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**1/8", Shockless Type Proportional
Directional and Flow Control Valves**

CAUTION



READ FIRST!

To prevent serious accidents, equipment damage, and other property damage, please observe the following precautions, as well as all related regulations regarding safety. Before using the product, be sure you read and understand entirely all the instructions in the Operator's Manual.



PRECAUTIONS FOR USE

1. To avoid possible injury when handling the products, wear protective safety equipment in accordance with the instruction of the Operator's Manual.
2. Failure to support the weight of the product or lifting the product with improper posture may result in injury to the hands or back. Be sure to follow the instructions in the Operator's Manual.
3. Do not climb on, strike, drop or exert unnecessary force on the product. This may lead to injury or fire due to improper operation, damage or leakage.
4. Oil on the product or floor must be cleaned up thoroughly. Oil could cause you to drop the product or slip on the floor.



PRECAUTIONS FOR INSTALLATION, REMOVAL AND MAINTENANCE

1. All installation, removal, maintenance, piping or wiring should be performed by properly trained personnel.
2. Before starting the work for installation, removal, maintenance, piping and wiring, do the following jobs. Failure to do these jobs may cause the equipment to move suddenly or spout oil during the work, with may cause serious accidents.
 - a. Shut off the power supply to the equipment and make sure that all the electrical motors or engines have stopped.
 - b. Relief all pressure in pipes and cylinders in the system.
3. Before working on any electrical wiring, be sure to shut off the power supply. Failure to do this may cause electrical shock
4. Keep all installation holes and surfaces clean. Failure to do this may cause insufficient tightening of the bolts that may cause fire due to oil leakage.
5. Before installing the product, be sure that all specified bolts are tightened with the specified torque. Tightening outside the specifications may cause improper operation, damage, oil leakage, etc.



PRECAUTIONS FOR OPERATION

1. Never operate any device in an environment where there is danger of explosion or fire, unless the device is fully protected. This may lead to major and serious accidents including explosion or fire.
2. In the event of abnormal operation (unusual sounds, oil leakage, smoke, etc.) immediately stop operation and take appropriate corrective measures.
3. When bleeding the air in the valves, hold it under low pressure and expel the air completely. However, do not turn the air vent screw more than two revolutions. Spouting of pressurized hydraulic oil may cause accidents.
4. Before operating this device for the first time, check that hydraulic and electrical circuits are properly connected and that adjoining surfaces are tightly aligned.
5. Do not use the product out of the range of the specifications as described in the catalog, related data sheets, drawings, etc. Not following specified ratings may cause improper operation, damage or injury.
6. During operation, high temperatures in the hydraulic system or solenoid units may occur. Wear protective gear on hands and body when around these components.
7. Always operate the product with proper oil, and within established ranges for temperatures, viscosity and purity. Use outside of specified limits may cause improper operation or fire due to oil leakage.



GENERAL PRECAUTIONS

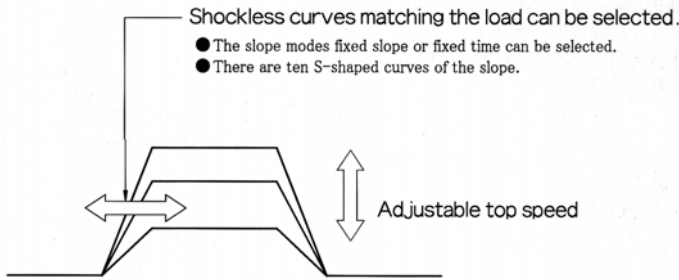
1. Do not modify the equipment. If any modifications are made, unexpected machine movement may cause injury.
2. Do not disassemble or change the products without prior consent of the manufacturer. Failure to do this will cause the products to not perform at the specified performance characteristics. Moreover, failure to follow these guidelines may cause accidents or equipment failures.



RELATED REGULATIONS

1. To ensure that this product is used in a safe manner, it is essential to observe the above precautions, as well as all related regulations regarding safety.

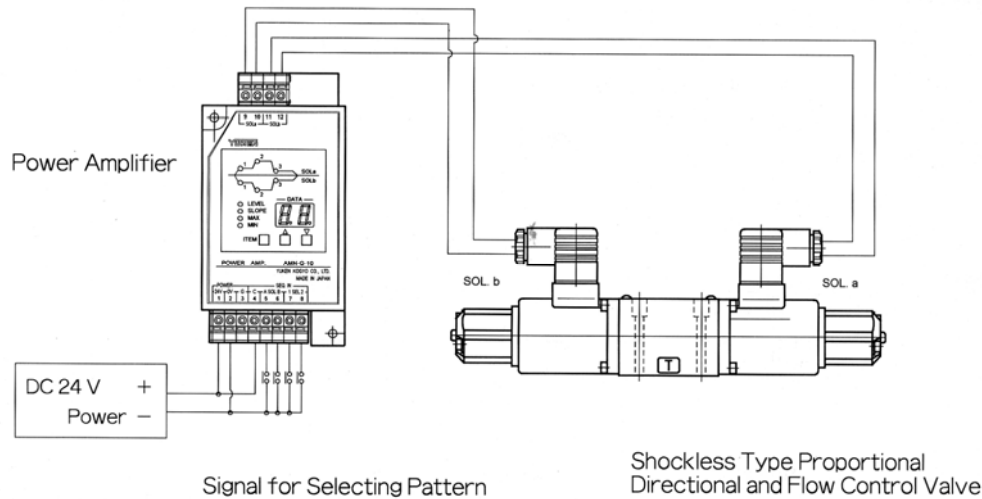
Adjustable Shifting Time Shockless Valves Can Be Used More Easily!



These valves are well accepted by industrial users as adjustable shift time shockless type valves. By employing the basic design concept of the “G” series solenoid operated directional valves, Yuken has been successful developing the adjustable shift time shockless valves with higher performance which makes the speed setting possible at any high speed operation. In combination with the newly developed digital amplifiers, the further enhancement of maneuverability and repeatability of the valves can be realized.

- The top speed of the actuator can be adjusted by this valve.
- The power amplifier facilitates by digital setting and provides high repeatability.

▶ Schematic Drawing



▶ Control of Contamination

Due caution must be paid maintaining control of contamination of the hydraulic fluids which may otherwise lead to breakdown and shorten the life of the valve. Maintain the degree of contamination within NAS grade 11. Use 20 μm or finer line filter.

▶ Hydraulic Fluid Types

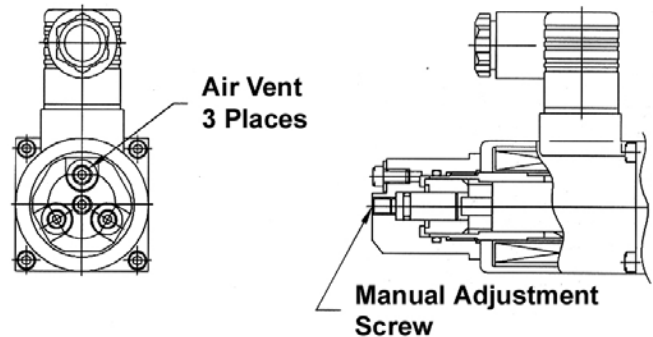
Petroleum based oils. Use fluids equivalent ISO VG: 32 or VG: 46.

▶ Recommended Viscosity & Temp.

The recommended viscosity ranges are from 20 to 200 mm²/s and the temperature range is from +32° to +140° F (0 - +60° C), both of which have to be satisfied for the use of the above hydraulic oils.

▶ Air Bleeding

To ensure stable control, bleed the air from the solenoid completely and fill its core with oil. Bleeding can be done slowly, loosening one of the air vents at the end of the solenoid. Choose one of the three air vents which is expected to work most effectively (see the figure below.)



► Instructions

Mounting

The valve should be mounted with its solenoid air vent up and its spool axis horizontal.

Tank Piping

Be sure to fill the Tank port with the hydraulic fluid. Tank Pipes must be equipped with a 5.8 PSI (0.04 MPa) check valves to take backpressure. Do not connect the tank pipes to other lines, but connect them directly to the reservoir. Be sure that the tank pipe ends are immersed in fluid.

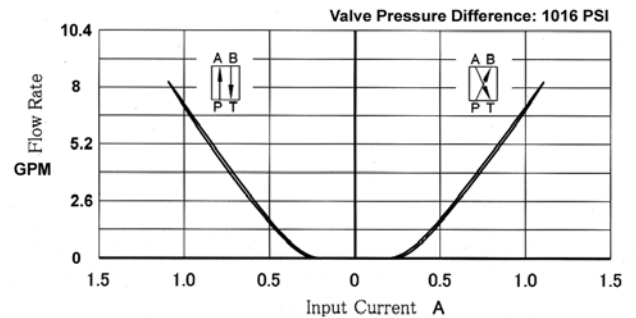
Manual Adjustment Screw

When initial adjustments are to be made or when no current is supplied to the valve due to electrical failure or other problem, turn the manual adjustment screw to temporarily set the spool position.

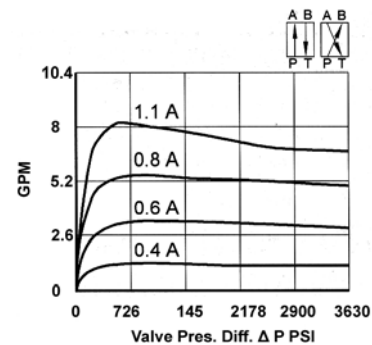
Under normal conditions, however, this screw must be kept in its original position. (See figure on page 3.)

► Typical Performance Characteristics at Viscosity 30mm²/s

- Input Current vs. Flow



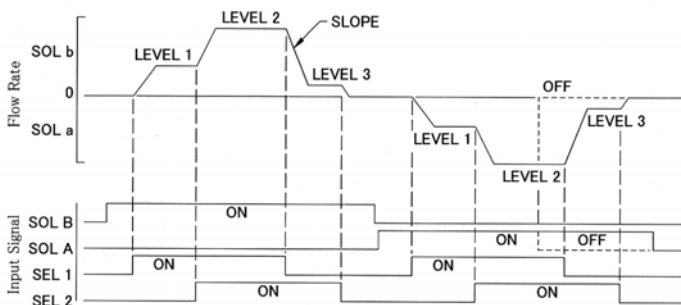
- Valve Pressure Difference vs. Flow



► Relationship Between SOL Signals And Flow Patterns

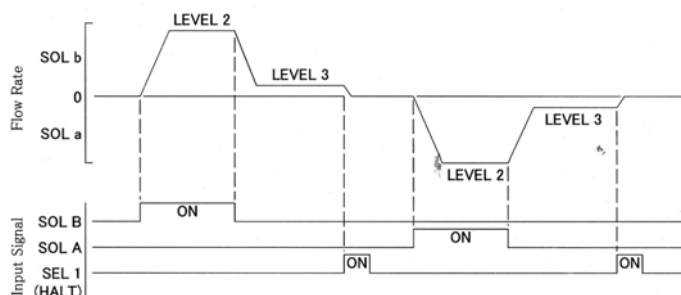
Shockless Control Mode

- Outputs shockless patterns, low speed (LEVEL 1); high speed (LEVEL2); low speed (LEVEL 3).



- “LEVEL”, “SLOPE” and other functions are all digital settings.
- Each “LEVEL” and “SLOPE” can be set separately for both SOL a and SOL b.
- The “SLOPE” is selectable fixed slope or fixed time.
- Ten S-shaped curves for “SLOPE” (one for straight line and nine for curve) can be selected to reduce shocks at starting and stopping of the actuator.

G-Series Control Mode



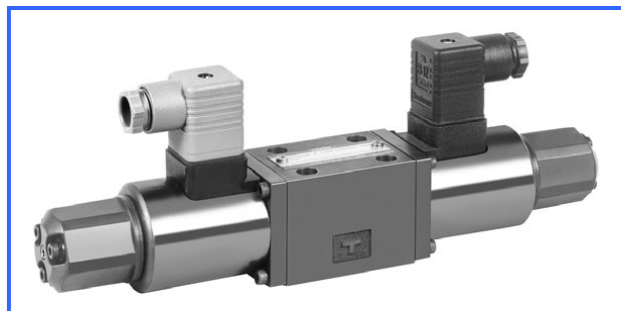
Shockless speed control is enabled just by providing SOL a and SOL b only contact signals in the same control mode for the “G” series of adjustable shifting time type shockless valves.

- The LEVEL 3 output automatically becomes zero within 60 seconds unless the HALT (SEL 1) signal is input.

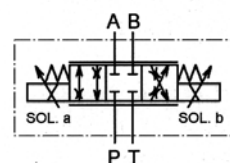
1/8", Shockless Type Proportional Directional and Flow Control Valves

► Specifications

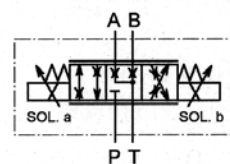
Description	EDFG-01-30-3C*-XY-50
Max. Operating Pressure	3630 PSI (25 MPa)
Max. Tank Line Back Pressure	2033 PSI (14 MPa)
Rated Flow	7.9 GPM (30 l/min)
Rated Current	1.1 A
Coil Resistance	10.8±0.5Ω
Hysteresis * ¹	Less Than 5%
Repeatability * ²	1% or less
Step Response	100 ms or less
Frequency Response	Phase (-90°): 20 Hz
	Gain (-3 dB): 25 Hz
Approx. Mass	5.4 lbs (2.4 kg)



Graphic Symbols



EDFG-01-30-3C2-XY



EDFG-01-30-3C40-XY

*¹ Hysteresis Value: Obtained when Yuken's applicable power amplifier is used

*² Repeatability Value: Obtained when Yuken's applicable power amplifier is used under the same conditions

► Model Number Designation

EDFG	-01	-30	-3C2	-XY	-50
Series Number	Valve Size	Rated Flow	Spool Type	Direction of Flow	Design Number
EDFG: Shockless Type Proportional Directional and Flow Control Valve	01	30: 7.9 GPM (30 L/min)	3C2 3C40	XY: Meter in- Meter Out	50

► Sub-Plates

Sub-Plate Model Numbers	Thread Size Re (BSPT)	Approx. Mass lb (kg)
DSGM-01-30	1/8	1.8 (0.8)
DSGM-01X-30	1/4	
DSGM-01Y-30	1/2	

- Other sub-plate configurations are available. (e.g. aluminum, side ports). Please call your Yuken representative for information.
- When sub-plates are not used, the mounting surface must have a good, machined finish.

► Attachment (Mtg. bolts)

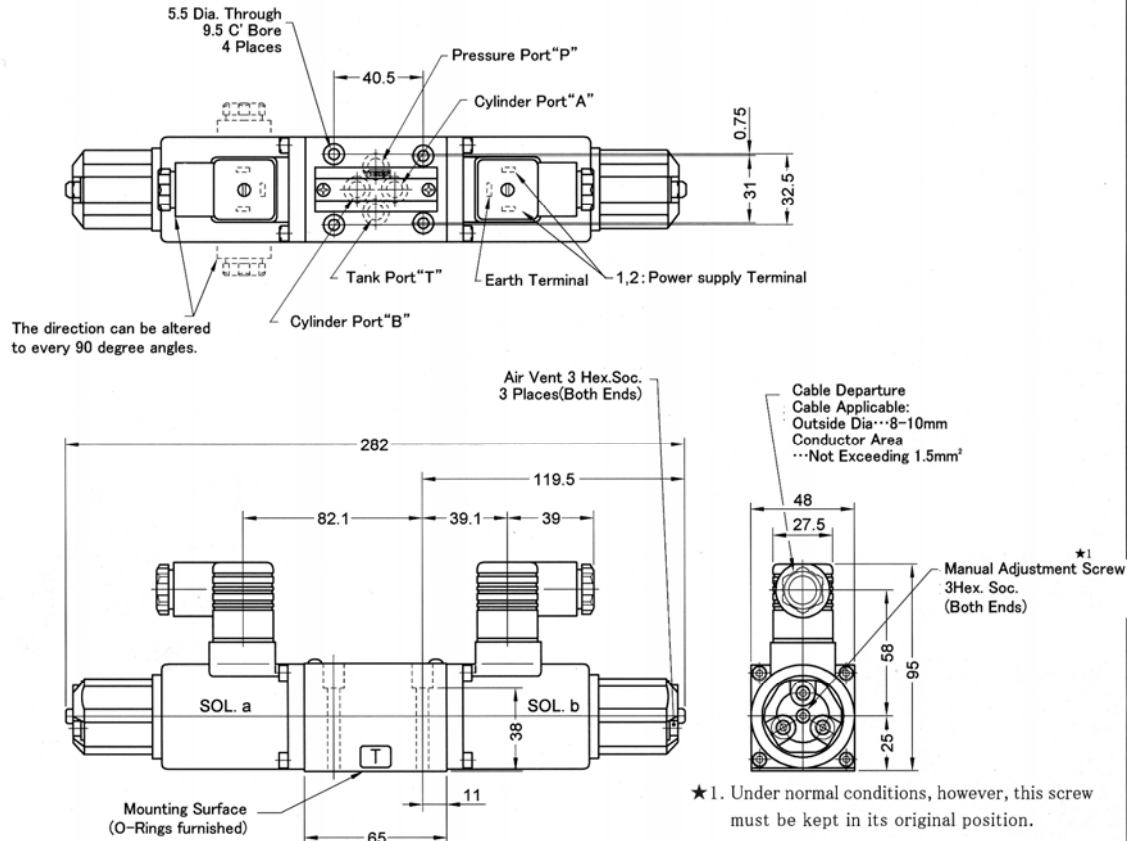
Mounting bolt (Socket Head Cap Screw)	
Size	Tightening Torque
No. 10-24 UNC x 1 - 3/4" lg	5 - 7 Nm

► Applicable Power Amplifier

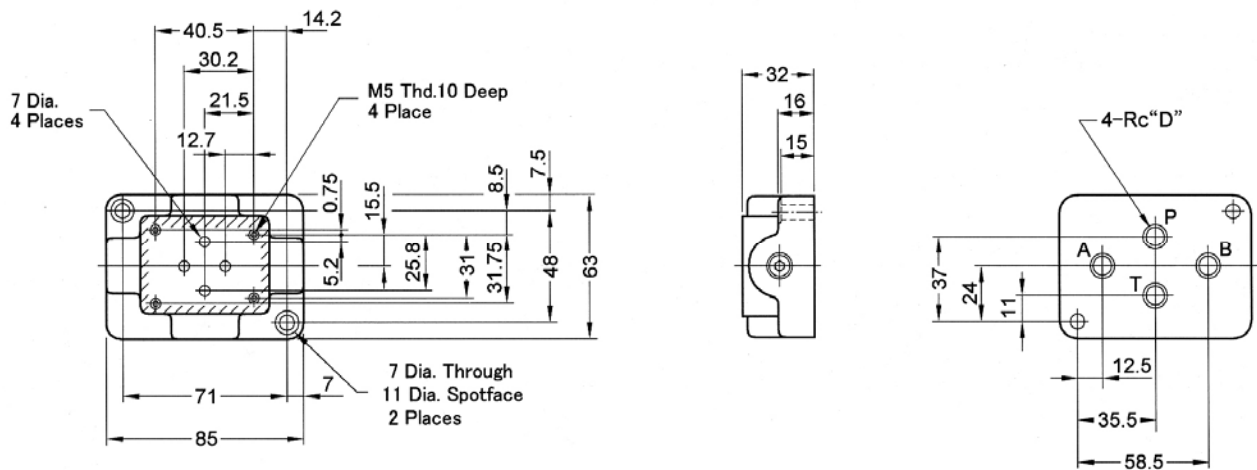
- For stable performance, it is recommended that Yuken's applicable power amplifier be used. (For details, see page 7.)

▶ EDFG-01-30-3C*-XY-50

- Mounting surface: Conform to ISO 4401-AB-03-



▶ DSGM-01, 01X, 01Y Sub-Plate



Sub-plate Model No.	"D"
DSGM-01-3090	1/8" NPT
DSGM-01X-3090	1/4" NPT
DSGM-01Y-3090	3/8" NPT

- Other sub-plate configurations available. (e.g. aluminum, JIS-Rc or SAE thread, side ported) Please call your Yuken representative for details and availability.

► Power Amplifier

Energy Saving and Lower Heat Generation

Applied new circuit system suppresses heat generation, providing substantial energy savings.

Simple Wiring Procedure

A screwless terminal board facilitates wiring and unwiring of the power amplifier without a screwdriver.

► Specifications

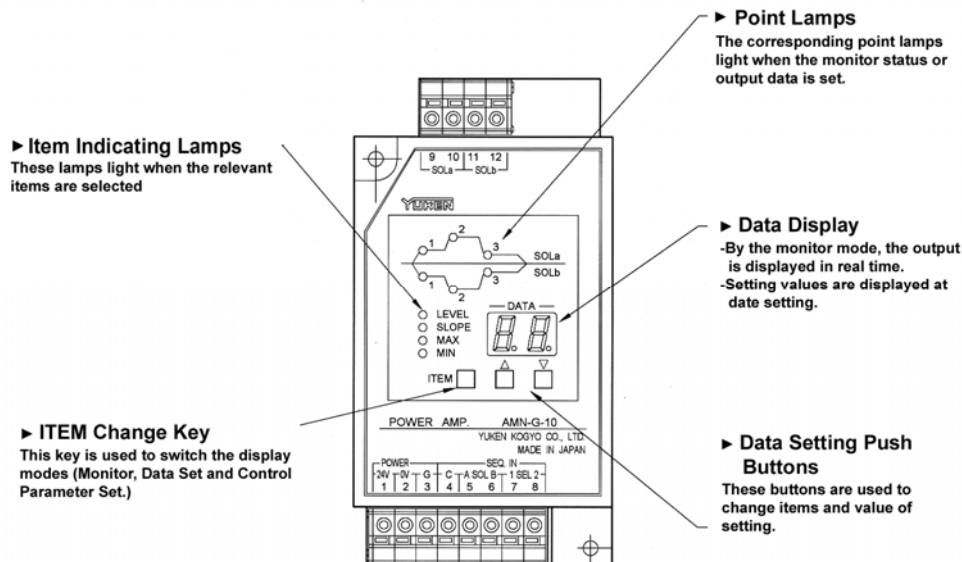
Description		AMN-G-10
Maximum Output Current		1.3S (10 Ω SOL)
Setting Resolution		0—99% (1% Units)
Number of Pre-selected Patterns		SOL a: 3 Patterns SOL b: 3 Patterns
Sequence Input	Input Current	10 mA / 24 V
	Voltage Range	10—28 V
Dither		Variable (Internal)
Slope Adjustment Range		0—99% Max. Slope Time
Maximum Slope Time		1—99 s
Temperature Drift		0.2 mA / °C
Power Supply		24 VDC (Power Supply Range: 20—30 V)
Power Input		25 W
Ambient Temperature		32°—122° F
Ambient Humidity		90% RH or Less
Mass		0.45 Lbs



► Model Number Designation

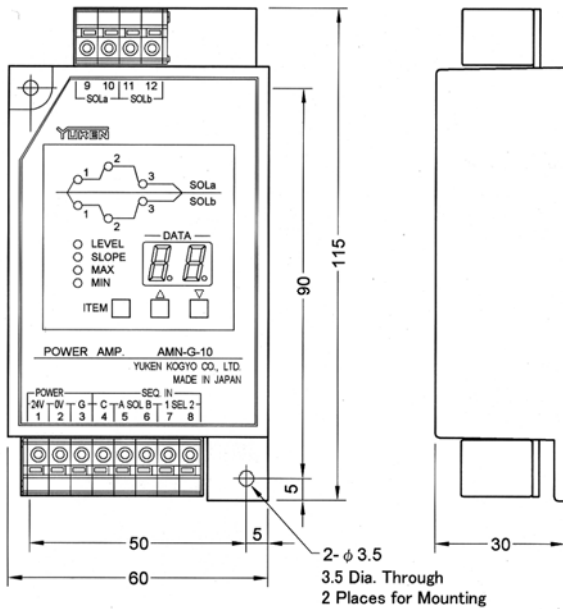
AMN	-G	-10
Series Number	Type of Function	Design Number
AMN	G: Shockless Direction and Flow Control	10

► Part Names and Functions of the Power Amplifier



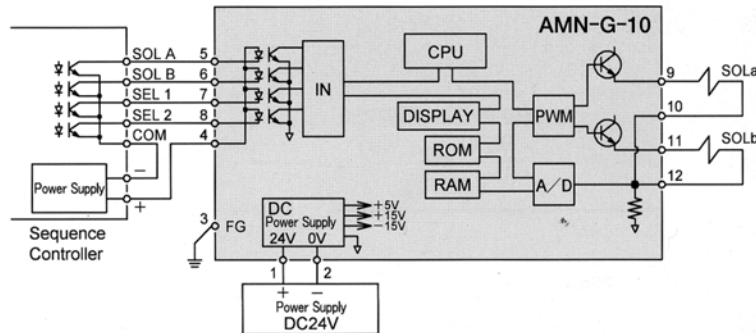
► Power Amplifier AMN-G-10

• Detail of Terminal Board

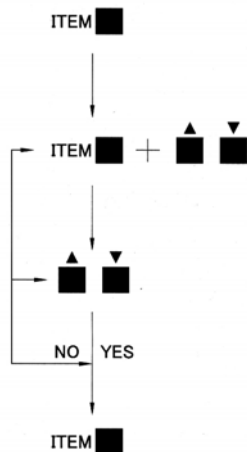


Terminal Number	Name	Terminal Number	Name	
1	Power Supply	+ 24 V	Output To Valve Solenoid	
2		0 V		
3	Ground	G		SOL a
4	Sequence Input	IN COM	12	SOL b
5		SOL A		
6		SOL B		
7		SEL 1		
8		SEL 2		

• Example Diagram



• Data Setting Method



- Push the key twice to select the item or point to be set. (The mode is alternately switched when the key is pushed.)
- Use the key to select the item or point to be set. The level and slope are switched at each point.
- Use the key to change data.
- Data change completed?
- Push the key twice to select the monitor mode.

► For details of the data setting method, please see Operator's Manual.