

Job Name:

System Reference:

Date:

**MODULAR WATER-SOURCE VRF HEAT PUMP SYSTEM****FEATURES**

- Single modules up to 20 tons with the ability to combine single modules for systems up to 30 tons
- 208/230V, 3-Phase, 60Hz and 460V, 3-Phase, 60Hz options
- Designed for closed water loops
- Dual heat recovery - from water loop and refrigerant circuit
- 0-10V output signal to modulate water flow for compliance with energy codes
- Features Variable Evaporating Temperature (VET) technology, which enables the outdoor unit to raise the target evaporation temperature based on the difference between set point and return air temperature, saving energy.
- Water flow can be stopped while the unit is in a thermo-off state, saving on pump energy consumption. For twinned systems, both modules must be thermo-off to stop water flow.
- Enhanced water-side heat exchanger design for improved efficiency and reduced risk of clogging
- Self-cooling cabinet design
- Inlet water temperature range: 23-113° F
- Max. Total Refrigerant Piping Length: up to 2,460 feet based on model
- Connects to CITY MULTI® indoor units; controlled via CITY MULTI® Controls Network (CMCN)
- External finish: Acrylic-painted steel
- Stack multiple units on a field-supplied rack to take advantage of vertical space when available
- Extended 10-year parts and compressor warranty available

**ACCESSORIES**

- Twinning Kit (required) (CMY-Q100CBK2)
- Joint Kit (for details see Pipe Accessories Submittal)
- BC Controller (for details see BC Controller Submittal)

## SPECIFICATIONS: PQRYP168YSLMU-A1

Specifications		System	
Unit Type		PQRYP168YSLMU-A1	
Nominal Cooling Capacity (460V)	Btu/h	168,000	
Nominal Heating Capacity (460V)	Btu/h	188,000	
Total Net weight of Modules	Lbs. (kg)	812 (368)	
Electrical Power Requirements	Voltage, Phase, Hertz	460V, 3-phase, 60Hz	
<b>Piping Diameter (Brazed)</b>			
From Twinning Kit to First Joint or Header (In. / mm)	Liquid pipe	In. (mm)	7/8 (22.2)
	Gas pipe	In. (mm)	1-1/8 (28.58)
Max. Total Refrigerant Line Length	Ft.	2,460	
Max. Refrigerant Line Length (Between ODU & IDU)	Ft.	541	
Max. Control Wiring Length	Ft.	1,640	
Indoor Unit	Total capacity	50~150% of heat source unit capacity	
	Model/Quantity	P06~P96/1~42	
Sound pressure level (measured in anechoic room)	dB(A)	50	
Compressor Operating Range		10% - 100%	
AHRI Ratings ( Ducted/Non-Ducted)	EER	14.8 / 17.1	
	IEER	23.6 / 25.8	
	COP	5.57 / 5.67	
	SCHE	21.0 / 22.6	

**Refer to Module Data<sup>\*1</sup>**

Specifications			Module 1 <sup>*1</sup>	Module 2 <sup>*1</sup>
Unit Type			PQRYP96YLMU-A1	PQRYP72YLMU-A1
Nominal Cooling Capacity (460V)	Btu/h		96,000	72,000
Nominal Heating Capacity (460V)	Btu/h		108,000	80,000
Operating Temperature Range	Cooling (Indoor)	W.B.	59~75°F (15~24°C)	59~75°F (15~24°C)
	Heating (Indoor)	D.B.	59~81° F (15~27°C)	59~81° F (15~27°C)
Operating Water Temperature Range	Circulating water	°F	50~113° F (10~45°C)	50~113° F (10~45°C)
	Circulating water	°F	50~113° F (10~45°C)	50~113° F (10~45°C)
External dimension H x W x D	In.		43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
	mm		1,100 x 880 x 550	1,100 x 880 x 550
Net weight	lbs. (kg)		406 (184)	406 (184)
External finish			Galvanized steel sheets	Galvanized steel sheets
Electrical Power Requirements	Voltage, Phase, Hertz		460V, 3-phase, 60Hz	460V, 3-phase, 60Hz
Minimum Circuit Ampacity	A		9	6

# SPECIFICATIONS: PQRYP168YSLMU-A1

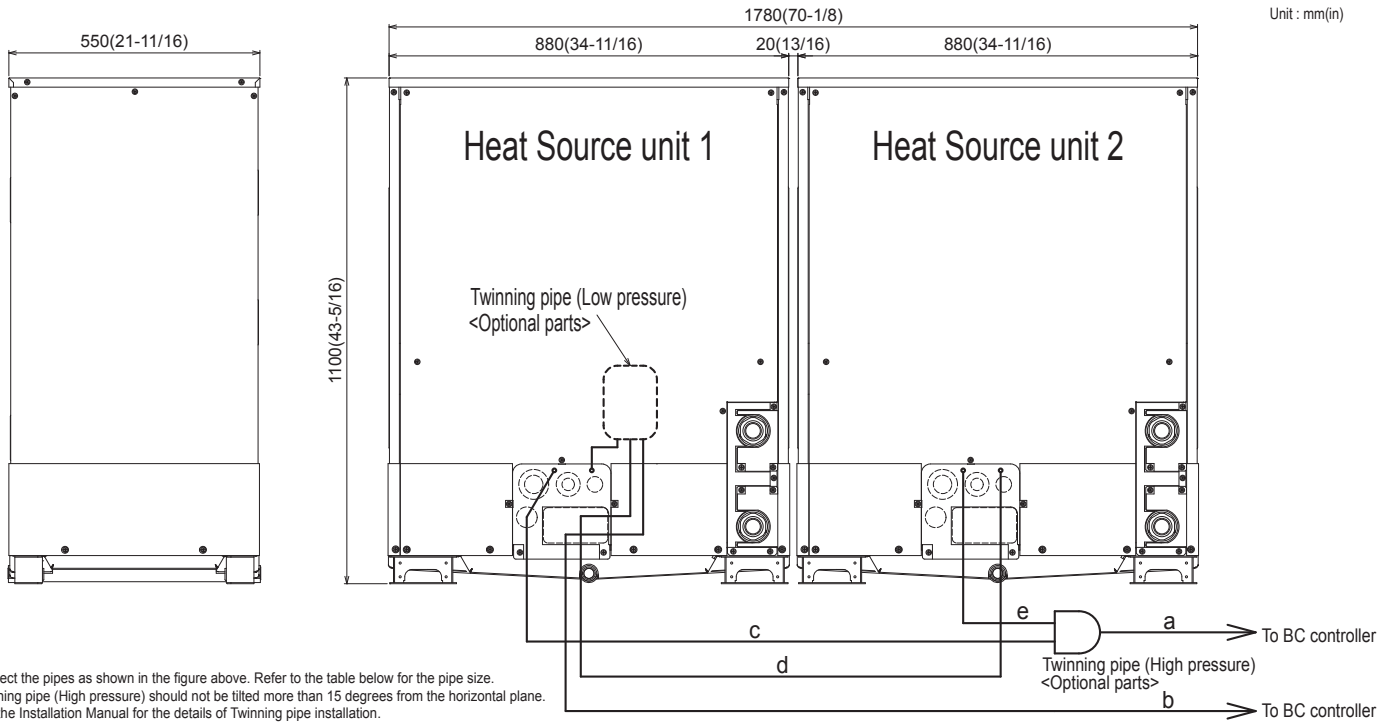
Specifications		Module 1 <sup>*1</sup>		Module 2 <sup>*1</sup>	
Unit Type		PQRYP96YLMU-A1		PQRYP72YLMU-A1	
Maximum Overcurrent Protection	A	15		15	
<b>Circulating Water (quality must meet regulations)</b>					
Flow Rate	G/min (gpm)	25.4		25.4	
	L/s	1.6		1.6	
Pressure Drop	Ft.	8.0		8.0	
	psi	3.48		3.48	
Operation Volume Range	G/min (gpm)	13.2 ~ 31.7		13.2 ~ 31.7	
	L/m	50 ~ 120		50 ~ 120	
Maximum Water Pressure	MPa	2		2	
	psi	290		290	
Water-source Connection for Inlet and Outlet	In.	1-1/2 NPT		1-1/2 NPT	
<b>Piping Diameter (Brazed)</b>					
From Modules to Twinning Kit [In.(mm)]	Liquid (High Pressure)	In. (mm)	3/4 (19.05)		5/8 (15.88)
	Gas (Low Pressure)	In. (mm)	7/8 (22.2)		3/4 (19.05)
Sound pressure level (measured in anechoic room)		dB(A)	48		46
Compressor Type x Quantity			Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
Motor output		kW	6		4.3
Lubricant			MEL32		MEL32
Refrigerant			R410A x 11 lbs. + 1 oz. (5.0 kg)		R410A x 11 lbs. + 1 oz. (5.0 kg)
Protection Devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection
	Compressor		Over-heat protection		Over-heat protection

\*1 Each individual module requires a separate electrical connection. Reference electrical data for each individual module.

Notes:

# DIMENSIONS: PQRYP168YSLMU-A1

Unit : mm(in)



- Note 1. Connect the pipes as shown in the figure above. Refer to the table below for the pipe size.  
 2. Twinning pipe (High pressure) should not be tilted more than 15 degrees from the horizontal plane.  
 3. See the Installation Manual for the details of Twinning pipe installation.  
 4. Only use the Twinning pipe by Mitsubishi (optional parts).

**Twinning pipe connection size**

Package unit name		PQRYP144YSLMU-A1	PQRYP168YSLMU-A1	PQRYP192YSLMU-A1	PQRYP216YSLMU-A1	PQRYP240YSLMU-A1
Component unit name	Heat Source unit 1	PQRYP72YLMU-A1	PQRYP96YLMU-A1	PQRYP96YLMU-A1	PQRYP120YLMU-A1	PQRYP120YLMU-A1
	Heat Source unit 2	PQRYP72YLMU-A1	PQRYP72YLMU-A1	PQRYP96YLMU-A1	PQRYP96YLMU-A1	PQRYP120YLMU-A1
Twinning pipe Kit(optional parts)		CMY-Q100CBK2				
BC controller~Twinning pipe	High pressure   a	ø22.2(7/8)			ø22.2(7/8) *1	
	Low pressure   b	ø28.58(1-1/8)			ø34.93(1-3/8)	
Twinning pipe~Heat source unit	Unit model	High pressure c or e	Low pressure d			
	P72	ø15.88(5/8) *2	ø19.05(3/4) *2			
	P96	ø19.05(3/4)	ø22.2(7/8)			
	P120					

\*1. When the piping length is 65 m or longer, use the ø28.58(1-1/8) pipe for the part that exceeds 65 m.  
 \*2. When the package unit name "PQRYP168YSLMU-A1", use the ø19.05(3/4) pipe for high pressure and the ø22.2(7/8) pipe for low pressure.

# DIMENSIONS: PQRV-P96YLMU-A1

Note1. Seal around the water piping, the refrigerant piping, the power supply, and the control wiring and plug unused knockout holes with putty, etc., to prevent moisture or dirt from entering cabinet.

Note2. At the time of product shipment, the front side piping serves as the local drainage connection.

When connecting on the rear side, please remove the rear side plug sealing corks, and attach on the front side.

Note3. See Fig. A and Fig. B for service clearances.

Note4. If piping is installed in front of the unit, provide clearances as shown in Fig. A and Fig. B.

Note5. Environmental condition for installation: -20~40°C(DB) (-4~-104°F) for indoor installation.

Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.

• Circulate the water all the time even if heat source unit is not in operation and provide glycol for freeze protection.

• Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.

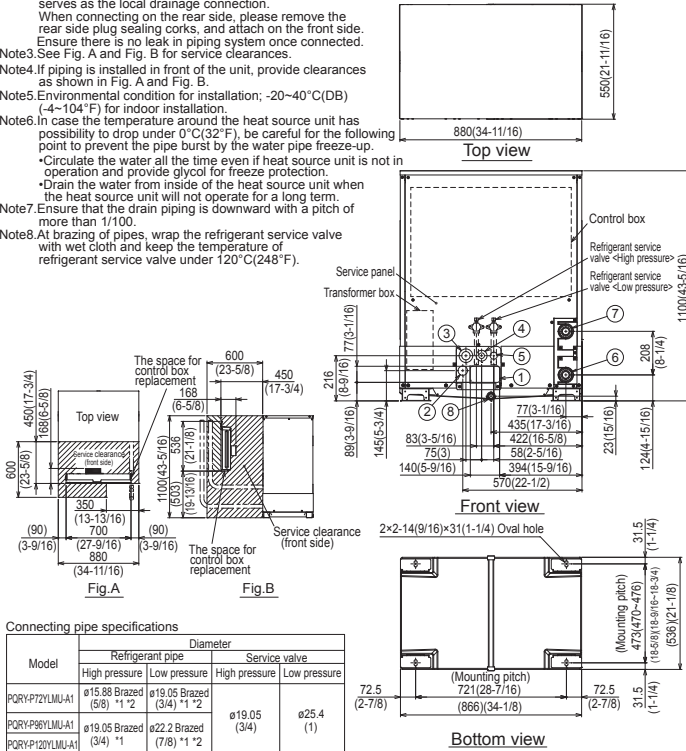
Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.

Note8. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).

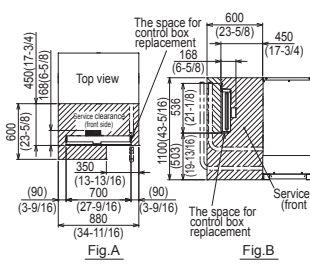
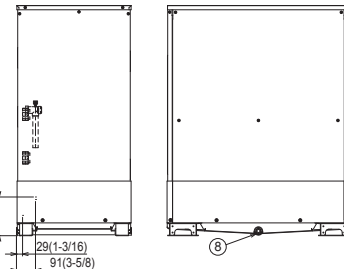
Unit : mm(in)

<Accessories>

- Refrigerant (high pressure) conn. pipe ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)
- Refrigerant (low pressure) conn. elbow ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)
- Water stopper ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for water stopper ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for field piping (high pressure, low pressure) ..... 1pc. each  
(P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for drain socket ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)
- Pipe cover for low pressure ..... 1pc.  
(P72/P96/P120 ; Packaged in the accessory kit)



Top of unit casing not suitable for supporting system modules stacked above - field framing required for stacking modules of additional systems



Model	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PQRV-P72YLMU-A1	ø15.88 Brazed (5/8) *1 *2	ø19.05 Brazed (3/4) *1 *2	ø19.05 (3/4)	ø25.4 (1)
PQRV-P96YLMU-A1	ø19.05 Brazed (3/4) *1	ø22.2 Brazed (7/8) *1 *2		
PQRV-P120YLMU-A1				

\*1 Connect by using the connecting pipes and elbow that are supplied.  
\*2 Use the pipe joint(field supply) and connect to the refrigerant service valve piping.

NO.	Usage	Specifications
①	Front through hole	140 x 77 Knockout hole (5-9/16) (3-1/16)
②	For pipes	Front through hole (Uses when trimming kit (optional parts) is mounted.) ø45 Knockout hole (1-13/16)
③	For wires	Front through hole ø62.7 or ø34.5 Knockout hole (2-1/2) (1-3/8)
④	For wires	Front through hole ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑤	For transmission cables	Front through hole ø34 Knockout hole (1-3/8)
⑥	Water pipe inlet	NPT1-1/2 Screw
⑦	Water pipe outlet	NPT1-1/2 Screw
⑧	Drain pipe	Rc3/4 Screw

# DIMENSIONS: PQRV-P72YLMU-A1

Note1. Seal around the water piping, the refrigerant piping, the power supply, and the control wiring and plug unused knockout holes with putty, etc., to prevent moisture or dirt from entering cabinet.

Note2. At the time of product shipment, the front side piping serves as the local drainage connection.

When connecting on the rear side, please remove the rear side plug sealing corks, and attach on the front side. Ensure there is no leak in piping system once connected.

Note3. See Fig. A and Fig. B for service clearances.

Note4. If piping is installed in front of the unit, provide clearances as shown in Fig. A and Fig. B.

Note5. Environmental condition for installation: -20~40°C(DB) (-4~-104°F) for indoor installation.

Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.

• Circulate the water all the time even if heat source unit is not in operation and provide glycol for freeze protection.

• Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.

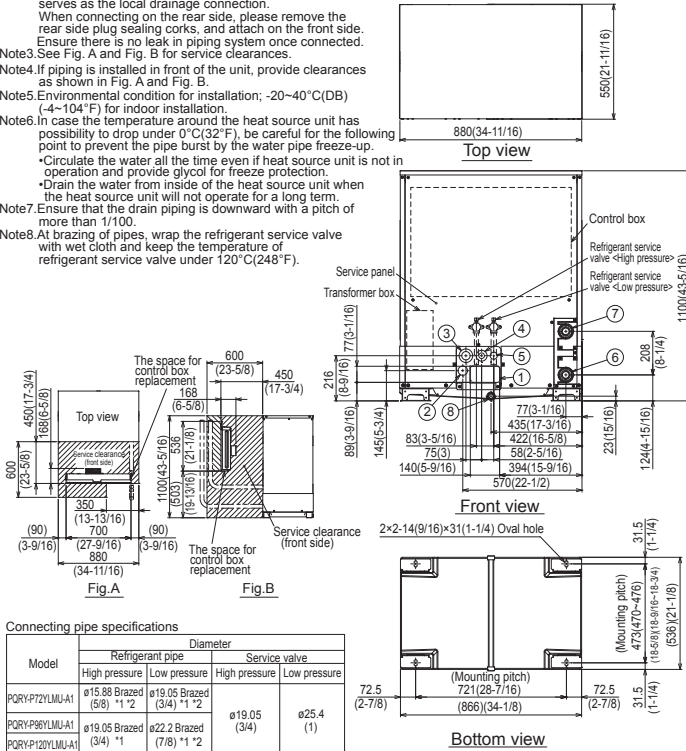
Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.

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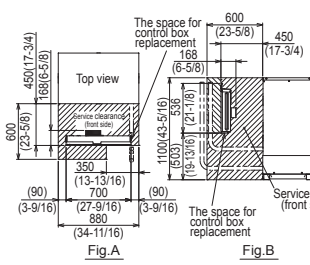
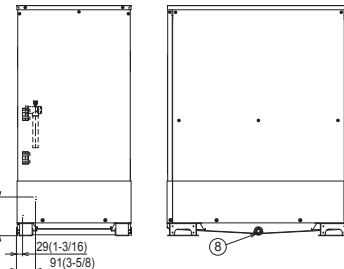
Unit : mm(in)

<Accessories>

- Refrigerant (high pressure) conn. pipe ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Refrigerant (low pressure) conn. elbow ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Water stopper ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for water stopper ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for field piping (high pressure, low pressure) ..... 1pc. each (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for drain socket ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Pipe cover for low pressure ..... 1pc. (P72/P96/P120 ; Packaged in the accessory kit)



Top of unit casing not suitable for supporting system modules stacked above - field framing required for stacking modules of additional systems



Model	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PQRV-P72YLMU-A1	ø15.88 Brazed (5/8) *1 *2	ø19.05 Brazed (3/4) *1 *2	ø19.05 (3/4)	ø25.4 (1)
PQRV-P96YLMU-A1	ø19.05 Brazed (3/4) *1	ø22.2 Brazed (7/8) *1 *2		
PQRV-P120YLMU-A1				

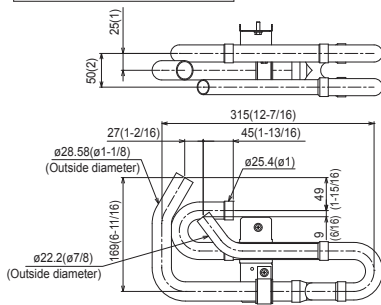
\*1 Connect by using the connecting pipes and elbow that are supplied.  
 \*2 Use the pipe joint(field supply) and connect to the refrigerant service valve piping.

NO.	Usage	Specifications
①	Front through hole	140 x 77 Knockout hole (5-9/16) (3-1/16)
②	For pipes	Front through hole (Uses when trimming kit (optional parts) is mounted.) ø45 Knockout hole (1-13/16)
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⑥	Water pipe inlet	NPT1-1/2 Screw
⑦	Water pipe outlet	NPT1-1/2 Screw
⑧	Drain pipe	Rc3/4 Screw

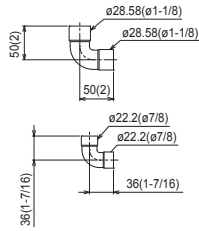
# DIMENSIONS: CMY-Q100CBK2 (TWINNING KIT)

Unit : mm(in)

### Low-pressure pipe twinning kit



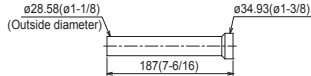
### <Elbow pipe(Accessory)>



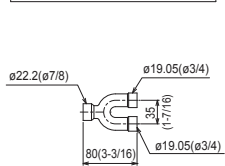
### <Accessory>

- Fixing screw ..... 1
- Insulation cover ..... 1
- Pipe cover (150mm(5-15/16) Length) ..... 2
- Pipe cover (60mm(2-3/8) Length) ..... 1
- Pipe cover (80mm(3-3/16) Length) ..... 2
- Cable tie ..... 2
- Water stopper ..... 1
- Sealing material (Small) ..... 1
- Sealing material (Large) ..... 1

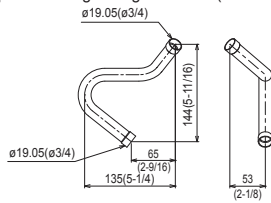
### <Pipe for routing through the front (Accessory)>



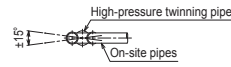
### High-pressure twinning pipe



### <Pipe for routing through the front (Accessory)>

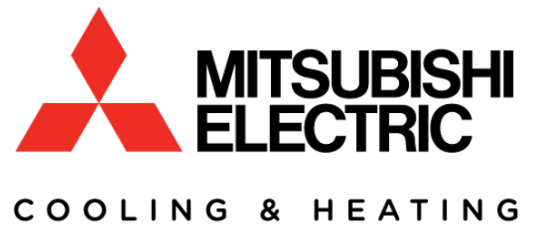


Note 1. Refer to the figure below for the installation position of the high-pressure twinning pipe.



Inclination tolerance of the high-pressure twinning pipe is  $\pm 15^\circ$  relative to the ground.

2. Pipe diameter is indicated by inside diameter.



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FORM# PQRY-P168YSLMU-A1 - 201710

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