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# MECHANICAL POWER TAKE-OFFS

SELECTION  
GUIDE

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WE PUT HORSEPOWER TO WORK®



# TWIN DISC SETS THE STANDARD IN POWER TAKE-OFFS

Power take-offs (PTOs) are used as a standard method for transmitting the power of engines in a great variety of industrial applications such as air compressors, agricultural machinery, crushers, road building machinery, cranes, shovels, pump drives and oil field service. A power take-off consists of a complete clutch assembly with shaft and bearings mounted in a cast-iron housing for easy engine installation.

Twin Disc offers power take-offs for all industrial engines. The IBF line is designed especially for today's high inertia applications and presently is offered in two- and three-clutch plate construction. This multiple-plate, ventilated design assures ample cooling area to withstand heat, and with solid friction plates, these PTOs can effectively handle the stress of higher engine speeds. The IBF units feature oil lubricated tapered roller bearings that extend lubrication intervals.

## An extra margin of strength

Actual design torque capacity of the clutches used in Twin Disc power take-offs is in excess of the horsepower rating listed. This permits Twin Disc power take-offs in proper adjustment to withstand temporary torque overloads. Rated torque can be transmitted while moderately slipping during short periods without permanent damage.

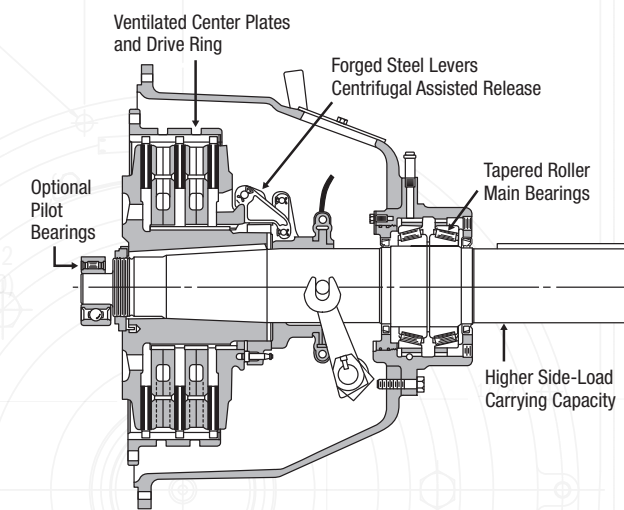
## Specifications

- Suitable for Duty Class II industrial applications with internal combustion engines up to 1667 horsepower and with standard SAE flywheel housing dimensions from No. 6 through No. 00.
- Contain clutches ranging in size from one plate 6½" to one plate 14"; in two-plate size from 11" to 18"; and three-plate size from 11" to 21".
- Standard sealed pilot ball or roller bearings eliminate the lubrication requirement and shaft rifle-drilling normally encountered with standard pilot bearings. Also available as options: ball bearing throw-out collars and finger springs.
- Horsepower and torque capacities listed can be increased by the use of sintered-iron clutch plates, which are available as optional equipment in the 8" through 21" sizes.
- All bearings, shafts and other parts are designed with liberal safety factors to maximize life under normal operating conditions.\*

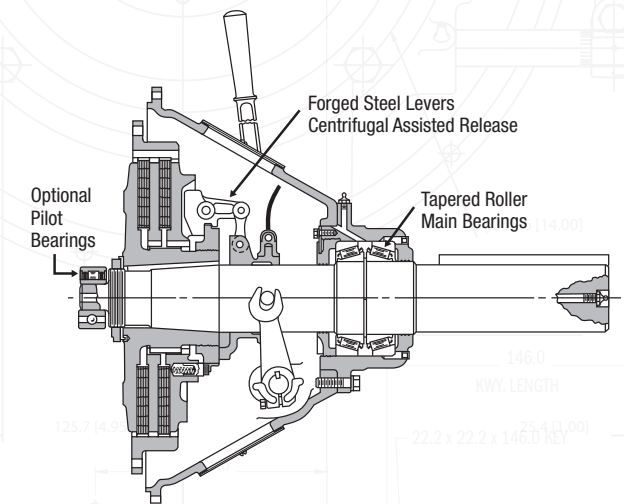
Note: All dimensions given in inches unless noted.

\*To avoid overloading the shaft and bearings, use the allowable side-pull load data in this bulletin, and calculate the side load. The resultant value should be less than the corresponding maximum value listed for each power take-off. In questionable cases, consult the Twin Disc Application Department, Twin Disc, Incorporated, Racine, Wisconsin.

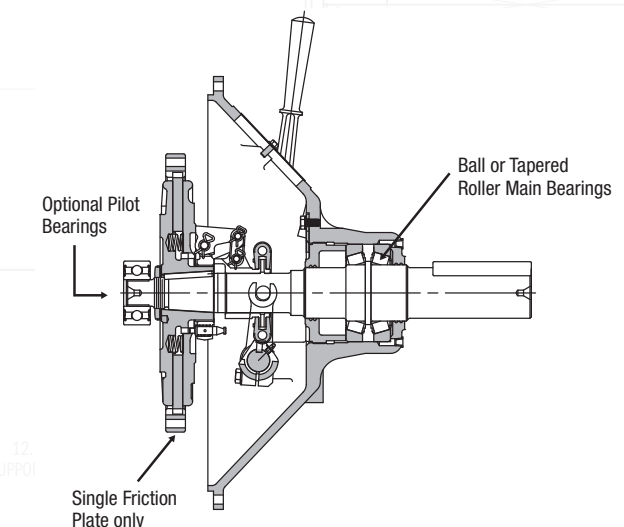
## IB TYPE POWER TAKE-OFF



## SP TYPE POWER TAKE-OFF



## C(X) TYPE POWER TAKE-OFF



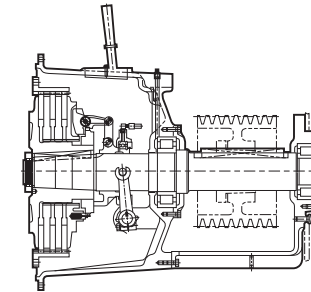
## SPECIAL POWER TAKE-OFFS

Special power take-offs are available from Twin Disc. These include the innovative straddle bearing concept and a limited-attendance PTO that contains a positive throw-out collar clearance mechanism and extended lubrication intervals.

For original equipment manufacturers, Twin Disc can design other special power take-offs to meet individual requirements when sufficient volume is indicated. Design variations can range from minor changes to entirely new concepts.

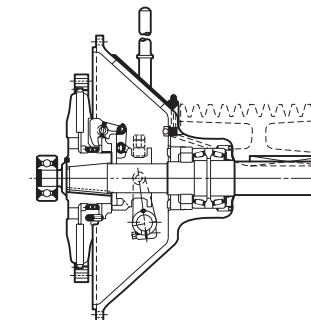
### Straddle Bearing Power Take-Offs

- SP & PO Models
- High side-load applications
- No pilot bearing
- 14" & 18" flywheel connection
- SAE #0 & SAE #1 Input Housing
- 180° sheave housing rotatable by 90° increments



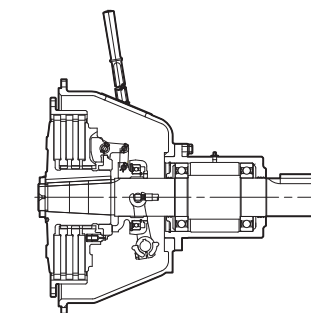
### Limited-Attendance Power Take-Offs

- Modified SP & C Models
- Special grease on main bearings
- Sealed pilot bearings
- Lubrication interval can be extended to 6 months
- Positive clearance mechanism to reduce collar wear
- SAE #0 through SAE #6 Input Housing
- 6" through 14" flywheel connection



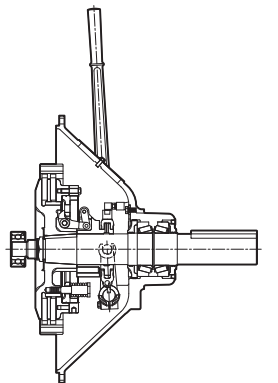
### Inline Power Take-Offs

- SP, IB, & CA Models
- Bearings designed for in-line only duty
- Sealed pilot bearings
- Lubrication interval can be extended to 6 months
- SAE #0 & SAE #1 Input Housing
- 180° sheave housing rotatable by 90° increments



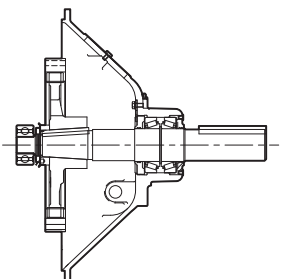
### Spring Loaded Power Take-Offs

- SL & TC Models
- Self-adjusting spring-loaded clutch
- Ideal for high frequency engagements
- Single- and double-friction plates
- 11", 13", 14" flywheel connection
- SAE #1 through SAE #4 Input Housing



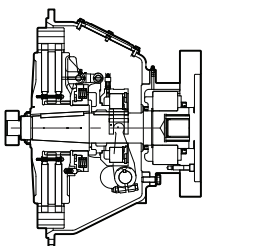
### Rubber Block Drive Power Take-Offs

- RBD Models
- Direct drive / Clutchless
- Absorbs torsional activity
- Single row 11" rubber blocks
- Double row 14" rubber blocks
- SAE #0 through SAE #2 Input Housing



### Pump Mount Power Take-Offs

- BDP & BDSP Models
- Single SAE pad on output of PTO
- SAE "A" through SAE "D" pads available
- SAE #1 through SAE #4 Input Housing
- 11.5" flywheel connection
- Optional keyed stub shaft input for remote mount applications



HOW TO CHOOSE THE APPROPRIATE PTO

Several factors must be considered in the selection process in addition to duty service, such as:

SPEED LIMITS • SIDE-LOAD LIMITS • CLUTCH TORQUE LIMITS

The selections are usual dry clutch disconnect type applications where engagements are infrequent and are at low (idle) input speed. Once engaged operation continues for one hour or more, engaging the clutch at higher input speed will reduce component life. Refer to the following duty classifications and examples.

Application Data\*:

|                        |   |
|------------------------|---|
| SAE Housing Size       | Input Power to Clutch                                   |
| SAE Flywheel Size      | Input Torque to Clutch                                  |
| Number of Engagements  | Maximum Output Shaft RPM                                |
| Sheave Pitch Diameter  | Load Center-Line “X” Dimension (side-load applications) |
| Pilot Bearing Diameter |   |

\*refer to attached PTO data sheet located in back cover

Determine duty classification (page 5)

PTO Selection Procedure

1. Calculate NET Input Power or Torque to PTO

2. Calculate imposed side-load using the following formula (side-load only):

L = 126,000 x HP x F x LF / N x D

- L = Actual Applied Load (lbs)
- N = Shaft Speed (rpm)
- D = Sheave Pitch Diameter (in)
- F – Load Factor
  - 1.0 for Chain / Gear Drive
  - 1.5 for Timing Belts
  - 2.5 for All V Belts
  - 3.5 for Flat Belts

LF = 2.1 for reciprocating compressors and other Severe Shock Drives and 1.8 for Large Inertia Type Drives (crushers, chippers, planers, etc.)

3. Use the PTO rating table on page 6 and the side-load tables on pages 7-8 with the following information:

|                                     |   |
|-------------------------------------|---|
| NET input power or torque to clutch | maximum PTO output shaft speed                |
| SAE flywheel size                   | calculated side-load (side-load applications) |
| SAE housing size                    |   |

Find proper duty class along top row and SAE housing & flywheel size along left-hand column of the rating table on page 6. A PTO that has a power or torque rating greater than the calculated application power or torque rating is suitable for the application. The PTO output shaft speed should be at or under the listed ratings for the drive rings.

Use PTO output shaft speed and calculated side-load and refer to tables on pages 7-8 to verify that the side-load is at or under the load at the given speed.

PTO SIZING EXAMPLE – Select the proper Twin Disc PTO for this application

A disconnect PTO is required to drive a rotary screw compressor which is a Duty Class III application. The prime mover is a diesel engine rated for 200 hp @ 2,000 rpm. The engine has a SAE #2 flywheel housing and SAE 11.5" flywheel with a 72 mm pilot bearing bore. The sheave pitch diameter mounted to the PTO shaft will be 13" and “V” belts are used for power transmission. The centerline of the load imposed “X” dimension will be 4". Assume 5% parasitic losses from the engine for this specific application.

1. Determine the NET horsepower to the clutch (assume 5% parasitic losses.)  
200 hp gross x 0.95 = 190 hp NET

2. Calculate the imposed side-load utilizing the following formula:

L = 126,000 x HP x F x LF / N x D

- L = Actual Applied Load (lbs)
  - N = Shaft Speed (rpm)
  - D = Sheave Pitch Diameter (in)
  - LF = 2.1 for reciprocating compressors and other severe shock drives and 1.8 for large inertia type drives (crushers, chippers, planers...)
  - F = Load Factor
    - 1.0 for Chain/Gear Drive
    - 1.5 for Timing Belts
    - 2.5 for All V Belts
    - 3.5 for Flat Belts
- L = 126,000 x 190 hp / 2,000 rpm x 13" x 2.5 = 2,302 lbs

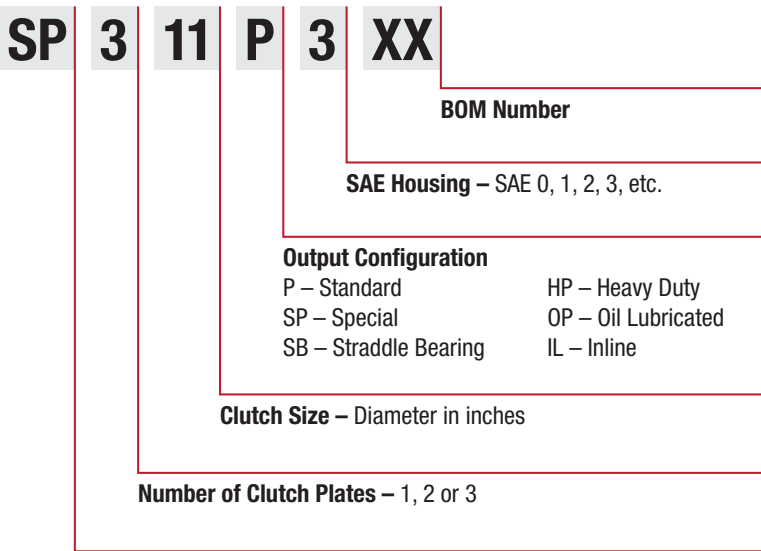
3. Use the following data and compare to the PTO rating and allowable side-load tables:  
– 190 hp NET to clutch  
– SAE 11.5" flywheel  
– SAE #2 housing  
– 2,302 lbs of side-load  
– 2,000 rpm PTO shaft speed

The SP311P has a Class III rating of 247 hp and max speed rating of 3,000 rpm with nodular iron drive rings. The application requires 190 hp into the clutch @ 2,000 rpm, which are within the limits of the SP311P.

The side-load required for the application is 2,302 lbs at an “X” dimension of 4". The side-load capacity of the SP311P at an “X” dimension of 4" for any rpm is 2,720 lbs. The application side-load of 2,302 lbs @ 4" is within the capacity of the SP311P.

THE SP311P IS ACCEPTABLE FOR THIS APPLICATION AND IS AVAILABLE WITH A 72MM PILOT BEARING.

MODEL NUMBER DESIGNATION



**Type of Clutch**  
C – Positive overcenter clutch suitable for power transmission applications  
CA – Positive overcenter for inline irrigation applications  
IBF – Inverted lever action clutch  
SP – Counter balanced toggle action overcenter clutch



SELECTION GUIDE TO DUTY CLASSIFICATION

CLASS I (Disconnect)

- 1. Pumps – centrifugal
- 2. Hydraulic pumps (without pre-charge)
- 3. Feeders – disc type
- 4. Agitators – pure liquids
- 5. Irrigation pumps

**Duty Class I:** The clutch is used for disconnecting the power from the load. When engaging, so little work is done that the clutch shows no temperature increase at the pressure plate outer surface. Use maximum input torque from the Class I Table, disregard horsepower. The mechanism is operated one or more hours before disconnecting.

Examples: Engagement of clutches with the driven equipment having WR2 less than that of the clutch and whose torque demand curve is similar to that of a centrifugal pump.

CLASS II (Light Duty)

- 1. Cookers – cereal
- 2. Elevators – bucket, uniformly loaded all types
- 3. Kettles – brew
- 4. Line shafts – light duty
- 5. Machines, general – all types with uniform loads, non-reversing
- 6. Bow thrusters
- 7. Generators (non-welding)

**Duty Class II:** The clutch is used primarily for disconnect, but does more work during engagement than in Duty Class I. The clutch will engage within two seconds, never heat the pressure plate more than 50°F (28°C) above ambient, and once engaged is operated for one or more hours before disconnecting. The maximum horsepower which the clutch can absorb is given in Class II Table.

Examples: Power shovel master clutches, generators, line shafts and similar light-duty drives.

CLASS III (Normal Duty)

- 1. Agitators – solid or semi-solids
- 2. Batchers – textile
- 3. Blowers and fans – centrifugal and lobe
- 4. Bottling machines
- 5. Compressors – all centrifugal, screw
- 6. Elevators – bucket, non-uniformly loaded or fed
- 7. Feeders – apron, belt, screw or vane
- 8. Filling machines – can-type
- 9. Mixers – continuous
- 10. Pumps – two or more cylinders
- 11. Conveyors – uniformly loaded
- 12. Dredge pumps (allow for shock loading)
- 13. Locomotive railroad shuttles

**Duty Class III:** The clutch will engage within three seconds, never heat the pressure plate more than 100°F (56°C) above ambient, and once engaged is operated for one or more hours before disconnecting. The maximum horsepower which the clutch can absorb is given in Class III Table.

Examples: Engine PTO starting average loads, and clutches whose starting load is up to 1.4 times the running load. Blowers, fans, screw compressors, conveyors and similar normal-duty drives.

CLASS IV (Heavy Duty)

- 1. Cranes and hoists – working clutch
- 2. Crushers – ore and stone
- 3. Chippers – wood tub grinders\*
- 4. Drums – barking\*
- 5. Compressors – lobe rotary plus 3 or more cylinder reciprocating type
- 6. Haulers – car puller and barge-type
- 7. Machines – impact load types\*
- 8. Mills – ball-type
- 9. Paper mill machinery – except calendars and driers
- 10. Presses – brick and clay
- 11. Mud pumps
- 12. Road planers

**Duty Class IV:** The clutch will engage within four seconds, never heat the pressure plate more than 150°F (83°C) above ambient, and once engaged is operated for one or more hours before disconnecting. The maximum horsepower which the clutch can absorb is given in Class IV Table.

Examples: Engine PTO starting heavy loads such as rock crushers, mud pumps, and other large inertia machinery and clutches whose starting load is up to 1.8 times the running load typical of heavy-duty drives.

CLASS V (Extreme Heavy Duty)

DUTY CLASS V REQUIRES FACTORY REVIEW

- 1. Compressors – one and two cylinder reciprocating
- 2. Calenders and driers – paper mill
- 3. Mills – hammer-type
- 4. Shakers – reciprocating-type
- 5. Automobile shredders

**Duty Class V:** The clutch is used to start large inertia loads which require four seconds to start the largest load, with the longest slip period per engagement not to exceed ten seconds. The clutch must be selected according to its horsepower absorption capability. Clutch applications in this Duty Class, or those which require frequent engagements, require factory review. Contact General Products Application department for consultation on the drive.

For reciprocal compressors and applications where high torsionals can be experienced, a flexible coupling may be mounted between clutch and flywheel.

\* BEWARE OF OPERATOR MISUSE

SPECIFICATIONS

| PTO Model Number | Drawing Assembly Number | Available Housing Sizes SAE | Application Duty Classification |                                       |           |          | Maximum Safe Operating Speed¹ |              | Approximate Net Weight lbs |
|------------------|-------------------------|-----------------------------|---------------------------------|---------------------------------------|-----------|----------|-------------------------------|--------------|----------------------------|
|                  |                         |                             | Class I                         | Clutch Maximum HP Rating (See note 2) |           |          | Solid Plate                   | Split Plates |                            |
|                  |                         |                             | Maximum Input Torque² lb-ft     | Class II                              | Class III | Class IV | Drive Ring                    | Drive Ring   |                            |
| CX-106SP         | X8317                   | 6, 5, 4                     | 159                             | 40                                    | 27        | 20       | 3500                          | 3500         | 53                         |
| CX-107SP         | X8317                   | 6, 5, 4                     | 175                             | 54                                    | 36        | 27       | 3200                          | 3200         | 55                         |
| CX-108SP         | X8419A                  | 5, 4, 3                     | 230                             | 61                                    | 41        | 31       | 3100⁵                         | 3100⁵        | 72                         |
| CX-110HP         | X8249                   | 4, 3, 2, 1                  | 328                             | 96                                    | 64        | 48       | 3930⁵                         | 3500⁵        | 115                        |
| CX-111HP         | X8249                   | 4, 3, 2, 1                  | 387                             | 124                                   | 82        | 62       | 3600⁵                         | 3200⁵        | 120                        |
| SP-111P          | X9619                   | 3, 2, 1                     | 455                             | 124                                   | 82        | 62       | 3600⁵                         | 3200⁵        | 129                        |
| SP-111HP         | X9582                   | 3, 2, 1                     |                                 |                                       |           |          |                               |              | 141                        |
| SP-1110P         | X9818                   | 3, 2                        |                                 |                                       |           |          |                               |              | 145                        |
| SP-211HP         | X9681                   | 3, 2, 1                     | 909                             | 247                                   | 165       | 124      | 3500⁵                         | 3160⁵        | 155                        |
| SP-2110P         | X9894B                  | 2, 1                        |                                 |                                       |           |          | 3000⁵                         | 3000⁵        | 175                        |
| SP-311P          | XA7570                  | 2, 3                        | 1620                            | 371                                   | 247       | 186      | 3000⁵                         | NA           | 220                        |
| SP-114P          | X9643                   | 1, 0                        | 810                             | 188                                   | 125       | 94       | 3000⁵                         | 2750⁵        | 260                        |
| SP-214P          | X9803                   | 1, 0                        | 1620                            | 376                                   | 251       | 188      | 3000⁵                         | 2750⁵        | 328                        |
| SP-2140P         | X9845                   |                             |                                 |                                       |           |          | 2400⁵                         | 2400⁵        | 340                        |
| IB-2140P         | X9745E                  | 1, 0                        | 1620                            | 395                                   | 264       | 197      | 2400⁵                         | NA           | 470                        |
| IB-2140P         | X9745F                  |                             |                                 |                                       |           |          |                               |              |                            |
| SP-314P          | X9585                   | 1, 0                        | 2430                            | 564                                   | 376       | 282      | 3000⁵                         | 2700         | 408                        |
| SP-314P          | X9585A                  |                             |                                 |                                       |           |          |                               |              |                            |
| IB-3140P         | XA7149                  | 1, 0                        | 3040                            | 741³                                  | 494       | 371³     | 2400⁵                         | NR           | 595                        |
| IB-3140P         | XA7149A                 |                             |                                 |                                       |           |          |                               |              |                            |
| IB-3140P         | XA7149B                 |                             |                                 |                                       |           |          |                               |              |                            |
| SP-2180P         | XA7190                  | 0, 00                       | 4000                            | 933                                   | 415       | 311      | 1950                          | 1550         | 660                        |
| SP-2180P         | XA7190A                 |                             |                                 |                                       |           |          |                               |              |                            |
| SP-318P          | X9671                   | 0                           | 6000                            | 933                                   | 622       | 467      | 2350⁵                         | 2100⁵        | 700                        |
| IB-3180P         | X9918                   | 0                           | 7500                            | 1224                                  | 816³      | 612³     | 2200⁵                         | NR           | 920                        |
| IB-3180P         | X9918A                  |                             |                                 |                                       |           |          |                               |              |                            |
| IB-3180P         | X9918B                  |                             |                                 |                                       |           |          |                               |              |                            |
| SP-321P          | X9691A                  | 00                          | 6730                            | 1270                                  | 847       | 635      | 1800                          | 1400         | 1110                       |
| IB-3210P         | X9919                   | 00                          | 8400                            | 1667³                                 | 11113     | 834³     | 2200⁵                         | NR           | 1210                       |

- NOTES:
- 1. NA (Not available). NR (Not recommended).
  - 2. Horsepower and torque ratings may be increased by specifying optional sintered iron-type clutch plates. Available 8” through 21” sizes.
  - 3. Sintered iron clutch plates with ventilated-type center plates are standard in IBF-314, IBF-318 and IBF-321 PTO units. These plates should not be used in applications where torsionals or vibrations are prevalent. Consult Twin Disc General Products Application Department, Racine, WI.
  - 4. Compound drives and power-engaged PTO applications require written factory review for warranty to apply.
  - 5. Nodular Iron.

GENERAL INFORMATION NOTES

- 1. Capscrews to mount PTO and driving ring to prime mover are not Twin Disc supplied.
- 2. Installation of support plate to PTO housing requires bearing carrier capscrews be properly retorqued to prevent damage. Refer to applicable Care and Operation service manual.
- 3. Clutch maximum input torque values in specification chart is for properly adjusted clutch assemblies. Refer to applicable Care and Operation service manual.

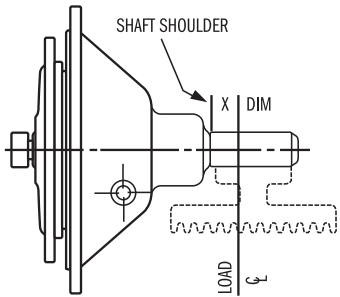
**IMPORTANT NOTICE:** Disregarding system torsional compatibility could cause damage to components in the drive train resulting in loss of mobility or power transmission for which the drive is intended. At minimum, system incompatibility could result in unwanted noise and vibration at low speeds.

The responsibility for ensuring that the torsional compatibility of the system is satisfactory rests with the assembler of the drive and driven equipment.

Torsional vibration analysis can be made by the engine builder, independent consultants and others. Twin Disc is prepared to assist in finding solutions to potential torsional problems that relate to the power take-off, pump mount PTO or rubber block drive.

ALLOWABLE SIDE-PULL LOADS FOR STANDARD POWER TAKE-OFFS

| PTO MODEL AND<br>DRAWING NUMBERS | RPM  | “X” DISTANCE, INCHES (see sketch) |      |      |      |      |   |      |      |      |  |
|----------------------------------|------|-----------------------------------|------|------|------|------|---|------|------|------|--|
|                                  |      | 1                                 | 2    | 3    | 4    | 5    | 6   | 7    | 8    | 9    |  |
| CX-106SP<br>X8317 (M141A)        | 1000 | 835                               | 625  | 475  |      |      | <div>The following general formula should be used for determining the actual applied load.</div> <div><math display="block">L = \frac{126,000 \times \text{HP} \times F \times \text{LF}}{N \times D}</math></div> <div>WHERE:</div> <div>L = Actual Applied Load (lbs)</div> <div>N = Shaft Speed (RPM)</div> <div>D = Pitch Diameter (in) of Sheave, etc.</div> <div>F = Load Factor</div> <div>1.0 for Chain or Gear Drive</div> <div>1.5 for Timing Belts</div> <div>2.5 for All V Belts</div> <div>3.5 for Flat Belts</div> <div>LF = 2.1 for Reciprocating Compressors and other Severe Shock Drives and 1.8 for Large Inertia Type Drive (crushers, chippers, planers).</div> <div>Compound drives and power engaged power take-off applications must have written factory review.</div> |      |      |      |  |
|                                  | 2000 | 665                               | 595  |      |      |      |   |      |      |      |  |
|                                  | 3000 | 585                               | 525  |      |      |      |   |      |      |      |  |
| CX-107SP<br>X8317 (M141A)        | 1000 | 835                               | 625  | 475  |      |      |   |      |      |      |  |
|                                  | 2000 | 665                               | 595  |      |      |      |   |      |      |      |  |
|                                  | 3000 | 585                               | 525  |      |      |      |   |      |      |      |  |
| CX-108SP<br>X8419A (M163A)       | 1000 | 1495                              | 1110 | 885  | 735  | 630  |   |      |      |      |  |
|                                  | 2000 |                                   |      |      |      |      |   |      |      |      |  |
|                                  | 3000 |                                   |      |      |      |      |   |      |      |      |  |
| CX-110HP<br>X8249 (M224A)        | 1000 | 2740                              | 2190 | 1730 | 1430 | 1216 |   |      |      |      |  |
|                                  | 1500 | 2420                              | 2190 |      |      |      |   |      |      |      |  |
|                                  | 2000 | 2230                              | 2070 |      |      |      |   |      |      |      |  |
|                                  | 2600 | 2050                              | 1910 |      |      |      |   |      |      |      |  |
| CX-111HP<br>X8249 (M224A)        | 1000 | 2740                              | 2190 | 1730 | 1430 | 1216 |   |      |      |      |  |
|                                  | 1500 | 2420                              | 2190 |      |      |      |   |      |      |      |  |
|                                  | 2000 | 2230                              | 2070 |      |      |      |   |      |      |      |  |
|                                  | 2600 | 2050                              | 1910 |      |      |      |   |      |      |      |  |
| SP-111P<br>X9619 (M224A)         | 1000 | 3050                              | 2550 | 2000 | 1650 | 1400 |   |      |      |      |  |
|                                  | 1200 | 2900                              | 2550 | 2000 |      |      |   |      |      |      |  |
|                                  | 1800 | 2560                              | 2370 | 2000 |      |      |   |      |      |      |  |
|                                  | 2400 | 2340                              | 2170 | 2000 |      |      |   |      |      |      |  |
|                                  | 2800 | 2235                              | 2070 | 1925 |      |      |   |      |      |      |  |
| SP-111HP<br>X9582 (M224A)        | 1000 | 2790                              | 2600 | 2240 | 1840 | 1570 |   |      |      |      |  |
|                                  | 1200 | 2630                              | 2450 | 2240 | 1840 |      |   |      |      |      |  |
|                                  | 1800 | 2330                              | 2170 | 2030 | 1840 |      |   |      |      |      |  |
|                                  | 2400 | 2140                              | 1990 | 1865 | 1750 |      |   |      |      |      |  |
| SP-1110P<br>X9818 (M2467A)       | 1000 | 3290                              | 3060 | 2870 | 2700 | 2540 | 2240  |      |      |      |  |
|                                  | 1200 | 3190                              | 2970 | 2780 | 2610 | 2460 | 2240  |      |      |      |  |
|                                  | 1800 | 2810                              | 2620 | 2450 | 2300 | 2170 | 2050  |      |      |      |  |
|                                  | 2400 | 2530                              | 2370 | 2220 | 2090 | 1970 | 1860  |      |      |      |  |
|                                  | 3000 | 2320                              | 2160 | 2030 | 1890 | 1800 | 1700  |      |      |      |  |
| SP-211HP<br>X9681 (M224A)        | 1000 | 4540                              | 3395 | 2710 | 2255 | 1930 | 1690  |      |      |      |  |
|                                  | 1200 | 4370                              | 3395 |      |      |      |   |      |      |      |  |
|                                  | 1800 | 3900                              | 3395 |      |      |      |   |      |      |      |  |
|                                  | 2400 | 3550                              | 3330 |      |      |      |   |      |      |      |  |
|                                  | 2800 | 3390                              | 3165 |      |      |      |   |      |      |      |  |
| SP-2110P<br>X9894B (M224A)       | 1000 | 4728                              | 3558 | 2852 | 2380 | 2042 | 1788  |      |      |      |  |
|                                  | 1200 | 4728                              |      |      |      |      |   |      |      |      |  |
|                                  | 1800 | 4656                              |      |      |      |      |   |      |      |      |  |
|                                  | 2400 | 4273                              |      |      |      |      |   |      |      |      |  |
|                                  | 3000 | 3993                              |      |      |      |      |   |      |      |      |  |
| SP-2110P<br>X9894B (M2467A)      | 1000 | 5454                              | 4104 | 3292 | 2747 | 2357 | 2063  |      |      |      |  |
|                                  | 1200 | 5251                              | 4104 |      |      |      |   |      |      |      |  |
|                                  | 1800 | 4651                              | 4104 |      |      |      |   |      |      |      |  |
|                                  | 2400 | 4268                              | 4001 |      |      |      |   |      |      |      |  |
|                                  | 3000 | 3989                              | 3739 |      |      |      |   |      |      |      |  |
| SP-311P<br>XA7570 (M224A)        | 1000 | 4935                              | 3880 | 3200 | 2720 | 2365 | 2090  | 1875 | 1700 |      |  |
|                                  | 1800 | 4935                              |      |      |      |      |   |      |      |      |  |
|                                  | 2500 | 4935                              |      |      |      |      |   |      |      |      |  |
|                                  | 3000 | 4750                              |      |      |      |      |   |      |      |      |  |
| SP-114P<br>X9643 (M1985A)        | 1000 | 3390                              | 2600 | 2120 | 1780 | 1535 | 1350  | 1210 | 1090 |      |  |
|                                  | 1500 |                                   |      |      |      |      |   |      |      |      |  |
|                                  | 2000 |                                   |      |      |      |      |   |      |      |      |  |
|                                  | 2200 |                                   |      |      |      |      |   |      |      |      |  |
| SP-214P<br>X9803 (M1985A)        | 1000 | 5980                              | 4700 | 3880 | 3290 | 2870 | 2540  | 2270 | 2060 |      |  |
|                                  | 1500 |                                   |      |      |      |      |   |      |      |      |  |
|                                  | 2000 |                                   |      |      |      |      |   |      |      |      |  |
|                                  | 2200 |                                   |      |      |      |      |   |      |      |      |  |
| SP-2140P<br>X9845 (M2529)        | 1000 | 7750                              | 6730 | 5480 | 4630 | 4000 | 3530  | 3160 | 2850 | 2600 |  |
|                                  | 1200 | 7330                              | 6730 | 5480 |      |      |   |      |      |      |  |
|                                  | 1800 | 6480                              | 6130 | 5480 |      |      |   |      |      |      |  |
|                                  | 2400 | 5950                              | 5650 | 5350 |      |      |   |      |      |      |  |



HP =  $\frac{(\text{TORQUE})(\text{RPM})}{5252}$

or  $\frac{(\text{Nm})(\text{RPM})}{7121}$

or  $\frac{\text{kW}}{.746}$

NOTE: Allowable side pull given are for standard PTOs as shown (page 3). Deviations will require adjustment to the allowable side-pull limits.

| PTO MODEL AND<br>DRAWING NUMBERS | RPM  | “X” DISTANCE, INCHES (see sketch) |       |       |       |       |       |      |      |      |
|----------------------------------|------|-----------------------------------|-------|-------|-------|-------|-------|------|------|------|
|                                  |      | 1                                 | 2     | 3     | 4     | 5     | 6     | 7    | 8    | 9    |
| IB-2140P<br>X9745E (M2137)       | 1000 | 8000                              | 7550  | 7000  | 5875  | 5100  | 4500  | 4025 | 3675 | 3350 |
|                                  | 1200 | 7550                              | 7150  | 6800  | 5875  | 5100  |       |      |      |      |
|                                  | 1800 | 6700                              | 6325  | 6000  | 5750  | 5100  |       |      |      |      |
|                                  | 2400 | 6150                              | 5800  | 5500  | 5250  | 5025  |       |      |      |      |
| IB-2140P<br>X9745F (M1985A)      | 1000 | 6590                              | 5160  | 4250  | 3600  | 3130  | 2760  | 2470 | 2250 | 2050 |
|                                  | 1200 | 6590                              |       |       |       |       |       |      |      |      |
|                                  | 1800 | 6590                              |       |       |       |       |       |      |      |      |
|                                  | 2400 | 6150                              |       |       |       |       |       |      |      |      |
| IB-2140P<br>X9745E (M2713)       | 1000 | 8000                              | 7550  | 7200  | 6850  | 6350  | 5600  | 4950 | 4560 | 4150 |
|                                  | 1200 | 7550                              | 7150  | 6800  | 6500  | 6200  | 5600  |      | 4560 |      |
|                                  | 1800 | 6700                              | 6325  | 6050  | 5750  | 5500  | 5300  |      | 4560 |      |
|                                  | 2400 | 6125                              | 5800  | 5500  | 5250  | 5050  | 4850  |      | 4475 |      |
| IB-2140P<br>X9745F (M2529)       | 1000 | 8000                              | 6550  | 5300  | 4500  | 3900  | 3450  | 3100 | 2800 | 2550 |
|                                  | 1200 | 7550                              | 6550  |       |       |       |       |      |      |      |
|                                  | 1800 | 6700                              | 6330  |       |       |       |       |      |      |      |
|                                  | 2400 | 6150                              | 5800  |       |       |       |       |      |      |      |
| SP-314P<br>X9585 (M1985A)        | 1000 | 6170                              | 5120  | 4200  | 3570  | 3100  | 2740  | 2460 | 2220 | 2035 |
|                                  | 1500 | 5350                              | 5120  |       |       |       |       |      |      |      |
|                                  | 2000 | 5025                              | 4750  |       |       |       |       |      |      |      |
|                                  | 2200 | 4850                              | 4650  |       |       |       |       |      |      |      |
| SP-314P<br>X9585A (M2137)        | 1000 | 6170                              | 5850  | 5580  | 4720  | 4110  | 3630  | 3260 | 2945 | 2690 |
|                                  | 1500 | 5350                              | 5120  | 4850  | 4650  | 4110  |       |      |      |      |
|                                  | 2000 | 5025                              | 4750  | 4450  | 4250  | 4110  |       |      |      |      |
|                                  | 2200 | 4850                              | 4650  | 4350  | 4150  | 4000  |       |      |      |      |
| IB-3140P<br>XA7149 (M2713)       | 1000 | 8969                              | 8557  | 8182  | 7838  | 6878  | 6080  | 5448 | 4935 | 4510 |
|                                  | 1200 | 8494                              | 8104  | 7748  | 7423  | 6878  | 6080  | 5448 |      |      |
|                                  | 1800 | 7522                              | 7176  | 6862  | 6574  | 6309  | 6080  | 5448 |      |      |
|                                  | 2400 | 6903                              | 6586  | 6296  | 6033  | 5790  | 5556  | 5358 |      |      |
| IB-3140P<br>XA7149A (M2529)      | 1000 | 8978                              | 8048  | 6616  | 5616  | 4879  | 4313  | 3865 | 3501 | 3200 |
|                                  | 1200 | 8503                              | 8048  | 6616  |       |       |       |      |      |      |
|                                  | 1800 | 7530                              | 7186  | 6616  |       |       |       |      |      |      |
|                                  | 2400 | 6911                              | 6595  | 6307  |       |       |       |      |      |      |
| IB-3140P<br>XA71498 (M1969A)     | 1000 | 6007                              | 4707  | 3869  | 3285  | 2854  | 2523  | 2260 | 2047 | 1871 |
|                                  | 1200 |                                   |       |       |       |       |       |      |      |      |
|                                  | 1800 |                                   |       |       |       |       |       |      |      |      |
|                                  | 2400 |                                   |       |       |       |       |       |      |      |      |
| SP-2180P<br>XA7190 (M2713)       | 1000 | 9099                              | 8701  | 8336  | 8000  | 7407  | 6539  | 5854 | 5298 | 4839 |
|                                  | 1200 | 8617                              | 8240  | 7894  | 7576  | 7283  | 6539  | 5854 |      |      |
|                                  | 1800 | 7631                              | 7297  | 6991  | 6709  | 6450  | 6210  | 5854 |      |      |
|                                  | 2400 | 7004                              | 6697  | 6416  | 6158  | 5920  | 5699  | 5494 |      |      |
| SP-2180P<br>XA7190 (M2327)       | 1000 | 9099                              | 8701  | 7785  | 6594  | 5720  | 5050  | 4521 | 4092 | 3731 |
|                                  | 1200 | 8617                              | 8240  | 7785  | 6594  |       |       |      |      |      |
|                                  | 1800 | 7631                              | 7297  | 6991  | 6594  |       |       |      |      |      |
|                                  | 2400 | 7004                              | 6697  | 6416  | 6158  |       |       |      |      |      |
| SP-2180P<br>XA7190A (M2977)      | 1000 | 9099                              | 8701  | 8336  | 8000  | 7690  | 7404  | 6937 | 6278 | 5734 |
|                                  | 1200 | 8617                              | 8240  | 7894  | 7576  | 7283  | 7012  | 6760 | 6278 | 5734 |
|                                  | 1800 | 7631                              | 7297  | 6991  | 6709  | 6450  | 6210  | 5987 | 5779 | 5585 |
|                                  | 2400 | 7004                              | 6697  | 6416  | 6158  | 5920  | 5699  | 5494 | 5304 | 5126 |
| SP-318P                          | 1000 | 8000                              | 7650  | 7340  | 7040  | 6790  | 6530  | 6120 | 5580 | 5100 |
|                                  | 1200 | 7600                              | 7300  | 7000  | 6700  | 6450  | 6210  | 6000 | 5580 | 5100 |
|                                  | 1800 | 6620                              | 6350  | 6080  | 5840  | 5620  | 5400  | 5220 | 5030 | 4850 |
| IB-3180P<br>X9918 (M2977)        | 1000 | 16306                             | 15683 | 13225 | 11295 | 9856  | 8742  | 7855 | 7131 | 6529 |
|                                  | 1200 | 15442                             | 14852 | 13225 |       |       |       |      |      |      |
|                                  | 1800 | 13675                             | 13153 | 12669 |       |       |       |      |      |      |
|                                  | 2000 | 13253                             | 12747 | 12278 |       |       |       |      |      |      |
|                                  | 2200 | 12871                             | 12380 | 11924 |       |       |       |      |      |      |
| IB-3180P<br>X9918A (M2713)       | 1000 | 16316                             | 13479 | 11175 | 9544  | 8328  | 7387  | 6637 | 6025 | 5517 |
|                                  | 1200 | 15452                             | 13479 |       |       |       |       |      |      |      |
|                                  | 1800 | 13683                             | 13162 |       |       |       |       |      |      |      |
|                                  | 2000 | 13261                             | 12756 |       |       |       |       |      |      |      |
|                                  | 2200 | 12880                             | 12389 |       |       |       |       |      |      |      |
| IB-3180P<br>X99188 (M2529)       | 1000 | 12036                             | 9555  | 7921  | 6765  | 5903  | 5236  | 4704 | 4271 | 3910 |
|                                  | 1200 |                                   |       |       |       |       |       |      |      |      |
|                                  | 1800 |                                   |       |       |       |       |       |      |      |      |
|                                  | 2000 |                                   |       |       |       |       |       |      |      |      |
|                                  | 2200 |                                   |       |       |       |       |       |      |      |      |
| SP-321P<br>X9691A (M2156)        | 500  | 12900                             | 12400 | 11900 | 11100 | 9660  | 8550  | 7600 | 6950 | 6350 |
|                                  | 1000 | 10250                             | 9820  | 9450  | 9100  | 8750  | 8450  | 7600 |      |      |
|                                  | 1200 | 9750                              | 9350  | 9000  | 8650  | 8350  | 8050  | 7600 |      |      |
|                                  | 1500 | 9200                              | 8900  | 8500  | 8200  | 8000  | 7700  | 7400 |      |      |
| IB-3210P<br>X9919 (M21568)       | 1000 | 16295                             | 15670 | 15092 | 13635 | 11898 | 10554 | 9482 | 8608 | 7882 |
|                                  | 1200 | 15432                             | 14840 | 14292 | 13635 | 11898 |       |      |      |      |
|                                  | 1800 | 13666                             | 13142 | 12657 | 12206 | 11786 |       |      |      |      |
|                                  | 2000 | 13244                             | 12737 | 12266 | 11829 | 11423 |       |      |      |      |
|                                  | 2200 | 12863                             | 12369 | 11913 | 11488 | 11093 |       |      |      |      |



STANDARD POWER TAKE-OFFS

Dimensions of Twin Disc industrial PTOs with drive ring and overcenter clutch conform to the recommendations of SAE J621 (latest revision) unless noted.

| DIMENSIONAL DATA (all dimensions in inches unless noted) |                         |       |                         |          |             |                   |                    |      |            |                                   |
|--|-------------------------|-------|-------------------------|----------|-------------|-------------------|--------------------|------|------------|-----------------------------------|
| PTO Model Number   | Drawing Assembly Number | D     | SHAFT                   |          |             | B Clutch Diameter | C (See Footnote 8) | H    | J Diameter | M Diameter (in-mm) +.0000 - .0005 |
|  |                         |       | F Diameter +.000 - .001 | E Length | G Keyway    |                   |                    |      |            |                                   |
| CX-106SP   | X8317                   | 5.56  | 1.438                   | 3.50     | 3⁄8 x 3⁄16  | 6.50              | 2.81               | 0.88 | 4.50       | 2.0472 - 52                       |
| CX-107SP   |                         |       |                         |          |             | 7.50              |                    |      |            |                                   |
| CX-108SP   | X8419A                  | 7.06  | 1.750                   | 6.00     | 1⁄2 x 1⁄4   | 8.00              | 3.94               | 2.34 | 5.00       | 2.4409 - 62                       |
| CX-110HP   | X8249                   | 8.63  | 2.250                   | 5.50     | 5⁄8 x 5⁄16  | 10.00             | 3.94               | 3.75 | 5.75       | 2.8346 - 72                       |
| CX-111HP   |                         |       |                         |          |             | 11.50             |                    |      |            |                                   |
| SP-111P  | X9619                   | 8.13  | 2.250                   | 5.50     | 5⁄8 x 5⁄16  | 11.38             | 3.94               | 2.75 | 5.38       | 2.8346 - 72                       |
| SP-111HP   | X9582                   | 9.25  |                         | 6.50     |             |                   |                    | 3.75 | 5.75       | 2.8346 - 72                       |
| SP-1110P   | X9818                   | 9.25  |                         | 6.50     |             |                   |                    | 1.75 | 5.38       | 2.8356 - 72                       |
| SP-211HP   | X9681                   | 9.63  | 2.500                   | 6.50     | 5⁄8 x 5⁄16  | 11.38             | 3.94               | 3.00 | 6.50       | 2.8356 - 72                       |
| SP-2110P   | X9894B                  | 10.69 |                         |          |             |                   |                    | 2.86 | 10.75      |                                   |
| SP-311P  | XA7570                  | 13.89 | 3.500                   | 10.00    | 7⁄8 x 7⁄16  | 11.38             | 3.94               | 3.38 | 7.50       | 2.8346 - 72                       |
| SP-114P  | X9643                   | 12.13 | 3.000                   | 8.50     | 3⁄4 x 3⁄8   | 14.00             | 3.94               | 3.44 | 6.66       | 3.1496 - 80                       |
| SP-214P  | X9803                   | 13.75 | 3.500                   | 10.00    | 7⁄8 x 7⁄16  | 14.00             | 3.94               | 3.38 | 7.50       | 3.1496 - 80                       |
| SP-2140P   | X9845                   |       |                         |          |             |                   |                    | 0.61 |            | 3.1506 - 80                       |
| IB-2140P   | X9745E                  | 14.75 | 3.938                   | 10.00    | 1 x 1⁄2     | 14.00             | 3.94               | 3.63 | 12.50      | 3.9370 - 100                      |
| IB-2140P   | X9745F                  |       |                         |          |             |                   |                    |      |            | 3.1496 - 80                       |
| SP-314P  | X9585                   | 14.50 | 3.938                   | 10.00    | 1 x 1⁄2     | 14.00             | 3.94               | 3.38 | 7.50       | 3.1496 - 80                       |
| SP-314P  | X9585A                  |       |                         |          |             |                   |                    |      |            | 3.9370 - 100                      |
| IB-3140P   | XA7149                  | 16.77 | 3.938                   | 10.00    | 1 x 1⁄2     | 14.00             | 3.94               | 3.63 | 12.50      | 3.93843 - 100                     |
| IB-3140P   | XA7149A                 |       |                         |          |             |                   |                    |      |            | 3.1506 - 80                       |
| IB-3140P   | XA7149B                 |       |                         |          |             |                   |                    |      |            | 2.8346 - 72                       |
| SP-2180P   | XA7190                  | 17.89 | 3.938                   | 10.00    | 1 x 1⁄2     | 18.00             | 3.94               | 3.63 | 12.50      | 3.93843 - 100                     |
| SP-2180P   | XA7190A                 |       |                         |          |             |                   |                    |      |            | 4.72443 - 120                     |
| SP-318P  | X9671                   | 18.25 | 4.500                   | 10.00    | 1 x 1⁄2     | 18.00             | 3.94               | 2.66 | 10.00      | 4.72443 - 120                     |
| IB-3180P   | X9918                   | 21.20 | 4.688                   | 10.00    | 1 1⁄4 x 5⁄8 | 18.00             | 3.94               | 3.48 | 10.50      | 4.72443 - 120                     |
| IB-3180P   | X9918A                  |       |                         |          |             |                   |                    |      |            | 3.93843 - 100                     |
| IB-3180P   | X9918B                  |       |                         |          |             |                   |                    |      |            | 3.1506 - 80                       |
| SP-321P  | X9691A                  | 19.88 | 4.750                   | 10.00    | 1 1⁄4 x 5⁄8 | 21.00             | 3.94               | 2.84 | 11.00      | 5.11815 - 130                     |
| IB-3210P   | X9919                   | 21.20 | 4.688                   | 10.00    | 1 1⁄4 x 5⁄8 | 21.00             | 3.94               | 3.48 | 10.50      | 5.11815 - 130                     |

<sup>1</sup> Dimension shown is for No. 4 and No. 6 Housings; 2.63" for No. 5.  
<sup>2</sup> Dimension shown is for No. 1, No. 2 and No. 3 housings; 2.16" for No. 4.  
<sup>3</sup> +.0000 and -.0006.  
<sup>4</sup> Furnished with spherical roller main bearings.  
<sup>5</sup> +.0000 and -.0008.  
<sup>6</sup> Sealed roller bearing.  
<sup>7</sup> 2.13" DIM is non SAE std. For 11.5" OC clutch.  
<sup>8</sup> Face of flywheel housing to bottom of pilot bore in flywheel.

| HOUSING FLANGES |                |        |            |         |      |       |
|-----------------|----------------|--------|------------|---------|------|-------|
| SAE Housing No. | A +.000 - .005 | R B.C. | S Diameter | T Holes |      | P     |
|                 |                |        |            | No.     | Dia. |       |
| 6               | 10.500         | 11.25  | 12.13      | 8       | .41  | 7.75  |
| 5               | 12.375         | 13.13  | 14.00      | 8       | .41  | 7.75  |
| 4               | 14.250         | 15.00  | 15.88      | 12      | .41  | 7.75  |
| 3               | 16.125         | 16.88  | 17.75      | 12      | .41  | 9.75  |
| 2               | 17.625         | 18.38  | 19.25      | 12      | .41  | 9.75  |
| 1               | 20.125         | 20.88  | 21.75      | 12      | .47  | 9.75  |
| 1⁄2             | 23.000         | 24.38  | 25.50      | 12      | .53  | 9.75  |
| 0               | 25.500         | 26.75  | 28.00      | 16      | .53  | 12.75 |
| 00              | 31.000         | 33.50  | 34.75      | 16      | .53  | 16.75 |

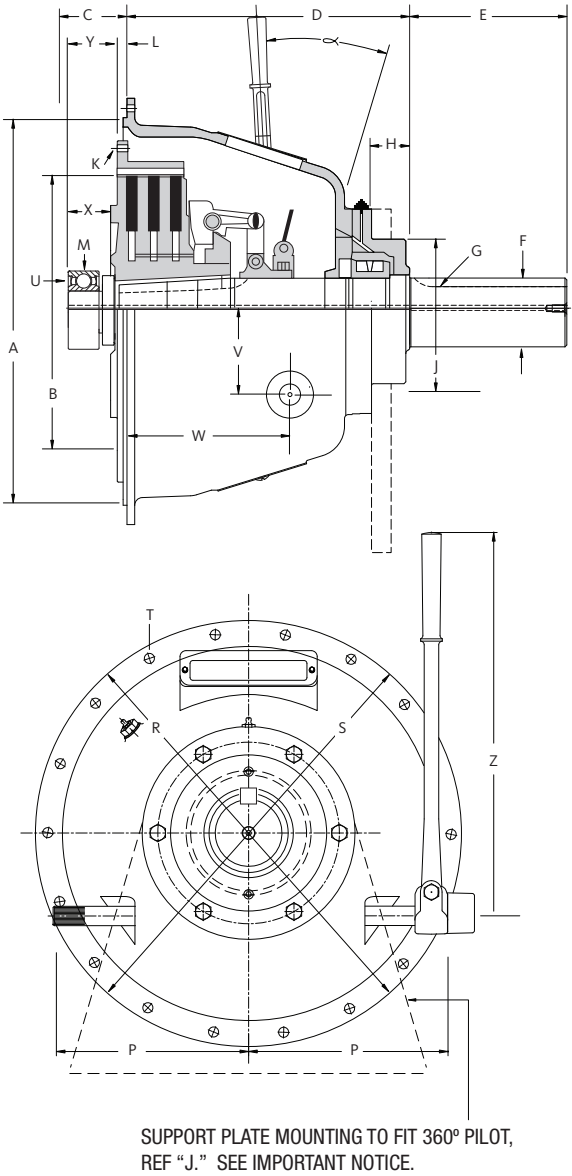
| V    | W     | X    | Y    | L    | Hand Lever Travel (Degrees) α | Z     |
|------|-------|------|------|------|-------------------------------|-------|
| 3.00 | 2.131 | 1.31 | 1.68 | 1.19 | 13"                           | 15.38 |
| 3.00 | 1.88  | 1.18 | 1.44 | 2.44 | 17"                           | 15.38 |
| 3.00 | 2.002 | 1.50 | 1.75 | 2.12 | 15"                           | 15.38 |
|      |       |      |      | 2.12 |                               |       |
| 3.00 | 3.19  | 1.73 | 2.26 | 1.56 | 15.50"                        | 15.38 |
|      |       | 1.83 | 2.26 |      |                               |       |
|      |       | 1.88 | 2.31 |      |                               |       |
| 3.75 | 4.06  | 1.92 | 2.31 | 1.56 | 15.50"                        | 15.38 |
|      |       | 1.95 |      |      |                               |       |
| 4.50 | 6.62  | 2.32 | 2.26 | 1.56 | 18"                           | 23.38 |
| 4.50 | 5.44  | 2.44 | 2.82 | 1.00 | 18"                           | 23.38 |
| 4.50 | 6.63  | 2.38 | 2.82 | 1.00 | 18"                           | 23.38 |
|      |       | 2.44 | 2.82 |      |                               |       |
| 4.50 | 7.66  | 2.41 | 2.82 | 1.00 | 17.75"                        | 23.38 |
| 4.50 | 7.75  | 2.44 | 2.82 | 1.00 | 18"                           | 23.38 |
| 4.50 | 9.67  | 2.53 | 2.82 | 1.00 | 17.75"                        | 23.38 |
|      |       |      |      |      |                               |       |
| 5.50 | 9.69  | 2.77 | 3.20 | 0.62 | 20"                           | 30.00 |
| 5.50 | 10.50 | 2.88 | 3.20 | 0.62 |                               | 30.00 |
| 5.50 | 13.50 | 2.75 | 3.20 | 0.62 | 20"                           | 42.00 |
| 5.50 | 11.75 | 3.22 | 3.82 | 0.00 | 20"                           | 42.00 |
| 5.50 | 13.50 | 3.10 | 3.82 | 0.00 | 20"                           | 42.00 |

| ADAPTER RINGS (SPACELESS) |                         |                       |
|---------------------------|-------------------------|-----------------------|
| Part Number               | From SAE Engine Housing | To SAE Clutch Housing |
| B6320                     | 2                       | 4                     |
| 6880                      | 1                       | 2                     |
| A7210                     | 1⁄2                     | 1                     |
| 8407                      | 0                       | 1                     |
| 6964                      | 00                      | 0                     |

**USE A CERTIFIED PRINT FOR INSTALLATION**  
NOTE: PTO models with **OP** designation have oil-lubricated main bearings. All other models have grease-lubricated main bearings.

- IMPORTANT NOTICE**
1. A support plate for one-plate 14" and smaller PTOs (except SP-311P) is not required.
  2. A support plate for three-plate 11" and two- and three-plate 14" PTOs is required in side-load applications and is recommended for in-line applications.
  3. A support plate for 18" and larger PTOs is required for both side-load and in-line applications.

FOOTNOTE 8

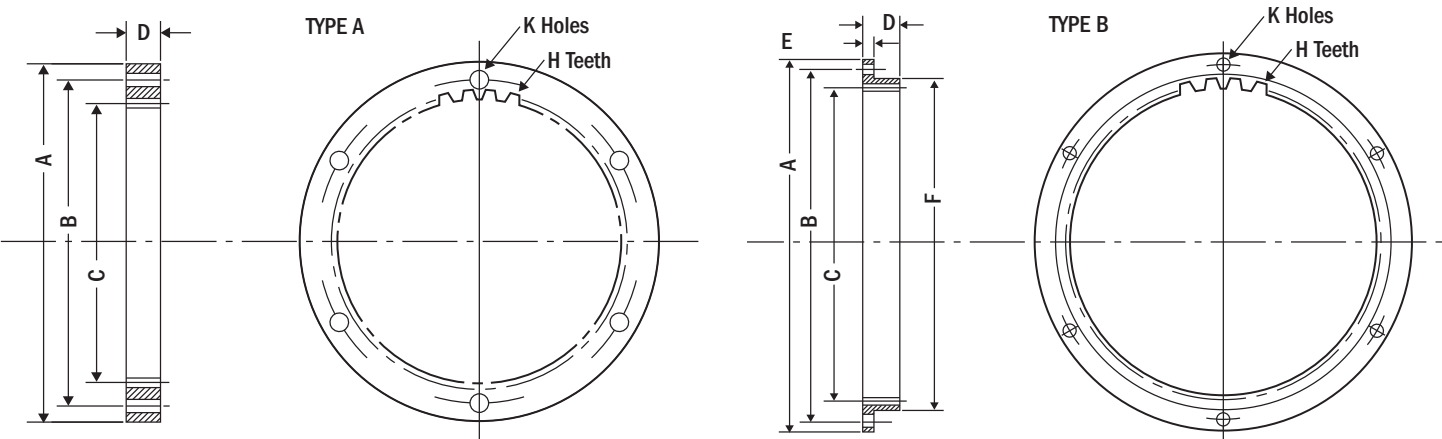


DYNAMICALLY-BALANCED DRIVING RINGS

Dimensions of Twin Disc industrial PTOs with drive ring and overcenter clutch conform to the recommendations of SAE J621 (latest revision) unless noted.

| DIMENSIONAL DATA (all dimensions in inches unless noted) |                |                             |           |                             |        |                          |      |      |
|--|----------------|-----------------------------|-----------|-----------------------------|--------|--------------------------|------|------|
| PTO Model Number   | Drawing Number | Driving Ring Drawing Number | Type Ring | A Diameter<br>+.000   -.005 | B B.C. | C Nominal Pitch Diameter | D    | E    |
| CX-106SP   | X8317          | 6639                        | A         | 8.500                       | 7.88   | 7.00                     | 0.63 | —    |
| CX-107SP   | X8317          | 6661                        | A         | 9.500                       | 8.75   | 7.83                     | 0.63 | —    |
| CX-108SP   | X8419A         | 5805                        | A         | 10.375                      | 9.63   | 8.50                     | 0.63 | —    |
| CX-110HP   | X8249          | 6187A                       | A         | 12.375                      | 11.63  | 10.50                    | 0.88 | —    |
| CX-111HP   | X8249          | 6625A                       | A         | 13.875                      | 13.13  | 12.00                    | 0.88 | —    |
| SP-111P  | X9619          |                             |           |                             |        |                          |      |      |
| SP-111HP   | X9582          |                             |           |                             |        |                          |      |      |
| SP-1110P   | X9818          | 6625D <sup>1</sup>          | A         | 13.875                      | 13.13  | 12.00                    | 0.88 | —    |
| SP-211HP   | X9681          | 6931                        | A         | 13.875                      | 13.13  | 12.00                    | 1.88 | —    |
| SP-2110P   | X9894B         |                             |           |                             |        |                          |      |      |
| SP-311P  | XA7570         | 6625N <sup>1,2</sup>        | B         | 13.875                      | 13.13  | 12.00                    | 3.13 | —    |
| SP-114P  | X9643          | 5712                        | B         | 18.375                      | 17.25  | 14.75                    | 1.13 | 0.50 |
| SP-214P  | X9803          | 5713                        | B         | 18.375                      | 17.25  | 14.75                    | 2.38 | 0.50 |
| SP-2140P   | X9845          |                             |           |                             |        |                          |      |      |
| IB-2140P   | X9745E         | A6518C <sup>1</sup>         | B         | 18.375                      | 17.25  | 14.75                    | 3.38 | 0.50 |
| IB-2140P   | X99745F        |                             |           |                             |        |                          |      |      |
| SP-314P  | X9585          | A6518                       | B         | 18.375                      | 17.25  | 14.75                    | 3.38 | 0.50 |
| SP-314P  | X9585A         |                             |           |                             |        |                          |      |      |
| IB-3140P   | XA7149         | B5835 <sup>1</sup>          | B         | 18.375                      | 17.25  | 14.75                    | 5.38 | 0.50 |
| IB-3140P   | XA7149A        |                             |           |                             |        |                          |      |      |
| IB-3140P   | XA7149B        |                             |           |                             |        |                          |      |      |
| SP-2180P   | XA7190         | 6925                        | B         | 22.500                      | 21.38  | 18.75                    | 3.06 | 0.63 |
| SP-2180P   | XA7190A        |                             |           |                             |        |                          |      |      |
| SP-318P  | X9671          | 6926A                       | B         | 22.500                      | 21.38  | 18.75                    | 4.25 | 0.63 |
| IB-3180P   | X9918          | B5352 <sup>1</sup>          | B         | 22.500                      | 21.38  | 18.75                    | 5.75 | 0.63 |
| IB-3180P   | X9918A         |                             |           |                             |        |                          |      |      |
| IB-3180P   | X9918B         |                             |           |                             |        |                          |      |      |
| SP-321P  | X9691A         | 6875                        | B         | 26.500                      | 25.25  | 21.75                    | 5.00 | 0.63 |
| IB-3210P   | X9919          | 9917 <sup>1</sup>           | B         | 26.500                      | 25.25  | 21.75                    | 5.95 | 0.63 |

<sup>1</sup> Nodular Iron Driving Ring  
<sup>2</sup> SAE Grade 8 Attachment Capscrews Required



| F     | K Holes |      | H Teeth 20° P. A. |               | Approximate Weight lbs |
|-------|---------|------|-------------------|---------------|------------------------|
|       | No.     | Size | No.               | P.            |                        |
| —     | 6       | 0.33 | 42                | $\frac{6}{8}$ | 2.8                    |
| —     | 8       | 0.33 | 47                | $\frac{6}{8}$ | 3.4                    |
| —     | 6       | 0.41 | 51                | $\frac{6}{8}$ | 4.3                    |
| —     | 8       | 0.41 | 63                | $\frac{6}{8}$ | 7.0                    |
| —     | 8       | 0.41 | 72                | $\frac{6}{8}$ | 8.1                    |
| —     | 8       | 0.41 | 72                | $\frac{6}{8}$ | 8.3                    |
| —     | 8       | 0.41 | 72                | $\frac{6}{8}$ | 18.1                   |
| —     | 8       | 0.41 | 72                | $\frac{6}{8}$ | 29.5                   |
| 16.00 | 8       | 0.53 | 59                | $\frac{4}{5}$ | 16.5                   |
| 16.00 | 8       | 0.53 | 59                | $\frac{4}{5}$ | 25.8                   |
| 16.13 | 8       | 0.53 | 59                | $\frac{4}{5}$ | 31.3                   |
| 16.00 | 8       | 0.53 | 59                | $\frac{4}{5}$ | 32.6                   |
| 16.13 | 8       | 0.53 | 59                | $\frac{4}{5}$ | 44.3                   |
| 20.00 | 6       | 0.66 | 75                | $\frac{4}{5}$ | 42.2                   |
| 20.13 | 6       | 0.66 | 75                | $\frac{4}{5}$ | 56.8                   |
| 20.13 | 6       | 0.66 | 75                | $\frac{4}{5}$ | 61.0                   |
| 23.38 | 12      | 0.66 | 87                | $\frac{4}{5}$ | 89.3                   |
| 23.38 | 12      | 0.66 | 87                | $\frac{4}{5}$ | 95.5                   |

USE A CERTIFIED PRINT FOR INSTALLATION

Correct and proper installation is very important. Procedures are described in Care and Operation Manuals and Tech Talk Service Letters 71-1, 71-2, 73-2 and 77-5. Copies are available upon request.



## PTO APPLICATION DATA SHEET



**PLEASE RETURN TO:**

Twin Disc, Incorporated  
Industrial Applications  
Phone: +1 (262) 638-4000  
Fax: +1 (262) 638-4482  
Email: [applications@twindisc.com](mailto:applications@twindisc.com)

Date: \_\_\_\_\_

Company: \_\_\_\_\_

Contact Name: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Country: \_\_\_\_\_


Phone: \_\_\_\_\_

Email: \_\_\_\_\_

| TYPE AND MODEL OF MACHINE | SKETCH OF INSTALLATION |
|---------------------------|------------------------|
|                           |                        |

| PRIME MOVER           |   |     |                            |    |    |
|-----------------------|---|-----|----------------------------|----|----|
| Manufacturer:         |   |     | Model:                     |    |    |
| Rated HP:             | @ | RPM | SAE Flywheel Size:         |    |    |
| Max. Intermittent HP: | @ | RPM | SAE Flywheel Housing Size: |    |    |
| Peak Torque LB FT:    | @ | RPM | Flywheel Pilot Bearing:    | MM | IN |
| Notes:                |   |     |                            |    |    |

| DESCRIPTION                      |
|----------------------------------|
| Description or Duty Class Cycle: |
| Duty Classification:             |

|  |   |
|--|---|
| <b>PRIME MOVER</b>   |   |
| Side Load "X" Dimension  |   |
| Belt Type: <input type="checkbox"/> Chain <input type="checkbox"/> Timing <input type="checkbox"/> "V" <input type="checkbox"/> Flat |                            |
| Sheave Diameter:   | <div style="display: flex; justify-content: space-around; width: 100%;"> <span>MM</span> <span>IN</span> </div> |

| APPLICATION DETAILS   |    |                        |   |
|---|----|------------------------|---|
| Net Input HP to Clutch:                                       | HP | @                      | RPM   |
| How is Clutch Actuated?                                       |    |                        |   |
| Maximum Torque to Clutch:                                     |    | LB FT                  | Maximum Engagements:                          |
|   |    | per (min) (hour) (day) |   |
| WR <sup>2</sup> of Driven Machinery:                          |    | LB FT <sup>2</sup>     | BTU Input to Clutch:                          |
| Maximum Safe RPM Published by Twin Disc for Unit Recommended: |    | RPM                    | Maximum Input RPM Expected This Installation: |
|   |    | RPM                    |   |
| Back Drive Possible This Installation?                        |    | Maximum RPM            |   |

|                   |
|-------------------|
| OTHER INFORMATION |
|                   |



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visit [twindisc.com/productsupport](http://twindisc.com/productsupport). For assistance regarding a specific application, please contact [sales@twindisc.com](mailto:sales@twindisc.com).

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## NOTES