

# DODGE® PARA-FLEX® Couplings

## Includes ATEX Approved Couplings

These instructions must be read thoroughly before installation or operation. The instruction manual was correct at the time of printing. Please see [www.dodge-pt.com](http://www.dodge-pt.com) for updated instruction manual.

**WARNING: To ensure that 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 those products.**

### FLANGE INSTALLATION

#### Two-Piece Flange Styles

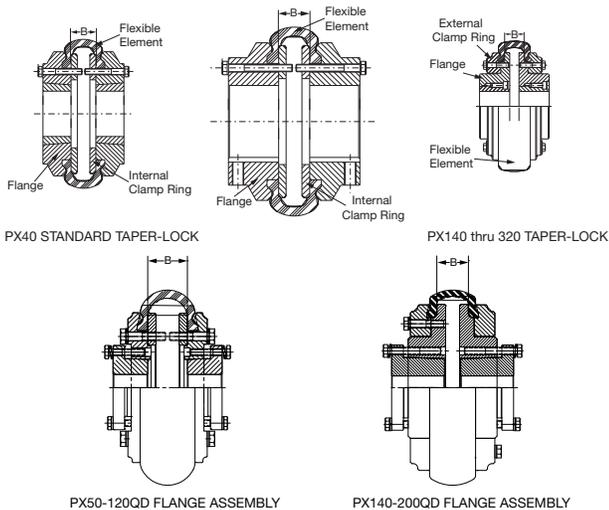


Figure 1 - Two-Piece Flange Styles

1. For the TAPER-LOCK® and QD flanges, install bushing in the flange per instructions included with bushing or find the instruction manuals at [www.dodge-pt.com](http://www.dodge-pt.com).
2. Check the axial float of the shafts. Position the shafts at the midpoint of the float. Where Limited End Float is required or Sleeve Bearings are used, consult DODGE for application assistance.
3. Referring to Figure 1 and Table 1, observe the "B" dimension for the coupling size being installed. Mount and position the flanges on the shafts so that dimension "B" is achieved when the shafts are in their final position.

For the TAPER-LOCK and QD flanges, secure the flange assembly to the shaft by positioning the assembly onto the shaft allowing for small axial movement which will occur during tightening procedure. Alternately torque hardware to recommended torque setting. For the clearance fit straight bore (FBX) flange, tighten the set screws to values listed in Table 2. Align flanges using precision equipment such as dial indicators or laser equipment.

If precision equipment is not available, scales, straight edges, and calipers can be used as less accurate means of alignment. If using a scale or calipers, refer to Figure 3 and check the angular misalignment by measuring dimension "B" at four places 90° apart. Adjust the equipment until the four measurements do not vary more than value "C" in Table 1. If using a straight edge, check the parallel offset by laying the straight edge across the outside diameter of

**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 Baldor Electric Company, nor are the responsibility of Baldor Electric Company. 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 risks 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.**

the flanges in four places 90° apart. The gap between the flange and straight edge should not exceed 1/32" (0.79mm). To achieve maximum coupling performance, align the coupling as accurately as possible during initial installation.

4. Remove any anti-rust lubricants or oil from the grooved side of the clamp rings. Loosen but do not remove clamp ring screws until only one or two threads are engaged and proceed to the section on flexible element installation.

#### Three-Piece Flange Styles

1. Disassemble the clamp rings from the flanges. Place the external clamp rings on the shafts with the grooved side facing the shaft end.
2. For the TAPER-LOCK flange, install the bushing in the flange per instructions included with bushing.
3. Check the axial float of the shafts. Position the shafts at the midpoint of the float. Where Limited End Float is required or Sleeve Bearings are used, consult DODGE for application assistance.
4. Referring to Figure 2 and Table 1, observe the "B" dimension for the coupling size being installed. Mount and position the flanges on the shafts so that dimension "B" is achieved when the shafts are in their final position.

For the TAPER-LOCK flange, secure the flange assembly to the shaft by positioning the assembly onto the shaft allowing for small axial movement which will occur during tightening procedure. Alternately torque setscrews to recommended torque setting. For the clearance fit straight bore (FBX) flange, tighten the set screws to values listed in Table 2. Align flanges using precision equipment such as dial indicators or laser equipment.

If precision equipment is not available, scales, straight edges, and calipers can be used as less accurate means of alignment. If using a scale or calipers, refer to Figure 3 and check the angular misalignment by measuring dimension "B" at four places 90° apart. Adjust the equipment until the four measurements do not vary more than value "C" in Table 1. If using a straight edge, check the parallel offset by laying the straight edge across the outside diameter of the flanges in four places 90° apart. The gap between the flange and straight edge should not exceed 1/32" (0.79mm). To achieve maximum coupling performance, align the coupling as accurately as possible during initial installation.

5. Remove any anti-rust lubricants or oil from the element side of the clamp rings. Assemble clamp rings on the flanges engaging only one or two threads and proceed to the section on flexible element installation.

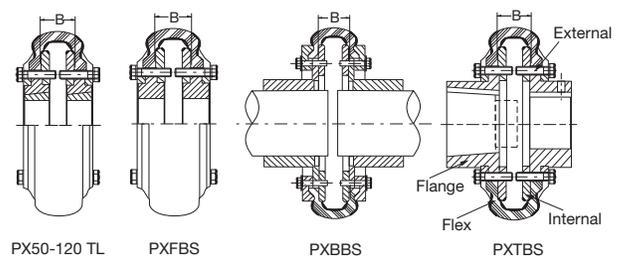


Figure 2 - Three-Piece Flange Styles

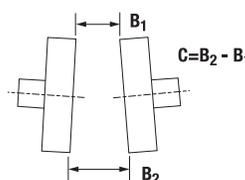


Figure 3

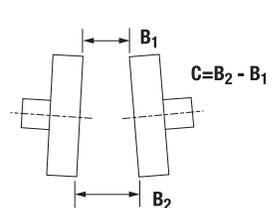


Figure 4



Table 1 - Mounting Dimensions

| Coupling Size | Clamp Ring Screw Wrench Torque (lb-in) |                          | Distance Between Flanges B (in) | Total Difference See Figure 8 (below) C (in) |
|---------------|--|--------------------------|---------------------------------|--|
|               | Flange Style Two-Piece                 | Flange Style Three-Piece |                                 |  |
| PX40          | 130                                    | 130                      | 49/64                           | 1/64   |
| PX50          | 130                                    | 130                      | 31/32                           | 1/64   |
| PX60          | 290                                    | 290                      | 1-9/32                          | 1/64   |
| PX70          | 290                                    | 290                      | 1-1/2                           | 1/64   |
| PX80          | 290                                    | 290                      | 1-1/2                           | 1/64   |
| PX90          | 480                                    | 480                      | 1-17/32                         | 1/32   |
| PX100         | 480                                    | 480                      | 1-23/32                         | 1/32   |
| PX110         | 480                                    | 480                      | 1-9/16                          | 1/32   |
| PX120         | 1080                                   | 1080                     | 1-3/4                           | 1/32   |
| PX140         | 1080                                   | 1080                     | 2-1/16                          | 1/32   |
| PX160         | 2160                                   | 1150                     | 2-11/16                         | 1/16   |
| PX200         | 2160                                   | 2400                     | 3-5/16                          | 1/16   |
| PX240         | 3600                                   | 4020                     | 3-29/32                         | 1/16   |
| PX280         | 4320                                   | 6600                     | 4-7/32                          | 1/16   |
| PX320         | 4320                                   | 6600                     | 4-1/2                           | 1/16   |

| Coupling Size | Clamp Ring Screw Torque (Nm) |                        |                          | Distance Between Flanges "B" (mm) | Total Difference "C" (mm) |
|---------------|------------------------------|------------------------|--------------------------|-----------------------------------|---------------------------|
|               | Thread Size                  | Flange Style Two-Piece | Flange Style Three-Piece |                                   |                           |
| PXM 40        | M6                           | 15                     | 15                       | 19.4                              | 0.4                       |
| PXM 50        | M6                           | 15                     | 15                       | 24.6                              | 0.4                       |
| PXM 60        | M8                           | 36                     | 36                       | 32.5                              | 0.4                       |
| PXM 70        | M8                           | 36                     | 36                       | 38.1                              | 0.4                       |
| PXM 80        | M8                           | 36                     | 36                       | 38.1                              | 0.4                       |
| PXM 90        | M10                          | 72                     | 72                       | 38.9                              | 0.8                       |
| PXM 100       | M10                          | 72                     | 72                       | 43.7                              | 0.8                       |
| PXM 110       | M10                          | 72                     | 72                       | 39.7                              | 0.8                       |
| PXM 120       | M12                          | 125                    | 125                      | 44.5                              | 0.8                       |
| PXM 140       | M12                          | 125                    | 125                      | 52.4                              | 0.8                       |
| PXM 160       | M16                          | 311                    | 130                      | 68.3                              | 1.6                       |
| PXM 200       | M16                          | 311                    | 271                      | 84.1                              | 1.6                       |

Table 2 - Set Screw Torque

| Inch Set Screw Size      | #0  | #1  | #2  | #3  | #4  | #5  | #6   | #8   | #10 | 1/4 | 5/16 | 3/8  | 7/16 | 1/2  | 9/16  | 5/8   | 3/4   | 7/8   |
|--------------------------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------|------|------|------|-------|-------|-------|-------|
| Torque (lb-in)           | 1   | 1.8 | 1.8 | 5   | 5   | 10  | 10   | 20   | 36  | 87  | 165  | 290  | 430  | 620  | 1325  | 2400  | 5200  | 7200  |
| Torque (Nm)              | 0.1 | 0.2 | 0.2 | 0.6 | 0.6 | 1.1 | 1.1  | 2.3  | 4.1 | 9.8 | 18.6 | 32.8 | 48.6 | 70.1 | 149.7 | 271.2 | 587.5 | 813.5 |
| Metric Set Screw Size    | M4  | M5  | M6  | M8  | M10 | M12 | M16  | M20  |     |     |      |      |      |      |       |       |       |       |
| Torque (in-lbs)          | 19  | 35  | 64  | 150 | 290 | 480 | 1190 | 2100 |     |     |      |      |      |      |       |       |       |       |
| Installation Torque (Nm) | 2.2 | 4   | 7.2 | 17  | 33  | 54  | 134  | 237  |     |     |      |      |      |      |       |       |       |       |

**NOTE:** Many sizes of PARA-FLEX elements are supplied with a cardboard gauge to facilitate accurate flange spacing before installing the rubber tire element. This gauge comes in the box with the element. Gauges not supplied for PX40 and PX140 through PX320. Gauges should not be used for alignment purposes.

**FLEXIBLE ELEMENT INSTALLATION**

- Clean flange mounting area as well as surface that will come in contact with the element with a solvent, such as Xylene (Xylo), to remove grease, oil, wax, and dirt from surfaces. Do not clean the element with the solvent. A diluted soapy water solution may be applied to aid with element installation.
- Wrap flexible element around flanges as shown in Figure 5. Make sure beads of element are fully worked down upon the seats. To ensure proper seating, tap around the tire's outside diameter with a small mallet until split is closed. Make sure element is evenly centered on the flanges.
- Hold split of flexible element closed as shown in Figure 6. Tighten (finger tight) one or two screws 180° from split. Using both hands, knead the tire pulling it toward the split. Hold split closed and tighten (finger tight) the next two screws farthest from the split. Repeat the procedure on all remaining clamp ring screws. Use a torque wrench to tighten each clamp ring screw in succession to the torque specified in Table 1. Using a torque wrench, recheck all

- clamp ring screw torque values before coupling operation.
- Optional Procedure: Hold split of flexible element closed as shown in Figure 6. Tighten (finger tight) one or two screws 180° from split. Using both hands, knead the tire pulling it toward the split. Hold split closed and tighten (finger tight) the next two screws in a star or cross pattern as shown in Figure 7. Repeat the procedure on all remaining clamp ring screws. Use a torque wrench to tighten each screw to the torque specified in Table 1. Using a torque wrench, recheck all clamp ring screw torque values before coupling operation.
- Install coupling guards per OSHA or applicable requirements. Guarding should be designed so that coupling tyre will be contained within the guard in the event that the coupling tyre is thrown from the coupling assembly.

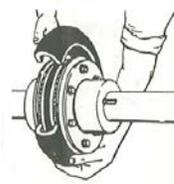


Figure 5

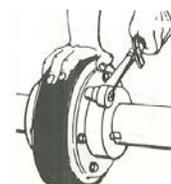


Figure 6



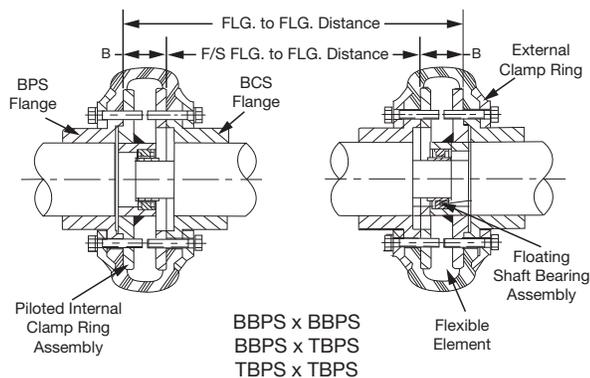
Figure 7

## FLEXIBLE ELEMENT REPLACEMENT

Loosen all clamp ring screws. Grasp one end of flexible element at the split and peel off the flanges. Clean clamping parts with a solvent, such as Xylene (Xylol), to remove grease, oil, wax, and dirt from surfaces. Do not clean element with solvent. Check to see that only one or two threads of each clamp ring screw are engaged. Re-align flanges and install new flexible element according to the sections on flange installation and flexible element installation. When replacing clamp ring screws and washers, use only SAE Grade 8 or ISO Class 10.9 screws and hardened washers.

**WARNING: The metal components of the coupling that clamp the flexible element will operate properly only if the screws are tightened properly. Tightening one screw to full torque before proceeding to the next screw may cause excessive clamp ring or flange deflection. To prevent clamp ring and flange deflection, the screws must be evenly and gradually tightened to full torque.**

## FLOATING SHAFT COUPLING INSTALLATION



**Figure 8 - Floating Shaft Coupling**

1. Disassemble the clamp rings from the flanges. Place the external clamp rings on the shafts with the grooved side facing the shaft end.
2. Check the axial float of the shafts. Position the shafts at the mid-point of the float. Where Limited End Float is required or Sleeve Bearings are used, consult DODGE for application assistance.
3. Referring to Figure 8 and Table 1, observe the "B" dimension for the coupling size being installed. Mount and position the flanges on the shafts so that dimension "B" is achieved when the shafts are in their final position. Where flanges contain set screws, tighten to values listed in Table 2.
4. Remove any anti-rust lubricants or oil from the grooved side of the clamp rings. Assemble internal and external clamp rings to floating shaft flanges and snug up clamp ring screws. Slip internal piloted clamp rings onto the turned down portion of floating shaft. Hub projection on clamp ring should be toward floating shaft as shown in Figure 8.
5. Position and support floating shaft assembly between driving and driven flanges. Make sure clamp ring pilot is seated in flange counterbore. Assemble external clamp rings to flange with screws. Tighten screws sufficiently to prevent movement between the parts.
6. Align flanges using precision equipment such as dial indicators or laser equipment. If precision equipment is not available, scales, straight edges, and calipers can be used as less accurate means of alignment. If using a scale or calipers, refer to Figure 3 and check the angular misalignment by measuring dimension "B" at four places 90° apart. Adjust the equipment until the four measurements do not vary more than value "C" in Table 1. Repeat the procedure at both ends of the coupling. To achieve maximum coupling performance, align the coupling as accurately as possible during initial installation.
7. Loosen clamp ring screws and proceed to Section II for element installation.

## ATEX Approved PARA-FLEX Couplings

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 Baldor•Dodge representative.

DODGE Elastomeric couplings are manufactured under the guidelines of the ATEX directive 2014/34/EU.

DODGE Elastomeric couplings are suitable for ATEX category 2 and M2, Group II and I for gas and dust environments and are also suitable for ATEX category 3 for all gas or dust environments with ignition temperatures higher than T5 = 100° C.

A sticker indicating ATEX certification will be attached to the product or on the box containing the product and will be similar to the following:



**Figure 9 - ATEX Certification**

**WARNING: These couplings are designed to operate with surface temperatures below 100°C when properly installed and selected. Excessive temperatures greater than 80°C is a result of an abnormal operating condition caused by:**

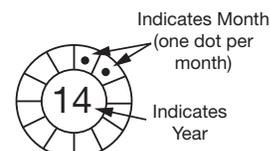
1. **Improper installation - refer to installation manual for proper procedures**
2. **Excessive misalignment - re-align coupling / shafts**
3. **Failure of the coupling element - replace elastomeric**
4. **Excessive speed - re-evaluate application and selection**
5. **Excessive vibration - determine 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, DODGE elastomeric couplings should not be considered as fail safe or "break-away" power transmission devices. Overloads imposed to these devices could cause irreparable damage. 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 capabilities of the unit as published in the DODGE PT Components Engineering Catalog. Any assistance needed in selection shall be referred to a Baldor•Dodge representative.

### Additional Instruction for Safe Installation and Use

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 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 the risk, proper electrical bonding and grounding is recommended.
5. Overloading may result in breakage or damage to the coupling or other equipment. As a result the coupling could become an explosion hazard. Damaged coupling components or elements must not be operated in hazardous environment.
6. If thrust loading or axial movement is anticipated, The DODGE PARA-FLEX coupling is the desired unit for use as it has design capability of accepting this movement up to 5/16". Couplings are not intended to be used as thrust bearing members.
7. Coupling guards should have a minimum of 2" clearance over PARA-FLEX tire style couplings. (3" clearance for PARA-FLEX style couplings greater than 16" outer diameter.)
8. The date code should be read as:



**EU Declaration of Conformity**

The undersigned, representing the following supplier and the following authorized representative-

**Baldor Electric Company**  
5711 R. S. Boreham, Jr. Street  
Fort Smith, Arkansas 72901 USA

**ABB Automation Products GmbH**  
Oberhausener Straße 33  
40472 Ratingen, Germany

This declaration is issued under the sole responsibility of the manufacturer.  
herewith declare that the Products

**Couplings** 

Product identification (brand and catalogue number/part number):

**Dodge Paraflex, Dodge D-Flex Equipment Group I, Category M2  
c / Equipment Group II Category 2 GD c T5 T amb - 30°C to  
+50°C**

are in conformity with the provisions of the following EC Directive(s) when installed in accordance with the installation instructions contained in the product documentation:

94/9/EC and 2014/34/EU<sup>1</sup> ATEX

Note 1: 94/9/EC applies until April 19, 2016, 2014/34/EU applies from April 20, 2016

and that the standards and/or technical specifications referenced below have been applied:

EN 13463-1:2009

Non - Electrical Equipment For Potentially Explosive Atmospheres -Method And Requirements

EN 13463-5:2011

Non - Electrical Equipment For Potentially Explosive Atmospheres – Part 5 Protection by constructional safety 'c'

Notified Body:

Sira Certification Services Ltd  
Unit 6  
Hawarden Industrial Park  
Hawarden  
DEESIDE  
CH5 3US

Certificate: SIRA 04ATEX9358

Supplier:  
Signature



Authorised Representative:  
Signature



Name: L. Evans Massey  
Position: Manager Standards and Certification

Name: Michael Klein  
Position: Regional Sales and Marketing Manager Central Europe

Date: 1 April 2016

Date: 1 April 2016

Document Control Number: DOC-BEZ-DA-M22-C-EN.DOC

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