VRVIII-Q

Replacement VRV The Daikin solution to R-22 phase out

Due to significant developments in heat pump technology, today's air conditioning systems, running on R-410A refrigerant, offer better performances than R-22 and R-407C systems did in the past. Furthermore, R-22 will be soon unavailable in Europe. Already today, only reclaimed or recycled R-22 can be used for servicing. To upgrade R-22 and R-407C systems as cost effectively as possible, Daikin units can be installed using existing pipe work. Replacement technology is available for residential and commercial applications in the following ranges:

› Split
› Sky Air
› VRV

PLAN YOUR SYSTEM REPLACEMENT NOW!

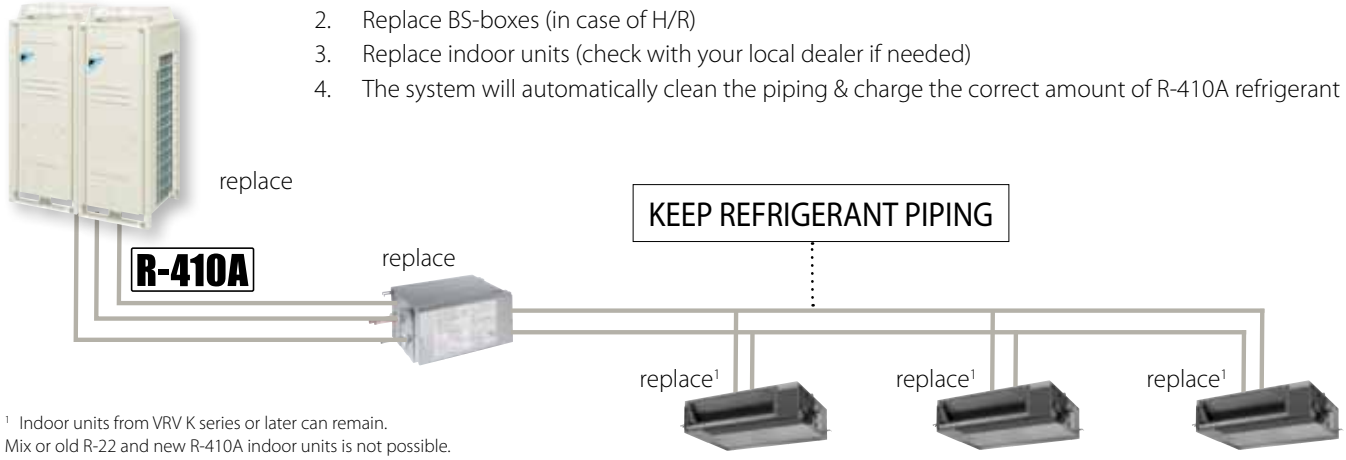
The R-22 phase-out regulation will impact on all currently operating R-22 systems, although reliable R-22 equipment does not need to be replaced immediately because maintenance can be carried out with recycled or reclaimed R-22 until January 1st, 2015. However, currently not enough R-22 is reclaimed or recycled to cover the demand, supply shortages and price increases are expected. If there is no reclaimed or recycled R-22 available, certain repairs (for example: compressor change) are no longer possible and considerable air conditioning system downtime can occur.

It is therefore worthwhile to consider a replacement system before 2015, especially for air conditioning systems with a large impact on the daily running of the business.

LOW COST REFURBISHMENT

Replace your R-22 / R-407C outdoor unit with R-410A technology, but keep your refrigerant piping and in some cases your indoor units[1]. In case your indoor units can remain, works only need to be carried out at the outdoor unit and not inside your building (in case of a heat pump installation).

1. Replace outdoor unit
2. Replace BS-boxes (in case of H/R)
3. Replace indoor units (check with your local dealer if needed)
4. The system will automatically clean the piping & charge the correct amount of R-410A refrigerant



[1] Indoor units from VRV K series or later can remain.
Mix or old R-22 and new R-410A indoor units is not possible.

FEATURES OF VRVIII-Q

Fast Installation

It is not necessary to remove the existing piping and even the indoor units can remain (depending on type of indoor unit). This means work only has to be carried out at the outdoor unit and not inside your building in case of a heat pump installation. The outdoor unit automatically charges the refrigerant and cleans the refrigerant piping. This unique Daikin feature makes the installation time even shorter.

High Efficiency

Upgrading an old R-22 system to a Replacement VRV system will result in increased system efficiency. Efficiency gains of more than 40% in cooling can be realized, by virtue of technological developments in current heat pump technology and the more efficient R-410A refrigerant. Increased energy efficiency equals lower energy consumption, subsequent lower energy costs and lower CO_2 emissions.

No Limitations on System History

As a result of the combined automatic charging and refrigerant pipe cleaning function, it is possible to ensure a clean piping network, even when a compressor breakdown has previously occurred.

In this way all correct installed R-22 and R-407C VRV and competitor VRF systems can be replaced.

Limited and Planned-Downtime

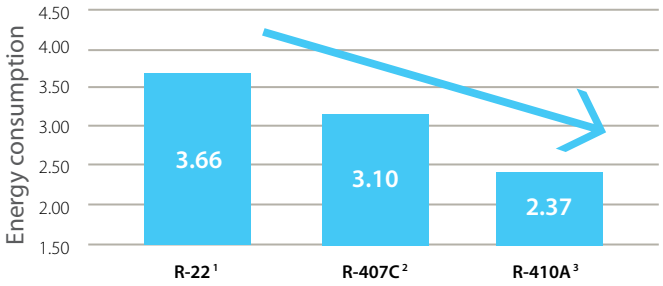
As the refrigerant piping can be maintained the installation is less intrusive and less time consuming than for a completely new system. Moreover, downtime can be carefully planned: whereas if a problem occurs when not enough reclaimed R-22 is available, a long and unplanned downtime can be the result.

Limited and Phased Investment Cost

It is possible to spread the various stages of replacement over a certain period of time because the indoor units can remain in most cases. The air conditioning replacement therefore, can be incorporated in the general refurbishment schedule of the building and the investment cost can be spread. A further reduction in installation cost can be achieved by maintaining the old refrigerant copper pipe work.

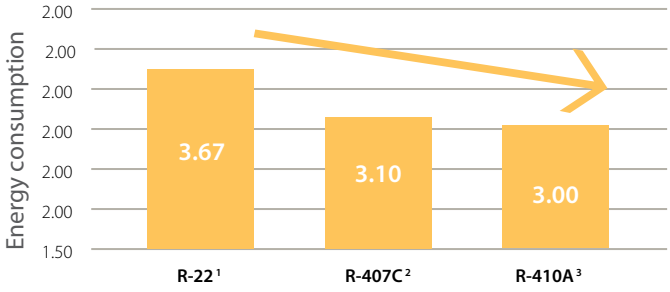
35% less consumption in cooling mode

Energy use of a 10HP system in cooling



18% less consumption in heating mode

Energy use of a 10HP system in heating



[1] R-22: RSXY-KA7
[2] R-407C: RSXYP-L7
[3] R-410A: RQYQ-P

COP/EER comparison

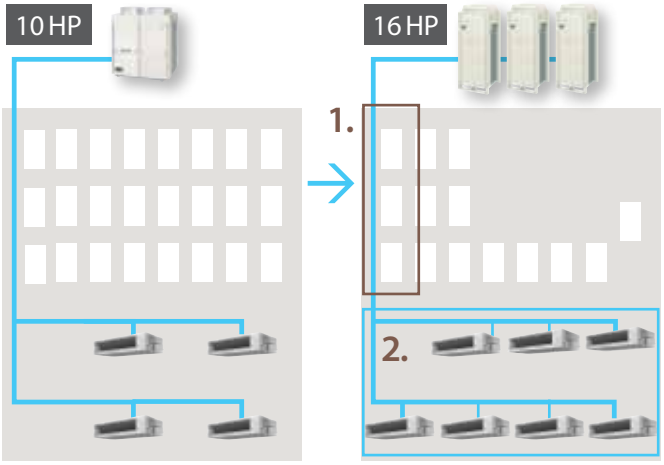
System (HP)	8		10	
	EER	COP	EER	COP
RQYQ-P(R-410A)	4.27	3.89	2.37	3.00
RSXYP-L7(R-407C)	3.10	3.14	3.10	3.10
RSXY-KA7(R-22)	2.37	2.95	3.66	3.67

Zero ozone depleting

R-410A not only has a zero ozone depletion potential, it is also proven to be more energy efficient than R-22.

Possibility to Increase Capacity

Cooling loads often increase after to the initial installation of the air conditioning system. The Replacement VRV(VRVIII-Q) enables system capacity to be increased without changing the refrigerant piping (depending on system characteristics). For example: It is possible to install a 16 HP Replacement VRV on the refrigerant piping of an R-22 10 HP system.

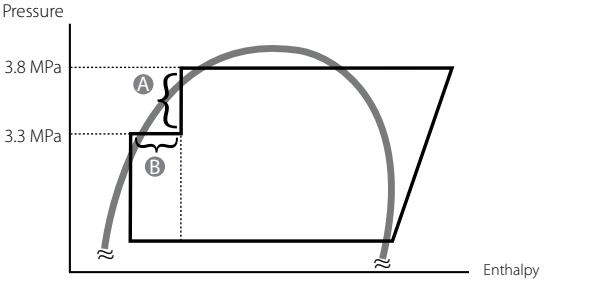


1. Keep main piping
2. Install indoor units with a higher total capacity

TECHNOLOGIES OF VRVIII-Q

Reduced Pressure

Older R22 VRV systems work on a lower pressure than today's R-410A systems. However thanks to the sub cool circuit, VRV-Q is capable of operating at lower pressures than the standard VRV series, while still maintaining high efficiency levels.

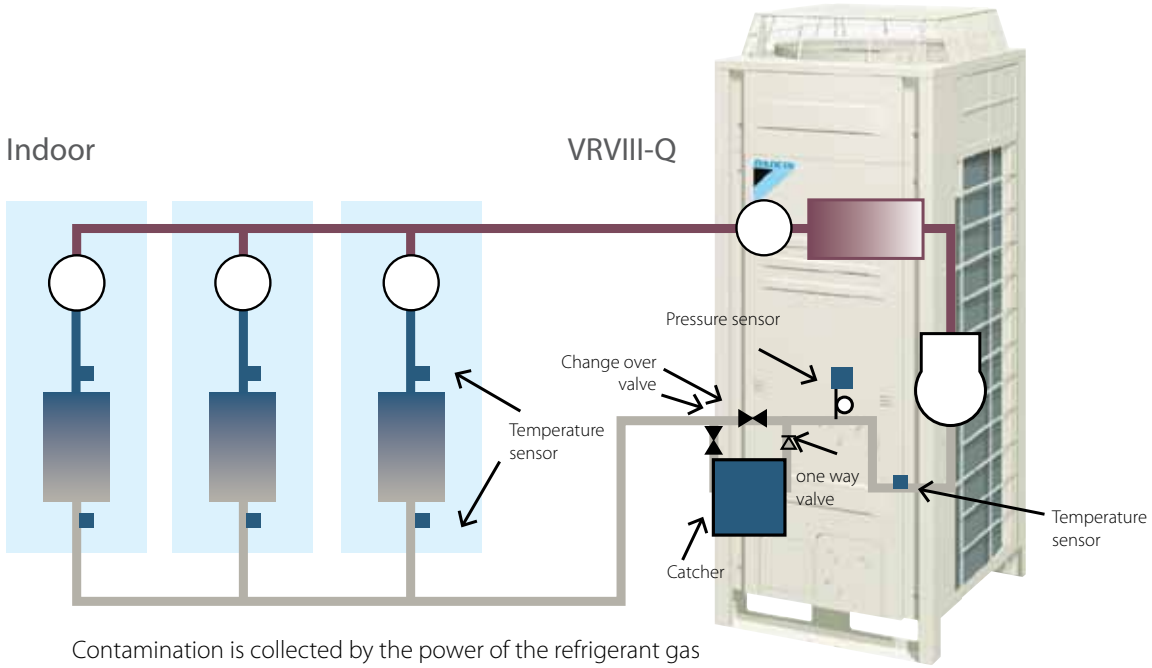


Ⓐ Decompression to 3.3MPa(s) → R-22 existing piping can be used
Ⓑ Extra sub cool circuit → high COP

Refrigerant Pipe Cleaning

When replacing an air conditioning system, the piping is normally replaced as well since traces of old refrigerant and oil mixed with the oil and refrigerant of the new system can cause the equipment to malfunction.

In order to allow re-use of existing R-22 piping with an R-410A system Daikin developed a technology to capture and retain the contamination left in the refrigerant piping. During the charging of the system, R-410A refrigerant starts circulating through the copper piping collecting the contamination left in the refrigerant piping. The refrigerant including the remaining oil from the R-22 system is filtered in the outdoor unit and the contamination is deposited in the outdoor unit. This process is executed only once and takes about 1 hour (depending on system characteristics). Daikin is the first manufacturer in the industry to develop this combination of automatic charging and refrigerant pipe cleaning function.



Contamination is collected by the power of the refrigerant gas

SPECIFICATIONS

VRV-Q - Replacement VRV - Heat pump

					RQYQ-P																					
OUTDOOR UNIT					**140**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**32**	**34**	**36**	**38**	**40**	**42**	**44**	**46**	**48**
System	Outdoor unit module 1				**140**	**8**	**10**	**12**	**14**	**16**	**8**		**10**	**12**	**10**	**12**	**14**	**16**	**10**			**12**	**10**	**12**	**14**	**16**
	Outdoor unit module 2				-						**10**		**12**		**16**				**10**		**12**		**16**			
	Outdoor unit module 3				-														**14**	**16**						
Capacity range				HP	5	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Cooling capacity	Nom.			kW	14.0 [1]	22.4 [1]	28.0 [1]	33.5 [1]	40.0 [1]	45.0 [1]	50.4 [1]	55.9 [1]	61.5 [1]	67.0 [1]	73.0 [1]	78.5 [1]	85.0 [1]	90.0 [1]	96.0 [1]	101 [1]	107 [1]	112 [1]	118 [1]	124 [1]	130 [1]	135 [1]
Heating capacity	Nom.			kW	16.0 [2]	25.0 [2]	31.5 [2]	37.5 [2]	45.0 [2]	50.0 [2]	56.5 [2]	62.5 [2]	69.0 [2]	75.0 [2]	81.5 [2]	87.5 [2]	95.0 [2]	100 [2]	108 [2]	113 [2]	119 [2]	125 [2]	132 [2]	138 [2]	145 [2]	150 [2]
Power input - 50Hz	Cooling	Nom.		kW	3.36	5.24	7.64	10.10	11.6	13.6	12.9	15.4	17.8	20.2	21.3	23.7	25.2	27.2	26.9	28.9	31.4	33.8	34.9	35.3	38.8	40.8
	Heating	Nom.		kW	3.91	6.42	8.59	10.20	12.2	13.6	15.1	16.7	18.8	20.4	22.2	23.8	25.8	27.2	29.4	30.8	32.4	34.0	35.8	36.0	39.4	40.8
EER					4.17	4.27	3.66	3.32	3.45	3.31	3.91	3.63	3.46	3.32	3.43	3.31	3.37	3.31	3.57	3.49	3.41	3.31	3.38	3.51	3.35	3.31
COP					4.09	3.89	3.67	3.68	3.69	3.68	3.74		3.67	3.68	3.67		3.68		3.67			3.68	3.69	3.83	3.68	
Maximum number of connectable indoor units					10	17	21	26	30	34	39	43	47	52	56	60	64									
Indoor index connection	Min.				62.5	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
	Nom.				125	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1,000	1,050	1,100	1,150	1,200
	Max.				162.5	260	325	390	455	520	585	650	715	780	845	910	975	1,040	1,105	1,170	1,235	1,300	1,365	1,430	1,495	1,560
Dimensions	Unit	HeightxWidthxDepth		mm	1,680x635 x765	1,680x930x765			1,680x1,240x765		-															
Weight	Unit			kg	175	230	284		381		-															
Heat exchanger	Type				Cross fin coil						-															
Fan	Type				Propeller fan						-															
	Air flow rate	Cooling	Nom.	m^3/min	95	180	185	200	233		-															
	External static pressure	Max.		Pa	78						-															
Sound power level	Cooling	Nom.		dBA	-						-															
Sound pressure level	Cooling	Nom.		dBA	54.0	57.0	58.0	60.0			61	62	63						64		65					
Compressor	Type				Hermetically sealed scroll compressor						-															
Operation range	Cooling	Min.~Max.		°CDB	-5~43						-															
	Heating	Min.~Max.		°CWB	-20~15.5						-															
Refrigerant	Type				R-410A						-															
	Charge			kg	11.1	10.8	11.7				-															
	Control				Electronic expansion valve						-															
Piping connections	Liquid	Type			Braze connection																					
		OD		mm	9.52			12.7			15.9				19.1											
	Gas	Type			Braze connection																					
		OD		mm	15.9	19.1	22.2	28.6			28.6				34.9				41.3							
	Piping length	OU - IU	Max.	m	150																					
		After branch	Max.	m	40																					
	Total piping length	System	Actual	m	300																					
	Level difference	OU - IU	Outdoor unit in highest position/ Indoor unit in highest position	m	50/40																					
		IU - IU	Max.	m	15																					
Power supply	Phase/Frequency/Voltage			Hz/V	3~/50/380-415						-								-							
Current - 50Hz	Maximum fuse amps (MFA)			A	15	25			35		45	50			60		70		90				100		110	

(1) Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB; equivalent piping length: 7.5m; level difference: 0m (2) Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB; equivalent refrigerant piping: 7.5m; level difference: 0m (3) Select wire size based on the larger value of MCA or TOCA

VRV-Q - Replacement VRV - Heat recovery

OUTDOOR SYSTEM					RQCEQ280P	RQCEQ360P	RQCEQ460P	RQCEQ500P	RQCEQ540P	RQCEQ636P	RQCEQ712P	RQCEQ744P	RQCEQ816P	RQCEQ848P
System	Outdoor unit module 1				RQEQ140P	RQEQ180P	RQEQ140P		RQEQ180P	RQEQ212P	RQEQ140P		RQEQ180P	RQEQ212P
	Outdoor unit module 2				RQEQ140P	RQEQ180P	RQEQ140P	RQEQ180P		RQEQ212P	RQEQ180P		RQEQ212P	
	Outdoor unit module 3				-		RQEQ180P			RQEQ212P	RQEQ180P	RQEQ212P		
	Outdoor unit module 4				-						RQEQ212P			
Capacity range				HP	10	13	16	18	20	22	24	26	28	30
Cooling capacity	Nom.			kW	28.0 [1]	36.0 [1]	45.0 [1]	50.0 [1]	54.0 [1]	63.6 [1]	71.2 [1]	74.4 [1]	81.6 [1]	84.8 [1]
Heating capacity	Nom.			kW	32.0 [2]	40.0 [2]	52.0 [2]	56.0 [2]	60.0 [2]	67.2 [2]	78.4 [2]	80.8 [2]	87.2 [2]	89.6 [2]
Power input - 50Hz	Cooling	Nom.		kW	7.04	10.3	12.2	13.9	15.5	21.9	21.2	23.3	27.1	29.2
	Heating	Nom.		kW	8.00	10.7	13.4	14.7	16.1	17.7	20.7	21.2	23.1	23.6
EER					3.98	3.48	3.77	3.61	3.48	2.90	3.36	3.19	3.01	2.90
COP					4.00	3.72	3.89	3.80	3.72	3.79	3.80	3.81	3.77	3.79
Maximum number of connectable indoor units					21	28	34	39	43	47	52	56	60	64
Indoor index connection	Min./Nom./Max.				140/280/364	180/360/468	230/500/598	250/500/650	270/540/702	318/636/827	356/712/926	372/744/967.0	408/816/1,061	424/848/1,102
Sound power level	Cooling	Nom.		dBA	-									
Sound pressure level	Cooling	Nom.		dBA	57	61		62	63	64	63	64	65	66
Refrigerant	Circuits	Quantity			1									
Piping connections	Liquid	Type/OD		mm	Braze connection/9.52	Braze connection/12.7		Braze connection/15.9			Braze connection/19.1			
	Gas	Type/OD		mm	Braze connection/22.2	Braze connection/25.4		Braze connection/28.6			Braze connection/34.9			
	Discharge gas	Type/OD		mm	Braze connection/19.1		Braze connection/22.2			Braze connection/25.4			Braze connection/28.6	
	Piping length	OU - IU	Max.	m	120									
	Total piping length	System	Actual	m	300									
	Level difference	OU - IU	Outdoor unit in highest position	m	50									
Current - 50Hz	Maximum fuse amps (MFA)			A	30	40	50	60		70	80		90	

OUTDOOR UNIT MODULE				RQEQ140P	RQEQ180P	RQEQ212P
Dimensions	Unit	HeightxWidthxDepth	mm	1,680x635x765		
Weight	Unit		kg	175		179
Heat exchanger	Type			Cross fin coil		
Fan-Type				Propeller fan		
Fan-Air flow rate	Cooling	Nom.	m^3/min	95	110	
Fan-External static pressure	Max.		Pa	-		
Sound pressure level	Cooling	Nom.	dBA	54	58	60
Compressor	Type			Hermetically sealed scroll compressor		
Operation range	Cooling	Min.	°CDB	-5		
		Max.	°CDB	43		
	Heating	Min.~Max.	°CWB	-20~15		
Refrigerant	Type			R-410A		
	Charge		kg	10.3	10.6	11.2
	Control			Electronic expansion valve		
Power supply	Phase/Frequency/Voltage		Hz/V	3~/50/380-415		

(1) Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB; equivalent piping length: 7.5m; level difference: 0m (2) Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB; equivalent refrigerant piping: 7.5m; level difference: 0m (3) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker).