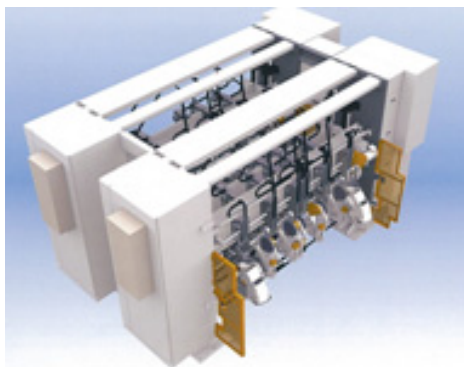


# New 57H-V Slitter Scorer for a Corrugating Machine



PAPER & PRINTING MACHINERY DIVISION  
PAPER CONVERTING MACHINERY  
DEPARTMENT

## 1. Product Overview

Mitsubishi Heavy Industries (MHI), Ltd., has developed the new 57H-V slitter scorer series. In addition to the basic functions of the existing 57H-III slitter scorer series, which include sharp slitting performance and quick setup for short orders, MHI added the following new features to the 57H-V to better meet customer requirements: (1) reduced paper loss, (2) improved workability and serviceability, and (3) easy installation in a smaller space.

## 2. Main Features

### 2.1 Reduced paper loss

(1) In place of the existing air cylinder, MHI adopted a servomotor for the lifting mechanism of the slitter knife and the scoring roll. As a result, variation in lifting timing can be minimized, thereby significantly reducing paper loss that occurs on order changes (**Table 1**).

- Cost reduction compared to MHI 57H-III: approximately 600,000 yen/year
- Cost reduction compared to MHI 57G (model subject to replacement):  
approximately 1,700,000 yen/year

**Table 1 Comparison of cost resulting from paper loss, due to order changes for different MHI slitter scorers**

Machine type	units	57H-V	57H-III	57G
Waste sheet length	m	0.70	0.85	1.10
Waste sheet width	m	1.52		
Slitter unit change	times/ day	200		
Paper loss upon order change	m <sup>2</sup> /day	213	258	334
Annual paper loss upon order change (250 days/year)	m <sup>2</sup>	53 250	64 500	83 500
Annual paper loss cost	1 000 yen	3 035	3 677	4 760
Difference in annual cost	1 000 yen	—	642	1 725

Note: Order change speed: 250m/min, sheet unit price: 57 yen/m<sup>2</sup>

(2) A steering guide device incorporated in the slitter scorer controls the web skewing. This prevents losses due to defective products that occur when the slitter knife is misaligned with the web.

Furthermore, the steering guide is synchronized to move inversely with respect to the lateral adjustment of the slitter scorer, thereby improving the phase alignment response between the slitter knife and the web (patent application filed).

## 2.2 Improved workability and serviceability

- (1) The 57H-V slitter scorer precisely adjusts the slitter knife height to cope with the change in the knife diameter due to automatic grinding of the knife on the machine. The height adjustment is automatically carried out by a mechanism that combines the slitter knife lifting servomotor and positioning laser sensor, thus eliminating the manual adjustment by an operator (patent application filed).
  - Adjustment time for the existing model: more than 30 minutes for manual adjustment
  - Adjustment time for the 57H-V: 2-3 minutes for automatic adjustment
- (2) Fixing of the knife for trim slitting and the incorporation of a trim head hitting device in the slitter scorer ensure that trim comes into the trim chute during an order change, thus eliminating some checking work by an operator (patent application filed).

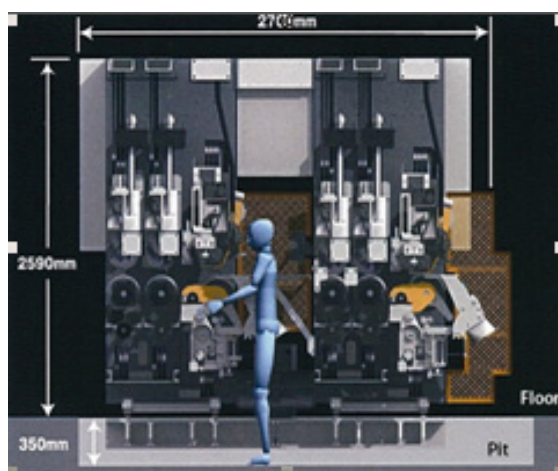
## 2.3 Easy installation in a smaller space

Previously, the large machine dimension in the flow direction has been a disadvantage of double-frame slitter scorers. In the 57H-V, the dimension was reduced by modifying the machine mechanism and optimizing the maintenance space. Thus, the new slitter scorer can be installed in a smaller space, providing a convenient alternative for an existing single-frame machine.

- Required dimension in the machine flow direction
- MHI 57H-V: 2,700 mm (minimum)
- MHI 57G (Single-frame machine): 2,500 mm
- MHI 57H-III (Double-frame machine): 4,080 mm

## 3. Main Specifications

**Figure 1** shows a cross-sectional view of the new 57H-V slitter scorer, and **Table 2** lists its main specifications.



**Figure 1** Cross-sectional view of the 57H-V

**Table 2** Specifications of the 57H-V slitter scorer

Item	Specification
Maximum machine speed	400 m/min
Maximum paper width	1800, 2000, 2200, 2500 mm
Machine mechanism	2 units/2 frames (tandem alignment)
Shaft arrangement	Scorer-scorer slitter/1 unit
Number of boxes out	4-7 boxes out
Slitting method	Lower blade slitting system with a single blade
Head positioning method	1 head/1 motor system
Head lifting method	Servomotor method
Knife height adjustment	Automatic adjustment
Steering guide device	Optional