



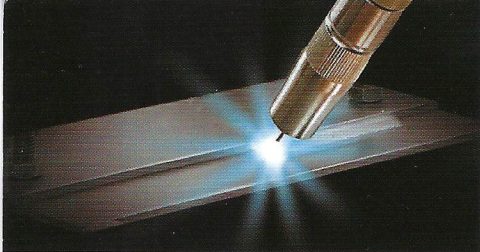
Welding & Handling Robot *Friendly series*

Gas Metal Arc

Synchro-feed GMA Welding Robot Package

*With minimum
spatter!*

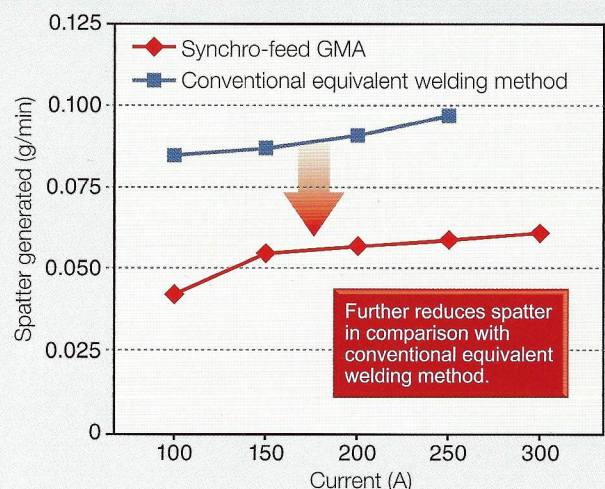
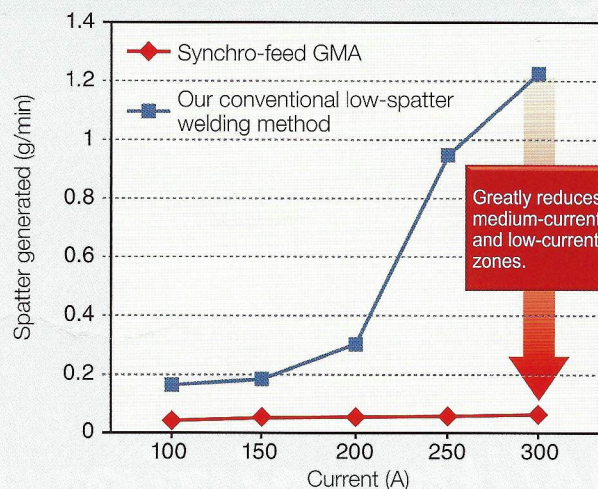




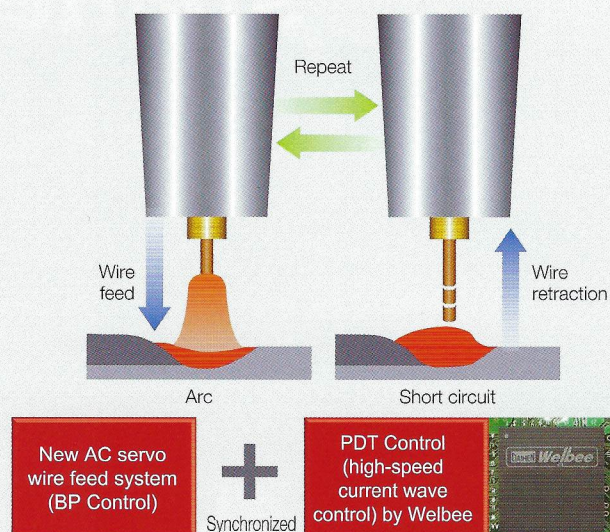
OTC's new welding process *Synchro-feed GMA* Welding

Ultra-low-spatter welding across a wide current zone (50 A–300 A)

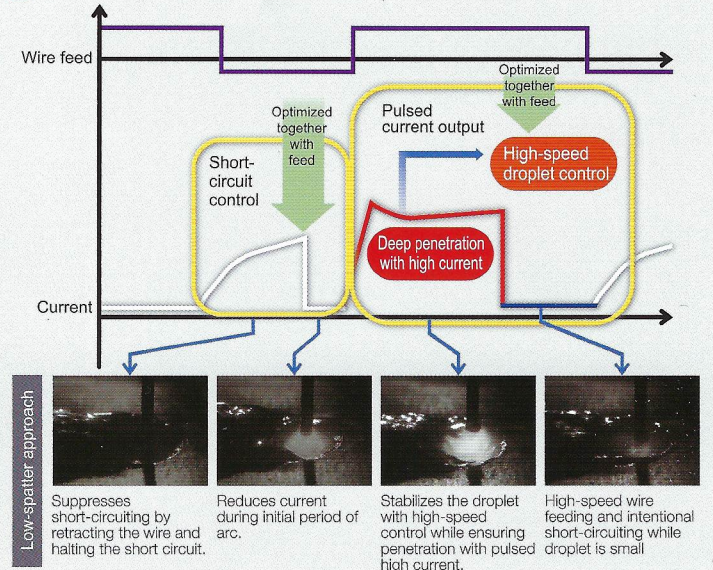
Comparison of spatter quantity with CO₂ shielding gas



Features of the Synchro-feed GMA Welding System



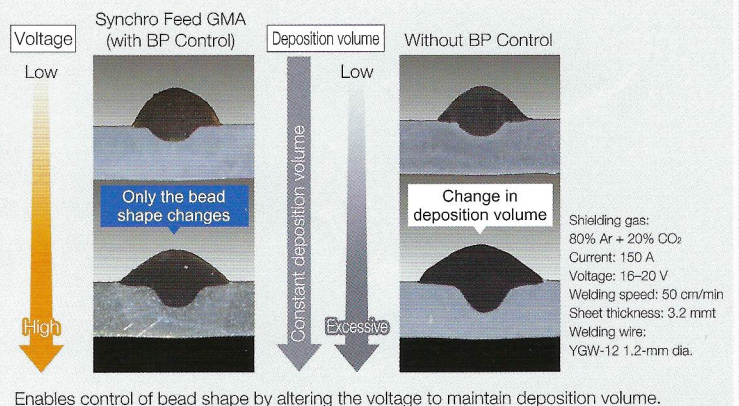
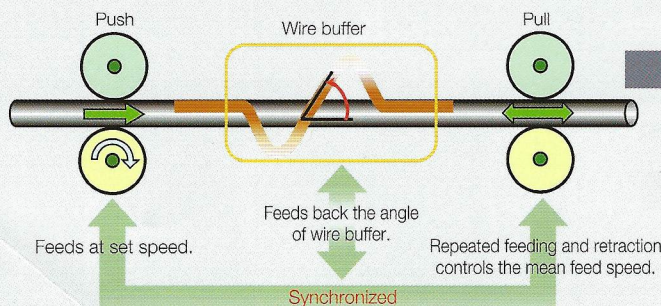
PDT Control (Pulsed Dip Transfer Process)



Synchro-feed GMA Wire Feed Control

BP Control (Buffer Position Control)

The mean feed speed is controlled with repeated feeding and retraction according to the settings of the new AC servo wire feed system.

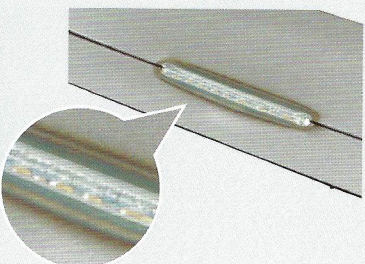
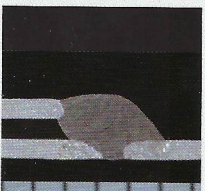
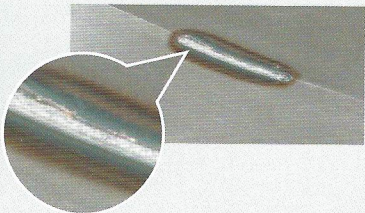
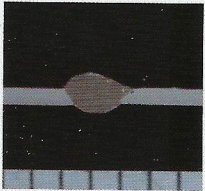


achieves the lowest possible spatter. Robot Package

Ensures low heat input into super-thin sheet.

Sheet
thickness
**0.6
mmt**

Achieves low-spatter welding of super-thin sheet with 1.2-mm dia. wire for low running cost. Low heat input prevents burn-through.

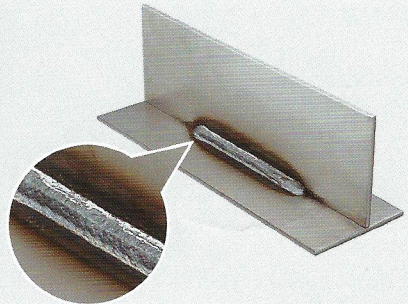
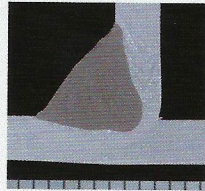


Shielding gas: 100% CO₂
Current: 50 A
Voltage: 18.0 V
Welding speed: 70 cm/min
Feed speed: 1.2 m/min
Sheet thickness: 0.6 mmt
Welding wire: YGW-12 1.2-mm dia.

Achieves ultra-low-spatter welding that ensures deep penetration.

Sheet
thickness
**3.2
mmt**

The combination of PDT Control (pulsed high-current control) and BP Control (high-speed wire feed control) overcomes the limitations of CO₂ shielding gas to achieve sufficiently deep penetration and a flat bead shape.



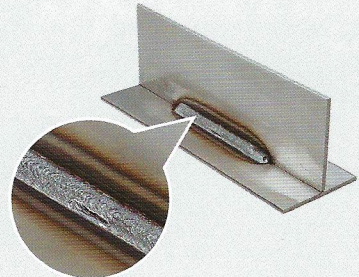
Shielding gas: 100% CO₂
Current: 250 A
Voltage: 23.0 V
Welding speed: 50 cm/min
Feed speed: 10 m/min
Sheet thickness: 3.2 mmt
Welding wire: YGW-12 1.2-mm dia.

Optimized for weaving

Good beads are guaranteed because rapid wire-feed control has an excellent tracking capability with the wire extension, ensuring low spatter even during weaving.

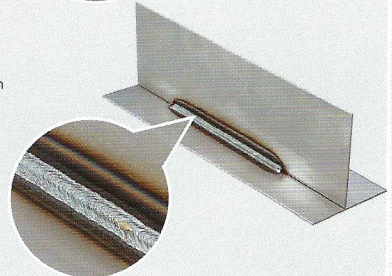
Sheet
thickness
**3.2
mmt**

Shielding gas: 100% CO₂
Current: 130 A
Voltage: 17.0 V
Welding speed: 45 cm/min
Feed speed: 3.2 m/min
Weaving frequency: 4 Hz
Sheet thickness 3.2 mmt
Welding wire:
YGW-12 1.2-mm dia.



Sheet
thickness
**1.0
mmt**

Shielding gas: 100% CO₂
Current: 80 A
Voltage: 17.0 V
Welding speed: 45 cm/min
Feed speed: 1.7 m/min
Weaving frequency: 5 Hz
Sheet thickness 1.0 mmt
Welding wire:
YGW-12 1.2-mm dia.



Improved starts

Current waveform control and dedicated wire feed start control contribute to a beautifully wide bead and greatly reduced spatter during starts.



Shielding gas: 100% CO₂
Current: 250 A
Voltage: 23.0 V
Welding speed: 50 cm/min
Feed speed: 10 m/min
Sheet thickness: 3.2 mmt
Welding wire: YGW-12 1.2-mm dia.

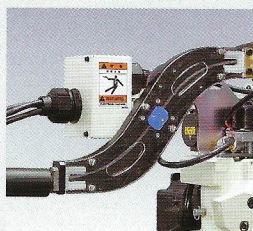
Main Components



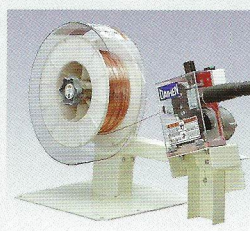
Pull Feed Unit
AFSB-2501
(for FD-B4(S))



Pull Feed Unit
AFSB-2501
(for FD-V6(S))



Wire Buffer
L-11610

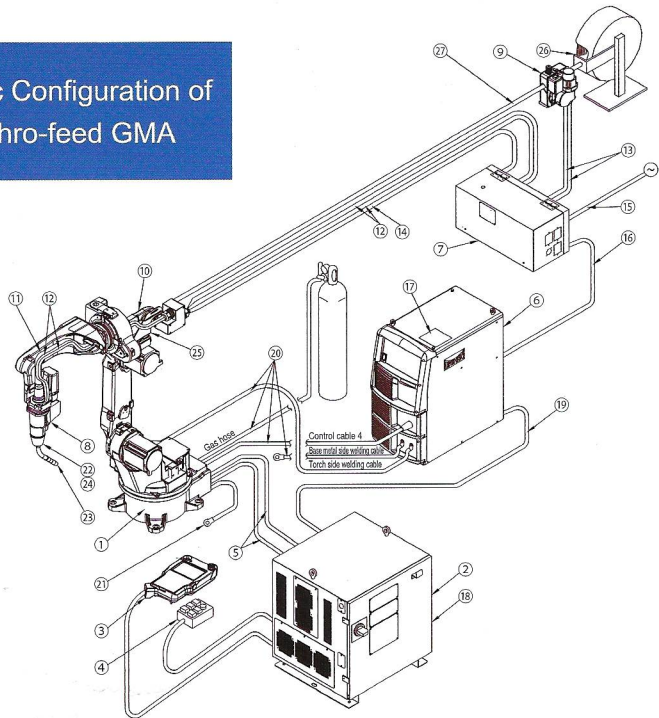


Push Feeder
AFS-2301



Wire Feed Controller
AFCA-S1W04

Basic Configuration of
Synchro-feed GMA



■ Application Range of Synchro-feed GMA Welding System

Item	Specification
Shielding gas	CO ₂ /MAG
Applicable wire diameter/material	YGW-12 1.2-mm dia. mild steel solid wire
Wire stock method	Wire reel/pack wire
Applicable tips	Welding current 50–200 A: E tip 50–300 A: CW tip
Mean wire feed speed	1.2–18.0 m/min.
Welding current	CO ₂ : 300 A 30% MAG: 250 A 30%
Rated use	CO ₂ : 50–300 A MAG: 50–250 A
Applicable sheet thickness	0.6–4.5 mm (Varies with welding speed.)
Max. cable length in conduit	5 m

■ Basic Configuration of Friendly Series

Diagram Reference & Part Name	Model	Specification
① Manipulator	NB42-□□□□	NB4
	NB4S1-□□□□	NB4S
	NV62-□□□□	NV6
	NV6S1-□□□□	NV6S
② Control Unit	FD11-J□□□□□	FD11 Control Unit
Teach Pendant	FDTPDSJN-4L□□	Standard: 8 m
③ WTP Wireless Teach Pendant (optional)	FDWTPDSJN-4	Wireless
④ Operation Box	FDOP-00□□	Standard: 5 m
⑤ Control Cable 1, 2 (Wire harness)	FDRB-10□□	Standard: 5 m

■ Basic Configuration of Synchro-feed GMA Welding System

Diagram Reference & Part Name	Model	Specification
⑥ Welding Power Supply	WB-P500L	
⑦ Wire Feed Control Unit	AFCA-S1W04	
⑧ Pull Feed Unit (Note 1)	AFPSB-2501	Use for NB42/NB4S1
	AFPS-2501	Use for NV62/NV6S1
⑨ Push Feeder	AFS-2301	
⑩ Wire Buffer	L-11610	Use for NV62/NV6S1 Use for NB42/NB4S1
⑪ Single-Wire Power Cable	L-11621	Use for NB42/NB4S1
	L-11622	Use for NV62/NV6S1
⑫ Pull Feeder Control Cable	AFRB-PL10□□	□□: 08 8 m (Standard) : 13 13 m : 18 18 m
⑬ Push Feeder Control Cable	AFRB-PS10□□	□□: 05 5 m (Standard) : 10 10 m : 15 15 m
⑭ Wire Buffer Control Cable	AFRB-BF10□□	□□: 08 8 m (Standard) : 13 13 m : 15 15 m
⑮ Power Supply Cable	AFRB-AC10□□	□□: 05 5 m (Standard) : 10 10 m : 15 15 m
⑯ CAN cable	AFRB-CN10□□	□□: 05 5 m (Standard) : 10 10 m : 15 15 m
⑰ CAN Interface Assembly	L22789C	
⑱ Software Options	L22153F	
⑲ Control Cable 5	FDRB-51□□	□□: 05 5 m (Standard) : 10 10 m : 15 15 m
⑳ Cable Hose (Note 2)	A2RB-4D□□	□□: 05 5 m (Standard) : 10 10 m : 15 15 m
㉑ Voltage Detection Line (negative side)	L9509□	□: B 5 m (Standard) : C 10 m : D 15 m
㉒ CO ₂ /MAG Welding Torch	RT3500H	Air-cooled 350 A 45° curved torch (350-A rated output welder: Standard)
㉓ Tip Gauge Assembly	L317X	350-A rated output welder (For RT3500* torch, 15-mm wire protrusion)
㉔ Robot Gauge (optional)	L11608H	Use for NB42/NB4S1
㉕ Bracket for Wire Buffer	L11610C	Use for NB42/NB4S1
	L11610D	Use for NV62/NV6S1
㉖ Bracket for Push Feeder	L11623A	For wire reel
	L11624A	For back wire
㉗ Conduit	L10597D	3 m

In accordance with DAIHEN's policy to make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.

DAIHEN Corporation

4-1, Koyochi-nishi, Higashinada-ku, Kobe, Hyogo 658-0033, Japan
Phone: (Country Code 81) 78-275-2006
Fax: (Country Code 81) 78-845-8159

Distributed by :

CAT NO.R21505 11.2015.TP PRINTED IN JAPAN

Note This product and the technologies (including software) used in the product are subject to Catch-All Controls. When exporting any of them, verify the users, applications, etc. according to the applicable laws and regulations and take appropriate procedures such as applications for export permission to the Minister of Economy, Trade and Industry if required.

- The information contained in this catalog is current as of September 2015 and is subject to revision without notice.
- This catalog was printed with environmentally-friendly vegetable oil ink.

