Liquid Nitrogen (LN2) Sprayer

Medical Nitrospray Treatment Unit 500 ml 16 oz

**ONE: Brief Introduction**

DZ_4 is a small type of handheld low temperature treatment instrument. Equipped with proper cold head, it can be applied to dermatologic, ophthalmologic, and otorhinolaryngologic, anorectal, gynecologic, oncologic therapy. DZ_4 low temperature treatment instrument has the following features:

1. logical construction, delicate craft
2. simple operation
3. stable in performance
4. attractive and novel in appearance
5. reliable quality, sturdy and durable

**Two: Work Principle**

DZ_4 low temperature treatment instrument uses liquid nitrogen as refrigerant substance. Liquid nitrogen is stored in an airtight receiver. Receiver gets pressure by liquid nitrogen’s spontaneous evaporation. Liquid nitrogen flows form perfusion tube to cold head under pressure. (Liquid nitrogen gasifies fiercely in cold head and then gas is discharged through outlet pipe.) Cold head can form low-temperature circumstance under nitrogen’s cold service. Set the cold head on proper therapy
temperature when using. Freeze the focus when cold head is in touch with the focus, then the focus is damaged in order to achieving curing without pain.

**Three: Scope of Application**

Cryosurgery can cure many kinds of benign dermatosis and 5 kinds of precancerous dermatosis by freezing. Disease names are as follows:

1. verruca vulgaris
2. verruca plana
3. verruca acuminata
4. molluscum contagiosum
5. hemangioma simplex
6. cavernous hemangioma
7. nevus flammeus
8. simple lymphoma
9. cavernous lymphangioma
10. amelanotic nevus
11. pigmented nevus
12. verrucoid nevus
13. linear verrucous nevus
14. sebaceous nevus
15. keloid
16. seborrheic keratosis
17. granuloma pyogenicum
18. neurodermatitis
19. chronic eczema
20. lichen planus
21. prurigo nodularis
22. skin tag
23. Face yellow warts
24. granuloma annulare
25. discoid lupus erythematosus
26. acne rosacea
27. porokeratosis of Mibelli
28. papillary dermatitis
29. keratoacanthoma
30. dermatofibroma
31. neurofibromatosis
32. lupus
33. leukoderma acquisitum centrifugum
34. lichen spinulosus
35. trichoepithelioma
36. chloasma.
37. seborrheic dermatitis
38. atopic dermatitis
39. tylosis
40. clavus
41. black nevus
42. pigmented nevus
43. eye crumbs
44. folliculitis
45. amyloidosis cutis
46. spider angioma
47. brothers tinea
48. posttraumatic blackspot
49. keratoma palmare et plantare
50. Insect shape skin atrophy
51. psoriasis
52. pigmentation
53. benign bluenevus
54. Nevus of Ito
55. verruca filiformis
56. multiple neurofibromatosis
57. psoriasis vulgaris
58. knuckle pads
59. corporis diffusum
60. freckle
Precancerous lesion:

1. senile keratosis
2. cutaneous horn
3. alphelasma
4. arsenical keratosis
5. xeroderma pigmentosum

As the pathological changes mentioned above, it is better to cure using freezing method.

Four: Planet Explanation

1. cold head knob
2. off-gas pipe
3. control valve
4. receiver
5. handle

Five: Structure Features

1. Receiver: It uses slender thermos flask which is of 250mm height. Its shell is made of bilayer stainless steel. Take vacuum polarization treatment.

2. Cold gun: Barrel, perfusion tube and outlet pipe are all made of small diameter, thin-walled, seamless stainless steel pipe.

3. Cold head: It is made of pure copper which is high thermal
conductivity. Plate silver on the surface.

4. Handle: It is made of refined organic glass material.

5. Equipment box: The shell is made of leather and the box is made of wood. Box-locker and handle are elegant appearance. The box is convenience in use.

**SIX: Equipment Installation and Inspection**

Open the therapy apparatus, load liquid nitrogen, tighten. Install the cold head, open the control valve, and spray the liquid nitrogen without liquid leakage.

**SEVEN: Use and Maintenance**

1. Clean the equipment before operation

2. There is no need to pre-cooling the receiver when loading the liquid nitrogen. Don’t fill too much liquid nitrogen (no more than 200ml)

3. Note: The best distance between liquid level and mouse of receiver is 10mm.

4. Put the cap back on the receiver quickly. Fasten screwed cutting ferrule.

5. Close control valve’s switch. Outlet pipe begins to spray gas.

6. Open control valve’s switch when stop using. Outlet pipe stops spraying gas.
7. Dispose the liquid nitrogen in the receiver before use. Put the equipment in the box when use.

8. Keep the purity of liquid nitrogen to avoid blocking perfusion tube and outlet pipe.

9. Keep away from hit and pump to avoid damaging.

10. If the shell of receiver is covered with water or frost, it means that vacuum tightness of receiver’s glass liner is broken. Stop using and change another one.

Eight: Notice

Liquid nitrogen is a super low temperature liquid so it can damage skins and produces frostbite. When you inject liquid-gas into receiver, put on gloves. Naked foot or wearing slippers are forbidden in case liquid gas damages people when spraying. Although liquid nitrogen is colorless, odorless and no-poisonous, be care of indoor airflow to keep air fresh.

NINE: List Details for Attachment

Therapy Apparatus: one

Cold Head: nine

Product’s Introduction: one

Warranty Card: one

TEN: RECEIVER’S CLEAN and DRY
During the use of liquid nitrogen receiver, thermos flask saves water and reproducts bacterial slowly. These mix with liquid nitrogen. It had better clean 2 or 3 times per month. Method is as follows:

(1) When the temperature of thermos flask reaches 0 degree, inject water of 40-50 degree and clean with rag.

(2) Rinse with clean water.

(3) Invert receiver and dry. You can dry the moisture in the open air or using warm air. If using warm air, the temperature should be under 60 degree, between 40-50 degree.