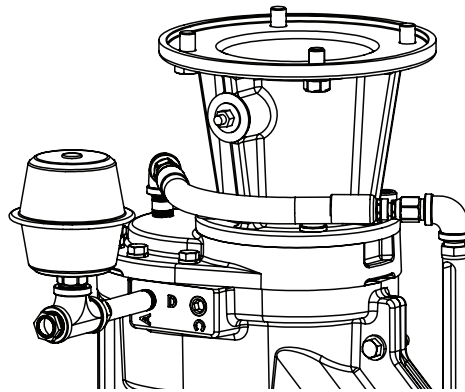


Figure 13 - Hose Installation

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-MTA3, 30 in-lbs for MTA4, and 35 in-lbs for MTA5-MTA8). 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-MTA3, 30 in-lbs for MTA4, and 35 in-lbs for MTA5-MTA8). See Figure 15.

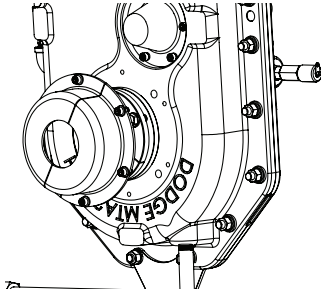


Figure 14: Split Bushing Cover Installation

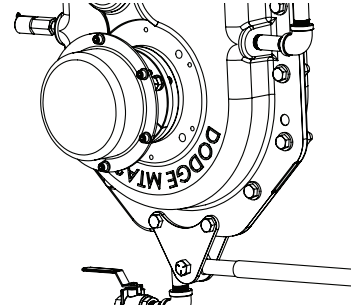


Figure 15: Closed Bushing Cover Installation

Motor Adapter Plugs:

This kit comes with either 1 or 2 hex-nut expansion plugs to replace the standard plastic plug(s) that come with a standard MTA reducer and motor adapter. After the motor and couplings have been installed, install these in the 1" diameter inspection hole(s) of the motor adapter per Figure 16. Tighten with a crescent wrench.

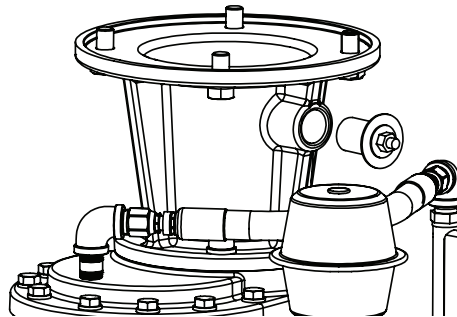


Figure 16 - Motor Adapter Plug Installation on MTA

Reliability kit level 1 is used where users demand maximum uptime from critical equipment.

The level 1 kit includes:

1. Large vented oil sight tube with closed loop piping.
2. Quick drain valve.
3. Quick oil sampling port.
4. ABS bushing covers, closed cover, and a split cover for the backside.
5. Position D breather kit with sight gauge and enclosed.
6. Severe duty adapter plug

Reliability level 2 kit is used when condition monitoring is critical to the uptime reliability of the plant and adds:

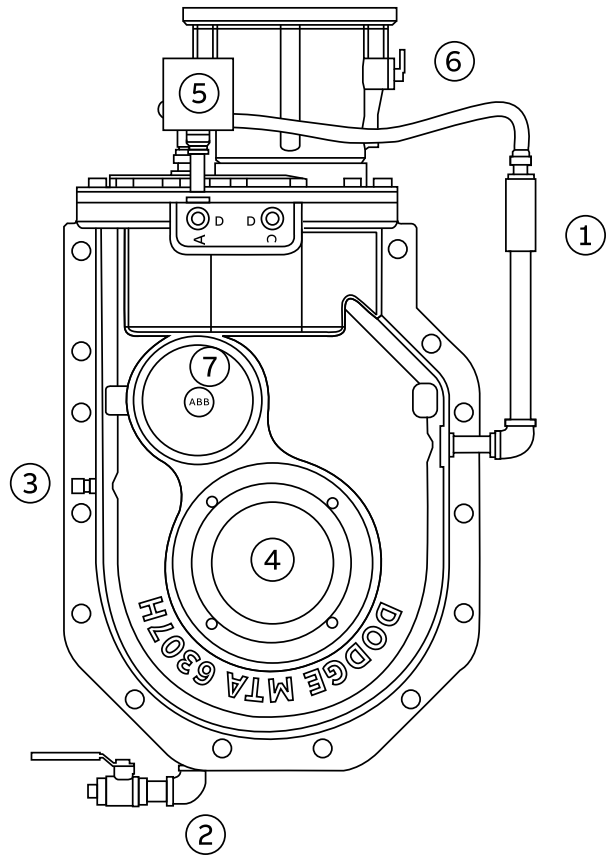
1. Dodge smart sensor.

Part number	Description
M2RELIAKITLVL01 –	MTA2115 reliability kit level 1
M3RELIAKITLVL01 –	MTA3203 reliability kit level 1
M4RELIAKITLVL01 –	MTA4207 reliability kit level 1
M5RELIAKITLVL01 –	MTA5215 reliability kit level 1
M6RELIAKITLVL01 –	MTA6307 reliability kit level 1
M7RELIAKITLVL01 –	MTA7315 reliability kit level 1
M8RELIAKITLVL01 –	MTA8407 reliability kit level 1

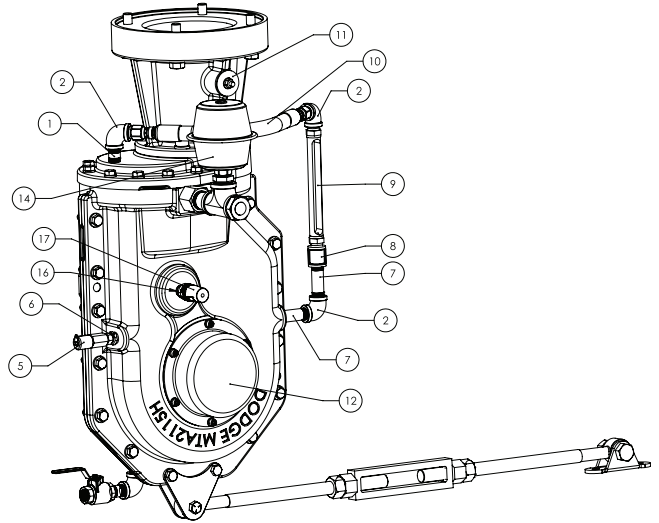
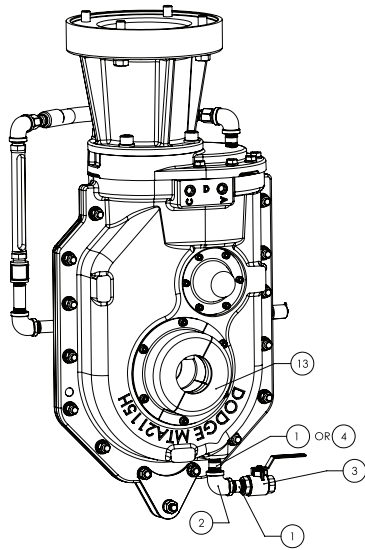
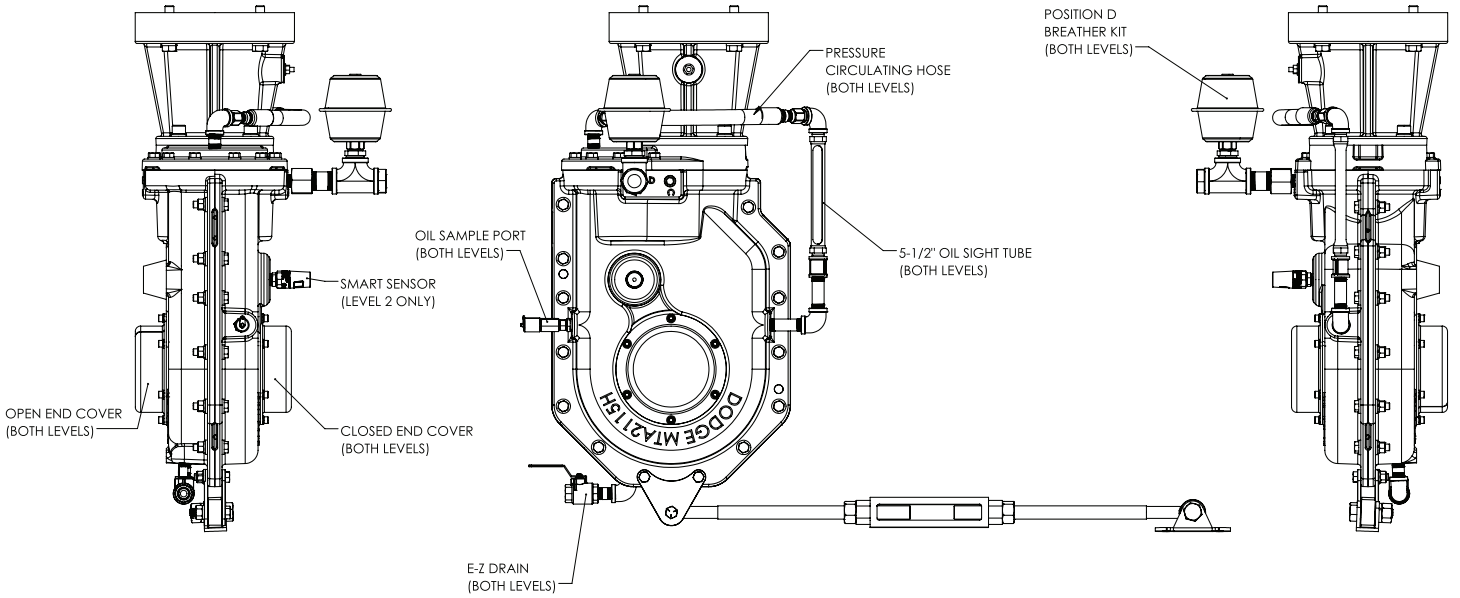
Part number	Description
M2RELIAKITLVL02 –	MTA2115 reliability kit level 2
M3RELIAKITLVL02 –	MTA3203 reliability kit level 2
M4RELIAKITLVL02 –	MTA4207 reliability kit level 2
M5RELIAKITLVL02 –	MTA5215 reliability kit level 2
M6RELIAKITLVL02 –	MTA6307 reliability kit level 2
M7RELIAKITLVL02 –	MTA7315 reliability kit level 2
M8RELIAKITLVL02 –	MTA8407 reliability kit level 2

Reliability kit level 1 is used where users demand maximum uptime from critical equipment. The level 1 kit includes creates a closed loop system that eliminates the introduction of any outside air or contaminants. It also allows the end user to check the oil level from a distance. Add to that, the complete protection from spinning bushing bolts, and you have a winner for longevity and safety.

Reliability kit level 2 is used when condition monitoring is critical to the uptime reliability of the plant and adds the Dodge smart sensor. This allows trend monitoring of critical data from the reducer. And can be read from cell phone or computer. Can be integrated into plant wide preventative maintenance programs.



M2RELIAKITS

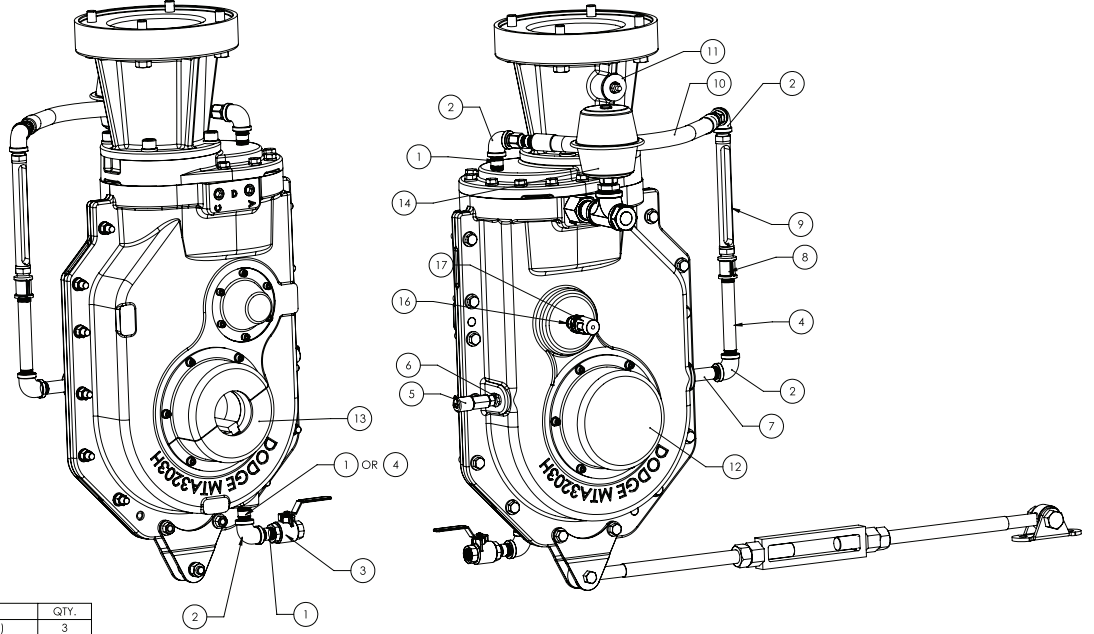
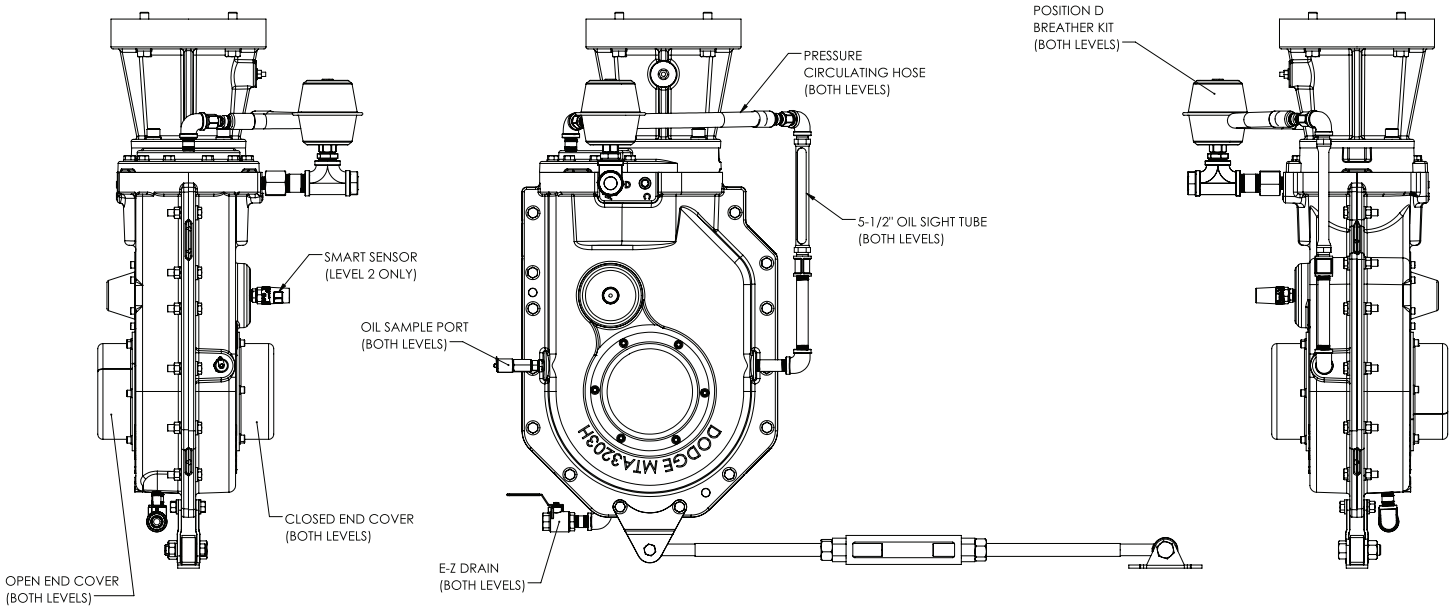


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	3
2	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	4
3	095780	3/8" BALL VALVE	1
4	034530040CC	3/8" X 5" PIPE NIPPLE (GALV)	1
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600003AC	3/8" TO 1/4" ADAPTER	1
7	034530020CC	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	MTA2 HOSE ASSEMBLY	1
11	455000	MTA MOTOR ADAPTER PLUG	1
12	902142	TA2115 ABS CLOSED END COVER ASSY	1
13	902143	TA2115 ABS SPLIT END COVER ASSY	1
14	472300	MTA2-8 POSITION D BREATHER KIT	1
15	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
16	966905	SENSOR ADAPTER KIT	1
17	750000	SMART SENSOR	1

NOTES:

1. ITEMS 5 & 15 COME FROM TRICO. SAMPLE COLLECTION SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-15
3. LEVEL 2 KIT INCLUDES ITEMS 1-17

M3RELIAKITS

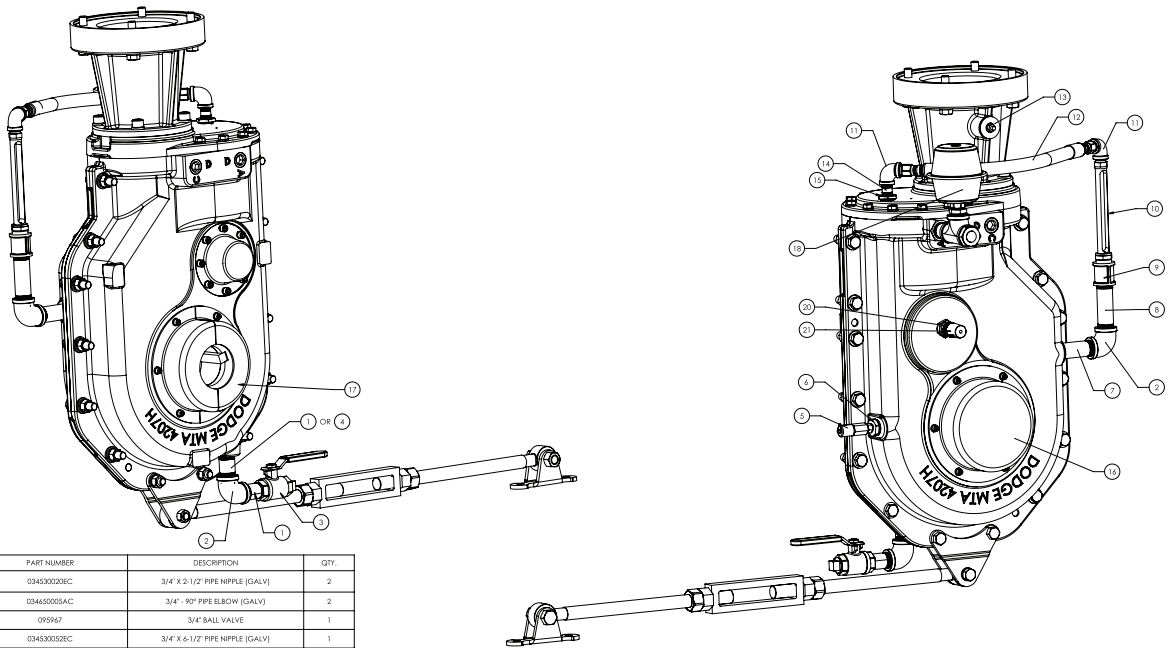
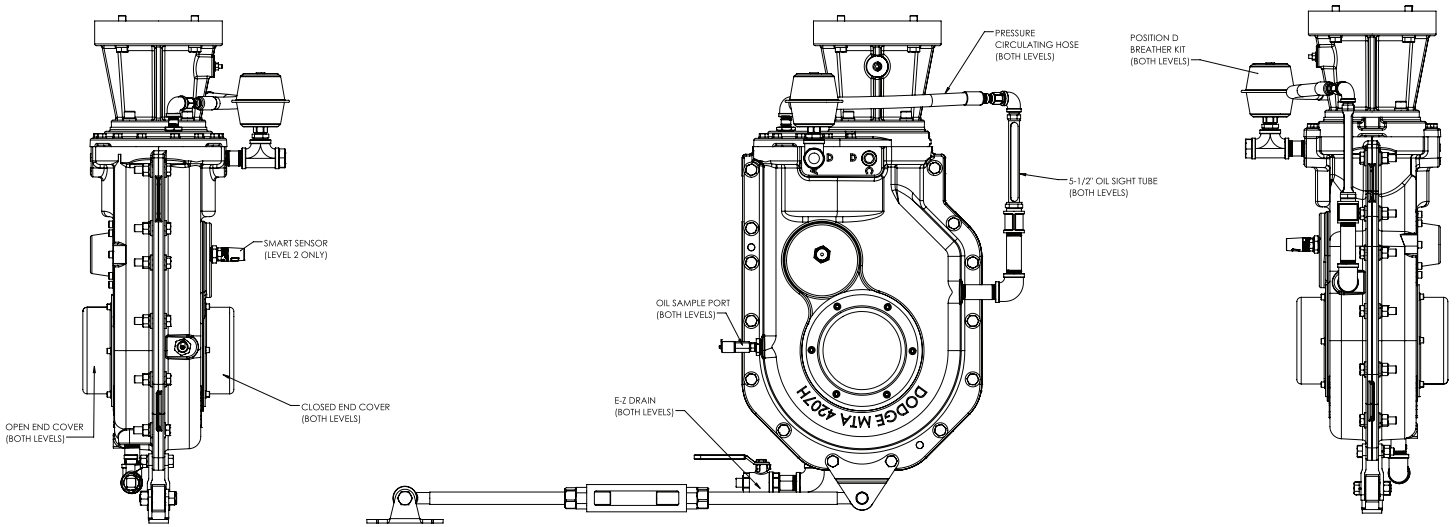


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	3
2	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	4
3	095780	3/8" BALL VALVE	1
4	034530040CC	3/8" X 5" PIPE NIPPLE (GALV)	2
5	453303-1	OIL SAMPLING PITOT TUBE (1" TUBE)	1
6	034600003AC	3/8" TO 1/4" ADAPTER	1
7	034530020CC	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	454631-20	MTA3-5 HOSE ASSEMBLY	1
11	455000	MTA MOTOR ADAPTER PLUG	2
12	903142	TA3 ABS CLOSED END COVER ASSY	1
13	903143	TA3 ABS SPLIT END COVER ASSY	1
14	472300	MTA2-8 POSITION D BREATHER KIT	1
15	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
16	966905	SENSOR ADAPTER KIT	1
17	750000	SMART SENSOR	1

NOTES:

1. ITEM 5 & 15 COME FROM TRICO. SAMPLE COLLECTIONS SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-15
3. LEVEL 2 KIT INCLUDES ITEMS 1-17

M4RELIAKITS

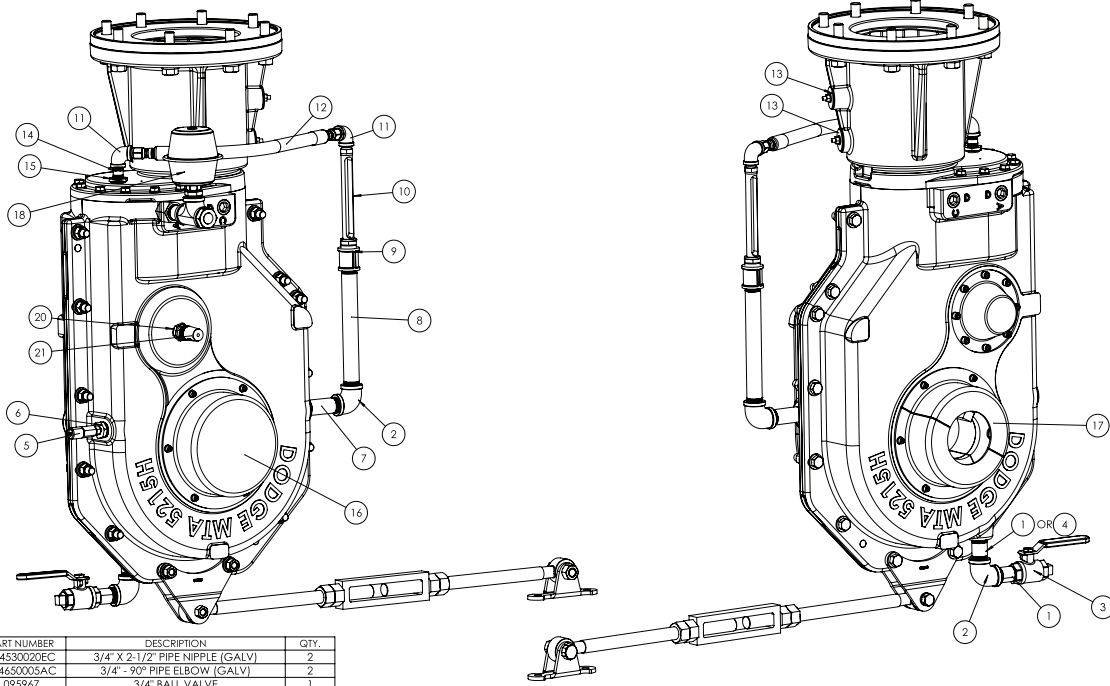
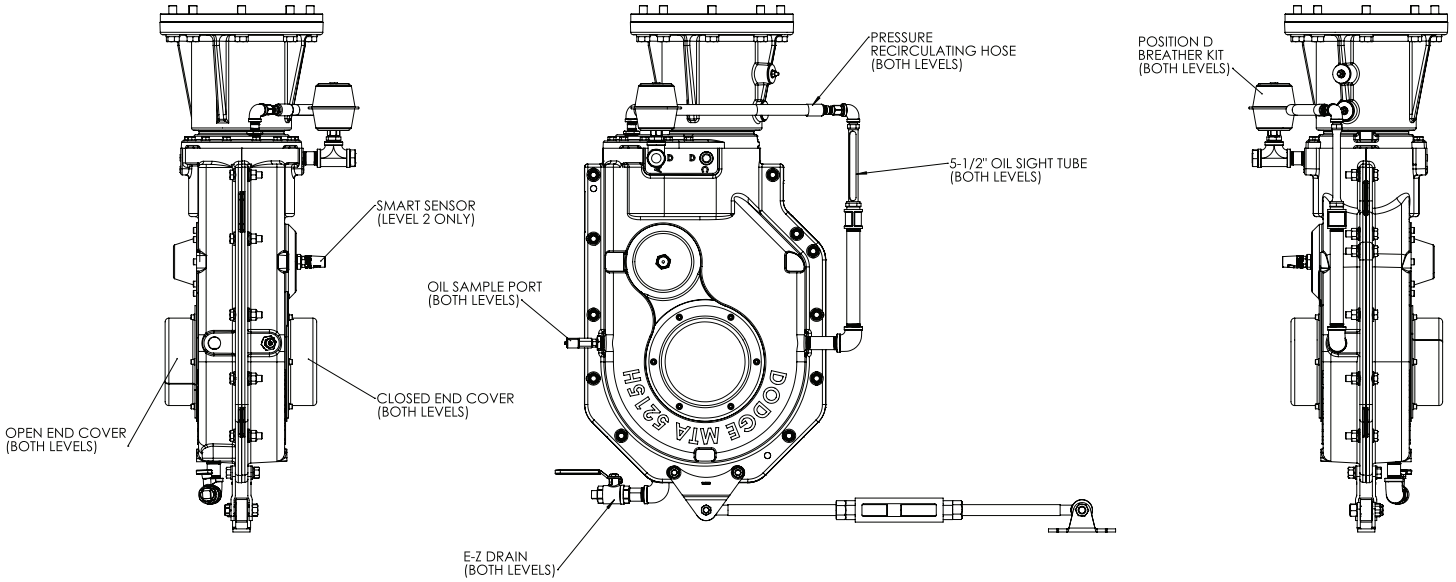


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530028C	3/4" X 2-1/2" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530032EC	3/4" X 6-1/2" PIPE NIPPLE (GALV)	1
5	453300-1	OIL SAMPLING PISTON TUBE (1" TUBE)	1
6	453304	3/4" TO 1/4" ADAPTER	1
7	034530028C	3/4" X 5-1/2" PIPE NIPPLE (GALV)	1
8	034530032EC	3/4" X 4" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA-8 OIL SIGHT TUBE (3/4" TO 3/8")	1
11	034650005AC	3/8" - 90° PIPE ELBOW (GALV)	2
12	454631-20	MTA-3-S HOSE ASSEMBLY	1
13	455000	MTA MOTOR ADAPTER PLUG	2
14	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	1
15	034620009AC	3/4" TO 3/8" ADAPTER (GALV)	1
16	904142	T44 ABS CLOSED END COVER ASSY	1
17	904143	T44 ABS SPLIT END COVER ASSY	1
18	472300	MTA-2-B POSITION D BREATHER KIT	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
20	966907	SENSOR ADAPTER KIT	1
21	730000	SMART SENSOR	1

NOTES:

1. ITEM 5 & 19 COME FROM TRICO. SAMPLE COLLECTIONS SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-19
3. LEVEL 2 KIT INCLUDES ITEMS 1-21

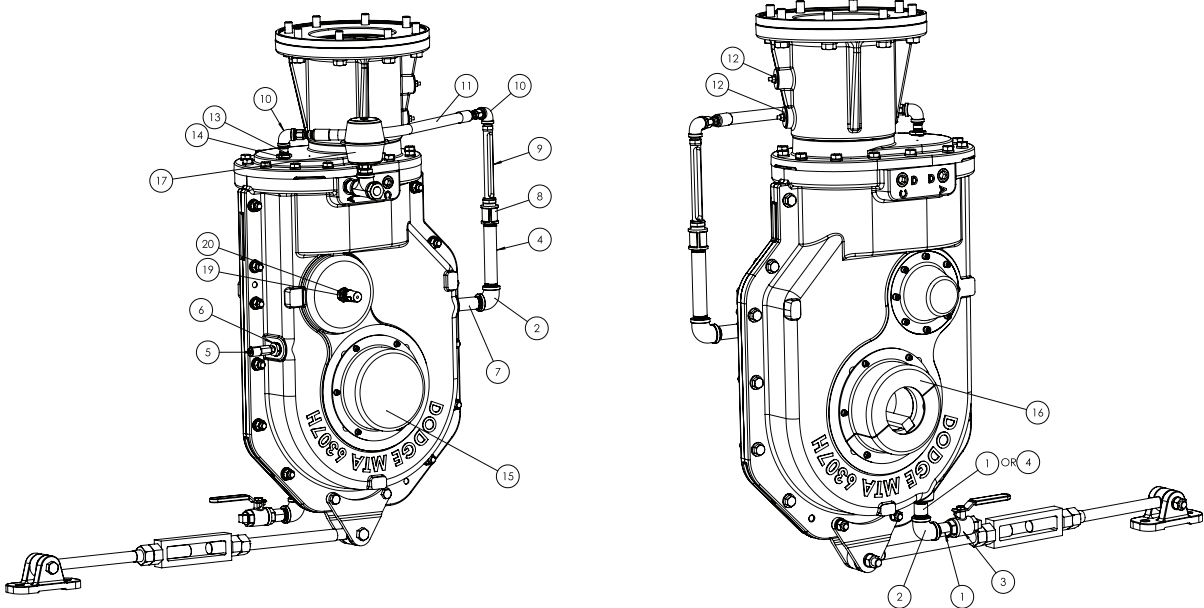
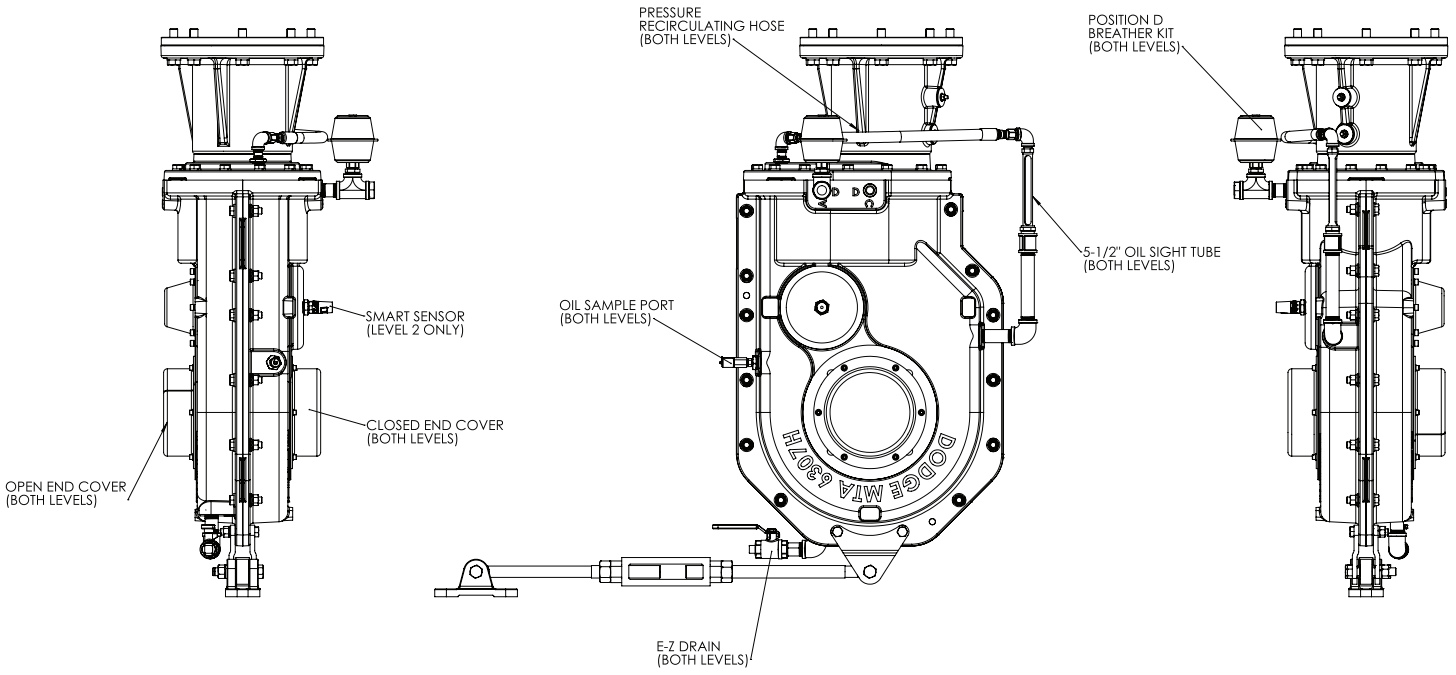
M5RELIAKITS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530028EC	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	453304	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
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	2
12	454631-20	MTA3-5 HOSE ASSEMBLY	1
13	455000	MTA MOTOR ADAPTER PLUG	2
14	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	1
15	034600099AC	3/4" TO 3/8" ADAPTER (GALV)	1
16	905142	TAS/6 ABS CLOSED END COVER ASSY	1
17	905143	TAS/6 ABS SPLIT END COVER ASSY	1
18	472300	MTA2-8 POSITION D BREATHER KIT	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
20	966907	SENSOR ADAPTER KIT	1
21	750000	SMART SENSOR	1

- NOTES:
 1. ITEM 5 & 19 COME FROM TRICO. SAMPLE COLLECTION SUPPLIES NOT PROVIDED.
 2. LEVEL 1 KIT INCLUDES ITEMS 1-19
 3. LEVEL 2 KIT INCLUDES ITEMS 1-21

M6RELIAKITS

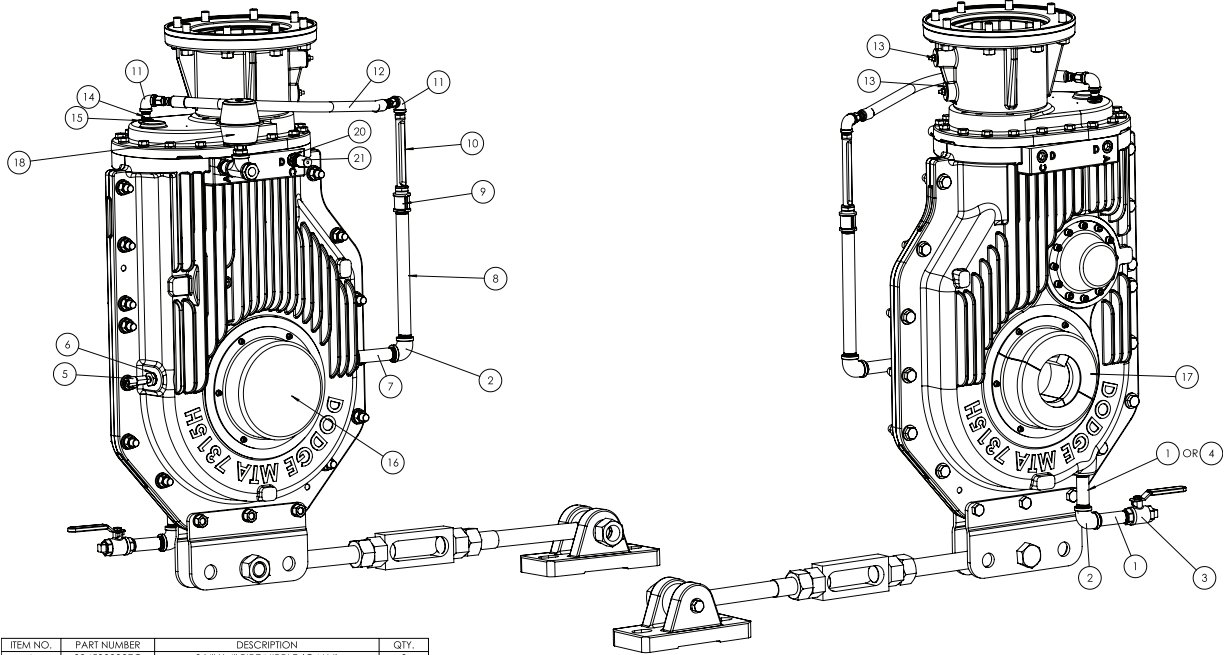
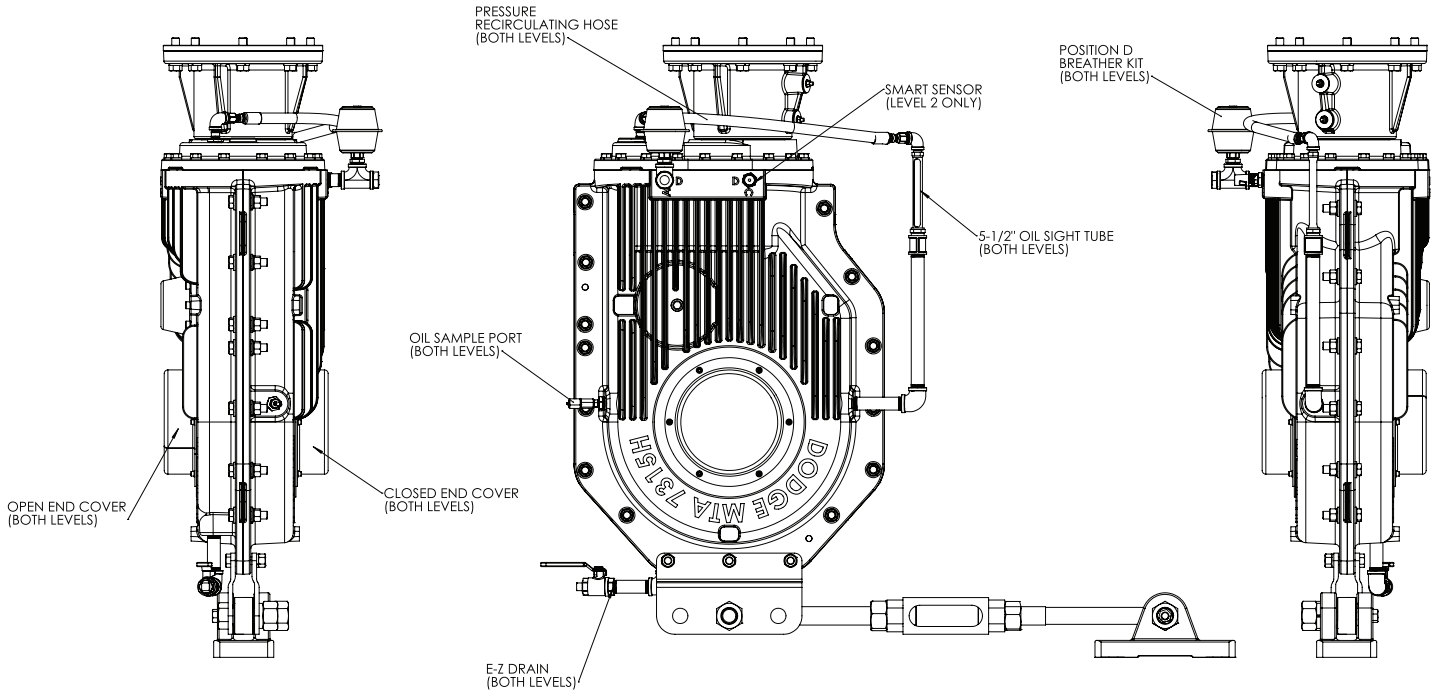


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530020EC	3/4" X 2-1/2" PIPE NIPPLE (GALV)	2
2	034650005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530052EC	3/4" X 6-1/2" PIPE NIPPLE (GALV)	2
5	453303-3	OIL SAMPLING PITOT TUBE (3" TUBE)	1
6	453304	3/4" TO 1/4" ADAPTER	1
7	034530028EC	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)	2
11	454631-22	MTA6 HOSE ASSEMBLY	1
12	455000	MTA MOTOR ADAPTER PLUG	2
13	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	1
14	034600099AC	3/4" TO 3/8" ADAPTER (GALV)	1
15	905142	TA5/6 ABS CLOSED END COVER ASSY	1
16	905143	TA5/6 ABS SPLIT END COVER ASSY	1
17	472300	MTA2-8 POSITION D BREATHER KIT	1
18	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
19	966907	SENSOR ADAPTER KIT	1
20	750000	SMART SENSOR	1

NOTES:

1. ITEM 5 & 18 COME FROM TRICO. SAMPLE COLLECTION SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-18
3. LEVEL 2 KIT INCLUDES ITEMS 1-20

M7RELIAKITS

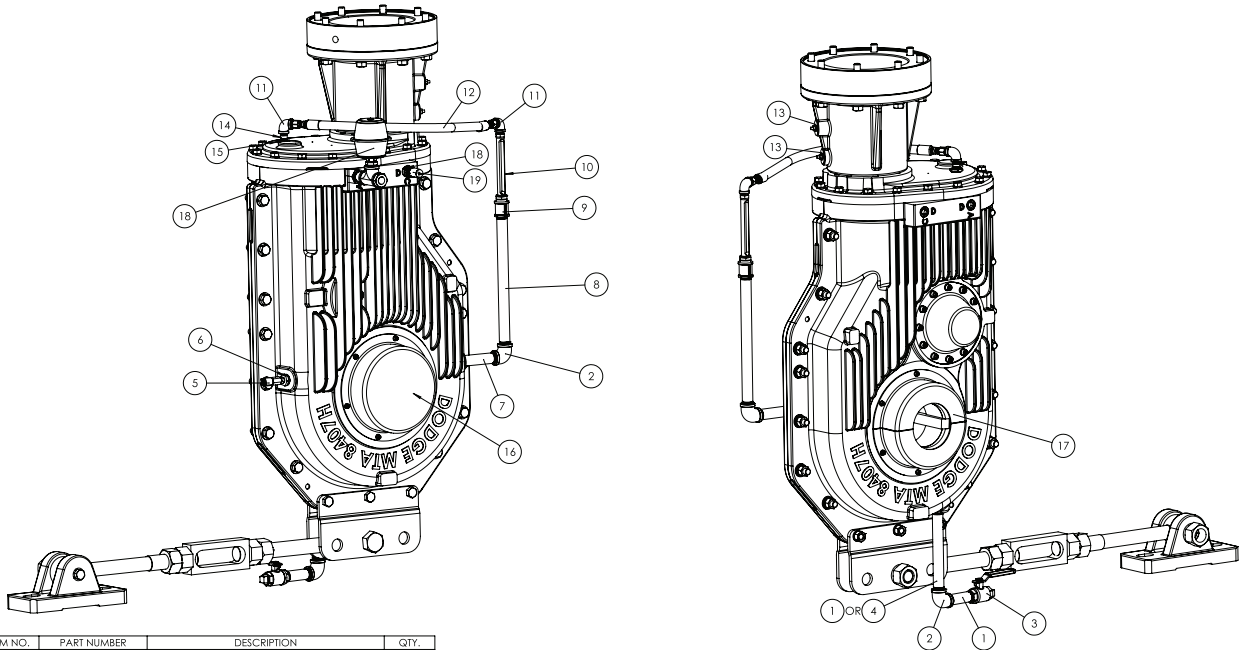
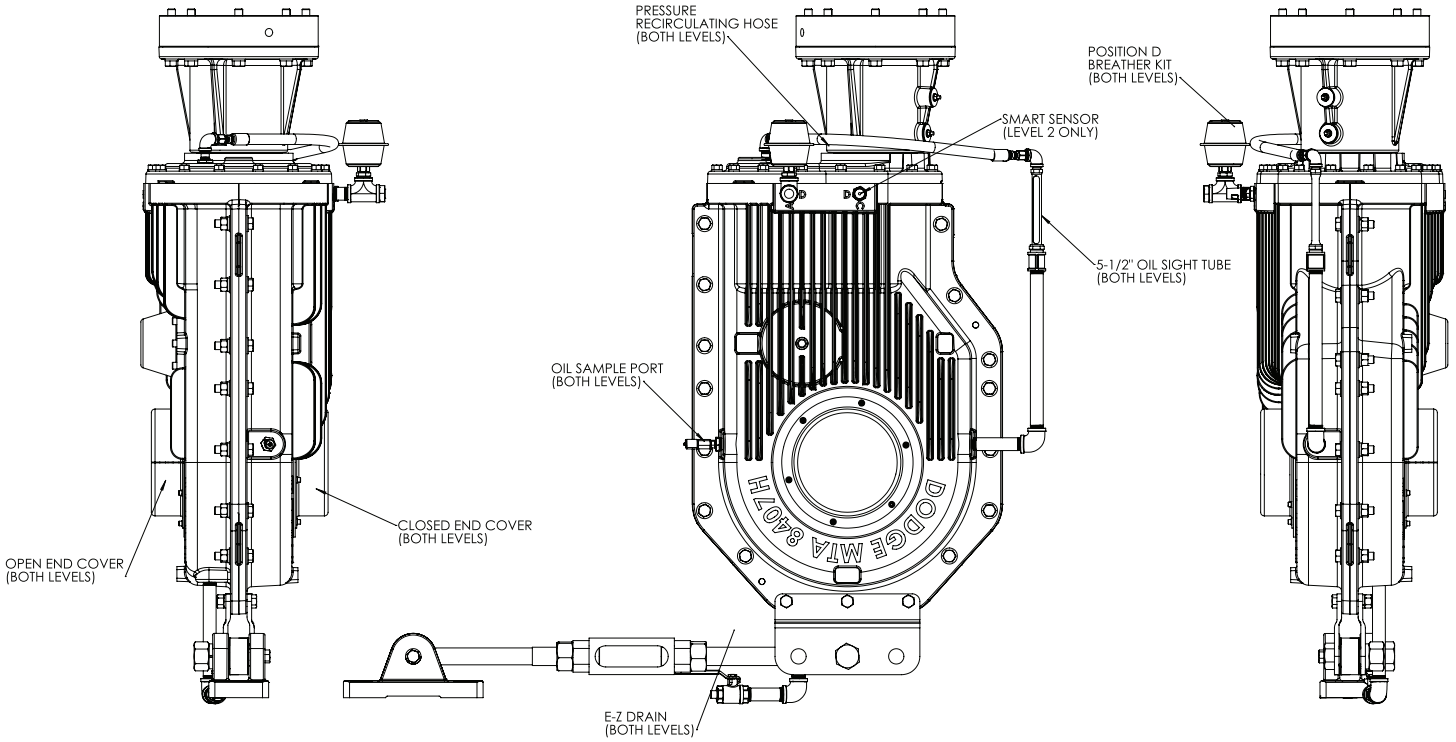


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	034530032EC	3/4" X 4" PIPE NIPPLE (GALV)	2
2	034630005AC	3/4" - 90° PIPE ELBOW (GALV)	2
3	095967	3/4" BALL VALVE	1
4	034530072EC	3/4" X 9" PIPE NIPPLE (GALV)	1
5	453303-3	OIL SAMPLING PITOT TUBE (3" TUBE)	1
6	453304	3/4" TO 1/4" ADAPTER	1
7	034530040EC	3/4" X 5" PIPE NIPPLE (GALV)	1
8	034530094EC	3/4" X 12" PIPE NIPPLE (GALV)	1
9	034630005AC	3/4" PIPE COUPLING (GALV)	1
10	967052	MTA-4-8 OIL SIGHT TUBE (3/4" TO 3/8")	1
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	2
12	454631-30	MTA7-8 HOSE ASSEMBLY	1
13	455000	MTA MOTOR ADAPTER PLUG	2
14	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	1
15	034600009AC	3/4" TO 3/8" ADAPTER (GALV)	1
16	907142	TA7 ABS CLOSED END COVER ASSY	1
17	907143	TA7 ABS SPLIT END COVER ASSY	1
18	472300	MTA2-8 POSITION D BREATHER KIT	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
20	966907	SENSOR ADAPTER KIT	1
21	750000	SMART SENSOR	1

NOTES:

1. ITEM 5 & 19 COME FROM TRICO. SAMPLE COLLECTION SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-19
3. LEVEL 2 KIT INCLUDES ITEMS 1-21

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	453304	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
11	034650003AC	3/8" - 90° PIPE ELBOW (GALV)	2
12	454631-30	MTA7-8 HOSE ASSEMBLY	1
13	455000	MTA MOTOR ADAPTER PLUG	1
14	034530012CC	3/8" X 1-1/2" PIPE NIPPLE (GALV)	1
15	034600009AC	3/4" TO 3/8" ADAPTER (GALV)	1
16	908142	TAB ABS CLOSED END COVER ASSY	1
17	908143	TAB ABS SPLIT END COVER ASSY	1
18	472300	MTA2-8 POSITION D BREATHER KIT	1
19	455003	SAMPLING PORT ADAPTER (NOT SHOWN)	1
20	966907	SENSOR ADAPTER KIT	1
21	750000	SMART SENSOR	1

NOTES:

1. ITEM 5 & 19 COME FROM TRICO. SAMPLE COLLECTION SUPPLIES NOT PROVIDED.
2. LEVEL 1 KIT INCLUDES ITEMS 1-19
3. LEVEL 2 KIT INCLUDES ITEMS 1-21

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