Edwards

07-D024-22-880
September 1980

Supersedes
07-D024-21-880

PIRANI GAUGE HEADS

Type	Code
PR10-K	07-D024-22-000
PR10-C	07-D024-23-000
PRCT10-K	07-D021-52-000
PRCT10-C	07-D021-53-000
PRCT10-K Corrosion Resistant	07-D021-56-000
PR25-K	07-D021-64-000
G5C2	07-D022-11-000

Communication with Edwards

Any communication relating to the subject of these instructions should be addressed to Edwards High Vacuum or to the supplier from whom it was purchased.

Please specify:

1 The model, serial number and code
2 The date of purchase
3 Your order number and the suppliers sales reference

Equipment should not be returned to the supplier without prior arrangement

Damage in transit

If any damage has occurred in transit, it is important to inform both the carrier and the supplier within three days of delivery.

Edwards High Vacuum
Manor Royal, Crawley, West Sussex RH10 2LW, England
Telephone: Crawley 28844 (std code 0293) Telex: 87123 Edhivac G

1 Vacuum couplings

The size and type of the vacuum coupling are indicated by the numerals and final letter of the gauge head model number.

Size
10 = 10 mm (nominal)
25 = 25 mm (nominal)

Type of coupling

K = KF

C = Cone, metal, B14 to BS 572:1960

Exception — G5C2 is a glass gauge head with a B14 glass cone

Note: — A range of vacuum connexions and pipeline components is available from Edwards, both KF and screwed. A full description appears in the Edwards catalogue.

2 Functionally equivalent types

Old type	New type	Used with
M6B M7B G6B	PR10-K PR10-C	Pirani 10 Pirani 11 Controller 101
M9 M12	PRCT10-K	Pirani 9 Pirani 12 Monitor 101 Controller 161
G12	PRCT10-C	
M12 (UF6)	PRCT10 Corrosion Resistant	Controller 162
M5C2	PR25-K	Pirani 8/2 Pirani 14
G5C2	G5C2	

3 Specification

		PR10	PRCT10	PRCT10 Cor.Res.	PR25	G5C2
Pressure (N_2) range	mbar	5 to 10^{-3}	100 to 10^{-3}	100 to 10^{-3}	1 to 10^{-4}	1 to 10^{-4}
Volume	cm^3	8	6.5	6.5	21	21
Dimensions (excluding lead)	mm	139 x 40 x 25.6			220 x 51 dia	194 x 51 dia
Weight	kg	0.27	0.14	0.19	0.58	0.31

Leads All heads are fitted with leads 2m long.

Extension leads

(available to order)

Gauge head	Length	Code number
PR10	5m	07-D368-03-005
	15m	07-D368-04-015
	30m	07-D368-04-030
PRCT10 PRCT10 CR	5m	07-D368-05-005
	15m	07-D368-06-015
	30m	07-D368-06-030
PR25 G5C2	5m	07-D368-01-005
	15m	07-D368-02-015
	30m	07-D368-02-030

4 Connexion to vacuum system:

New installations

The gauge head should be mounted as close as possible to the point at which the pressure is to be measured, using a short branch tube with a diameter no less than the gauge head size. Long or narrow connexions can cause serious error.

The head should be positioned vertically so that the gauge body is above the connexion. If the gauge head is mounted in any other attitude, it may require a slight adjustment to the 'atm' pre-set, as described in Section 8, Maintenance.

WARNING

The internal pressure of the G5C2 gauge head must not be allowed to exceed atmospheric pressure.

The internal pressures of the PR10, PR25 and PRCT10 gauge heads must not exceed 2 bar at 28°C.

Do not use the gauge head to measure the pressure of explosive or inflammable gas mixtures. The sensing elements operate normally at the following temperatures, PRCT10, 160°C (depending on ambient temperature) PR10/25 up to 300°C (depending on ambient temperature and pressure). It is possible that malfunction on momentary transients could raise the sensor above the ignition temperature of combustible mixtures which might then explode.

4.1 KF gauge heads

The branch tube should be fitted with a matching KF flange and assembled with the appropriate KF centring ring, O-ring and clamp.

Alternatively if the branch tube termination is screwed the clamp is replaced with an Edwards SC coupling nut of the correct size. The KF O-ring and carrier will be needed.

4.2 Cone fitting gauge heads

A borosilicate glass B14 cone (female) is supplied as an accessory for joining to the vacuum system.

5 Connexion to control unit

Plug the lead into the socket on the back panel of the control unit, with the optional extension lead if used.

The lead should always be cleated to secure supports.

For cone-coupled heads, it is important to cleat the lead securely a short distance vertically above the gauge head to ensure that no strain is imposed on the cone coupling.

6 Description

The PR10 and PRCT10 gauge heads are all constructed in the same way. The body consists of a pair of identical rectangular mouldings, held together by four cross-head screws. These mouldings contain the Pirani tube and also clamp the lead and the vacuum coupling stub, one at each end of the body.

Adjusting and compensating resistors are also housed in the body of the PR10. They are pre-set in manufacture and should not normally be disturbed.

The PR25 and G5C2 heads use a tubular body into which the vacuum coupling stub and the end-piece supporting the lead are fixed by radial screws. The body contains the four Pirani tubes.

The internal electrical connexions are shown on page 7.

7 Maintenance

Gauge heads require no maintenance in normal service.

7.1 Contamination

Extended operation in a contaminating atmosphere or any gross contamination may change the gauge head calibration. If this is suspected, the recommended procedure is to return the gauge head to Edwards under the Edwards Exchange/Replacement service, but in an emergency an attempt may be made to wash out any Edwards gauge head except the PR25 and G5C2. There is no certainty of success.

WARNING

Switch off the gauge control unit and unplug the gauge head before dismantling the head.

7.2 Washing out PR10 and PRCT10 gauge heads

Acetone is suggested as a first trial. Use 1 or 2 ml of pure acetone with very gentle agitation, repeat twice and allow to dry.

A proprietory solvent may be more effective. After using one, the gauge head should be rinsed thoroughly with distilled water, then with alcohol and finally blown dry.

Caution Acetone attacks the plastic case.

After washing a gauge head, it is advisable to check the calibration, as described below for the PR10 and as described in the instructions supplied with the control unit for the PRCT 10.

WARNING

Cleaning solvents such as trichloroethylene, perchlorethylene, toluene and acetone produce fumes that are toxic and/or inflammable. Such solvents should only be used in well ventilated areas away from electronic equipment or flame.

7.3 Calibration check, PR10

Replace the gauge head on the vacuum system and plug in its connector.

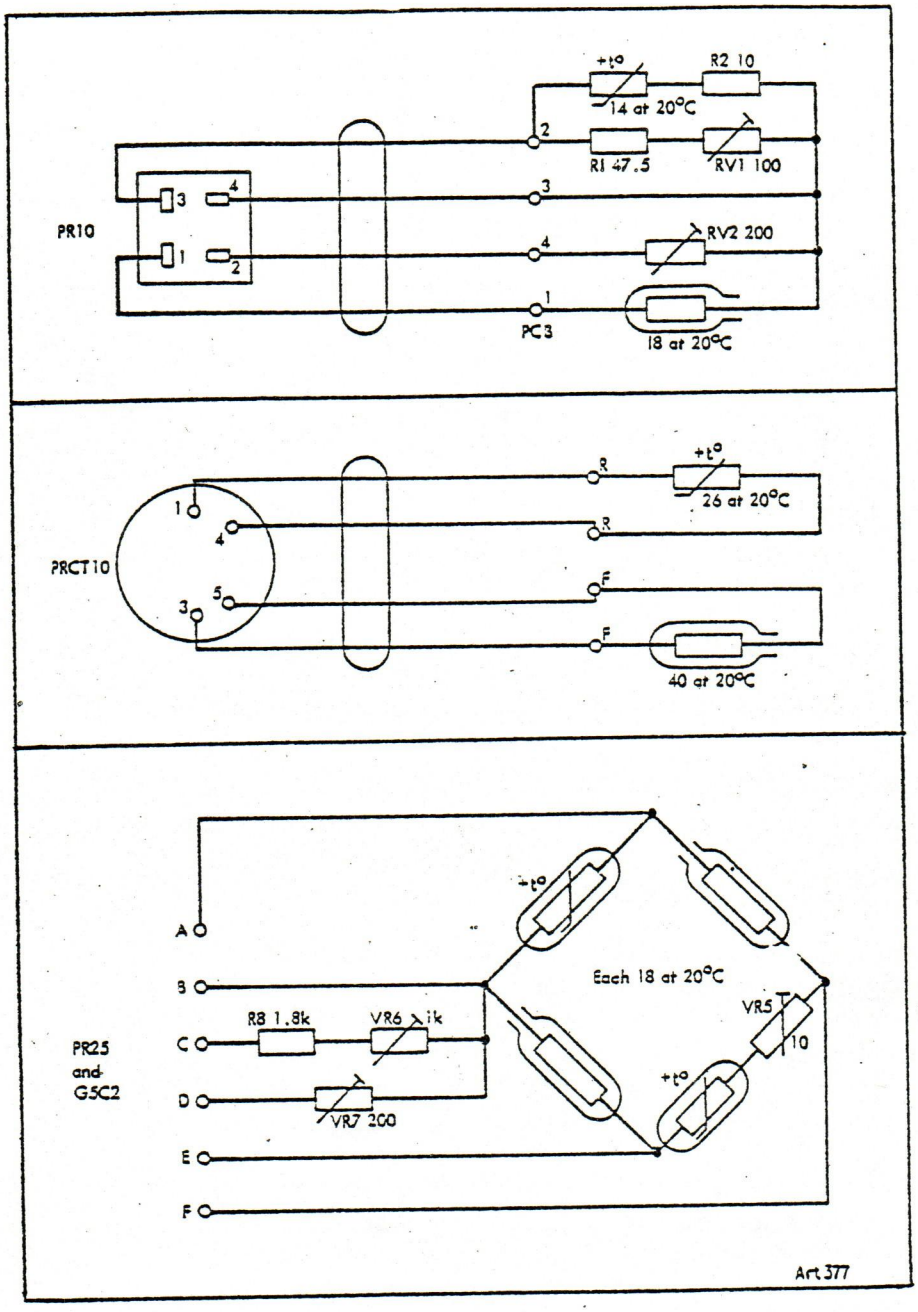
1 With the vacuum system at atmospheric pressure, note the instrument reading and if necessary adjust the 'set atm' pre-set on the gauge head to bring the meter to the 'atm' mark.

2 Pump down to 10^{-3} mbar, check the reading and if necessary adjust the 'set vac' pre-set.

3 Recheck 1 and 2.

If there is insufficient range of adjustment on either pre-set, the gauge head should be returned to Edwards under the Edwards Exchange/Replacement service.

Circuit diagrams



Communication with Edwards

Any communication relating to the subject of this instruction should be addressed to Edwards High Vacuum or to the supplier from whom it was purchased.

Please specify:

1) the model, serial number and code.

2) the date of purchase.

3) your order number and the suppliers sales reference.

Equipment should not be returned to the supplier without prior arrangement.

IMPORTANT Health and Safety

Under Section 3 of the Health and Safety at Work Etc Act 1974 every employer has a duty to conduct his business so as not to expose persons not in his employment to risks to their health and safety. When goods are returned to the supplier, therefore, warning must be given if their usage is likely to render the equipment hazardous in any way.

Edwards High Vacuum and its distributors reserve the right to refuse acceptance of any equipment returned which they have reason to believe may be hazardous.

Damage in transit

If any damage has occurred in transit, it is important to inform both the carrier and the supplier within three days of delivery.