

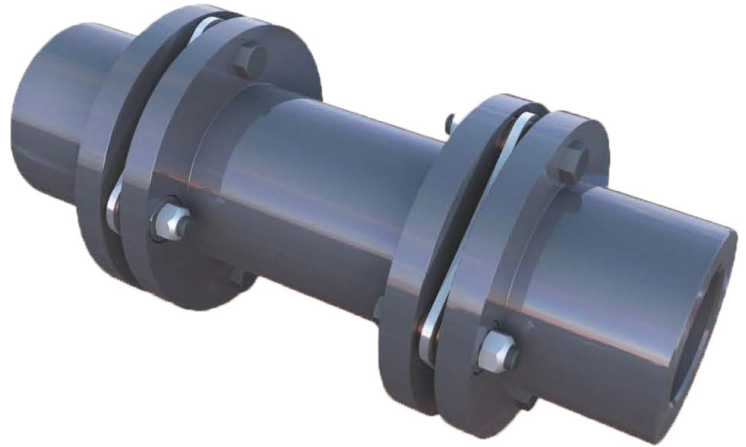
## PRODUCT FEATURES

AMERIFLO FD series flexible disc couplings were developed on the basis of more than thirty years of professional manufacturing experience. It's a competitive flexible transmission products for industrial process pumps and other medium or low speed rotating machinery. Based on a higher degree of standardization, this series of products are manufactured in batch production mode and have the advantages of cost performance and delivery competitiveness.

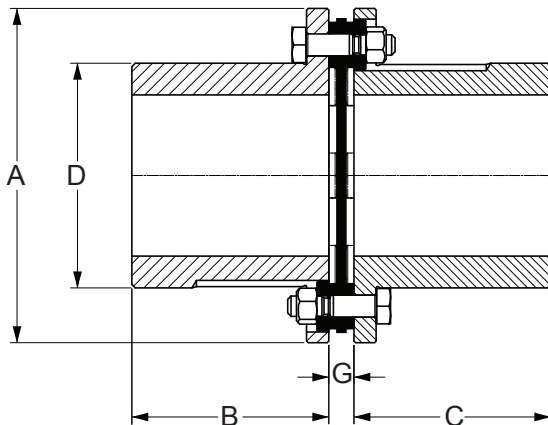
- Flexible components are made of high strength stainless steel
- Square disc with 4 bolt-holes, higher flexibility
- Excellent comprehensive performance based on finite element analysis and contour profile optimization
- Metric standard fasteners used

## RECOMMENDED APPLICATIONS

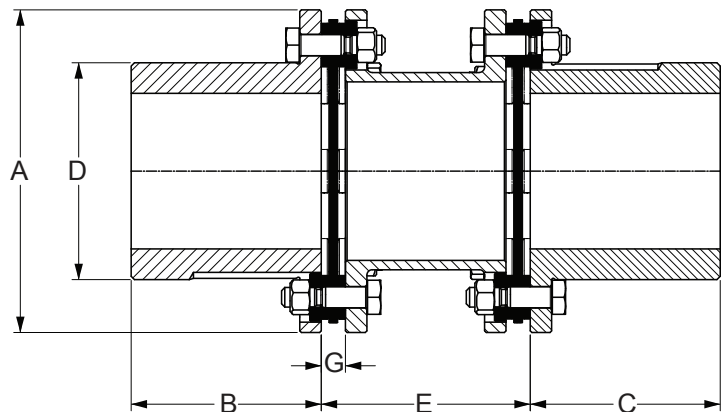
AMERIFLO FD series Flexible Disc Couplings are recommended for all types of industrial process pumps and other machines working at 4000r/min and below.



### NON-SPACER DESIGN



### SPACER DESIGN



FD FLEXIBLE DISC ENGINEERING DETAILS

COUPLING MODEL	CONTINUOUS TORQUE RATING	PEAK TORQUE RATING	MOMENTORY TORQUE LIMIT	MAXIMUM SPEED	TIGHTENING TORQUE	WEIGHT OF TOTAL COUPLING	CENTER OF GRAVITY (FROM COUPLING END)	TORSIONAL STIFFNESS $K_r$	MOMENT OF INERTIA
	N-M [LB-FT]	N-M [LB-FT]	N-M [LB-FT]	RPM	N-M [LB-FT]	KG [LB]	MM [IN]	MN-M/RAD [MLB-FT/RAD]	KGM <sup>2</sup> [LBFT <sup>2</sup> ]
FD4-4	40 [30]	140 [104]	300 [222]	4000	6 [4]	2.1 [4.6]	38.1 [1.50]	0.021 [15.49]	0.0015 [0.036]
FD4-6	63 [47]	200 [148]	400 [296]		6 [4]	3.2 [7.1]	49.7 [1.96]	0.024 [17.70]	0.0028 [0.067]
FD4-14	140 [104]	400 [296]	700 [518]		7 [5]	4.7 [10.4]	66.4 [2.62]	0.034 [25.10]	0.0050 [0.119]
FD4-22	200 [148]	630 [466]	1500 [1110]		11 [8]	7.5 [16.5]	66.8 [2.63]	0.035 [25.81]	0.0122 [0.290]
FD4-44	400 [296]	1000 [740]	1750 [1295]		14 [10]	9.3 [20.5]	80.0 [3.15]	0.055 [40.57]	0.0197 [0.468]
FD4-112	1000 [740]	2000 [1480]	3100 [2294]		30 [22]	13.9 [30.6]	84.2 [3.31]	0.086 [63.43]	0.0353 [0.838]
FD4-142	1400 [1036]	3553 [2629]	5300 [3922]		55 [41]	22.4 [49.4]	84.6 [3.33]	0.209 [154.2]	0.0813 [1.931]
FD4-220	2000 [1480]	6300 [4662]	10000 [7400]		92 [68]	31.2 [68.9]	106.1 [4.18]	0.290 [213.9]	0.1441 [3.423]



COUPLING MODEL	SPACER			ANGULAR MISALIGNMENT		AXIAL DISPLACEMENT	
	WEIGHT	TORSIONAL STIFFNESS $\Delta K_r$	INERTIA	MAXIMUM	RESTORING MOMENT	MAXIMUM	AXIAL FORCE
	KG [LB]	MN-M/RAD [LB-FT/RAD]	KGM <sup>2</sup> [LBFT <sup>2</sup> ]	MAXIMUM DEGREES	N-M/DEG [LB-FT/DEG]	±MM [±IN]	N [LBF]
FD4-4	4.05 [8.93]	0.014 [10.33]	0.0014 [0.033]	1	15.4 [11.4]	2.0 [0.078]	185 [41.6]
FD4-6	4.72 [10.4]	0.022 [16.23]	0.0022 [0.052]	1	19.4 [14.4]	2.5 [0.098]	215 [48.3]
FD4-14	5.72 [12.6]	0.039 [28.76]	0.0038 [0.090]	1	22.9 [16.9]	2.8 [0.110]	315 [70.8]
FD4-22	8.61 [19.0]	0.089 [65.64]	0.0087 [0.207]	1	15.0 [11.1]	3.4 [0.134]	290 [65.2]
FD4-44	9.97 [22.0]	0.138 [101.8]	0.0135 [0.321]	1	20.5 [15.2]	3.9 [0.154]	515 [116]
FD4-112	11.2 [24.7]	0.195 [143.8]	0.0191 [0.454]	1	25.2 [18.9]	4.0 [0.158]	700 [157]
FD4-142	13.8 [30.4]	0.362 [267.0]	0.0356 [0.846]	1	37.9 [28.0]	5.9 [0.232]	1630 [366]
FD4-220	13.8 [30.4]	0.362 [267.0]	0.0356 [0.846]	1	44.8 [33.2]	6.4 [0.252]	2150 [483]

● In the above chart the total mass, centre of mass, torsional stiffness and moment of inertia are calculated according to maximum allowable shaft diameter and minimum standard distance between flange mating faces F, where the torsional stiffness is taken in 1/2 shaft penetration. For other sizes of shaft diameter or other distances between flange mating faces, above mentioned parameters should be calculated or corrected separately.

● Single disc pack design can not compensate for radial misalignment and it's axial misalignment value is only half of the data in the table. If necessary, please consult Ameriflo sales engineer for assistance.

**FD FLEXIBLE DISC DIMENSIONAL DETAIL**

COUPLING MODEL	FLANGE DIAMETER (A)	HUB DIAMETER (C)	ALLOWABLE SHAFT DIAMETER (D)	HUB LENGTH (E)	SPACER DISTANCE (F)							DISC PACK THICKNESS (G)
	MM [IN]	MM [IN]	MM [IN]	MM [IN]	MM [IN]							MM [IN]
FD4-4	48 [1.88]	28 [1.10]	42 [1.65]	SEE TABLE BELOW	100 [4.000]	140 [5.500]						7.2 [0.28]
FD4-6	90 [3.54]	38 [1.50]	54 [2.13]		100 [4.000]	140 [5.500]	180 [7.000]					7.2 [0.28]
FD4-14	100 [3.93]	42 [1.65]	61 [2.40]		100 [4.000]	140 [5.500]	180 [7.000]					8.4 [0.33]
FD4-22	120 [4.72]	55 [2.17]	78 [3.07]		100 [4.000]	140 [5.500]	180 [7.000]	200 [7.875]				9.5 [0.37]
FD4-44	130 [5.12]	60 [2.36]	88 [3.46]		100 [4.000]	140 [5.500]	180 [7.000]	200 [7.875]				10.7 [0.42]
FD4-112	146 [5.74]	70 [2.76]	98 [3.86]			140 [5.500]	180 [7.000]	200 [7.875]	250 [9.875]			11.1 [0.44]
FD4-142	176 [6.93]	75 [2.95]	114 [4.49]				180 [7.000]	200 [7.875]	250 [9.875]			13.6 [0.54]
FD4-220	196 [7.72]	90 [3.54]	126 [4.96]				180 [7.000]	200 [7.875]	250 [9.875]	280 [11.000]	300 [11.875]	15.2 [0.60]

**STANDARD HUB LENGTH**

SHAFT DIAMETER	HUB LENGTH (E)	FD4-4	FD4-6	FD4-14	FD4-22	FD4-44	FD4-112	FD4-142	FD4-220
19 [0.750]	25 [1.000]	●	●	●	-	-	-	-	-
24 [0.938]	35 [1.375]	●	●	●	●	●	-	-	-
28 [1.125]	50 [2.000]	●	●	●	●	●	-	-	-
32 [1.250]	50 [2.000]	-	●	●	●	●	●	-	-
38 [1.500]	50 [2.000]	-	●	●	●	●	-	-	-
42 [1.625]	70 [2.750]	-	-	●	●	●	●	●	●
48 [1.875]	80 [3.125]	-	-	-	●	●	●	●	●
55 [2.188]	80 [3.125]	-	-	-	●	●	●	●	●
60 [2.375]	80 [3.125]	-	-	-	-	●	●	●	●
65 [2.500]	100 [4.000]	-	-	-	-	-	●	●	●
70 [2.750]	100 [4.000]	-	-	-	-	-	●	●	●
75 [2.938]	100 [4.000]	-	-	-	-	-	-	●	●
80 [3.125]	100 [4.000]	-	-	-	-	-	-	-	●
85 [3.375]	100 [4.000]	-	-	-	-	-	-	-	●
90 [3.500]	100 [4.000]	-	-	-	-	-	-	-	●

● "●" Standard hub is available, "-" No standard hub supply.

● The bore tolerance of a standard hub is H7 or F7.

● Slight clearance fit is recommended for hub-shaft connection, standard hub has a set screw on the top of the keyway to fix it on the shaft

● The keyway dimensions and tolerances conform with national dimensional standards (the keyway width tolerance is Js9.)

# —AMERIFLO—

## COUPLING SELECTION PROCEDURE

SECTION **9000** PAGE **4** OF **4**  
DATE **APRIL 2021**

AMERIFLO FD series is prepared for medium and low speed applications with working speed not exceeding 4000r/min. If a higher speed is needed, please contact Ameriflo engineering support. It is recommended to select a disc coupling jointly by both supply and demand sides. Whenever you have questions during the selection process, please contact Ameriflo engineering support.

1. According to the type of driving and driven machines and operation conditions, select a service factor K from the service factor table below.

2. Determine coupling calculation power rating  $P_c$

$$P_c = P \times K$$

Where:  $P_c$  -- calculation power (Kw); P -- transmitting power (Kw). Ameriflo recommends that P is calculated according to the power value of the driving machine; K -- service factor

3. Calculate transmitting torque of the coupling T

$$T = 9549 \times P_c / n$$

Where: T -- torque (N.m); n -- rated or normal working speed (r/min)

4. According to the principle  $T \leq$  Continuous torque rating, make a tentative choice of coupling type from the table

5. Select a suitable distance between flange ends from the table

6. Check the operating conditions

a. Check up peak torque rating and momentary torque limits with the requirements of the machines. For machines starting frequently and those with high start-up shock loads, the starting torque should be checked. For machines equipped with brake apparatus, the braking torque should be checked. For power generation packages or machines driven by synchronous motors, the transient torque associated with generator short-circuit torque or the cyclic torque associated with synchronous motor start-up should be checked. If necessary, select the types with higher parameter values or select other coupling series.

b. Check up the coupling type selected with the requirement for maximum allowable shaft diameter. If necessary, select the types with higher parameter values or select other coupling series.

c. Check up the capacity to accommodate axial displacement and angular misalignment of the coupling selected with requirements of the machines. If necessary, select the types with higher parameter values or select other coupling series. For machines with larger thermal expansion the coupling may be processed by cold prestretching so that the coupling works in a small deformation state when the machines are thermally balanced in operation.

## COUPLING SERVICE FACTORS

DUTY	DRIVEN MACHINE	DRIVING MACHINE		
		ELECTRIC MOTOR, STEAM OR GAS TURBINE	STEAM ENGINE OR WATER TURBINE	INTERNAL COMBUSTION ENGINE
CONSTANT TORQUE	CENTRIFUGSL PUMPS, LIGHT CONVERORS, ALTERNATORS, LIGHT FANS	1.0 ①	1.5	3.0
SLIGHT TORQUE FLUCTUATIONS	MACHINE TOOLS, SCREW COMPRESSOR, SCREW PUMPS, LIQUID RING COMPRESSORS, ROTARY DRYERS	1.5	2.0	3.0
SUBSTANTIAL TORQUE FLUCTUATIONS	RECIPROCATING PUMPS, LOW VISCOSITY MIXERS, CRANES, WINCHES	2.0	2.5	4.0
EXTREMELY HIGH TORQUE FLUCTUATIONS	ROTARY PRESSES, RECIPROCATING COMPRESSORS, HIGH VISCOSITY MIXERS, MARINE PROPELLERS	3.0	3.5	5.0

① For gear box applications the value of the service factor 1.25 may be adopted, for direct electric motor start-up service factor is 1.5 according to the requirements in API 671. When needed, the service factor value may be increased or decreased following the relative rules in API 671 (4th edition) chapter 6. If the customer can not find the corresponding types of driving or driven machines recommended in the table, please select the service factors from AGMA 514.02 or consult with Ameriflo engineering support.