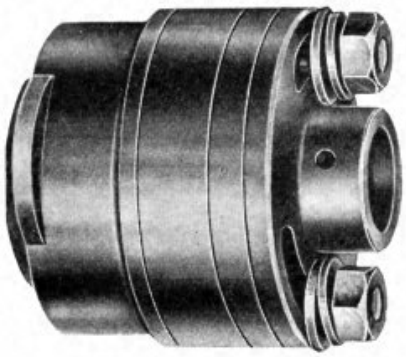
AMERICAN BOSCH
PRODUCTS

REPAIR INSTRUCTIONS FOR AMERICAN BOSCH ADJUSTABLE IMPULSE COUPLING

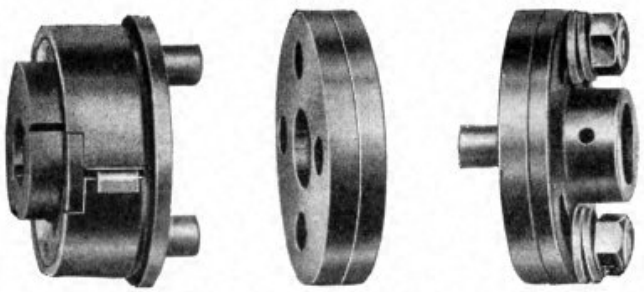
Type IC-100 Series

TRADE MARK AMERICAN BOSCH



Type IC Coupling

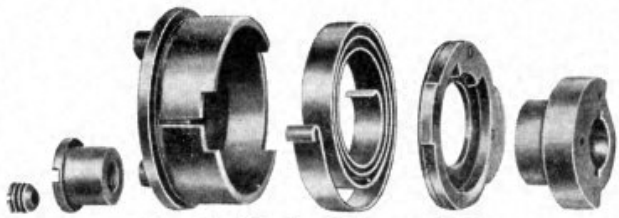
The American Bosch Adjustable Impulse Coupling was developed to facilitate the starting of one and two cylinder gas engines of the farm and marine type without the aid of an auxiliary battery system. It is a spring device which, fitted to the magneto, will give the armature a short quick turn when the engine is cranked, automatically disengaging when the engine attains a speed of 100 to 120 revolutions per minute.



Type IC-100 Coupling Partly Disassembled

This coupling which is applicable to the standard smaller type of American Bosch Magnetos, such as ZE, BA, FB and FX, is very simple and compact. It consists of but three main parts: the impulse member, the driving disc and the adjustable driving member.

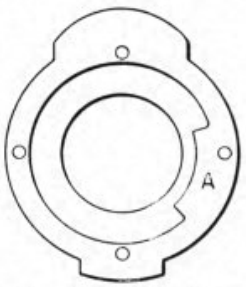
As shown in the illustration, the impulse member consists of a hardened steel housing which is fastened directly to the magneto shaft. Inside of the housing are a spring, coupling hub, cam, and a round slotted nut.



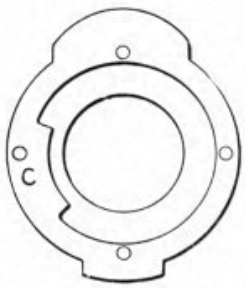
Impulse Member Disassembled

A spring made of highly tempered steel acts as a connecting link between the housing and magneto shaft. One end of the spring is fastened to the outer edge of the housing, the other end is anchored in the coupling hub which is keyed to the magneto shaft and held in place by a round slotted nut and set screw.

The cam serves as a cover for the housing and lifts the arrester weight attached to the magneto end plate at the proper instant, thus releasing the spring.



Cam for Anticlockwise Rotation



Cam for Clockwise Rotation

It is possible to set the coupling for either clockwise or anticlockwise rotation, all parts being reversible except the cam. Cams marked "A" denote anticlockwise, and cams marked "C" denote clockwise rotation. The coupling hub is furnished with two keyways marked "A" and "C" for anticlockwise or clockwise rotation respectively.

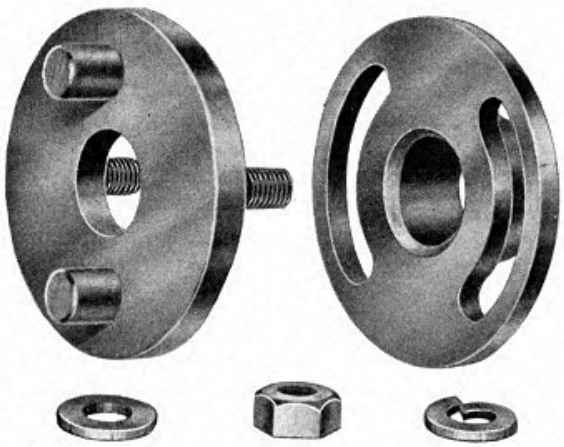
When the engine is cranked, the impulse coupling is in its normal position, the notched face of the coupling hub resting against the arrester weight, thus holding the magneto shaft stationary. As the engine is turned further, the driving flange revolves and winds up the spring. At a fixed point the cam lifts the arrester weight, releasing the spring and gives the magneto armature a quick turn. This causes the magneto to deliver an intense spark in the cylinder then under compression and starts the engine. It does not matter how slowly the engine is cranked, the same intensity of spark is always available. The disengagement of the

arrester weight is automatic. If, however, the engine fails to start at the first release of the impulse movement, it is necessary to throw the stop weight back into engagement with the coupling hub and repeat the operation.

Do Not Engage Arrester Weight While the Engine is Running

When the American Bosch Impulse Coupling is used to start the engine, it is absolutely impossible for the engine to back-fire, because the adjustment is such that, when cranking, the spark occurs only after the piston has passed top dead center position.

The adjustable driving member is made of hardened steel throughout and consists of two main parts, namely: the studded flange and the driving hub. The



Adjustable Flange Disassembled

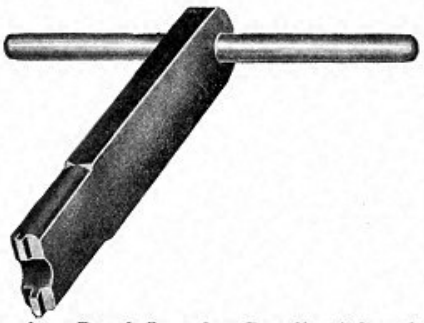
inner face of the studded flange carries two studs which fit into the holes of the leather driving disc. The outer surface is provided with two threaded studs which fit into elongated openings in the driving hub. The two parts are held together by means of the two threaded studs engaging the openings provided in the driving flange. Plain washers, lockwashers and locknuts are provided to insure an absolutely firm, tight union at all times. The construction of the two parts readily permits fractional adjustment of advance or retard when timing the magneto.

The driving hub is fastened to the shaft of the engine which drives the magneto by means of a pin and is available in 5/8" size only.

Care and Maintenance

The American Bosch Adjustable Impulse Couplings are thoroughly tested before leaving the factory and require no attention. All parts are of case hardened steel and there is practically no wear under proper operation.

The only tools necessary with the American Bosch Adjustable Impulse Coupling are a small screw driver to remove the set screw, a wrench of any description for unfastening the nuts of the adjustable member, and the American Bosch Impulse Coupling wrench to unscrew the round slotted nut which holds the impulse member to the magneto shaft.

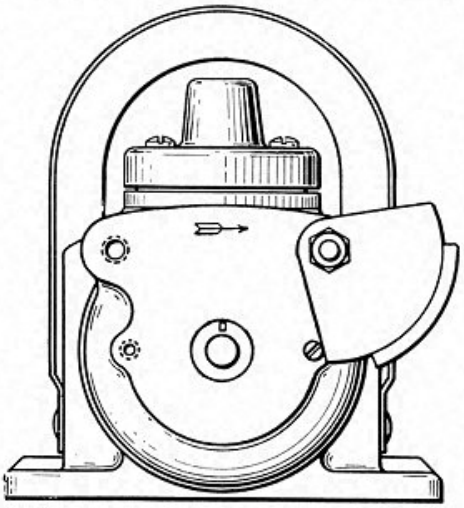


American Bosch Impulse Coupling Wrench

It is very easy to disassemble the impulse member of the American Bosch Adjustable Impulse Coupling. Take the coupling off the magneto shaft by removing the set screw and the round slotted nut on the end of the magneto shaft, then pull the entire impulse member off. Hold cam firmly in place and knock out coupling hub with screw-driver, working from studded face of impulse housing. Next lift cam off and take spring out.

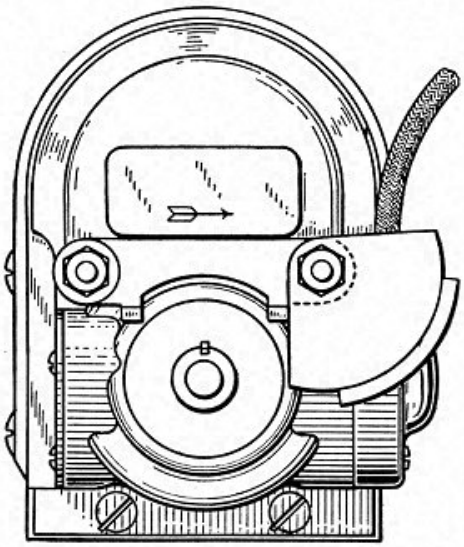
Installation

The American Bosch Adjustable Impulse Coupling can be made to work in either direction of rotation by using the proper cam. Therefore, before installing the coupling on an American Bosch Magneto it is necessary to determine the rotation of the magneto. This is shown by the arrow engraved on the face of the driving end of magneto just above tapered drive shaft.



Type F Magneto with arrester Weight Set for Clockwise Rotation

On type "F" magnetos simply insert the stud furnished in the proper threaded hole (right hand side for clockwise and left hand side for anticlockwise rotation). Mount arrester weight and fasten it with washers and nut. Insert arrester weight pin in hole provided.

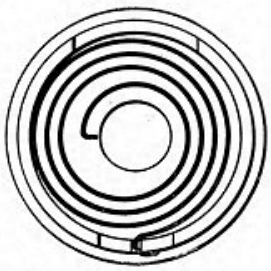


Type BA Magneto with Arrester Weight Set for Clockwise Rotation

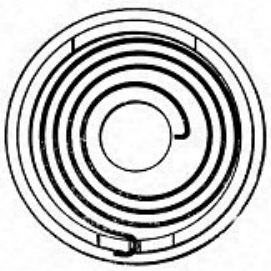
On type "BA" magnetos remove upper two end-plate fastening screws on drive end and insert the two studs furnished. The long stud always carries the arrester weight and bushing. Mount the strap across the two studs and assemble arrester weight over bushing on long stud (right hand side for clockwise and left-hand side for anticlockwise) and put washers and locknuts in place, making whole assembly secure.

Insert spring in housing according to rotation desired. (See cut).

Place cam of proper rotation in housing so that recessed face is out and face of cam flush with the edge of the housing. Now install coupling hub, engaging free end of spring with slot in hub and twisting same into recess provided in cam assembly. The coupling hub has two keyways marked "C" and "A" respectively, which show the proper keyway to be used for clockwise and anticlockwise rotation.



Spring Set for Anticlockwise Rotation



Spring Set for Clockwise Rotation

Mount complete Adjustable Impulse Coupling on magneto shaft, using proper keyway according to magneto rotation, and secure same with slotted nut and set screw. Set the magneto on its bracket but do not tighten the magneto fastening screws.

The adjustable member should then be placed on the drive shaft of the engine and the leather driving disc set between the impulse member and the adjustable driving member. Line up the magneto with the adjustable driving member and fasten the adjustable member to the drive shaft, with pin, then tighten the magneto fastening screws. Loosen the two nuts of the adjustable driving member and you are ready to proceed with the timing of the magneto.

Timing the Magneto

NOTE: See also Page 3002 in American Bosch Service Manual.

Set No. 1 cylinder on top dead center position of the compression stroke and turn the armature in direction of its rotation until the fibre block of the interrupter lever rests against the cam and the contact points start to open.

Connect the terminal with the spark plug of No. 1 cylinder and tighten the two nuts of the adjustable coupling.

On two-cylinder engines determine which brush rests on brass segment of collector ring and connect its terminal to No. 1 cylinder of engine. Connect other terminal to No. 2 cylinder of engine.

When timing a magneto, the timing arm should be in full retard position. When timing the magneto for fixed ignition, the piston of the cylinder should be set approximately 25° before dead center position.

When Ordering

It is profitable to order a magneto with the impulse coupling attached. When ordering the coupling alone be sure to specify:

1—Type of Magneto.
2—Rotation of Magneto.
3—Diameter of driving shaft.

The American Bosch Adjustable Impulse Coupling is for use on American Bosch Magnetos only.