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Crystal Lake, IL
60014
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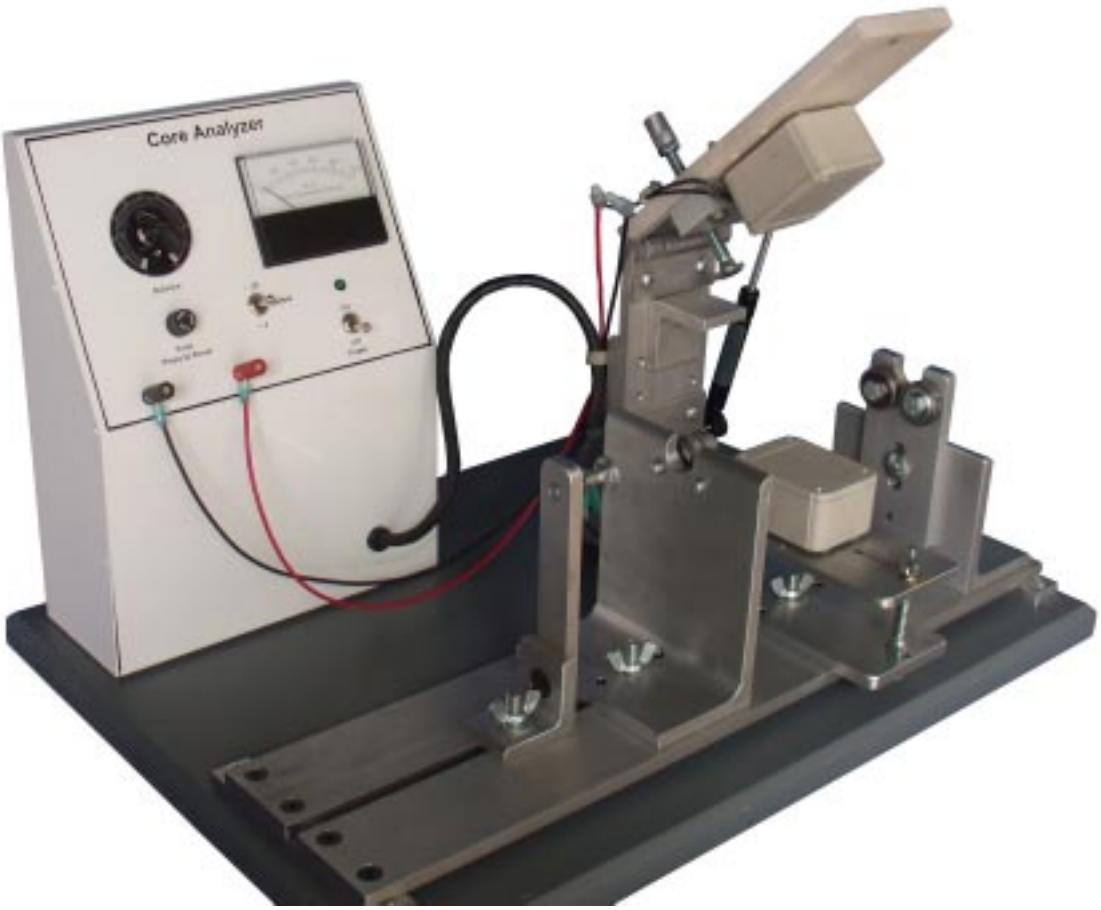
Operation Manual Armature Core Analyzer



K101-0920
Armature Core Analyzer

Why Use The Armature Core Analyzer Before Rewinding?

1 With all the different laminations being used in imported armature today, no one knows the percentage of efficiency the laminations have. With the Armature Core Analyzer the unknown is eliminated allowing a much higher salvage rate and stopping the use of cores that will fail, BEFORE THEY ARE WOUND.

2 Armatures that are burned out in excess of 750 degrees Fahrenheit loose their magnetic efficiency causing higher amps and lower torque. Armature Core Analyzing will eliminate these unknowns.

3 Armatures that have variations in the lamination OD's can produce lower torque and higher amps. Armature Core Analyzing will also eliminate this unknown.

This test will allow you to compare your lamination stack and shaft assemblies' steel magnetic capabilites to OEM material or to your own "in house" generated standard. This tester is designed to give you a constant source of equal magnetic strength lamination stacks and shafts, so that you will know the torque of the armature before you waste the time and money winding an armature that will not pass your final load test for high amps and/or low torque.

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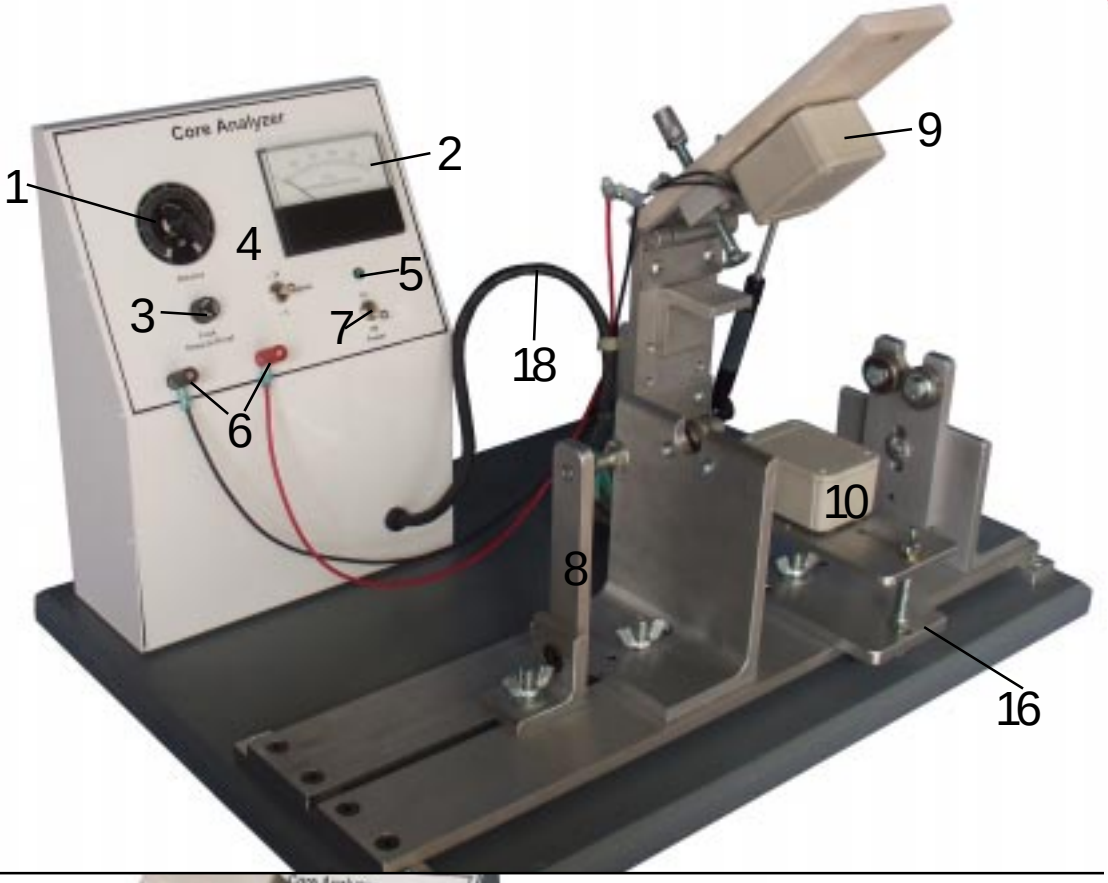

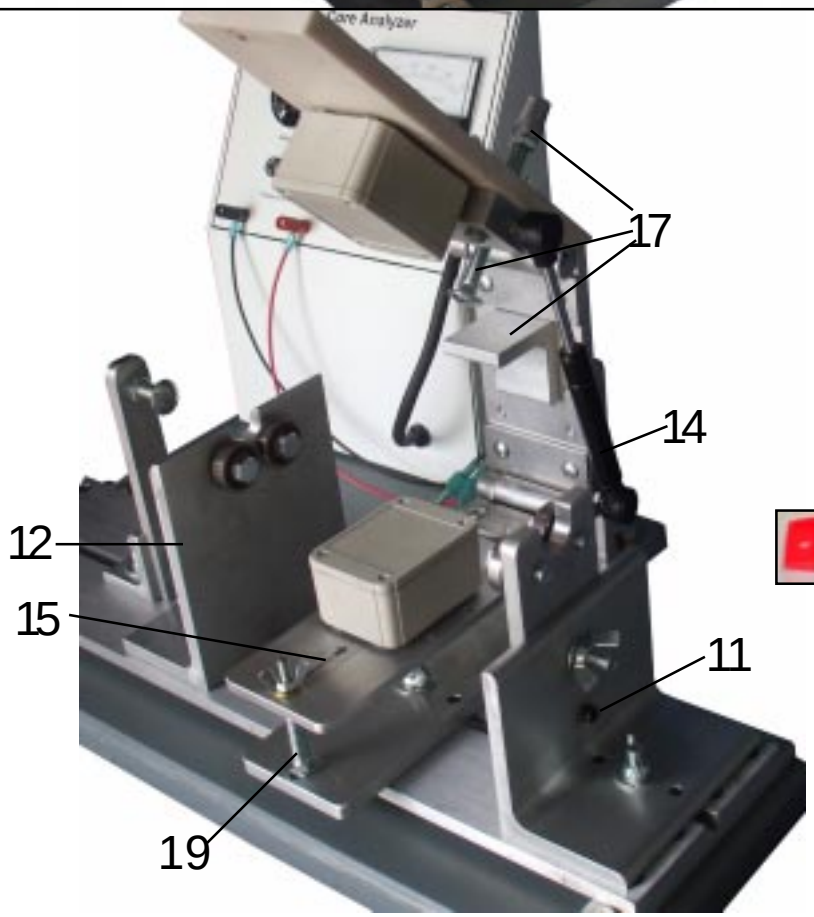

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Components & Functions

(See page 2 for exact locations)

1=Balance Potentiometer:	adjustment control strength indicator meter (2), used to set and calibrate the test standard. Works with (4) Meter Range Switch.
2=Strength Indicator Meter:	gives a comparative reading of magnetic capability based on your standard (PER DIFFERENT ARMATURE SIZE)
3=10 Amp Fuse:	protection for all AC circuits
4=Meter Range Switch:	calibrating switch with 3 position 20, normal & 4. Allows 3 different meter ranges for a wide test range of different armature sizes. Works with (1).
5=Pilot Light:	power on indicator
6=Transmitter Connections:	connections, transmitter leads
7=On/Off Switch:	power control for the analyzer
8=Adj. Shaft Stop Bracket:	insures location of the lamination stack from test to test on the same size armatures
9=Reception Coil Assembly:	receives the signal from the transmitter after going through the lamination stack and shaft. The clearance should be approx. 0.030 or the thickness of a credit card. This is adjusted by (19) height adjustment wing nut assembly on top of (16) movable transmitter and receiver assembly.
10=Transmitting Coil Assembly:	transmits the signal into the lamination stack and shaft. Must be approx. 0.030 or the thickness of a credit card from the lamination stack and centered on the lamination stack. Use with (17) to lock in place.
11=Mounting Brackets (right):	movable brackets for armature location with height adjustment. For same size shafts on both ends use allen head screw in bracket. For shafts with different size shafts remove the screw and use the wing nut for tightening in position.
12=Mounting Bracket (left):	movable bracket with fixed height
13=Power Cord:	incoming AC power can be 110/220, 50/60Hz. 220 Volt cord is not supplied with a plug. Not pictured.
14=Air Shock:	position return device. Moves (9) reception coil, back to it's at rest, up position.
15=Centering Arrow:	reference for lamination stack centering over transmitting coil assembly
16=Transmitter & Receiver Coil Assembly:	movable/adjustable bracket for centering over the lamination stack
17=Bracket:	adjustable bracket for stop on receiver coil. Wing nut adjustment for height setting over the lamination stack. Should be set at approx. 0.030 or the thickness of a credit card.
18=Receiver Coil Cable:	cable assembly for receiver coil the control box.
19=Height Adjustment:	adjusts the height of the transmitter coil under the lamination stack. Adjust to 0.030 or the thickness of a credit card.
20=Level	used to aid in adjusting (11) so armature is level for proper testing. The clearance between (12) & (11) must be level for accurate testing.

Specifications:
Height: 17”
Width: 24”
Depth: 16”
Shipping Weight: 40 lbs.
Electrical Power: K101-0920 110V, 60Hz, K101-0920-220 220V, 50Hz

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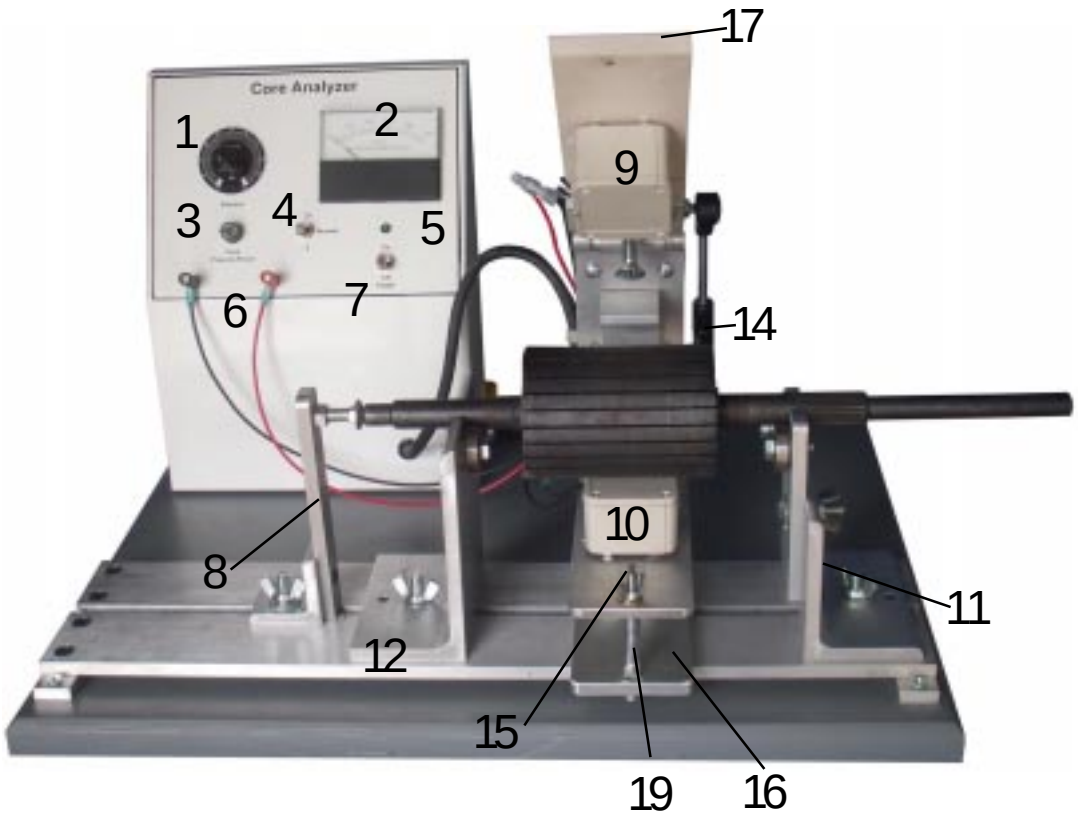

Theory Of Operation

With the lamination stack centered on the transmitter (10) and receiver coils (9), a signal is induced into the laminations and shaft and the induced affect is sent to the control panel (18) where it is evaluation and calibrated by the balance pot (1) and Range Switch (4). Then the resultant strength is displayed on the strength indicator meter (2) allowing you to compare any shaft and lamination shaft combination to an OEM one. This insures that the resultant torque and amp draw is similar to the OEM. All this is determined before the armature is installed in the starter. Remember, the wire size and twist must be the same as OEM as well.)

Armature Preparation for Test:

There are two ways these assemblies can be tested for the best and most meaningful results.

The first way as shown below, cleanly cut the hair pins at the lamination stack on the commutator end. Leave no inner contact between hairpins. Remove the commutator and cut hairpins. This will determine if the assembly is worth rewinding and if there is any lamination variation in the lamination OD's.

The second way as shown below, is after burnout and hairpin removal. This will determine if any damage was done during the burn out process and if there is any variation in the lamination OD's.

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Operating Instructions

Guidelines For Setting Your Standard (per armature size):

1 Use an original OEM armature that has never been rewound. Do not use an aftermarket new armature.

2 Any armature that has past your load starter test specifications. You should keep a sample armature of each size variation for a calibration standard. You will refer to it often.

3 Always record and save the setting of the Balance Potentiometers in the Setting Log of this manual.

Initial Machine Set Up Per Different Physical Dimensions of Armature:

1 Loosen and spread out lamination stop brackets (8).

2 Lower the adjustment on the transmitter assembly (10) using adjustment (19) to allow clearance over the lamination stack of approximately 0.030 or the thickness of a credit card.

3 Set you're known good lamination and shaft assembly in mounting brackets (11 & 12).

4 Position the transmitter and receiver coil assembly (16) in the center of the lamination stack and align with the arrow (15).

5 Move the stop arm (8) into light contact with the ends of the shaft.

6 Once everything is in place, tighten the wing nut on the mounting brackets (8, 11 & 12) and the transmitter and receiver coil assembly (16).

7 Turn on the AC power switch (7)

8 Lower the receiver coil to approximately 0.030 or the thickness of a credit card from the lamination stack and lock it in place with the wing nut lock on the bottom of (16) & (17). Use level (20).

9 Using the combination of the balance pot (1) and the meter range switch (3), adjust until you get a reading of 100 on the strength meter (2).

10 Rotate the lamination stack 360 degrees to insure that you have a constant reading of approximately 100. Your standard should read 100 regardless of the laminations circular position. We recommend using only armatures that read a constant of 100 as your standard.

11 Log the settings of the balance pot (1) and the meter range switch (4) into the setting log in this manual for future reference.

12 Now you are set up for production testing of any armatures that are this same physical size.

13 Repeat this process for each armature that is a physically different size.

Meter Readings & Meaning:

- Our findings indicate good steel will produce a reading from 80 to 100. We recommend using 100 as the standard set point on all armatures.
- Weaker steel will produce readings from 10 to 70 and corrective action must be taken. After the corrective actions is taken the assembly must be retested to get the readings as close to 100 as possible. This may not be possible all the time.

You will set your own standard for what you consider an acceptable assembly. We suggest running a batch of 25 armatures and recording the readings. Then wind 2-100's, 2-90's, 2-70's and 2 of the lowest reading you get. Run these on your or your customer's starter load tester and record the readings. You will not have an acceptable range of what is usable.

As you rotate the armatures, you will see that some do not read a consistent number; they will vary anywhere from 40 to 70 or 20 to 40. These should be physically checked to verify that they are not to small in diameter or contain different diameter laminations in the lamination stack. If the lamination stack fails the core lamination test the shaft can be pressed out and reinstalled or the shaft can be removed and the lamination cleaned in a shaker and reassembled and retested. There will still be a percentage that will not pass and these should be scraped at this point. The best thing about this tester is that it will save you money because you will not waste time and money rewinding armatures that never pass the Armature Core final test.

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SETTING LOG

Armature #	Lamination OD	Lamination Width	Meter Range Switch (4)	Balance Setting (1)
40MT	3.320	4.655	Normal	60
50MT	3.800	5.015	Normal	70

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ADJUSTING & CALIBRATION INSTRUCTIONS

Calibration instructions available upon request.

Service Parts List

Part Number	Description
K101-0920-1	Balance Potentiometer
K101-0920-2	Strength Analog Meter
K101-0920-3	Fuse & Fuse Holder
K101-0920-4	Meter Range Switch
K101-0920-5	Pilot Light
K101-0920-7	On/Off Power Switch
K101-0920-8L	Left Hand Lamination Stop Bracket
K101-0920-8R	Right Hand Lamination Stop Bracket
K101-0920-B	Ball Bearings (4)
K101-0920-9	Reception Coil
K101-0920-10	Transmitter Coil
K101-0920-11	Complete Armature Mounting Bracket (Right)
K101-0920-12	Complete Armature Mounting Bracket (Left)
K101-0920-13	AC Power Cord
K101-0920-14	Air Shock

For Replacement Parts and Questions contact:
Vensel Enterprises @ 800-662-6099 or vensel7@comcast.net