

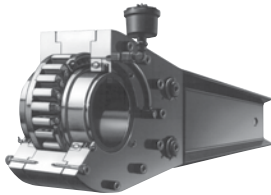
A wide range of styles and sizes to choose from...

General & Special Purpose Clutches



- Ball Bearing Supported
- Sleeve Bearing Supported
- Bearing Envelope Design
- Not Self-supporting

Backstopping Clutches



- Holdback
- Detachable Torque Arm
- Integral Torque Arm
- Bi-directional

Modular Clutch Components



Building Block System

- Clutches
- Flanges
- Covers

Clutch Couplings



- Overrunning Clutches
- Couplings

While the wide range of sizes and capabilities covered by this catalog will cover substantially all industrial needs, it is sometimes necessary to design and manufacture clutches to meet specialized requirements.

Formsprag's and Stieber's years of research and development in this specialized field are at your service to help solve all special overrunning clutch applications. In many cases a standard clutch can be adapted to a special use. You can be sure of a clutch that will meet your exact requirements simply by supplying complete application data to your local Altra Industrial Motion sales representative.

Clutch Functions and Applications	2
Overrunning Clutch Designs	4
Principles of Operation	6
Selection	8
Models:	14
AL/ALM	92
AL..F2D2, AL..F4D2; ALM..F2D2, ALM..F4D2	94
ALP..F7D7, ALPM..F7D7	96
AL..KEED2, ALM..KEED2	110
AS	34
ASK	30
ASNU	36
Building Block System	90
CDU	54
CSK, CSK..2RS	26
CSK..P, CSK..PP	28
DC	40
FHB	84
FRB	18
FS 02, 04, 05	22
FS 20 and 50	38
FS 100, 200 and 300	46
FS/FSO/HPI	16
FSA	20
FSD/HBG	52
FSO/HPI	14
FSR	24
FW/FWW	114
GFK	32
GFR/GFRN	98
GFR..F1F2, GFR..F2F7, GFRN..F5F6	100
GFR..F2F3, GFR..F3F4	102
HFB/VFB	88
HPO	48
HSB	64
LCB	86
LLH	68, 74
RIZ/RINZ	104
RIZ, RINZ..G1G2, G2G7, G5G5	106
RIZ..ELG2	112
RIZ..G2G3, G3G4	108
RL	58
RSCI	42
RSBW	62
SB/SBI	50
Accessories	122
Stieber Interchange Chart	127
Cross-Reference Part Numbers	127
Engineering Data	128
Application Data Form	135
Conversion Factors	136
Rebuild and Overhaul Service	137



Clutch Functions and Applications

All Formsprag/Stieber clutches described in this catalog are “overrunning” clutches, i.e., they will drive in one direction but overrun (freewheel) in the other direction. The preparation of a catalog such as this can be undertaken only by a company having very broad experience in all aspects of the use and application of overrunning clutches.

Formsprag/Stieber is such a company, and the information given in this catalog

is based on the accumulation of many years of experience in the design, construction and application of overrunning clutches. In physical appearance, the Formsprag/Stieber catalog overrunning clutches are all very much alike. However, different types of applications will involve differing load characteristics and will call for variations in the technical details of clutch construction. For this reason the clutches

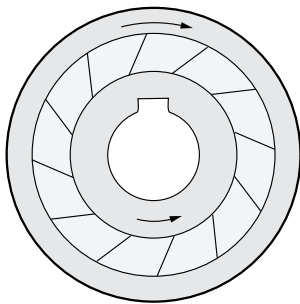
are divided into three basic types of applications for which they are intended.

The three basic applications are:

- **Overrunning**
- **Indexing**
- **Holdbacks or Backstops**

These three categories are described in greater detail under those headings in this catalog.

Overrunning clutch



This class of applications is typified by standby and compound drives. For example, a steam turbine and a standby electric motor may be connected to a single driven shaft through overrunning clutches. The shaft can then be driven by either the turbine or the motor or both with no further modification of the installation. The turbine drive clutch automatically engages when the turbine starts to drive, but automatically overruns when the load is transferred to the electric motor.

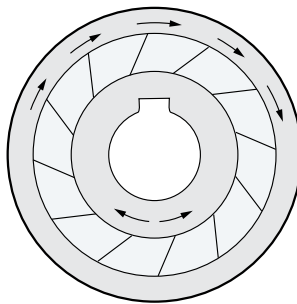
Considerations

- Type of motor
- Max starting torque
- Internal combustion engines, please consult Formsprag
- Nominal driving torque
- Range of driving speed
- Inertia (WR^2) of the driven masses
- Range of overrunning speed
- Number of starts during service life
- Shaft diameter

Applications

- Dual motor/engine drives
- Conveyor belts
- Creep and starter drives
- Disengagement of centrifugal masses

Indexing clutch



In this type of application, reciprocating motion applied to the driving race is transformed into intermittent motion in only one direction at the driven race. For example, if a pinion is connected to the driving race, a rack meshing with the pinion can give reciprocating motion to the driving race. The clutch will then advance or “index” the work (driven race) on each forward stroke of the rack, but will not return or back-up on the return stroke of the rack.

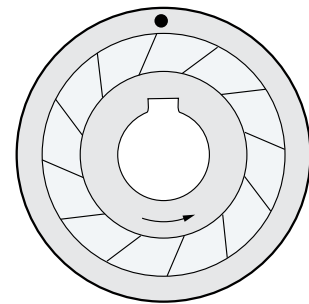
Considerations

- Number of cycles/min
- Index angle
- Nominal torque
- Inertia (WR^2) of the driven masses
- Accelerations of the driving member
- Number of indexes during service life
- Shaft diameter

Applications

- Metal stamping
- Pressworking
- Packing machines
- Indexing tables
- Assembling machines
- Printing machines

Backstopping clutch



In backstopping or holdback* applications, one race is always fixed to a stationary ground member. The function of the clutch is to permit rotation of the mechanism, connected to the other race, in one direction only, and to prevent any rotation in the reverse direction at all times. Although the clutch normally overruns most of the time, it is referred to as a holdback or backstop in conveyors, gear reducers and similar equipment because its function is to prevent reverse rotation.

**“Holdback” is a name given to a backstop clutch when mounted on an inclined conveyor head shaft.*

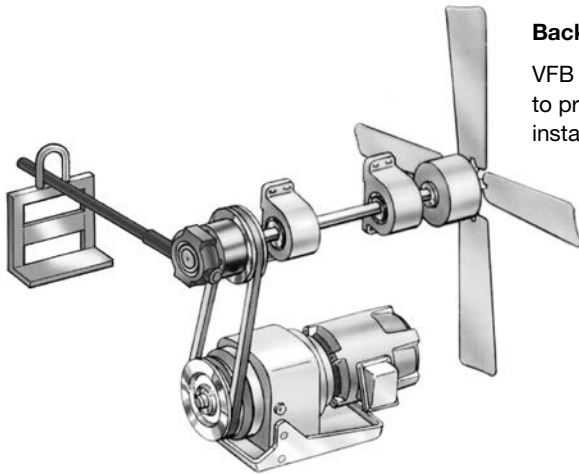
Considerations

- Motor breakdown torque
- Maximum dynamic reverse torque due to elasticity of the locked parts: elastic belts, shafts of more than 9 feet (3 meters) long
- Range of overrunning speed
- Number of torque applications during service life
- Shaft diameter

Applications

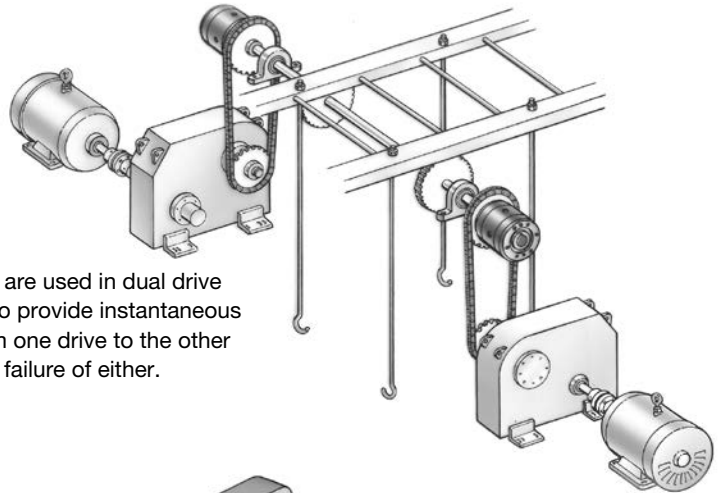
- Inclined conveyors
- Escalators
- Pumps
- Gear drives
- Fans

Clutch Functions and Applications



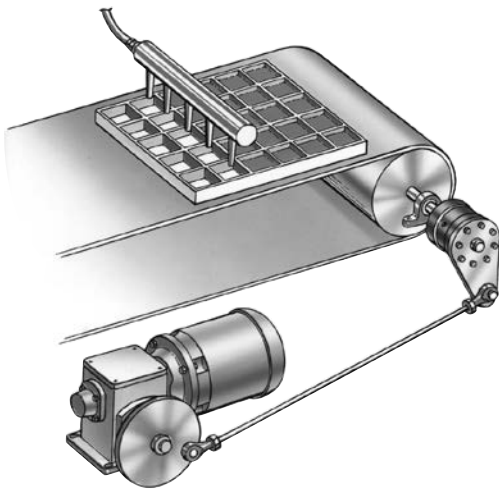
Backstopping

VFB & HFB models provide automatic backstopping for fans to prevent wind milling when the fan is turned off, actuates instantaneously to prevent any reverse rotation.



Dual Drive

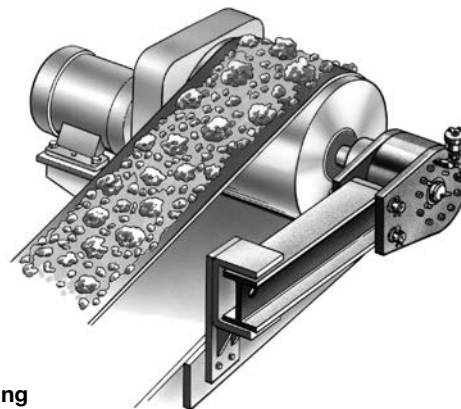
FSO clutches are used in dual drive applications to provide instantaneous clutching from one drive to the other in case of the failure of either.



Indexing

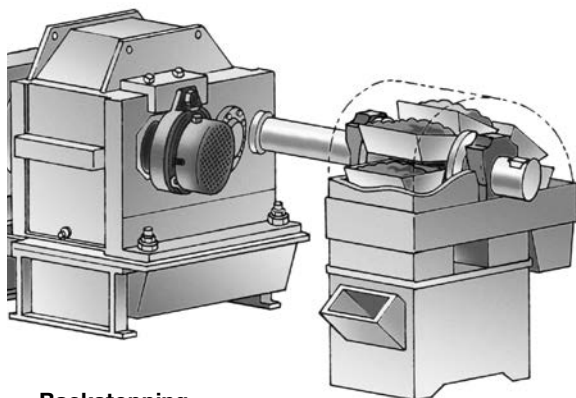
Indexing clutches are used to convert reciprocating linear motion to incremental rotary motion for conveyor or material feed applications.

Clutch Models: HPI, AL



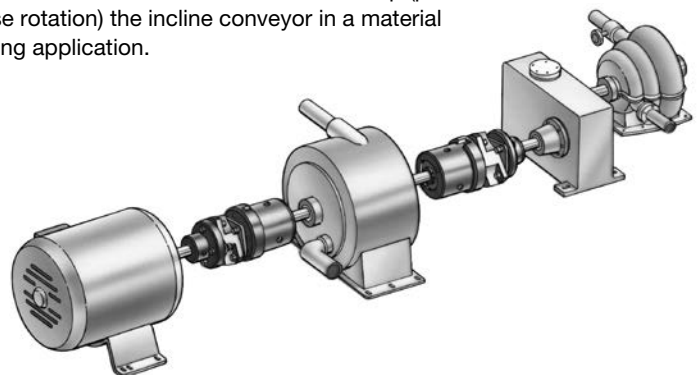
Backstopping

The LLH Holdback clutch is used to backstop (prevent reverse rotation) the incline conveyor in a material handling application.



Backstopping

FHB backstops are mounted on the double extended input shaft of gear reducers and provide instantaneous automatic backstopping to the drive system for typically inclined conveyors and bucket elevator applications.



Clutch-Couplings

Clutch Couplings are used for dual drive of a pump or fan, and when there is a need to connect inline shafts. The clutch coupling prevents backdriving of the other drive source when operating at motor speeds. Clutch couplings allow for the transition from one drive source to another without controls.

Clutch Models: FW, FWW, ALKMS, RIZEL, AL..KMSD2, RIZ..ELG2