

INSTRUCTION MANUAL

FM7V4-C/2D

PL 2248 (IE 11553)

IE-7012

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INTRODUCTION

SCOPE

This manual covers the installation, operating, and maintenance instructions for the Winpower line of two bearing AC generators for overhead irrigation systems. Included as a part of this manual is a parts list and a wiring diagram covering the particular model you have purchased.

GENERAL

The generators covered by this manual are of the foot mounted, two bearing type. All generators are thoroughly tested at the factory. The generators should be inspected on delivery for evidence of possible shipping damage. If damage has occurred a notation should be made on the freight bill and a claim should be filed if necessary. If the damage appears to be of a major nature, the generator should not be operated until the fault has been corrected. The warranty registration card is to be promptly filled in and mailed. The guarantee is void unless the card is returned.

The model number and the serial number of the set must be given when contacting the dealer or the factory.

GENERATOR DESCRIPTION

The generator is a brushless, revolving field generator. The exciter is a rotating armature type AC generator whose output is rectified and fed into the revolving field of the main generator. The field of the exciter is excited from the output of the main generator thru a choke and rectifier, as shown in simplified form below in Figure 1.

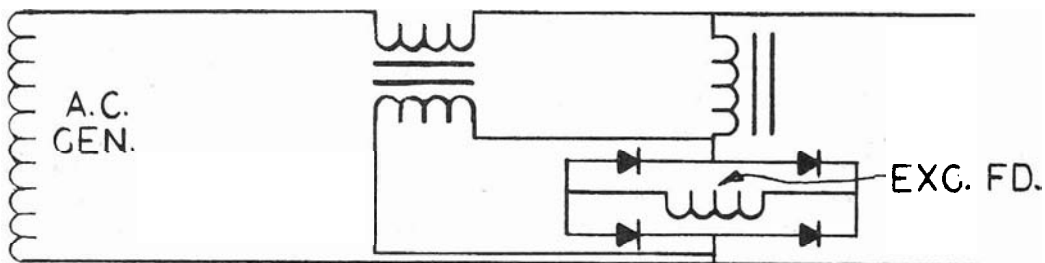


Figure 1

As can be seen, that there is also current feedback. This current feedback is not only load sensitive but also power factor sensitive.

The generator is a 3 lead generator and is not reconnectable. As shipped from the factory it is connected for 120/240 volts. Sealed, prelubricated ball bearings are used. The fan is at the drive end of the generator and the air is also exhausted there.

The excitation components, rectifier, choke and transformer are mounted internally to the stator housing.

INSTALLATION

MECHANICAL

Turn the rotor by hand to make certain that it turns freely. The generator should be located in a well ventilated area free from fumes and excessive dust. If direct connected, good alignment is of utmost importance even though the coupling is of the flexible type. Install shims under the generator or prime mover feet if necessary to properly align the generator with the prime mover. If belt driven, the belts and pulleys must be of sufficient size to meet the torque requirements. If V belts are used it is not necessary to pull them extremely tight. They should be tightened sufficiently to take out the slack. Belts should be kept clean and free of oil. Wipe belts with a dry cloth to clean.

ELECTRICAL

The generator frame is to be grounded either by a grounding stake or reliably grounded to other grounded components of the system with a wire that is at least the same size conductor as the load leads. Scrape contact surfaces clean to make a good electrical connection.

Connection instructions are given in the diagram supplied with this generator manual. All connections to other components and to the power supply should be in accordance with the local regulations, and the code requirements of the National Electric Code.

OPERATION

After the connections have been correctly made there are no adjustments necessary before operating.

The first thing to check for after the generator is running is to determine the correctness of the phase rotation by running one of the 3 phase induction motors that is to be powered by the generator. If the induction motor rotates the wrong way reverse any two generator leads (except neutral if used) and then check rotation again.

The generator is inherently regulated and no adjustments are necessary during operation.

MAINTENANCE

CLEANING

Remove all accumulations from the exterior of the generator. Use low pressure compressed air to blow dirt and dust out of the interior of the generator. This cleaning operation should be done every 250 operating hours.

INSPECTION

Inspection should be performed every 1000 operating hours. The bearing bracket at the end opposite the drive should be pulled off. Check for loosely mounted components, damaged insulation, and loose wires.

LUBRICATION

No lubrication is necessary. Replace bearings every 5 years.

TROUBLE SHOOTING CHART

TROUBLE	CAUSE	REMEDY
No output voltage	Defective diode in rectifier bridges (See instructions for testing rectifier bridges)	Replace rectifier assemblies
	Open circuit (See instructions for checking for open circuit)	Check wiring
	Shorted generator stator or exciter armature	Replace stator or rotor
	Loss of residual magnetism	See instructions for restoring residual magnetism
	Generator speed too low	Adjust prime mover speed to correct value
Low output voltage at no load	Low prime mover speed	Adjust prime mover speed to correct value
	Defective diode in rotating rectifier bridge assembly (see instructions for testing rectifiers)	Replace rectifier assembly
Excessive noise	Worn or damaged bearing	Replace bearing
	Armature rubbing on field pole	Tighten field pole bolts

TESTING RECTIFIER ASSEMBLIES

PROCEDURE

It is necessary to remove the bearing bracket at the end opposite the drive to make the rectifier assemblies accessible.

The exciter rectifier (No. 10 on dwg. IE-11553) is a single phase bridge. Remove the lead from the positive terminal and one of the leads going to an AC terminal of the bridge. Check the resistance in both directions from the DC terminal to each of rectifier AC terminals with an ohmmeter. One direction should give a low resistance value (25 ohms or less), and the other direction should give a very high or an infinity reading. Repeat the test from the negative terminal to each of the AC terminals of the rectifier bridge.

A shorted diode will give a low resistance reading in both directions. An open diode will give a high or infinite reading in both directions.

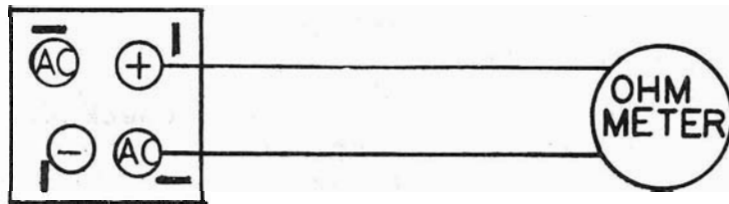


Figure 2

The rotating rectifiers (No. 10 on dwg. IE-11553) are two single phase bridges. Their terminal locations are as shown on Figure 3.



Figure 3

Remove the lead from the positive terminals. Place an ohm meter across the positive terminal and each of the AC terminals, and then reverse the leads and repeat. Do the same for the negative terminal and each of the AC terminals. There should be a low reading in one direction (25 Ohms or less) and an infinite or very high reading in the opposite direction. A low reading in both directions shows a shorted bridge. Repeat on second bridge.

RESTORING RESIDUAL MAGNETISM

PROCEDURE

If a machine has had the rotor removed it maybe necessary to restore its residual magnetism. If the rotor is in position and the bearing bracket at the end opposite the drive is not in position,

PROCEDURE (con't)

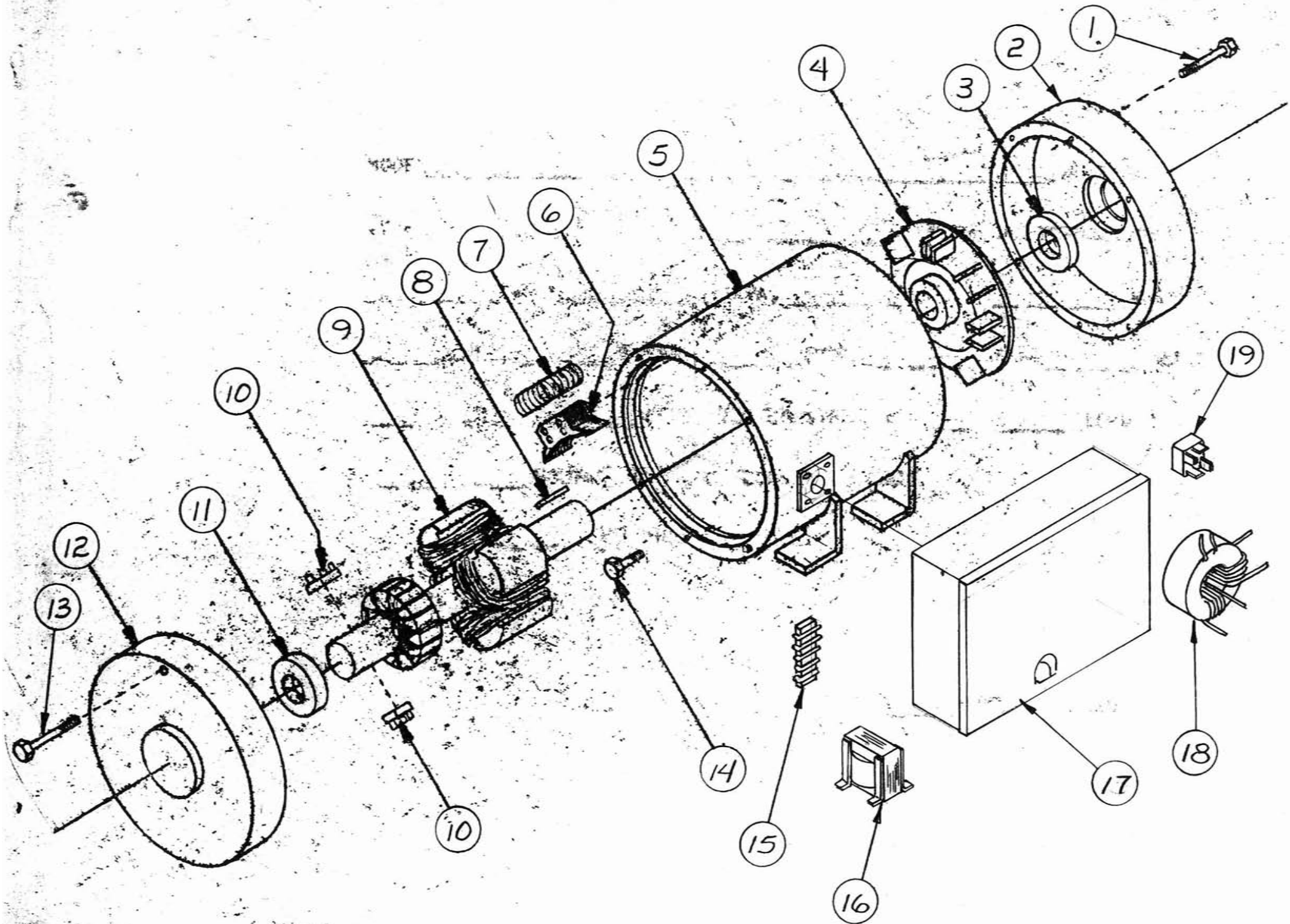
the field may be flashed by placing 115 volts AC across the AC terminals of the single phase bridge (No. 10 on dwg. IE-11553). If the machine is assembled, apply 230 volts AC across the blue and yellow leads. It will be necessary to disconnect either the yellow or blue lead from the other wires connected to it before applying the 230 volts.

CHECKING FOR OPEN CIRCUITS

PROCEDURE

Open the terminal box on the side of the generator. Then remove the exciter field leads from the bridge. Check for an open circuit in the exciter field. With the exciter field leads still removed from the bridge, and with the blue lead disconnected from its connection on the outside of the generator, check for continuity between the blue and yellow lead.

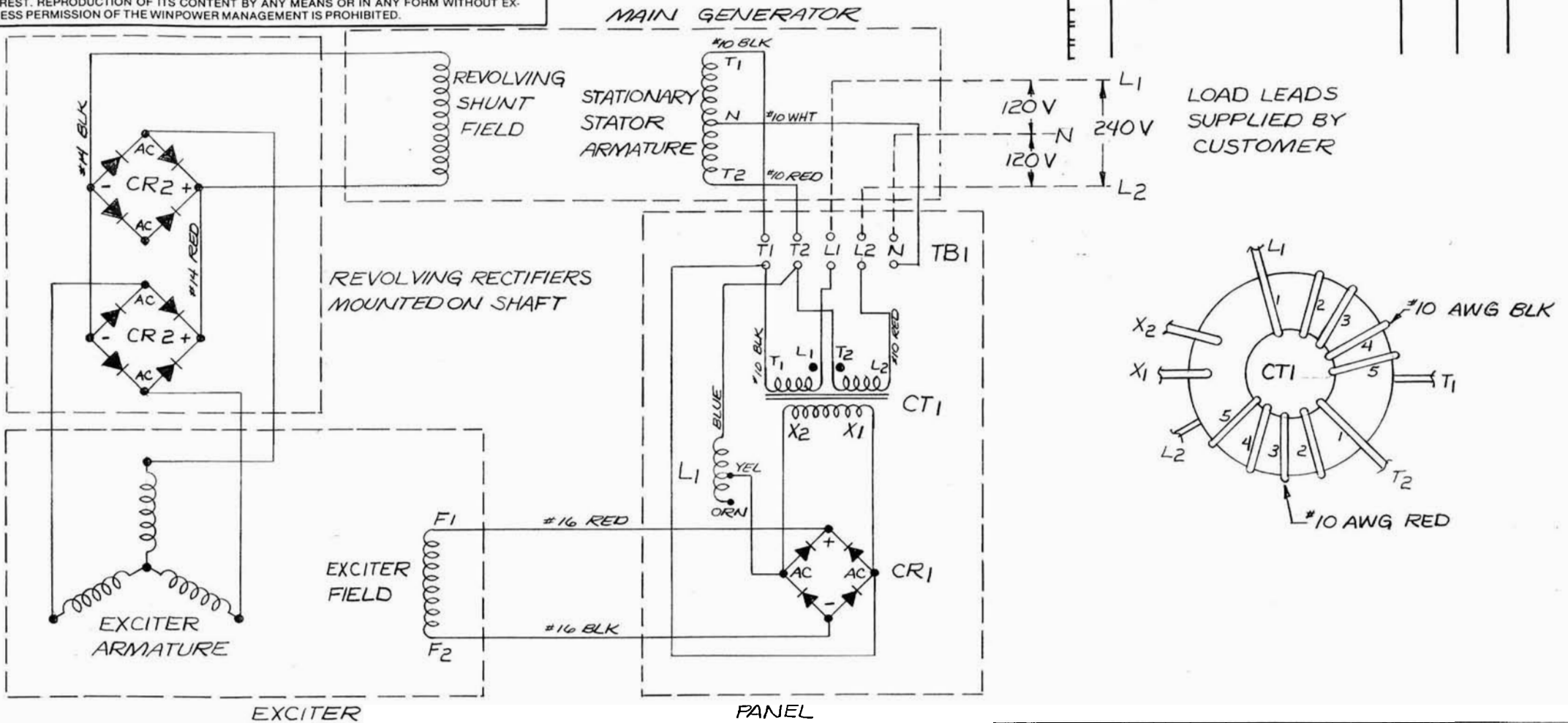
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REVISIONS				
LTR	DESCRIPTION	DATE	BY	APPROVED



LOAD LEADS SUPPLIED BY CUSTOMER

REF	PART NO.	SZ	DESCRIPTION	QTY.
TB1	EE-1700-5	C	TERMINAL BOARD	1
L1	EE-2031	C	CHOKE	1
CT1	EE-1994	C	CURRENT TRANSFORMER	1
CR2	EE-2214	E	RECTIFIER	2
CR1	EE-2214	E	RECTIFIER	1

PARTS LIST			
		WINPOWER CORPORATION NEWTON, IOWA 50208	
TITLE SCHEMATIC DIAGRAM			
EM7V4-C12D ASSY BUILD NO		PART NO. IC-7012	SIZE B REV
SCALE ~		DATE 3-25-80	SHEET

SYMBOLS	MATERIAL	DO NOT SCALE
PARALLELISM O ROUNDNESS - STRAIGHT □ FLATNESS ⊥ PERPENDICULARITY	⊕ POSITION = SYMMETRY ⊙ CONCENTRICITY < ANGULARITY	DECIMAL ± FRACTIONAL ± ANGULAR ±
DRAWN BY KH PROJ ENG. ReCase		
TOLERANCE ON DIMENSIONS NOT OTHERWISE SPECIFIED		