

# 12

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## Golden Rules Co., Ltd

FLOW NOZZLE  
Liquid, Gas, Vapor

**차압식유량계**  
플로우 노즐  
KC-3300 Series



The nation's development item, 100% domestic goods, Patent **NO.** 10-1660226



## 12. 플로우 노즐 KC-3300 Series

### 12-3. 플로우 노즐 KC-3300

#### 제품 특징

- 짧은 상류 배관에 적합합니다.
  - 움직이는 부품 없음, 간단한 구성, 유지 보수가 필요 없음
  - 파이프 및 봉재로 제작됨.
  - 낮은 배송 비용. \* 낮은 설치 비용.
- 
- 고온, 고압
  - 지속적인 정확성
  - 광범위한 범위 - 200,000개의 파이프 레이놀즈 수까지 작동할 것이며, 200,000개의 파이프 레이놀즈 수 미만의 실험실 유량 교정을 권장합니다.
  - 간단한 구성과 움직이는 부품이 없기 때문에 높은 반복성.
  - 정확성은 적절한 설치 및 베타 레이놀즈 수 제한에 따라 결정됩니다.



#### 적용 분야

반도체 산업 / 철강 산업 / 화학 산업 / 환경 공학 /  
식품 / 제약 / 하수처리 / 발전소 / R & D 테스트

#### 제품 사양

구조상 다른 오리피스보다 비용이 많이 드는 플로우 노즐은 고온 및 고압에서 흐르는 유체의 유량을 결정하는 데 적합합니다.

동일한 측정 조건에서 플로우 노즐은 기계적 강도가 더 높고 같은 구멍에서 유체의 60% 더 많은 부피의 흐름을 허용할 수 있습니다.

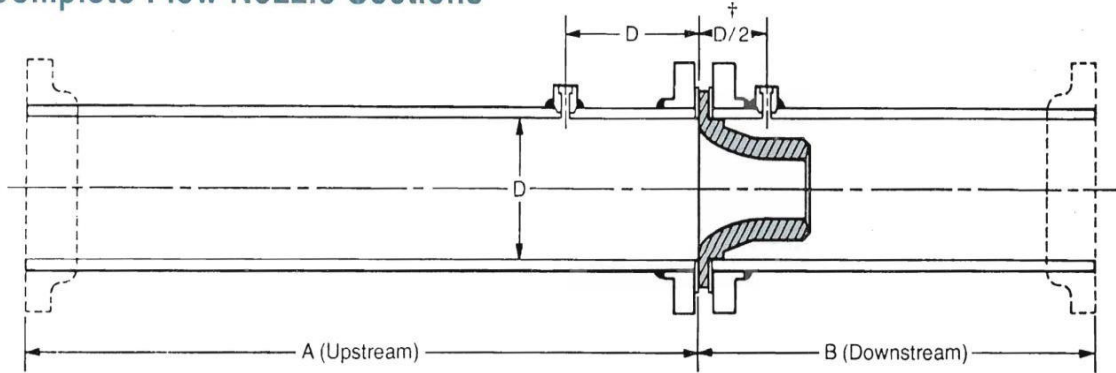
따라서 고속으로 흐르는 유체에도 적합합니다.

골든룰은 단일 플로우 노즐뿐만 아니라 상류 및 하류 측 모두에 짧은 파이프가 용접된 플로우 노즐을 공급할 수 있습니다.

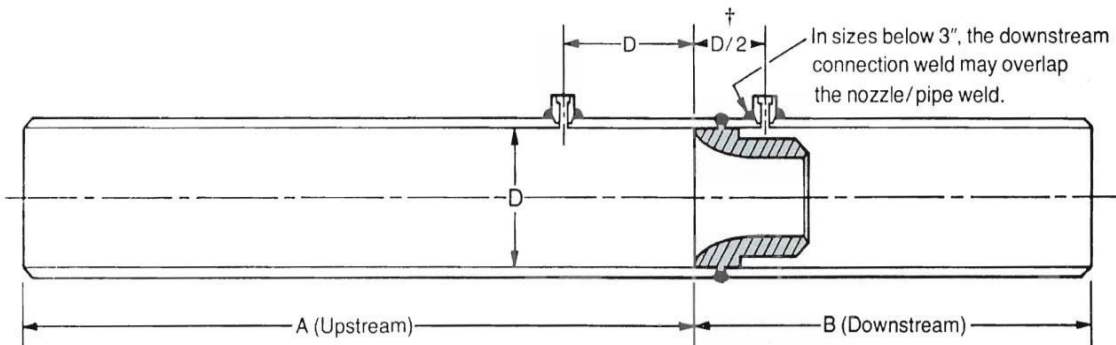


**플로우 노즐의 전형적인 치수사양 II**

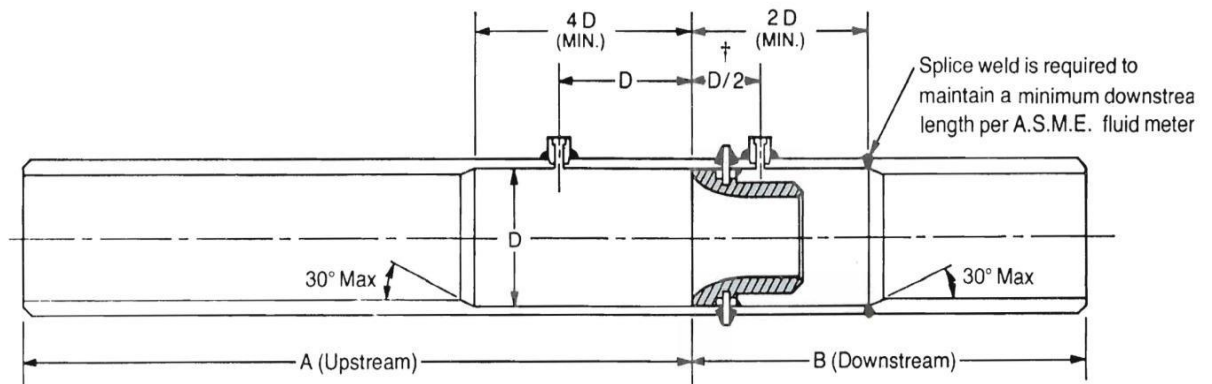
**Complete Flow Nozzle Sections**



**A. FLOW SECTION WITH FLANGE TYPE FLOW NOZZLE**



**B. FLOW SECTION WITH WELD-IN TYPE FLOW NOZZLE**

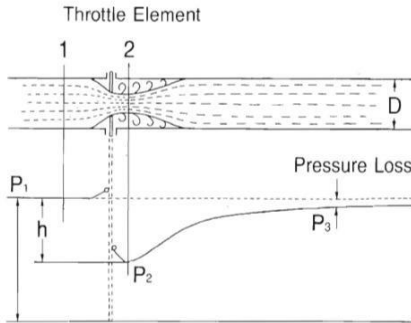


**C. \*FLOW SECTION WITH HOLDING RING FLOW NOZZLE**

†Downstream tap locations shown are for Beta ranges of .45 and larger. For low Beta (below .45) nozzles, tap is located 1.5x nozzle bore from upstream face.

\* **Note:** The pipe for holding ring nozzle flow sections **MUST** be bored internally to allow nozzle installation. See chart, Page 3, for recommended bore diameters. Bore diameters shown are only recommendations. Daniel Industries will not accept responsibility for any pipe which does not clean up fully to these dimensions. Pipe sections for flanged or weld-in type flow nozzles need not be bored if the pipe is measured and found to be round within .33% of the average pipe I.D.

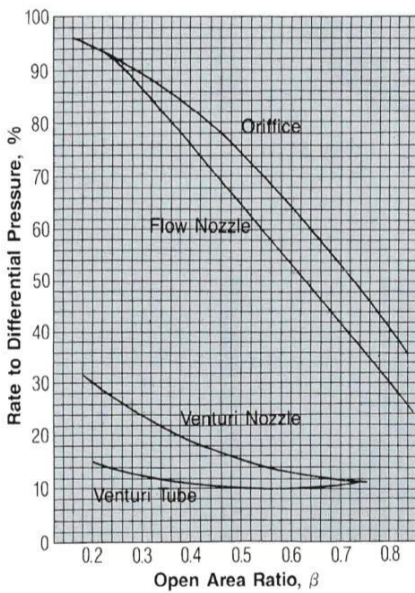
**차압 및 압력 손실**



**Fig.1**

**Table 1: Relation between Flow Rate and Differential Pressure**

Flow rate %	100	90	80	70	60	50	40	30	20	10	0
Differential pressure	100	81	64	49	36	25	16	9	4	1	0



**Fig. 2**

When a throttle element is interposed in a closed passage of fluid in piping, a difference is produced between the pressures upstream and downstream the throttle element as illustrated in Fig. 1. This difference ( $h=p_1-p_2$ ) is called differential pressure. The fluid passing through the section 2 gradually regains its pressure as it flows downstream, but the downstream pressure cannot be recovered up to the upstream pressure, part of the pressure being lost. This loss is called a pressure loss (permanent pressure loss= $p_1-p_3$ )

The extent of this pressure loss depends on the type of throttle elements and their open area ratio, as shown in Fig. 2.

The relation between the flow rate and the differential pressure is given by:

$$Q=K \sqrt{\frac{h}{\gamma_1}} \dots\dots\dots (1)$$

$$Q_N=K\sqrt{\gamma_1 h} \frac{1}{\gamma_N} \dots\dots\dots (2)$$

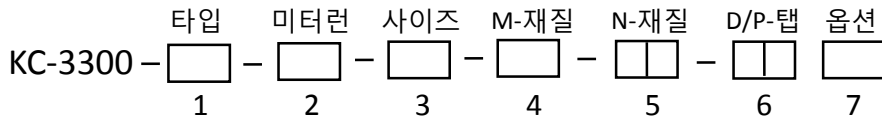
$$W=K\sqrt{\gamma_1 h} \dots\dots\dots (3)$$

- $Q(m^3/hr)$  : Volume Rate of Flow at Density in Operating Conditions
- $Q_N(Nm^3/hr)$  : Volume Rate of Flow at Density in Basic Conditions
- $W(kg/hr)$  : Differential Pressure
- $h(kg/m^2)$  : Weight Rate of Flow
- $\gamma_1(kg/m^3)$  : Density in Operating Conditions
- $\gamma_N(kg/Nm^3)$  : Density in Basic Conditions
- $K$  : Coefficient (determined by type and size of throttle element)

From the above, the relation between the flow rate and the differential pressure where the density is constant but the flow rate is variable is as listed in Table 1. In other words, the flow rate is obtainable by measuring the differential pressure. When the density is variable (when the pressure and temperature are variable), the true flow rate can be given by compensating the variate of the density by the above equations (this, however, is not applicable when the density varies to a great extent).



**주문 코드 KC-3300 Series 플로우 노즐**



Flow Nozzle type	Code 1
Weld in	1
Holding Ring	2
Flange	3
Agency approved specified	W

Meter Run	Code 2
Element Only	1
Meter run include	2
Agency approved specified	W

Pipe Size in inch / mm	Code 3
Ex) 300A	12"
Agency approved specified	W

Meter Run Material	Code 4
A53 Gr B	1
A106 Gr B	2
A335 P11	3
A334 P22	4
A335 P51	5
A335 P91	6
Agency approved specified	W

Nozzle Material	Code 5
A105	1
A182 F304	2
A182 F304L	3
A182 F316	4
A182 F316L	5
A182 F11	6
A182 F12	7
A182 F51	8
A182 F91	9
Agency approved specified	W

Differential Taps	Code 6
NPT 1/2"	1
NPT 3/4"	2
SW 1/2"	3
SW 3/4"	4
Agency approved specified	W

Option	Code 7
Tap valve & Nipple	TN
Agency approved specified	W

**부속품 |**

**응축수 및 밀폐 챔버**



Model No.	Material	Design Pressure(kg/cm)	Design Temperature(°C)
RSV-150	STPG 38	10	-10~350
	SUG		
RSV-400 POT,POTP	STPG 38	30	-10~350
	SUG		
RSV-900	STPG 38	60	-10~350
	SUG		
RSV-1500	S25C	100	0`450

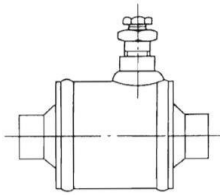


Fig. 37 RSV-150

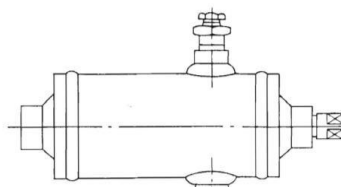


Fig. 38 RSV-400, RSV-900

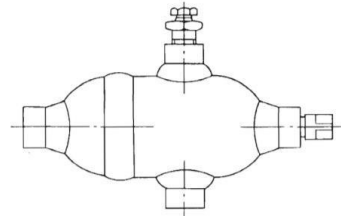


Fig. 39 RSV-150, RSV-2500

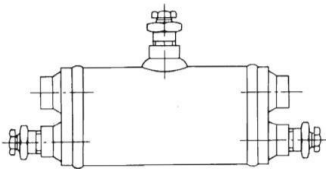


Fig. 40 POT-400

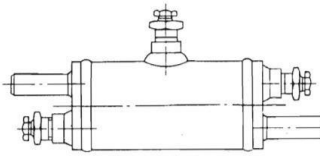


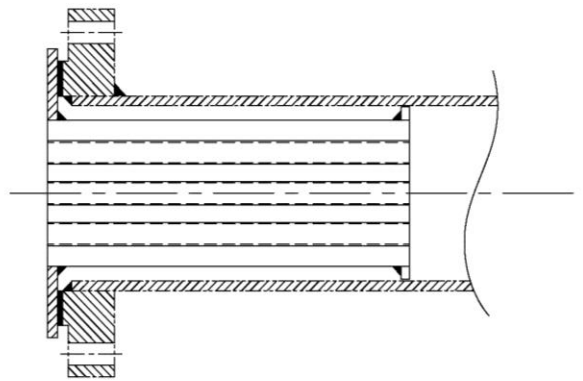
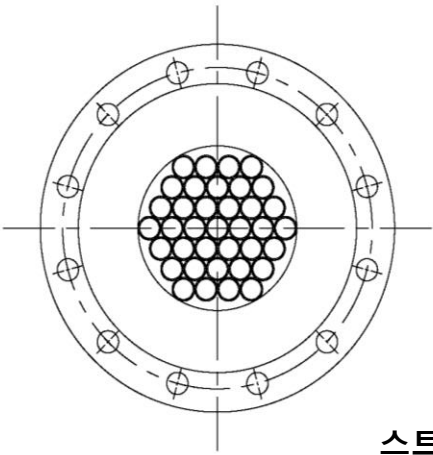
Fig. 41 POTP-400



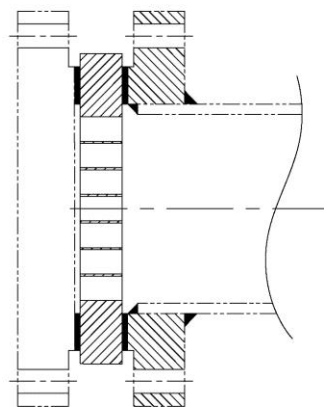
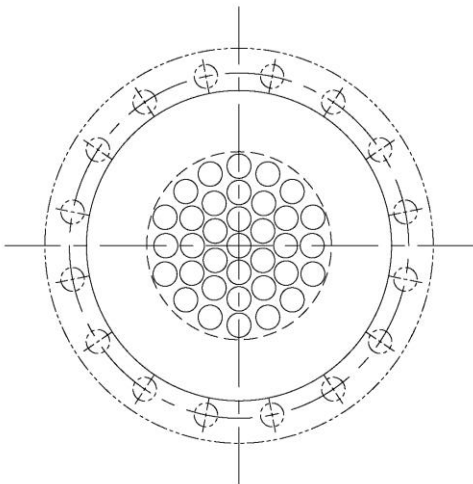
**부속품 II**

**스트레이트너 다발관 & 플로우컨디셔너 플레이트**

스트레이트닝 베인은 미터 튜브 앞에 있는 파이프 피팅 및 밸브에 의해 발생된 소용돌이 및 난류를 제거하는 기능을 갖고 있습니다. 미터 튜브에 이러한 베인을 사용하면 오리피스 플레이트보다 먼저 직선 튜브의 길이가 필요합니다. 스트레이트닝 베인은 얇은 강철 튜브로 구성됩니다. 튜브의 네스트는 대칭이고 각 튜브는 양쪽 끝이 비스듬하게 되어 있습니다. 최대 강도를 위해 양쪽 끝의 접선이 용접됩니다. CS 또는 S.S로 제작 사용 가능합니다.



**스트레이트너 다발관**  
**MODEL : KC-7700-SV**



**플로우컨디셔너 플레이트**  
**MODEL : KC-7700-FC**





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유량계, 계측기, 수질 TMS  
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KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

 (주)골든룰