

# Animal Administration and Blood Sampling Solution

## Drug Delivery Cannula

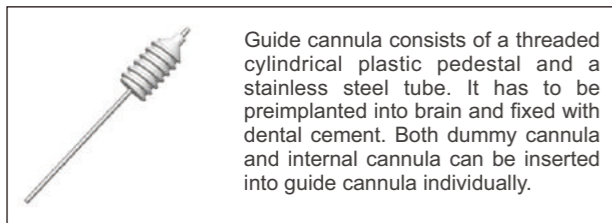
Cannula implantation is the international general method for acute and chronic intracranial drug administration in animal experiments. RWD offers customized services for users, the users can customize according to specific experimental requirements.



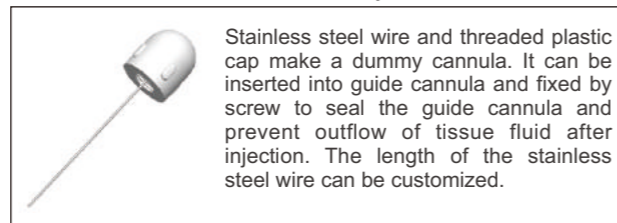
### Single Cannula

#### Components:

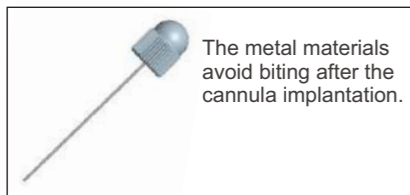
##### Guide cannula



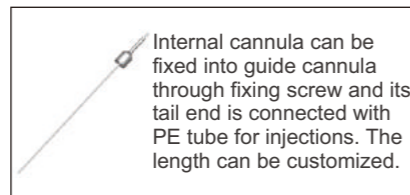
##### Dummy cannula



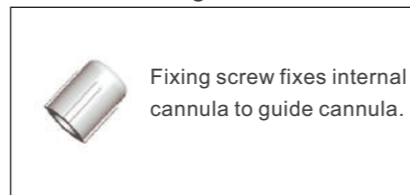
##### Metal Cannula



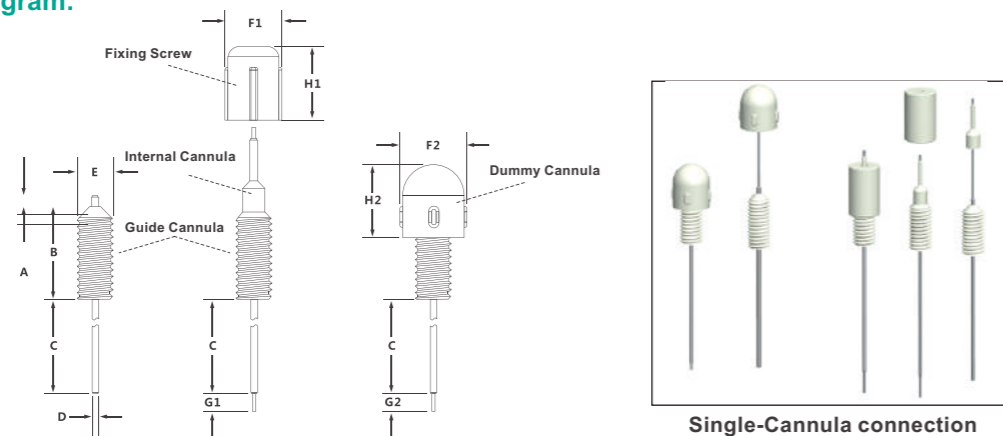
##### Internal cannula



##### Fixing screw



#### Cording Diagram:



#### Diagrams:

- A - The length of the stainless steel tubing below the plastic pedestal.
- B - The height of the cylindrical plastic base.
- C - The length of the stainless steel tubing below the plastic pedestal, can be customized.
- D - External diameter of stainless steel guide cannulas.
- E - External diameter of cylindrical plastic base.
- F1 - External diameter of Fixing screw.
- F2 - External diameter of Dummy Cannulas.
- H1 - Height of Fixing screw.
- H2 - Height of Dummy Cannulas.
- G1 - The internal cannulas projection length beyond the guide cannulas tip, can be customized.
- G2 - The dummy cannulas projection length beyond the guide cannulas tip, can be customized.

#### Ordering Instructions:

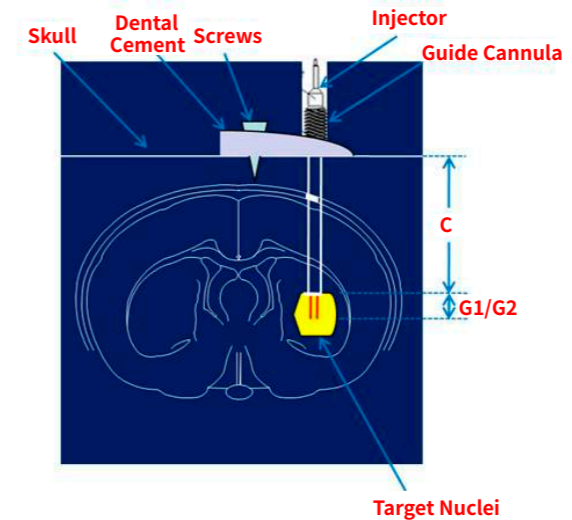


Diagram for Customization

- D-outer diameter of the Guide Cannula (Unit:g) , five sizes 22, 23, 24, 26 and 27g are available.
- C-length (Unit: mm) of the metal tube below the plastic pedestal (B).
- G1-length (Unit: mm) of the protrudent Injector through the Guide Cannula, 0.5 or 1.0mm is recommended.
- G2-length (Unit: mm) of the protrudent Dummy Guide, 0.5 or 1.0mm is recommended.

#### Order information (Unit: mm):

Matching	Guide Cannula (OD x ID)	Internal Cannula (OD x ID)	Dummy Cannula (plastic OD)	Dummy Cannula (metal OD)	Fixing Screw	PE Tube	Range of customized length		
							C	G1	G2
Cannula	62001(23g) 0.64x0.45	62201 0.41x0.25	62101 0.4	62106 0.4	62502	62329	0.5~15	0.5~15	0.5~15
	62002(24g) 0.56x0.38	62202 0.36x0.2	62102 0.3	62107 0.3					
	62003(26g) 0.48x0.34	62203 0.3x0.14	62102 0.3	62107 0.3					
	62004(27g) 0.41x0.25	62204 0.21x0.11	62104 0.2	62108 0.2					
	62005(22g) 0.71x0.45	62201 0.41x0.25	62101 0.4	62106 0.4					

Notes: The height and external diameter of the cylindrical plastic base are 8mm and 3.5mm respectively. Plastic or metal dummy cannula is optional.

### Double Cannula

#### Introduction:

RWD has launched I, II, III and IV series double cannula systems for acute and chronic intracranial drug administration in animal experiments.

Series I: Recommended for rat or mouse use, 0.48mm (outer diameter) x 0.34mm (internal diameter).

Series II: Recommended for rat use, 0.64mm (outer diameter) x 0.45mm (internal diameter).

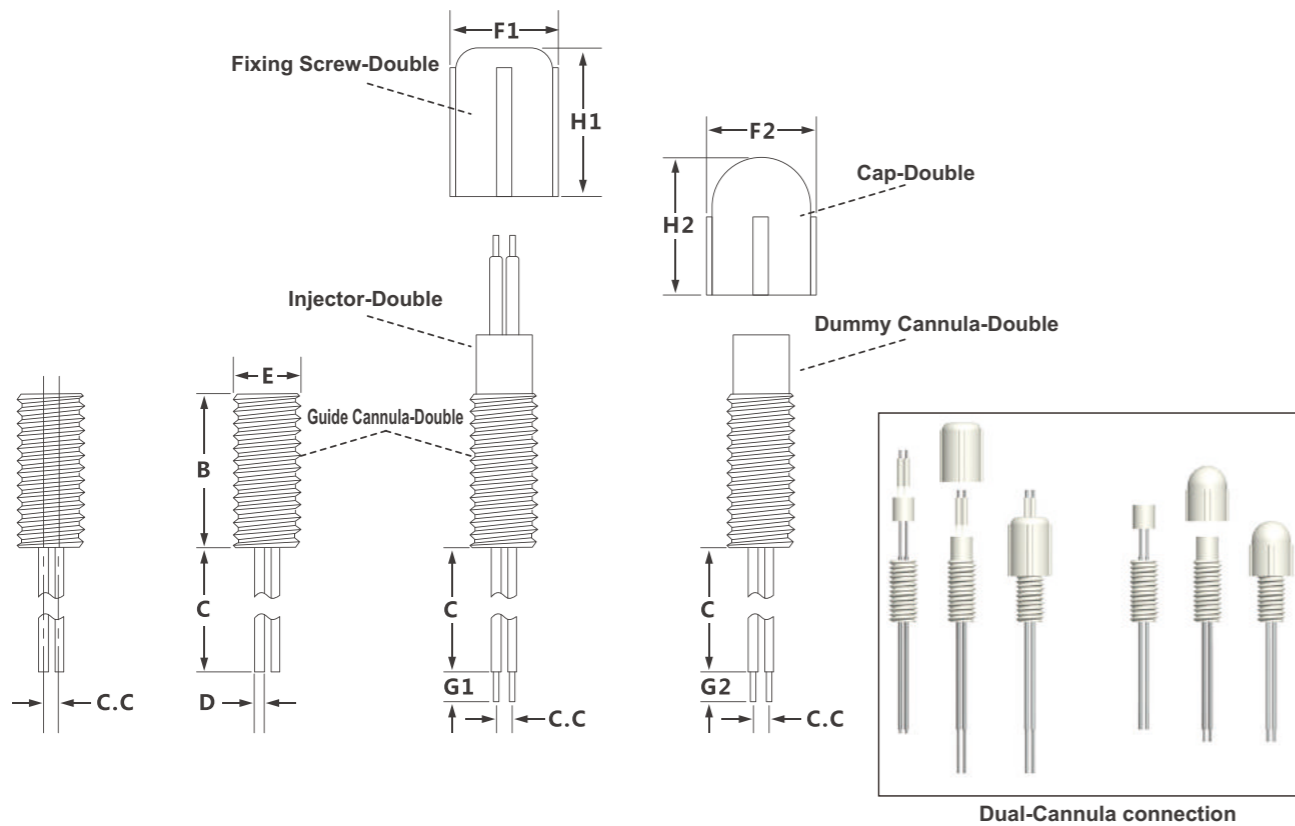
Series III: Specifically for mouse use, 0.48mm (outer diameter) x 0.34mm (internal diameter). The height of cylindrical plastic pedestal of Guide cannula is different from Series I.

Series IV: 0.41mm (outer diameter) x 0.25mm (internal diameter).

#### Application:

Double cannula system is used for bilateral implantation, suitable for injecting one or two drugs into two different brain regions.

**Cording Diagram:**



**Comments:**

- B - Height of cylindrical plastic pedestal which is 7.8mm for Series I, II & IV and 5.5mm for Series III
  - ★C - Length of stainless steel tube below the cylindrical plastic pedestal. The default value is 13.7mm for Series I & III, 20.0mm for Series II and 10.0mm for Series IV. The length can be customized with default value as maximum
  - ★C.C - Center distance between double guide cannulas, double dummy cannulas and double injectors. These 3 values should be the same in one system. It can be customized (range: 0.5mm-3.0mm)
- D - Outer diameter of stainless steel tube and it has 3 sizes: 0.48mm for Series I & III, 0.64mm for Series II and 0.41mm for Series IV
- E - Outer diameter of the cylindrical plastic pedestal and it comes with 3.5mm or 5.0mm. It is related to the outer diameter and centre distance between double guide cannulas
- F1 - Outer diameter of fixing screw and it comes with 5.0mm (when E=3.5mm) or 7.0mm (when E=5.00mm)
- F2 - Outer diameter of guide cannula cap and it comes with 5.5mm (when E=3.5mm) or 7.0mm (when E=5.0mm)
- H1 - Height of the fixing screw and it comes with 7.5mm (when E=3.5mm) and 8.0mm (when E=5.0mm)
- H2 - Height of guide cannula cap and it comes with 7.00mm (when E=3.5mm) and 7.5mm (when E=5.0mm)
  - ★G1 - Length of protruding part after internal cannula is inserted into guide cannula. This length can be customized
  - ★G2 - Length of protruding part after dummy cannula is inserted into guide cannula. This length can be customized

**Ordering Instructions:**

Determine the target brain region for drug administration and then determine target values of C, C.C, G1 and G2. These values can not exceed the default ones. Please refer to :

- ★ part of comments of cording diagram for more detail.
- ★ C: Maximal customized length is 13.7mm for Series I & III, 20.0mm for Series II and 10.0mm for Series IV.
- ★ C.C: Customized range is 0.5mm-3.0mm.
- ★ G1: Maximal customized length is 6.0mm for Series I, 4.0mm for Series II, 8.0mm for Series III and 4.0mm for Series IV.
- ★ G2: Maximal customized length is 2.0mm for Series I, 5.0mm for Series II, 4.0mm for Series III and 5.0mm for Series IV.

**Order Information: (Unit: mm)**

**Series I: Recommended for rat or mice**

Matching	C.C	Guide Cannula	Internal Cannula	Dummy Cannula	Cap	Fixing Screw	PE Tube	Range of customized length		
								C	G1	G2
Cannula (26G) O.D.0.48mmxI.D.0.34 mm Dummy Cannula: O.D.0.30mm Internal Cannula: O.D.0.30mm x I.D.0.14mm Plastic Pedestal of Guide Cannula: Height B = 7.8mm Diameter E = 3.5mm	0.5	62021	62250	62121	62523	62521	62320	0.5~13.7	0.0,5~6	0.0,5~2
	0.6	62022	62250	62122						
	0.8	62023	62223	62123						
	1.0	62024	62224	62124						
	1.2	62025	62225	62125						
	1.3	62026	62226	62126						
	1.4	62027	62227	62127						
	1.5	62028	62228	62128						
	1.6	62029	62229	62129						
	1.8	62030	62230	62130						
Plastic Pedestal of Guide Cannula: Diameter E = 5 mm	2.0	62031	62231	62131	62524	62522	62329	0.5~13.7	0.0,5~6	0.0,5~2
	2.2	62032	62232	62132						
	2.4	62033	62233	62133						
	2.6	62034	62234	62134						
	2.7	62035	62235	62135						
	3.0	62036	62236	62136						

**Series II: Recommended for rat**

Matching	C.C	Guide Cannula	Internal Cannula	Dummy Cannula	Cap	Fixing Screw	PE Tube	Range of customized length		
								C	G1	G2
Cannula(23G) O.D.0.64mmx I.D.0.45 mm Dummy Cannula: O.D.0.40mm Internal Cannula: O.D.0.41mm x I.D.0.25mm Plastic Pedestal of Guide Cannula: Height B = 7.8mm Diameter E = 3.5 mm	0.8	62037	62237	62137	62523	62521	62323	0.5~20	0.0,5~4	0.0,5~5
	1.0	62038	62238	62138						
	1.2	62039	62239	62139						
	1.3	62040	62240	62140						
	1.4	62041	62241	62141						
	1.5	62042	62242	62142						
	1.8	62043	62243	62143						
	2.0	62044	62244	62144						
Plastic Pedestal of Guide Cannula : Diameter E = 5 mm	2.2	62045	62245	62145	62524	62522	62329	0.5~20	0.0,5~4	0.0,5~5
	2.4	62046	62246	62146						
	2.5	62047	62247	62147						
	2.8	62048	62248	62148						
	3.0	62049	62249	62149						

**Series III: Recommended for mice**

Matching	C.C	Guide Cannula	Internal Cannula	Dummy Cannula	Cap	Fixing Screw	PE Tube	Range of customized length		
								C	G1	G2
Cannula (26G) O.D.0.48mmxI.D.0.34 mm Dummy Cannula: O.D.0.30mm Internal Cannula : O.D.0.30mm x I.D.0.14mm Plastic Pedestal of Guide Cannula: Height B = 5.5mm Diameter E = 3.5mm	0.5	62050	62250	62121	62523	62521	62320	0.5~13.7	0.0,5~8	0.0,5~4
	0.8	62052	62223	62123						
	1.0	62053	62224	62124						
	1.2	62054	62225	62125						
	1.3	62055	62226	62126						
	1.4	62056	62227	62127						
	1.5	62057	62228	62128						
	1.6	62058	62229	62129						
	1.8	62059	62230	62130						
	2.0	62060	62231	62131						

Series IV: Recommended for mice

Matching	C.C	Guide Cannula	Internal Cannula	Dummy Cannula	Cap	Fixing Screw	PE Tube	Range of customized length		
								C	G1	G2
Cannula (27G) O.D.0.41mm x I.D.0.25 mm Dummy Cannula: O.D.0.20mm Internal Cannula: O.D.0.21mm x I.D.0.11mm Plastic Pedestal of Guide Cannula: Height B = 7.8mm Diameter E = 3.5mm	0.5	62061	62251	62161	62523	62521	62320	0.5~10	0,0.5~4	0,0.5~5
	0.6	62062	62251	62162						
	0.8	62063	62263	62163						
	1.0	62064	62264	62164						
	1.2	62065	62265	62165						
	1.3	62066	62266	62166						
	1.4	62067	62267	62167						
	1.5	62068	62268	62168						
	1.6	62069	62269	62169						
	1.8	62070	62270	62170						
2.0	62071	62271	62171							

Notes : (1)For cap, plastic or metal is optional. Metal cap 62525 (corresponding plastic cap 62523), Metal cap 62526 (corresponding plastic cap 62524).

(2)The difference between Series I and Series III is the height of the pedestal, the former is 7.8mm and the later is 5.5mm, and Series III is specially designed for mice

### PE & Silicone Tubings

PE(Polyethylene) / HDPE(High Density Polyethylene) tube, with good fluidity, high thermal stability and good flexibility, is widely used in the field of life science. Currently, RWD has 9 types of PE tube and 1 type of silicone tube, including the international standard tubes PE10, PE20 and PE50, which can be used in microdialysis, animal artery intubation, venous cannula, bile duct intubation, subcutaneous implantation of buried pipe, lateral ventricle buried pipe, portal vein intubation and so on. These tubes can be used together with syringe, guide cannula, microdialys connector and luer stubs.

Order Information:

No.	Model	Product Description
1	62320	PE Tubing-0.85*0.42mm, pkg of 10m
2	62321	PE Tubing (HDPE)-0.85*0.42mm, pkg of 10m
3	62322	PE Tubing-0.50*0.25mm, pkg of 10m
4	62323	PE Tubing-1.00*0.50mm, pkg of 10m
5	62324	PE10 Tubing-0.61*0.28mm, pkg of 10m
6	62325	PE20 Tubing-1.09*0.38mm, pkg of 10m
7	62326	PE25 Tubing-0.91*0.46mm, pkg of 10m
8	62327	PE50 Tubing-0.97*0.58mm, pkg of 10m
9	62328	PE60 Tubing-1.20*0.80mm, pkg of 10m
10	62329	PE Tubing-1.50*0.50mm, pkg of 10m

Note: Except 62322, other PE tube can withstand high-pressure steam sterilization(121°C, 30min).



### Screws



Model	Product Description
62513	Screw-M1.0xL2.0mm
62514	Screw-M1.2xL2.0mm
62515	Screw-M1.4xL2.5mm

## Osmotic Pumps

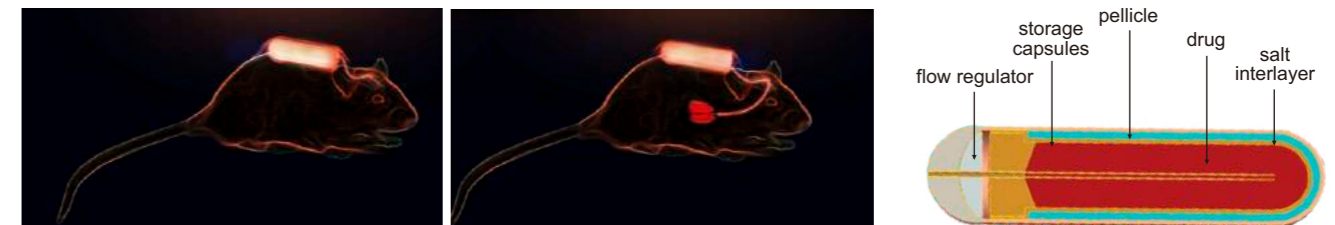
The osmotic pump has become the best tool for continuous dose of unrestrained laboratory animals. It can be implanted subcutaneously or intraperitoneally in animals. Minimizes side effects and experimental variables, and reduces the risk of stress due to frequent animal handling. And it is used for continuous delivery of a wide range of drugs, including antibodies, growth factors, cytokines, chemotherapeutics, addictive drugs, hormones, steroids and more.



### Features:

- Ensure continuous and uninterrupted administration, maintaining the preset speed for the administration of the animal.
- Storage capsules have good drug compatibility, and protection for short half-life drugs.
- Capsules have good biocompatibility and do not affect the physiology of animals.
- Easy to use, It allows one-time operation in an experiment instead of frequent operation.
- Avoid the stress caused by repeated administration, reducing the impact of non-experimental factors on the experimental results.
- Small size, can be applied to experiments on mice, neonatal rats and other small animal.
- Ensure that the drug is delivered to the target site accurately.

The osmotic pump can be directly implanted in the abdominal cavity or the back of the neck for drug administration, or it can be applied to specific tissue and organ, such as blood vessels, brain, spinal cord, lungs, liver, etc., by connecting the catheter or other accessories.



- Flow regulator: The sole outlet for drug solution, which is used to connect the catheter to target administration area.
- Storage capsules: Fill with solution. It has good corrosion resistance to acid and alkali.
- Shell: Firmness, designed to protect the internal structure of osmotic pump, with fluid passability characteristics.
- Salt interlayer: absorption of tissue fluid by osmosis. After the salt interlayer absorbs the tissue fluid, it can only be extruded inwards to slowly pump the solution out of the capsule.
- Pellicle: prevents the salt layer from diffusing into the tissue, and ensures that the tissue fluid can enter the salt layer to squeeze the storage capsule and pump out the drug solution

### Technical Parameters:

Capsule (10pcs/box)	Drug capacity	100µL				200µL				2mL		
	Type	1003D	1001W	1002W	1004W	2003D	2001W	2002W	2004W	2ml1W	2ml2W	2ml4W
	Duration	3d	1w	2w	4w	3d	1w	2w	4w	1w	2w	4w
Pumping Rate(µL/hr)		1.0	0.5	0.25	0.125	2.0	1.0	0.5	0.25	10.0	5.0	2.5
Flow regulator (10pcs/box)	Cap	Without				PE material						
	Draft tube	304 stainless steel material										
Infusion tube (1pcs/box)	Syringe	Flat head for the injection of liquid										

### Osmotic pump kit ordering information:

	Model	Description
Brain Infusion Kit	Bic-3	For 1-3mm deep brain area administration (10 Bags/ Package)
	Bic-5	For 1-3mm deep brain area administration (10 Bags/ Package)
Catheter Delivery Kit	Mic	For long-distance muscle administration (10 Bags/ Package)

