

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

RAJYA SABHA
UNSTARRED QUESTION NO. 2323
ANSWERED ON 19.12.2025

PROGRESS OF INSTALLATION OF KAVACH IN INDIAN RAILWAYS

2323 # SHRI BABURAM NISHAD:

SHRI MADAN RATHORE:

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SHRI BRIJ LAL:

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DR. PARMAR JASHVANTSINH SALAMSINH:

Will the Minister of RAILWAYS be pleased to state:

- (a) the current status of installation of the Kavach Automatic Train Protection System, including the total route in kilometers covered till date along with the zone-wise details thereof;
- (b) the number of stations currently operating with electronic interlocking systems and the extent of increase achieved in the last two years;
- (c) the total route in kilometers brought under automatic block signaling during the last two financial years along with the targets set for the year 2025-26; and
- (d) the details of the signaling modernisation, including Kavach electronic interlocking and automatic signaling systems during the last two years and the funds allocated and utilised therefor?

ANSWER

MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND
ELECTRONICS & INFORMATION TECHNOLOGY

(SHRI ASHWINI VAISHNAW)

- (a) to (d): 1. Kavach is an indigenously developed Automatic Train Protection (ATP) system. Kavach is a highly technology intensive system, which requires safety certification of highest order (SIL-4).
- 2. Kavach aids the Loco Pilot in running of trains within specified speed limits by automatic application of brakes in case Loco Pilot fails to do so and also helps the trains to run safely during inclement weather.

3. The first field trials on the passenger trains were started in February 2016. Based on the experience gained and Independent Safety Assessment of the system by Independent Safety Assessor (ISA), three firms were approved in 2018-19, for supply of Kavach Ver 3.2.
4. Kavach was adopted as National ATP system in July 2020.
5. Implementation of Kavach System involves following Key Activities:
 - i. Installation of Station Kavach at each and every station, block section.
 - ii. Installation of RFID Tags throughout the track length.
 - iii. Installation of telecom Towers throughout the section.
 - iv. Laying of Optical Fibre Cable along the track.
 - v. Provision of Loco Kavach on each and every Locomotive running on Indian Railways.
6. Based on deployment of Kavach version 3.2 on 1465 Rkm on South Central Railway and experience gained, further improvements were made. Finally, Kavach specification version 4.0 was approved by RDSO on 16.07.2024.
7. Kavach version 4.0 covers all the major features required for the diverse railway network. This is a significant milestone in safety for Indian Railways. Within a short period, IR has developed, tested and started deploying Automatic Train Protection System.
8. Major improvement in Version 4.0 includes increased Location Accuracy, Improved Information of Signal Aspects in bigger yards, Station to Station Kavach interface on OFC and Direct Interface to existing Electronic Interlocking System. With these improvements, Kavach Ver.4.0. is planned for large scale deployment over Indian Railways.
9. After extensive and elaborate trials, Kavach Version 4.0 has been successfully commissioned on 738 Route km on Palwal – Mathura- Nagda section (633 Rkm) on Delhi – Mumbai route and Howrah–Bardhaman section (105 Rkm) Delhi – Howrah route. Kavach implementation has been taken up in balance sections of Delhi – Mumbai & Delhi – Howrah corridors.
10. Progress of key items of Kavach on High density routes including Delhi– Mumbai & Delhi– Howrah corridors are as under:

SN	Item	Progress
i	Laying of Optical Fibre Cable	7129 Km
ii	Installation of Telecom Towers	860 nos
iii	Station Data Centre	767 Stns
iv	Installation of Track side equipment	5672 Rkm
v	Provision of Kavach on Locos	4,154

11. Further, track side Kavach implementation work has been taken up on 15,512 Rkm covering all GQ, GD, HDN and identified sections of Indian Railways.
12. Bids have been invited for equipping another 9,069 locomotives with Kavach version 4.0. Kavach is being provided progressively in a phased manner in locomotives.
13. Specialized training programmes on Kavach are being conducted at centralized training institutes of Indian Railways to impart training to all concerned officials. By now more than 40,000 technicians, operators and engineers have been trained on Kavach technology. This includes 33,000 Loco Pilots & Assistant Loco Pilots. Courses have been designed in collaboration with IRISSET.
14. The funds utilized on Kavach works so far up to Oct'25 is ₹2,354.36 Crores. The allocation of funds during the year 2025-26 is ₹1673.19 Crores. Requisite funds are made available as per the progress of works.
15. Electronic Interlocking Systems with centralized operation of points and signals in place of old mechanical signalling have been provided at 3830 stations as on 30.11.2025. This includes commissioning of Electronic Interlocking at 817 stations during last two years.
16. Automatic Block Signalling (ABS) that enhances line capacity within existing track infrastructure has been provided at 6559 Route km upto 30.11.2025. This includes commissioning of 1959 Rkm of Automatic Block Signalling during last two years.
17. During the year 2025-26, ₹6800 crore have been allocated for Signalling & Telecom related works, out of which ₹4050.62 crore spent till Nov.'2025.
