GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

LOK SABHA
UNSTARRED QUESTION NO. 4021
TO BE ANSWERED ON 12.08.2026

INSTALLATION OF KAVACH ON HIGH-DENSITY AND HIGH-PASSENGER TRAFFIC ROUTES

4021. DR. HEMANT VISHNU SAVARA:
SHRI JASWANTSINH SUMANBHAI BHABHOR:
SHRI ANUP SANJAY DHOTRE:
DR. SANJAY JAISWAL:

Will the Minister of RAILWAYS be pleased to state:

(a) the details of the progress made in the deployment of Kavach 4.0 including the route kilometres covered and number of locomotives equipped with Kavach 4.0 as on date, zone-wise;

(b) whether the railway zones and high-density corridors have been identified for implementation of the Kavach during 2026–27 including the sections of Maharashtra particularly Akola district and zones of Mumbai and Palghar areas, Delhi-Mumbai routes passing through the Dahod Lok Sabha Constituency and if so, the details thereof;

(c) whether any routes falling within the State of Bihar have been covered/identified for the implantation under Kavach 4.0 and if so, the details thereof, route-wise;

(d) whether the Government prescribed any timeline for the phased, network-wide deployment of Kavach across Railways and if so, the details thereof;

(e) the steps taken/being taken by the Government to expedite the installation and commissioning of the Kavach system across the Railways network;

(f) the details of the strategy made by the Government to augment manufacturing capacity, signalling infrastructure and availability of trained manpower for this purpose; and

(g) whether the Government propose to prioritise the rollout of Kavach on high-density and high-passenger traffic routes for enhancing rail safety and if so, the details thereof?

ANSWER

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

(SHRI ASHWINI VAISHNAW)

(a) to (g):

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:
   a. Installation of Station Kavach at each and every station, block section.
   b. Installation of RFID Tags throughout the track length.
   c. Installation of telecom Towers throughout the section.
   d. Laying of Optical Fibre Cable along the track.
   e. Provision of Loco Kavach on each and every Locomotive running on Indian Railways.
6. Based on deployment of Kavach version 3.2 on 1,465 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 2,633 Route Kilometres as on 31.07.26, covering the high density Delhi- Mumbai and Delhi-Howrah routes as below:

SN	Section	Progress (Route Km)
(1)	Delhi-Mumbai route: 1,423 Rkm	
i	Tilak Bridge - Junction cabin – Palwal – Mathura –Kota-Nagda-Ratlam–Dahod-Vadodara-Palghar-Virar section (Passes through Maharashtra including Palghar & Dahod areas on the Delhi - Mumbai route)	1,327
ii	Vadodara – Ahmedabad section	96
(2)	Delhi – Howrah route: 1,210 Rkm	
i.	Chipyana - Tundla - Kanpur - Subedarganj section	563

ii.	Kanpur – Lucknow section	71
iii.	Mirzapur - DDU (Excluding) section	64
iv.	DDU(FOC)-Bhabua Road section (Passes through Bihar also)	50
v.	Sasaram - Phesar section (Passes through Bihar)	43
vi.	Gaya -Sarmatarn- Nimiaghat section (Passes through Bihar also)	159
vii.	Chota Ambana - Bardhaman – Howrah section	260

10. In addition, track side Kavach implementation work has been taken up on 21,794 RKM covering all GQ, GD, HDN and identified sections of Indian Railways including states of Maharashtra (including parts of Akola) and Bihar.
11. The total Progress of key items of Kavach on Indian Railway sections are as under:-

SN	Item	Progress
i	Laying of Optical Fibre Cable	11,547 Km
ii	Installation of Telecom Towers	1,721 Nos.
iii	Station Data Centre	1,009 station
iv	Installation of Track side equipment	7,726 RKm
v	Provision of Kavach in Loco	6,290 Nos.

12. In addition, work for installation of Kavach in 7,190 Locomotives and 1,200 EMU/MEMU has been taken up.
13. Specialized training programs on Kavach are being conducted at centralized training institutes of Indian Railways to impart training to all concerned officials. By now more than 94,000 technicians, operators and

engineers have been trained on Kavach technology. This includes about 57,000 Loco Pilots & Assistant Loco Pilots. Courses have been designed in collaboration with IRISET.

14. **The funds utilized on Kavach works so far up to Jun'26 is Rs. 3,875 Crores. The allocation of funds during the year 2026-27 is Rs. 2,066 Crores. Kavach work is going at good pace in the entire country. Requisite funds are made available as per the progress of works.**

15. **Kavach is an indigenously developed Automatic Train Protection system. The main component of Kavach are Stationary Kavach, Remote Interface Units and Loco Kavach which comply with Make In India policy.**

    Since entire Kavach system is conceived, designed, and manufactured in India, all the vendors are Indian manufacturer. Three manufacturers are already approved and further two more are under process of approval. These vendors have to comply with stringent safety standards of SIL4 for components and products, and accordingly utilize the supply chain.

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