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Universal Field Installation Kit Assembly Instructions

Models 1010 & 1030

How to Use the Assembly Instructions

The instructions describe the assembly of the Smart Condition Monitoring System Model 1010 and 1030 Universal Field Installation kits on gear drives. The kits were designed to be installed on Falk A+Plus®, Y-Series, and V-Class units, but can be adapted for other Falk and non-Falk drives as well. The kit consists of a vibration sensor, oil sump sensor, Andon light (to show system status), and an Edge Device, as shown in **Figure 1. Table 1** shows the preferred sensor locations. In the Model 1010 and 1030 Universal kits, hardware is provided for A+Plus®, Y-Unit, and V-Class drives. Use the appropriate hardware and fittings that will be required for the gearbox that you will be installing the kit on. Additional fittings or hardware (not included) may be required for other Falk or non-Falk gear drives. These same instructions can be used for installing a 1110 or 1130 kit, but note that an Edge with a cellular antenna is included in those kits.

Figure 1 — Smart Condition Monitoring System Model 1010 and 1030 Universal Field Installation Kit Components

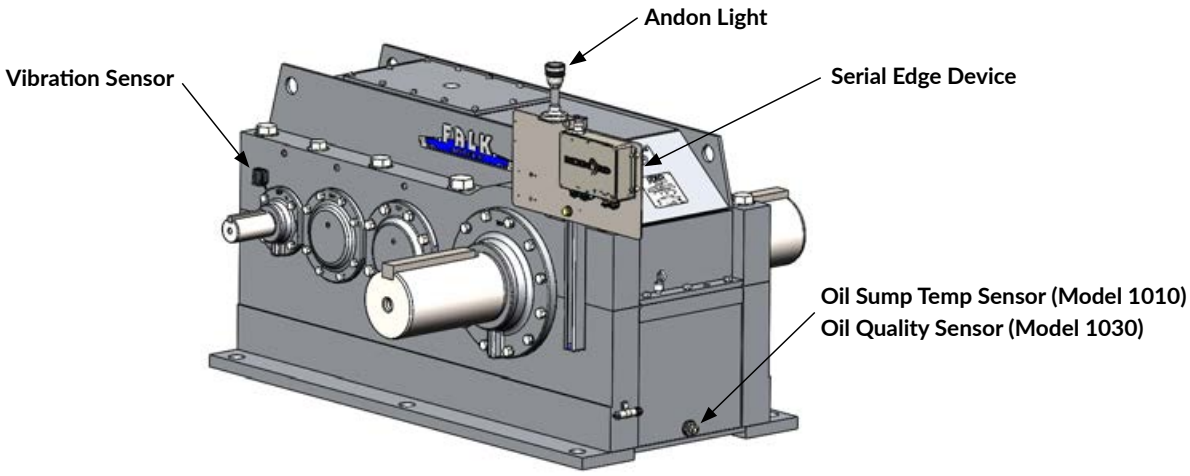


Table 1 — Preferred locations of sensors

Sensor	Installation location
High speed shaft vibration sensor	Next to high speed shaft seal cage
Oil sump temperature sensor (Model 1010) Oil quality sensor (Model 1030)	Low-speed drain port (V-Class) High-speed or low speed drain port (all other drives)
Andon light	Preferred: on edge mounting plate Optional: can be mounted remotely
Edge device	Preferred: on gear drive Optional: remotely (recommended for all non-Falk gear drives)

Suggested assembly sequence: vibration sensor, oil sump temperature sensor, Unistrut, Edge Device, Andon light, wiring and cabling.

CONTENTS

Safety Requirements

The gear drive and power to Edge Device needs to be locked out during installation and troubleshooting.

Site Preparation

The gear drive that the Smart Condition Monitoring System will be assembled to needs to be drained of oil and locked out prior to the installation. Coupling guards on the high-speed (input) shaft may need to be removed to gain access to the gear drive housing side walls.

Vibration Sensor Installation

The preferred side to mount the vibration sensor, for parallel shaft gear drives, is the side where the motor drives the high-speed input shaft. For right-angle drives, there is no preferred side. The vibration sensor is to be installed to a mounting plate. The mounting plate is epoxied to the side of the housing cover as shown in the exploded view in **Figure 2. Table 2** shows the parts list of the vibration sensor.

Proper orientation of the sensor is critical. Both the sensor and mounting plate have a 45-degree flat on them. Align this flat in the 11 O'clock position when installing the mounting plate. There is also an "x-axis" printed on the sensor. Align the x-axis, so it is parallel to the split line of the gear drive, or the top of the housing if it is a monoblock style housing. See **Figure 3** for general placement and orientation of the sensor relative to the bearing and housing. The sensor should be installed as close to the high-speed bearing as possible.

The vibration sensor mounting plate will be epoxied to the gearbox housing. Do not drill into the house to install the mounting plate, as this may void the warranty. Discard the thermal tape and 1/4–28 UNF flat head screw included in the kit.

Vibration Sensor Installation Procedure

1. Select the proper location near the high-speed bearing for installing the vibration sensor. The sensor must be installed on a flat and vertical location on the housing, near the bearing to ensure that the sensor has a firm foundation for installation and the proper vibration levels can be measured. For V-Class drives refer to the drawing in the appendix for the proper installation location.
2. To ensure proper adhesion of the epoxy, sand the housing, removing all paint until a bare metal surface is achieved. Clean the housing surface of all contaminants using a mild solvent or degreaser.
3. Using the supplied, 2-part Devcon Plastic Welder (Rexnord material number 10724955), epoxy the mounting plate to the housing in the proper orientation. Ensure that the threaded holes on the plate remain free of epoxy. This can be done by threading the bolts into the holes prior to applying the epoxy and then removing the screws, before the epoxy sets.
4. Install the sensor to the mounting plate, using the two M3 screws. **Figure 4** shows a completed installation.

Figure 2 — Exploded view of the vibration and oil quality sensor assemblies

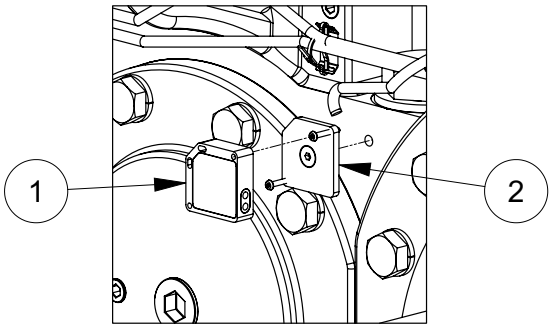


Table 2 — Vibration sensor parts lists (housing mount)

Item number	Description	Quantity
1	Vibration Sensor	1
2	Vibration Mounting Bracket	1

Figure 3 — Placement and orientation of vibration sensor

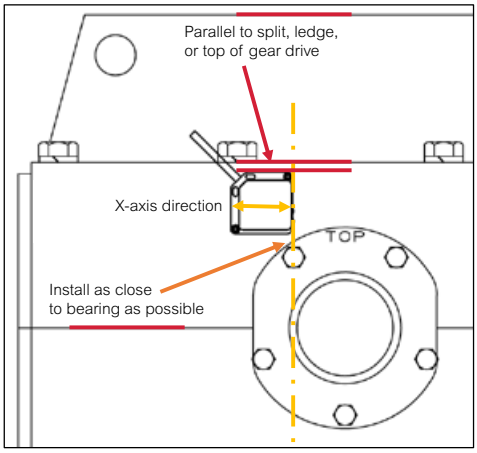


Figure 4 — Installed vibration sensor

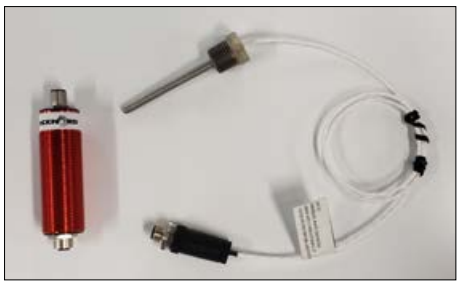
Oil Sump Temperature Sensor Installation — Model 1010

The oil sump temperature sensor consists of the sensor, a signal converter, and a bushing, as shown in **Figure 5**. Three bushing adapters are provided in the kit, as listed in **Table 3**. If the drive you are installing the 1010 Universal kit on has a drain hole size different that the bushings supplied, you will need to supply you own bushing.

Table 3 — Oil temperature sensor plug adaptor size and corresponding gear drives

Bushing Size	Used on these gear drives
1" NPT (M) x 1/2" NPT (F)	Y-Unit: 2050 - 2070 V-Class: 107 - 187
1-1/4" NPT (M) x 1/2" NPT (F)	A+Plus: 385 – 505 Y-Unit: 2080 – 2120
2" NPT (M) x 1/2" NPT (F)	V-Class: 193 – 227

Figure 5 — Oil Sump Temperature Components



Prior to installation, select a location where the oil sump temperature sensor will be installed. Choose a location that is compatible with any accessories that may be installed on the gear drive. Ensure that the temperature sensor will not impact any of the gearing prior to installation.

Recommended oil sump temperatures sensor installation locations are as following:

- **A+Plus and Y-Unit drives:** high-speed end
- **V-Class drives:** low-speed end (opposite low speed gear preferred)

Oil Sump Sensor Installation Procedure

1. Drain the oil in the gearbox and remove plug where the sensor will be installed.
2. Select or supply the correct bushing based on the size of the drain port and discard the other bushings. Apply thread joint compound or Teflon tape to the threads on the bushing and install into the port on the gear drive.
3. Apply thread joint compound or Teflon tape to the threads on the oil sump temperature sensor and install the sensor into the bushing.
4. Determine a suitable location to install the oil sump temperature signal sensor converter. Verify that the sensor cable will reach the converter location prior to installation. The converter can be installed in three methods:
   - Drill and tap for M8-1.25 pitch thread. Drill to a maximum depth of 0.63 inch, but do not drill through the housing wall. This option is only recommended for A+Plus, Y-Unit, and V-Class drives. Suitable locations for the converter are shown below in **Figures 6 through 8**. Only drill into the cast housing and do not drill into any machined surfaces. Install the converter using the P-clip and M8 hardware.

Figure 6 — Converter Installed on a V-Class Drive

Figure 7 — Converter Installed on A+Plus Drive on top ledge

Figure 8 — Converter Installed on A+Plus Drive on end of drive

Oil Sump Temperature Sensor Installation — Model 1010

- Attach the converter to the Edge mounting plate. For this installation method, the Edge will need to be installed near the location of the temperature senor. Use the P-clip and M8 hardware to secure the converter as shown in **Figure 9**.
- Secure the converter to the drive by using a cable mount. Sand the location to bare metal and clean the housing surface of all contaminants using a mild solvent or degreaser. Use the supplied, 2 PART DEVCON PLASTIC WELDER to secure the mount to the drive. Use cable ties to secure the converter to the cable mount, as shown in **Figure 10.** Connect the sensor cable to the converter by screwing together the blue ends of the cables.

5. Connect the sensor cable to the converter by screwing together the blue ends of the cables.
6. Excess cable can be looped and secured to drive using cable tie mount and cable ties. See Cable and Wire Routing section for installation instructions for cable tie mounts.

Figure 9 — Converter Installed on Edge mounting plate

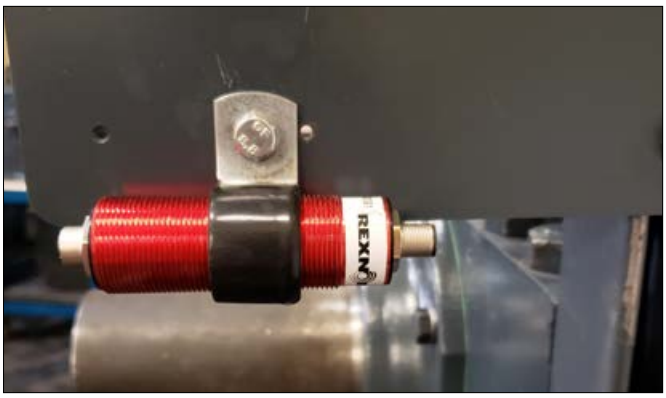


Figure 10 — Converter secured with cable mount

Oil Quality Sensor Installation — Model 1030

Install the oil quality sensor (**Figure 11**) in a location where oil can flow across the sensor. It is recommended to install the sensor on the low speed end of the gear drive. If multiple ports are available on the low speed end, the oil quality sensor should be installed on the same side as the low speed gear. However, due to limited ports on some A+Plus and Y-Unit gear drives, it is acceptable to install the sensor on the high-speed end. Bushings are included for several sizes, but if the drain port does not match one of the supplied bushings, a standard bushing can be used with the included 3/4" NPT adapter. **Table 4** lists drain port sizes for Falk gear drives.

Recommended oil quality sensor installation locations are as following:

- **A+Plus and Y-Unit drives:** high-speed end
- **V-Class drives:** low-speed end (same side as low speed gear preferred)

Table 4 — Oil quality sensor plug adaptor size and corresponding gear drives

Drain Port Size	Used on these gear drives
3/4" NPT	Link Belt and smaller Falk drives
1" NPT	Y-Unit: 2050 - 2070 V-Class: 107 - 187
1-1/4" NPT	A+Plus: 385 – 505 Y-Unit: 2080 – 2120
2" NPT	V-Class: 193 – 227

Figure 11 — Oil quality sensor components

Oil Quality Sensor Installation — Model 1030

Oil Quality Sensor Installation Procedure

1. Drain the oil in the gearbox and remove plug where sensor will be installed.
2. Select or supply the correct bushing or bushings based on the size of the drain port.
   - For installing on a drive with a 3/4", 1-1/4", or 2" NPT drain port, select the proper adapter that fits the drain size.
   - For drives with a 1" NPT drain port, use the 3/4" NPT adapters along with the 1" NPT bushing.
   - If none of the supplied bushings will fit the port on the drive, a standard bushing can be used. Use the 3/4" NPT adapter and supply a bushing with a 3/4" NPT female port.

Figure 12 – Completed installation of oil quality sensor

3. Install Oil quality sensor cover over sensor. (If not already pre-installed.)
4. Apply thread joint compound or Teflon tape to the NPT threads on the bushing(s) only. Do not apply any thread joint compound or Teflon tape to the sensor threads or corresponding straight threads on the 3/4" NPT adapter. Install the bushing(s) into the port on the drive.
5. Install the sensor into the bushing. Apply 40 ft-lbs of torque to install the sensor and do not over tighten. The O-ring on the sensor will seal against the bushing. A completed installation is shown in **Figure 12**.

Edge Device Installation

Unistrut is used to secure the Edge Device to the gear drive at a remote location. Never install the Edge Device upside down, sideways, or at any angle other that the upright position pictured in the instructions.

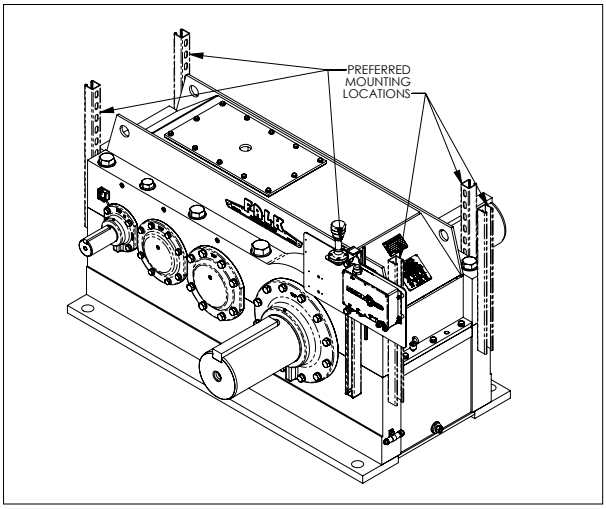
Unistrut Installation Procedure

1. Select a location to mount the Unistrut, verifying that there is adequate clearance for drive accessories and guarding. The following locations are recommended:
   - **A+Plus and Y-Unit drives:** low-speed end (refer to step 2.1)
   - **V-Class:** low-speed end (refer to step 2.2)
   - **Other Falk and non-Falk drives:** remote mounting (refer to step 2.3)
2. The Unistrut provided in the kit is 32 inches long, which is suitable for most applications. However, you can cut down the Unistrut if necessary. Do not install the Edge Device more than 18 inches above the gear drive. Refer to subsections 2.1 through 2.3 for the correct installation procedure based on the gear drive and method of installing.

   2.1 A+Plus and Y-Unit Drives

   - The preferred location for installing the Unistrut is on the low-speed end of the drive, but it can be installed on any of the corners or sides of the drive as shown in **Figure 13.**
   - Two holes to mount the Unistrut will need to be drilled into the drive. Drill (F drill bit) to a maximum depth of 0.45 inch and thread the hole with a 5/16-18 tap. Drill all holes above the split line of the housing.
   - Install the Unistrut using the 5/16 inch socket head cap screw, washer, and lock washer.

Figure 13 — Preferred Edge installation locations for A+Plus and Y-Unit Drives

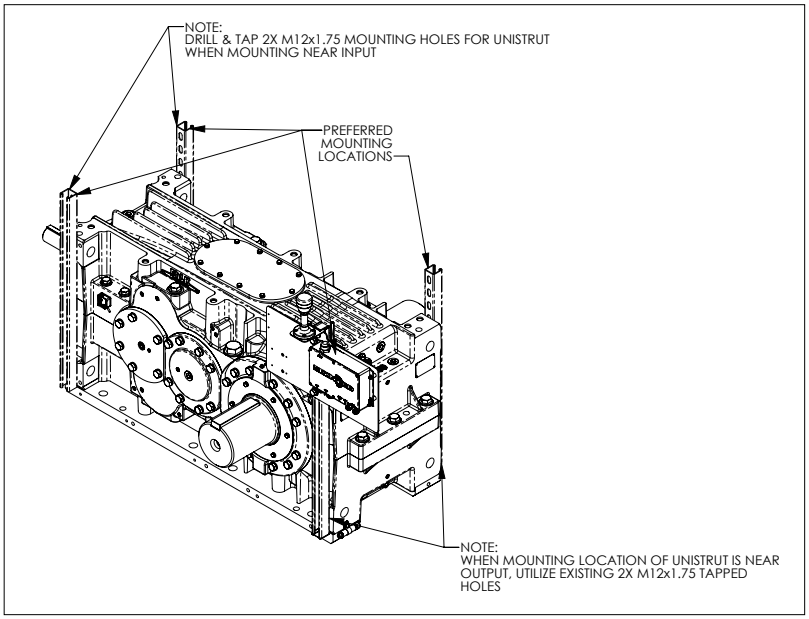


Edge Device Installation

2.2 V-Class drives

- The Unistrut will be installed into existing holes on the V-Class drives. The preferred location for installing the Unistrut is on the low-speed end of the drive, but it can be installed on any of the corners or sides, as shown in **Figure 14.**
- Use the M12 hardware to bolt the Unistrut to the gear drive. If this is to be installed on a size 190 – 220 drive, the mounting posts and longer bolts are required.

Figure 14 — Preferred Edge installation locations for V-Class Drives



2.3 Remote installation

- This installation method can be used for all gear drives, including A+Plus, Y-Unit, and V-Class drives.
- The end user must supply the hardware required to clamp the Unistrut for their application
- Typical installation locations include floor, pipe or rail, and I-beam mounting. **Figure 15** shows the Unistrut remotely mounted on a rail.
- If remotely mounting the Edge, the Andon light can be either installed on the Edge mounting plate or on the drive. Installation of the Andon light will be covered in the next section.

Figure 15 — Remote installation of Unistrut on rail

Edge Device Installation

Edge Device Installation Procedure

1. Attach the Edge Device mounting plate to the Unistrut using the 1/2 inch bolts and channel nuts. Do not install the plate more than 18 inches about the gear drive.
2. Install the Edge Device to the plate using the #12 hardware. Do not over tighten.
3. On the back of the plate, install the power supply using the #8 hardware, as shown in **Figure 16**. It is generally easier to partially thread the lower screw first and then place the power supply on the screw. Install the upper screw next and tighten both screws to secure the power supply. Do not overtighten. Connect the power supply to the power port on the front of the Edge device. The Edge device can also be powered by suppling 24VDC directly to the Edge Device. If using this method, the power supply is not required.

A completed installation in shown in **Figure 17**. A diagram of the installation component in shown in **Figure 18**, with the components listed in **Table 5**.

Figure 16 — Power supply for Edge Device installed on back on mounting plate

Figure 17 — Assembled view of Edge Device and Andon Light

Edge Device Installation

Figure 18 — Exploded view of Edge Device assembly

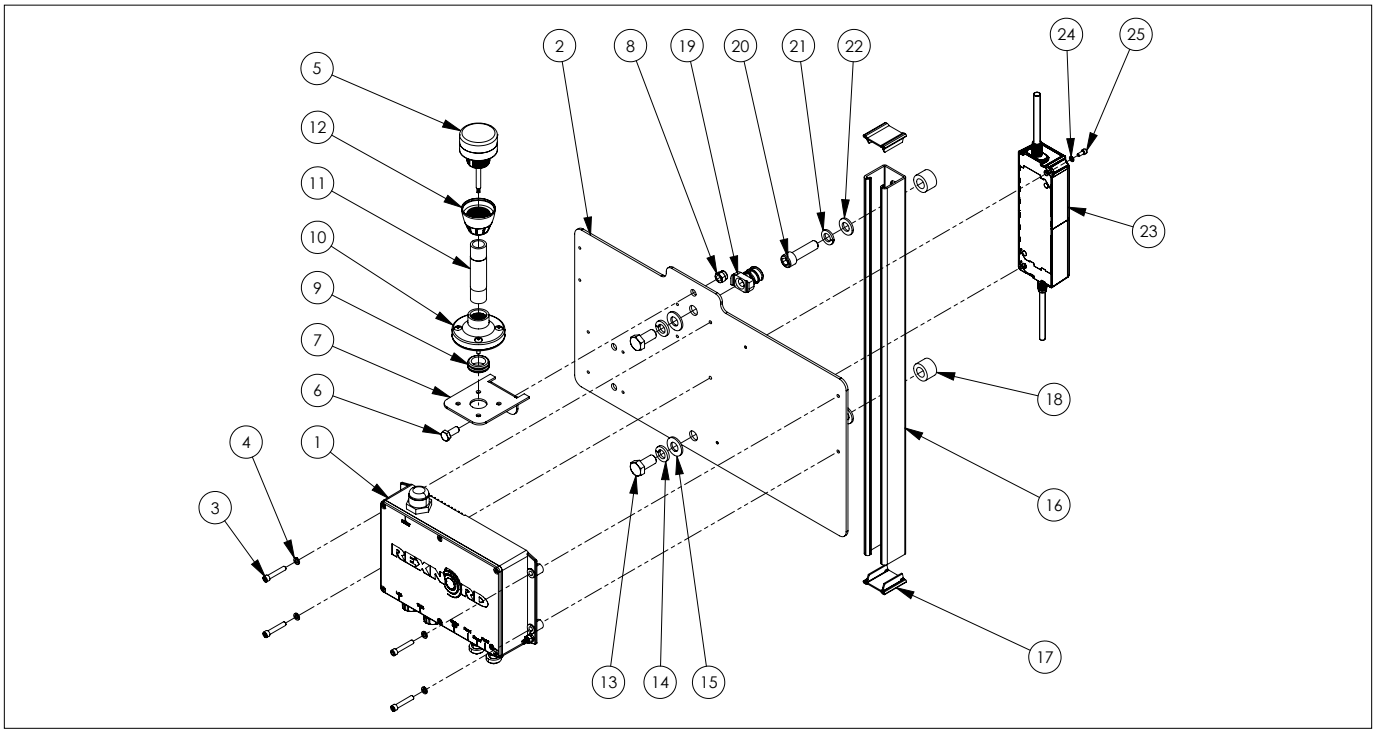


Table 5 — Parts list of the Edge Device mounting for foot mounted gear drives

Item number	Description	Quantity
1	Serial Edge Device	1
2	Edge Device mounting plate	1
3	Socket head cap screw, #12-24UNC x 1-1/4"	4
4	Lock washer #12	4
5	Andon light	1
6	Hex head cap screw, 5/16-18UNC x 3/4", grade 5	1
7	Andon light bracket	1
8	Lock nut 5/16-18UNC	1
9	Rubber grommet	1
10	Andon Light mounting flange with M5 hardware	1
11	Conduit nipple electrical 0.50-14NPT x 3-1/2”	1
12	Andon light pipe cover	1
13	Hex Head Cap Screw, 1/2-13UNC x 1", grade 5	2
14	Lock washer, 1/2"	2
15	Flat washer, 1/2"	2
16	Channel 1-5/8" x 1-5/8" slotted, galvanized	1
17	Unistrut end cap	2
18	Mounting post, 190V-220V gear drives only	2
19	Channel Nut with Spring, 1-5/8" series, 1/2-13UNC	2
20	Socket head cap screw, M12x1.75 x 30mm, grade 8.8 (V-Class 120V – 180V)	2
	Socket head cap crew, M12x1.75 x 45mm, Grade 8.8 (V-Class 190V – 220V)	2
	Socket head cap screw, 5/16-18UNC x 5/8" (A+Plus and Y-Unit)	2
21	Lock washer, M12 (V-Class)	2
	Lock washer, 5/16” zinc plated (A+Plus and Y-Unit)	2
22	Flat washer, M12 (V-Class)	2
	Flat washer, 5/16” stainless (A+Plus and Y-Unit)	2
23	Power supply for Edge Device	1
24	Socket head cap screw #8-32 x 3/8”	2
25	Lock washer #8	2

Andon Light Installation

Refer to **Figure 18** and **Table 5** that details the components needed to assemble the Andon light. It is recommended that the Andon light is to be mounted at the top of the Edge Device mounting plate after the Unistrut and Edge bracket have been installed, as shown in **Figure 19**. However, the Andon light can be remotely mounted for greater visibility.

Andon Light Installation Procedure

1. Insert the runner grommet into the Andon light bracket.
2. Install the flange into the Andon light bracket using the gasket and M5 hardware.
3. Screw in the 1/2 inch conduit nipple to the flange. Slide on the adapter cap on the conduit and insert the washer into the groove on the adapter cap.
4. Feed the Andon light cable through the conduit and screw the light to the conduit. Then tighten the adapter cap to the Andon light.
5. Install the light assembly into the Edge Device mounting plate using the 5/16 inch bolt and locknut. The Andon light can also be installed to the drive, to increase visibility.

Figure 19 — Assembled view of Edge Device and Andon Light

Digital Display Installation (Optional Add-on)

The digital display is compatible with your Edge Device. Contact your local distributer to purchase the display (Rexnord part number 10787167). Included in the kit is the display, a serial y-cable, and mounting hardware. For the Universal Kits, it is recommended that the display should be installed on the Edge mounting plate. However, the digital display can be mounted remotely, in a more visible location if preferred. If choosing to mount in a remote location, you may need to supply your own hardware or request additional serial cables from Rexnord.

Digital Display Installation (Optional Add-on)

Digital Display Installation Procedure

1. Install the display to the Edge Device mounting plate using the #10 hardware provided. Do not over tighten.
2. Use the y-cable included with digital display to connect the display to the Edge. Use the wiring diagram in the next section as a guide to connect the sensors.
3. Use cable ties to secure the new cable in a neat and orderly fashion. A completed installation is shown n **Figure 20.**
4. Power on the Edge Device and the Display will illuminate. It may take a few minutes for the Edge to restart, but once completed the Andon light will illuminate and the status of the gear drive will be displayed on the digital display, as shown in **Figure 21**.

Figure 20 — Finished installation of display

Figure 21 — Digital display readout

Wiring/Cable Routing

In the 1010 field installation kit, you will be provided serial cables that will connect the sensors to the Edge Device. Included are one long and two short serial cables and two y-splitters. Depending on the size of the gearbox, as well as locations on the oil sensor and Andon light, you may not need to use all three cables. If installing the Andon light on the drive, instead of on the Edge mounting plate, use the 2m serial cable to connect the light. It is recommended that the long y-cable should be attached directly to the Edge device. The shorter y-cable can be used to connect two sensors. Use your best judgment when selecting cables for the installation.

Figure 22 shows a reference schematic of how the sensors can be connected to the Edge Device for the 1010 Universal Kit and **Table 6** lists the sensors and cables used to connect the components. For the wiring diagram of the 1030 Universal kit, refer to **Figure 23** and **Table 7**. It is up to the installer to select the appropriate cables and configurations based on the gear drive. However, all cables must be routed into one port on the Edge Device.

Wiring/Cable Routing

Figure 22 — Model 1010 Reference schematic of sensor cable connections

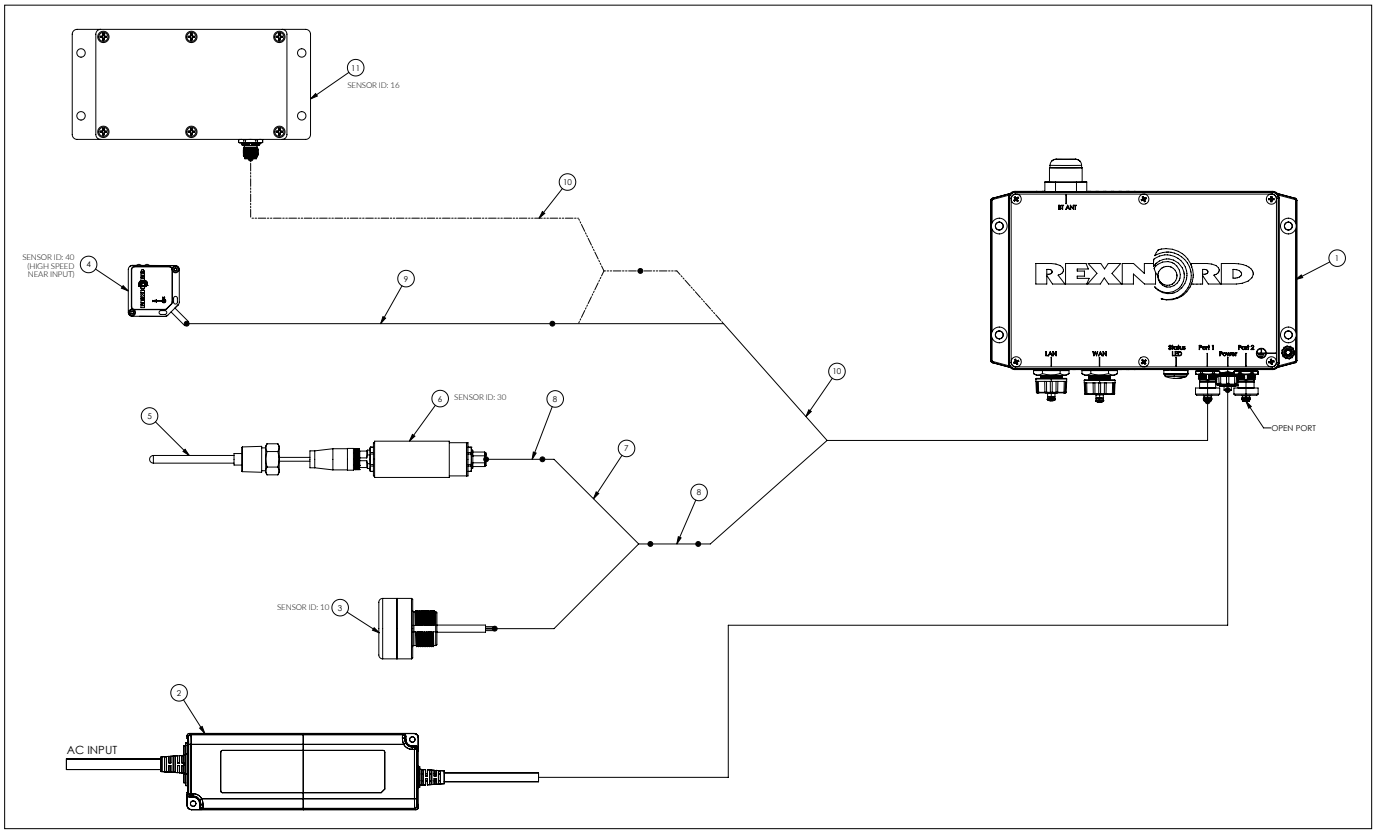


Table 6 — Parts list sensors and cables for the 1010 Universal Kit

Item number	Description	Quantity
1	Serial Edge Device	1
2	AC power supply	1
3	Andon light	1
4	Vibration sensor	1
5	Oil sump temperature sensor	1
6	Signal Converter	1
7	0.25M Y-serial cable	1
8	5.0M serial cable	1
9	2.0M serial cable	2
10	0.5M Y-serial cable	2
11	Digital display (optional)	1

Wiring/Cable Routing

Figure 23 — Model 1030 Reference schematic of sensor cable connections

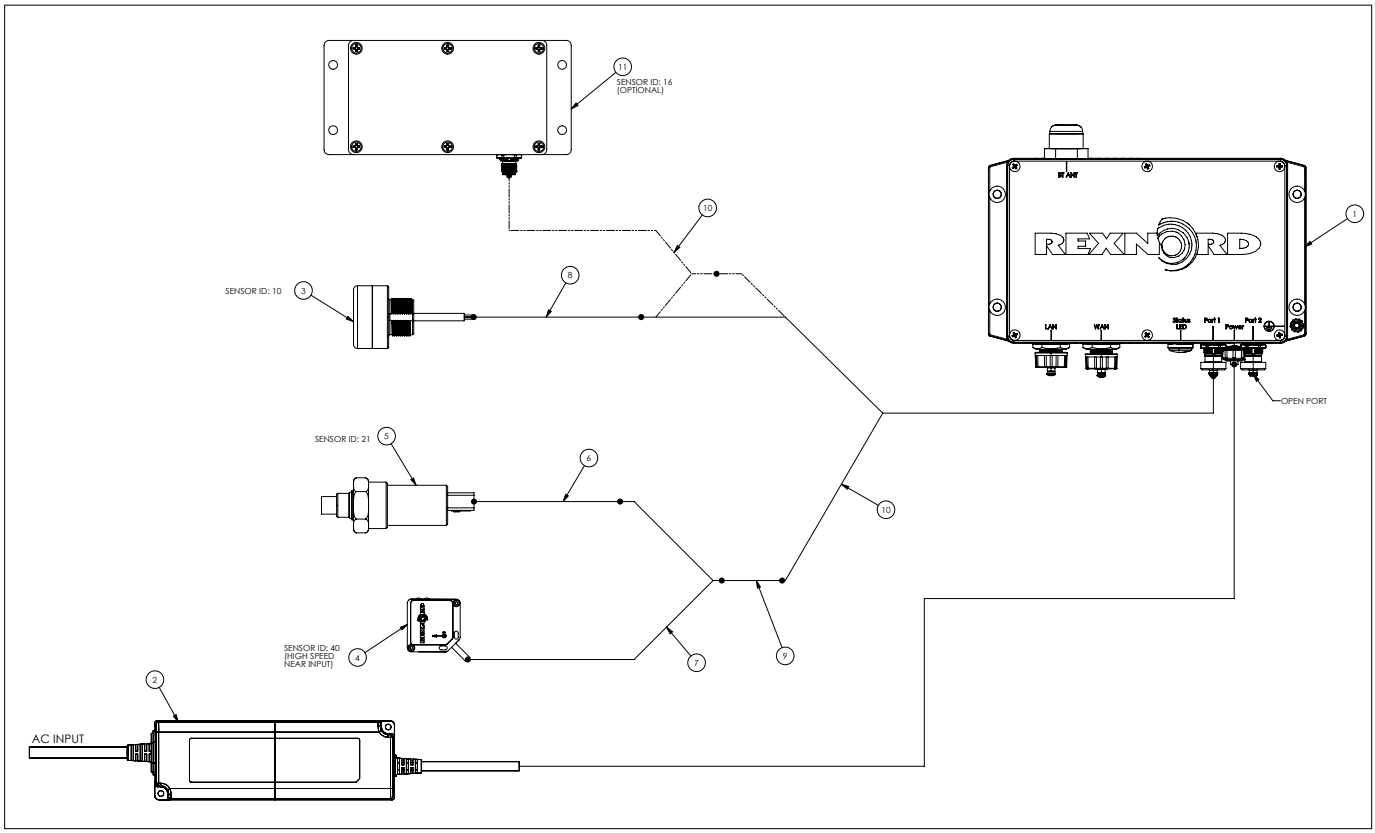


Table 7 — Parts list sensors and cables for the 1030 Universal Kit

Item number	Description	Quantity
1	Serial Edge Device	1
2	AC power supply	1
3	Andon light	1
4	Vibration sensor	1
5	Oil quality sensor	1
6	2.5m Oil quality sensor cable	1
7	0.25M Y-serial cable	1
8	2.0M serial cable	1
9	5.0M serial cable	1
10	0.5M Y-serial cable	2
11	Digital display (optional)	1

Wiring/Cable Routing

Cable Installation Procedure

1. Connect the straight serial cables to the sensors.
2. Use the y-serial cables to connect all of the serial cables into Port 1 on the Edge Device. It is important to route all cables into this port, but the order in which they are connected is not important.
3. Select locations for cable tie mounts. Position mounts every 12 – 16 inches away, ensuring that the cables are secured away from any rotating machinery.
4. Install cable tie mounts
   a. Sand the locations, then clean the area to remove any contaminants or debris. Use the DEVCON PLASTIC WELDER to secure the clips to the housing. This the recommended installation procedure for all gear drives.
   b. Cable tie mounts can also be secured with #8 drive screws. Use a #27 drill bit and drill to a maximum depth of 0.15 inch. Hammer the drive screws into the holes to secure the clips. This method is only recommended for A+Plus, Y-Series, and V-Class. If using this method, only drill into cast surfaces and avoid drilling into any machined parts or surfaces.
5. Secure the cables to the mounts using cable ties, as shown in **Figure 24**. Loop any excess cable behind the Edge Device mounting plate and secure with cable ties, as shown in **Figure 25**.

If additional serial cables are required for remotely installing the Edge, refer to **Table 8**. Contact 1-866-Rexnord (1-866-739-6673) to purchase additional serial cables.

Refer to the SS3-001 document for installing the power cable and making the RJ45 connections. To setup the Edge on your PLC network, refer to the SS3-002 document.

Table 8 — Part Numbers for additional serial cables

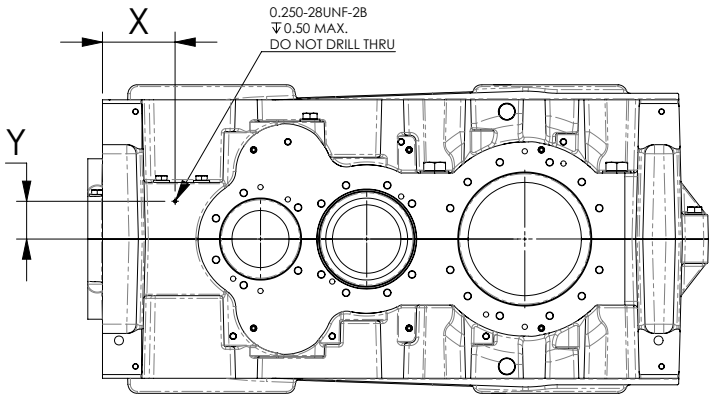
Description	Part Number
1m Serial Cable	10738994
2m Serial Cable	10738996
5m Serial Cable	10738998

Figure 24 — Sensor cables secured with cable tie mounts

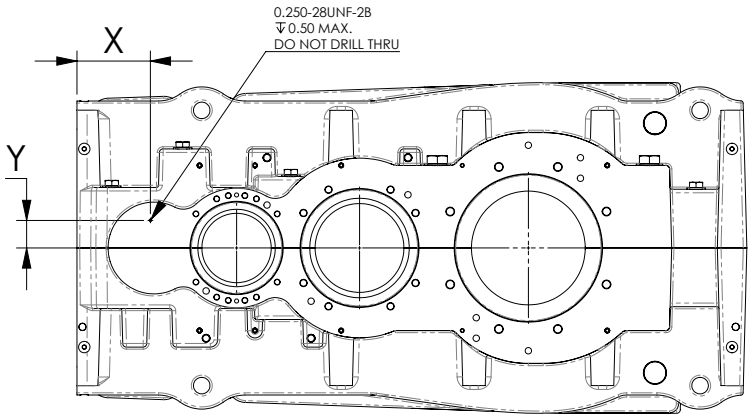
Figure 25 — Excess cable coiled and secured to the back of the Edge Device mounting plate

Appendix

Unit	Config	X [in]	Y [in]
100V	VP1	7-5/16	4-7/16
	VP2	9-1/2	3-15/16
	VP3	7-9/16	4-1/2
	VR2	8-3/4	1-3/8
	VR3	9-1/2	3-15/16
110V	VP1	11-1/16	3-15/16
	VP2	11-7/16	4-1/8
	VP3	11-1/16	4-1/2
	VR2	9-11/16	1-3/16
	VR3	4-15/16	2-3/4
120V	VP1	10-5/8	3-3/8
	VP2	5-1/8	2
	VP3	5-1/8	2
	VR2	11	1-9/16
	VR3	5	2-9/16
130V	VP1	13-3/16	4-1/16
	VP2	5-7/16	2-3/8
	VP3	5-7/16	2-3/8
	VR2	12-13/16	2-3/8
	VR3	5-7/16	2-15/16
140V	VP1	13-3/4	2-15/16
	VP2	6-11/16	2-9/16
	VP3	6-11/16	2-9/16
	VR2	13-3/4	2-15/16
	VR3	6-11/16	2-9/16
150V	VP1	15-15/16	4-5/8
	VP2	6-1/16	3-1/8
	VP3	6-1/16	3-1/8
	VR2	15-9/16	3-9/16
	VR3	6-1/16	3-1/8
160V	VP1	17-15/16	5-7/8
	VP2	7-1/2	3-3/8
	VP3	7-1/2	3-3/8
	VR2	17-15/16	3-15/16
	VR3	7-1/2	3-3/8
170V	VP1	21-5/8	7-1/16
	VP2	22-1/16	7-1/16
	VP3	16-15/16	7-7/8
	VR2	22-1/16	7-1/16
	VR3	22-1/16	7-1/16
180V	VP1	21-5/8	7-1/16
	VP2	22-1/16	7-1/16
	VP3	16-15/16	7-7/8
	VR2	22-1/16	7-1/16
	VR3	22-1/16	7-1/16
190V	VP1	38-3/16	8
	VP2	9-13/16	2-15/16
	VP3	4-7/16	5-3/16
	VR3	7-7/8	2-15/16
200V	VP1	38-3/16	8
	VP2	9-13/16	2-15/16
	VP3	4-7/16	5-3/16
	VR3	7-7/8	2-15/16
210V	VP1	44-1/8	8-7/8
	VP2	11	3-3/4
	VP3	5-1/2	5-7/8
	VR3	11	3 3/4
220V	VP1	44-1/8	8-7/8
	VP2	11	3-3/4
	VP3	5-1/2	5-7/8
	VR3	11	3-3/4



100V THRU 180V



190V THRU 220V

Note: Housing depicted may not resemble actual housing configuration.

