

FLEXIDYNE® PH Couplings

Sizes: 987, 1196, 15116, 18172, 22172, 27192, D15116, D15131, D18172

These instructions must be read thoroughly before installing or operating this product.



DESCRIPTION:

Flexidyne dry fluid couplings are a unique concept to provide soft start and momentary overload protection for all types of driven equipment. Standard NEMA-B motors with RPM base speeds of 1750, 1160 or 860 are commonly used with a Flexidyne coupling, yet other available power sources may be used with the Flexidyne coupling.

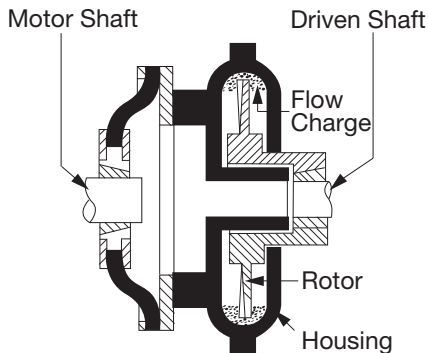


Figure 1

The dry “fluid” in the Flexidyne housing is heat treated steel shot. A measured amount, referred to as flow charge, is added into a housing which has been keyed to the motor shaft. When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packs it between the housing and the rotor, which in turn transmits power to the load.

After the starting period of slippage between housing and rotor the two become locked together and achieve full load speed, operating without slip and with 100% efficiency.

Consequently, the motor accelerates instantly to base speed, while the load starts gradually and smoothly.

WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Dodge nor are the responsibility of Dodge. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

INSTALLATION

1. On all single cavity sizes, except the 18172 and 22172, install coupling flange on motor shaft. On sizes 18172 and 22172 first, place flange spacer ring on flange assembly, located between flange and clamp ring, then install coupling flange on motor shaft.
2. Mount flange assembly on motor shaft.
Straight bored assemblies - press or shrink flange assembly on the shaft.
Taperlock assemblies - install per instruction sheet supplied with Taper-lock bushing. Taperlock flanges are reversible to allow the locating of bushing screws on either the inside or the outside as desired. Motor shaft end is normally flush with flange, but may extend through as much as dimension ‘A’ in Table 1.
3. Position shafts so that dimension “B” (See Table 1) is maintained. If shaft end float is to occur, locate shafts at mid-position of end float.
4. Slip bolt ring over coupling flange and rest it on motor shaft.
5. Disassemble clamp rings and place flexible element and clamp rings in position, making certain element bead is properly seated. Install and tighten clamp ring screws alternately and evenly (approximately ½ turn per screw) until metal to metal contact is felt upon bottoming of clamp ring to flange. Tighten each screw with a torque wrench to torque value shown in Table 1.
6. Install bolt ring and screws. Tighten screws alternately and evenly (approximately ½ turn per screw) until all screws are tightened to torque value shown in Table 1.
7. For longest Flexidyne coupling life, it is always desirable to align coupling as accurately as possible at initial installation. Check both angular and parallel alignments by mounting indicators near the O.D. of the flange, as shown in Figure 2, and rotating the shafts thru 360°. For a good installation neither reading should exceed value “E” given in Table 1. Alignment should be re-checked after any repositioning.

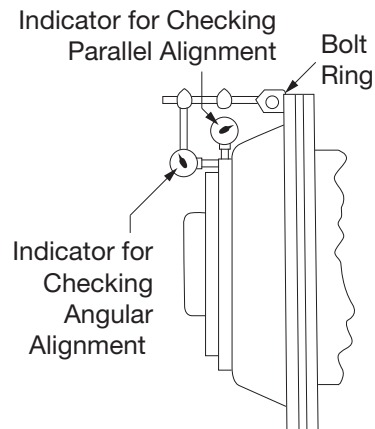


Figure 2

The cutout which is included with the coupling must be installed to protect against excessive heat which may be generated in the Flexidyne coupling by prolonged or frequent slipping caused by overloads. It can be hooked up to automatically interrupt the current and, if desired, activate a bell, light or other warning device. For hazardous atmospheres, special explosion-proof cutouts are available.

Table 1 - Recommended Torque

Flexidyne Coupling Size	Dimension			Torque (in.-lbs.)			
	A*	B*	C*	Clamp Ring	Bolt Ring	Filler Plug	Rotor
987	2-1/8	1-5/8		300	150	200	100
1196	3-1/8	1-15/16		300	250	200	100
15116	2-5/8	2		400	300	700	200
18172	4-1/4	2-15/14		700	500	700	350
22172	3-3/4	2-15/16		700	500	700	1700
27192	4-1/4	3-5/16		1000	650	700	1700
D15116	2-3/4	2	.030	400	300		200
D15131	3-1/2	2-1/2	.035	400	350		200
D18172	3-3/4	2-15/16	.045	900	500		350

*For A, B, and C dimension refer to drawing.

INSTALLATION FOR DUPLEX COUPLINGS

NOTE: Duplex (double cavity) Flexidyne couplings are for use on horizontal shafts only.

1. Install driven hub on driven shaft, making sure that the shaft does not project beyond the end of the TAPER-LOCK® bushing. Install Taper-Lock bushing per instruction manual for bushing.
2. Mount flange assembly on motor shaft. For straight bored assemblies: press or shrink flange assembly on the shaft. For Taper-Lock assemblies: install per instruction manual for Taper-Lock bushing. Taper-Lock flanges are reversible to allow the locating of bushing screws on either the inside or the outside as desired. Motor shaft end is normally flush with flange, but may extend through as much as dimension 'A' in Table 1.

NOTE: The D18172 requires a spacer ring which must be installed between flange and clamp ring before mounting flange assembly on shaft.

Flexible Element Installation

3. Slip bolt ring over flange and rest on shaft.
4. **Size D15116 & D15131:** Remove clamp ring screws and internal clamp ring. Place internal clamp ring inside the element and reassemble to flange seating the bead of the element on the flange. Tighten clamp ring screws alternately and evenly to torque values shown in Table 1.

Size D18172: Remove external clamp ring and rest it on shaft. Turn element sideways to shaft and push over flange. Seat element on flange and reassemble clamp ring and screws tightening to recommended torque value in Table 1.
5. Place shafts in position so that dimension "B" in Table 1 will be maintained. If shaft end float is to occur, locate shafts at mid-position of end float.
6. Place bolt ring and screws in position. Using a torque wrench, tighten screws alternately and evenly until all screws are tightened to recommended torque in Table 1.

7. Check shaft alignment. Although the shafts may be perfectly aligned in installation, some parallel and angular misalignment may develop in usage due to shifting of the driving and driven units. It is desirable to align the coupling as accurately as possible at installation to minimize flexing of the flexible element caused by the shaft misalignment which usually develops in usage.

Check both parallel and angular alignments by mounting indicators near the OD of the flange (See Figure 2) and rotating the shafts through 360°. For a good installation neither indicator reading should exceed value "C" in Table 1. Both alignments should be rechecked after any repositioning.

The cutout, which is included with the coupling, must be installed to protect against excessive heat which may be generated in the Flexidyne mechanism by prolonged or frequent slipping. It can be hooked up to automatically interrupt the current and, if desired, activate a bell, light or other warning device. For hazardous atmospheres special explosion-proof cutouts are available.

START UP

1. Remove one of the filler plugs and install one-half the proper amount of flow charge specified in Table 2. Replace and tighten filler plug, making sure that no flow charge is trapped in the threads. Remove other filler plug and install the remaining one-half of the specified amount of flow charge repeating the same procedure. Tighten filler plugs to recommended torque in Table 1.
2. Attach AC ammeter (conventional clamp-on or equivalent) to one line of the AC motor. Set range to cover 200% of motor nameplate current.
3. Note the maximum allowable acceleration time for Flexidyne coupling as stated in Tables 2 and 3.

Note: Table 2 lists starting time capacity for starting cycles occurring more than once every 2 hours.

4. Push start button. Observe motor current during load acceleration and number of seconds required to reach full speed (Figure 3).

Increase amount of flow charge if:

- a. Acceleration time reaches maximum allowable before load is up to speed. Turn off power immediately if this time is reached.
- b. Acceleration amperage is below the motor nameplate value.

Decrease amount of flow charge if:

- a. Acceleration time is less than 1-1/2 seconds.
- b. Acceleration amperage is above 200% of motor nameplate value.

5. Once satisfactory operation has been obtained record the following for future reference:

- The amount of flow charge.
- Starting current.
- Acceleration Time.

The amount of flow charge in the Flexidyne coupling determines the acceleration time for a given load. Slower acceleration times will occur when less flow charge is used and faster acceleration, from stop to full speed, will be observed with greater amounts of flow charge.

CAUTION: The rotor of the Flexidyne coupling must slip during acceleration to allow flow charge to become evenly distributed in the Flexidyne housing. Therefore, DO NOT ALLOW FLEXIDYNE MECHANISM TO RUN "FREE" (that is, without a load on the driven end), otherwise an out of balance condition may result, damaging equipment.

START UP FOR DUPLEX COUPLINGS

1. The flow charge recommended in Table 2 is the amount per cavity required. To assure a more even initial distribution of flow charge, remove filter plugs and pour 1/2 of recommended amount in both cavities. Replace filler plugs, being careful to clear threads of any flow charge. Manually rotate the Flexidyne housing several turns. Remove filler plugs and pour in remaining amount of flow charge. Clear threads as before, replace filler plugs and torque to 700 in-lbs.
2. Attach AC ammeter (conventional clamp-on or equivalent) to one line of the AC motor. Set range to cover 200% of motor nameplate current.
3. Note the maximum allowable acceleration time for Flexidyne as stated in Table 3.

NOTE: Table 3 lists starting time capacity for starting cycles occurring more than once every 2 hours.

4. Push start button. Observe motor current during load acceleration and number of seconds required to reach full speed (Figure 3).

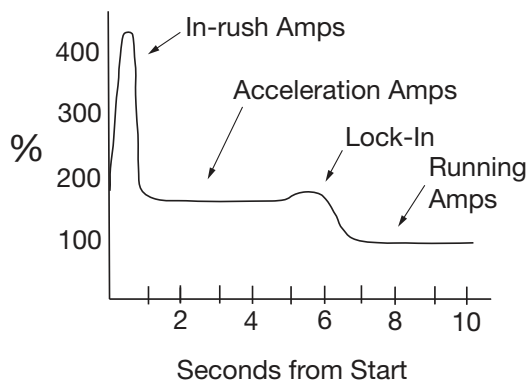


Figure 3

Increase amount of flow charge by equal quantity in each cavity if:

- a. Acceleration time reaches maximum allowable before load is up to speed. Turn off power immediately if this time is reached.
- b. Acceleration amperage is below the motor nameplate value.

Decrease amount of flow charge by equal quantity in each cavity if:

- a. Acceleration time is less than 1-1/2 seconds.
 - b. Acceleration amperage is above 200% of the motor nameplate value.
5. Once satisfactory operation has been obtained record the following for future reference:
 - The amount of flow charge.
 - Starting current.
 - Acceleration Time.

The amount of flow charge in the Flexidyne coupling determines the acceleration time for a given load. Slower acceleration times will occur when less flow charge is used and faster acceleration, from stop to full speed, will be observed with greater amounts of flow charge.

CAUTION: The rotor of the Flexidyne coupling must slip during acceleration to allow flow charge to become evenly distributed in the Flexidyne housing. Therefore, DO NOT ALLOW FLEXIDYNE MECHANISM TO RUN "FREE" (that is, without a load on the driven end), otherwise an out of balance condition may result, damaging equipment.

OPERATION

The Flexidyne coupling should start the load smoothly and without delay, provided the proper amount of flow charge has been used. Should the acceleration time exceed the maximum allowable in Table 2, shut off power to the Flexidyne coupling immediately. Allow the Flexidyne coupling to cool, then add small amounts of flow charge until proper acceleration is observed.

Vibration is an indication of accelerating too rapidly and not allowing flow charge to become evenly distributed in the Flexidyne housing. This can be corrected by removing small amounts of flow charge until vibration subsides. Other causes of vibration are, undersize shafting, unit not installed far enough on shaft or worn bore in the unit.

Slippage — The Flexidyne coupling can, without slipping, transmit overloads up to 130% of its pre-set starting torque. Should this breakaway torque be exceeded, the Flexidyne mechanism will slip and generate heat (see Overload Protection). Although slippage usually indicates increased loads, it can also be caused by worn flow charge or a worn rotor especially if the Flexidyne mechanism has been in operation for some time. The necessity to replace either a rotor or flow charge will be made evident by a loss in power transmitting capacity of the Flexidyne coupling.

To Replace Flexible Element

1. Remove screws from bolt ring and place bolt ring on shaft.
2. Remove screws, back off clamp ring and remove flexible element. (It may be necessary to back off one shaft to allow room.)
3. Install new flexible element per INSTALLATION.

OVERLOAD PROTECTION

A Thermal Cutout is available from DODGE® and is recommended for Flexidyne coupling Size 987 where slippage (due to overloads, starting or reversing) is frequent or prolonged. Its function is to protect against excessive heat which may be generated by the Flexidyne coupling. A Speed Drop Cutout is available from Dodge for Flexidyne coupling Size 1196 for installation where overloads or jamming may occur. For Size 15716, 18172, 22172 & 27192, single or double cavity, a speed drop cutout is included with the Flexidyne coupling and must be installed regardless of the application.

Either unit can be installed to send a signal to interrupt the motor current and, if desired, activate a bell, light or other warning device. Cutout switches are intended for use in control circuits only and are not recommended for DC current nor should they be used directly in the line to the motor. Both units are available in special explosion proof models for hazardous atmospheres.

MAINTENANCE

For average industrial applications involving 3 or 4 starts per day of not more than 6 seconds acceleration time each, the flow charge should be changed every 10,000 hours of operation. For more severe conditions, visually inspect flow charge at more frequent intervals; it should be changed when it has deteriorated to a half powder, half granular condition. Visual inspections should continue until enough flow charge changes have been made to adequately establish a schedule for changing Flexidyne flow charge. See Chart of Flexidyne Mechanism Flow Charge Analysis.

NOTE: The Flexidyne mechanism has been lubricated at the factory and no further lubrication is required. Never apply grease, oil or any other foreign material to the flow charge.

THERMAL CAPACITY

Since there is slippage within the flow charge during acceleration, heat is generated from friction. The thermal capacity of the Flexidyne mechanism is based on balancing this heat generated during acceleration against the cooling time between accelerations. The amount of heat generated is determined by the amount of horsepower dissipated by slipping and the duration of each acceleration. If the flow charge weight is light, the heat generated will not be as great as that which would be generated with a heavier flow charge, when compared at the same acceleration time. A longer time between starts will dissipate more heat; therefore, higher starting horsepower may be transmitted, or longer acceleration times may be allowable. (See Starting Cycle) Acceleration times shown in Table 2 are for starting frequencies of one start per hour or less. If starting frequency is more than once per hour, use acceleration time for actual starting cycle shown in Table 3.

Acceleration times listed in Tables 2 and 3 are the MAXIMUM permissible for the various starting frequencies listed. The MINIMUM acceleration time required for proper Flexidyne coupling operation is 1 to 1-1/2 seconds. This is the time required for the flow charge to be uniformly distributed around the housing cavity before the unit "locks in". Any acceleration time between the minimum and maximum listed is acceptable, although a shorter acceleration time will generally provide longer wear life. For applications requiring a specific acceleration time (within these limits) flow charge may be added or removed to produce the required results.

Stalled — If a jam-up stalls the drive, the motor continues to run and the Flexidyne coupling slips. This causes heat to be generated at twice the rate of normal acceleration. Therefore, the allowable slipping time, when stalled, is half the allowable acceleration time given in Table 2.

Starting Cycle — The time from the beginning of one acceleration to the beginning of the next. Allowable acceleration times in Table 3 are based on the assumption that the Flexidyne coupling will be running continuously, except for a momentary stop before the next start. If the stop is more than momentary, decrease the actual starting cycle by one-half the stopped time before using Table 3. For example, with a 50 minute actual starting cycle of which 20 minutes is stopped time, decrease 50 by half of 20 to give 40 minutes as the starting cycle time to use for Table 3.

Grouped Starts — For several starts grouped together followed by uninterrupted running, add the acceleration times of all starts and consider it as the time for one start. The starting cycle would be the time from the beginning of one group of starts to the beginning of the next group.

Table 3 - Flexidyne Coupling Thermal Capacity

Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		2 Hours			1 Hour			30 Min.			15 Min.		
		870	1160	1750	870	1160	1750	870	1160	1750	870	1160	1750
987	2.5	1000	230	...	1000	230	...	1000	230	...	600	190	...
	5.0	310	166	...	310	166	...	310	166	...	180	135	...
	9.1	220	150	135	220	150	135	220	150	135	130	120	118
	10.0	...	120	76	...	120	76	...	120	76	...	100	66
	15.0	...	110	64	...	110	64	...	110	64	...	92	55
	17.5	...	...	52	...	...	52	...	...	52	...	...	45
	20	...	...	40	...	...	40	...	...	40	...	...	35
	25	...	...	26	...	...	26	...	...	26	...	...	22
	30	...	...	21	...	...	21	...	...	21	...	...	18
	35	...	...	16	...	...	16	...	...	16	...	...	15
38	...	...	...	...	...	...	...	...	...	...	...	...
987	2.5	425	160	...	225	100	...	90	42	...	45	22	...
	5.0	140	110	...	70	72	...	27	29	...	13	15	...
	9.1	100	100	100	50	65	70	20	26	28	10	13	14
	10.0	...	85	58	...	50	38	...	21	15	...	11	7
	15.0	...	78	48	...	47	31	...	19	12	...	9	6
	17.5	...	...	38	...	...	25	...	...	10	...	...	5
	20	...	...	30	...	...	20	...	...	8	...	...	4
	25	...	...	18	...	...	12	...	...	5	...	...	...
	30	...	...	15	...	...	10	...	...	4	...	...	...
	35	...	...	13	...	...	9	...	...	3	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...
1196	5	1000	480	...	950	480	...	700	400	...	450	270	...
	10	600	308	116	560	308	116	440	257	116	280	175	96
	20	320	136	80	300	136	80	230	115	80	150	80	67
	30	...	107	44	...	107	44	...	89	44	...	63	37
	40	...	78	34	...	78	34	...	64	34	...	46	28
	50	...	...	24	...	...	24	...	...	24	...	...	20
	60	...	...	21	...	...	21	...	...	21	...	...	17
	70	...	...	18	...	...	18	...	...	18	...	...	15
	80	...	...	16	...	...	16	...	...	16	...	...	13
	90	...	...	14	...	...	14	...	...	14	...	...	12
100	...	...	...	...	...	...	...	...	...	...	...	...
1196	5	290	200	...	130	100	...	46	40	21	...	20	...
	10	180	130	80	80	65	50	30	26	21	13	13	11
	20	90	60	56	42	30	35	15	12	14	6	6	7
	30	...	47	32	...	23	20	...	9	8	...	4	4
	40	...	35	24	...	17	15	...	6	6	...	3	3
	50	17	10	4
	60	14	9	3
	70	12	8
	80	11	7
	90	10	6
100	

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Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		2 Hours			1 Hour			30 Min.			15 Min.		
		870	1160	1750	870	1160	1750	870	1160	1750	870	1160	1750
15116	10	560	....	....	560	....	....	460	....	....	350	....	....
	20	300	230	....	300	230	....	240	230	....	170	190	....
	30	200	167	....	200	167	....	160	167	....	125	140	....
	40	145	105	....	145	105	....	120	105	....	90	90	....
	50	....	81	35	....	81	35	....	81	34	....	68	30
	60	....	56	31	....	56	31	....	56	30	....	47	27
	70	....	47	27	....	47	27	....	47	26	....	40	23
	80	....	39	23	....	39	23	....	39	22	....	33	20
	90	....	33	20	....	33	20	....	33	18	....	28	16
	100	....	28	16	....	28	16	....	28	15	....	24	13
	110	....	....	15	....	....	15	....	....	14	....	....	12
	120	....	....	14	....	....	14	....	....	13	....	....	11
	130	....	....	13	....	....	13	....	....	12	....	....	10
	140	....	....	12	....	....	12	....	....	11	....	....	10
	150	....	....	11	....	....	11	....	....	10	....	....	9
	160	....	....	10	....	....	10	....	....	10	....	....	8
	170	....	....	9	....	....	9	....	....	9	....	....	8
	180	....	....	9	....	....	9	....	....	9	....	....	7
	190	....	....	8	....	....	8	....	....	8	....	....	7
	200	....	....	8	....	....	8	....	....	7	....	....	6
15116	10	10 Min.			5 Min.			2 Min.			1 Min.		
		870	1160	1750	870	1160	1750	870	1160	1750	870	1160	1750
		260	....	....	160	....	....	85	....	....	53	....	....
	20	130	160	....	80	100	....	42	44	....	25	23	....
	30	95	117	....	60	73	....	32	32	....	19	17	....
	40	68	74	....	42	46	....	22	20	....	14	10	....
	50	....	57	28	....	35	19	....	15	12	....	7	8
	60	....	40	25	....	25	16	....	11	10	....	5	7
	70	....	34	21	....	21	14	....	9	9	....	5	6
	80	....	28	17	....	17	12	....	7	7	....	4	5
	90	....	24	15	....	14	10	....	6	6	....	3	4
	100	20	13	12	9	5	5	3	3
	110	12	8	5	3
	120	11	7	4
	130	10	7	4
	140	9	6	3
	150	8	6	3
	160	8	6
	170	7	5
	180	7	5
190	6	4	
200	6	4	

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Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		2 Hours			1 Hour			30 Min.			15 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
18172	20	600	....	....	560	....	....	450	....	....	300	....	....
	40	370	200	....	350	200	....	280	160	....	180	115	....
	60	220	160	....	200	160	....	160	130	....	100	94	....
	80	160	120	....	150	120	....	120	100	....	74	72	....
	100	....	96	60	....	96	60	....	80	56	....	58	44
	120	....	72	49	....	72	49	....	60	45	....	45	35
	140	....	62	38	....	62	38	....	52	35	....	38	26
	160	....	52	33	....	52	33	....	44	30	....	32	23
	180	....	....	28	....	....	28	....	....	26	....	....	20
	200	....	....	25	....	....	25	....	....	23	....	....	18
	220	....	....	22	....	....	22	....	....	20	....	....	16
	240	....	....	20	....	....	20	....	....	18	....	....	14
	260	....	....	18	....	....	18	....	....	17	....	....	13
	280	....	....	16	....	....	16	....	....	15	....	....	11
	300	....	....	14	....	....	14	....	....	13	....	....	10
18172	20 40 60 80 100	10 Min.			5 Min.			2 Min.			1 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
		200	90	....	90	....	....	35	....	....	16	....	....
		120	90	....	54	44	....	21	17	....	10	8	....
		60	66	72	32	35	....	12	13	....	5	6	....
	80	48	54	23	27	....	8	10	....	4	5	....
	100	....	43	32	....	21	17	....	8	7	....	4	....
	120	....	32	26	....	16	13	....	6	5	....	3	....
	140	....	27	20	....	13	10	....	5	4	....	....	....
	160	....	22	17	....	11	9	....	4	4	....	....	....
	180	....	....	15	....	....	8	....	....	3	....	....	....
	200	....	....	13	....	....	7	....	....	....	....	....	....
	220	....	....	12	....	....	6	....	....	....	....	....	....
	240	....	....	10	....	....	5	....	....	....	....	....	....
	260	....	....	9	....	....	5	....	....	....	....	....	....
280	....	....	8	....	....	4	....	....	....	....	....	....
300	....	....	7	....	....	4	....	....	....	....	....	....
22172	60 80 100 120 140	2 Hours			1 Hour			30 Min.			15 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
		290	....	....	270	....	....	224	....	....	150	....	....
		175	....	....	170	....	....	140	....	....	92	....	....
		110	96	....	110	90	....	90	76	....	62	55	....
	120	94	78	93	74	....	77	62	....	53	40	....
	140	78	60	76	58	....	64	48	....	44	35	....
	160	....	55	....	53	....	....	44	....	24	31	....
	180	....	50	....	48	....	....	40	....	....	28	....
	200	....	44	....	43	....	....	36	....	....	25	....
	250	30	22	30	22	25	21	18	17
	300	24	18	24	18	20	18	14	14
	350	19	16	18	16	15	15	11	12
	400	13	13	12	10
	450	11	11	10	8

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Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		2 Hours			1 Hour			30 Min.			15 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
27192	80	240	....	....	240	....	....	170	....	....	130	....	....
	100	196	....	....	196	....	....	143	....	....	108	....	....
	150	94	....	....	94	....	....	74	....	....	55	....	....
	200	60	42	....	60	42	....	50	39	....	35	30	....
	250	49	36	....	49	36	....	40	33	....	28	26	....
	300	38	30	....	38	30	....	30	27	....	22	22	....
	350	32	27	....	32	27	....	25	24	....	19	19	....
	400	26	24	....	26	24	....	21	22	....	16	17	....
	450	23	21	....	23	21	....	19	19	....	14	15	....
	500	20	18	....	20	18	....	17	17	....	12	13	....
	550	19	17	....	19	17	....	16	15	....	11	12	....
	600	....	15	....	....	15	....	....	14	....	....	11	....
	650	....	14	....	....	14	....	....	13	....	....	10	....
			10 Min.			5 Min.			2 Min.				
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
27192	80	90	....	....	45	....	....	18	....	....	9	....	....
	100	74	....	....	37	....	....	15	....	....	8	....	....
	150	37	....	....	18	....	....	7	....	....	4	....	....
	200	24	24	....	12	12	....	5	5	....	....	....	....
	250	19	20	....	9	10	....	....	4	....	....	....	....
	300	15	17	....	7	9	....	....	3	....	....	....	....
	350	12	15	....	6	8	....	....	....	....	....	....	....
	400	10	14	....	5	7	....	....	....	....	....	....	....
	450	9	12	....	4	6	....	....	....	....	....	....	....
	500	8	11	....	4	5	....	....	....	....	....	....	....
	550	7	10	....	....	5	....	....	....	....	....	....	....
	600	....	9	....	....	4	....	....	....	....	....	....	....
	650	....	8	....	....	4	....	....	....	....	....	....	....
			2 Hours			1 Hour			30 Min.			15 Min.	
		870	1160	1750	870	1160	1750	870	1160	1750	870	1160	1750

Table 3 - Flexidyne Coupling Thermal Capacity

Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		560	230	...	560	230	...	460	230	...	350	190	...
015	20	560	230	...	560	230	...	460	230	...	350	190	...
	40	300	167	...	300	167	...	240	167	...	170	140	...
	60	200	105	...	200	105	...	160	105	...	125	90	...
	80	145	81	35	145	81	35	120	81	34	90	68	30
	100	...	...	...	...	...	...	...	...	...	...	...	...
	120	...	56	31	...	56	31	...	56	30	...	47	27
	140	...	47	27	...	47	27	...	47	26	...	40	23
	160	...	39	23	...	39	23	...	39	22	...	33	20
	180	...	33	20	...	33	20	...	33	18	...	28	16
	200	...	28	16	...	28	16	...	28	15	...	24	13
	220	...	...	15	...	...	15	...	...	14	...	...	12
	240	...	...	14	...	...	14	...	...	13	...	...	11
	260	...	...	13	...	...	13	...	...	12	...	...	10
	280	...	...	12	...	...	12	...	...	11	...	...	10
	300	...	...	11	...	...	11	...	...	10	...	...	9
	320	...	...	10	...	...	10	...	...	10	...	...	8
	340	...	...	9	...	...	9	...	...	9	...	...	8
	360	...	...	9	...	...	9	...	...	9	...	...	7
	380	...	...	8	...	...	8	...	...	8	...	...	7
	400	...	...	8	...	...	8	...	...	7	...	...	6
		10 Min.			5 Min.			2 Min.			1 Min.		
		870	1160	1750	870	1160	1750	870	1160	1750	870	1160	1750
015	20	260	...	...	160	100	...	85	...	...	53	...	...
	40	130	160	...	80	73	...	42	44	...	25	23	...
	60	95	117	...	60	46	...	32	32	...	19	17	...
	80	68	74	...	42	35	...	22	20	...	14	10	...
	100	...	57	28	...	...	19	...	15	12	...	7	8
	120	...	40	25	...	25	16	...	11	10	...	5	7
	140	...	34	21	...	21	14	...	9	9	...	5	6
	160	...	28	17	...	17	12	...	7	7	...	4	5
	180	...	24	15	...	14	10	...	6	6	...	3	4
	200	...	20	13	...	12	9	...	5	5	...	3	3
	220	...	...	12	...	...	8	...	...	5	...	...	3
	240	...	...	11	...	...	7	...	...	4	...	...	...
	260	...	...	...	...	...	7	...	...	4	...	...	...
	280	...	...	...	...	...	6	...	...	3	...	...	...
	300	...	...	...	...	...	6	...	...	3	...	...	...
	320	...	...	...	...	...	6	...	...	...	...	...	...
	340	...	...	...	...	...	5	...	...	...	...	...	...
	360	...	...	...	...	...	5	...	...	...	...	...	...
	380	...	...	...	...	...	4	...	...	...	...	...	...
	400	...	...	...	...	...	4	...	...	...	...	...	...

Table 3 - Flexidyne Coupling Thermal Capacity

Single Cavity Flexidyne Coupling Size	Starting HP	Maximum Allowable Acceleration Time in Seconds for Standard Motor Speeds at Various Starting Cycles											
		2 Hours			1 Hour			30 Min.			15 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
018	40	600	....	....	560	....	....	450	....	....	300	....	....
	80	370	200	....	350	200	....	280	160	....	180	115	....
	120	220	160	....	200	160	....	160	130	....	100	94	....
	160	160	120	....	150	120	....	120	100	....	74	72	....
	200	....	96	60	....	96	60	....	80	56	....	58	44
	240	....	72	49	....	72	49	....	60	45	....	45	35
	280	....	62	38	....	62	38	....	52	35	....	38	26
	320	....	52	33	....	52	33	....	44	30	....	32	23
	360	....	....	28	....	....	28	....	....	26	....	....	20
	400	....	....	25	....	....	25	....	....	23	....	....	18
	440	....	....	22	....	....	22	....	....	20	....	....	16
	480	....	....	20	....	....	20	....	....	18	....	....	14
	520	....	....	18	....	....	18	....	....	17	....	....	13
	560	....	....	16	....	....	16	....	....	15	....	....	11
	600	....	....	14	....	....	14	....	....	13	....	....	10
018	40	10 Min.			5 Min.			2 Min.			1 Min.		
		720	870	1160	720	870	1160	720	870	1160	720	870	1160
		200	....	....	90	....	....	35	....	....	16	....	....
	80	120	90	....	54	44	....	21	17	....	10	8	....
	120	66	72	....	32	35	....	12	13	....	5	6	....
	160	48	54	....	23	27	....	8	10	....	4	5	....
	200	....	43	32	....	21	17	....	8	7	....	4	....
	240	....	32	26	....	16	13	....	6	5	....	3	....
	280	....	27	20	....	13	10	....	5	4	....	....	....
	320	....	22	17	....	11	9	....	4	4	....	....	....
	360	....	....	15	....	....	8	....	....	3	....	....	....
	400	....	....	13	....	....	7	....	....	....	....	....	....
	440	....	....	12	....	....	6	....	....	....	....	....	....
	480	....	....	10	....	....	5	....	....	....	....	....	....
	520	....	....	9	....	....	5	....	....	....	....	....	....
560	....	....	8	....	....	4	....	....	....	....	....	....
600	....	....	7	....	....	4	....	....	....	....	....	....

Parts Replacement Sizes 987, 1196 & 15116:

DISASSEMBLY:

1. Remove bolt ring and back off one of the shafts.
2. Remove driven hub from driven shaft. Remove filler plug and drain flow charge from Flexidyne housing.
3. Remove housing screws and housing cover. Remove cover seal retainer by inserting a small pin in the holes for the drive screws and tapping on pin to remove drive screws. Remove cover seal.
4. Remove the six rotor screws and slide driven hub off drive housing. Remove the rotor.
5. Remove ball bearing snap ring and ball bearing. To remove ball bearing place three equal length 11/64" to 3/16" diameter pins in the three holes in the end of the drive housing and press against the pins.
6. Remove rotor retainer and bearing seal shield. (Note shield is not used on 15116 coupling). Remove seal felt and housing seal.
7. Remove snap ring and bronze bushing from drive housing.

REASSEMBLY:

1. Install housing seal (red in color) on rotor retainer. Place seal felt and seal shield in position in drive housing. Install rotor retainer making sure housing seal is properly seated in drive housing.
2. Press ball bearing on drive housing. Press against inner (not outer) race. Rotor retainer must not be cocked when bearing enters it. Check after pressing to make sure rotor retainer rotates freely in seal. Install bearing snap ring.
3. Slide bronze bushing on drive housing and install snap ring.
4. Place rotor and driven hub in position. Install and tighten the 6 rotor screws.
5. Install cover seal (gray in color) in housing cover. Line up holes in seal retainer with holes in housing cover and install drive screws.
6. Place housing cover in position on drive housing so that filler plugs are diametrically opposed. Install and tighten housing screws.
7. Install flow charge and filter plug per Step 1, STARTUP.

Parts Replacement Sizes 18172, 22172 & 27192:

DISASSEMBLY:

1. Remove bolt ring and back off one of the shafts.
2. Remove Flexidyne mechanism from driven shaft. Remove one of the filler plugs and drain flow charge from Flexidyne housing.
3. Remove housing screws and housing cover. Remove cover seal retainer by inserting a small pin in the holes for the drive screws and tapping on pin to remove drive screws. Remove cover seal.
4. Remove rotor screws and remove rotor.
5. Remove ball bearing inner race retaining ring and slide driven hub off drive housing. Remove housing seal and seal felt from drive housing.
6. Remove ball bearing outer race retaining ring and remove driven end bearing from driven hub. To remove bearing, insert a plug in the bore and press on right hand end (as viewed in the drawing) of bearing. Press against outer (not inner) race of bearing.
7. Remove coupling end bearing from drive housing by placing three equal length 11/64" to 3/16" diameter pins in the three holes in end of the drive housing and pressing against the pins.

Note: On 27192 PH Flexidyne couplings remove bearing spacer before removing coupling end bearing.

REASSEMBLY:

1. Press coupling end bearing onto drive housing until it bottoms out. Press against inner (not outer) race of bearing. Slide bearing spacer onto drive housing (bearing spacer used only on 27192 PH Flexidyne couplings).
2. Press driven end bearing into driven hub until it bottoms out. Press against outer (not inner) race. Install bearing outer race retaining ring.
3. Stand driven hub on right hand (as viewed in the drawing) and place housing seal (red in color) and seal felt in position on end of driven hub.
4. Slide drive housing into driven hub and tap gently until drive housing starts to pass over housing seal. The seal may tend to twist. A wire or other blunt probe may be used to push the outer corner of the seal into position in the drive housing. Rotating the drive housing may also help to position the seal properly. When seal is properly positioned tap drive housing into place. Carefully turn the Flexidyne mechanism over and stand on adapter plate end. Install bearing outer race retaining ring.
5. Place rotor in position. Install and tighten rotor screws.
6. Install cover seal (gray in color) in housing cover. Line up holes in seal retainer with holes in housing cover and install drive screws.
7. Place housing cover in position on drive housing so that filler plugs are diametrically opposed. Install and tighten housing screws.
8. Install flow charge and filler plug per Step 1, STARTUP.

TO REPLACE FLEXIBLE ELEMENT:

1. Remove screws from bolt ring and place bolt ring on shaft.
2. Remove screws, back off clamp ring and remove flexible element. It may be necessary to back off one shaft to allow room.
3. Install new flexible element per Step 2 INSTALLATION.

PARTS REPLACEMENT D15116, D15131, D18172

Replacement of seals - (refer to parts drawing).

1. Remove bolt ring screws and back off bolt ring. Back off one shaft.
2. Remove driven hub from shaft per instruction manual for Taper-Lock bushing. Remove Flexidyne coupling from driven shaft.
3. Remove filler plug and pour out flow charge, being careful not to spill any.
4. Remove housing screws and housing cover.
5. Remove rotor screws, outside rotor and housing spacer.
6. **Size D15:** Remove rotor screws, driven hub, inside rotor, retaining ring, ball bearing and rotor retainer in that order.

NOTE: To remove ball bearing, replace every other drive hub screw with pins of equal length and 13/32" to 27/64" diameter. Press pins equally against bearing.

Size D18: Remove retaining ring and driven hub with inside rotor attached.

7. Remove and replace housing seal and bearing felt seal as follows: Set seals in place on rotor retainer (Size D15) only or driven hub (Sizes D18, D22 & D27). Install housing in place on rotor retainer (Size D15) or driven hub (Sizes D18, D22 or D27) and tap gently until housing starts to pass over housing seal, making sure that seal is not cocked. After seal is in position, tap housing into place.
8. **Sizes D18:** Replace retaining ring.
Size D15 only: Press ball bearing onto housing.

NOTE: Press against inner (not outer) bearing race. Rotor retainer must not be cocked when outer bearing race enters it. Check this, after pressing bearing, by running rotor retainer to see that it rotates freely in housing seal.

Install retaining ring, inside rotor and driven nub. Install rotor screws and tighten per recommended torque in Table 1.

9. Install housing spacer, outside rotor, and rotor screws and tighten per recommended torque in Table 1.
10. To replace cover seal in housing cover, first remove seal retainer by inserting a small rod in drive screw holes and tap on rod to remove drive screws. Remove and replace cover seal; reinstall retainer and drive screws. Place housing cover in position.
11. Install housing screws and tighten to recommended torque in Table 1.
12. Replace flow charge and filler plug per Step 1, STARTUP.
13. Reinstall Flexidyne assembly per INSTALLATION.

Replacement of bearings and seals

Steps 1 through 13 cover the replacement of seals on all sizes and the replacement of large bearing on D15 only. To replace small bearing on D15 and both bearings on D18, use following steps.

Size D15 - After performing Steps 1 through 6 Replacement of Seals:

1. Insert a plug in the bore of the hub and press on end (right end as viewed in drawing) of bearing. Press against outside (not inner) race.
2. Replace bearing in driven hub by pressing on outer (not inner) race.
3. Bearing is removed and replaced in Steps 6 and 8 above.

Sizes D18 - After performing Steps 1 through 7, Replacement of Seals:

1. Removal of bearing is similar to removal of bearing on D15 in Step 6 above, except for diameter of pins, 1/2" to 17/32" diameter on D18.
2. Replace bearing in housing by pressing on the inner (not outer) race until it bottoms out.
3. Remove bearing by removing retaining ring from driven hub. Insert a plug in bore of hub and press on end (right end as viewed in drawing) of bearing. Press against inner race.
4. Replace bearing in driven hub by pressing on outer (not inner) race until it bottoms. Replace retaining ring.

Replacement of rotors only

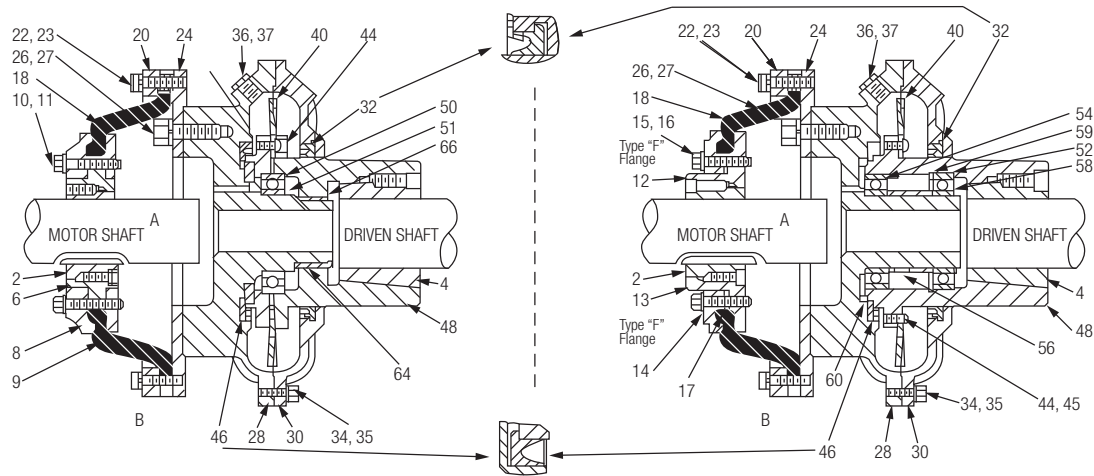
Size D15:

Perform Steps 1 through 6 above for removal of inside rotor only. Replace per Steps 8 through 13, Replacement of Seals.

Sizes D18:

Perform steps 1 through 7 above to remove outer rotor. Remove rotor screws and inside rotor. Replace inside rotor and rotor screws and tighten per recommended torque in Table 1. Perform Steps 8 through 13, Replacement of Seals.

Replacement Parts for 987, 1196, 15116, 18172, 22172 & 27192 PH Flexidyne Couplings

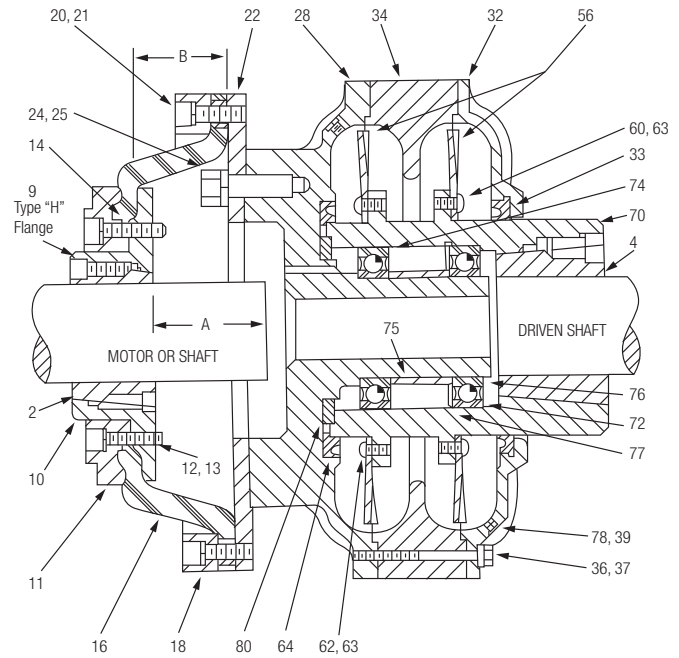
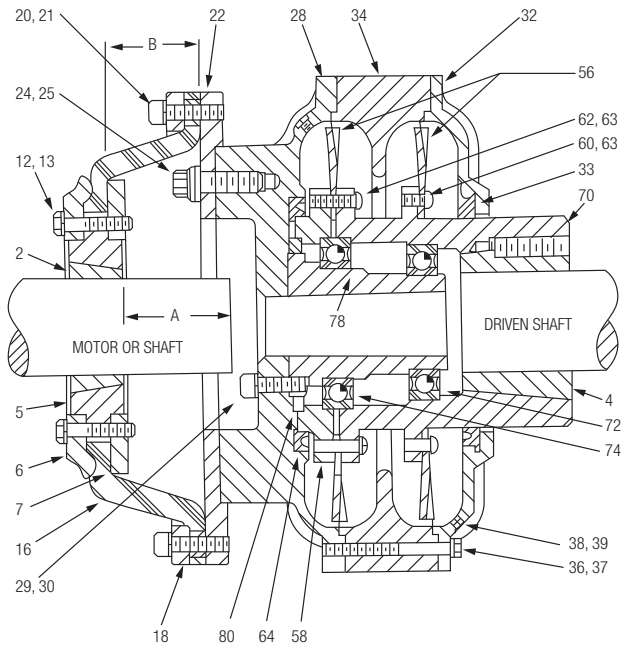


Reference	Name of Part	No. Required	Part Numbers					
			987	1196	15116	18172	22172	27192
2	Taper-Lock Bushing ①	1	1610	2012	2517	3535	3535	4040
4	Taper-Lock Bushing ①	1	2517	2517	3030	3535	4040	5050
6	FLANGE ASSEMBLY ②	1	010603	010604	010606	.....	.....	.....
8	③ Flange	1	010613	010614	010616	.....	.....	.....
8	③ External Clamp Ring	1	010623	010624	010626	.....	.....	.....
9	③ Internal Clamp Ring	1	011047	011048	011050	.....	.....	.....
10	③ Clamp Ring Screw	⑤	411253	411253	411257	.....	.....	.....
11	③ Hardened Flat Washer	⑤	419085	419085	419086	.....	.....	.....
12	TYPE 'H' FLANGE ASSEMBLY ②	1	.....	.....	.....	011134	011134	011137
12	③ Type 'H' Flange	1	.....	.....	.....	011014	011014	011017
14	③ Clamp Ring	1	.....	.....	.....	011054	011054	011057
15	③ Clamp Ring Screw	8	.....	.....	.....	411584	411584	411586
16	③ Plain Washer	8	.....	.....	.....	419079	419079	419081
13	TYPE 'F' FLANGE ASSEMBLY ②	1	.....	.....	.....	011154	011154	011157
13	③ Type 'F' Flange	1	.....	.....	.....	011034	011034	011037
14	③ Clamp Ring	1	.....	.....	.....	011054	011054	011057
15	③ Clamp Ring Screw	8	.....	.....	.....	411584	411584	411586
16	③ Plain Washer	8	.....	.....	.....	419079	419079	419081
17	Flange Spacer Ring	1	.....	.....	.....	011274	011274	.....
18	Flexible Element	1	011227	011228	011230	011234	011234	011236
20	Bolt Ring	1	011685	011686	011687	011689	011689	011690
22	Bolt Ring Screw	⑥	417371	417376	417376	417382	417382	417382
23	Lockwasher	⑥	419046	419047	419047	419050	419050	419050
④	Bolt Ring Pin	2	420150	420150	420150	420152	420152	420152
24	Adapter Plate	1	309449	311449	315449	318449	322449	327449
26	Adapter Screw	⑦	417171	415122	415042	411203	411162	411192
27	Lockwasher	⑦	419050	419014	419020	419020	419016	419018
28	Drive Housing	1	309079	311079	315077	318202	322202	327202
	HOUSING COVER AND SEAL ASSEMBLY ②	1	391457	391464	491494	391250	391248	391249
30	③ Housing Cover	1	309080	311081	315079	318203	322203	327203
32	③ Cover Seal w/Ret. & D12 SCR's	1	391254	391255	391256	391260	391258	391259
34	Housing Screw	⑧	411039	411057	411072	411108	411102	411126
35	Lockwasher	⑧	419009	419010	419011	419013	419016	419014
36	Filler Plug	2	308021	308021	315021	315021	315021	315021
37	Lockwasher	2	419121	419121	419123	419123	419123	419123
38	Lockwasher	6	407083	407085	407087	407091	.....	.....
40	Rotor	1	309006	311006	315006	318006	322006	327006
42	Rotor Retainer	1	309207	311207	315207	.....	.....	.....
44	Rotor Screw	⑨	415056	415058	415064	415114	415120	415122
45	Lockwasher	⑨	.....	.....	.....	419011	419014	419014
46	Housing Seal	1	309036	311038	315017	318038	322238	327238
48	Driven Hub	1	309205	311205	315205	318205	322205	327205
50	Ball Bearing	1	391210	391219	391227	.....	.....	.....
51	Bearing Retainer Ring	1	421013	421019	421027	.....	.....	.....
52	Ball Bearing (Driven End)	1	.....	.....	.....	391227	391271	391272
54	Ball Bearing (Motor End)	1	.....	.....	.....	391235	391238	391272
56	Bearing Spacer	1	.....	.....	.....	.....	.....	327213
58	Inner Race Retaining Ring	1	.....	.....	.....	421088	421100	421101
59	Outer Race Retaining Ring	1	.....	.....	.....	421039	421041	421044
60	Seal Felt	1	309024	311024	315024	318224	322224	327224
62	Seal Shield	1	309027	311027	.....	.....	.....	.....
64	Bronze Bushing	1	309212	311212	315212	.....	.....	.....
66	Bushing Retaining Ring	1	421009	421014	421022	.....	.....	.....

① When ordering Taper-Lock bushings specify the size number and the bore.
 ② Includes part listed immediately below.
 ③ Parts marked make up the assemblies under which they are listed.
 ④ Not shown on drawing.
 ⑤ 5 required on size 987; 6 required for sizes 1196 and 15116.

⑥ 6 required for size 1196; 8 required for sizes 987, 1196, 18172, 22172 and 27192.
 ⑦ 6 required for sizes 987, 1196, 15116, 18172 and 22172; 7 required for size 27192.
 ⑧ 6 required for sizes 987, 1196, 15116 and 18172; 9 required for sizes 22172 and 27192.
 ⑨ 6 required for sizes 987, 1196, 15116 and 18172; 8 required for sizes 22172 and 27192.
 ⑩ Cover seal includes retainer and drive screws.

Parts for D15116, D15131, D18172 Duplex Flexidyne Couplings



Ref	Name of Part	No. Required	Part Numbers		
			D15116	D15131	D18172
2	Taper-Lock Bushing with screws (Drive End) ①	1	2517	2517	3535
4	Taper-Lock Bushing with screws (Driven End) ①	1	3030	3030	3535
5	TAPER-LOCK FLANGE ASSEMBLY ②	1	010606	010607	.....
6	③ Flange	1	010616	010617	.....
7	③ External Clamp Ring	1	010626	010627	.....
12	③ Internal Clamp Ring	1	011050	010632	.....
13	③ Clamp Ring Screw	1	411257	411261	.....
	③ Washer	6	419086	419086	.....
9	TYPE H FLANGE ASSEMBLY ②	1	.....	.....	011134
11	③ Type H Flange	1	.....	.....	011014
12	③ Clamp Ring	1	.....	.....	011054
13	③ Clamp Ring Screw	④	.....	.....	411584
	③ Washer	④	.....	.....	419079
10	TYPE F FLANGE ASSEMBLY ②	1	.....	.....	011154
11	③ Type F Flange	1	.....	.....	011034
12	③ Clamp Ring	1	.....	.....	011054
13	③ Clamp Ring Screw	④	.....	.....	411584
	③ Washer	④	.....	.....	419079
14	Flange Spacer Ring	1	.....	.....	011274
16	Flexible Element	1	011230	011231	011234
18	Bolt Ring	1	011687	011688	011689
20	Bolt Ring Screw	8	417376	417374	417382
21	Lockwasher	8	419047	419047	419050
⑨	Bolt Ring Pin	2	420150	420151	420152
22	Adapter Plate	1	315449	315450	318449
24	Adapter Screw	6	415042	411203	411203
25	Lockwasher	6	419020	419020	419020

Ref	Name of Part	No. Required	Part Numbers		
			D15116	D15131	D18172
28	DRIVE HUB AND HOUSING ASSEMBLY ②	1	391263	391263	391264
29	③ Drive Hub Screw ⑧	6	415042	411203	417220
30	③ Lockwasher ⑧	6	419020	419020	419052
32	HOUSING COVER AND SEAL ASSEMBLY ②	1	391246	391246	391250
33	③ Housing Cover	1	315079	315079	318203
	③ Cover Seal (Gray)	1	315023	315023	318223
34	Housing Spacer	1	315080	315080	318241
36	Housing Screw	⑤	411420	411420	411242
37	Lockwasher	⑤	419011	419011	419013
81	Hex Nut	⑤	407087	407087	407091
38	Filler Plug	2	315021	315021	315021
39	Lockwasher	2	419123	419123	419123
56	Rotor	2	315006	315006	318006
58	Rotor Retainer	1	315207	315207	.....
60	Rotor Screw (Inside)	⑥	415109	415709	415114
62	Rotor Screw (Outside)	⑥	415112	415112	415114
63	Lockwasher	⑦	419010	419010	419011
64	Housing Seal (Red)	1	315017	315017	318038
70	Driven Hub	1	315405	315405	318243
72	Small Bearing	1	391230	391230	391227
74	Large Bearing	1	391227	391227	391235
75	Bearing Spacer	1	.....	.....	.....
76	Inner Race Retaining Ring	1	.....	.....	421088
77	Outer Race Retaining Ring	1	.....	.....	421047
78	Retaining Ring	1	421028	421028	.....
80	Seal Felt	1	315024	315024	318224

① Specify bore and bushing size number which is shown as Part Number

② Includes parts listed immediately below

③ Parts make up the assemblies under which they are listed

④ 8 required for D18172

⑤ 5 required for D15116 & D15131; 6 required for D18172; 9 required

⑥ 6 required for D15116, D15131, D18172

⑦ 12 required for D15116, D15131, and D18172

⑧ Not shown on D18172 drawing

⑨ Not shown on drawings

Flexidyne Mechanism Trouble Analysis		
Symptom	Cause	Cure
Vibration	<ol style="list-style-type: none"> 1. Misalignment 2. Bent shaft 3. Excess flow charge 4. Fused flow charge 5. Improper installation – Output shaft jammed against housing 	<ol style="list-style-type: none"> 1. Realign drive or coupling. 2. Replace or straighten. 3. Remove small amount of flow charge. 4. Correct the overload. 5. Readjust spacing between shafts and Flexidyne housing.
Erratic Acceleration	<ol style="list-style-type: none"> 1. Breakdown of flow charge 2. Caked flow charge 3. Below minimum amount of flow charge 	<ol style="list-style-type: none"> 1. Replace flow charge. 2. Moist environment – use stainless flow charge. 3. Add flow charge.
Flexidyne Mechanism Doesn't Slip	<ol style="list-style-type: none"> 1. Improper installation – Output shaft jammed against housing 2. Flow charge in bearings – causing bearing seizure 	<ol style="list-style-type: none"> 1. Readjust spacing between shafts and Flexidyne housing. 2. Replace seals, bearings and flow charge or replace Flexidyne mechanism.
Excessive Slippage	<ol style="list-style-type: none"> 1. Not enough flow charge 2. Overload 3. Worn flow charge 4. Worn rotor 	<ol style="list-style-type: none"> 1. Add flow charge. 2. Relieve overload 3. Replace flow charge. 4. Replace rotor.
Poor or short flow charge life	<ol style="list-style-type: none"> 1. Excessive slip at start up 2. Excessive inching or jogging of machine 	<ol style="list-style-type: none"> 1. Add flow charge to reduce starting time. 2. Install time delay in motor control circuit.

Flexidyne Mechanism Flow Charge Analysis	
Condition	Cause
<ol style="list-style-type: none"> 1. Red oxide color, granular consistency 2. Red oxide color, powdery consistency, possibly with powdery flakes 3. Black, powdery 4. Red oxide, powdery and chunky 5. Clumping of flow charge 	<ol style="list-style-type: none"> 1. Normal after some usage. 2. Worn-out, can cause Flexidyne mechanism damage. 3. Rotor worn, excessive slip and heat. 4. Worn-out and moisture present. 5. Moisture present, use stainless flow charge.

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