

KES

The Feature of Parts for Nozzle Projection in IDI Diesel Engine

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1. Scope of Application

This standard shall specify the fuel system using the pintle type nozzle and the nozzle holder of KCA or KCA-P type in the IDI diesel engines manufactured by KIA.

2. Purpose

The purpose of this standard is to prevent the fuel leakage happened frequently at the joint of the nozzle holder of the IDI diesel engines, and standardize the feature of the parts constituent of assembling the nozzle holder ass'y to the cylinder head.

3. Relative Constituent Parts

(1) The parts are classified like Table 1 by existence of the nozzle heat shield.

Table 1

Type	Constituent Parts	Remarks
When the Heat Shield-Nozzle is adopted	-Cylinder Head -Heat Shield-Nozzle -Washer-Nozzle -Gasket -Nozzle Holder Ass'y -Gasket-Corrugate	Refer to Figure 1.
When the Heat Shield-Nozzle is not adopted	-Cylinder Head -Washer-Nozzle -Nozzle Holder Ass'y Gasket-Corrugate	Refer to Figure 2.

(2) Classification by the type of the nozzle holder ass'y

(a) KCA Type Nozzle Holder Ass'y (General Type)

(b) KCA-A Type Nozzle Holder Ass'y (Small Type)

4. Definition of Terms

(1) Nozzle heat Shield : The part made for preventing burning flame and heat contacting the nozzle body directly so as to prevent the nozzle from excessive deterioration.

(Refer to Figure 3, 4.)

(2) Nozzle Washer : The parts made for preventing the combustion gas from leaking between the nozzle heat shield and the nozzle holder, and the cylinder head and the nozzle holder.

(Refer to Figure 5, 6.)

(3) Gasket : The part made for preventing the combustion gas from leaking between the cylinder head and the nozzle heat shield when the nozzle heat shield is adopted.

(Refer to Figure 7, 8.)

(4) Nozzle Projection : The projecting length of the nozzle body from the nozzle holder ass'y to the outside of the nozzle holder. (Refer to Figure 1, 2.)

(5) Corrugated Gasket : The part used for preventing the nozzle and the combustion gas from excessive deterioration and leaking between the nozzle body and the nozzle heat shield or the nozzle body and the cylinder head. (Refer to Figure 9, 10.)

(6) Clearance : The gap between the end of the nozzle body and the heat shield, or the end of the nozzle body and the nozzle holder ass'y assembling direction of the cylinder head.

(Refer to Figure 11.)

5. Items of Standardization

(1) In case of KCA type nozzle holder ass'y

Table 2

Classification		Cylinder or Nozzle Heat Shield	Nozzle Washer	Nozzle Projection	Clearance		
					KES	MC	Ricardo
Before Deformation of Nozzle Washer	Maximum Clearance	11.95	2.0	12.8	1.15	1.15	1.13
	Minimum Clearance	11.85	1.9	13.2	0.55	0.55	0.43
After Deformation of Nozzle Washer	Maximum Clearance	11.95	1.8	12.8	0.95	0.95	—
	Minimum Clearance	11.85	1.71	13.2	0.36	0.36	—

(2) In case of KCA-P type nozzle holder ass'y

Table 3

Classification		Cylinder or Nozzle Heat Shield	Nozzle Washer	Nozzle Projection	Clearance		
					KES	MC	Ricardo
Before Deformation of Nozzle Washer	Maximum Clearance	5.95	2.0	6.85	1.10	—	—
	Minimum Clearance	5.85	1.9	7.15	0.60	—	—
After Deformation of Nozzle Washer	Maximum Clearance	5.95	1.8	6.85	0.90	—	—
	Minimum Clearance	5.85	1.71	7.15	0.41	—	—

(3) Thickness deformation quantity of the nozzle washer

(a) Screwing torque when assembling the nozzle holder ass'y: 6 ~ 8kg · m

(b) Thickness deformation quantity of the nozzle washer: 10 %

(4) The drawings of the relative constituent part number according to standardization is shown below.

(a) Nozzle Heat Shield : For KCA Type -----Figure 3

For KCA-P Type-----Figure 4

(b) Nozzle Washer : For KCA Type-----Figure 5

For KCA-P Type-----Figure 6

- (c) Gasket : For KCA Type-----Figure 7
 For KCA-P Type-----Figure 8
- (d) Corrugated Gasket : For KCA Type-----Figure 9
 For KCA-P Type-----Figure 10

6. Explanation of The Relative Quoted Drawing

- (1) Figure 1 : Arrangement drawing of the constituent parts when the nozzle heat shield is adopted.
- (2) Figure 2 : Arrangement drawing of the constituent parts when the nozzle heat shield is not adopted.
- (3) Figure 3 : Part drawing of the nozzle heat shield
 (When the KCA type nozzle holder is adopted)
- (4) Figure 4 : Part drawing of the nozzle heat shield
 (When the KCA-P type nozzle holder is adopted)
- (5) Figure 5 : Part drawing of the nozzle washer
 (When the KCA type nozzle holder is adopted)
- (6) Figure 6 : Part drawing of the nozzle washer
 (When the KCA-P type nozzle holder is adopted)
- (7) Figure 7 : Part drawing of the gasket
 (When the KCA type nozzle holder is adopted)
- (8) Figure 8 : Part drawing of the gasket
 (When the KCA-P type nozzle holder is adopted)
- (9) Figure 9 : Part drawing of the corrugated gasket
 (When the KCA type nozzle holder is adopted)
- (10) Figure 10 : Part drawing of the corrugated gasket
 (When the KCA-P type nozzle holder is adopted)
- (11) Figure 11 : Assembly drawing of the constituent parts according to classification of the nozzle holder ass'y.