

# EOS 2



## EOS 2

EOS2 is a compact Type 2 light curtain with competitive performance and innovative features.

Its features include:

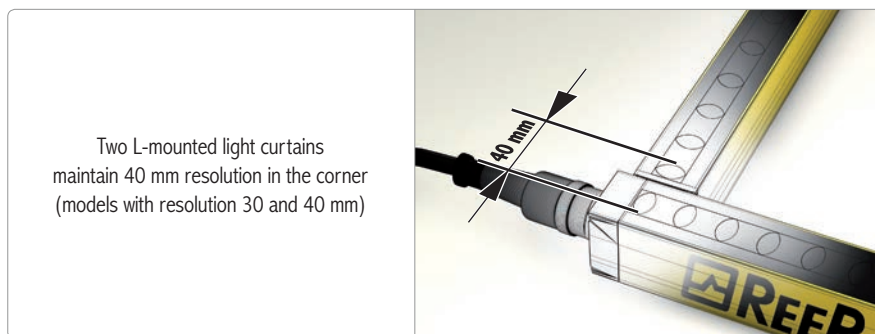
- Minimal cross section: 28 x 30 mm.
- No blind area on one side: the position of first beam ensures that the sensitive area extends to end of the light curtain.
- Minimal blind area on connector side.
- The solution with two L-mounted light curtains, e.g. Master-Slave, maintains 40 mm resolution in corner (models with resolution 30 and 40 mm).
- Easy connection and installation thanks to the M12 connectors and the use of unshielded cables up to 100 m.
- Integrated safety functions, including self-monitoring of static outputs, control of external contactors (EDM) and automatic/manual selectable Restart.
- Exceptional mechanical and electrical robustness are the result of extensive experience gained hands-on with all kinds of applications.
- Operating temperature range: -10 ... 55 °C.
- Protection rate: IP 65 and IP 67 at the same time.
- High resistance to infiltration by dust and liquids in a highly compact light curtain.
- Models Master/Slave for cascade connection of two or three light curtains.
- 2 safety PNP static outputs.

Special versions with IP 69K watertight enclosure (WTF and WTHF), also suitable for Food & Beverage industry, available.

► [See page 194](#)

Special models in conformity with the "ATEX Directive" 94/9/CE - Dust zone 22 - Gas Zone 2 available on request.

EOS2 light curtains may be connected to the dedicated safety interfaces series AD SR, or directly to contactors actuated and controlled by the light curtain, or to MOSAIC or to suitable commercial safety modules or safety PLCs.



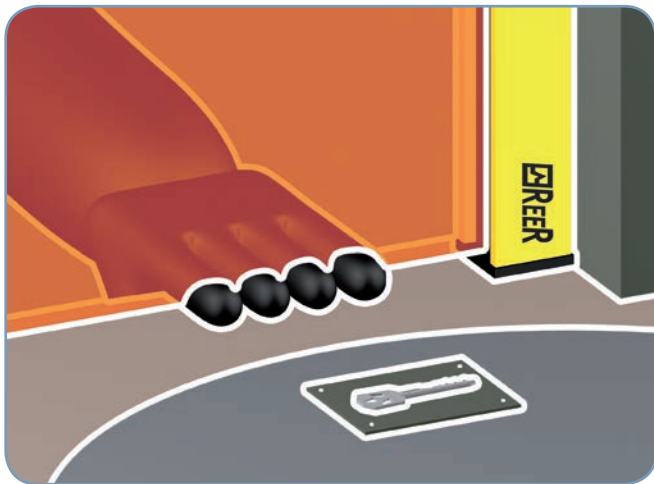
### Safety level: **Type 2 – SIL 2 – SILCL 2 – PL d – Cat. 2**

- 2006/42/EC "Machinery Directive"
- 2004/108/EC " Electromagnetic Compatibility (EMC) "
- 2006/95/EC "Low Voltage Directive (LVD) "
- IEC/EN 61496-1 Ed. 2.1, IEC/TS 61496-2 Ed. 2 " Safety of machinery - Electro-sensitive protective equipment- General requirements and tests "
- EN ISO 13849-1 "Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design "
- IEC/EN 62061 "Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems "
- IEC 61508 "Functional safety of electrical/electronic/programmable electronic safety-related systems "
- IEC/TS 62046 Ed. 2 "Safety of machinery – Application of protective equipment to detect the presence of persons "
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components" .



### THE EOS2 RANGE

EOS2 A	EOS2 X	EOS4 XS - XM - XS2
Automatic Start/Restart	Built-in, selectable manual or automatic Start/Restart	Master and Slave models for series connection of two or three light curtains regardless of height or resolution
The ideal light curtain for straightforward interfacing with safety modules (i.e. AD SR1) or safety PLCs. (i.e. MOSAIC)	An effective light curtain for directly controlling and monitoring machine circuits with no need of external safety modules	Ideal solution for series connection of several light curtains and combined detection of hand and body or the protection of two different sides of a machine
External relay monitoring (EDM) through external AD SR1 interface, MOSAIC or safety PLCs	Feedback input for external relay monitoring (EDM)	
Electrical connections: M12 5-pole connectors	Electrical connections: M12 5-pole connector for emitter M12 8-pole for receiver	
Max. range 12 m		
Protected height range 160 to 1810 mm		
Types of detection: resolution 30, 40 mm for hand detection resolution 50, 90 mm for detection of the body in a dangerous area 2, 3, 4 beams for detection of the body in access control		
2 safety static outputs PNP with auto-test protected against short circuits and overloads		



The protected area extends until the light curtain end maintaining the resolution



The resolution is maintained (up to 40 mm) in the junction between the 2 protected areas

# EOS2 A

## WITH AUTOMATIC START/RESTART

### MAIN FEATURES

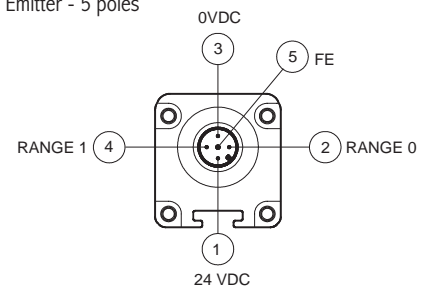
Automatic Start/Restart.  
 Two safety PNP static outputs, auto-controlled.  
 All connections and configurations through M12 5-pole connectors.  
 Unshielded cables up to 100 meter long.  
 Start/Restart interlock and EDM through external AD SR1 interface.  
 Muting function through external AD SRM interface.  
 Autotest every 0.5 sec.

### TECHNICAL FEATURES

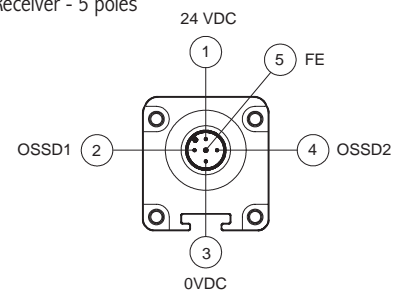
<b>Safety level</b>	Type 2 according to IEC/TS 61496-2 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 2 according to ISO 13849-1
<b>Protected heights (mm)</b>	160 ... 1810
<b>Resolutions (mm)</b>	30, 40, 50, 90
<b>Numbers of beams for body detection in access control</b>	2, 3, 4
<b>Max. range (m)</b>	4 or 12 selectable
<b>Response time (ms)</b>	2,5 ... 18,5
<b>Safety outputs</b>	2 PNP - 400 mA at 24 VDC with short-circuit, overload, polarity reversal protection
<b>Signaling</b>	LEDs for light curtain's status and diagnostic
<b>Start/Restart</b>	automatic
<b>Power supply (VDC)</b>	24 ± 20%
<b>Electrical connections</b>	M12 5-pole for emitter and receiver
<b>Max. cable length (m)</b>	100
<b>Operating temperature (°C)</b>	-10 ... 55
<b>Protection rating</b>	IP 65 and IP 67
<b>Fastening modes</b>	back slot or to the top and lower end by rotating brackets SFB E180 (optional)
<b>Cross section (mm)</b>	28 x 30



Emitter - 5 poles



Receiver - 5 poles



Safety level:

# TYPE 2

SIL 2 – SILCL 2  
PL d – Cat. 2



# TYPE 2 SAFETY LIGHT CURTAIN

## EOS2 A

WITH AUTOMATIC START/RESTART



Resolution 30 mm	EOS2 153 A	EOS2 253 A	EOS2 303 A	EOS2 453 A	EOS2 603 A	EOS2 753 A	EOS2 903 A	EOS2 1053 A	EOS2 1203 A	EOS2 1353 A	EOS2 1503 A	EOS2 1653 A	EOS2 1803 A
Ordering codes	<b>1320200</b>	<b>1321205</b>	<b>1320201</b>	<b>1320202</b>	<b>1320203</b>	<b>1320204</b>	<b>1320205</b>	<b>1320206</b>	<b>1320207</b>	<b>1320208</b>	<b>1320209</b>	<b>1320270</b>	<b>1320271</b>
Protected height (mm)	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	8	13	16	23	31	38	46	53	61	68	76	83	91
Overall height (mm)	213	313	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 40 mm	EOS2 154 A	EOS2 254 A	EOS2 304 A	EOS2 454 A	EOS2 604 A	EOS2 754 A	EOS2 904 A	EOS2 1054 A	EOS2 1204 A	EOS2 1354 A	EOS2 1504 A	EOS2 1654 A	EOS2 1804 A
Ordering codes	<b>1320300</b>	<b>1321202</b>	<b>1320301</b>	<b>1320302</b>	<b>1320303</b>	<b>1320304</b>	<b>1320305</b>	<b>1320306</b>	<b>1320307</b>	<b>1320308</b>	<b>1320309</b>	<b>1320370</b>	<b>1320371</b>
Protected height (mm)	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	6	9	11	16	21	26	31	36	41	46	51	56	61
Overall height (mm)	213	313	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 50 mm	EOS2 155 A	EOS2 305 A	EOS2 455 A	EOS2 605 A	EOS2 755 A	EOS2 905 A	EOS2 1055 A	EOS2 1205 A	EOS2 1355 A	EOS2 1505 A	EOS2 1655 A	EOS2 1805 A
Ordering codes	<b>1320400</b>	<b>1320401</b>	<b>1320402</b>	<b>1320403</b>	<b>1320404</b>	<b>1320405</b>	<b>1320406</b>	<b>1320407</b>	<b>1320408</b>	<b>1320409</b>	<b>1320470</b>	<b>1320471</b>
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 90 mm	EOS2 309 A	EOS2 459 A	EOS2 609 A	EOS2 759 A	EOS2 909 A	EOS2 1059 A	EOS2 1209 A	EOS2 1359 A	EOS2 1509 A	EOS2 1659 A	EOS2 1809 A
Ordering codes	<b>1320501</b>	<b>1320502</b>	<b>1320503</b>	<b>1320504</b>	<b>1320505</b>	<b>1320506</b>	<b>1320507</b>	<b>1320508</b>	<b>1320509</b>	<b>1320570</b>	<b>1320571</b>
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	6	8	10	12	14	16	18	20	22	24
Overall height (mm)	363	513	663	813	963	1113	1263	1413	1563	1713	1863



2, 3, 4 beams	EOS2 2B A	EOS2 3B A	EOS2 4B A
Ordering codes	<b>1320600</b>	<b>1320601</b>	<b>1320602</b>
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	653	953	1053

► "ACCESSORIES" on page 132

# EOS2 X

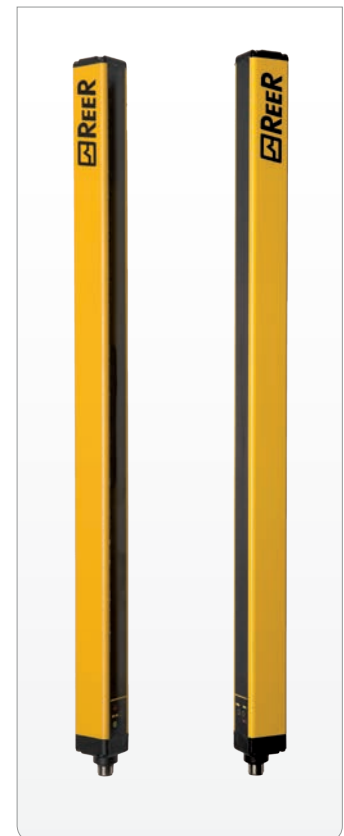
## WITH BUILT-IN CONTROL FUNCTIONS

### MAIN FEATURES

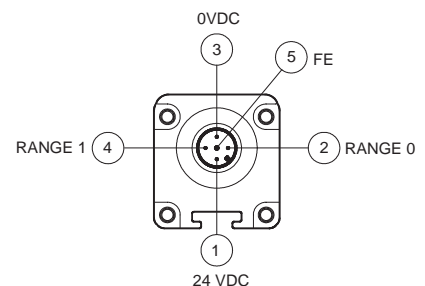
- Built-in, selectable manual/automatic Start/Restart.
- Feedback input for controlling external relays (EDM).
- Two safety PNP static outputs, auto-controlled.
- All connections and setting adjustments through M12 5-pole and 8-pole connectors.
- Unshielded cables up to 100 meter long.
- Master and Slave models for series connection of up to 3 light curtains.
- Max. length of connections toward Slaves: 50 meters, through standard unshielded cable.
- Autotest every 0.5 sec.

### TECHNICAL FEATURES

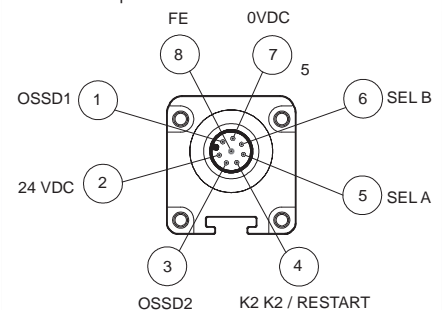
<b>Safety level</b>	Type 2 according to IEC/TS 61496-2 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 2 according to ISO 13849-1
<b>Protected heights (mm)</b>	160 ... 1810
<b>Resolutions (mm)</b>	30, 40, 50, 90
<b>Numbers of beams for body detection in access control</b>	2, 3, 4
<b>Max. range (m)</b>	4 or 12 selectable
<b>Response time (ms)</b>	2,5 ... 18,5
<b>Safety outputs</b>	2 PNP - 400 mA at 24 VDC with short-circuit, overload, polarity reversal protection
<b>Signaling</b>	LEDs for light curtain's status and diagnostic
<b>Start/Restart</b>	selectable automatic or manual
<b>External Device Monitoring</b>	external device monitoring feedback input with enabling, selectable
<b>Power supply (VDC)</b>	24 ± 20%
<b>Electrical connections for EOS2 X and EOS2 X Master</b>	M12 5-pole for emitter M12 8-pole for receiver
<b>Electrical connections between Master and Slave</b>	M12 5-pole per emitter and receiver
<b>Max. cable length (m)</b>	100 (50 between Master and Slave)
<b>Operating temperature (°C)</b>	-10 ... 55
<b>Protection rating</b>	IP 65 and IP 67
<b>Fastening modes</b>	back slot
<b>Cross section (mm)</b>	28 x 30



Emitter - 5 poles



Receiver - 8 poles



Safety level:

# TYPE 2

SIL 2 – SILCL 2  
PL d – Cat. 2



# TYPE 2 SAFETY LIGHT CURTAIN

## EOS2 X

WITH BUILT-IN CONTROL FUNCTIONS



Resolution 30 mm	EOS2 153 X	EOS2 253 X	EOS2 303 X	EOS2 453 X	EOS2 603 X	EOS2 753 X	EOS2 903 X	EOS2 1053 X	EOS2 1203 X	EOS2 1353 X	EOS2 1503 X	EOS2 1653 X	EOS2 1803 X
Ordering codes	<b>1320210</b>	<b>1321200</b>	<b>1320211</b>	<b>1320212</b>	<b>1320213</b>	<b>1320214</b>	<b>1320215</b>	<b>1320216</b>	<b>1320217</b>	<b>1320218</b>	<b>1320219</b>	<b>1320272</b>	<b>1320273</b>
Protected height (mm)	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	8	13	16	23	31	38	46	53	61	68	76	83	91
Overall height (mm)	213	313	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 40 mm	EOS2 154 X	EOS2 254 X	EOS2 304 X	EOS2 454 X	EOS2 604 X	EOS2 754 X	EOS2 904 X	EOS2 1054 X	EOS2 1204 X	EOS2 1354 X	EOS2 1504 X	EOS2 1654 X	EOS2 1804 X
Ordering codes	<b>1320310</b>	<b>1321209</b>	<b>1320311</b>	<b>1320312</b>	<b>1320313</b>	<b>1320314</b>	<b>1320315</b>	<b>1320316</b>	<b>1320317</b>	<b>1320318</b>	<b>1320319</b>	<b>1320372</b>	<b>1320373</b>
Protected height (mm)	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	6	8	11	16	21	26	31	36	41	46	51	56	61
Overall height (mm)	213	313	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 50 mm	EOS2 155 X	EOS2 305 X	EOS2 455 X	EOS2 605 X	EOS2 755 X	EOS2 905 X	EOS2 1055 X	EOS2 1205 X	EOS2 1355 X	EOS2 1505 X	EOS2 1655 X	EOS2 1805 X
Ordering codes	<b>1320410</b>	<b>1320411</b>	<b>1320412</b>	<b>1320413</b>	<b>1320414</b>	<b>1320415</b>	<b>1320416</b>	<b>1320417</b>	<b>1320418</b>	<b>1320419</b>	<b>1320472</b>	<b>1320473</b>
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563	1713	1863



Resolution 90 mm	EOS2 309 X	EOS2 459 X	EOS2 609 X	EOS2 759 X	EOS2 909 X	EOS2 1059 X	EOS2 1209 X	EOS2 1359 X	EOS2 1509 X	EOS2 1659 X	EOS2 1809 X
Ordering codes	<b>1320511</b>	<b>1320512</b>	<b>1320513</b>	<b>1320514</b>	<b>1320515</b>	<b>1320516</b>	<b>1320517</b>	<b>1320518</b>	<b>1320519</b>	<b>1320572</b>	<b>1320573</b>
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	6	8	10	12	14	16	18	20	22	24
Overall height (mm)	363	513	663	813	963	1113	1263	1413	1563	1713	1863



2, 3, 4 beams	EOS2 2B X	EOS2 3B X	EOS2 4B X
Ordering codes	<b>1320610</b>	<b>1320611</b>	<b>1320612</b>
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	653	953	1053

► "ACCESSORIES" on page 132

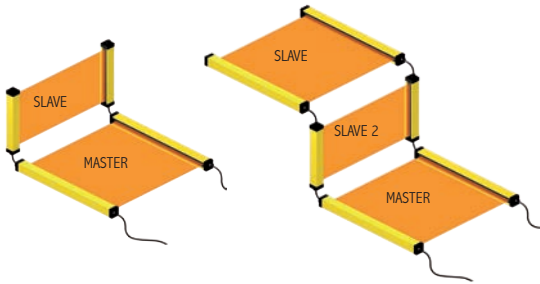
# EOS2 XS - XM - XS2

## MASTER / SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS

### MASTER/SLAVE MODELS

Master/Slave models permit series connection of up to three safety light curtains and combined detection of hand and presence of a person or of more sides of the machine, with the following major benefits:

- A single pair of safety outputs
- No interference between light curtains installed adjacent to one another.

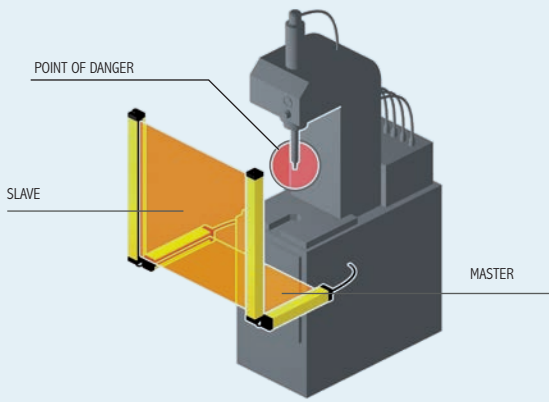


### EXAMPLES OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS

**Any Master model can be used together with any Slave model.**

All electrical connections are made using M12 5-pole connectors, except for Master receivers which necessitate the adoption of M12 8-pole connectors.

Pre-wired cables with twin connectors are available for the connection between Master and Slave.

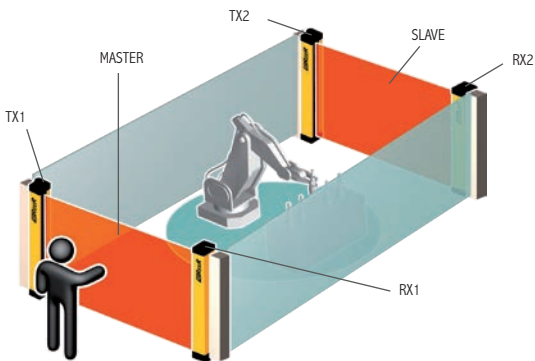


### EXAMPLES OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS

Master light curtain is placed horizontally for detection of the person and Slave light curtain is placed vertically to detect fingers or hands.

The arrangement can be reversed to have the Master light curtain vertical for finger and hand detection and the Slave light curtain horizontally for detecting the presence of a person.

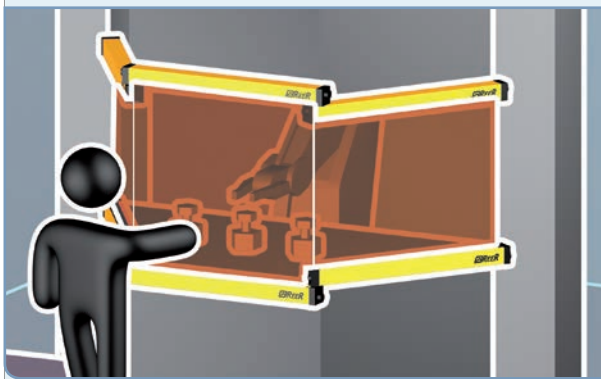
The application shown is one of the most common: horizontal curtains are used to prevent the operator from being undetected in the space between vertical light curtain and dangerous machine, upon system start-up or restarting.



### EXAMPLE OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS FOR PROTECTION OF TWO SIDES OF THE MACHINE

On EOS2 X the connecting cable across Master and Slave is a standard (unshielded) cable up to 50 meter long.

Thus, two series connected curtains may be located one at the front of the machine and the other at the rear, with a single connection to the machine power and control circuitry.



### EXAMPLE OF SERIES CONNECTION OF ONE MASTER AND TWO SLAVE LIGHT CURTAINS FOR THE PROTECTION OF THREE SIDES OF THE MACHINE

Benefit: unimpeded operator access to work area from front and sides.