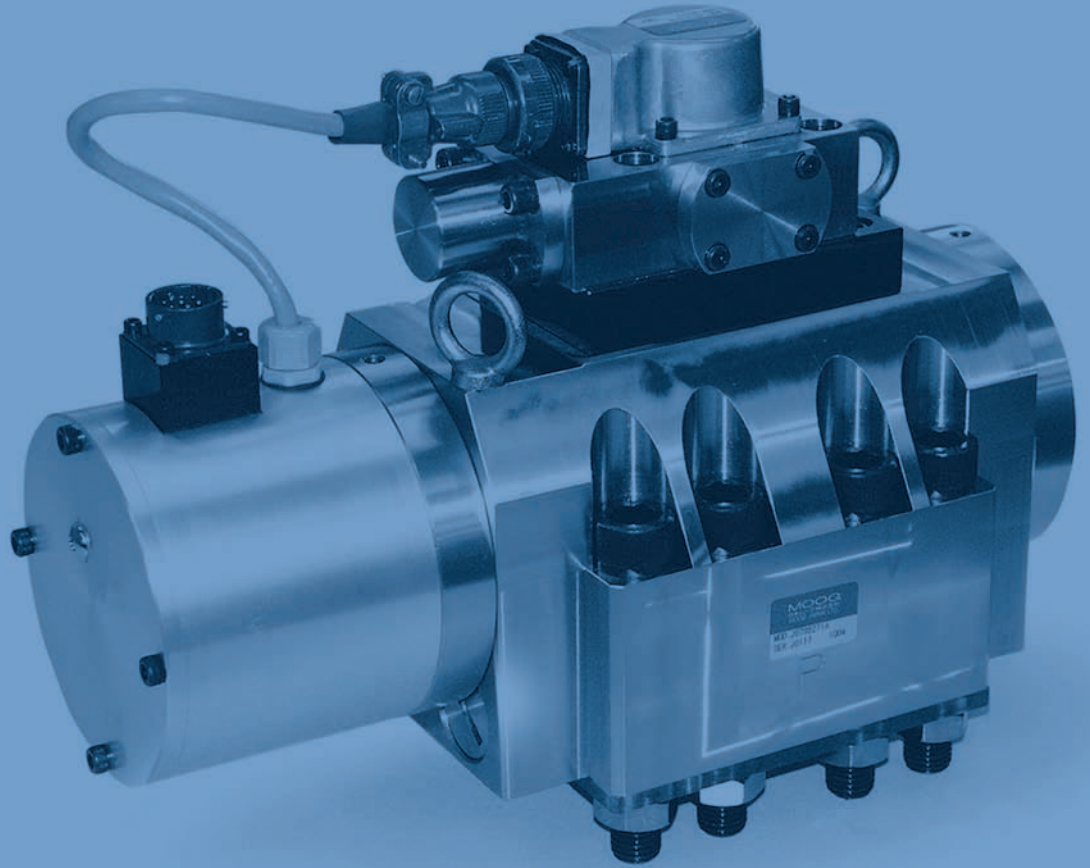


J079-100 J079-200 SERIES



3-Stage Servovalves
with Integrated Electronics

3-Stage Servovalves with Integrated Electronics

The J079-100 and J079-200 Series are throttle valves for 3-way and 4-way applications. They have been developed specifically for demanding applications requiring both high flow rates and high response. The internal amplifier is designed for high reliability, using SMD technology for concussion resistance. The valves are offered with 730 or 761 2-stage pilot valves. Electrical feedback J769 and J739 Series are available for longer life and higher response. The valves are also available in standard (21MPa) and high (35MPa) pressure versions. The J079-100 Series can deliver rated flow of 114 or 228 l/min and the J079-200 up to 757 l/min. These valves are suitable for pressure or force control, position, and speed control on high response systems.

Principle of operation

An electrical command signal is applied to the integrated control amplifier which drives a current through the pilot valve coils. The pilot valve produces differential pressure in its control ports. This pressure difference results in pilot flow which causes main spool displacement.

The position transducer which is excited via an oscillator measures the position of the main spool. This signal is then demodulated and fed back to the control amplifier where it is compared with the command signal. The control amplifier drives the pilot valve until the error between command signal and feedback signal is zero. Thus, the position of the main spool is proportional to the electrical command signal.

Operational features

- Electrical position feedback with pressure isolated position transducer, eliminates wear
- Integrated SMD electronics with false polarity protection
- Optional external pilot supply and return connections via fifth and sixth port in valve body
- Low hysteresis and threshold, and excellent null stability
- Pre-adjusted at the factory

The actual flow depends on the electrical command signal and the valve pressure drop, and may be calculated using the square root function for a sharp-edged orifice. The flow value Q calculated in this way should not exceed an average flow velocity 30 m/s in port P, C1, C2 and R.

$$Q = Q_N \sqrt{\frac{\Delta P}{\Delta P_N}}$$

- Q [l/min] = calculated flow
Q_N [l/min] = rated flow
ΔP [MPa] = actual valve pressure drop
ΔP_N [MPa] = rated valve pressure drop

If large flow rates with high valve pressure drops are required, an appropriate higher pilot pressure has to be chosen to overcome the flow forces. An approximate value can be calculated as follows:

$$P_x > 0.025 \times Q / A_k \times \sqrt{\Delta P}$$

- Q [l/min] = max. flow
ΔP [MPa] = valve pressure drop with Q
A_k [cm²] = spool drive area
P_x [MPa] = pilot pressure

This pilot pressure P_x has to be at least 1.5MPa above the return pressure of the pilot stage.

J079-100 and J079-200 Series

Technical data

Operating pressure range

Main Stage

Ports P, C1, and C2

With X internal _____ 21MPa (option 35MPa)

With X external _____ 35MPa

Port R

With Y internal _____ 21MPa

With Y external _____ 35MPa

Pilot Valve

Ports P, C1, and C2 _____ 21MPa (option 35MPa)

Port R _____ 21MPa

Temperature

Ambient _____ -20 to +60°C

Fluid _____ -20 to +80°C

Seal material _____ NBR (others on request)

Operating fluid _____ Mineral oil based hydraulic fluid (others on request)

Recommended viscosity _____ 10 to 100 mm²/s

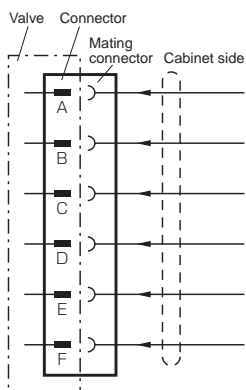
Class of cleanliness _____ The cleanliness of the hydraulic fluid greatly effects the performance (spool positioning, high resolution) and wear (metering edges, pressure gain, leakage) of the valve.

Recommended cleanliness class __ ISO 4406 < 14/11 (normal operation)
ISO 4406 < 13/10 (extended life)

Recommended filter rating _____ $\beta_{10} \geq 75$

Installation options _____ Any position, fixed or movable

Vibration _____ 10g, 3 axes

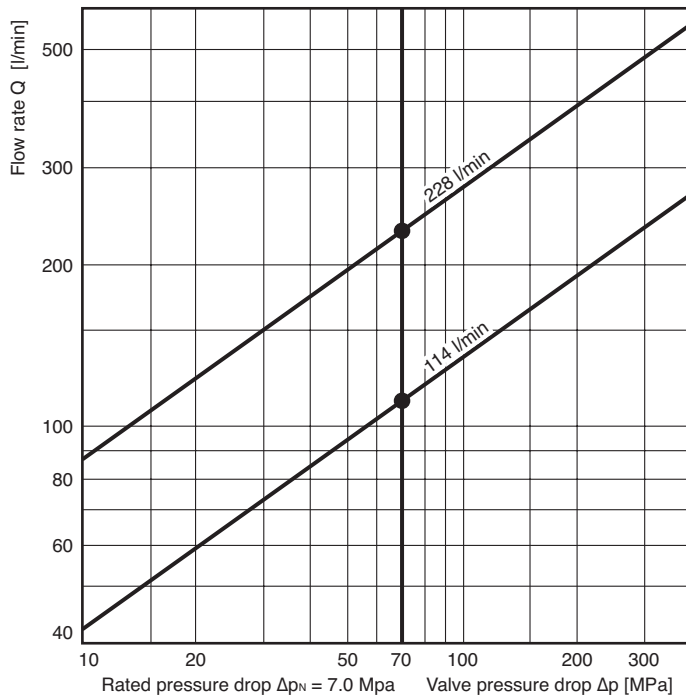


Function	Standard	Option
Power supply		+15 VDC ± 3%
Power supply		-15 VDC ± 3%
Supply/signal ground		⊥ (0V)
Input signal	± 10V	± 10mA / 4 to 20mA
Input signal	± 10V	± 10mA / 4 to 20mA
Spool monitor signal	± 10V	± 10mA / 4 to 20mA

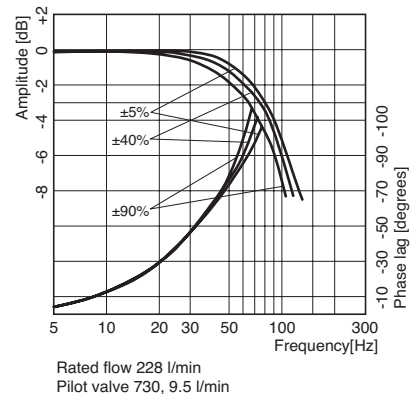
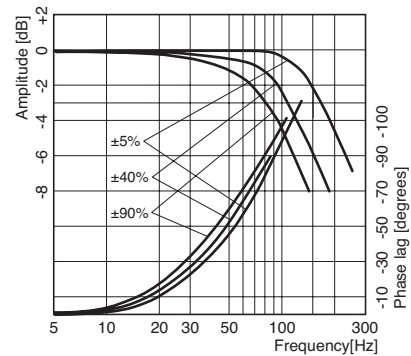
J079-100 Series
Technical data

Model number		J079-1...
Mounting pattern	ISO (X and Y excepted)	ISO 10372-06-05-0-92
Valve body version		4-way 3-way (option)
Pilot valve		730 or 761 series (standard) J739 or J769 series (option)
Pilot connection	Internal or external	X and Y port
Mass	[kg]	13
Rated flow	[l/min] @ $\Delta P=3.5\text{MPa}$ per land	114 or 228
Hysteresis	[%]	≤ 1.0
Threshold	[%]	≤ 0.5
Null shift	[%]	≤ 2.0
Null leakage	[l/min] total max	≤ 8.5
Pilot valve flow	[l/min] for 100% step input	≤ 16.5
Main spool stroke	[mm]	$\pm 0.84 / \pm 1.27$
Main spool drive area	[cm ²]	2.85

@21MPa pilot or operating pressure and fluid viscosity 32mm²/s



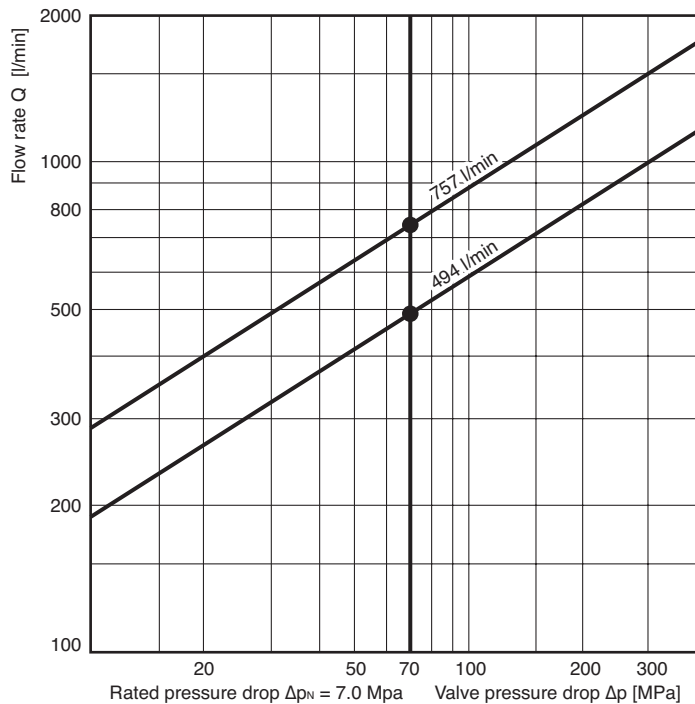
Valve flow for maximum valve opening (100% command signal) as a function of the valve pressure drop



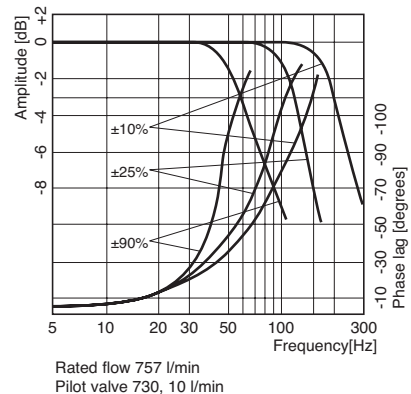
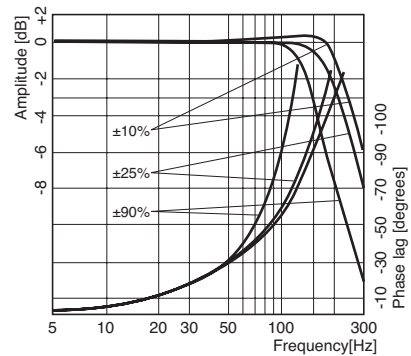
J079-200 Series
Technical data

Model number		J079-2...
Mounting pattern		Moog standard
Valve body version		4-way
Pilot valve		730 or 761 series (standard) J739 or J769 series (option)
Pilot connection	Internal or external	X and Y port
Mass	[kg]	17
Rated flow	[l/min] @ $\Delta P=3.5\text{MPa}$ per land	494 or 757
Hysteresis	[%]	≤ 1.0
Threshold	[%]	≤ 0.5
Null shift	[%]	≤ 2.0
Null leakage	[l/min] total max	≤ 11.0
Pilot valve flow	[l/min] for 100% step input	≤ 33.0
Main spool stroke	[mm]	$\pm 1.3 / \pm 2.5$
Main spool drive area	[cm ²]	7.14

@21MPa pilot or operating pressure and fluid viscosity 32mm²/s

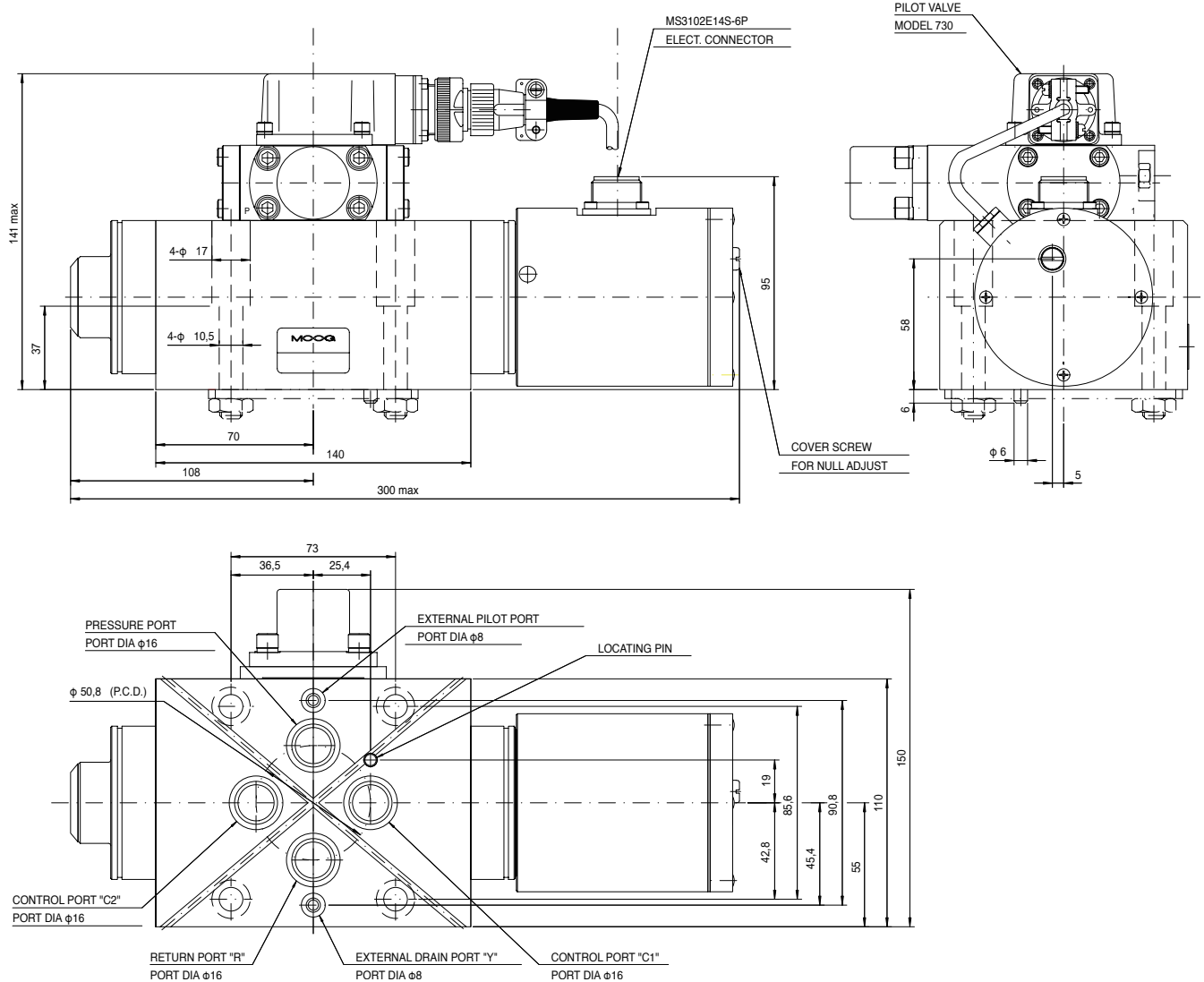


Valve flow for maximum valve opening (100% command signal) as a function of the valve pressure drop



J079-100 Series

Installation drawing with pilot valve 730 Series



Attachments and accessories for J079-100 Series

O-rings (standard attachment)

NBR 90D Shore

for P, C1, C2, R 4 pcs ID 20.34 x SD 1.78 P/N A47622-040

for X, Y 2 pcs ID 7.65 x SD 1.78 P/N A47622-012

Mating connector (standard attachment)

MS3106F14S6S 1 pc P/N -45054F014S006S

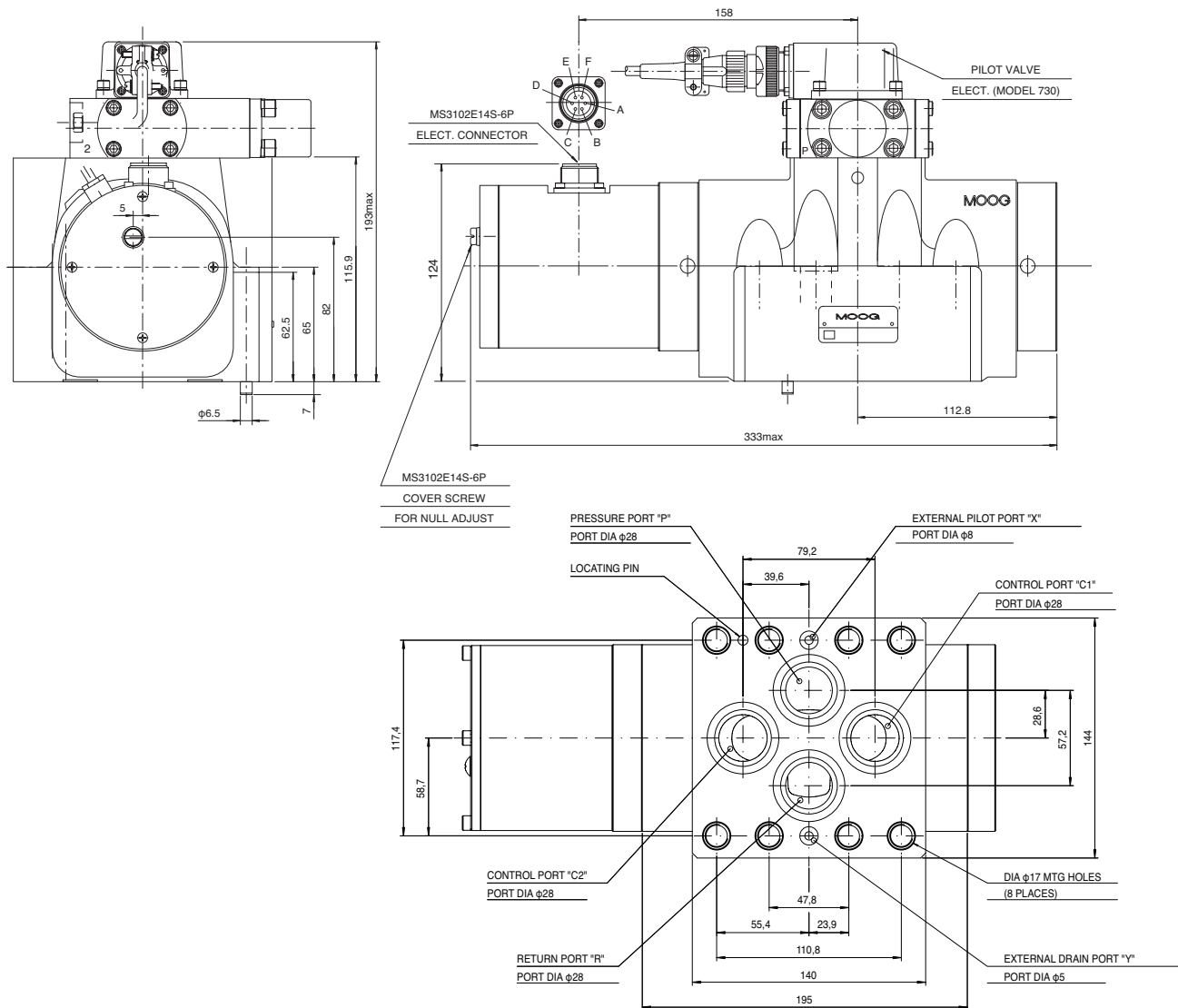
Flushing plate for pilot valve (accessory) P/N A04231-001

Mounting bolts (standard attachment)

M10 x 50L 12.9T 4 pcs Required torque 58Nm P/N A04001-010-050

J079-200 Series

Installation drawing with pilot valve 730 Series



Attachments and accessories for J079-200 Series

O-rings (standard attachment)

NBR 90D Shore

for P, C1, C2, R 4 pcs ID 36.1 x SD 3.53 P/N A47622-264

for X, Y 2 pcs ID 7.65 x SD 1.78 P/N A47622-012

Mating connector (standard attachment)

MS3106F14S6S 1 pc P/N -45054F014S006S

Flushing plate for pilot valve (accessory) P/N A04231-001

Mounting bolts (standard attachment)

M16 x 100L 12.9T 8 pcs Required torque 125Nm P/N A04001-016-085

TAKE A CLOSER LOOK

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