



***Ducted Systems  
Technical Services  
Service Tips Letter***

Letter: **ST-013-2019**

Date: October 22, 2019

To: All Ducted Systems Branch Service, Sales, and Training Managers  
All Ducted Systems Distribution Service, Sales, and Training Managers

Subject: **Oil Separators Requirements for Commercial Split Condensing Units**

Product: Commercial Split Condensing Units utilizing Tandem Compressors  
YC120-300, PC120-180, YD360-600, YH120-300, PH120-180, YJ360-600,  
J10YC-J25YC, J10PC-J15PC, YHT10-YHT25, PHT10-PHT15, YJT30-YJT50

Summary: When applying commercial split condensing units and heat pumps, it is extremely critical that oil return to the compressor(s) is guaranteed to maintain the reliability of the system. Due to this critical requirement, there are situations where it is mandatory to field install Oil Separator(s). Failure to follow these instructions could impact equipment warranty.

Field Installed Oil Separators are **required** for commercial split condensing units with tandem compressors when:

- Split condensing units that contain tandem compressors are paired with a third-party air handler or non-DS application (all installations). Oil separation shall be installed in accordance with separator manufacturer's installation instructions (see tables below) for sizing and height measurement.
- The refrigerant piping is extended beyond 50 linear feet or vertical elevation is over 25 feet in condenser high configuration.

All oil separators **must be pre-charged** with recommended volume of oil prior to installation in order to prevent the compressor oil from migrating to the oil separator which could result in compressor failure.

All HGBP lines are to be piped in after the separator.

POE oil is very hygroscopic in nature, which means it can absorb moisture from the atmosphere quite easily. Extreme care should be taken when system is opened to ensure system is sealed as quickly as possible. Good installation planning is crucial for a proper installation along with mandatory drier usage.

Please refer to the attached table (Temprite Oil Separators, Temprite.com) for the recommended oil separator. Ducted Systems reserves the right to review any non-DS installation for compliance before warranty can be executed with tandem compressors.

**VAV SPLIT SYSTEMS**

With direct expansion comfort cooling systems, there are always limitations, especially with split systems. Any split system can experience reliability and operational issues even if seemingly applied correctly.

VAV operation will most always compound operational and reliability issues of split systems as they very rarely operate at full load resulting in possible oil return issues. Line lengths and pipe routing play a crucial role in proper operation and reliability. Even systems with short line lengths can experience operational and reliability issues during times of extended operating conditions at low loads. Line lengths become very critical and oil entrapment can increase during reduced load operation. Oil separator is strongly recommended for these applications.

With any direct expansion comfort cooling system reduced airflow requires good refrigerant management especially when minimal staging is present. As with any and all VAV systems low load operational control is critical and hot gas bypass or a Rawal valve will provide load tempering/unloading capabilities for refrigerant systems.

Every application is different and requires a complete analysis of operational characteristics to minimize operational and reliability issues.

Sensor line length limitations are a given, lengths over 75 feet should be avoided. If unavoidable, shielded and properly grounded wiring must be installed to eliminate electro-magnetic interference.

YORK	Circuit 1				Circuit 2				Parts Required										
	MODEL	NO. COMP	TONS	DLS	SEPARATOR	NO. COMP	TONS	DLS	SEPARATOR	Kit	Separator	Ball Valves w/schrader	Check valve	Service valve.	Heater	Insulation	Glue	Oil Charge	Filter Kit
YC090	1	7.5	3/4"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YC120	2	5/5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YD120	1	5	3/4"	923	1	5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YC150	2	6.25/6.25T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YD150	1	6.3	3/4"	923	1	6.3	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YC180	2	7.5/7.5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YD180	1	7.5	3/4"	923	1	7.5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YC240	2	10/10T	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
YD240	1	10	7/8"	923	1	10	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YC300	2	12.5/12.5	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
YD360	2	7.5/7.5T	7/8"	923	2	7.5/7.5T	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YD480	2	10/10T	1 3/8"	925	2	10/10T	1 3/8"	925		D	(2) 925	(4) 1-3/8"	(2) 1 3/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62037000
YD600	2	12.5/12.5T	1 3/8"	925	2	12.5/12.5T	1 3/8"	925		D	(2) 925	(4) 1-3/8"	(2) 1 3/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62037000
CID60544S	1	5	1/2"	922						E	(1) 922	(2) 5/8"	(1) 5/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
JCI	Circuit 1				Circuit 2				Parts Required										
MODEL	NO. COMP	TONS	DLS	SEPARATOR	NO. COMP	TONS	DLS	SEPARATOR	Separator	Ball Valves w/schrader	Check valve	Service valve.	Heater	Insulation	Glue	Oil Charge	Filter Kit		
J07YC	1	7.5	3/4"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J10YC	2	5/5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J10YD	1	5	3/4"	923	1	5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J12YC	2	6.25/6.25T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J12YD	1	6.3	3/4"	923	1	6.3	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J15YC	2	7.5/7.5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J15YD	1	7.5	3/4"	923	1	7.5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J20YC	2	10/10T	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
J20YD	1	10	7/8"	923	1	10	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J25YC	2	12.5/12.5	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
J07PC	1	7.5	3/4"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J10PC	2	5/5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J15PC	2	7.5/7.5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
J15PD	1	7.5	3/4"	923	1	7.5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J20PD	1	10	7/8"	923	1	10	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J30YD	2	7.5/7.5T	7/8"	923	2	7.5/7.5T	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
J40YD	2	10/10T	1 3/8"	925	2	10/10T	1 3/8"	925		D	(2) 925	(4) 1-3/8"	(2) 1 3/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62037000
J50YD	2	12.5/12.5T	1 3/8"	925	2	12.5/12.5T	1 3/8"	925		D	(2) 925	(4) 1-3/8"	(2) 1 3/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62037000

Please verify discharge line size in field before ordering separators

Coleman,	Circuit 1				Circuit 2				Parts Required										
	MODEL	NO. COMP	TONS	DLS	SEPARATOR	NO. COMP	TONS	DLS	SEPARATOR	Kit	Separator	Ball Valves w/schrader	Check valve	Service valve.	Heater	Insulation	Glue	Oil Charge	Filter Kit
YH-07	1	7.5	3/4"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YH-10	2	5/5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YJ-10	1	5	3/4"	923	1	5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YH-12	2	6.25/6.25T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YJ-12	1	6.3	3/4"	923	1	6.3	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YH-15	2	7.5/7.5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
YJ-15	1	7.5	3/4"	923	1	7.5	3/4"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YH-20	2	10/10T	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
YJ-20	1	10	7/8"	923	1	10	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
YH-25	2	12.5/12.5	1 3/8"	925						C	(1) 925	(2) 1-3/8"	(1) 1 3/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62037000
PH-07	1	7.5	3/4"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
PH-10	2	5/5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
PH-15	2	7.5/7.5T	7/8"	923						A	(1) 923	(2) 7/8"	(1) 7/8"	(1) 1/4"	4"	Armeflex		(1) 16 oz	62034000
PJ-15	1	7.5	3/4"	923	1	7.5	3/4"	923		B	(2) 922	(4) 5/8"	(2) 5/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000
PJ-20	1	10	7/8"	923	1	10	7/8"	923		B	(2) 923	(4) 7/8"	(2) 7/8"	(2) 1/4"	4"	Armeflex		(2) 16 oz	62034000

Minimum Overhead Clearance*	
133A, 922, 923,R versions	4" (102mm)
135A, 924, 925,R versions	8" (203mm)
137A, 926, 927,R versions	12" (305mm)
928,R versions	16" (406mm)
930,R versions	16" (406mm)
139A	17" (432mm)
138A	18" (457mm)
*Minimum overhead clearance is measured from top of separator top cover.	

If in doubt, consult Commercial Pre-Sales support for recommendations of proper equipment application and installation of commercial products.

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