

MANUALE D'USO PER V3V DOPPIA SYNTESI **SERIE SAFE AIR®**



ISTRUZIONI ORIGINALI

1. Designazione

Blocco di comando per l'interruzione dell'alimentazione e la messa a scarico del ramo di circuito pneumatico collegato con la porta 2.

2. Descrizione

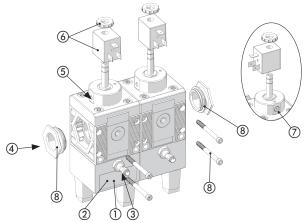
Doppia valvola 3/2 elettropneumatica monostabile con monitoraggio della spola.

3. Dati tecnici

			V3V DOPPIA SY2 SAFE AIR®				
Attacco filettato		3/8"	1/2" 3/4" 1"				
Attacco filettato scarico		n° 4 da 1/2″					
Fluido		Δ	Aria filtrata (50µm) senza lubrificazione				
Funzione valvola			3/2 monostabile				
Pressione di funzionamento:							
non asservita		3 ÷ 10 bar - 0.3 ÷ 1 MPa - 43 ÷ 145 psi					
asservita			0 ÷ 10 bar - 0 ÷ 1 MPa - 0 ÷ 145 psi				
Pressione di asservimento		3	÷ 10 bar - 0.3 ÷ 1 MPa - 43 ÷ 145 psi				
Temperatura min/max a 10 bar; 1 MPa; 145 psi	°C		-10 ÷ +50 ≄				
Conduttanza C	NI/min · bar	557	600				
Rapporto critico b	bar/bar	0.23	0.24				
Portata a 6.3 bar Δp 0.5 bar	NI/min	1700	1800				
Portata a 6.3 bar Δp 1 bar	NI/min	2300	2500				
Conduttanza C in scarico	NI/min · bar		742				
Rapporto critico b in scarico	bar/bar		0.09				
Portata in scarico libero a 6.3 bar	NI/min		5400				
TRA/TRR a 6.3 bar	ms/ms		70 / 100				
Posizione di montaggio			In qualsiasi posizione				
Montaggio			In linea				
Viti fissaggio a parete			Numero 2 viti M5				
Coppia max viti di fissaggio a parete	Nm		2				
Operatore manuale			Monostabile				
Bobine		Lato 22 e 30 r	mm foro ø 8 – connessione EN175301-803 forma B				
		c	Certificate EN 60204.1 e VDE 0580 (■)				
Grado di protezione		IP65 con bobina e connettore montati					
Livello di rumorosità			Max 95 dBA con scarichi silenziati				
Coppia max ghiera bobina	Nm		1				
Marcatura CE		Ai sensi della Direttiva Macchine, Allegato V ●					
Funzione di sicurezza svolta		Interruzione del	l'alimentazione e messa a scarico del ramo di circuito				
			pneumatico collegato con la porta 2				
Tipo di sensore utilizzato			Sensore di prossimità induttivo				
B10d			10 x 10° cicli				
Categoria - EN ISO 13849			4				
PL - EN ISO 13849		Idonea ad e	essere utilizzata in circuiti di sicurezza fino a PL=e				

- Per evitare inconvenienti nel funzionamento, si consiglia l'utilizzo di accessori Metal Work
- Dichiarazione scaricabile dal sito www.metalwork.it
- Il punto di rugiada deve essere inferiore di almeno 10°C alla temperatura del fluido, per evitare la formazione di ghiaccio

4. Istruzioni per l'installazione



- 1) Verificare la correttezza del codice ordinato
- 2 La numerazione delle porte è riportata sull'etichetta
- S la connessione elettrica del sensore va eseguita secondo le indicazioni riportate
 Collegare i tubi dell'aria alla valvola mediante raccordi pneumatici
 Asservimento (solo per versioni asservite)

- Montare la bobina sul pilota e fissarla con la ghiera (max 1 Nm)
- Operatore manuale monostabile da utilizzare per eventuali test in fase di installazione
- ® Montare kit attacco pneumatico (qualora non presente) in ingresso e uscita alla valvola mediante le viti preposte con coppia di serraggio 2.5 Nm (max).

- Per la messa in opera del prodotto, seguire i seguenti passi: montare le bobine Metal Work per l'azionamento sui due elettropiloti e fissarli mediante le apposite ghiere (coppia massima 1 Nm);

- (coppia massima 1 Nm);
 collegare i tubi dell'aria alla valvola mediante appositi raccordi pneumatici;
 alimentare elettricamente le bobine alla tensione nominale; attenzione per il corretto funzionamento del prodotto è necessario che il comando elettrico delle due valvole sia contemporaneo;
 alimentare elettricamente i sensori di prossimità induttivi e collegarli al sistema di diagnostica; attenzione per il corretto funzionamento del prodotto è necessario che la lettura dei due sensori sia indipendente;
- alimentare pneumaticamente la porta 1 della valvola 1; verificare il corretto funzionamento delle valvola e dei sensori: se entrambe le bobine sono diseccitate la porta 1 della valvola 1 non è collegata con il circuito pneumatico di valle, la porta 2 della valvola 2 è messa in scarico (porta 3) ed il corrispondente sensore è in stato ON;

se entrambe le bobine sono eccitate la porta 1 è collegata con la porta 2, ed entrambi i sensori sono

Effettuare i controlli di congruenza secondo le seguenti tabelle che mettono in relazione gli stati di ingressi e uscite delle valvole:

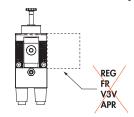
stato 0: alimentazione/segnale assente;

stato 1: alimentazione/segnale presente. Quando la doppia valvola è in stato sicuro (posizione di una delle due spole a riposo) almeno uno dei due sensori è in stato ON (1).

VALVOLA	VALVOLA VERSIONE NON ASSERVITA						
INGRESSI	Elettropilota	0	0	1	1		
	p porta 1	0	1	0	1		
USCITE	p porta 2	0	0	0	1		
	sensore 1	1	1	1	0		
	sensore 2	1	1	1	0		

VALVOLA	VALVOLA VERSIONE ASSERVITA								
INGRESSI	Elettropilota	0	0	0	0	1	1	1	1
	p asservimento	0	0	1	1	0	0	1	1
	p porta 1	0	1	0	1	0	1	0	1
USCITE	p porta 2	0	0	0	0	0	0	0	1
	sensore 1	1	1	1	1	1	1	0	0
	sensore 2	1	1	1	1	1	1	0	0

N.B. A valle delle valvole di sicurezza **non si possono montare** gli elementi **REG**, **FR**, **V3V**, **APR** poiché, se questi ultimi si bloccano, la messa a scarico di sicurezza non è garantita.



SCHEMA ELETTRICO SENSORE BN + (L+) BK NO BU - (M)

Tipo di sensore		DI PROSSIMITÀ INDUTTIVO
Tipo contatto		NO.
Interruttore		PNP
Tensione di alimentazione (Ub)	V	10 ÷ 30
Caduta di tensione (per la max)	v	< 2
Isteresi	%	3 ÷ 20
FMC.	/0	FN 60 947-5-2
Corrente di servizio continuativo la	mA	< 200
Corrente a vuoto	mA	< 10
Frequenza di commutazione	Hz	4000
Protezione da corto circuito		Sì
Resistenza alle vibrazioni e urti		100 g /11 ms / 1000 cicli; 150 g / 1 milione cicli;
		10 ÷ 55 Hz /1 mm/ 55 ÷ 500 Hz /15 g
Visualizzazione comunicazione Led		Giallo
Grado di protezione (EN 60529)		IP 68
Temperatura di lavoro	°C	-40 ÷ +100
Materiale custodia sensore		Accigio inox V2A, DIN 1.4305 / AISI 303
Materiale, superficie attiva		Plastica, LCP
Classe di protezione		III
Tipo di collegamento		Connettore maschio M8, 3 poli
MTTFd	anni	1971
UL-File-Nr		E.181493
Certificazioni		

5. Istruzioni per la manutenzione

Prima di effettuare operazioni di manutenzione si raccomanda di utilizzare i dispositivi di protezione individuali (DPI) necessari e successivamente di togliere l'alimentazione pneumatica ed elettrica a monte del componente.

Verificare periodicamente che i silenziatori non siano intasati. Per le operazioni di manutenzione sulla valvola si consiglia di rendere la valvola a Metal Work che provvederà al corretto rispristino

6. Avvertenze per i rischi residui

- Il prodotto dev'essere installato da personale tecnico competente
 Verificare che il sensore e le parti elettriche non vengano danneggiati durante il funzionamento e l'installazione
 Verificare che i terminali elettrici vengano adeguatamente connessi ad un connettore
 Verificare il corretto inserimento dei tubi prima di alimentare pneumaticamente

- Verificare il corretto collegamento elettrico di bobine e sensori
 Si raccomanda di togliere l'alimentazione elettrica e pneumatica prima di intervenire sul prodotto
 Se la funzione di sicurezza (scarico sicuro) viene utilizzata meno di una volta al mese si consiglia di effettuare un test di funzionamento con frequenza almeno mensile.

7. Istruzioni per lo smaltimento

Il prodotto deve essere rimosso e smaltito secondo le leggi nazionali, pertinenti in vigore, del paese in cui il prodotto è stato usato.







USER MANUAL FOR SHUT-OFF-VALVE DOUBLE SYNTESI **SERIES SAFE AIR®**



ORIGINAL INSTRUCTIONS

1. Designation

Control valve for cutting off the air supply and relieving the air circuit connected to port 2.

2. Description

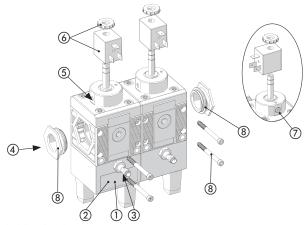
3/2 electropneumatic monostable double valve with spool monitoring.

3. Technical data

Threaded port Threaded discharge port Fluid Operation				DOUBLE V3V SY2 SAFE AIR®			
Threaded discharge port Fluid Operating Operating pressure: non-assisted pilot-assisted from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 0 to 10 bar - from 0.1 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 10 to + 50 ★ 600 00 02.23 0.24 Flow rate at 6.3 bar Ap 0.5 bar NI/min 1700 1800 1800 1700 1800 1800 1800 1800	Threaded port				1"		
Filtered unlubricated air (50µm) Operation Operation Operation Operation Operation Operation 3/2 monostable from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 0 to 10 bar - from 0.3 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 0 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 0 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 3 to 10 bar - from 0.3 to 10 har fom 42 to 10 to 145 psi from 3 to 10 bar - from 0.3 to 10 har fom 42 to 10 to 145 psi from 3 to 10 b			., .	No. 4 from 1/2"			
Operation Operation pressure: non-assisted pilot-assisted pilot assisted pilot	Fluid			Filtered unlubricated air (50um)			
from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi from 0 to 10 bar - from 0.0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 0 to 10 bar - from 0 to 1 MPa - from 0 to 145 psi from 10 to + 50 ★	Operation						
pilot-assisted Pilot pressure Min/max temperature at 10 bar; 1 MPa; 145 psi Conductance C Conductance C Conflict ratio b Dear/bar Conductance C NI/min · bar Conductance C on relief NI/min · bar NI/min · loa NI/min	Operating pressure:						
pilot-assisted pilot-assisted From 3 to 10 Dar - from 0 to 1 MPa - from 0 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.5 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.0 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 1 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 10 MPa - from 43 to 145 psi From 3 to 10 Dar - from 0.3 to 10 MPa - from 43 to 145 psi From 10 to 10 Dar - from 0.3 to 10 MPa - from 43 to 145 psi From 10 to 10 Dar - from 0.3 to 10 MPa - from 43 to 10 to 10 Dar Fom 43 to 10 to 10 Dar - From 3 to 10 Dar - from 0.3 to 10 MPa - from 43 to 10 to 10 Dar - From 3 to 10 Dar - from 0.3 to 10 MPa - from 43 to 10 Dar - From 43 to 10 to 10 to 2.23			from 3 to 10 bar - from 0.3 to 1 MPa - from 43 to 145 psi				
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Flow rate at 6.3 bar Δρ 1 bar NI/min Dar Conductance C on relief NI/min Dar 742 Conductance C on relief NI/min Dar 742 Cirtical ratio bo ar relief 0.09 Flow rate on free exhaust at 6.3 bar NI/min Dar 740 TRA/TRR at 6.3 bar MS/min 5400 TRA/TRR at 6.3 bar MS/min 70 / 100 Assembly In-line Norman In-l	Critical ratio b	bar/bar	0.23	0.24			
Conductance C on relief NI/min - bar Critical ratio b on relief bar/bar Flow rate on free exhaust at 6.3 bar NI/min TRA/TRR at 6.3 bar Mounting position RASsembly Wall fixing screws Max wall fixing screws torque Manual actuator Coils 22 and 30 mm side, ø 8 hole − EN175301-803 connection, type B Certified EN 60204.1 and VDE 0580 (■) Pl65 with coil and connector mounted Noise level Max coil ring nut torque Nm 1 1 CE marking Safety function Cut sof sensor used Blod Category - EN ISO 13849 4 742 742 742 742 742 742 742 742 742	Flow rate at 6.3 bar Δp 0.5 bar	NI/min	1700	1800			
Critical ratio b on relief Flow rate on free exhaust at 6.3 bar RN/min RXA/TRR at 6.3 bar Mounting position Assembly Moull fixing screws Max wall fixing screws torque Monaud actuator Coils Class of protection Noise level Max coil ring nut torque Max of ring nut torque RE marking Safety function Casers or scarces Cuts off person used Monaud actuator CE marking Safety function CE marking Safety function Cet generates Casers Casers D.0. 9 Any position Any position In-line Monaud actuator Any position In-line Monaud actuator 22 and 30 mm side, a 8 hole – ENIT/S301-803 connection, type B Certified EN 60204.1 and VDE 0580 (■) IP65 with coil and connector mounted Max. 95 dBA with silenced relief Max of ling nut torque In accordance with Machinery Directive, Annex V ■ Cuts off the power supply and relieves the air circuit connected to port 2 Inductive proximity sensors B104 Category - EN ISO 13849 4	Flow rate at 6.3 bar Δp 1 bar	NI/min	2300	2500			
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TRA/TRR at 6.3 bar ms/ms Mounting position Any position Any position Any position In-line No. 2 M5 screws Max wall fixing screws torque No. 2 M5 screws Manual actuator Coils 22 and 30 mm side, ø 8 hole − EN175301-803 connection, type B Certified EN 60204.1 and VDE 0580 (■) IP65 with coil and connector mounted Max. 95 dBA with silenced relief Max coil ring nut torque Nom 1 In accordance with Machinery Directive, Annex V ● Cuts off the power supply and relieves the air circuit connected to port 2 Inductive proximity sensors B10d Category - EN ISO 13849 4	Critical ratio b on relief	bar/bar	0.09				
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Type of sensor used $\frac{1}{10 \times 10^{\circ}}$ connected to port 2 Inductive proximity sensors B10d $\frac{10 \times 10^{\circ}}{10^{\circ}}$ cycles Category - EN ISO 13849 4	CE marking		In accord	dance with Machinery Directive, Annex V	•		
Type of sensor used Inductive proximity sensors B10d 10 x 10° cycles Category - EN ISO 13849 4	Safety function		Cuts off	the power supply and relieves the air circu	uit		
510d 10 x 10° cycles Category - EN ISO 13849 4				connected to port 2			
Category - EN ISO 13849 4	Type of sensor used			Inductive proximity sensors			
	B10d			10 x 106 cycles			
PL - EN ISO 13849 Suitable for use in safety circuits up to PL = e	Category - EN ISO 13849			4			
	PL - EN ISO 13849		Suite	able for use in safety circuits up to PL = e			

- To avoid malfunctions, we recommend using Metal Work accessories
- The declaration can be downloaded from www.metalwork.it
- * The dew point must be at least 10°C lower than the fluid temperature, to avoid ice formation

4. Installation instructions



- Check the order code is correct
- The port number is shown on the label
 The electrical connection of the sensor must be as indicated
 Connect the air tubes to the valve using pneumatic fittings
 Pilot (only SES versions)
- 6 Mount the coil on the pilot and tighten the locking nut (max 1 Nm)
- Monostable manual operator to be used for any tests during installation
 Fit the threaded port kit (if not present) at the valve inlet and outlet using the appropriate screws with a tightening torque of 2.5 Nm (max).

- Proceed as follows to install the valve:
 Mount the Metal Work actuating coils on the two solenoid pilots and secure them using the ring nuts (max torque 1 Nm);

- (max torque 1 Nm);
 connect the air tubes to the valve, using the pneumatic fittings;
 supply power to the coils at the rated voltage;
 N.B. For correct operation, the two valves must be activated simultaneously;
 supply power to the inductive sensors and connect them to the diagnostic system;
 N.B. For correct operation, the reading of the two sensors must be independent;
 supply port 1 of valve 1 with compressed air;
 check operation of the valves and sensors:
 if both coils are de-energized, port 1 of valve 1 is not connected with the pneumatic circuit of downstream,
 port 2 of the valve 2 discharges (port3) and both sensors are ON;

- if both coils are energized, port 1 is connected to port 2, both sensors are OFF.

Perform consistency checks based on the following tables, which relate the valve input and output statuses:

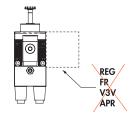
status 0: power/signal absent; status 1: power/signal present.

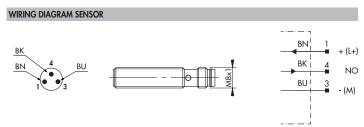
When the double valve is in the safe status (one of the spools in the home position), at least one of the sensors is ON (1).

VALVE NOT PILOT-ASSISTED VERSION						
INPUTS	solenoid pilot	0	0	1	1	
	p port 1	0	1	0	1	
OUTPUTS	p port 2	0	0	0	1	
	sensor 1	1	1	1	0	
	sensor 2	1	1	1	0	

VALVE PILOT-ASSISTED VERSION									
INPUTS	solenoid pilot	0	0	0	0	1	1	1	1
	p assisted	0	0	1	1	0	0	1	1
	p port 1	0	1	0	1	0	1	0	1
OUTPUTS	p port 2	0	0	0	0	0	0	0	1
	sensor 1	1	1	1	1	1	1	0	0
	sensor 2	1	1	1	1	1	1	0	0

N.B. The REG, FR, V3V, APR elements cannot be mounted downstream the safety valves because if the elements are blocked, safety relief is not guaranteed.





Type of sensor		INDUCTIVE PROXIMITY
Type of contact		N.O.
Switch		PNP
Supply voltage (Ub)	V	from 10 to 30
Voltage dro (for la max)	V	≤ 2
Hysteresis	%	from 3 to 20
EMC		EN 60 947-5-2
Continuous current la	mA	≤ 200
No load current	mA	≤ 10
Switching frequency	Hz	4000
Over-voltage suppression		Yes
Vibration and shock resistance		100 g /11 ms / 1000 cycles; 150 g / 1 Mio cycles;
		from 10 to 55 Hz /1 mm/ from 55 to 500 Hz /15 g
LED display		Yellow
Degree of protection (EN 60529)		IP 68
Temperature range	°C	from -40 to +100
Sensor capsule material		Stainless steel V2A, DIN 1.4305 / AISI 303
Sensing face material		Plastic, LCP
Protection class		III
Communication interface detail		Connector male M8, 3-pin
MTTFd	years	1971
UL-File-Nr		E.181493
Certifications		

5. Maintenance instructions

Before carrying out any maintenance operations it is recommended to use the personal protective equipment, and then to remember to switch off the electricity and compressed air supplies.

Check the silencers regularly for blockage.

For maintenance operations, it is advisable to return the valve to Metal Work for the necessary repairs.

6. Instructions to prevent residual risks

- The valve must be installed by a qualified technician
 Make sure the sensor and electrical parts are not damaged during operation and installation
 Make sure the power terminals are properly connected
 Check that the pipes are inserted properly before activating the air supply
 Check that the coils and sensors are correctly wired

- Cut off the power and the air supply prior to maintenance interventions

 If the safety function (safe relief) is used less than once a month, it is advisable to conduct a monthly function test.

7. Disposal instructions

The product must be dismantled and disposed of in accordance with the regulations in force in the country in which the product is used