

# **Special Flange**

Ariel provides special flanges for all cylinders that do not utilize standard Industry flanges. Ariel's special flanges come in four main types, Dual Nozzle, Racetrack, Peanut, and Taper-Lok. Special flange outline drawings are available in the Ariel Databook listed next to the cylinder outline drawing. These outline drawings show the flange style, size, and use of orifice plates.

Cylinder Class	Flange Type	Sealing	<u>Standard</u> <u>Material</u>	Special Bolting	"For Orifice" Bolting	Orifice Plate Thickness Required
13-1/2JG:J:M	<u>Dual</u> <u>Nozzle</u>	O-ring	SA-105	Fatigue Fighter	Option	1/2" with o-ring groove
17-1/4R:RJ:H:E	<u>Dual</u> <u>Nozzle</u>	O-ring	SA-105	Fatigue Fighter	Option	1/2" with o-ring groove
19-1/2R:RJ:H:E						
22-1/2H:E	<u>Racetrack</u>	Gasket	SA-516 Gr70 and SA-53	Fatigue Fighter	Not Avail	Not Applicable
17-7/8K:T:C:D:Z:U	Peanut Flexitallic Gasket	Flexitallic Gasket	SA-516 Gr70	Fatigue Fighter	Option	3/8"
20-1/8K:T:C:D:Z:U						
22K:T:C:D:Z:U						
24-1/8K:T:C:D:Z:U	<u>Peanut</u>	Flexitallic Gasket	SA-516 Gr70	Fatigue Fighter	Option	3/8"
26-1/2K:T:C:D:Z:U						
19BL:VL:BM:VM	<u>Peanut</u>	Flexitallic Gasket	SA-516 Gr70	Fatigue Fighter	Included	Included
Higher Pressure Cylinder Class (refer to Databook)	<u>Taper-Lok</u>	Taper-Lok Seal Ring	SA350 LF2	Studs and Nuts	Included	Included
1-3/4SG-FS-HE	SAE O-Ring Straight	Fitting By Packager	None	Not Available	Not Available	
2-1/2SG-FS-HE	Thread		Ŭ,			

## **Dual Nozzle Flanges:**

Dual nozzle flanges are used on medium sized cylinders where there are two separate nozzles for suction, and two separate nozzles for discharge. These nozzles are weld neck flanges and need to be butt welded to nozzle piping between the flange and the pulsation vessel body. These nozzles are not standard ANSI flange sizes. The bolting is high strength fatigue fighter bolts, and the sealing is accomplished with an o-ring. When orifices are required, Ariel can provide longer bolting and an extra o-ring ("for orifice" option).



## **Racetrack Flanges:**

Racetrack flanges are used on the larger low pressure cylinders, 22-1/2H and E. The bolting is high strength fatigue fighter bolts, and the sealing is accomplished with a gasket. The flange nozzle is designed to weld directly to the pulsation vessel body or to a transition piece.



## **Peanut Flanges:**

Peanut flanges are used on the larger cylinder classes. These cylinders have two separate flow areas like the dual nozzle cylinders, but the flanges are connected together resembling the shape of a peanut. The flanges are plate material ready for welding the pulsation vessel nozzle piping, two nozzles per flange. The bolting is high strength fatigue fighter bolts, and the sealing is accomplished with flexitallic gaskets. When orifices are required, Ariel can provide longer bolting and an extra flexitallic gasket ("for orifice" option). The flanges need to be welded to the

nozzle piping between the flange and the pulsation vessel body. The Customer must specify either butt or fillet weld style flanges at time of order.



## Taper-Lok:

Taper-Lok flanges are used on higher pressure cylinders. Ariel provides the flange, seal rings, orifice plate and bolting. The orifice plates ship with a minimum bore and require drilling to the required orifice bore by the Packager.



Taper-Lok flanges are designed to ASME Boiler and Pressure Vessel code Section VIII Div 1. If design and calculations are required to Div 2, the packager can procure the flanges, seal rings and orifice plates directly from Taper-Lok.

When stainless steel Taper-Lok flanges are required by the Client or Packager (such as on carbon dioxide applications) Ariel will provide the studs and nuts and a deduct for the carbon steel flange parts. The Packager can procure the stainless steel flange, two seal rings and the orifice plate directly from Taper-Lok.

Taper-Lok flanges include an orifice plate with minimum bore. Final bore dimensions for all orifice plates to be machined by the Packager. Refer to the outline drawings for maximum bore limits.

# SAE Straight Thread (Fitting Provided by Packager)

The 1-3/4SG-FS-HE and 2-1/2SG-FS-HE cylinder classes utilize an SAE o-ring style connection at the cylinder for gas inlet and discharge. These cylinders are most commonly fit up with tubing. The SAE o-ring fittings for tubing fitting can be found at a local Parker Hannifin distributor, Parker Seal-Lok O-Ring Face Seal Tube Fitting part number 16 F50LO.

If piping will be utilized rather than tubing, a Grayloc hub to SAE adapter can be found at a local Grayloc distributor, drawing number H600307-1310. Care must be taken that an understanding of the use of Grayloc hubs is known prior to incorporating a Grayloc hub pipe system.

#### Code Calculations:

Code calculations for the special flanges are available on the Ariel website.

#### Materials:

Standard materials of construction for these special flanges are carbon steel. Flange materials are suitable for NACE construction once suitable bolting is provided.

Flanges are designed to ASME Boiler and Pressure Vessel code Section VIII Div 1. Division Ilfor Ariel supplied flanges are not available. See Taper-Lok above for special notes on the high pressure flanges.

Dual Nozzle Flange SA-105

Racetrack Flange SA-516 Gr 70 and SA-53

Peanut Flange SA-516 Gr 70

Taper-Lok SA-350 LF2 suitable for -50 F

304L and 316L stainless steel materials are available options for the dual nozzle flanges and peanut flanges.

17-4PH bolting may lower available MAWP on some cylinders, specifically the 17-7/8K,T,C,D,Z,U Class cylinders and some KBB:V cylinders. Refer to the Ariel Databook.

#### Orifices:

Steel orifice plates for suction or discharge are commonly used for pulsation attenuation. Orifices are to be provided by the Packager. Longer bolts and extra o-rings / gaskets are available as a "for orifice" option when orifice plates are used (not applicable to welded in orifice plates).

Ariel encourages the use of orifice plates of specific thickness due to the special bolting types and lengths used in the "for orifice" bolting option provided by Ariel. The dual nozzle flanges require the use of o-rings rather than gaskets. The o-ring groove dimensions for the orifice plates are defined in the special flange outline drawings.

Dual Nozzle Flanges 1/2" orifice plate with o-ring groove

Peanut Flanges 3/8" orifice plate and gasket

Taper-Lok flanges include an orifice plate with minimum bore. Final bore dimensions for all orifice plates to be machined by the Packager. Refer to the outline drawings for maximum bore limits.