



REC PRO 90S

High efficiency heat recovery units
Non residential applications



Comply with ErP Directive 125/2009/CE and EU Regulation 1253/2014.

Classification: Non Residential Ventilation Unit (NRVU). Bidirectional Ventilation Unit (BVU).

- 4 sizes
- Airflow from **2.000 to 20.000 m³/h**
- Very high efficiency enthalpy rotor heat exchanger

REGULATION ELECTRONICS MULTIFUNCTION

Built-in electric box by removable side panel provided with main switch and electronic controller for a complete control of all typical functions of the unit; in particular:

- manual control of EC fan motors
- automatic control of EC fan motors (by pressure, temperature or air quality sensor)
- heating/cooling water valve modulating control
- electric heater on/off control (both pre and re-heater)
- heat recovery defrost control
- free-cooling on/off mode control
- post-ventilation
- weekly programming
- alarm management and dirty filter warning
- remote on/off
- remote Summer/Winter mode
- fan management by fire alarm digital input
- BMS



DESCRIPTION

The heat recovery units of the **REC PRO 90S** series are designed to match the need to equip the buildings with ventilation systems which can combine low energy consumption, high aeraulic performance and high indoor air quality. They can easily be integrated with conventional heating and air-conditioning systems and their construction is optimized for a ducted installation in false ceilings and for an all-seasons operation.

The series is available in 4 sizes with performances ranking from 2.000 to max 20.000 m³/h. The units are suitable for operation in atmospheres that are free from aggressive, corrosive and/or potentially explosive agents, which may affect and irreparably damage their components and structures.

CONSTRUCTION

- Supporting frame by thermal bridge aluminium profiles and sandwich panels 42 mm thickness, galvanized sheet metal inner skin and pre-coated sheet metal outer skin
- Non-flammable mineral wool thermal and acoustic insulation for panels and doors
- High efficiency (> 80% at dry condition) counterflow heat recovery with aluminium plates and built-in total by-pass motorized damper
- Rigid bag filters with polystyrene frame and polyurethane sealing and waterproof fiberglass media; ISO ePM10 70% efficiency class on return air intake, ISO ePM1 50% efficiency class on fresh air intake, easily removable from side doors. Each filter station is already equipped with pressure switch wired to the unit electric box
- Direct driven EC motor plug fans
- Prearrangement for internal electric preheater
- Prearrangement for internal electric reheater

UPON REQUEST

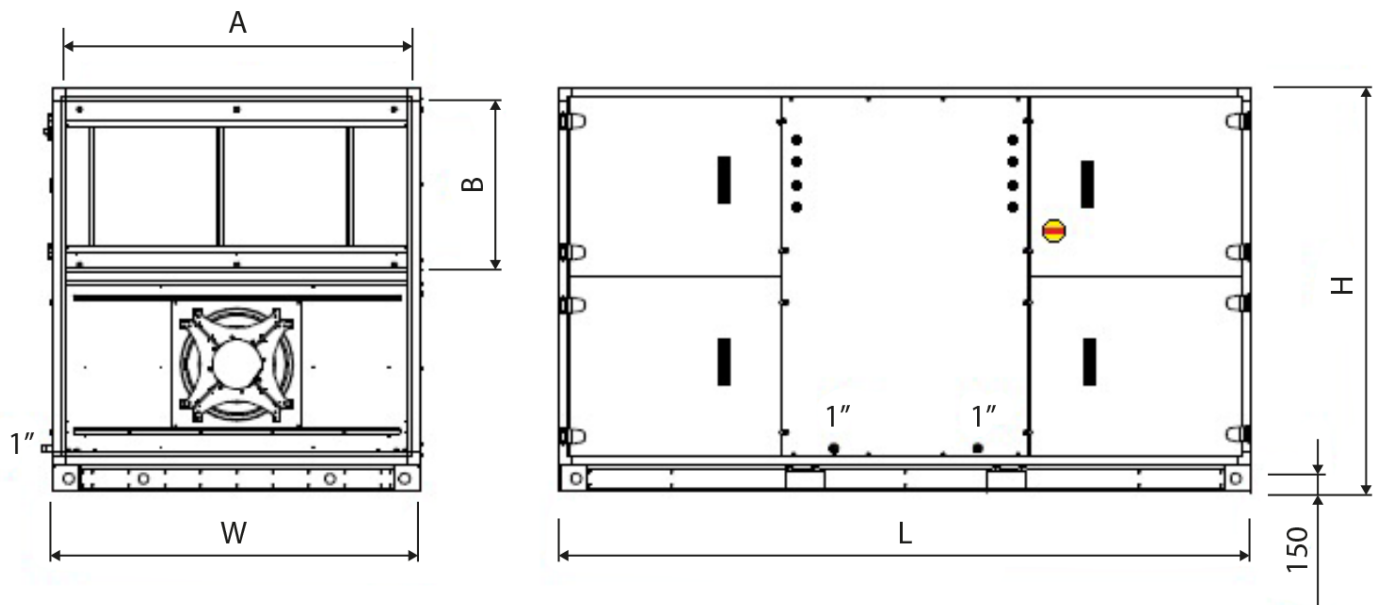
REC 80R can be supplied with the following function components, assembled and connected, to be requested in stage of order:

- **AQS** - CO₂ sensor, ductable type, to be placed on the return duct, it allows a continuous modulation of the fresh air volume, based on air quality desired level.
- **DPS** - Differential pressure sensor. Differential pressure sensor for constant airflow mode control (option DPSa, supplied already mounted and wired on board) or for constant pressure mode control (option DPSp, supplied apart to be installed close to the air duct to be controlled and later wired to unit electric box).

RANGE

CODE	MODEL
1RC9020	REC PRO 90 S 4.200
1RC9021	REC PRO 90 S 7.500
1RC9022	REC PRO 90 S 11.000
1RC9023	REC PRO 90 S 14.000

DIMENSIONS (mm)



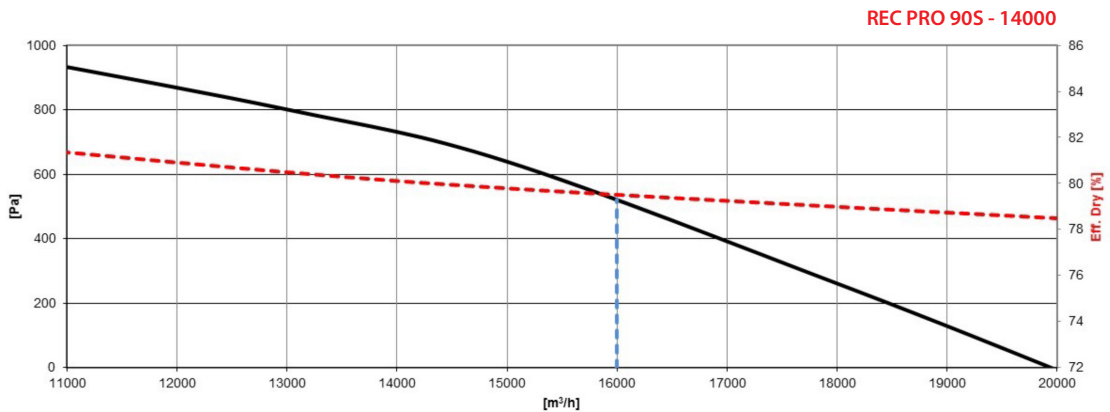
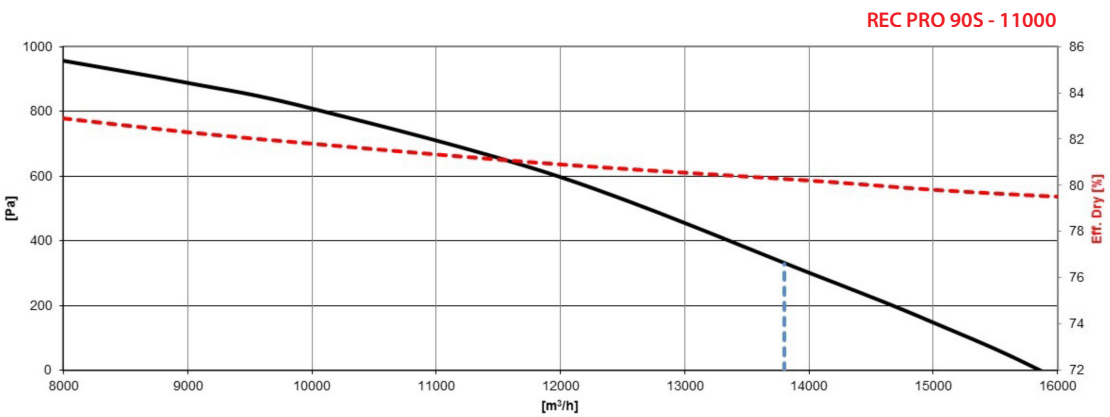
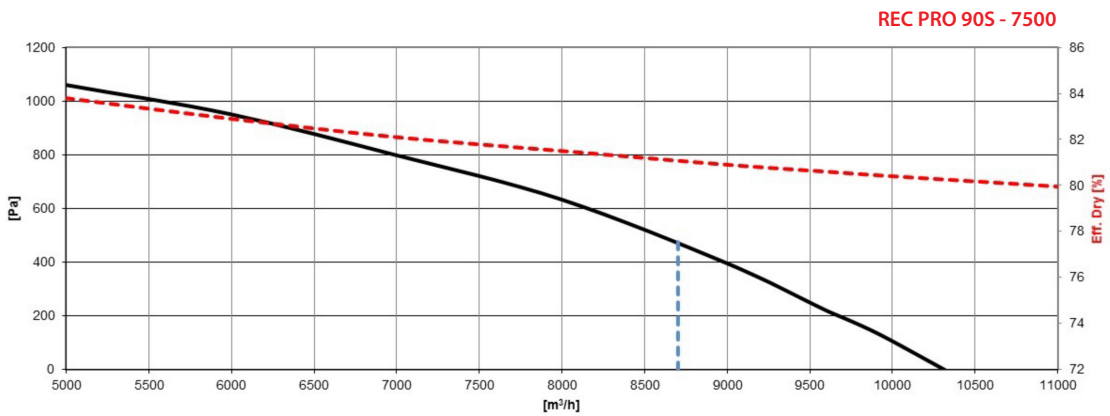
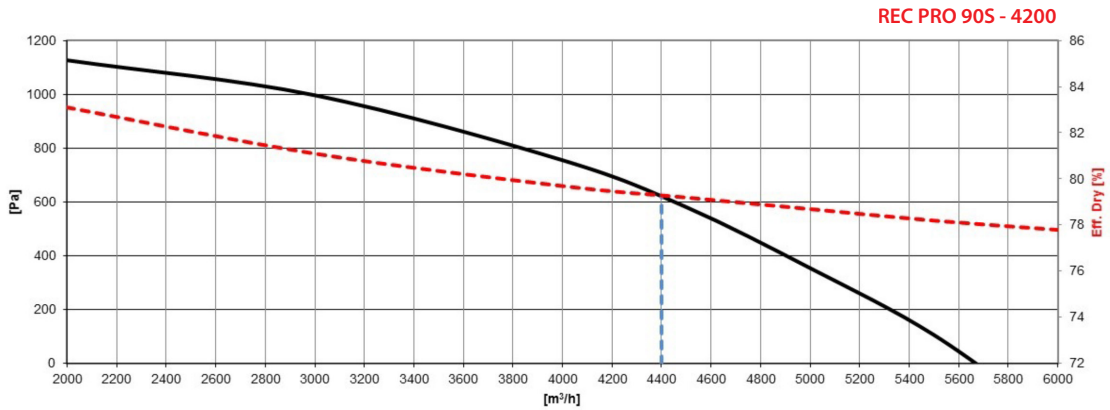
MODEL		4200	7500	11000	14000
L	mm	2845	3175	3505	3505
W	mm	1360	1690	2020	2350
H	mm	1550	1880	2210	2540
Weight (1)	kg	800	1000	1250	1600
Air duct connection (2)		4200	7500	11000	14000
A x B		1350 x 680	1680 x 845	2010 x 1010	2340 x 1175

(1) basic unit

(2) duct flange external dimensions (also valid for option GAT, SKR2 and MS3)

PERFORMANCE

The following curves are, model by model, the max supply side external static pressure delivered by the basic unit and the heat recovery dry efficiency (in dotted red line) in the whole airflow rate range. The vertical blue line defines the upper limit of working range where unit is still compliant with ErP step 2018. All the shown performances are referred to air filter kept properly clean and fully efficient.



ErP PERFORMANCE AND COMPLIANCE

Regulation UE 1253/2014

VENTILATION			4200	7500	11000	14000
Airflow rate	Nom	m ³ /h	4.200	7.500	11.000	14.000
		m ³ /s	1,17	2,08	3,06	3,89
External static pressure (1)	Nom	Pa	350	350	350	350
Radiated sound power	Nom	dB(A)	82	84	84	86
Overall power input	Nom	W	2600	4200	5500	7700
	Max		4700	9500	9700	18800
Overall input current	Nom	A	4	6,5	8,6	12
	Max		7,5	14,8	15	28,5
Power supply	V-Ph-Hz		400-3-50			
Fan speed control			0 ÷ 10 V			
Yearly filter energy consumption (4)	kWh		5510	9460	13500	17180

HEAT RECOVERY (2)		4200	7500	11000	14000
Efficiency	%	91,6 (79,2)	94,6 (81,5)	92,3 (81,1)	91,5 (79,9)
Recovery capacity	kW	41,4 (6,6)	76,2 (12,3)	109,2 (18,1)	137,6 (22,6)
Off air temperature	°C	19,4 (27,2)	20,3 (27,1)	19,5 (27,1)	19,3 (27,2)

COMPLIANCE WITH EU 1253/2014		4200	7500	11000	14000
Recovery efficiency (3)	%	79,5	81,8	81,3	80,2
Efficiency bonus	W/m ³ /s	195	264	249	216
Filter correction factor	-	0	0	0	0
SFP int limit	W/m ³ /s	1120	1064	1049	1016
SFP int	W/m ³ /s	1043	914	726	915
Compliance airflow rate range	m ³ /h	≤ 4400	≤ 8700	≤ 13800	≤ 16000

WORKING LIMITS		42000	7500	11000	14000
Max airflow rate unbalancing	%	20			
Air temperature	°C	-0,5			
Fresh air RH	%	MAX 90% (winter) - MAX 65% (summer)			
Room air RH	%	MAX 65% (winter) - MAX 70% (summer)			
Working environment	-	Not explosive, not corrosive, not chlorinated, not saline			

(1) fresh air/supply air circuit

(2) at wet conditions : outside air temperature -10°C 90% RH, room air temperature 22°C 50% RH (outside air temperature 32°C 50% RH, room air temperature 26°C 50% RH)

(3) at dry conditions : outside air temperature 5°C, room air temperature 25°C

(4) based on 6000 operating hours per year at nominal airflow rate and ESP and on 250 Pa max air filter pressure drop before replacing

SOUND LEVELS

Referring to nominal working conditions and at balanced airflow rates, the following table shows the sound power level (SWL) per octave band and total; It also shows the sound pressure level (SPL) at 1m, 5m and 10m on supply/exhaust air, fresh/return air and outside the unit connected to air ducts, not depending on air flow direction configuration.

Size	SWL [dB] per octave band [Hz]								SWL dB(A)	Supply/Exhaust SPL			Suction air SPL			Outside SPL		
	63	125	250	500	1000	2000	4000	8000		1 m	5 m	10 m	1 m	5 m	10 m	1 m	5 m	10 m
										dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
4200	68	68	77	75	78	75	71	69	82	74	60	54	68	54	48	54	40	34
7500	77	83	79	80	78	78	75	71	84	76	62	56	70	56	50	56	42	36
11000	75	83	80	82	79	75	70	69	84	76	62	56	70	56	50	56	42	36
14000	78	85	81	82	80	80	77	72	86	78	64	58	72	58	52	58	44	38

REC PRO 90S ACCESSORIES

SKE	On-board electric preheater / reheater
CCS V33	Water changeover coil section
TPR - TPR CCS	Roof covers
SKR SSE	External motorized twin damper
MS3 SSE	3-damper box with actuators
FT9	High efficiency filter
CFA	External rain hood
GAT	Flexible connection
TPR	Roof covers
DPSa	Pressure sensor
DPSp	Pressure sensor

Code	Model	SKE Pre	SKE Post	CCS V33	TPR CCS	SKR SSE	MS3 SSE	MS3 SSE mod.	FT9	CFA Alto	CFA Basso	GAT	TPR	TPR CCS	DPSa	DPSp	TPR MS3
1RC9020	REC PRO 90 S 4.800	5BT0308	5BT0312	5BT0316	5TE0270	5SE0100	5PL0100	5PL0104	5FL4043	5SU0020	5SU0024	5SU0028	5TE0278	5TE0270	5SU0015	5SU0016	5TE0274
1RC9021	REC PRO 90 S 7.700	5BT0309	5BT0313	5BT0317	5TE0271	5SE0101	5PL0101	5PL0105	5FL4044	5SU0021	5SU0025	5SU0029	5TE0279	5TE0271	5SU0015	5SU0016	5TE0275
1RC9022	REC PRO 90 S 11.400	5BT0310	5BT0314	5BT0318	5TE0272	5SE0102	5PL0102	5PL0106	5FL4045	5SU0022	5SU0026	5SU0030	5TE0280	5TE0272	5SU0015	5SU0016	5TE0276
1RC9023	REC PRO 90 S 13.200	5BT0311	5BT0315	5BT0319	5TE0273	5SE0103	5PL0103	5PL0107	5FL4046	5SU0023	5SU0027	5SU0031	5TE0281	5TE0273	5SU0015	5SU0016	5TE0277

SKE - Electric heater

ON-BOARD ELECTRIC PREHEATER SKEp

It is composed of filament type elements inside a galvanized steel frame installed inside the unit as a fresh air preheater and provided of both manual and automatic reset thermostat. On/off control based on exhaust air temperature.

Model		SKEp 4200	SKEp 7500	SKEp 11000	SKEp 14000
Capacity	kW	16,0	24,0	32,0	40,0
ΔT (1)	°C	11,2	9,4	8,6	8,4
Air pressure drop (1)	Pa	≤ 10			
Power supply	V-ph-Hz	400-3-50			

(1) at nominal airflow rate

SKE - PREHEATER

Code	Description
5BT0308	SKE - preheater 90S 4200
5BT0309	SKE - preheater 90S 7500
5BT0310	SKE - preheater 90S 11000
5BT0311	SKE - preheater 90S 14000

ON-BOARD ELECTRIC REHEATER SKEr

It is composed of filament type elements inside a galvanized steel frame installed inside the unit as a fresh air reheater (after the heat recovery) and provided of both manual and automatic reset thermostat. Modulating control based on supply air temperature.

Model		SKEr 4200	SKEr 7500	SKEr 11000	SKEr 14000
Capacity	kW	16,0	24,0	32,0	40,0
ΔT (1)	°C	11,2	9,4	8,6	8,4
Air pressure drop (1)	Pa	≤ 10			
Power supply	V-ph-Hz	400-3-50			

(1) at nominal airflow rate

SKE - REHEATER

Code	Description
5BT0312	SKE - reheater 90S 4200
5BT0313	SKE - reheater 90S 7500
5BT0314	SKE - reheater 90S 11000
5BT0315	SKE - reheater 90S 14000

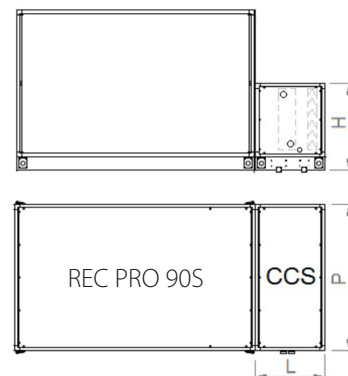
CCS V33 - Water changeover coil section

4-row turbulence Al fin and Cu pipe and header type, placed in an external section to match basic unit supply air connection side. It is provided with droplet eliminator, drain tray with 1" GAS M drainage connection and modulating water valve (to be installed and wired by Installer). Side water connection.

MODEL		CCS 4200	CCS 7500	CCS 11000	CCS 14000
CODE		5BT0316	5BT0317	5BT0318	5BT0319
Total cooling capacity (1)	kW	32,53	59,32	92,55	127,48
Water flow rate (1)	l/h	5600	10200	15920	21920
Off air temperature (1)	°C	15,1	14,9	14,3	13,5
Water pressure drop (1)	kPa	11	15	17	23
Air pressure drop (1)	Pa	175	180	155	140
Heating capacity (2)	kW	40,31	72,49	108,86	140,24
Dimensions L x P x H	mm	535 x 1360 x 850	535 x 1690 x 1015	535 x 2020 x 1180	535 x 2350 x 1345
Total weight	kg	119	172	206	278
In/Out water connection		1 1/2" M	2" M	2 1/2" M	2 1/2" M
Water valve with mod. actuator		DN32 Kvs 16 230V 50 Hz	DN40 Kvs 25 230V 50 Hz	DN65 Kvs 63 230V 50 Hz	DN65 Kvs 63 230V 50 Hz

(1) at nominal airflow rate, air inlet 28°C 60% RH, in/out water temperature 7/12°C

(2) at nominal airflow rate, air inlet 15°C, in/out water temperature 50/44°C



REC PRO 90S ACCESSORIES

SKR SSE - External motorized twin damper

Dampers to be placed externally on the unit side connected to atmosphere (fresh air and exhaust air circuits), each provided with IP 54 modulating actuator.

SKR SSE - External motorized twin damper

Code	Description
5SE0100	SKR SSE 90S 4200
5SE0101	SKR SSE 90S 7500
5SE0102	SKR SSE 90S 11000
5SE0103	SKR SSE 90S 14000

MS3 SSE - 3-Damper box with actuators

External section to match exhaust air/fresh air unit connection side provided with 3 dampers (two outside, one inside for recirculation), driven by IP54 modulating actuators. It adjusts the fresh air amount according to the signal coming from an air quality sensor; therefore it shall be combined with AQS option or with a sensor of equal characteristics.

CODE	DESCRIPTION
5PL0100	MS3 SSE 90S 4200
5PL0101	MS3 SSE 90S 7500
5PL0102	MS3 SSE 90S 11000
5PL0103	MS3 SSE 90S 14000
5PL0104	MS3 SSEmod 90S 4200
5PL0105	MS3 SSEmod 90S 7500
5PL0106	MS3 SSEmod 90S 11000
5PL0107	MS3 SSEmod 90S 14000

FT9 - High efficiency filter F9

ISO ePM1 80% efficiency type, it allows a higher fresh air filtration in place of the standard filter. Prefilter PF also suggested.

F9 FT9 - High efficiency filter

Code	Description
5FL4043	FT9 90S 4200
5FL4044	FT9 90S 7500
5FL4045	FT9 90S 11000
5FL4046	FT9 90S 14000

DPS - Pressure sensor

Differential pressure sensor for constant airflow mode control (option DPSa, supplied already mounted and wired on board) or for constant pressure mode control (option DPSp, supplied apart to be installed close to the air duct to be controlled and later wired to unit electric box).

DPS - Pressure sensor

Code	Description
5SU0015	DPSa
5SU0016	DPSp

GAT - Flexible connection

It is a flexible joint between unit and air ducts, avoiding the transmission of mechanical vibrations towards return and supply duct system. Its dimensions (both for air intakes & outlets) are the same of SKR damper ones, model by model.

GAT - Flexible connection

Code	Description
5SU0028	GAT 90S 4200
5SU0029	GAT 90S 7500
5SU0030	GAT 90S 11000
5SU0031	GAT 90S 14000

CFA - External rain hood

It allows the unit to have intakes and exhausts directly in place, and avoid possible risks of injury and entrance of anything.

CFA/A - Upper external rain hood

Code	Description
5SU0020	CFA/A 90S 4200
5SU0021	CFA/A 90S 7500
5SU0022	CFA/A 90S 11000
5SU0023	CFA/A 90S 14000

CFA/B - Lower external rain hood

Code	Description
5SU0020	CFA/B 90S 4200
5SU0021	CFA/B 90S 7500
5SU0022	CFA/B 90S 11000
5SU0023	CFA/B 90S 14000

TPR - TPR/CCS - TPR/MS3

Roof covers

The precoated roof cover is to be used when basic unit (TPR) and its possible external sections SILm/SILf (TPRs), CCS V33 (TPRc) and MS3 (TPRm) are installed outdoor

TPR - Roof covers

Code	Description
5TE0278	TPR 90S 4200
5TE0279	TPR 90S 7500
5TE0280	TPR 90S 11000
5TE0281	TPR 90S 14000

TPR/CCS - Roof covers for CCS

Code	Description
5TE0270	TPR/CCS 50 for REC PRO 90 S - 4200
5TE0271	TPR/CCS 92 for REC PRO 90 S - 7500
5TE0272	TPR/CCS 144 for REC PRO 90 S - 11000
5TE0273	TPR/CCS 205 for REC PRO 90 S - 14000

TPR/MS3 - Roof covers for MS3

Code	Description
5TE0274	Roof for MS3 4200 - REC PRO 90 S
5TE0275	Roof for MS3 7500 - REC PRO 90 S
5TE0276	Roof for MS3 11000 - REC PRO 90 S
5TE0277	Roof for MS3 14000 - REC PRO 90 S