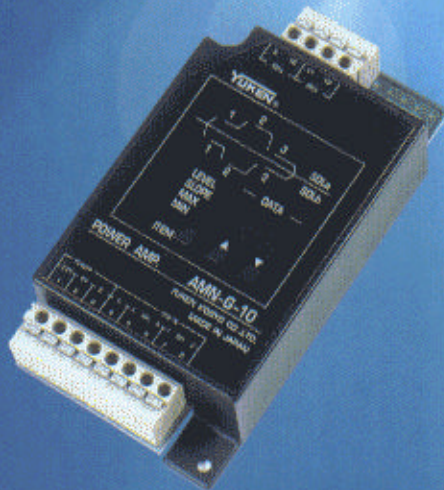
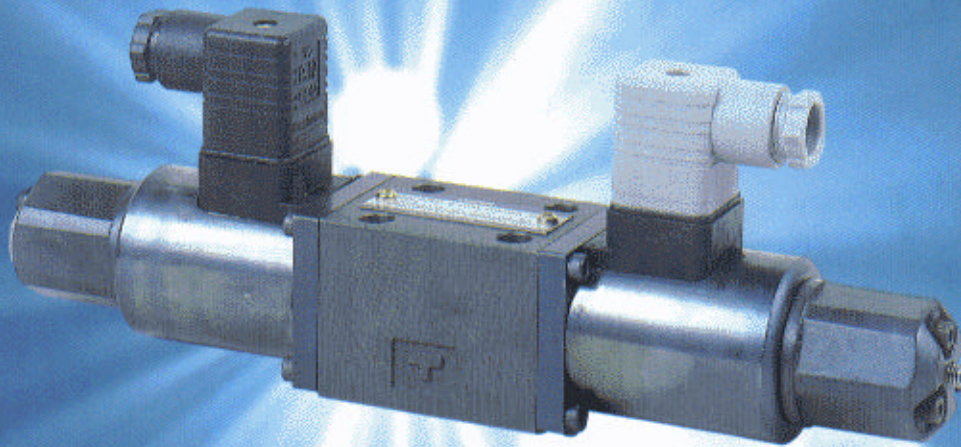









**1/8, Shockless Type
Proportional Directional and Flow Control Valves**





Proportional Directional and Flow Control Valves

Safety Precautions

3. Precautions for Operation




-  **DANGER ❶** 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.
-  **WARNING ❷** In event of abnormal operation (unusual sounds, oil leakage, smoke, etc.), immediately stop operation and take appropriate corrective measures.
-  **WARNING ❸** When bleeding the air in the valves, hold it under a low pressure and expel the air completely. However do not the air vent screw turn over two revolutions. It is feared to cause an accident by spouting of the pressured hydraulic fluid.
-  **CAUTION ❹** Before operating this device for the first time, check that hydraulic and electrical circuits are properly connected and that adjoining surfaces are tightly aligned.
-  **CAUTION ❺** Do not use the product out of the specification as described in the catalogue, related data sheets, drawings, etc. Not doing so may cause improper operation, damage or injury.
-  **CAUTION ❻** During operation, high temperatures in the hydraulic system or solenoid units may occur. Wear protective gear on hands and body when around these parts.
-  **CAUTION ❼** Always operate the product with proper oil, and within established ranges for temperature, viscosity and purity. Use outside of specified limits may cause improper operation or fire due to oil leakage.

4. General Precautions





-  **WARNING ❶** Do not modify the equipment. If any modifications are made, unexpected machine movement may cause injury.
-  **CAUTION ❷** Do not disassemble or change the products without prior consent of the manufacturer. Failure to do this will cause the products not to perform the specified performance and characteristics, and moreover will become the causes of the accidents or failures.

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 all the instructions in the Operator's Manual entirely.






In this catalogue, safety precautions are classified into three ranks: DANGER, WARNING, and CAUTION. These words are defined as follows:

-  **DANGER:** Indicates an imminent danger that is very likely to cause death or severe injury unless the situation is avoided.
-  **WARNING:** Indicates a potential danger that may cause death or severe injury unless the situation is avoided.
-  **CAUTION:** Indicates a potential danger that may cause a minor or moderate injury or that may result in property damage.

1. Precautions for Use

-  **CAUTION ❶** To avoid possible injury when handling the products, wear protective safety equipment in accordance with the instructions in the Operator's Manual.
-  **CAUTION ❷** 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.
-  **CAUTION ❸** 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 oil leakage.
-  **CAUTION ❹** Oil on the product or floor must be cleaned up thoroughly, Oil could cause you to drop the product or slip on the floor.

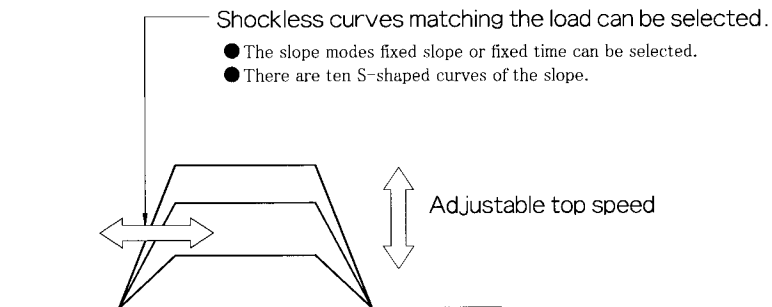
2. Precautions for Installation, Removal, and Maintenance

-  **WARNING ❶** All installation, removal, maintenance, piping or wiring should be performed by properly trained personnel.
-  **WARNING ❷** 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 the oil from it during the work, which eventually may cause the serious accidents.
- Shut off the power supply to the equipment and make sure that all the electrical motors or engines have stopped.
 - Get the pressure in the pipes and cylinders in the hydraulic system back to zero pressure.
-  **WARNING ❸** Before working on any electrical wiring, be sure to shut off the power supply. Failure to do this may cause electrical shock.
-  **CAUTION ❹** 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.
-  **CAUTION ❺** Before installing the product, be sure that all specified bolts are tightened with the specified torque. Tightening with the outside specifications may cause improper operation, damage, oil leakage, etc.

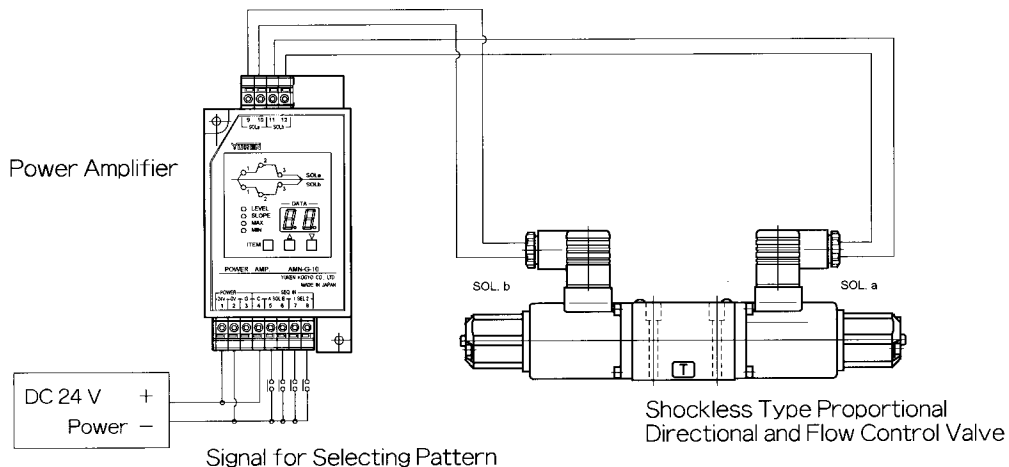
Shifting time adjustable type shockless valve can be used more easily!

These valves are well accepted by industrial users as shifting time adjustable type shockless valves. By employing the basic design concept of the "G series solenoid operated directional valves", we have been successful developing the shifting time adjustable shockless valves with high 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.



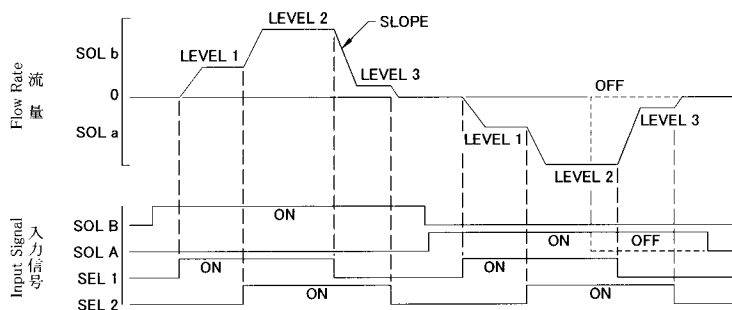
■ Schematic Drawing



■ Relationships between SOL signals and flow patterns

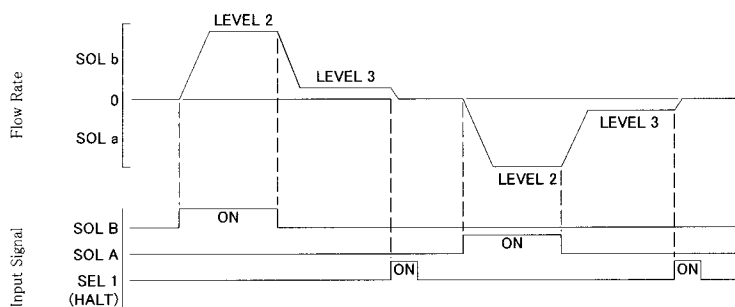
● Shockless Control Mode

Outputs shockless patterns, low speed (LEVEL 1) high-speed (LEVEL 2) 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.

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



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

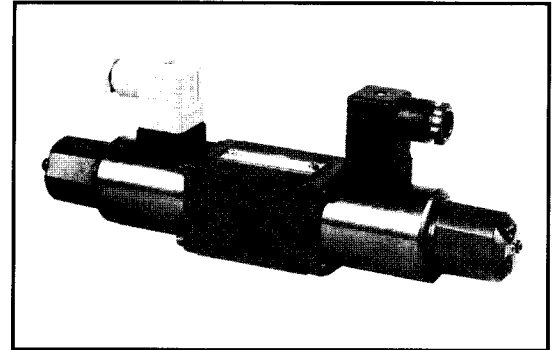
1/8, Shockless Type Proportional Directional and flow Control Valves

■ Specifications

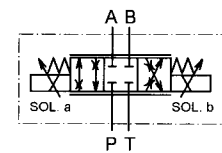
Model Numbers	EDFG-01-30-3C※-XY-50
Description	
Max. Operating Pressure	25 MPa
Max. Tank Line Back Pressure	14 MPa
Rated Flow	30 L/min
Rated Current	1.1 A
Coil Resistance (20 °C)	10.8±0.5 Ω
Hysteresis ★1	Less than 5%
Repeatability ★2	1% or less
Step Response (0 ↔ 100%)	100ms or less
Frequency Response (50% ± 25%)	Phase (-90°): 20 Hz
	Gain (-3 dB): 25 Hz
Approx. Mass	2.4 kg

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

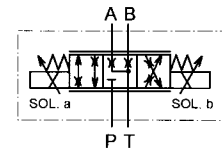
★2. Repeatability Value : Obtained when Yuken's applicable power amplifier is used under the same conditions.



■ Graphic Symbols



EDFG-01-30-3C2-XY



EDFG-01-30-3C40-XY

■ 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 : 30 L/min	3C2 3C40	XY : Metre In· Metre Out	50

■ Sub-Plates

Sub-plates Model Numbers	Thread Size	Approx. Mass
DSGM-01-30	1/8	0.8
DSGM-01X-30	1/4	
DSGM-01Y-30	3/8	

● Sub-plates are available. Specify sub-plate model from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

■ Attachment (Mtg. Bolt)

Mtg. Bolt (Soc. Hd. Cap Screw)	
Size	Tightening Torque
M5×45L···4 (4Pcs.)	5~7Nm

■ Applicable Power Amplifier

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see page 8)

Hydraulic Fluids

Fluid Types

Petroleum Base Oils : Use fluids equivalent ISO VG 32 or VG 46.

Recommended Fluid Viscosity and Temperature

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

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 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 Adj. 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 adjusting screw to temporarily set the spool position.

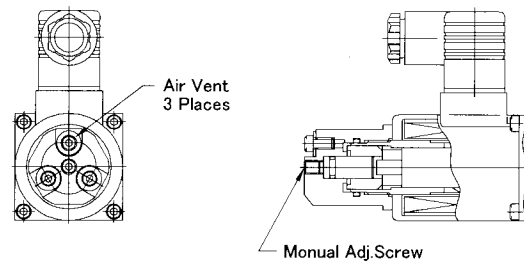
Under normal conditions, however, this screw must be kept in its original position (see the figure right).

Control of Contamination

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

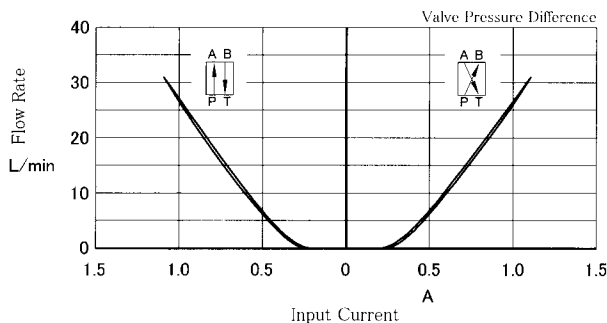
Air Bleeding

To ensure stable control, bleed the air from 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).

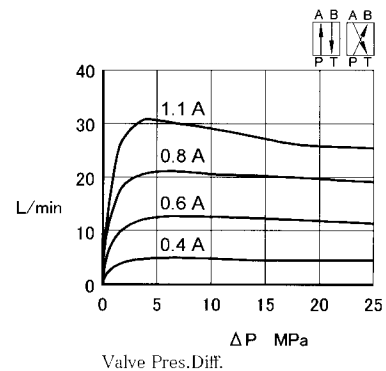


Typical Performance Characteristics at Viscosity 30mm²/s

Input Current vs. Flow

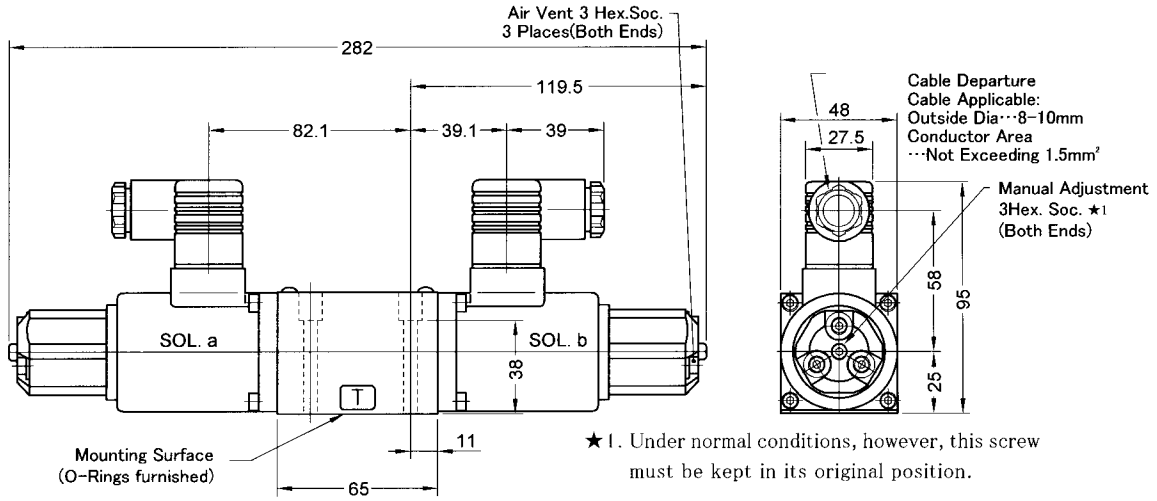
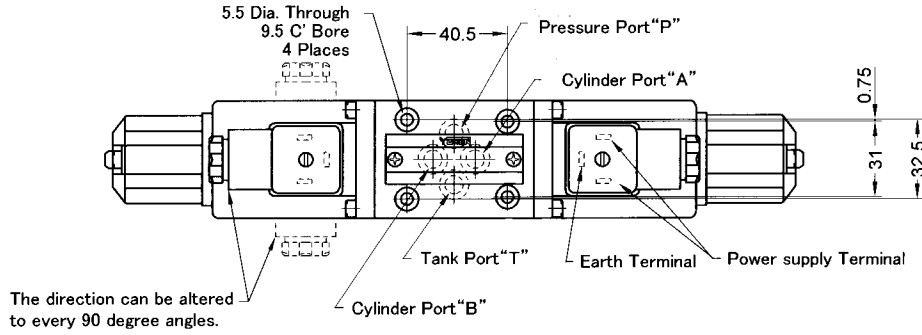


Valve Pressure Difference vs. Flow

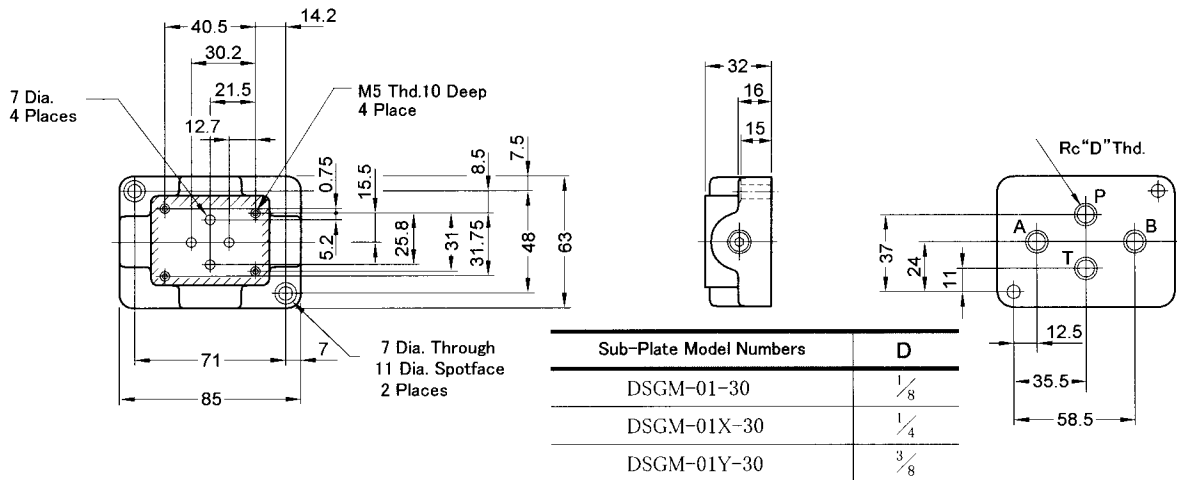


EDFG-01-30-3C※-XY-50

Mounting Surface: Conform to ISO 4401-AB-03-4-A



■ : DSGM-01.01X.01Y Sub-Plate



Power Amplifier

Full use of YUKEN electronics technology provides smaller, lighter and higher-performance power amplifier.

● Energy Saving and Lower Heating

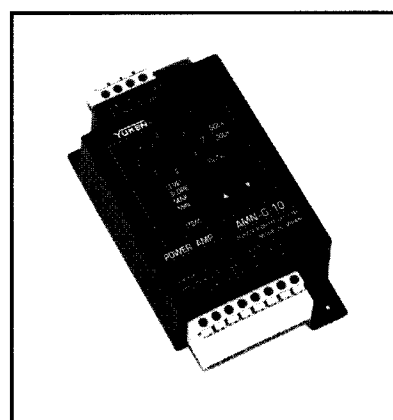
Applied new circuit system suppresses heating, providing substantial energy savings.

● Wiring with simple procedure

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

■ Specifications

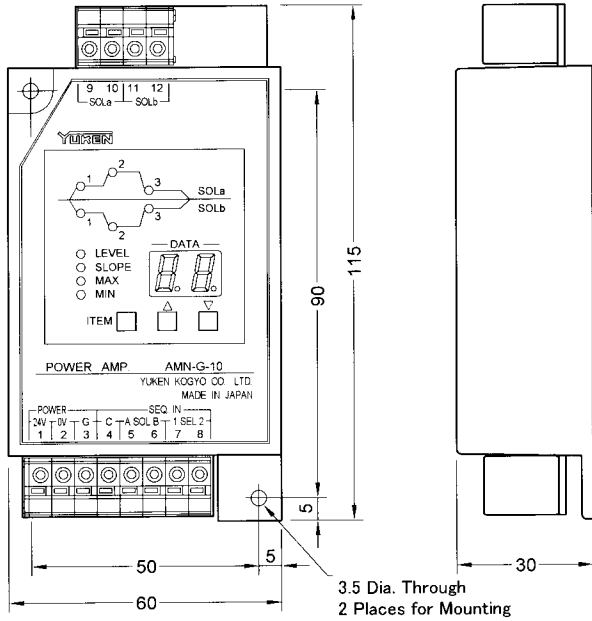
Model Numbers		AMN-G-10
Description		
Maximum Output Current		1.3 A (10 Ω SOL)
Setting Resolution		0~99 %: (1% Units)
Number of Preselected Pattern		SOL a: 3 Patterns SOL b: 3 Patterns
Sequence Input	Input Current	10 mA / 24 V
	Voltage Range	10~28 V
Dither		Variable (Internal)
Slope Adjust Range		0~99% / Max slope time
Max. Slope Time		1~99 s
Temperature Drift		0.2 mA / °C
Power Supply		24 V DC (Power Supply Range: 20~30V)
Power Input		25 W
Ambient Temperature		0~50°C
Ambient Humidity		90%RH or less
Mass		0.2 kg



■ Model Number Designation

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

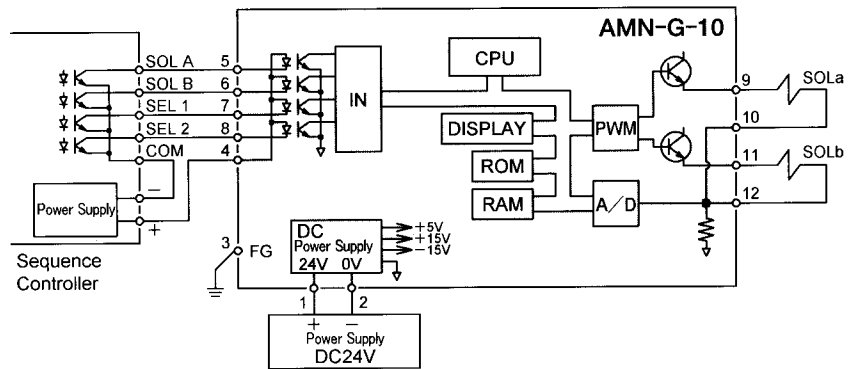
AMN-G-10



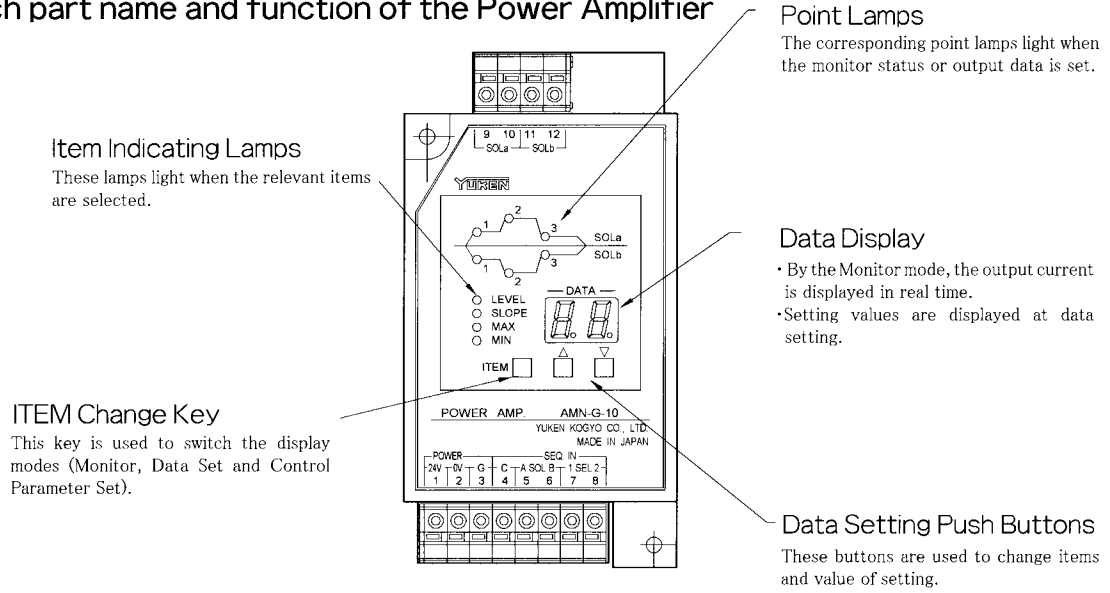
Detail of Terminal Board

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

Example Diagram



■ Each part name and function of the Power Amplifier



Item Indicating Lamps
These lamps light when the relevant items are selected.

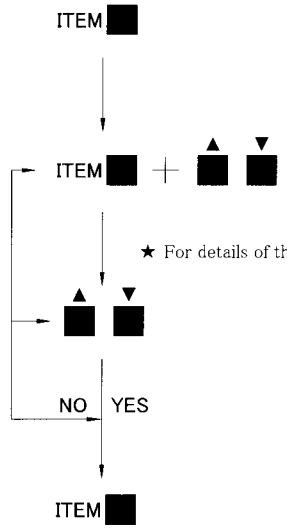
ITEM Change Key
This key is used to switch the display modes (Monitor, Data Set and Control Parameter Set).

Point Lamps
The corresponding point lamps light when the monitor status or output data is set.

Data Display
• By the Monitor mode, the output current is displayed in real time.
• Setting values are displayed at data setting.

Data Setting Push Buttons
These buttons are used to change items and value of setting.

■ Data Setting Method



- Push the key twice to select the Data Set mode.
(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 the Operation Manual.