Installation

Types AB-16, and -40 Synchroscopes

1.

Synchroscopes are designed for 120 or 240 volt circuits and will operate properly on any voltage which does not differ more than 10 percent from this value. Above this value, a potential transformer must be used.

For proper operation of these synchroscopes, the difference between the frequency of the "incoming" machine and the frequency of the "running" machine, or bus, should be within approximately 3 cycles per second. Within this range of frequency difference, the instrument will operate smoothly.

The words FAST and SLOW on the scale indicate that the frequency of the incoming machine is respectively higher or lower than that of the bus or running machine. Clockwise rotation of the pointer signifies that the incoming machine is operating faster than the running machine. Synchronism is indicated when the instrument pointer is over the index at the top of the scale.

If the frequency of the incoming machine differs by more than 3 cycles per second from the frequency of the running machine, or bus, the synchroscope pointer may oscillate at a fixed position on the scale; or the pointer may oscillate and simultaneously rotate at an irregular velocity. This condition should not be confused with the smooth movement of the pointer which occurs when the frequency difference is within 3 cycles per second.

UNCALIBRATED SCALES

CAUTION: For instruments with unmarked scales, incoming inspection (or acceptance) tests must be performed for zero, "stickiness", etc. Failure to do so will place warranty in jeopardy. As with any instrument, extreme caution should be taken not to touch the pointer while removing cover and scale because of the possibility of unbalancing the element. The same precaution should be exercised in handling any other parts of the moving system.

INSTALLATION

Cut and drill the panel as indicated in Fig. 1. All drilling and all wiring on the switchboard should be completed before installing the instrument. Supporting studs are provided for mounting the synchroscopes on the switchboard. Mount the instrument in a level position.

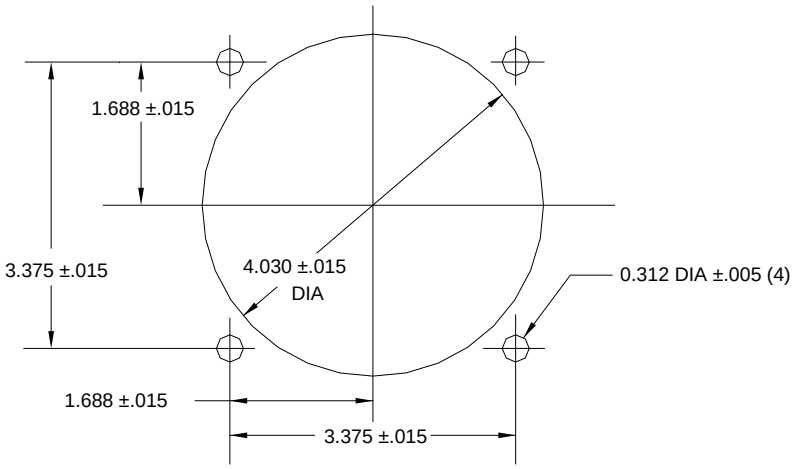

FiG.1

These instruments are practically unaffected by stray fields, but it is advisable to keep transformers and wires carrying heavy current far as possible from all: indicating instruments.

When de-energized, the instrument pointer will drift and may deflect to any position on the scale.

POLARITY MARKINGS ON TRANSFORMERS

Transformers of present manufacture have white polarity markings, H, for primary and X, for secondary, on or near the proper terminal. These markings denote the relative polarity and facilitate the making of proper connections for correct direction of deflection of the instrument. The relation of the marked leads is such that the instantaneous direction of the current in them is the same, namely toward the transformer in the marked secondary leads, or vice versa. These polarity markings are indicated in the connection diagram and should be followed irrespective of their physical location on the transformers.

GROUNDING INSTRUMENT CASES

When potential transformers are used with instruments, the cases of the instruments should be connected to the grounded side of the transformer secondary. Use No. 12 AWG copper wire. Grounding connections from the grounded side of the secondary circuit to earth should be made in accordance with the provisions of the National Electric Code. Yokogawa Corp of America recommends that a UL 20 Amp breaker be installed between the auxiliary power input and power source.
WARNING! DO NOT REMOVE CASE WHEN THE INSTRUMENT IS POWERED UP!

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the Yokogawa Corporation of America.

Yokogawa
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PRINCIPLES OF OPERATION

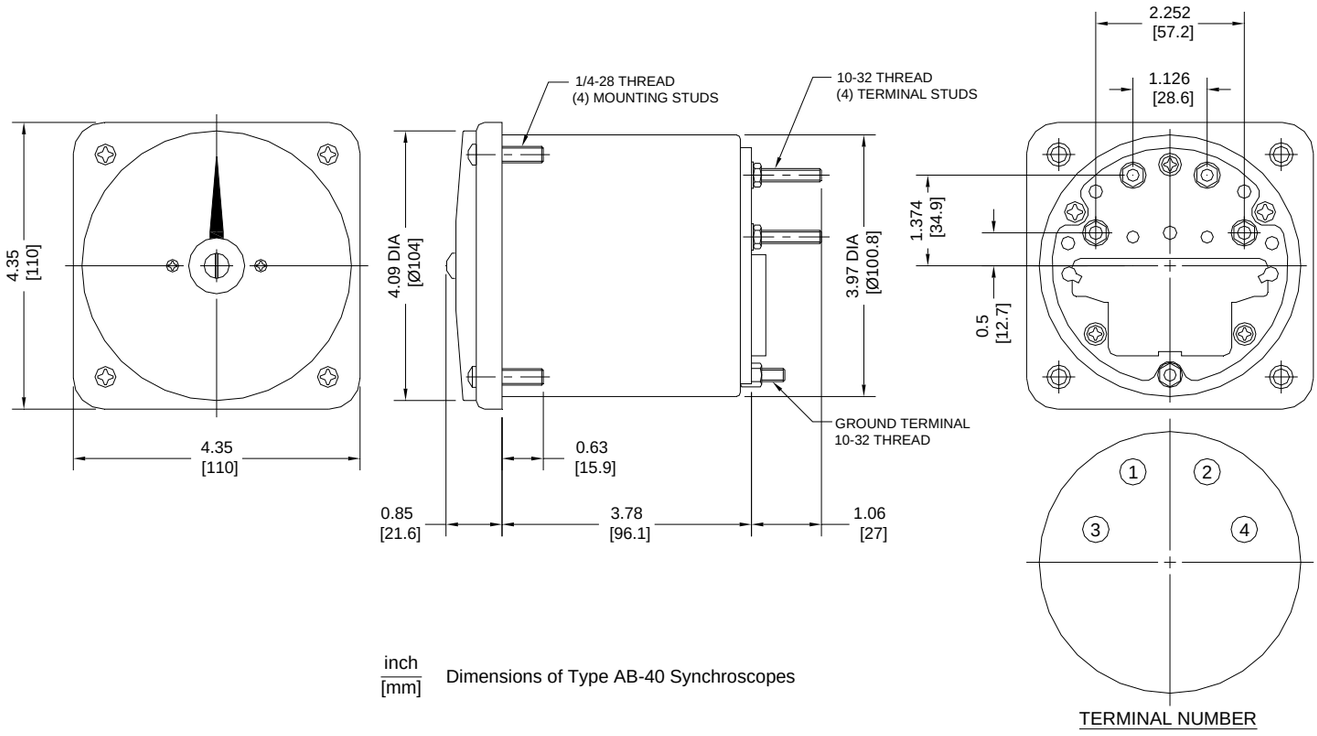
1.The driving signal that shifts the phase lag of the input signal by 90 degrees is directed to the crossed coil movement. The crossed coil directs the difference of the two driving signals. When the two input signals are synchronized, the same period point is directed.
MAINTENANCE: To clean AB-16 and -40 plastic windows, wash with soap and water, not with chemical cleaners.

REPAIR PARTS

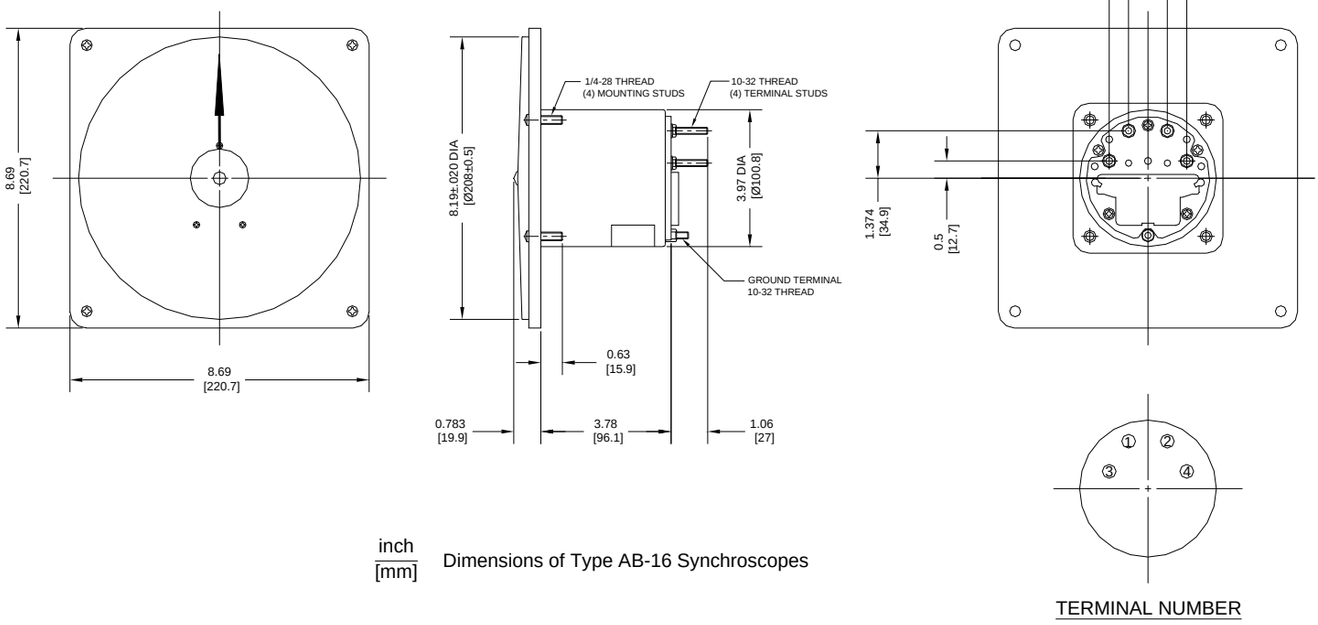
Repair parts for these instruments and additional copies of this publication may be ordered through the nearest Yokogawa sales office or distributor.

ADJUSTMENTS

There are no external adjustments (Le. no zero adjust) for this instrument.

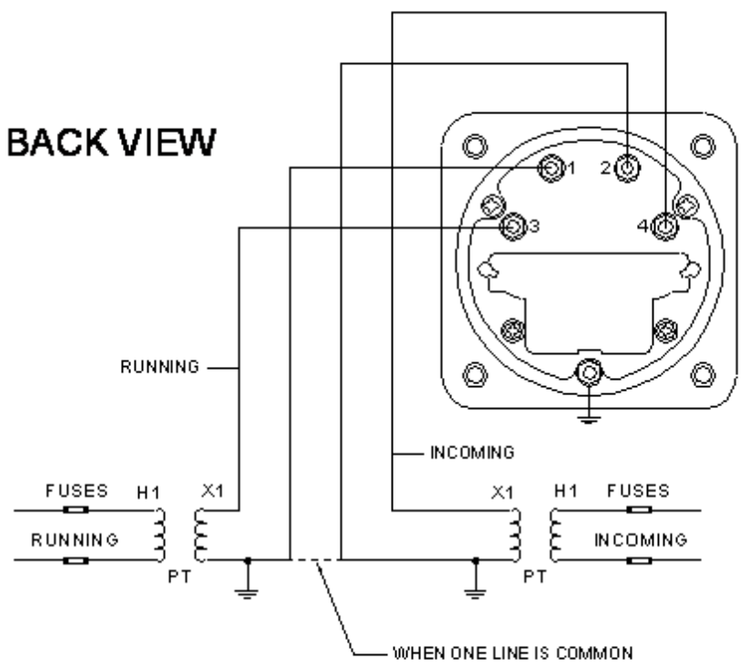


inch / [mm] Dimensions of Type AB-40 Synchroscopes

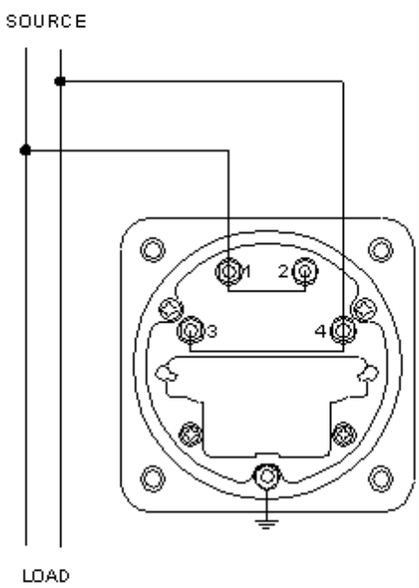


inch
[mm] Dimensions of Type AB-16 Synchroscopes

TERMINAL NUMBER



CONNECTIONS FOR AB-16/40 SYNCHROSCOPES RATED FOR 50/60 Hz OR 400 Hz WITH POTENTIAL TRANSFORMERS.



CONNECTIONS FOR AB-16/40 SYNCHROSCOPES RATED FOR 50/60 Hz OR 400 Hz FOR CHECKING POINTER LOCATION.