DEPARTMENT OF TRADE AND COMMERCE

STANDARDS BRANCH

E-60

OTTAWA September 1, 1967

NOTICE OF APPROVAL

FOR

SANGAMO TYPE "KY-" POLYPHASE WATTHOUR METERS

Apparatus

Elements	Current Range (amperes)	Volts	Kh	Register Ratio (Rr) 4 dial x 1	4 dial x 10	5 dial x 1
2	.12-10	120	0.72	166-2/3	1666-2/3	166-2/3
		240	1.44	83-1/3	833-1/3	83-1/3
		345	2.16	55-5/9	555-5/9	55-5/9
		480	2.88	41-2/3	416-2/3	41-2/3
		600	3.6	33-1/3	333-1/3	33-1/3
	1.2-100	120	7.2	16-2/3	166-2/3	16-2/3
		240	14.4	-	83-1/3	8-1/3
		345	21.6	-	55-5/9	5-5/9
		480	28.8	-	41-2/3	4-1/6
		600	36.0	-	33-1/3	3-1/3
	2.5-200	120	14.4	-	83-1/3	8-1/3
		240	28.8	-	41-2/3	4-1/6
		345	43.2	-	27-7/9	2-7/9
		480	57.6	-	20-5/6	2-1/12
		600	72.0	-	16-2/3	1-2/3
2-1/2 wye	.12-10	120	1.08	111-1/9	1111-1/9	111-1/9
		240	2.16	55-5/9	555-5/9	55-5/9
		345	3.24	37-1/27	370-10/27	37-1/27
	1.2-100	120	10.8	-	111-1/9	11-1/9
		240	21.6	-	55-5/9	5-5/9
		345	32.4	-	37-1/27	3-19/27
	2.5-200	120	21.6	-	55-5/9	5-5/9
		240	43.2	-	27-7/9	2-7/9
		345	64.8	-	18-14/27	1-23/27

Elements	Current Range (amperes)	Volts	Kh	Register Ratio(Rr) 4 dial x 1	4 dial x 10	5 dial x 1
2-1/2 delta	.12-10	240	1.44	83-1/3	833-1/3	83-1/3
	1.2-100	240	14.4	-	83-1/3	8-1/3
	2.5-200	240	28.8	-	41-2/3	4-1/6
3-element Y	.12-10	120	1.08	111-1/9	1111-1/9	111-1/9
		240	2.16	55-5/9	555-5/9	55-5/9
		345	3.24	37-1/27	370-10/27	37-1/27
	1.2-100	120	10.8	-	111-1/9	11-1/9
		240	21.6	-	55-5/9	5-5/9
		345	32.4	-	37-1/27	3-19/27
	2.5-200	120	21.6	-	55-5/9	5-5/9
		240	43.2	-	27-7/9	2-7/9
		345	64.8	-	18-14/27	1-23/27
Frequency	50 and 60 cycles					

2 Element, 2-1/2 Element wye and 3 Element wye 240 volt 60 cycle meters are approved for use on 277 volts without recalibration.
All registers have test dials.
All ratings are available with "S" base mounting.
All except 200 ampere rated meters are available with "P" die cast aluminum base with large terminal block having a maximum of 8 current and 6 potential terminals.
2-Element, 1.2-100 amps., and 2.5-200 ampere meters are available with "A" base mounting for network service.
2 Element, 2-1/2 Element and 3 Element .12-10 ampere meters all voltages are available on "F" base mounting.
All ratings can be supplied with potential indicating lamps.

Description

The type "KY-" polyphase watthour meters are for energy measurement on all the usual polyphase services. They are of the single disc type and in the 2- and 2 1/2 element construction, the two electromagnet assemblies are displayed ten degrees from being diametrically opposite one another across the meter disc. In 3 element meters, the third electromagnet is placed at the back of the disc forming an angle of 85 degrees with the other two electromagnets. The meter disc is solid aluminum with a perforated central section and an insulated hub. The frame carrying the electromagnets, moving element and drag magnet is made from die cast aluminum.

Each element of the meter consists of a separate current and voltage electromagnet, dowelled with spring pins and screwed to machined pads on the meter frame.

In the 3 element construction, shielding is added to cancel the effect of the coupling fluxes.

The rotor bearing system is the magnetic flotation type similar to that used in the type CJ3 meter, but in the KY- meter it consists of 3 toroidal barium ferrite magnets, two mounted on the rotor spindle opposing one mounted in the lower stationary housing with a temperature compensator around its periphery.

The guide pins in the lower and upper bearing housing and the graphite guide bearings in the top and bottom of the rotor spindle are the same as used in the CJ3 single phase meter.

The meter speed is controlled by a pair of alnico drag magnets. The alnico magnet and its compensator is wrapped in a soft aluminum wrapper and two of these assemblies are pressed into a rigid die cast enclosure.

The housing carrying the drag magnet assembly is dowelled with spring pins and secured with screws to machined pads on the main meter frame, and can be removed to permit the removal of the disc, and replaced without disturbing the calibration appreciably.

Adjustments

All adjustments are linear and turn to the right to slow the meter down.

The full load is a spring loaded plate across the front of the drag magnet and is recessed in the housing. This plate rocks over a ridge in the housing during adjustment giving almost linear performance.

Each element has its' individual low load adjustment consisting of a spring loaded conducting vane, moveable across the pole face of the voltage electromagnet by means of a threaded guide rod.

Each element has its' individual inductive adjustment which consists of a lag band around the central pole of the voltage electromagnet whose resistance can be altered in steps by cutting sections out of the band. A "U" shaped vane adjusted by a spring loaded brass screw provides a vernier adjustment.

Each element has an auxiliary calibration adjustment for obtaining balance, and consists of two steel screws that move in or out of the flux gaps of the potential electromagnet. These screws should be moved equal amounts when adjusting.

The meters are supplied in five enclosures, two for socket connections(Type "S"), two for bottom front connections(types "P" and "A"), and one for panel mounting (type "F"). The two socket type bases are moulded from fibre-glass filled polyester resin and are equipped with fibre glass filters and the terminals are sealed where they pass through the base with stainless washers against a neoprene gasket.

The one base of Canadian design covers all the 5, 7 and 8 terminal meters. That is, self contained 2 element network, 2 1/2 element wye and delta and 3 element meters plus the 2 element transformer rated .12-10 amp meter.

The other base imported from the parent company in the United States covers 9 to 13 terminal meters. This includes transformer type .12-10 amp., 2 1/2 element wye and delta and 3 element meters.*

The two bottom front connected bases are the same eight current terminal "P" and four current terminal "A" base used in the present P20 polyphase meters. The mounting points that carry the meter frame inside the base have been altered to suit the mounting of the "KY-" meter frame. Also the inside section of the terminal block of the "P" base has been changed from a moulded section to two flat blanked phenolic plates that lock around the current leads. The sealing clip on the side of the base carries a pin that enters a hole in the terminal block when the seal is in place and prevents the terminal block from being removed.

* Meters on this base will be sealed with a lead seal, taking care that the sealing wires are kept short and the unused ends clipped off.

The type "F" enclosure, for flush mounting on a switchboard panel is the same enclosure approved for use with types CJ3F, P20F and P30F meters, and is used only for the transformer type .12-10 amp., meters.

The type of base will appear in the type designation on the nameplate as "KIA", "KYS", "KYP", and "KYF".

On socket type meters the potential disconnect links are connected to the current terminal blades, so care should be taken when verifying to follow the diagram on the nameplate.

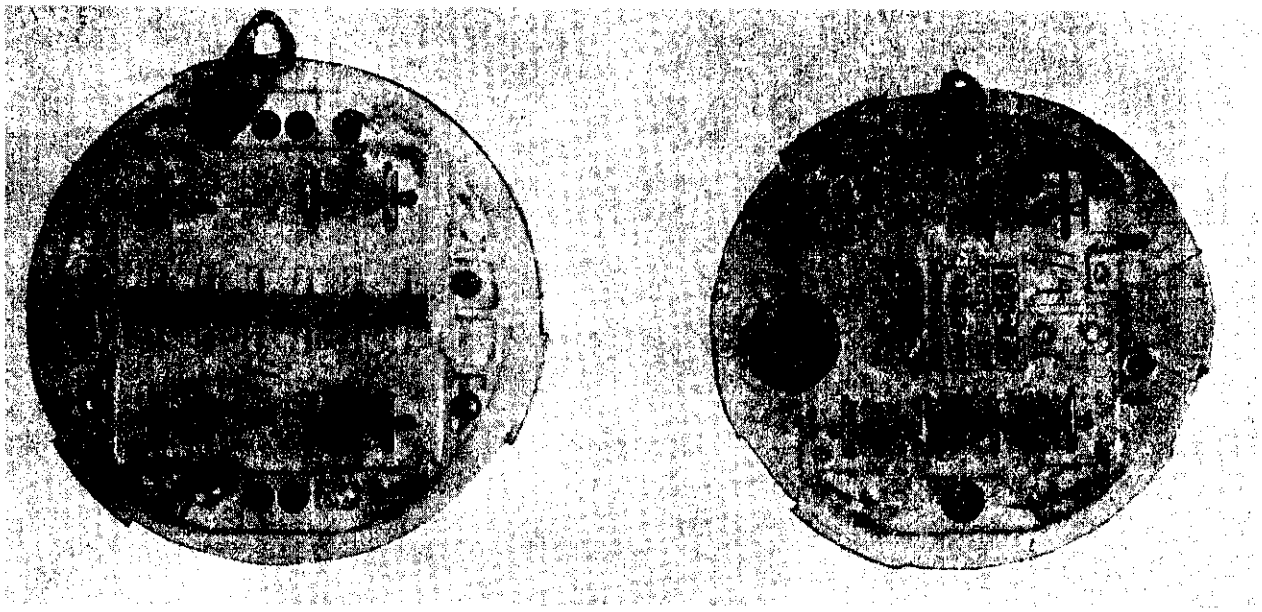
Approval granted to: Sangamo Company Limited,
Leaside,
Toronto 17, Ontario.

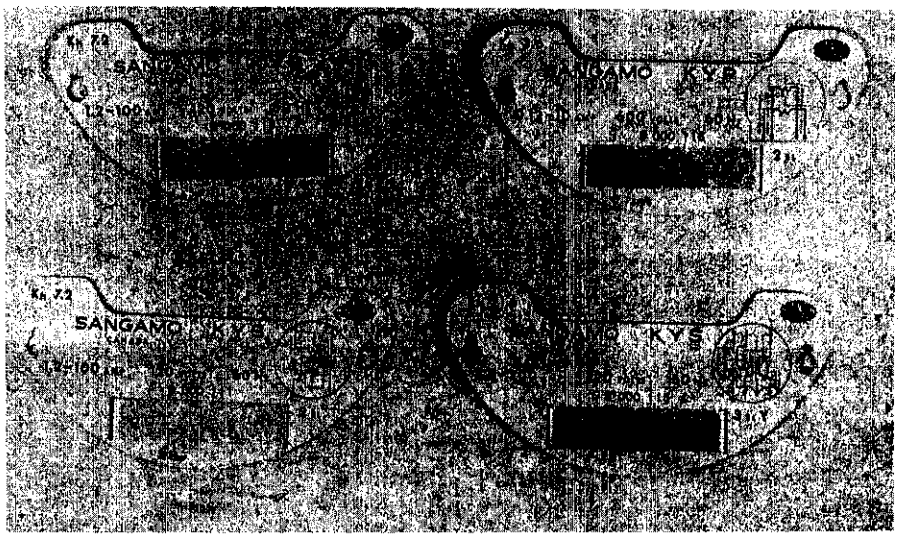
(for) Chief of Standards Laboratory,
Standards Branch.

W.J.S. Fraser,
Chief, Electricity & Gas Division,
Standards Branch.

Ref. SL-100-93

SANGAMO TYPE "KY-" POLYPHASE WATTHOUR METERS





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