

Conventional Horizontal Separator

Description

The conventional horizontal separator (SEP) is an instrumented vessel designed to efficiently separate well effluent into three phases for onshore and offshore well testing. The SEP separator can operate as a stand-alone unit or in combination with the PhaseTester* Vx* multiphase well testing equipment and technology, reducing the dependency on the separation process for high-quality flow measurements.

The SEP typically consists of a vessel, an oil flow-measuring system with dual meters, a flow-measuring system for gas, several sampling points for each effluent phase, and two relief valves to protect the vessel against overpressure. Most separators are also equipped to measure water flow rate. To provide accurate measurements, the SEP is fitted with pneumatic regulators that maintain a constant pressure and a constant liquid level inside the vessel by control valves on the oil and gas outlets.

The SEP is fitted with a deflector plate, coalescing plates, a foam breaker, a vortex breaker, a weir plate, and a mist extractor. These components reduce the risk of carry-over (liquid in gas line) and carry under (gas in liquid line) that would affect the flow rate measurement accuracy. Large SEP-N vessels are fitted with an inlet cluster instead of a deflector, coalescing plates, and a foam breaker. The SEP can accommodate small quantities of solids, especially those SEPs fitted with sand-jet lines.

Several separator models with various vessel sizes are available to accommodate different well flow rates, pressures, and temperatures, as well as offshore, onshore, truck-mounted, and heliportable operations. The SEP models for offshore applications are protected by a removable frame, and some are rated to Det Norske Veritas (DNV) 2.7-1 standard.

All separators are manufactured under Type Approval or Design Verification Review and are provided with a Certificate of Conformity and a full quality file.

Applications

- Onshore and offshore exploration, development, and production well testing after cleanup

Benefits

- Separates effluents for fluid metering and sampling before disposal
- Provides single-phase surface sampling and flow metering over a wide range of flow rates
- Maintains constant pressure and liquid levels to optimize measurement accuracy
- Reduces separation problems caused by foam, carryover, and carry under
- Accommodates small quantities of solids

Features

- Wide range of vessel sizes for different flow rates
- Single-phase flow metering on oil and water outlets using positive displacement (FLOCO®), proportional velocity (ROTRON®), or mass (Coriolis) flowmeters
- Gas metering with orifice diameters or mass flowmeter
- Pneumatic control valves on gas and oil outlets
- Fitted with deflector plate, coalescing plates, foam and vortex breaker, weir plate, and mist extractor
- Sand-jet line for fast cleaning
- Sampling points for all phases
- Two relief valves to protect against overpressure
- Compliant with ASME[†] VIII, Div. 1 or 2, H₂S (NACE[‡] MR0175)

Conventional horizontal separator.



[†] American Society of Mechanical Engineers

[‡] National Association of Corrosion Engineers International

Conventional Horizontal Separator Specifications

Model	Vessel Size, cm x m [in x ft]	Working Pressure, kPa [psi], at 38 degC [100 degF]	Temperature Range, degC [degF]	Maximum Oil Flow Rate with 1-min Retention Time, m³/d [bbl/d]		Maximum Gas Flow Rate, m³/d [MMcfd]		Liquid Meters (Water)	Gas Meter	DNV Rating 2.7-1	Part Number
				High Level	Low Level	High Level	Low Level				
SEP-JA/JAB (Trailer-mounted)	61 x 1.8 [24 x 6]	13,789 [2,000]	0 to 100 [32 to 212]	160 [1,000]	–	–	425,000 [15]	FLOCO 1 in (FLOCO 1 in)	Orifice, 3 in	No	100071039 100137764
SEP-HFE (Heliportable)	91 x 3.1 [36 x 10]	4,137 [600]	–20 to 100 [–4 to 212]	1,669 [10,500]	413 [2,600]	306,000 [10.8]	792,000 [28]	Two FLOCO 2 in (No)	Orifice, 4 in	No	M836948
SEP-HFF (Heliportable)	91 x 3.1 [36 x 10]	4,137 [600]	0 to 100 [32 to 212]	1,669 [10,500]	413 [2,600]	306,000 [10.8]	792,000 [28]	Two FLOCO 2 in (No)	Orifice, 4 in	No	P792049
SEP-SGF	91 x 3.1 [36 x 10]	4,964 [720]	0 to 100 [32 to 212]	1,669 [10,500]	413 [2,600]	306,000 [10.8]	708,000 [25]	FLOCO 2 in and FLOCO 1 in (FLOCO 2 in)	Orifice, 4 in	No	M837655
SEP-C	107 x 3.1 [42 x 10]	9,928 [1,440]	0 to 100 [32 to 212]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	Yes	P791354
SEV-SKL	107 x 3.1 [42 x 10]	9,928 [1,440]	0 to 100 [32 to 212]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	No	M837020
SEP-SKN	107 x 3.1 [42 x 10]	9,928 [1,440]	–20 to 100 [–4 to 212]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	No	M870576
SEP-T	107 x 3.1 [42 x 10]	9,928 [1,440]	0 to 100 [32 to 212]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	No	P585700
SEP-TE	107 x 3.5 [42 x 10]	9,928 [1,440]	0 to 100 [32 to 212]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	Yes	P488073
SEP-W	107 x 3.5 [42 x 10]	9,928 [1,440]	0 to 149 [32 to 300]	2,289 [14,400]	1,057 [6,650]	708,000 [25.0]	1,698,000 [60]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	No	P778478
SEP-G	107 x 4.6 [42 x 15]	4,964 [720]	–20 to 149 [–4 to 300]	3,784 [23,800]	1,669 [10,500]	509,000 [18.0]	1,160,000 [41]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	No	P775867
SEP-NE	122 x 3.8 [48 x 12.5]	9,928 [1,440]	0 to 149 [32 to 300]	2,623 [16,500]	1,956 [12,300]	2,123,000 [75.0]	2,547,000 [90]	Coriolis (Coriolis)	2 Coriolis	Yes	P486474
SEP-NF	122 x 3.8 [48 x 12.5]	9,928 [1,440]	–20 to 149 [–4 to 300]	2,623 [16,500]	1,956 [12,300]	2,123,000 [75.0]	2,547,000 [90]	Coriolis (Coriolis)	2 Coriolis	Yes	P487218
SEP-NFW (Winterized)	122 x 3.8 [48 x 12.5]	9,928 [1,440]	–20 to 149 [–4 to 300]	2,623 [16,500]	1,956 [12,300]	2,123,000 [75.0]	2,547,000 [90]	Coriolis (Coriolis)	2 Coriolis	Yes	100244518
SEP-NG	122 x 3.8 [48 x 12.5]	9,928 [1,440]	0 to 100 [32 to 212]	2,623 [16,500]	1,956 [12,300]	2,123,000 [75.0]	2,547,000 [90]	ROTRON 3 in and FLOCO 2 in (FLOCO 2 in)	Orifice, 6 in	Yes	P489506

Conventional Horizontal Separator Specifications and Codes

Model	Connections						Dimensions, (L x W x H), m [ft]	Weight, kg [lbm]	Applied Codes
	Inlet	Gas Outlet	Oil Outlet	Water Outlet	Sand-Jet Line	PSV Outlet			
SEP-JA/JAB (Trailer-mounted)	3-in Fig 1502 Female	2-in Fig 1502 Male	2-in Fig 1502 Male	2-in Fig 1502 Male	na ¹	3-in Fig 602 Male	5.18 x 2.52 [17 x 8.25]	1,905 [4,200]	ASME VIII Div. 1 (U-Stamp), ANSI B31.3, H ₂ S (NACE MR0175)
SEP-HFE (Heliportable)	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	na	4-in Fig 602 Male	4.00 x 1.10 x 1.70 [13.13 x 3.61 x 5.58]	1,800 [4,000]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-HFF (Heliportable)	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	na	4-in Fig 602 Male	3.90 x 2.51 x 1.80 [12.80 x 8.24 x 5.90]	1,800 [3,968]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-SGF	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	na	4-in Fig 602 Male	5.21 x 1.82 x 2.55 [17.09 x 5.97 x 8.37]	8,700 [19,211]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-C	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	5.68 x 2.24 x 2.50 [18.64 x 7.35 x 8.20]	15,000 [33,123]	ASME VIII Div. 1, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEV-SKL	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	na	4-in Fig 602 Male	5.68 x 2.24 x 2.45 [18.64 x 7.35 x 8.04]	14,000 [30,915]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-SKN	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	na	4-in Fig 602 Male	5.68 x 2.24 x 2.45 [18.64 x 7.35 x 8.04]	14,000 [30,915]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-T	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	5.68 x 2.24 x 2.45 [18.64 x 7.35 x 8.04]	14,000 [30,915]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-TE	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	5.68 x 2.44 x 2.50 [18.64 x 8 x 8.20]	14,000 [30,915]	ASME VIII Div. 1, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEP-W	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	5.68 x 2.24 x 2.45 [18.64 x 7.35 x 8.04]	15,000 [33,123]	ASME VIII Div. 1, ANSI B31.3, H ₂ S (NACE MR0175)
SEP-G	3-in Fig 602 Female	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	6.88 x 2.24 x 2.45 [22.6 x 7.35 x 8.04]	15,000 [33,123]	ASME VIII Div. 1, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEP-NE	4-in Fig 602 Female	4-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 1502 Female	4-in Fig 602 Male	6.65 x 2.44 x 2.80 [21.82 x 8 x 9.18]	19,600 [43,281]	ASME VIII Div. 2, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEP-NF	4-in Fig 602 Female	4-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	6.65 x 2.44 x 2.80 [21.82 x 8 x 9.18]	19,600 [43,281]	ASME VIII Div. 2, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEP-NFW (Winterized)	6-in Fig 1002 Female	6-in Fig 206 Male	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	6-in Fig 206 Male	7.50 x 2.95 x 3.10 [24.60 x 9.68 x 10.17]	23,000 [50,789]	ASME VIII Div. 2, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)
SEP-NG	6-in ANSI 600 Raised Face	6-in ANSI 600 Raised Face	3-in Fig 602 Male	3-in Fig 602 Male	3-in Fig 602 Female	4-in Fig 602 Male	6.65 x 2.44 x 2.80 [21.82 x 8 x 9.18]	18,800 [41,514]	ASME VIII Div. 2, ANSI B31.3, DNV 2.7-1, H ₂ S (NACE MR0175)

¹ not available

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