GAMEWELL

DATA SHEET

NO. P124

ELECTRO-PNEUMATIC CONTROL VALVE TYPE A, 1½ INCH, A27778-5

General

This valve, designed for use on compressed air systems, is an electrically operated pneumatically powered balanced valve for controlling the operation of the horn in conformity with the code signal impulses transmitted over the fire alarm circuit as follows.

a. Directly from the fire alarm boxes.

b. From a code signal transmitter which may be manually set to transmit different combinations of code numbers.

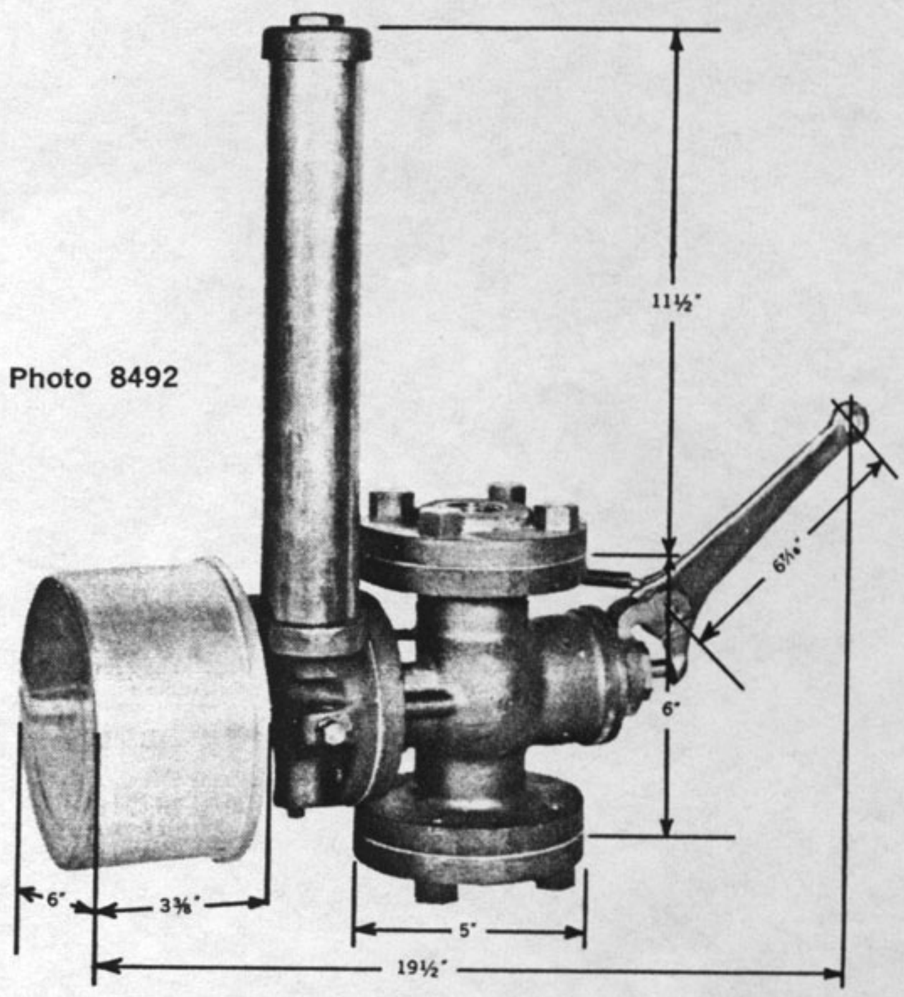
c. From a manually operated telegraph key or other circuit breaking device.

This valve is of the uniform time type and is designed to give blasts of uniform duration irrespective of the length of time the control circuit may remain open. In the event of an accidental break in the fire alarm (control) circuit, a single warning blast will be given, thus preventing waste of air and the annoyance of a continuous blast.

The valve is controlled by a magnet connected directly in the fire alarm circuit and the operating power is supplied by air pressure without the necessity for any local battery, weights or dependence upon solenoid magnet control from a local power circuit, the failure of which would render the public alarm useless in the event of fire. Stainless steel and bronze parts are used throughout the valve assembly.

The valve is entirely automatic and is constantly under the supervision of the fire alarm circuit, any interruption of which is instantly announced by a blast of the horn. A twleve-inch timing chamber is used. The maximum length of blast with this chamber is 1½ seconds and the minimum is ½ second. The standard valve is of the flange type. Two flanges, each fastened to the valve by means of four stainless steel bolts, the bottom flange threaded for connection to a 1½" pipe and the top flange threaded for a connection to a 1" pipe, are furnished with each valve as standard. Flanges for connection to other pipe sizes can be supplied when specified.

Photo 8492



Electrical Attachment

The electrical attachment is designed for use in either a normally open or a normally closed 100 milliampere direct current circuit. When used in a normally open circuit, the coils 10 are normally de-energized. The armature 9, to which are fastened detents 2 and 3, is held in a normally retracted position by spring 6 and detent lever 8 is held in a normal operating position by detent 3. Thumb screw 11 is provided for adjusting the tension of spring 6.

When used in a normally closed circuit, the coils are normally energized and the armature is held in attracted position. Detent lever 8 is held in a normal operating position by detent 2. When the control circuit in which the coils are connected is opened, the armature retracts and the detent lever is thrown forward by the action of spring 5, which operates plunger B and opens pilot valve R through the medium of hammer 4. Detent lever 8 is restored to its normal operating position when piston Q is operated.

A terminal block with terminal 7, is provided for connecting the necessary control wires.

The above equipment is mounted on base 12 and is fully enclosed and protected by a cover 13. A 7/8" hole is provided in the base for a standard 1/2" tubing or cable fitting.

Operation From Electrical Attachment

When installed, the lower end of the valve is connected to the air supply pipe. Air in chamber A is therefore at normal operating pressure. Air from chamber A passes through port S and N to chamber C so that air in chamber C is at the same pressure as that in chamber A.

When the electrical attachment operates, plunger B is activated, allowing the air within the timing valve to flow. The flow of air under specified pressure limits performs a number of mechanical functions within the timing valve.

1. Plunger B forced to the right opens pilot valve R, allowing the air in chamber C to escape through port D. Consequently the air pressure in chamber C becomes less than in chamber A. Air pressure from chamber A imposes adequate force to move piston Y, which is connected to shaft V, to the left causing the intermediate valve E to open.
2. At that instant air is allowed to pass through port F of main valve I to chamber G. When pressure equilibrium is reached in chamber G and A, the force acting upon piston H, being of magnitude proportioned to the area of piston H, overcomes the counteracting forces of air pressure and return spring on valve I. At that point piston H moves to the left, pushing main valve I in the same direction. The air from chamber A passes to chamber J through the open main valve I and then to the equipment attached to the timing valve. To prevent build up of pressure in front of piston H, which might interfere with proper opening of valve I, the chamber G is provided with vents H', allowing any pressure build up to dissipate into atmosphere.
3. When intermediate valve E opens, the relieved portion W of shaft V connects port K with chamber G and allows the air to pass through port K to chamber L, forcing piston M to the right, which closes port D.
4. With port D closed, piston M to the right and the valve R open, the air flows through port Z into timing chamber T and restoring chamber P.
5. Piston Q in chamber P under the pressure of the inflowing air moves to the left, restoring the detent lever 8 of the electrical attachment to its normal operating position.
6. During the period when piston Y is to the left in chamber C, the piston closes the port N and the flow of air from chamber A through port S to chamber C is then restricted by the adjusting screw U, provided for regulating the length of the blast, and small port in piston Y.
7. When the flow of air through port S, restricted as described in point 6, builds up pressure in the timing chamber T substantially equal to the pressure in chamber A, the intermediate valve E closes, cutting off the air supply to chamber G. The air in chamber G exhausts to atmosphere through port G', reducing pressure behind piston H. The air pressure and the force of retaining spring acting on main valve I, in area of chamber A, overcomes the diminishing pressure behind piston H and the main valve closes, cutting off the flow of air from chamber A to chamber J.
8. When intermediate valve E closes and shaft V moves to the right, the relieved portion W in shaft V connects port K to atmosphere through the right end of the timing valve. This relieves the pressure in chamber L, timing chamber T and restoring chamber P. The air pressure differential between chamber L and chamber C forces piston M to the left, allowing air to flow through open valve R and exhausts to atmosphere through port D. The flow of air under pressure from chamber C closes the pilot valve R, thus sealing chamber C. This allows the air pressure in chamber C and A to reach equilibrium and original operating level, until the valve is again tripped. Piston Q is moved to the right by its restoring spring and the timing valve is restored to its normal operating condition.

Manual Operation

The valve may be manually operated by pulling down on the manual operating handle B. This moves the shaft V to the left, opening the intermediate valve E, which admits air to chamber G and opens the main valve I, in the same manner as when the shaft V is moved to the left by piston Y in response to tripping of the pilot valve R by the electrical attachment. When operated manually, the automatic timing control is not effective and the main valve I will remain open as long as the handle is held down.

Cleaning

The cleaning plug in the opening to chamber C is provided so that any water or dirt which may collect in chamber C may be cleaned out by removing this plug, without taking the valve apart. The supply of air to the valve should be shut off before attempting to remove this plug.

Adjustment

To adjust the length of blast, first loosen the check nut on the adjusting screw and then turn the adjusting screw clockwise to lengthen the blast or counterclockwise to shorten the blast. After obtaining desired length blast, the check nut must be set up tightly.

Ordering Information

Standard pipe size is 1½" on the bottom flange and 1" on the top flange. Specify any required variation from standard size, the timing of control equipment, length of blast and the type and capacity of the equipment to be operated by the valve.

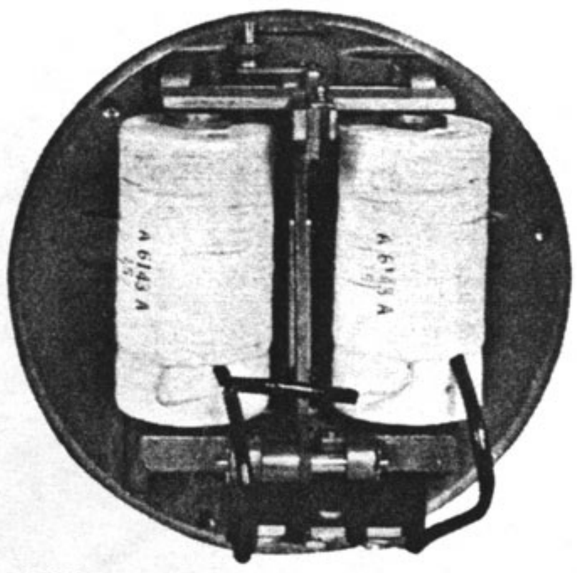


Photo 8493

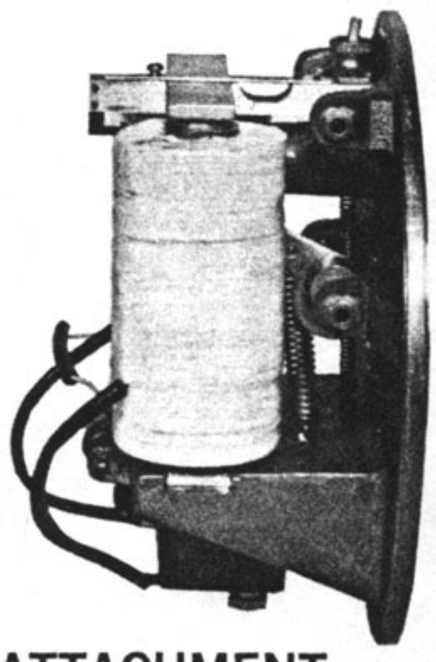


Photo 8494

EXPOSED VIEWS OF ELECTRICAL ATTACHMENT

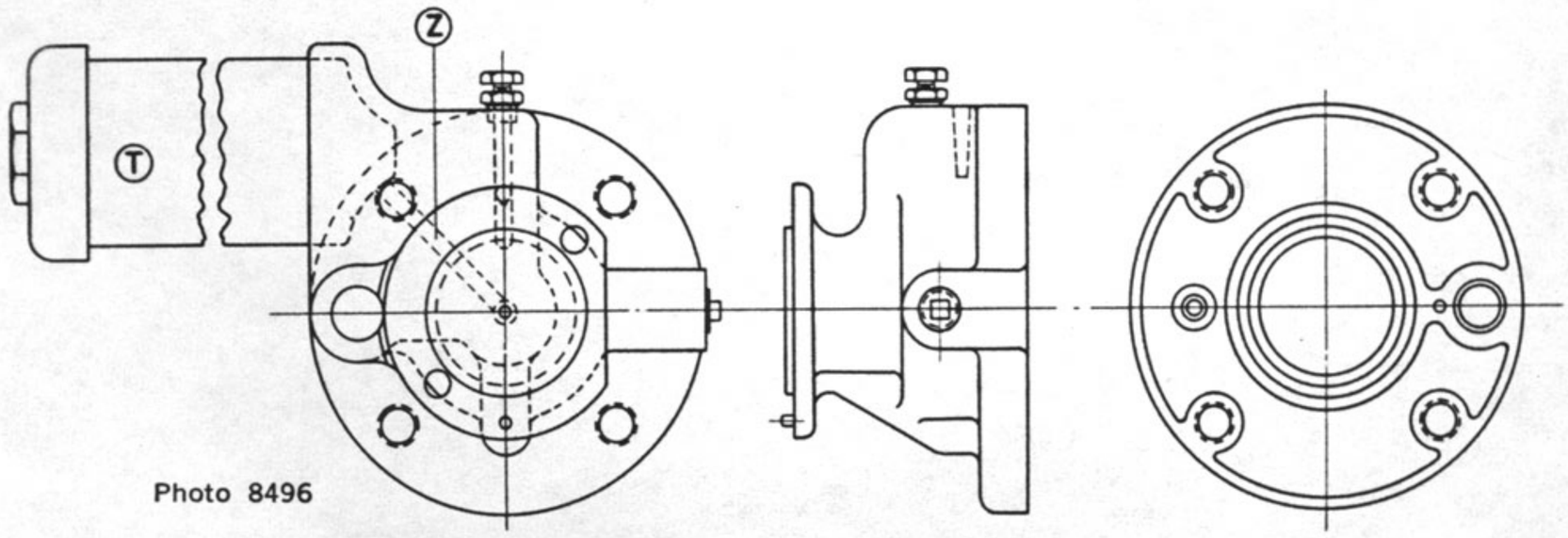


Photo 8496

TIMING HEAD ASSEMBLED

BLISS GAMEWELL

A DIVISION OF THE E. W. BLISS COMPANY

1238 CHESTNUT ST. NEWTON, MASS. 02164

Printed in U.S.A.

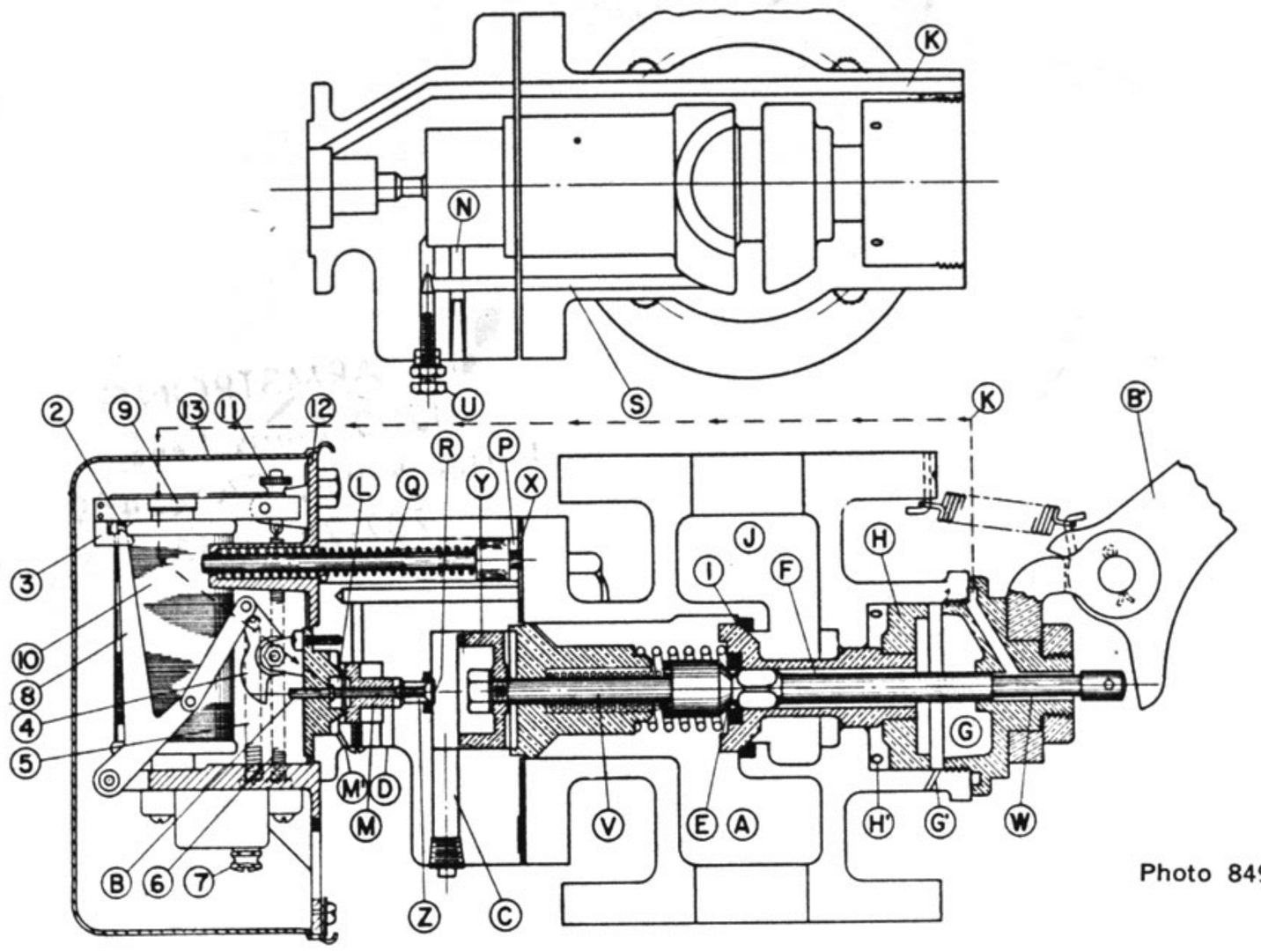


Photo 8495

TYPE-A 1½" TIMING VALVE ASSEMBLED

PARTS IDENTIFICATION

DESIGNATION	NAME	PART NO.	DESIGNATION	NAME	PART NO.
A	Air Chamber	*	V	Valve Stem	27744
B	Trip Valve Plunger	19462-A	W	Recess Section Valve Stem (See V)	*
B'	Manual Operating Handle	19465-A			
C	Air Chamber	*	X	Air Vent	*
D	Air Port	*	Y	Forward Piston	20171-A
E	Intermediate Valve	*	Z	Air Passage	*
F	Air Port	*	2	(See 8)	—
G'	Air Port	*	3	(See 8)	—
H	Rear Piston	20170-A	4	Lever Trip Valve and Hammer	20190-A
H'	Air Vent	*			
I	Main Valve	27669	5	Trip Valve Hammer Spring	48386
J	Air Chamber	*	6	Armature Tension Spring	6148-A
K	Air Port	*	7	Block, Terminal	17779-B-3
L	Air Chamber	*	8	Detent Lever Assembly with Hub	27809
M	Trip Valve Bushing	19461-A			
M'	Air Vent	*	9	Armature	—
N	Air Port	*	10	Magnet Assemblies, 30 ohms	6143-A
P	Air Chamber	*			
Q	Restore Plunger	13126-A	11	Armature Tension Screw Nut	13253-1
R	Trip Valve Stem	27744			
S	Air Port	*	12	Base, Electrical Attachment	—
T	Air Chamber	*	13	Cover, Electrical Attachment	—
U	Needle Valve Stem	27670			

* Denotes area or location, does not cover part.

Note: This list does not cover all parts and is intended only to clarify designations on diagrams.