4ManPro

Elements For Manufacturing Processes

UNIDADES DE POTENCIA HIDRÁULICA

UNIDADES HIDRÁULICAS DE BAJO CONSUMO ENERGÉTICO EQUIPADAS CON BOMBA DE PISTÓN

YUKEN 油圧機器

油研工業株式會社

FINCSA GROUP

Energy-Saving Hydraulic Units and Controllers

Substantial energy saving of hydraulic units has been achieved by the inverter drive.

Hydraulic units equipped with variable displacement pumps feature greater energy-saving than those with fixed displacement pumps. Yuken's energy-saving hydraulic units and controllers utilize rotational frequency control with an inverter. This innovative configuration solves the problem of efficiency losses suffered by induction motors operating at light loads and ensures significant energy savings.

Efficiency Characteristics of Induction Motor
- At Rated Output: Maximum Efficiency
- At Light-load: Significant Efficiency loss

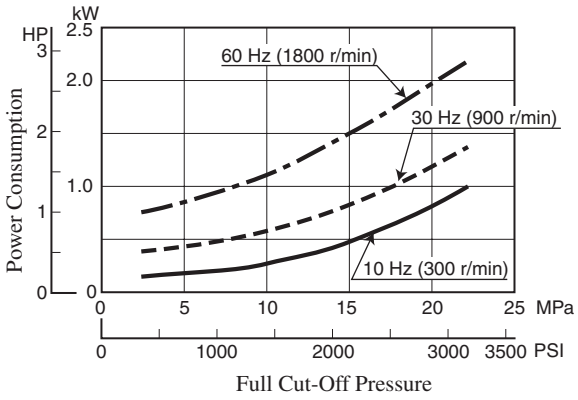
Rotational frequency control is effective for reducing power loss.

Extensive energy saving is possible by detecting a load pressure with the pressure sensor and keeping the motor rotation at the optimum level required for pressure holding. Based on the concept above, the following three different types of inverter-driven system and packages have been developed.

- **Energy-saving control system for hydraulic units (Energy saving controller)**
  For modification of existing hydraulic units to energy-saving type
- **Equipped with the variable displacement vane pump <YM-e Pack>**
- **Equipped with the variable displacement piston pump <YA-e Pack>**

- Example of reduction of power consumption with rotational frequency control

Combination of the A37 piston pump and 7.5 kW (10 HP) motor



Features of YUKEN energy-saving units / controllers

- **Extremely easy operation and maintenance**
  Adjustment and maintenance works are very easy as basically the conventional power unit is used.
- **Significant reduction of power consumption**
  With rotational frequency control, more than 40% of power consumption at pressure holding is possible compared to conventional hydraulic units.
- **Low Noise**
  Especially the noise level at the full-cutoff is reduced.
- **Discharge volume can be set to a certain volume at 50/60 Hz.**
  Regardless the power supply frequency, the rotation speed at the maximum discharge volume can be set by the inverter within the range from 1500 to 1800 r/min.
- **Continuous operation is possible even at breakdown of the pressure sensor or the inverter.**
  Operation at a certain rotation speed is possible even without receiving a signal from the pressure sensor due to breaking of wire or malfunction of the pressure sensor. Incase of malfunction of the inverter itself, the same operation mentioned above is possible by reconnecting of the primary power supply to the electric motor.

Energy-Saving Hydraulic Units – Equipped with Piston Pump <YA-e Pack>

Energy-saving units equipped with the high efficiency, high performance AR/A series variable displacement piston pumps.

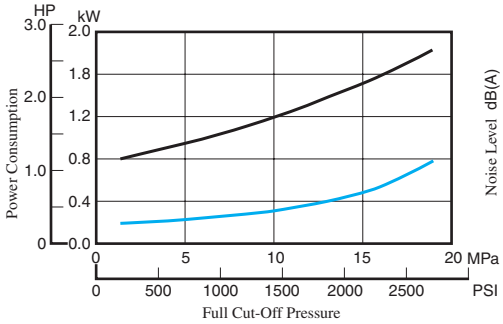
Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Reservoir Capacity L (Gal.)	Setting Range of Rotation Speed at Max. Discharge r/min
E–YA10–B–6–∗–41	7 (1020)	60 (15.9)	1500 – 1800
E–YA10–C–6–∗–41	16 (2320)		
E–YA10–C–10–∗–41	16 (2320)	100 (26.4)	
E–YA16–B–6–∗–41	7 (1020)	60 (15.9)	
E–YA16–B–10–∗–41	7 (1020)	100 (26.4)	
E–YA16–C–6–∗–41	16 (2320)	60 (15.9)	
E–YA16–C–10–∗–41	16 (2320)	100 (26.4)	
E–YA22–B–6–∗–41	7 (1020)	60 (15.9)	
E–YA22–B–10–∗–41	7 (1020)	100 (26.4)	
E–YA22–C–10–∗–41	16 (2320)		
E–YA37–B–10–3.7–41	7 (1020)	100 (26.4)	
E–YA37–B–16–∗–41	7 (1020)	160 (26.4)	

Model Number Designation

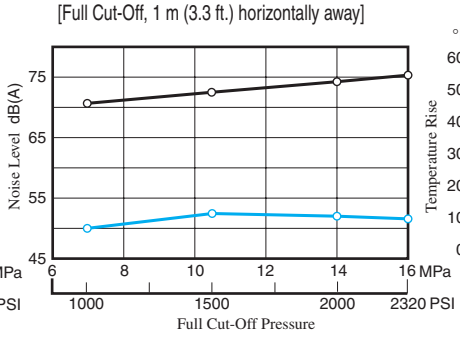
E–YA	10	–B	–6	–2.2	–41
Series Number	Geometric Displacement	Pressure Adj. Range	Reservoir Capacity	Electric Motor	Design Number
E–YA: Energy-Saving Hydraulic Unit YA-e Pack	10: 10.0 cm³/rev (.610 cu.in./rev)	B: 1.2– 7 MPa (170–1020 PSI)	6: 60 L (15.9 Gal.)	2.2: 2.2kW (3 HP) × 4P	41
		C: 2.0– 16 MPa (290–2320 PSI)	10: 100 L (26.4 Gal.)	2.2: 2.2kW (3 HP) × 4P 3.7: 3.7kW (5 HP) × 4P	
	16: 15.8 cm³/rev (.964 cu.in./rev)	B: 1.2– 7 MPa (170–1020 PSI)	6: 60 L (15.9 Gal.)	2.2: 2.2kW (3 HP) × 4P 3.7:3.7kW (5 HP) × 4P	
			10: 100 L (26.4 Gal.)	2.2: 2.2kW (3 HP) × 4P	
		C: 2.0–16 MPa (290–2320 PSI)	10: 100 L (26.4 Gal.)	3.7: 3.7kW (5 HP) × 4P 5.5: 5.5kW (7.4 HP) × 4P 7.5: 7.5kW (10 HP) × 4P	
	22: 22.2 cm³/rev (1.355 cu.in./rev)	B: 1.2– 7 MPa (170–1020 PSI)	6: 60 L (15.9 Gal.) 10: 100 L (26.4 Gal.)	2.2: 2.2kW (3 HP) × 4P 3.7: 3.7kW (5 HP) × 4P	
		C: 2.0–16 MPa (290–2320 PSI)	10: 100 L (26.4 Gal.)	5.5: 5.5kW (7.4 HP) × 4P 7.5: 7.5kW (10 HP) × 4P	
	37: 36.9 cm³/rev (2.25 cu.in./rev)	B: 1.2– 7 MPa (170–1020 PSI)	10: 100 L (26.4 Gal.)	3.7: 3.7kW (5 HP) × 4P	
			16: 160 L (42.3 Gal.)	5.5: 5.5kW (7.4 HP) × 4P 7.5: 7.5kW (10 HP) × 4P	

Power Consumption at Full Cut-Off Pressure

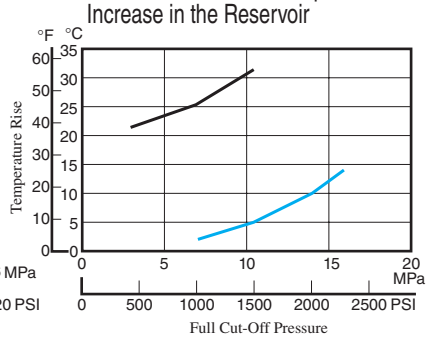


Noise Characteristics

[Full Cut-Off, 1 m (3.3 ft.) horizontally away]



Characteristics of Oil Temperature Increase in the Reservoir



: Standard Type <YA37, 3.7kW, 1800 r/min>
: Energy-Saving Type <E-YA37, 3.7kW, 300 r/min>

Consult Yuken when detailed material such as dimensions figures is required.

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