

SYNERGIE

TRANSPULS SYNERGIC 330 / 450

MIG / MAG



PERFECT WELDING



»PULSING« AHEAD OF ITS TIME

*Quality features
at a glance:
time-optimized globule-
shedding, to ensure
short-circuit-free
deposition
short, steady pulsed arc
no undercutting and
spattering
arc can be "shaped"
as desired
good welding-pool
fusion
finely-scaled
welding seam*

Tomorrow's technology — for today's requirements

The TPS is a world "first". Prompted by the requirements of actual welding practice, highly qualified Fronius specialists have developed a series of new features. Setting up wholly new standards for today, using the technology of tomorrow, took a lot of intensive development work in our research labs — but it was worth it!

The result is unique

A microprocessor-controlled MIG/MAG pulsed-arc machine with unprecedented welding characteristics and an unparalleled degree of user-friendliness.

A welding revolution!

The technical possibilities have been exploited to an absolute maximum — and harnessed in the service of the welder.



Quality by perfection

The TPS uses a micro-processor of the very latest type, which performs all control and monitoring functions.

One of the principal requirements of the welding process is for a steady arc. This is only possible if the length of the arc can be accurately measured and monitored. The microprocessor selects the appropriate process control method on the basis of the material to be welded, in order to then control the requisite form of pulse.

And it is here that the great innovation of the TPS lies: Thanks to its unique pulsing operation, it delivers the ideal welding current for a short, steady arc, thus avoiding undercutting and spatter. No matter whether you are welding steel, aluminium, CrNi, filler wires or special materials – even in extreme ranges.

Thanks to the programmed ignition current and burn-back, the ignition phase and end-of-welding phase are controlled just as precisely as is the welding process itself.



Tip of wire after end of welding

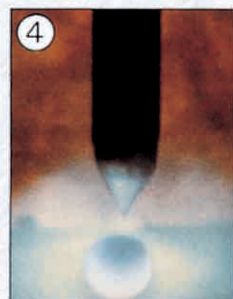
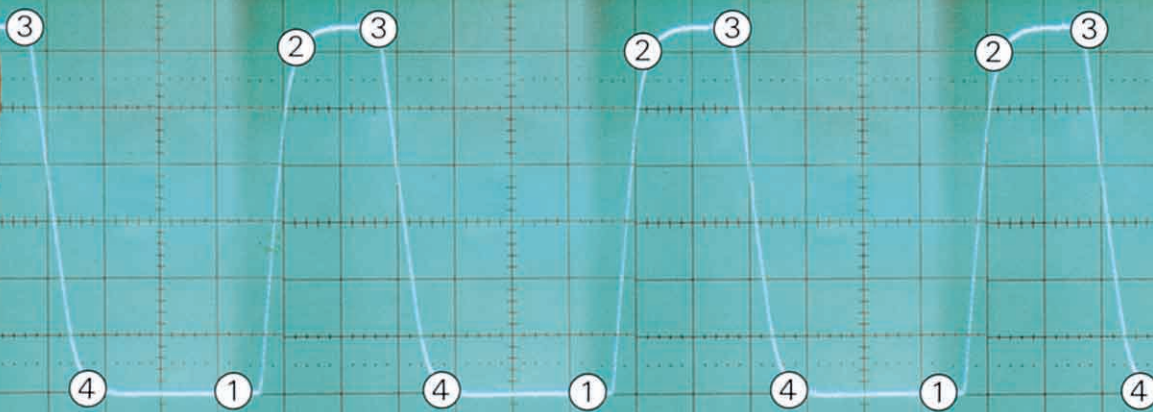
Efficiency put to the test

With today's ever fiercer competition, factors such as efficiency and production costs are becoming more significant by the minute – an urgency which is underlined by rising energy costs and by the intensifying price pressure to be expected in the forthcoming European Economic Area.

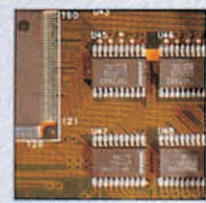
We know all about the priorities of a forward-looking company – such as our own! In developing the TPS, then, machine efficiency was right at the top of our list. The ingenious inverter technology we have used here combines a maximum efficiency factor with minimum no-load current consumption when on stand-by.

The low-spatter welding made possible by the TPS results in an equally great potential gain in efficiency, due to the amount of refinishing work that no longer needs to be done. And with Fronius, features such as the electronic cooling-fan controls and automatic whisper-quiet cooling unit are a matter of course.

The TPS pulse form



High speed photographs of globule-shedding (SG 2 steel wire, diam. 1,2 mm)

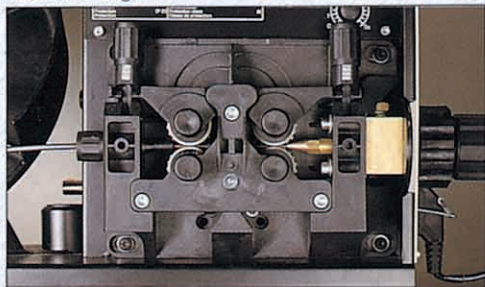




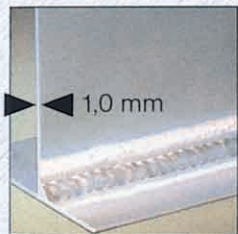
UNPRECEDENTED NEW SCOPE FOR THE USER

Precision is paramount

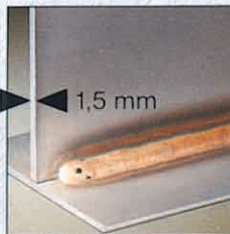
With the new TPS you can replicate any given welding result with an identical level of quality, again and again. This is thanks to the speed-controlled VR 152 wirefeed unit, with its constant wirefeed speeds of 0 – 22 m/min, and to the 4-roller-drive, which ensures better pressure distribution during wirefeeding.



It is also due to the electronic control, which ensures absolute reproducibility of welding results – regardless of the length of the welding cable and of fluctuations in mains voltage.

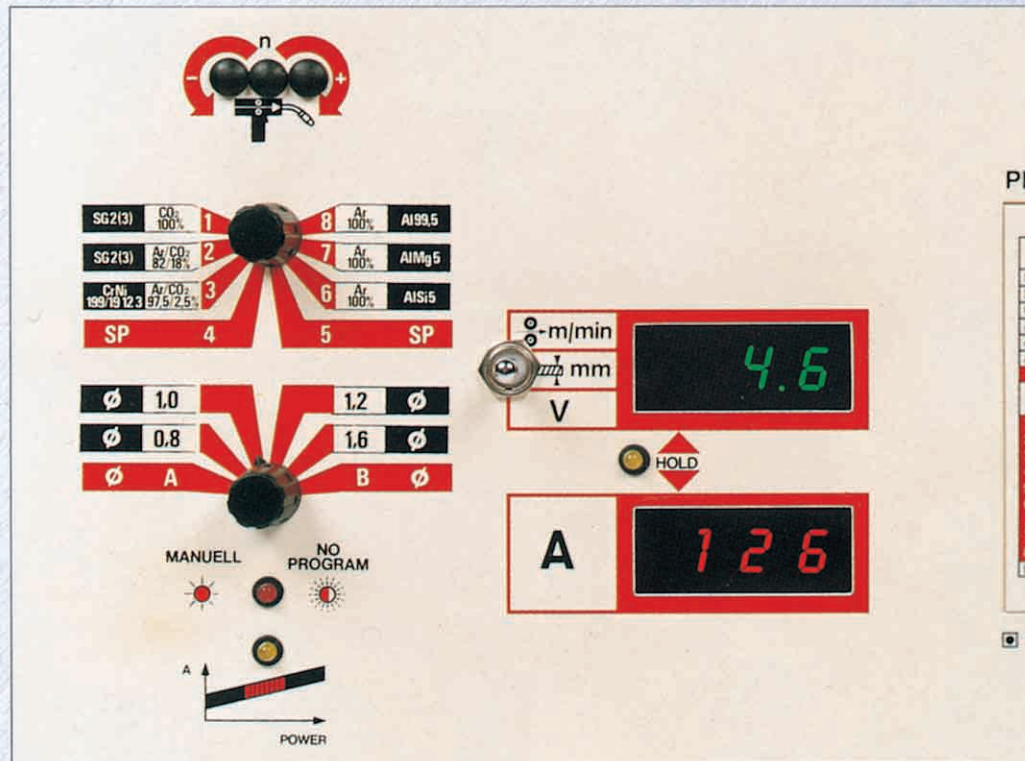


Material: Al 99,5
Wire: S-Al 99,5 Ti
Wire diam.: 1,2mm
Gas: I1 (Ar)
WFS: 2,0m/min



CrNi W. Nr. 1.4301
SGx2 CrNi 199
Wire diam.: 1,2mm
M12 (97,5 Ar, 2,5% CO₂)
WFS: 1,8m/min

Operating convenience



The only welding machines that merit the description "technically perfected" are ones which make the user's job easier in every respect. The new TPS certainly does! Its two biggest operator convenience features are highlighted in its name:

"Transpuls"

The TPS gives the user 67 different pulse and standard characteristics. These are set quickly and easily via the selector dials for wire diameter and material.



"Synergic"

A single twist of the dial is all it takes to set the required welding power. In the synergic mode, all the other parameters then set themselves automatically.

On call – any time!

If your daily welding work calls for machine settings of a very repetitive nature, you will find the TR 22-P a tremendous help. All you need do is call in the required program setting – and replication of any given welding result, with identical quality, is guaranteed. For all manual, mechanical and automated welding operations.



The TPS remote control range

PROGRAMS / PROGRAMME

MATERIAL	GAS	%	WIRED / DRAHTØ			
			0,8	1,0	1,2	1,6
IG 2/3	CO ₂	100	S	S	S	S
IG 2/3	Ar/CO ₂	82/18	•	•	•	•
MIG 19.9	Ar/CO ₂	97.5/2.5	•	•	•	•
MIG 5	Ar	100	•	•	•	•
MIG 5	Ar	100	•	•	•	•
MIG 5	Ar	100	•	•	•	•

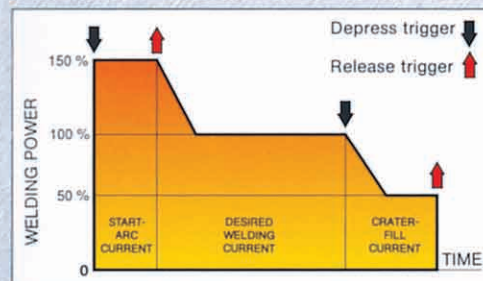
PROGRAMS - PROGRAMME - SPECIAL					
MATERIAL	GAS	%	DIN	Ø	
				A	B
Flux Cored	Ar/CO ₂	82/18	SGR1M21Y4543	S1.2	S1.6
Basic Wire	Ar/CO ₂	82/18	SGB1C4254	•1.2	•1.6
Metal Filler	Ar/CO ₂	82/18	6RD104-G7	•1.2	•1.6
CrNi Draht	Ar/CO ₂	82/18	19 12 3 L	•1.2	•1.6
CrNi 18 8 6	Ar/CO ₂	97.5/2.5	SGX15C-NMh18 8	•1.0	•1.2
Alu Bronze	Ar	100	S-CuAl 9	P1.2	
Hardfacing / Hartsauftragung	Ar/CO ₂	82/18	MSG6-GZ-60	•1.2	•1.6

FROM NR. D0017

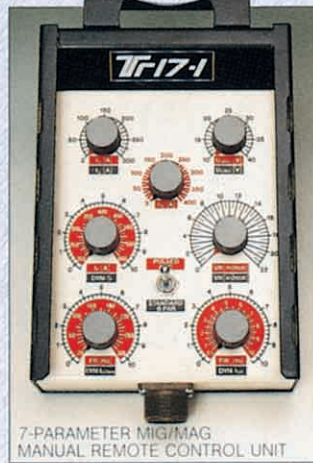
PULS / STANDARD P PULS S STANDARD

Display - Digital display or command and actual values for voltage and current; the actual values are stored after the end of the welding operation, and the WFS command values are displayed.

This is the first machine of its kind that has a digital guideline-value display to help the user set the welding power.



Another convenient operating feature of the TPS is its special 4-step operating mode, which is particularly useful for welding aluminium.



7-PARAMETER MIG/MAG MANUAL REMOTE CONTROL UNIT



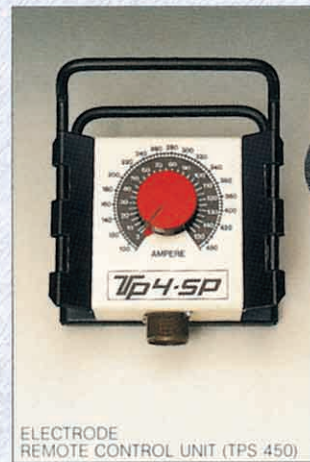
MIG/MAG PROGRAM REMOTE CONTROL UNIT



MIG/MAG PROGRAM AND MANUAL REMOTE CONTROL UNIT



ELECTRODE REMOTE CONTROL UNIT (TPS 330)



ELECTRODE REMOTE CONTROL UNIT (TPS 450)



TIG PEDAL REMOTE CONTROL UNIT

		continuous setting										reconnectable			
		Welding current	Et-arc force	Hot Start	Power	Wire-feed speed	Welding voltage	Length of arc	Globule shedding	MIG-arc force	Pulsing parameters	Pulsing standard	Pulsing - standard - manual	Welding range 3-150A - 150-450A	Program selection
TR 11	TPS 330/450	•													
TR 12-1	TPS 330/450				•			•			•				
TR 17-1	TPS 330/450					•	•			•	•				
TR 20-1	TPS 330/450				•			•			•				
TR 34	TPS 330/450				•	•	•	•	•	•			•		
TP 3	TPS 330	•	•	•											
TP 4-SP	TPS 450	•	•	•										•	
TR 52-1	TPS 330/450	•													
TR 22-P	TPS 330/450								•						•



TRANSPULS SYNERGIC- IN A CLASS OF ITS OWN

Well thought-out options

In order to cater as far as possible for users' special needs, we have developed a well-coordinated range of options for special applications. If desired, the machine can be supplied with these options ready-fitted.

Power source

- Mains voltage (for question)
- Display programming
- Diskette drive 3.5"
- RS 232-C for interfacing with computer or printer
- Roboter Interface: analogue/digital
- External current flow signal
- Push-pull connection. For smooth wirefeed when welding aluminium
- Special programs from the Fronius databank
- Welding time counter
- Gas preheater socket
- Extractor control
- Trolley for 2 gas cylinders
- Single-hook hoisting attachment

Periphery

- Remote control units (see previous page)
- Remote control cables 5m/10m/20m

VR 152-MP wirefeeder

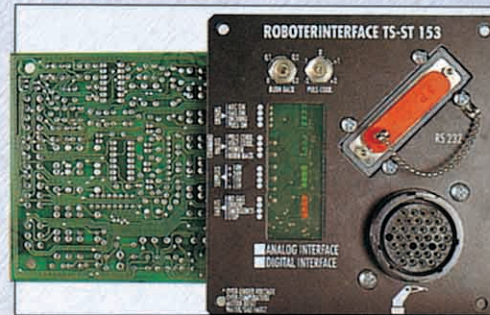


This small, lightweight and sturdy wirefeeder is designed to withstand the rough-and-tumble of industrial use. In conjunction with the VR 143-MP, it provides a high-grade push-pull intermediate drive system that can easily cope with wirefeed lengths of up to 25 m. The system is driven by a durable disc-armature motor.

Wirefeed

- VR 200-handy and light wight
- VR 152-standard equipment
- VR 152 MP-for the industrial use, with a disk-amature motor
- VR 153-robot wire feeder
- VR 155-enclosed system
- Twin-head variant with two wirefeeders. Does away with the need to change over the wirefeed unit when different types or diameters of wire need welding
- 4-roller drive
- Spot-welding timer
- TRABANT trolley for wirefeed unit
- Intermediate drive systems: VR 152/VR 143-2 Z and VR 152 MP/VR 143 MP
- Interconnecting cables: 1.6m/6m/10m/15m and special lengths
- HUMAN 7000 and 7001, tilt-and-swivel hosepack holders

Robot interface



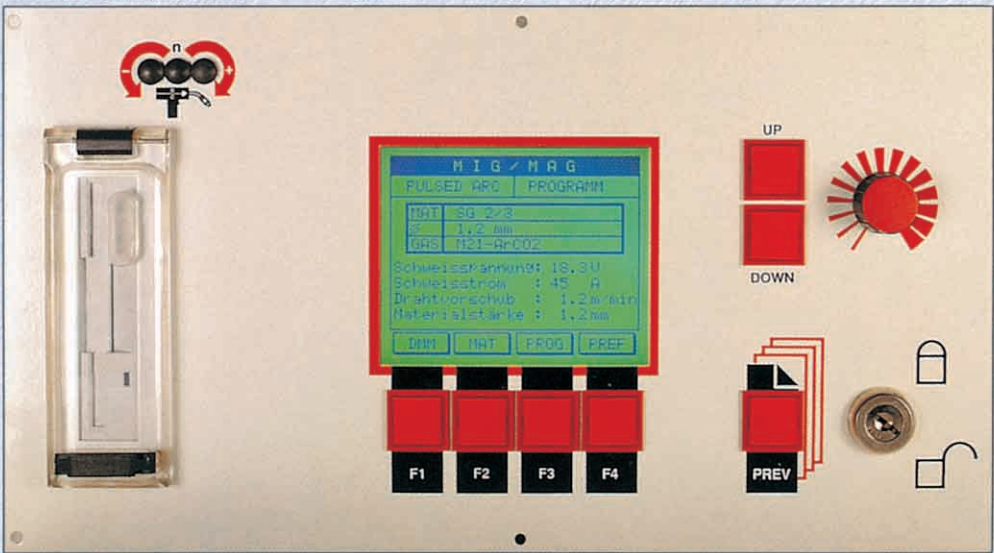
For communication and data exchange between the power source and the welding robot. Two 0-10V command voltages enable you to control the entire pulsed-arc and standard welding ranges. The required control signals (e.g. current flow, monitoring of gas, water and wire etc.) are transmitted to the computer of the robot in the form of ON/OFF signals.

Up/Down function

The Up/Down rocker on the Fronius torch enables you to continuously adjust the welding power while welding.



Display programming



If your production operation requires a variety of welding programs and procedures, then you will find this programmable screen version a very helpful "extra". Its graphic user interface makes it easy to store details of all operational steps, and no external cable connections are needed. The integral interface means that it is no problem to link up to a higher-ranking computer or to a printer.

- Integral welding databank with max. 185 synergic programs
- 20 freely storable synergic programs
- 100 component programs with max. 12 parameter records
- 60 component programs with start, weld and craterfill programs
- 67 permanently programmed characteristics
- External I/O
- RS 232-C interface

Single-dial operation
 Menu-driven operation via graphic screen
 Welding parameters can be remote-controlled


Area of application:

- Manual welding
- Mechanical welding
- Automated welding
- Robot applications
- Quality control

Quality control:

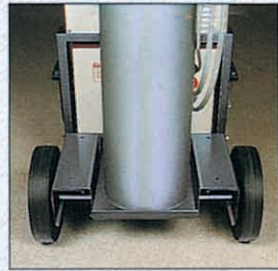
- Programmable warning and cut-out limits for welding current, welding voltage and wire speed
- Printout of production logs, with real-time clock

A word on your safety

All our machines bear the  mark as standard - a safety seal for welding in confined spaces where there is increased electrical hazard. They also come with the CE mark, applicable both to EN 60 974-1 and to EN 50 199.

Operating faults are ruled out – thanks to the automatic remote-control unit recognition system and special control logic.

Gas-cylinder handling is another safety aspect. The low-level trolley platform means that the cylinders can be changed easily and safely.



CHECKLIST

MIG/MAG-, TIG- and electrode manual welding
 2-step-, 4-step- and spezial 4-step operation
 Spotwelding operation
 Spotwelding time 0.5-5.0 s
 Spezial 4-step operation
 Start arc current adjustable 0-200%
 Crater-fill current adjustable 0-200%
 Slope adjustable 0.2-7.0 s
 Wire-inch without current and without gas
 Gas prew-flow adjustable 0-3.0 s
 Gas post-flow time adjustable 0.5-4.0 s
 Gas test button
 Wire creep speed adjustable 0-100%
 Burn-back time adjustable
 Thermostat-controlled fan
 Automatic cooling-unit cut-off

Synergic operation for pulsing and standard arc
 Arc-length correction dial
 Globule-shedding correction dial
 Burn back pulsing programmable (perfect end of wire)
 Welding programs are easy to find and to select
 4 wheel drive system
 Special programs from a wide databank
 MIG-soldering
 Up/Down (Power adjustable from the torch -
 also while welding)

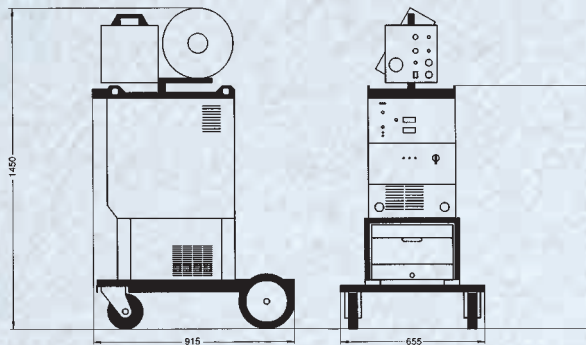
Digital ammeter } with command value and storable
 Digital voltmeter } actual value (Hold-function)
 Digital guideline-value display
 Digital wire-feed speed indicator
 Over and undervoltage indicator
 Error-code indicator
 Transition arc indicator
 Operational readiness indicator
 Diagram LCD-Display

Process-integrated quality assurance
 Q-Master
 Q-Vision
 Disk-Docu

TECHNICAL DATA

Power source	TPS 330, TS 331*	TPS 450, TS 450*
Mains voltage <i>switchable</i> $\pm 10\%$	3x380/400/415 V	3x380/400/415 V
Mains fuso <i>slow</i>	25/ 20/ 20 A	32/ 32/ 25 A
Welding power	50% d.c. 13.9 kVA	-
at 10 min. cycle	60% d.c. 12.3 kVA	22.3 kVA
	100% d.c. 8.5 kVA	17.2 kVA
Cos phi 1	0.99 (330 A)	0.99 (450 A)
Efficiency	88%	90%
Welding current range stepless	3-330 A	3-450 A
Welding current at	50% d.c. 330 A	-
	60% d.c. 300 A	450 A
	100% d.c. 210 A	360 A
Open-circuit voltage	70 V	50-80 V
Operating voltage	MIG/MAG 10-40 V	10-40 V
	TIG/Electrode 0-55 V	0-55 V
Protection class	IP 23	IP 23
Type of cooling	AF	AF
Isolation category	F	F
Weight	Power source 72 kg	78.5 kg
	Trolley/console 25 kg	25 kg

* No pulsed-arc mode



Wirefeeder	VR 152	Cooling unit	FK 71
Feed motor	42 V/DC	Mains voltage	2x380/415 V
Motor capacity	164 Watt	Protection class	IP 23
Gear ratio	24:1	Cooling capacity	20° C 2400 W
Wire-feed dial	0.8-1.6 mm	40° C 1450 W	
Wire-feed speed	0-22 m/min	Throughput	3.51 l/min
Protection class	IP 23	Feeding level	25 m
Dimensions l/w/h mm	610/270/380	Speed	50 Hz 2800 R/min
Weight	15.5 kg	60 Hz	3200 R/min
		Coolant volume	ca. 7 l
Dimensions l/w/h mm		Dimensions l/w/h mm	575/365/265
Weight		Weight	21 kg



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