Kraft Power is the North America Master Distributor for Transfluid Power Transmission & Associated Equipment.
Constant Fill Fluid Couplings
A fluid coupling is a hydrokinetic transmission that performs like a centrifugal pump and a hydraulic turbine.
What makes up a Fluid Coupling?

It’s comprised of three main components:

Driving Impeller – input shaft (Pump)

Driven Impeller – output shaft (Turbine)

Housing

There’s an option for a delay chamber for longer start time.
How does a Fluid Coupling work?

The input drive (e.g. electric motor or Diesel engine) is connected to the pump/impeller.

Mechanical energy is conveyed via the pump/impeller to the oil in the coupling.

The oil moves by centrifugal force across the blades of the turbine towards the outside of the coupling.

The turbine absorbs the kinetic energy and develops a torque which is always equal to input torque, thus causing rotation of the output shaft.

The wear is practically zero since there are no mechanical connections. The efficiency is influenced only by the speed difference (slip) between pump and turbine, i.e. Fluid Level.

\[
slip \% = \left( \frac{\text{input speed} - \text{out speed}}{\text{input speed}} \right) \times 100
\]
Relationship between Torque and Current

Across the Line Starter

- Torque Curve
- Current Draw
- % of Motor Torque
- % of Motor Current
- % of Motor Speed
- RPM

Motor reaches efficiency
Current Draw with and without a Fluid Coupling Across the Line Starter

Motor reaches efficiency
Torque Curve with and without a Fluid Coupling
Across the Line Starter

% of Motor Speed

% of Torque

S=100%
S=2-5%

A
B
C

Motor

Fig. 3
Delay Fill Chamber Advantages

- Improved start up time
- Higher torque limitation
- Lower current peaks
- Better fluid cooling because of bigger surface to dissipate the generated heat

Three delay chamber types

- K design without delay chamber
- CK design with single delay chamber
- CCK design with double delay chamber
Mm = Starting Torque of the Electric Motor

MI = Transmitted Torque from Fluid Coupling

Mn = Nominal Torque at Fluid Load

…… Accelerating Torque
Key factors are **Starting torque** and **speed control** are key subjects in modern **process designs**. A good drive should meet the following requirements:

- Allows the use of regular squirrel-cage motors
- Unloaded motor starting
- Load sharing with multiple drives, staggered motors start-up
- Torque limitation during acceleration
- Smooth increase of starting torque up to process “break away”
- Easy handling and compact design
- Low wear and maintenance
Electronics must be installed in a controlled environment and are susceptible to environmental conditions.

Electronic devices react to power supplied, over/under voltage, lightening, blackout and harmonics.

Electronic devices usually require specially wound motors.

Electronic devices have a manufacturing life cycle of 7 years, 7 years for parts.

Electronic devices are extremely difficult to repair and require highly priced technician to repair.

Drives designed with electronics, rigid and unforgiving to jams and shocks.

Fluid Couplings excel in dirt, hot, humid, wet and dusty locations.

Fluid Couplings are independent, they are unaffected by power supplied.

Fluid Couplings will use any motor.

Fluid Couplings have barely changed in the past fifty years.

Fluid Couplings are simple to repair and it can be done at most well equipped shops.

The super elastic effect of a fluid coupling prevents equipment damage from shocks, jams and overload.
Very smooth start-ups

Reduction of motor current absorptions during the starting phase: the motor starts with low load.

Protection of the drive line from jams, overloads and vibrations increasing the drive-line life.

Use asynchronous squirrel cage motors instead of special motors for soft-starter or inverter devices.

Limited starting torque even below electric motor nominal torque.

Possibility to achieve a high number of starts.

Load balancing with multiple motor drive: fluid couplings easily adjust load speed to the motor speed.

High efficiency, Minimum maintenance

Load balancing in case of a multiple motor drive: fluid couplings easily adjust load speed to the motor speed
Fluid Couplings
Mounting Configurations

V-Belt “Vertical & Horizontal”

Chain – “C” Face – Direct Mount
“Vertical & Horizontal”
Fluid Couplings Configurations

- KR
- KRG
- KRD
- EK
- KCM
- KCG
- KDM
- KSD-QD
- KSD
- KSI
- KSDF
What do we need to size the Fluid Coupling?

The minimum is
• Horse Power
• RPM
• Application

Better with
• Locked Rotor Amp
• Locked Rotor Torque
• Full Load Torque

Best with
• All the above information
• Manufacturer
• Part Number

### Fluid Couplings Sizing Chart

| MOTOR | SHAFT DIA | HP | COUPLING | HP | COUPLING | HP | COUPLING | HP | COUPLING |
|-------|-----------|----|----------|----|----------|----|----------|----|----------|----|----------|
| 143T  | 22.279    | 1.5| 6 K      | 1  | 6 K      | 0.75| 7 K      | 0.5| 7 K      |
| 145T  | 22.279    | 2  | 6 K      | 1.5| 7 K      | 1   | 8 K      | 1   | 8 K      |
| 182T  | 29.575    | 3  | 7 K      | 3  | 8 K      | 1.5 | 9 K      | 1.5 | 9 K      |
| 184T  | 29.575    | 5  | 7 K      | 5  | 9 K      | 2   | 9 K      | 2   | 9 K      |
| 213T  | 34.925    | 7.5| 8 K      | 7.5| 8 K      | 3   | 11 K     | 3   | 11 K     |
| 215T  | 34.925    | 10 | 10       | 10  | 12 K     | 5   | 12 K     | 5   | 12 K     |
| 254   | 41.578    | 15 | 9 K      | 15  | 12 K     | 7.5 | 13 K     | 7.5 | 13 K     |
| 256T  | 41.578    | 20 | 10       | 20  | 13 K     | 10  | 14 K     | 10  | 14 K     |
| 284T  | 47.625    | 30 | 9 K      | 30  | 13 K     | 15  | 15 K     | 15  | 15 K     |
| 284TS | 47.625    | 40 | 12 K     | 40  | 13 K     | 20  | 17 K     | 20  | 17 K     |
| 286T  | 47.625    | -  | -        | -   | -        | -   | -        | -   | -        |
| 286TS | 47.625    | -  | -        | -   | -        | -   | -        | -   | -        |
| 324T  | 53.975    | 50 | 9 K      | 50  | 15 K     | 50  | 17 K     | 50  | 17 K     |
| 324TS | 53.975    | -  | -        | -   | -        | -   | -        | -   | -        |
| 364T  | 60.325    | -  | -        | -   | -        | -   | -        | -   | -        |
| 365T  | 60.325    | -  | -        | -   | -        | -   | -        | -   | -        |
| 404T  | 73.027    | -  | -        | -   | -        | -   | -        | -   | -        |
| 405T  | 73.027    | -  | -        | -   | -        | -   | -        | -   | -        |
| 444T  | 85.725    | -  | -        | -   | -        | -   | -        | -   | -        |

### Power Levels
- 3600 rpm
- 1800 rpm
- 1200 rpm
- 900 rpm
For normal operating conditions, use only **ISO HM32 Hydraulic** (or the equivalent **SAE 10W non-detergent motor oil**). At low ambient temperatures (32°F/0°C), it is recommended to use **ISO FD 10** (or equivalent **SAE 5W**) oil.
Various types of Fluid Couplings

**KX SERIES**

KX has a fusible plug that in case of intervention, releases the oil from the working circuit to a tank preventing oil leakage into the ambient.

The bearings are greased for life and additionally protected by two double seals.

Instead of oil, the coupling can work using treated water upon request - **Water/glycole** mixture.

KX fluid couplings with ATEX rules for gas and dust explosion protection.
Transfluid designed the KTB series variable fill fluid coupling to overcome difficulties experienced during ‘start up’ and ‘speed variation’ operation for medium or high powered machines, driven by electric motors or internal combustion engines.
KSL
Variable Fill Fluid Coupling

Transfluid designed the KSL series variable fill fluid coupling to overcome difficulties experienced during ‘start up’ and ‘speed variation’ operation for medium or high powered machines, driven by electric motors or internal combustion engines.
SKF FLUID COUPLING
FOR INTERNAL COMBUSTION ENGINES
UP 180HP

KPT FLUID COUPLING
FOR INTERNAL COMBUSTION ENGINES
UP 1,500HP
REMOTE START & STOPS
Other Transfluid Products
Distributed by Kraft Power Corporation

Hydraulic or Air Actuated Power Take-off
Powers up to 1,100 HP
Remote engagement

Multi Pump Drive
Designed to “sandwich” between and engine and a
PTO or Transmission, SAE standard
Drives Pulleys, Pumps, ETC

RBD Elastic Coupling
Designed for use with industrial engines in
stationary applications such as generators, pumps,
and compressor sets.
For more info:

Call us at 800-394-0078

or email us at gainfo@kraftpower.com

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