

Grid-Lign® Flexible Couplings (Includes ATEX Certified Couplings) Instruction and Lubrication Manual

Sizes: 1020-1200T10 (Close Coupled, Horizontally Split Cover),
T20 (Close Coupled, Vertically Split Covers), T31 (Full Spacer Type), T35 (Half Spacer Type)

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.

INSTALLATION

Step 1: Pre-Assembly Inspection

All parts should be examined for any damage during the shipping and handling process. Measurements should be taken to ensure parts meet application requirements, such as hub and shaft fits, shaft separation, etc. All parts must be clean and free of any foreign material before attempting assembly.

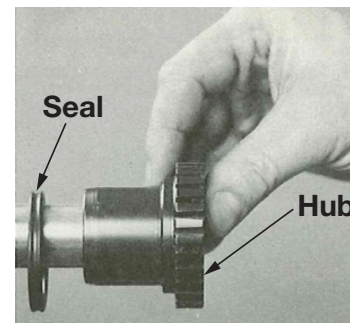
Step 2: Installation of Keys

Install keys in respective shafts. Keys should fit keyseat with a tight fit on the sides and slight clearance over the key.

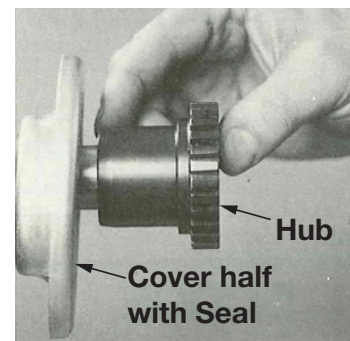
WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, 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.

Step 3: Mounting Hubs

Fit hubs with ends of shaft per the following recommendations.



T10 Hub Mounting



T20 Hub Mounting

Figure 1 - Hub Mounting

NOTE: When mounting T10 couplings, seals must be installed prior to mounting shaft hubs. Lightly grease each of the two seals from the grid and cover assembly. Place each seal far back on its respective shaft.

NOTE: When mounting T20 coupling, cover halves including seals, must be mounted prior to mounting shaft hubs. Remove lube plugs from each cover half and insert the two seal rings into each cover. Lightly coat seals with grease. Place cover halves as far back as respective shafts will allow with flanges facing each other.

Table 1–Set Screw Installation for Clearance Fit Grid-Lign Hubs

Coupling Size	Bore Range	Set Screw Size	Allen Wrench Size	Torque (ft-lbs)	Torque (N-m)
1020T	1/2 - 7/8	1/4-20	1/8	7	9
	15/16 - 1-1/8	8-32	5/64	2	3
1030T	5/8 - 1-3/8	1/4-20	1/8	7	9
1040T	7/8 - 1-5/8	1/4-20	1/8	7	9
1050T	7/8 - 1-7/8	1/4-20	1/8	7	9
1060T	15/16 - 1-3/8	1/4-20	1/8	7	9
	1-7/16 - 2-1/8	3/8-16	3/16	24	32
1070T	1-1/4 - 1-3/8	1/4-20	1/8	7	9
	1-7/16 - 2-5/8	3/8-16	3/16	24	32
1080T	1-1/2 - 3	3/8-16	3/16	24	32
1090T	1-1/2 - 3-3/4	3/8-16	3/16	24	32

- A. Interference Fit:** Use a scribe to mark the desired hub location on shafts. Using an oven or oil bath, heat hubs evenly to 350°F (204°C). To avoid distortion, do not exceed 450°F (232°C). Slide heated hubs onto shafts and align with the scribed marks. Allow the hubs to cool to room temperature before installing grid segment(s).
- B. Clearance Fit:** Slip hub onto shaft and tighten set screws to value listed in Table 1. Set screws should be checked periodically for tightness.
- C. Taper Bored hubs** do not require preheating for assembly. Mount hub and align on shaft before drawing up on shaft the required distance. In most applications, the hub face will project beyond the small end of the shaft taper. Lock hub in place with proper locking device provided with shaft.
- D. Taper-Lock® hubs** are available for T10, T20, T31 and T35 style couplings for light and medium applications. Install per instructions for the Taper-Lock bushings (MN4044).

Step 4: Set Shaft Spacing

Shaft Separation for T10 and T20 couplings should be set per appropriate “G” dimensions in Table 2. For T31 and 35 couplings, refer to the BSE (between shaft ends) dimension in Table 2. For the T31 and T35, use the G dimension for checking the coupling gap after the BSE is set.

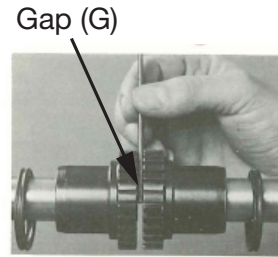


Figure 2 - Shaft Separation

Table 2–Recommended Operating Misalignment

Size	Misalignment Limits ①				Coupling Gap - “G”				BSE (Shaft Spacing) for T31				BSE (Shaft Space) for T35				Spacer Flange Bolt Tightening Torque		Cover bolt Tightening Torque for Type T20, T10, T31, T35		Lubrication Weight	
	Parallel		Angular		Type T20, T10 T35		Type T31		Min.		Max.		Min.		Max.		(lb.-in.)	(Nm)	(lb.-in.)	(Nm)	Lbs.	Kg
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm						
1020T	0.005	0.13	0.005	0.13	0.125	3.18	0.188	4.78	3.50	88.9	8.00	203.2	1.78	45.2	4.03	102.4	120	14	100	11	0.06	0.03
1030T	0.005	0.13	0.005	0.13	0.125	3.18	0.188	4.78	3.50	88.9	8.50	215.9	1.78	45.2	4.28	108.7	120	14	100	11	0.06	0.03
1040T	0.005	0.13	0.005	0.13	0.125	3.18	0.188	4.78	3.50	88.9	8.50	215.9	1.78	45.2	4.28	108.7	120	14	100	11	0.12	0.05
1050T	0.005	0.13	0.005	0.13	0.125	3.18	0.188	4.78	4.38	111.3	8.50	215.9	2.22	56.4	4.28	108.7	250	28	200	23	0.12	0.05
1060T	0.010	0.25	0.010	0.25	0.125	3.18	0.188	4.78	5.00	127.0	13.00	330.2	2.53	64.3	6.53	165.9	440	50	200	23	0.25	0.11
1070T	0.010	0.25	0.010	0.25	0.125	3.18	0.188	4.78	5.00	127.0	13.00	330.2	2.53	64.3	6.53	165.9	440	50	200	23	0.25	0.11
1080T	0.010	0.25	0.010	0.25	0.125	3.18	0.188	4.78	7.25	184.2	16.00	406.4	3.66	93.0	8.03	204.0	825	93	200	23	0.38	0.17
1090T	0.012	0.30	0.012	0.30	0.125	3.18	0.188	4.78	7.25	184.2	16.00	406.4	3.66	93.0	8.03	204.0	1640	185	200	23	0.56	0.25
1100T	0.012	0.30	0.012	0.30	0.188	4.78	0.250	6.35	8.00	203.2	16.00	406.4	3.93	99.8	7.93	201.4	2940	332	260	29	0.94	0.43
1110T	0.012	0.30	0.012	0.30	0.188	4.78	0.250	6.35	8.25	209.6	16.00	406.4	4.80	121.9	7.93	201.4	2940	332	260	29	1.12	0.51
1120T	0.012	0.30	0.012	0.30	0.375	9.53	0.375	9.53	9.69	246.1	16.00	406.4	5.78	146.8	7.65	194.3	8160	922	650	73	1.60	0.73
1130T	0.012	0.30	0.012	0.30	0.375	9.53	0.375	9.53	10.12	257.0	16.00	406.4	6.53	165.9	7.90	200.7	11640	1315	650	73	2.00	0.91
1140T	0.012	0.30	0.012	0.30	0.375	9.53	0.375	9.53	10.50	266.7	16.00	406.4	7.40	188.0	7.90	200.7	16320	1844	650	73	2.50	1.13
1150T	0.012	0.30	0.016	0.41	0.375	9.53	0.375	9.53	13.50	342.9	14.75	374.7	6.65	168.9	7.28	184.9	5400	610	650	73	4.30	1.95
1160T	0.012	0.30	0.018	0.46	0.375	9.53	0.375	9.53	13.50	342.9	16.00	406.4	6.65	168.9	7.90	200.7	5400	610	650	73	6.20	2.81
1170T	0.012	0.30	0.020	0.51	0.375	9.53	0.375	9.53	15.00	381.0	17.50	444.5	7.40	188.0	8.65	219.7	8160	922	1300	147	7.70	3.49
1180T	0.015	0.38	0.022	0.56	0.375	9.53	0.375	9.53	15.75	400.1	19.31	490.5	7.78	197.6	9.56	242.8	11640	1315	1300	147	8.30	3.76
1190T	0.015	0.38	0.024	0.61	0.375	9.53	0.375	9.53	16.00	406.4	20.88	530.4	8.00	203.2	10.34	262.6	16320	1844	1300	147	9.70	4.40
1200T	0.015	0.38	0.027	0.69	0.375	9.53	0.375	9.53	17.50	444.5	22.50	571.5	8.80	223.5	11.15	283.2	16320	1844	2300	260	12.40	5.62

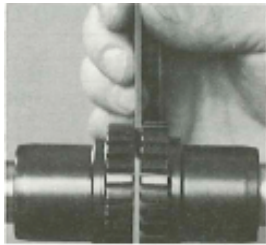
① These are recommended installation misalignment limits. As operating misalignment increases, coupling life is reduced.

Step 5: Alignment

Angular Alignment

NOTE: Proper alignment yields the longest service life.

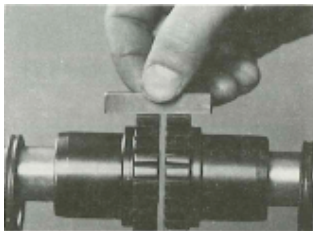
- A. Instrument Method** of checking alignment is recommended since it is most accurate. Rigidly attach dial base to one of the hubs and indicator needle against a face of the other hub. Rotate both hubs 360°. Take indicator reading at four points, 90° apart. Adjust alignment until all four readings are within angular misalignment limits given in Table 2. To check alignment, relocate the dial base to the opposite hub and repeat the procedure.
- B. Caliper/Feeler Gauge Method** may be used if dial indicator is not available or shaft gap is too small; however, it is not the recommended method of checking alignment. Check with calipers or feeler gauge at four points, 90° apart. Adjust alignment until all four readings are within angular misalignment limits as shown in Table 2.



**Figure 3 - Angular Alignment
Feeler Gauge Method**

Parallel Alignment

- A. Instrument Method** of checking alignment is recommended since it is most accurate. Rigidly attach dial base to one hub and set dial indicator needle in contact with an outside diameter of opposite hub. Rotate both hubs 360°. Take indicator reading at four points 90° apart. Adjust alignment until all four readings are within parallel misalignment limits given in Table 2. To check alignment, relocate dial base on opposite hub and repeat the procedure. Recheck angular alignment
- B. A Straight Edge and Feeler Gauge Method** may be used if a dial indicator is not available; however, it is not recommended as the most accurate method of checking alignment. Adjust alignment until straight edge appears to be resting squarely on both outside tooth diameters. Repeat procedure at 3 additional points, 90° apart. Refer to Table 2 for limits of parallel misalignment. Recheck angular alignment.



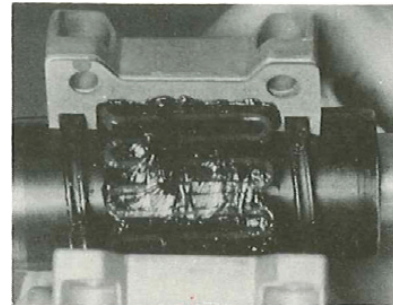
**Figure 4 - Parallel Alignment
Straight Edge Method**

Step 6: Assembly of Element Grid

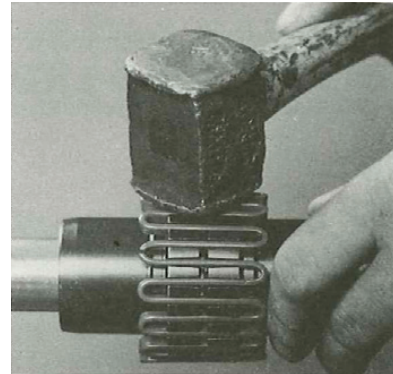
A. Assembly of T10 (Close coupled, horizontally-split cover) coupling:

- Before inserting grid, hand pack hub teeth with lubricant provided. Dodge Coupling Grease is recommended for use with Grid-Lign (refer to Tables 2 for recommendations on quantity of lubricant). Fit grid over hubs and starting at one end, work coils of grid between the teeth. Seat with a soft mallet. If grids are supplied in more than one segment, install so that all cut ends extend in the same direction.
- Hand pack more lubricant around the grid and between the spaces of the grid after it is installed. Refer to Step 7 for important information on lubrication.

CAUTION: Do not overpack coupling with grease.



Grease Packing

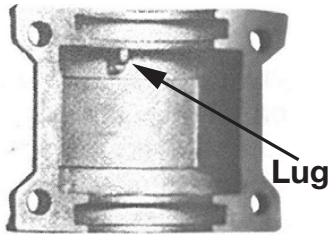


Grid Insertion

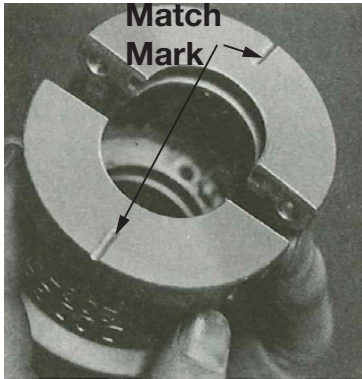
Figure 5 - Grease Packing and Grid Insertion

- Position the two cover seals on the hub and align with the grooves in the half cover. Place gaskets on flanges of bottom cover half. Assemble cover with match marks on same side. Install fasteners in cover halves with nut end of bolt nearest lube plug. (In this position, nuts are self retaining and do not require a wrench.) Tighten per T10 cover bolt tightening torque as shown in Table 2. (Sizes 1020-1090 have nut locking flats in cover.)

NOTE: T10 coupling may be mounted on vertical or inclined shafts. When doing so, assemble cover halves with anti-rotation lug and match mark up or on the higher side (see Figure 6).



Anti-Rotation Lug



Cover Match Marks

Figure 6 - Anti-Rotation Lug and Cover Match Mark

B. Assembly of T20 (Close coupled, vertically split cover) coupling:

- a. Lubricate and install grid per Step 5Aa for T10.
- b. Bring together the T20 vertical cover halves with gasket positioned between them, aligning all bolt holes. Lube holes should be 180° apart. Tighten bolts to tightening torque given in Table 2.

C. Assembly of T31 (Full Spacer) and T35 (Half Spacer):

- c. The T31 and T35 seals and covers are mounted after the rigid shaft hubs are in place.
- d. Set shaft spacing per appropriate BSE dimensions per Table 2.
- e. Carefully stretch cover seals over teeth and onto spacer hub. Bolt each half spacer hub onto rigid shaft hubs and torque to specifications given in Table 2 (Spacer Flange Bolt Tightening Torque).
- f. Lubricate and install grid per Step 5Aa for T10.
- g. Position cover seals on hubs and assemble cover with seals and gaskets per Step 5Ab.
- h. To remove spacer with cover, loosen rigid hub bolts and compress spacer hubs to disengage pilots. Center section of spacer coupling will drop out without disturbing driver or driven shafts.

NOTE: Install coupling guard per OSHA or applicable requirements. Guarding should be designed so that the coupling cover or element will be contained within the guard in the event that the coupling cover or element is thrown from the coupling assembly.

Step 7: Lubrication

Remove both lube plugs in cover and insert lube fittings. Pump in the appropriate amount of Dodge Coupling Grease as shown in Table 2, until it is forced out of the opposite lube hole. Then install both lube plugs back into cover. See Table 3 for Dodge Coupling Grease options.

NOTE: All lube plugs must be installed before operating coupling.

NOTE: Proper lubrication of all types of Grid-Lign couplings is necessary for their efficient operation and long service life.

NOTE: Successful operation is dependent upon adequate lubrication. Precaution should be taken during handling and recycling grease, oil or water glycol mixtures.

Table 3–Dodge Coupling Grease Options

Dodge Part Number	Description
012995	Dodge Coupling Grease - 14 Ounce Cartridge
012996	Dodge Coupling Grease - 14 Ounce Cartridge (10 Pack)
012997	Dodge Coupling Grease - 14 Ounce Cartridge (30 Pack)

*See Table 2 for lubrication weight required per coupling size

Dodge Coupling Grease is supplied as standard on Grid-Lign coupling sizes 1020T through 1090T.

Step 8: Maintenance

Maintenance is recommended every 6 months to ensure long life. Disassemble coupling, remove old lubricant and clean. Visually inspect all parts. Replace any worn parts. Hand pack coupling with lubricant and repeat Step 6.

Step 9: Grid Removal

When it is necessary to disassemble coupling, remove cover halves. Beginning at a cut end of grid, carefully insert a small pry bar into loop. Using the teeth for leverage, gradually pry the grid up, alternating sides while working around the coupling.

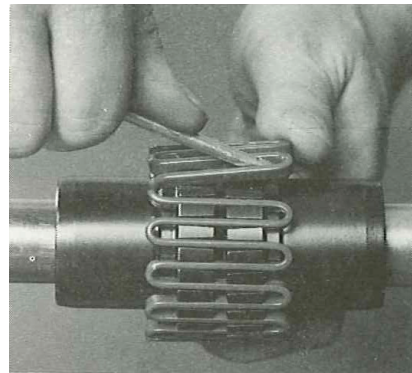


Figure 7 - Grid Removal

Interchange Information

The Grid-Lign flexible couplings are designed to be interchangeable with other tapered grid style couplings. See Table 4 for more information.

Table 4–Tapered Grid Coupling Nomenclature Interchange

Coupling with Horizontally Split Covers			Coupling with Vertically Split covers		
Dodge	Falk		Dodge	Falk	
1020T10	20T10	1020T10	1020T20	20T20	1020T20
1030T10	30T10	1030T10	1030T20	30T20	1030T20
1040T10	40T10	1040T10	1040T20	40T20	1040T20
1050T10	50T10	1050T10	1050T20	50T20	1050T20
1060T10	60T10	1060T10	1060T20	60T20	1060T20
1070T10	70T10	1070T10	1070T20	70T20	1070T20
1080T10	80T10	1080T10	1080T20	80T20	1080T20
1090T10	90T10	1090T10	1090T20	90T20	1090T20
1100T10	100T10	1100T10	1100T20	100T20	1100T20
1110T10	110T10	1110T10	1110T20	110T20	1110T20
1120T10	120T10	1120T10	1120T20	120T20	1120T20
1130T10	130T10	1130T10	1130T20	130T20	1130T20
1140T10	140T10	1140T10	1140T20	140T20	1140T20
1150T10	150T10	1150T10	1150T20	150T20	1150T20
1160T10	160T10	1160T10	1160T20	160T20	1160T20
1170T10	170T10	1170T10	1170T20	170T20	1170T20
1180T10	180T10	1180T10	1180T20	180T20	1180T20
1190T10	190T10	1190T10	1190T20	190T20	1190T20
1200T10	200T10	1200T10	1200T20	200T20	1200T20

Table 4–Tapered Grid Coupling Nomenclature Interchange

Spacer Coupling			Half Spacer Coupling		
Dodge	Falk		Dodge	Falk	
1020T31	20T31	1020T31	1020T35	20T35	1020T35
1030T31	30T31	1030T31	1030T35	30T35	1030T35
1040T31	40T31	1040T31	1040T35	40T35	1040T35
1050T31	50T31	1050T31	1050T35	50T35	1050T35
1060T31	60T31	1060T31	1060T35	60T35	1060T35
1070T31	70T31	1070T31	1070T35	70T35	1070T35
1080T31	80T31	1080T31	1080T35	80T35	1080T35
1090T31	90T31	1090T31	1090T35	90T35	1090T35
1100T31	100T31	1100T31	1100T35	100T35	1100T35
1110T31	110T31	1110T31	1110T35	110T35	1110T35

ATEX CERTIFICATION

These instructions do not cover all details or variations in equipment nor provide every possible contingency or hazard to be met in connection with installation, operation, and maintenance. Should further information be desired, or should particular problems arise which are not covered in this manual, the matter should be referred to your local Dodge representative.

Grid-Lign couplings are manufactured under guidelines of the ATEX directive 2014/34/EU. Dodge Grid-Lign Type T10, Type T31 and Type T35 couplings are suitable for ATEX category 2 Group II for dust and gas environments with ignition temperatures higher than T3 = 200°C for all sizes. Dodge Grid-Lign Type T20 couplings are suitable for ATEX category 2 and M2, Group II and I for gas and dust environments and also suitable for ATEX category 3 for all gas or dust environments with ignition temperatures higher than T3 = 200°C for all sizes. A UL Certified adhesive label indicating ATEX certification will be attached to the product and will contain the following depending on coupling type.

ATEX Marking Information

A sticker indicating ATEX Certification will be attached to the product and will be similar to the following:

For coupling types T10, T31 and T35

- II 2 GD
- Ex h IIC T3 Gb
- Ex h IIIC T 200°C Db
- Tamb -30°C to +50°C
- SIRA 16ATEX6169X
- Manufacturing by Dodge Industrial, Inc.
- 1061 Holland Road, Simpsonville, SC 29681



For coupling types T20

- I M2
- Ex h I 200°C, Mb
- II 2 GD
- Ex h IIC T3 Gb
- Ex h IIIC T 200°C, Db
- Tamb -30°C to +50°C
- SIRA 16ATEX6169X
- Manufacturing by Dodge Industrial, Inc.
- 1061 Holland Road, Simpsonville, SC 29681



Products manufactured prior to November 2021 may be marked as ABB Motors and Mechanical, Inc., Baldor, Reliance, etc.

Hazardous Area Use

For hazardous area use, the following potential ignition hazards have been identified:

- Impact of outer enclosures
- Heat generation from flexing or breaking of the internal grid due to excessive torque and/or misalignment
- Frictional sparking from contact with stationary parts either by coupling failure or incorrect installation

These potential hazards have been addressed by the materials and design of the coupling and rely on correct installation and maintenance, as detailed in the equipment instructions.

WARNING: These couplings are designed to operate with surface temperatures below 200°C when properly installed and selected. Excessive temperatures greater than 80°C is a result of an abnormal operating condition caused by:

1. Improper installation—refer to installation manual for proper procedures
2. Excessive misalignment—re-align coupling/shafts
3. Failure of the coupling grid—replace grid
4. Excessive speed—re-evaluate application and selection
5. Excessive vibration—determine source; re-evaluate application

If applied in a Division 1 or Zone 1 environment, the excessive temperature may cause ignition of hazardous materials.

In hazardous environments, Grid-Lign couplings should not be considered as fail safe or “break-away” power transmission devices. Overloads imposed to these devices could cause irreparable damage, shall be considered an explosive hazard, could create projectiles, and/or could cause torque transmission interruptions. The coupling shall be sized and used to the stated torque and speed capabilities of the unit as published in the Dodge PT Components Engineering Catalog. Any assistance needed in selection shall be referenced to a Dodge representative.

Additional Instruction for Safe Installation and Use

The coupling must be installed and operated in accordance with the below instructions and the certificate “special conditions of safe use” to ensure that the maximum temperatures are not exceeded and the coupling is not subject to impact.

1. All rotating parts should be guarded to prevent contact with foreign objects which could result in sparks, ignition, or damage to the coupling.
2. Couplings should be periodically inspected for normal wear, dust/dirt buildup, bends or breaks in the grid, or any similar scenario that would impede heat dissipation.
3. Increasing levels of vibration and noise could indicate the need for inspection, repair or replacement of the coupling or element.
4. Electrical sparks are a source of ignition. To reduce risk, proper electrical bonding and grounding is recommended.
5. Overloading may result in breakage or damage to the grid or other equipment. As a result the coupling could become an explosion hazard. Damaged coupling components must not be operated in hazardous environments.
6. The Grid-Lign coupling is not intended to be used as thrust bearing member.
7. Coupling guards should have a minimum of 2” clearance over the Grid-Lign coupling.
8. The coupling shall be suitably protected from impact by falling objects.
9. When choosing equipment for Group 1 applications, the user shall take account of the influence on the smouldering temperature of coal dusts where they may be deposited in a layer on surfaces which may reach a temperature of 150°C (300°F) and above.

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