

*Sjúkrahúsið*  
*á*  
*Neskaupsstað*

*Handbók*  
*fyrir*  
*hita- og loftræstikerfi*

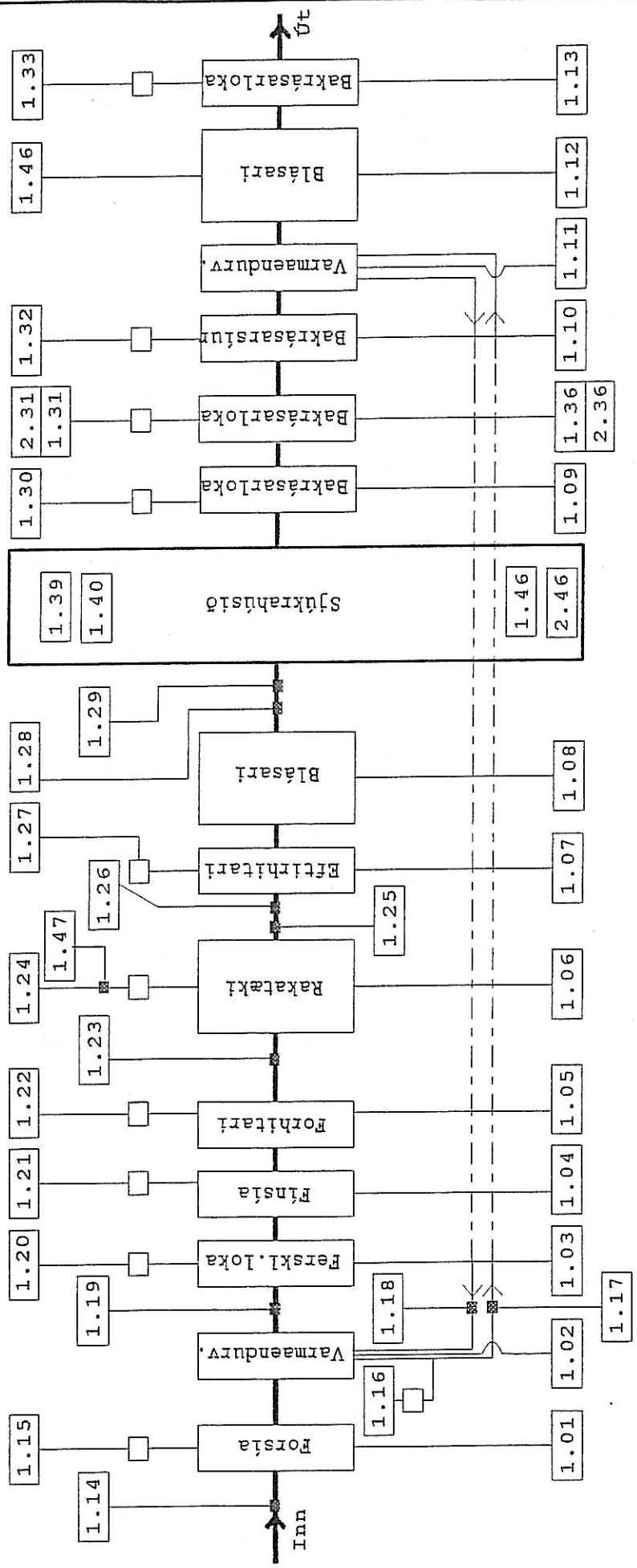
Sími: 893 4428



*Reykjavík í október 1994*

Í stjórnstöflu

- 1.34
- 1.37
- 1.41
- 1.43
- 1.35
- 1.38
- 1.42
- 1.45
- 1.48



<b>HEITI VERKS</b>		Dags: 25-08-04
SÚKRAHÚSIÐ NESKAUPSTAÐ		Telkn: 08
KERFI NR. 1		Samþ: KO
LOFTRETTIRJÓNUSTAN		Verk nr:
Ystaba 11 110 Reykjavík		Kvarði:
S. 91-673328 Fax 91-874162 Boðt. 984-54688		

## Lýsing á samvirkni tækja.

### Loftræstikerfi nr. 1

NR:	TÆKI:	HLUTVERK:
1. 01.	Forsíur	(LS 1+2) á ferkslofti, staðsettar í samstæðu, vaktaðar af tæki (nr.1.15.)
1. 02.	Varmaendurv.	(VN 1+2) Varmaendurvinnsluhitari, staðsettur í samstæðu, stjórnast af tæki (nr. 1.11. og 1.16.)
1. 03.	Ferksloftsloka	(SP 1) opnar - lokar, staðsett í samstæðu, stjórnast af tæki (nr.1.20.)
1. 04.	Fínsíur	(LS 1) staðsettar í samstæðu, vaktaðar af tæki (nr.1.21.)
1. 05.	Forhitari	(LHV 1A) staðsettur í samstæðu, stjórnast af tæki (nr.1.22.)
1. 06.	Rakataeki	(RT 1) staðsett í samstæðu, stjórnast af tæki (nr.1.24.)
1. 07.	Eftirhitari	(LHV 1B) staðsettur í samstæðu, stjórnast af tæki (nr.1.27.)
1. 08.	Blásari	(B1) staðsettur í samstæðu, stjórnast af tæki (nr.1.34. og 1.42.)
1. 09.	Lofloka	(SP 4C) opin - lokuð, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.1.30.)
1. 10.	Síur	(kerfi nr.2.10.) (LS4) staðsettar í bakrás í húsi á þaki, vaktaðar af tæki (nr.1.32.)
1. 11.	Varmaendurv.	(kerfi nr.2.11) (VN 1+2) Varmaendurvinnsluhitari, staðsettur í húsi á þaki, stjórnast af bakrásarlofti (útkastlofti) og tæki (nr. 1.16. og 1.02.)
1. 12.	Blásari	(B 4A) staðsettur í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.1.34. - 1.42 og 1.46.)
1. 13.	Lofloka	(SP 4A) opinn - lokuð, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.1.33.)

## Sjúkrahúsið Neskaupstað Sími: 97-71402

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1. 14. Lofthitamælir staðsettur í inntaksstokk í samstæðu, sýnir hitastigið úti hverju sinni.
1. 15. Síuvaki (Q 15-16) staðsettur í samstæðu, stjórnast af tæki (nr.1.??) en vaktar tæki (nr.1.01.) Gefur gult ljós í stjórnskáp, tæki (1. 45.)
1. 16. Hringrásardæla (kerfi nr.2.16.) (D 1) í varmaendurvinnslu í samstæðu, stjórnast af tæki (nr.1.34. - 1.42 og 2.34.) en stjórnar tæki (nr. 1.02. og 2.02.)
1. 17. Vamshitamælir staðsettur í bakrásarvökva varmaendurvinnslu í samstæðu.
1. 18. Vatnshitamælir staðsettur í framrásarvökva varmaendurvinnslu í samstæðu.
1. 19. Lofthitamælir staðsettur í samstæðu, sýnir hitastig á framrásarlofti innan við tæki (nr.1.02.)
1. 20. Spjaldlokumótor (SM 1A) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.1.34) en stjórnar tæki (nr.1.03.)
1. 21. Síuvaki (Q15-16) staðsettur á samstæðu, stjórnast af tæki (nr.1.??) en vaktar tæki (nr.1.04) Gefur gult ljós í stjórnskáp, tæki (1. 48.)
1. 22. Mótorloki (M 1-A) staðsettur á samstæðu, stjórnast af tæki (nr.1.35.) en stjórnar tæki (nr.1.05.)
1. 23. Frostvörn (T 4.1) staðsett í samstæðu, stjórnast af tæki (nr.1.41.)  
**Stillist á: + 5° C.**  
Við frostútleisingu gerist eftirfarandi:  
Slekkur á blásara (nr.1.08. og 1.12)  
Lokar loftloku (nr.1.03. , 1.09. og 1.13.)  
Lokar segulloka (nr.1.24.)  
Fullopnar mótoraloka (nr.1.22.)  
Gefur rautt ljós á tæki (nr.1.37.) í stjórnskáp.
1. 24. Segulloki (SE 1) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.1.40.) en stjórnar tæki (nr.1.06.)
1. 25. Hitaskynjari (T 3.1) **hámark** staðsettur í samstæðu, innan við forhitara tæki (nr.1.05.) sendir boð til stjórnstöðvar tæki (nr.1.35.)  
**Kjörhitastig: 12° C.**
1. 26. Lofthitamælir staðsettur í samstæðu, sýnir framrásarlofthita innan við rakatæki (nr.1.06.)



## Sjúkrahúsið Neskaupstað Sími: 97-71402

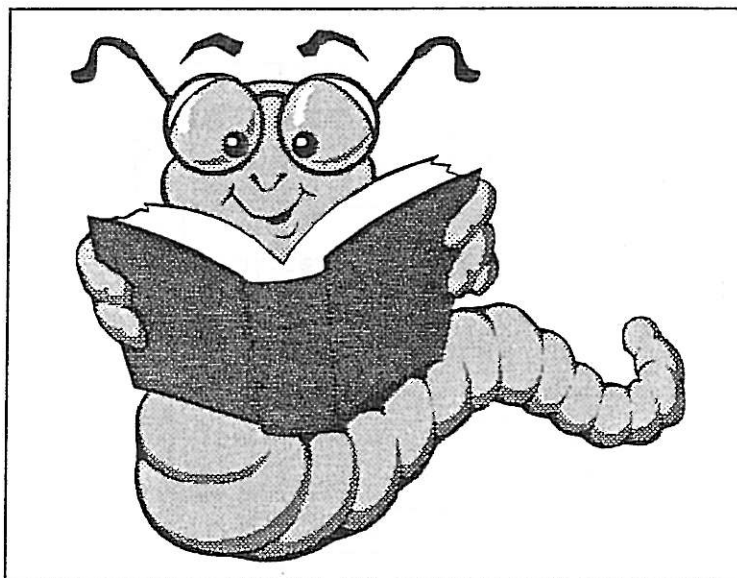
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1. 27. Mótorloki (M 1 B) staðsettur í samstæðu, stjórnast af tæki (nr.1.38.) en stjórnar tæki (nr.1.07.)
1. 28. Hitaskynjari (T 1.1) **lágmark**, staðsettur í stokk innan við samstæðu, sendir boð til stjórnstöðvar tæki (nr.1.38.) **Kjörhitastig 14° C.**
1. 29. Lofthitamælir staðsettur í stokk innan við samstæðu, sýnir hita á framrásarlofti frá samstæðu.
1. 30. Spjaldlokumótor (SM 4C) opinn - lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr. 1.34 og 2.34.), en stjórnar tæki (nr.1.09.)
1. 31. Spjaldlokumótor (kerfi nr.2.31.) (SM 4D SM 4E) opinn- lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr.1.34 og 2.34.) en stjórnar tæki (nr. 1.36.)
1. 32. Súvaki (kerfi nr. 2. 32.) staðsettur í húsi á þaki, vaktar tæki (nr. 1. 10.)
1. 33. Spjaldlokumótor (SM 4A) opinn - lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr.1.34.) en stjórnar tæki (nr. 1. 13.)
1. 34. Rofi (B1 og B4A) framan á stjórnskáp, slekkur á kerfi nr. 1
1. 35. Stjórnstöð (ST 1.2) staðsett í stjórnskáp, stjórnar tæki (nr.1.22.) eftir boðum frá tæki (nr.1.25.) **Stillist á hámark: 12° C.**
1. 36. Loftloka (kerfi nr.2.36.) (SP 4E-SP 4D) opin - lokaður, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.1.31.)
1. 37. Rautt ljós (H 25) framan á stjórnskáp.  
**Rautt logandi ljós merkir frostvörn útslegin, tæki (nr.1.23.)**
1. 38. Stjórnstöð (ST 1.1) staðsett í stjórnskáp, stjórnar tæki (nr.1.27.) eftir boðum frá tæki (nr. 1.28. og 1.39.) **Stillist á lágmark: 14° C.**  
**En stofuhita: 21° C.**
1. 39 Hitaskynjari (T 2.1) staðsettur í bakrásarlofti, í millilofti á 2 hæð, norðan við dyr á Línherbergi, austurhlið. Sendir boð til stjórnstöðvar tæki (nr.1.38.) **Kjörhitastig: 21° C.**
- 1.40. Rakastillir (RS 1.1) staðsettur í bakrásarlofti, í millilofti á 2 hæð, norðan við dyr á Línherbergi, austurhlið, stjórnar tæki (nr.1.24.)  
Ákvarðar rakaprósentu í andrúmslofti hússins.

## Sjúkrahúsið Neskaupstað Sími: 97-71402

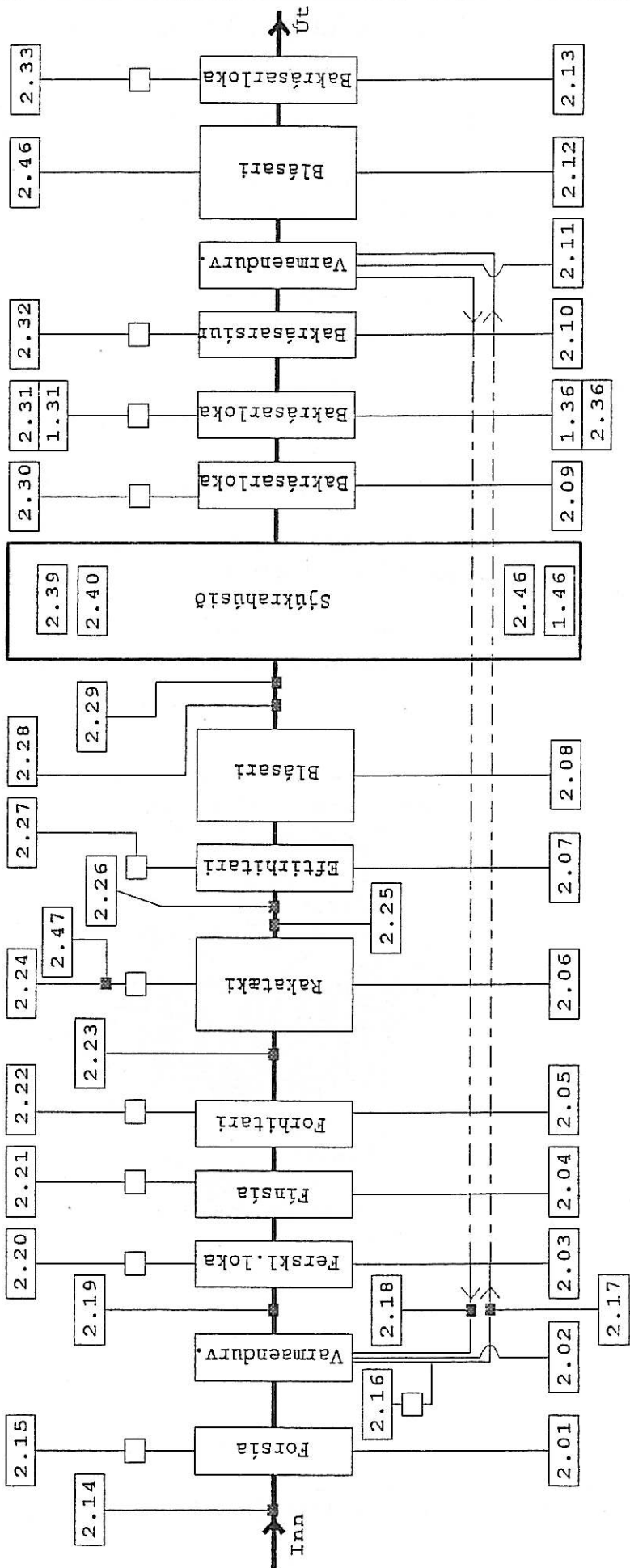
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1. 41. Rofi öryggi staðsett í stjórnskáp, stjórnar tæki (nr.2.23.)
1. 42. Klukka staðsett í stjórnskáp, stjórnar gangtíma kerfa nr. 1, 2 og 3. Kveikir á þeim Kl. 06.00 að morgni en slekkur á þeim Kl. 22.00 að kvöldi.
1. 43. Hitamælir staðsettur í stjórnstöflu, tekur við boðum frá hitaskynjara tæki (nr.2. 39.) sýnir það hitastig sem er hverju sinni á bakrásarlofti.
1. 45. Gult ljós (A 28) framan á stjórnskáp.  
**Gult logandi ljós merkir, óhrein sía tæki (nr.2.01.)**
1. 46. Rofi staðsettur í húsi á þaki, viðgerðarrofi fyrir tæki (nr.2.12.)
1. 47. Stilliloki staðsettur á rakatæki við tæki (nr.2.24.) stillir vatnsmagn inn á rakasellur í tæki (nr.2.06.)
1. 48. Gult ljós (H 30) framan á stjórnskáp.  
**Gult logandi ljós merkir óhrein sía tæki (nr.2.04.)**



Í stjórntöflu

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| 2.34 | 2.37 | 2.41 | 2.43 |
| 2.35 | 2.38 | 2.42 | 2.45 |
|      |      |      | 2.48 |



HEITI VERKS

Dags: 25-08-94

Taíkn: 08

Samþ: KO

Verk nr:

Kvæðl:

SJÚKRAHÚSIÐ NESKAUPSTAÐ  
KERFI NR. 2

LOFTRESTIÐJÓNUSTAN  
Ystaba 11 110 Reykjavík  
S. 91-673328 Fax 91-874162 Bost. 984-54608

## Lýsing á samvirkni tækja.

### Loftræstikerfi nr. 2

NR:	TÆKI:	HLUTVERK:
2. 01.	Forsíur	(SL 1+2) á ferkslofti, staðsettar í samstæðu, vaktaðar af tæki (nr.2.15.)
2. 02.	Varmaendurv.	(VN 1+2) Varmaendurvinnsluhitari, staðsettur í samstæðu, stjórnast af tæki (nr. 2.11. og 2.16.)
2. 03.	Ferksloftsloka	(SP 2) opnar - lokar, staðsett í samstæðu, stjórnast af tæki (nr.2.20.)
2. 04.	Fínsíur	(LS 2) staðsettar í samstæðu, vaktaðar af tæki (nr.2.21.)
2. 05.	Forhitari	(LHV 2A) staðsettur í samstæðu, stjórnast af tæki (nr.2.22.)
2. 06.	Rakataeki	(RT 2) staðsett í samstæðu, stjórnast af tæki (nr.2.24.)
2. 07.	Eftirhitari	(LHV 2B) staðsettur í samstæðu, stjórnast af tæki (nr.2.27.)
2. 08.	Blásari	(B 2) staðsettur í samstæðu, stjórnast af tæki (nr.2.34. og 2.42.)
2. 09.	Loftloka	(SM 4C) opin - lokuð, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.2.30.)
2. 10.	Síur	(kerfi nr. 1.10.) (LS 4) staðsettar í bakrás í húsi á þaki, vaktaðar af tæki (nr.2.32.)
2. 11.	Varmaendurv.	(kerfi nr. 1.11.) (VN 1+2) Varmaendurvinnsluhitari, staðsettur í húsi á þaki, stjórnast af bakrásarlofti (útkastlofti) og tæki (nr.2.16. og 2.02.)
2. 12.	Blásari	(B 4B) staðsettur í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.2.34.- 2.42. og 2.46.)
2. 13.	Loftloka	(SP 4B) opinn - lokuð, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.2.33.)

## Sjúkrahúsið Neskaupstað Sími: 97-71402

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2. 14. Lofthitamælir staðsettur í inntaksstokk í samstæðu, sýnir hitastigið úti hverju sinni.
2. 15. Síuvaki (Q15-16) staðsettur í samstæðu, stjórnast af tæki (nr.2.??.) en vaktar tæki (nr.2.01.) Gefur gult ljós í stjórnskáp, tæki (2.45.)
2. 16. Hringrásardæla (kerfi nr. 1.16.) (D 2) í varmaendurvinnslu í samstæðu, stjórnast af tæki (nr.1.34. - 2.42.og 2.34.) en stjórnar tæki (nr. 2.02. og 1.02.)
2. 17. Vatnshitamælir staðsettur í bakrásarvökva varmaendurvinnslu í samstæðu.
2. 18. Vatnshitamælir staðsettur í framrásarvökva varmaendurvinnslu í samstæðu.
2. 19. Lofthitamælir staðsettur í samstæðu, sýnir hitastig á framrásarlofti innan við tæki (nr.22.)
2. 20. Spjaldlokumótor (SM 2A) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.2.34) en stjórnar tæki (nr.2.03.)
2. 21. Síuvaki (LS2-Q15-16) staðsettur á samstæðu, stjórnast af tæki (nr.2.??) en vaktar tæki (nr.2.04) Gefur gult ljós í stjórnskáp, tæki (2.48.)
2. 22. Mótorloki (M 2A) staðsettur á samstæðu, stjórnast af tæki (nr.2.35.) en stjórnar tæki (nr.2.05.)
2. 23. Frostvörn (T 42) staðsett í samstæðu, stjórnast af tæki (nr.2.41.)  
**Stíllist á: + 5° C.**  
Við frostútleisingu gerist eftirfarandi:  
Slekkur á blásara (nr.2. og 2)  
Lokar loftloku (nr.2.03. , 2.09. og 2.13.)  
Lokar segulloka (nr.2.24.)  
Fullopnar mótorloka (nr.2.22.)  
Gefur rautt ljós á (nr.2.37.) í stjórnskáp.
2. 24. Segulloki (SE 2) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.2.40.) en stjórnar tæki (nr.1.06.)
2. 25. Hitaskynjari **(T 32) hámark** staðsettur í samstæðu, innan við forhitara tæki (nr.1.05.) sendir boð til stjórnstöðvar tæki (nr.2.35.)  
**Kjörhitastig: 12° C.**
2. 26. Lofthitamælir staðsettur í samstæðu, sýnir framrásarlofthita innan við rakataeki (nr.2.06.)

## Sjúkrahúsið Neskaupstað Sími: 97-71402

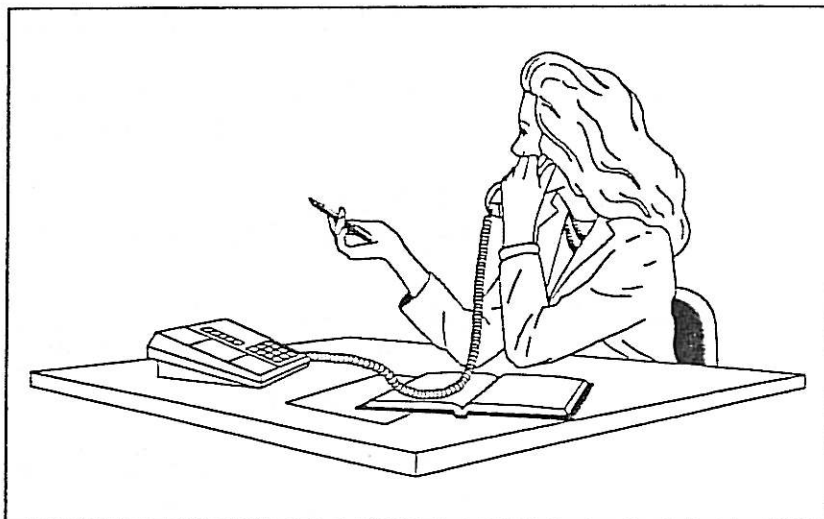
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2. 27. Mótorloki (M 2B) staðsettur í samstæðu, stjórnast af tæki (nr.2.38.) en stjórnar tæki (nr.2.07.)
2. 28. Hitaskynjari (T 1.2) lágmark, staðsettur í stökk innan við samstæðu, sendir boð til stjórnstöðvar tæki (nr.2.38.) Kjörhitastig: 14° C.
2. 29. Lofthitamælir staðsettur í stökk innan við samstæðu, sýnir hita á framrásarofiti frá samstæðu.
2. 30. Spjaldlokumótor (SM 4S) opinn - lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr. 2.34. ), en stjórnar tæki (nr.2.09.)
2. 31. Spjaldlokumótor (kerfi 1.31.) (SM 4D) (SM 4E) opinn - lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr.2.34. ) en stjórnar tæki (nr. 2.36.)
2. 32. Súvaki (kerfi nr. 1. 32.) staðsettur í húsi á þaki, vaktar tæki (nr. 2. 10.)
2. 33. Spjaldlokumótor (SM 4B) opinn - lokaður, staðsettur í húsi á þaki, stjórnast af tæki (nr.2.34. ) en vaktar tæki (nr.2.13.)
2. 34. Rofi framan á stjórnskáp, slekkur á kerfi nr. 2
2. 35. Stjórnstöð (ST 2.2) staðsett í stjórnskáp, stjórnar tæki (nr.2.22.) eftir boðum frá tæki (nr.2.25.) Stíllist á hámark: 12° C.
2. 36. Loftloka (kerfi 1.36.) (SP 4E- SP 4D) opinn - lokaður, staðsett í bakrásarlofti í húsi á þaki, stjórnast af tæki (nr.2.31.)
2. 37. Rautt ljós (H 26) framan á stjórnskáp.  
Rautt logandi ljós merkir frostvörn útslegin, tæki (nr.2.23.)
2. 38. Stjórnstöð (ST 2.1) staðsett í stjórnskáp, stjórnar tæki (nr.1.27.) eftir boðum frá tæki (nr. 2.28. og 2.39.) Stíllist á lágmark: 14° C.  
En stofuhita 21° C.
2. 39. Hitaskynjari (T 2.2) staðsettur í bakrásarlofti, í millilofti á 2 hæð, norðan við dyr á Línherbergi, vesturhlið. Sendir boð til stjórnstöðvar tæki (nr.2.38.) Kjörhitastig: 21° C
2. 40. Rakastillir (RS 1.2) staðsettur í bakrásarlofti, í millilofti á 2 hæð, norðan við dyr á Línherbergi, vesturhlið, stjórnar tæki (nr.2.24.)  
Ákvarðar rakaprósentu í andrúmslofti hússins.
2. 41. Rofi öryggi staðsett í stjórnskáp, stjórnar tæki (nr.2.23.)

## Sjúkrahúsið Neskaupstað Sími: 97-71402

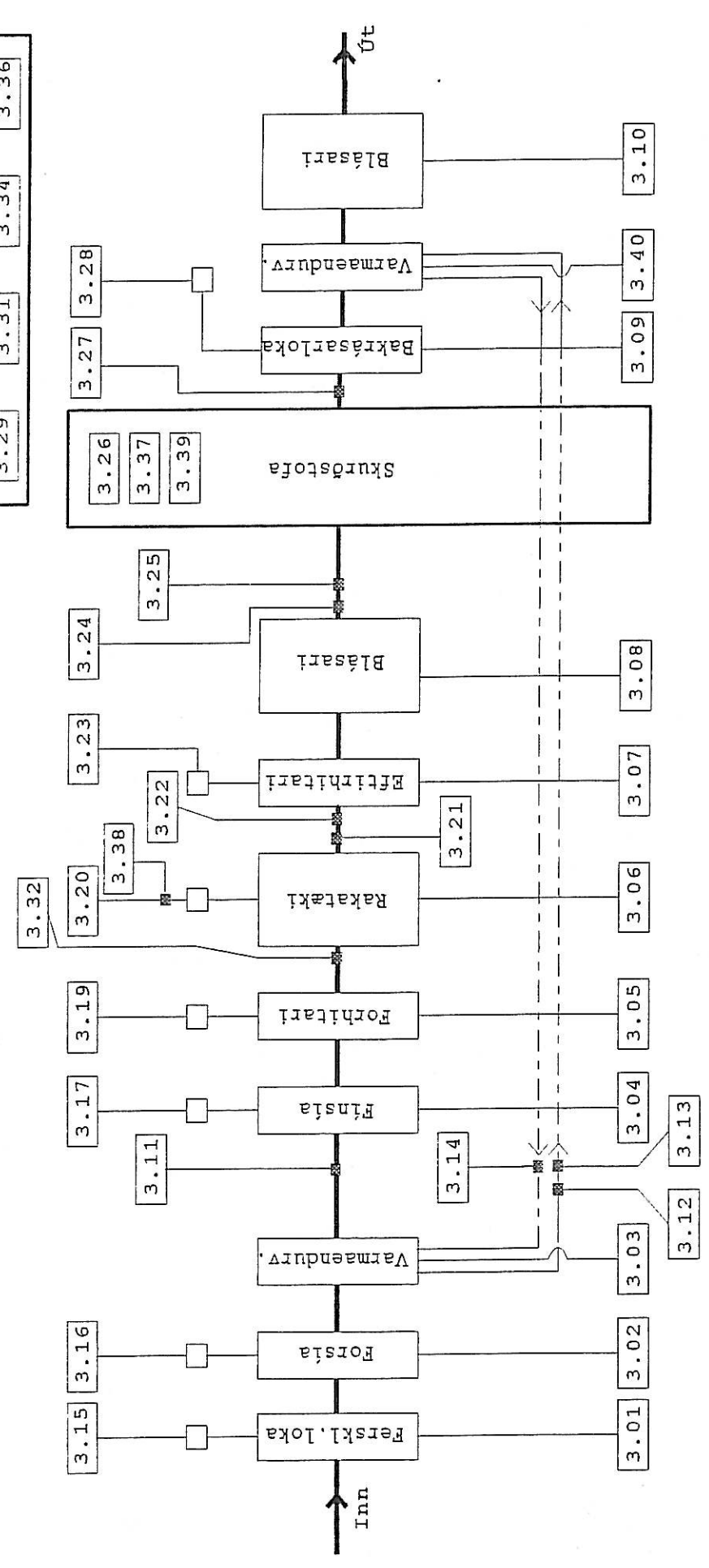
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2. 42 Klukka staðsett í stjórnskáp, stjórnar gangtíma kerfa nr. 1, 2 og 3. Kveikir á þeim Kl. 06.00 að morgni en slekkur á þeim Kl. 22.00 að kvöldi.
2. 43. Hitamælir staðsettur í stjórnstöflu, tekur við boðum frá hitaskynjara tæki (nr.2. 39.) sýnir það hitastig sem er hverju sinni á bakrásarlofti.
2. 45. Gult ljós (A 28) framan á stjórnskáp.  
Gult logandi ljós merkir, óhrein sía tæki (nr.2.01.)
2. 46. Rofi staðsettur í húsi á þaki, viðgerðarofi fyrir tæki (nr.2.12.)
2. 47. Stilliloki staðsettur á rakatæki við tæki (nr.2.24.) stillir vatnsmagn inn á rakasellur í tæki (nr.2.06.)
2. 48. Gult ljós (H 30) framan á stjórnskáp.  
Gult logandi ljós merkir óhrein sía tæki (nr.2.04.)



Í stjórnstöflu

3.18	3.30	3.33	3.41
3.29	3.31	3.34	3.35
			3.36



<b>HEITI VERKS</b>	Dags: 25-08-94
<b>SJÚKRAHÚSIÐ NESKAUPSTAÐ</b>	Teikn: 05
<b>KERFI NR. 3</b>	Samþ: KO
LOFTRETTIÐJÓNUSTAN	Verk nr:
Ystaba 11 110 Reykjavík	Kvarði:
S. 91-673328 Fax 91-874162	
Boðt. 984-54688	



## Lýsing á samvirkni tækja.

### Loftræstikerfi nr. 3

NR:	TÆKI:	HLUTVERK:
3. 01.	Ferksloftsloka	(SP 3) opnar - lokar, staðsett í samstæðu, stjórnast af tæki (nr.3.15.)
3. 02.	Forsía	(LS 3A) á fersklofti, staðsett í samstæðu, vöktuð af tæki (nr.3.16.)
3. 03.	Varmaendurv.	(VN 3) Varmaendurvinnsluhitari, í samstæðu, stjórnast af tæki (nr.3.12. , 3. 36. og 3. 40)
3. 04.	Fínsíur	(LS 3B) staðsettar í samstæðu, vaktar af tæki (nr.3.17.)
3. 05.	Forhitari	LHV 3A) staðsettur í samstæðu, stjórnast af tæki (nr.3.19.)
3. 06.	Rakataeki	(RT 3) staðsett í samstæðu, stjórnast af tæki (nr.3.20.)
3. 07.	Eftirhitari	(LHV 3B) staðsettur í samstæðu, stjórnast af tæki (nr.3.23.)
3. 08.	Blásari	(B 3) staðsettur í samstæðu, stjórnast af tæki (nr.3.31. og 3.36.)
3. 09.	Loftloka	(SP 5) opin - lokuð, staðsett í bakrásarlofti í tækjaklefa, stjórnast af tæki (nr.3.28.)
3. 10.	Blásari	(B 5) staðsettur í bakrásarlofti í tækjaklefa, stjórnast af tæki nr. (3.31. og 3.36.)
3. 11.	Lofthitamælir	staðsettur í samstæðu, sýnir hitastigið á framrásarlofti innan við tæki nr. (3.03)
3. 12.	Hringrásardæla	(D 2) í varmaendurvinnslu staðsett í samstæðu, stjórnast af tæki (nr.3.31. og 3.36.)
3. 13.	Vatnshitamælir	staðsettur í framrásarvökva varmaendurvinnslu í samstæðu.
3. 14.	Vatnshitamælir	staðsettur í bakrásarvökva varmaendurvinnslu í samstæðu.

## Sjúkrahúsið Neskaupstað Sími: 97-71402

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3. 15. Spjaldlokumótor (SM 3) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.3.31) en stjórnar tæki (nr.3.01.)
3. 16. Síuvaki (LS 3A) staðsettur á samstæðu, stjórnast af tæki (nr.3.Q15-Q16.) vaktar tæki (nr.3.02.) Gefur gult ljós í stjórnskáp, tæki (nr.3.33.)
3. 17. Síuvaki (LS 3B) staðsettur á samstæðu, stjórnast af tæki (nr.3.Q15-Q16.) vaktar tæki (nr.3.04.) gefur gult ljós í stjórnskáp, tæki (nr.3.34.)
3. 18. Rautt ljós (H 27) Rautt ljós framan á stjórnskáp.  
**Rautt logandi ljós merkir frostvörn útslegin, tæki (nr.3.32.)**
3. 19. Mótorloki (M 3A) staðsettur á samstæðu, stjórnast af tæki (nr.29.) en stjórnar tæki (nr.3.05.)
3. 20. Segulloki (SE 3) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.3.27.) en stjórnar tæki (nr.3.06.)
3. 21. Hitaskynjari (T 3.3) **hámark** staðsettur í samstæðu, innan við forhitara tæki (nr.1.05.) sendir boð til stjórnstöðvar tæki (nr.3.29.)  
**Kjörhitastig: 12° C**
3. 22. Lofthitamælir staðsettur í samstæðu, sýnir hitastig á framrásarlofti innan við tæki (nr.3.06.)
3. 23. Mótorloki (M 3B) staðsettur í samstæðu, stjórnast af tæki (nr.3.30.) en stjórnar tæki (nr.3.07.)
3. 24. Hitaskynjari (T 1.3) **lágmark**, staðsettur í stökk innan við samstæðu, sendir boð til stjórnstöðvar tæki (nr.3.30.) **Kjörhitastig: 14° C**
3. 25. Lofthitamælir staðsettur í samstæðu, sýnir hitastig á framrásarlofti innan við samstæðu.
3. 26. Hitaskynjari (T 2.3) staðsettur á vegg í skurðstofu á fyrstu hæð, (stjórnar hitastigi þar) sendir boð til stjórnstöðvar tæki (nr.3.30)  
**Kjörhitastig: 22° C**
3. 27. Rakastillir (RS 1.3) staðsettur í bakrásarlofti, í millilofti vesturgangi í kjallara, norðan við dyr á tækjaklefa stjórnar tæki (nr.3.20.) ákvarðar rakaprósentu í andrúmslofti á skurðstofu.
3. 28. Spjaldlokumótor (SM 5) opinn - lokaður, staðsettur á samstæðu, stjórnast af tæki (nr.3.31.), en stjórnar tæki (nr.3.09.)

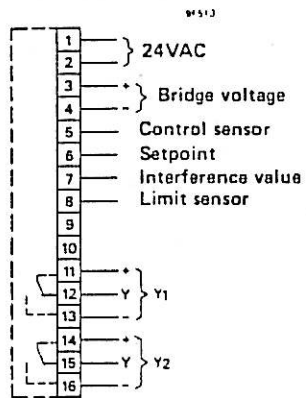
## Sjúkrahúsið Neskaupstað Sími: 97-71402

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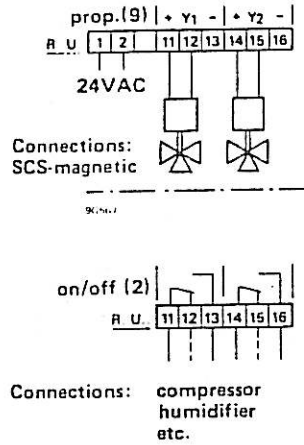
3. 29. Stjórnstöð (ST 3.2) staðsett í stjórnskáp, fær boð frá tæki (nr.3.21.) en stjórnar tæki (nr.3.19.) **Stillist á hámark: 12° C.**
3. 30. Stjórnstöð (ST 3.1) staðsett í stjórnskáp, fær boð frá tæki (nr.3.24.) og (nr.3.26.)en stjórnar tæki (nr.3.23.) **Stillist á lágmark: 14° C.**  
**En stofuhita í skurðstofu: 22° C**
3. 31. Rofi (B3+B5) staðsettur framan á stjórnskáp, slekkur á kerfi nr.3 Tækjum (3.08. - 3.10. - 3.12. og 3.15.)
3. 32. Frostvörn (T4.3) staðsett í samstæðu, stjórnast af tæki (nr.3.35.)  
**Stillist á: + 5° C.**  
Við frostútleisingu gerist eftirfarandi:  
Slekkur á blásara (nr.3.08. og 3.10)  
Lokar loftloku (nr.3.01. og 3.09.)  
Lokar segulloka (nr.3.20.)  
Fullopnar mótorkoka (nr.3.19.)  
Gefur rautt ljós (nr.3.18.) í stjórnskáp.
3. 33. Gult ljós (H31) framan á stjórnskáp.  
**Gult logandi ljós merkir, óhrein sía tæki (nr.3.02.)**
3. 34. Gult ljós (H32) framan á stjórnskáp.  
**Gult logandi ljós merkir, óhrein sía tæki (nr.3.04.)**
3. 35. Rofi öryggi staðsett í stjórnskáp, stjórnar tæki (nr.3.32.)
3. 36. Klukka staðsett í stjórnskáp, stjórnar gangtíma kerfa nr. 1, 2 og 3  
Kveikir á kerfunum Kl. 06.00 að morgni en slekkur á þeim Kl. 22.00 að kvöldi.
3. 37. Rofi staðsettur á vegg í skurðstofu. **Kveikir á kerfi 3 fram hjá klukku. ef nota þarf skurðstofu á tímabili frá Kl. 22.00 að kvöldi til 06.00 að morgni.**
3. 38. Stilliloki staðsettur á rakatæki við tæki (nr.3.20.) stillir vatnsmagn inn á rakasellur í tæki (nr.3.06.)
- 3.39. Næturhitastillir staðsettur á vegg í skurðstofu, kveikir á kerfi nr. 3 ef hiti í skurðstofu fer niður fyrir innstillt kjörhitastig.  
**Stillist á: 16° C**
3. 40. Varmaendurv. (VN3) Varmaendurvinnsla, staðsett í bakrásarlofti í samstæðu, stjórnast af bakrásarlofti frá skurðstofu og tæki. (nr.3.12.)

Connection diagram

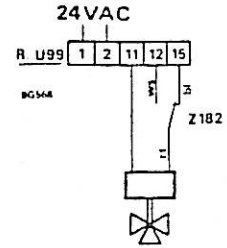
Terminal layout R..U..



Controller outputs

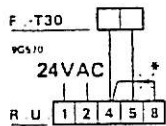


Connections:  
Change-over thermostat

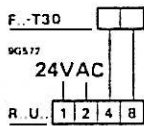


Controller inputs

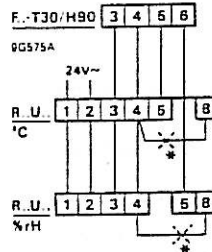
Temperature sensor  
as a control sensor



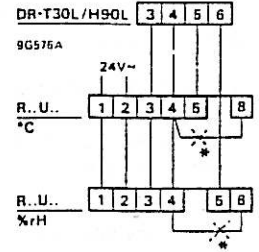
as a limit sensor



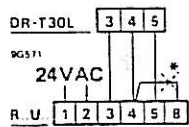
Temperature and humidity sensor  
as a control sensor



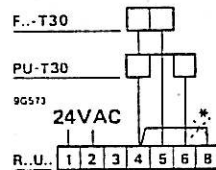
as a control sensor  
with internal setpoint  
potentiometer



as a control sensor  
with internal setpoint  
potentiometer



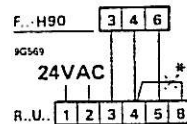
as a control sensor with  
external setpoint potentiometer



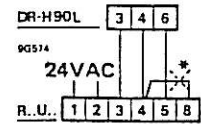
max. 2 controllers

max. 2 controllers

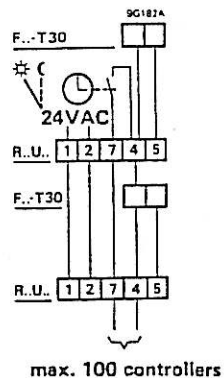
Humidity sensor  
as a control sensor



as a control sensor  
with internal setpoint  
potentiometer



Night depression



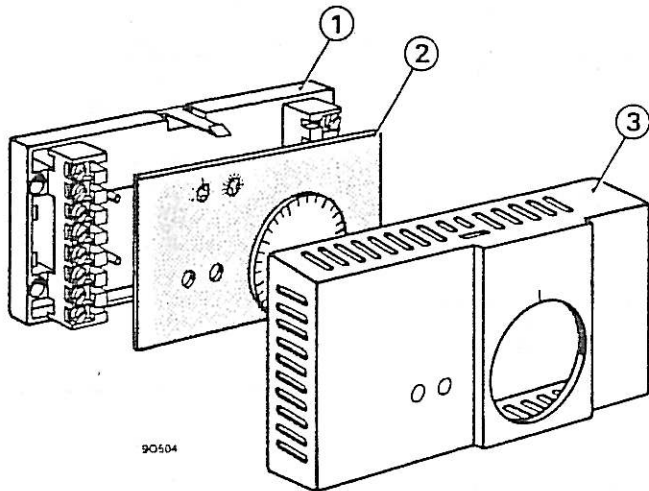
max. 100 controllers

\* When low limit control is used, the wire bridge between terminals 4 and 8 must be removed.

Ventilation and air conditioning controllers

Construction

The basic model of the R..U.. controller is designed as a room controller, With its slim, attractive shape, it blends into any decor.



The controller comprises the following parts:

- 1 Baseplate with 2 x 8 terminals
- 2 Printed circuit board with setpoint knob
- 3 Push-on housing

The controllers are supplied with a transparent cover for the setpoint. This may be removed where required. When the transparent cover is used, the selected setpoint can be read but cannot be adjusted externally.

The indicator lamps are not inserted on delivery but are stored in a holder in the housing. Before they can be mounted in the positions provided in the housing, the seals must first be broken with a screwdriver.

The controllers with a proportional output have a further holder containing a spare fuse.

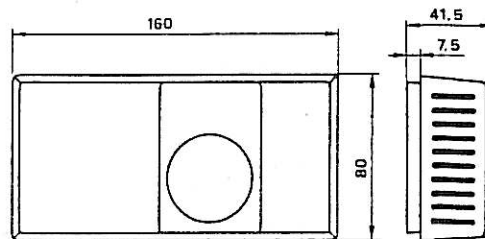
Mounting

The baseplate is first mounted and connected. The printed circuit board, which is equipped with pins to prevent incorrect mounting, is then placed on the baseplate. Finally, the housing is pushed over the printed circuit board on to the baseplate. The controllers should not be located near doors, windows, chimneys or on outside walls because of temperature distortions or in corners or recesses because of poor air circulation. The room controller is preferably flush-mounted at a height of about 1.5 m.

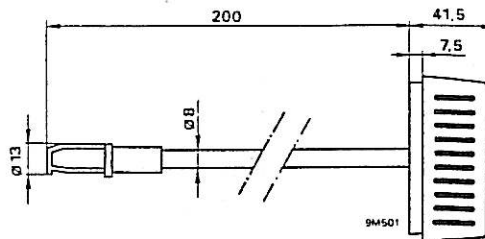
For duct mounting, an RSU.. controller and an FU-T30 push-on sensor probe are required. The duct controller should be mounted in the middle of the duct wall (vibration-free).

Dimensions [mm]

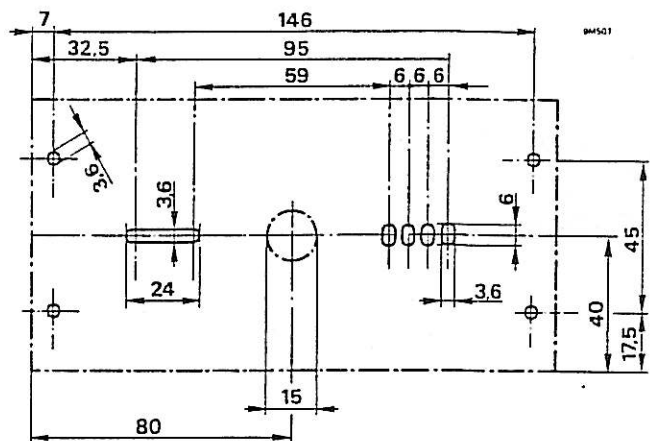
Controller for wall mounting



Controller with push-on sensor probe



Drilling layout



Technical data

Supply voltage *	24V $\begin{matrix} +15 \\ -10 \end{matrix}$ %, 50 ... 60 Hz
Power consumption	2 VA
Output signal	Y <sub>1</sub> , Y <sub>2</sub> : proportional (reference 9): 0 ... 20 V DC phase cut each on/off (reference 2): Indicator lamps indicate the output signal
Output power	proportional controller: max. 26 VA for Y <sub>1</sub> or Y <sub>2</sub> or both together on/off controller: 1 voltage-free SPDT contact 250V AC 2A inductive, 10A resistive each output
Measuring range	temperature 7 ... 38 °C humidity 30 ... 90 % rH
Proportional band x <sub>p1</sub> , x <sub>p2</sub>	adjustable 0.5 ... 10 K (°C) 1 ... 20 % rH
Switching differential x <sub>D1</sub> , x <sub>D2</sub>	adjustable 0.2 ... 6 K (°C) 0.4 ... 12 % rH factory setting 0.5 K (°C), 1 % rH
Dead zone x <sub>K1</sub> , x <sub>K2</sub>	adjustable ± 5 K (°C) ± 10 % rH each factory setting 0 K (°C), 0 % rH
Direction of operation	all outputs are reversible
Low limit cut-in point X <sub>E</sub>	adjustable 14 ... 25 °C
Night depression Δt <sub>N</sub>	adjustable 2 ... 14 K (°C)
Ambient temperature	0 ... 50 °C

\* Only transformers which have a screen between the primary and secondary coils and which are wound on the same former may be used (separate adjacent coils are not acceptable).

The factor k for increasing the proportional band in the limit range is fixed at 2.

Compatible devices:

- WSK4 Reset transmitter for summer and winter compensation (for max.100 control loops)
- SCS-indicate Indicators for monitoring

Adjustments

Setpoint X<sub>K</sub> is adjustable externally.

All controllers are supplied with visible temperature scale strips. These have a scale for relative humidity on the back and should, therefore, be reversed for humidity measurements.

The adjustable potentiometers (proportional band x<sub>p</sub>, switching differential x<sub>D</sub>, dead zone x<sub>K1</sub>, x<sub>K2</sub>, night depression Δt<sub>N</sub>, low limit X<sub>E</sub>) are located under the housing, which can be removed with a screwdriver.

There are pin boards on the printed circuit board for reversing the direction of operation of each individual controller output, for selection of an extranal remote setpoint potentiometer and for connecting a sensor/setpoint combination. The setpoint potentiometer built into the controller is rendered inoperative when a remote setpoint potentiometer is used. The position of the resistor should be altered to suit the type of sensor, setpoint potentiometer or setpoint potentiometer combination used.

Partial range

With room controllers, a partial range for the setpoint is often required. In the SCS-unico range, the built-in potentiometer can be connected to provide a partial range. The accessories required Z186 are a scale plate, which is mounted on the setpoint potentiometer, and a resistor which is plugged into the "int" position on the programming board. The partial range is 17 ... 25 °C.



"Ext" remote setpoint potentiometer  
"DR" sensor combination DR..  
"Int" built-in setpoint potentiometer



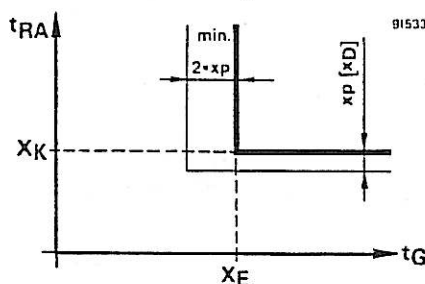
A<sub>1</sub>/B<sub>1</sub> reversal of direction of operation Y<sub>1</sub>  
A<sub>2</sub>/B<sub>2</sub> reversal of direction of operation Y<sub>2</sub>

Low limit control

The controllers are equipped as standard with low limit control. Access to the relevant adjustable potentiometer X<sub>E</sub> which is located under the housing can be gained by removing the setpoint knob X<sub>K</sub>.

When low limit control is used, the wire bridge between terminals 4 and 8 must be removed.

The proportional band x<sub>p</sub> is increased by the fixed factor 2.



Principle of operation

- The R..U.. controller is a self-contained module comprising:
- power supply
  - measuring loop
  - 1 or 2 control amplifiers

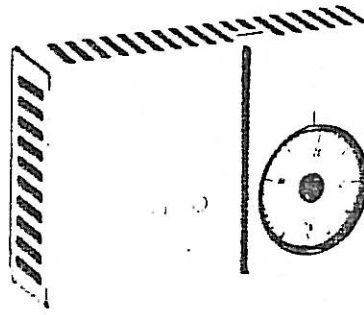
Integrated circuits amplify the signal from a temperature or humidity sensor to give either a 0 ... 20 V DC output signal (reference 9) or an on/off switching command (reference 2). This allows direct connection of all controlled devices, such as valves, damper motors and compressors, etc. There is a separate indicator lamp for each controller output.

Application

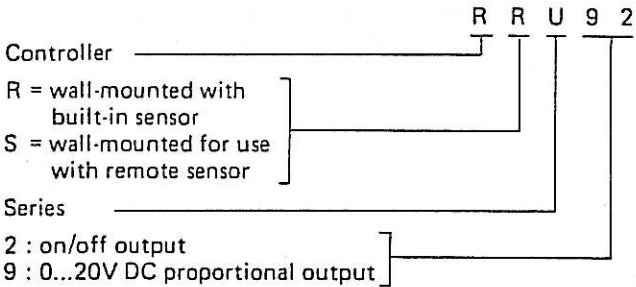
SCS-unico electronic controllers are used for the control of temperature and relative humidity in ventilation and air conditioning systems and for on/off control of compressors, humidifiers, pumps, etc.

They may be used in conjunction with the following controlled devices:

- Valves                    SCS-magnetic
- Motors                   SCS-push pull



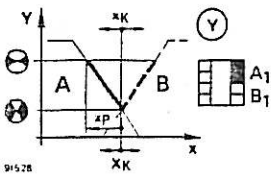
Type code



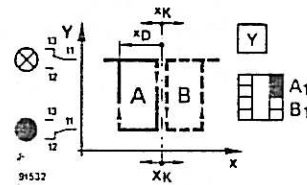
RRU..  
RSU..

Types

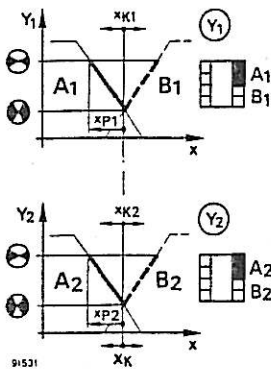
R..U9  
1 proportional output 0 ... 20 V DC



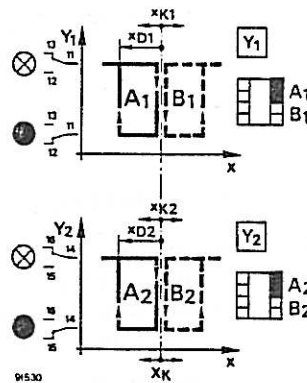
R..U2  
On/off output



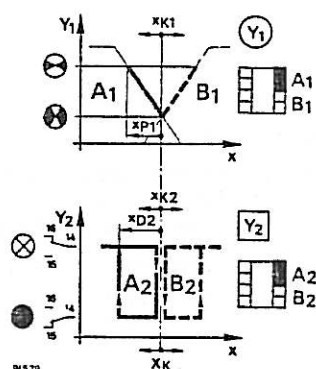
R..U99  
2 proportional outputs 0 ... 20 V DC



R..U22  
2 On/off outputs

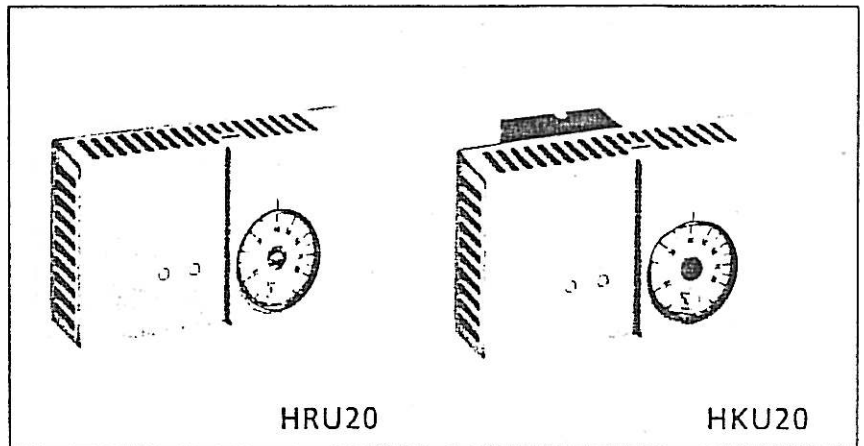


R..U92  
1 proportional output 0 ... 20 V DC  
1 on/off output



### Application

Hygostats are used to control humidifiers or dehumidifiers (e.g. for recirculation pumps in air washers, spinning disc humidifiers, refrigeration compressors, etc.)



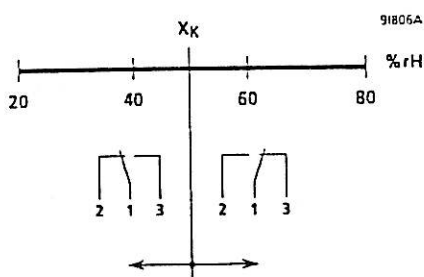
### Types

HRU20	Room hygostat
HRU20/T30	Same as HRU20, but with built-in temperature measuring element
HKU20	Duct hygostat

### Technical data

Setpoint range $X_K$	20 ... 80 %rH, adjustable externally
Temp. measuring range	HRU20/T30 0...30 °C
Output signal	1 voltage-free SPDT contact 220/240 VAC, 2.3 A inductive, 6A resistive
Switching differential $x_D$	fixed, 4 %rH
Ambient temperature	-25 ... 65 °C
Maintenance	No maintenance necessary Annual re-calibration recommended

### Operating diagram



### Principle of operation

The measuring element is a special plastic tape, the tension of which alters when the setpoint is adjusted. As soon as the relative humidity deviates from the setpoint selected, the SPDT contact is actuated.

### Construction

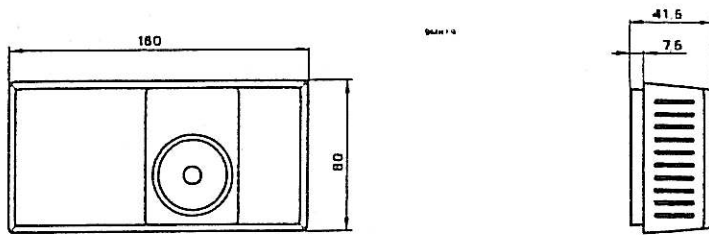
The HRU20 room hygostat consists of a baseplate with terminals and a push-on housing.

The HKU20 duct hygostat consists of a baseplate with terminals, a duct fitting and a push-on housing.

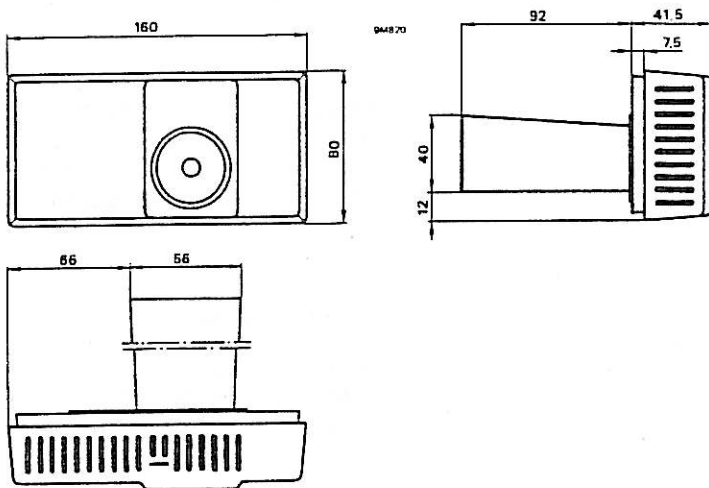
The hygostats are supplied with a removable transparent setpoint knob cover. When the cover is mounted, the selected setpoint can be read but cannot be adjusted externally.



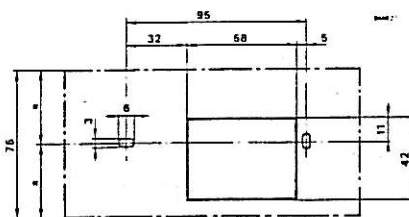
Room hygrosstat



Duct hygrosstat

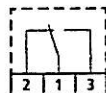


Drilling diagram



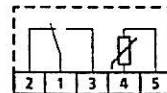
Dimensions [mm]

HRU20  
HKU20



HRU20/T30

9F383



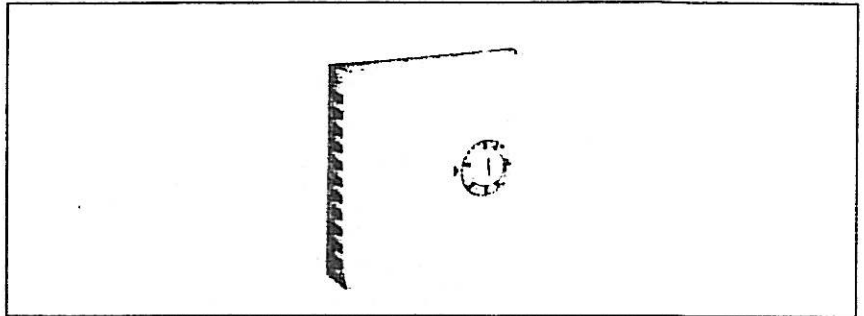
Terminal layout

Temperature sensors

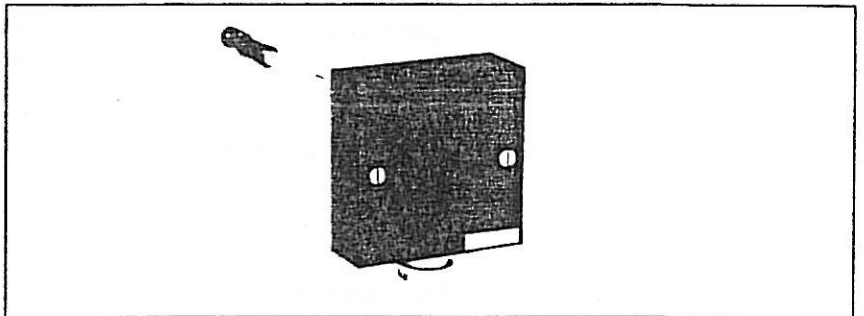
Application

These temperature sensors are used in combination with Staeфа control equipment for measuring and controlling temperature in ventilation and air conditioning installations.

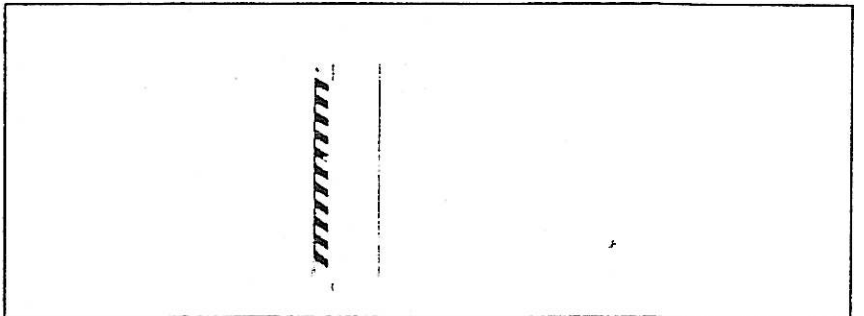
FR-T30  
Room sensor  
DR-T30L  
Room sensor with built-in setpoint potentiometer



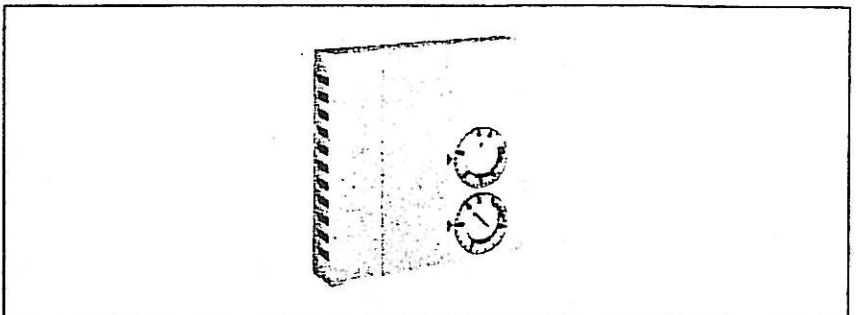
FK-T30  
Duct sensor  
FK-T30S  
Duct sensor with waterproof sensor element



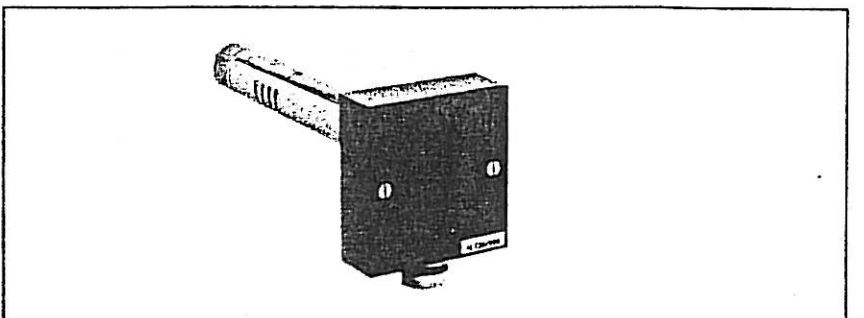
FR-T30  
Room sensor  
FR-T30/H90  
Room sensor for temperature and humidity



DR-T30L/H90L  
Room sensor with built-in potentiometers for temperature and humidity

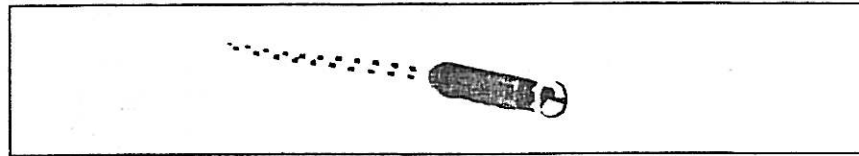


FK-T30/H90 SI33  
Duct sensor for temperature and humidity with corrosion resistant sensor



FKT30/H90  
Duct sensor for temperature and humidity

FT38  
Sensor element  
F-T105  
Sensor element



### Technical data

#### T30(S) measuring element

FR-T30, FK-T30, FR-T30/H90, FK-T30/H90

Measuring range	0 ... 30 °C
Range for limitation	0 ... 30 °C
Ambient temperature	0 ... 40 °C
Destruction threshold at 60 %rH	-30 °C / 60 °C
Output signal	Change in resistance (see diagram)
Connection	2 wire, interchangeable (T30 element) max 20 ohm per core

#### T30L measuring element

DR-T30L, DR-T30LH90L

Measuring range	0 ... 34 °C
Adjustment range (partial range)	13 ... 24 °C
Ambient temperature	0 ... 40 °C
Destruction threshold at 60 %rH	-30 °C / 60 °C
Output signal	Change in voltage approx. 50mV/K
Connection	3 wire, max 5 ohm per core (T30L element)

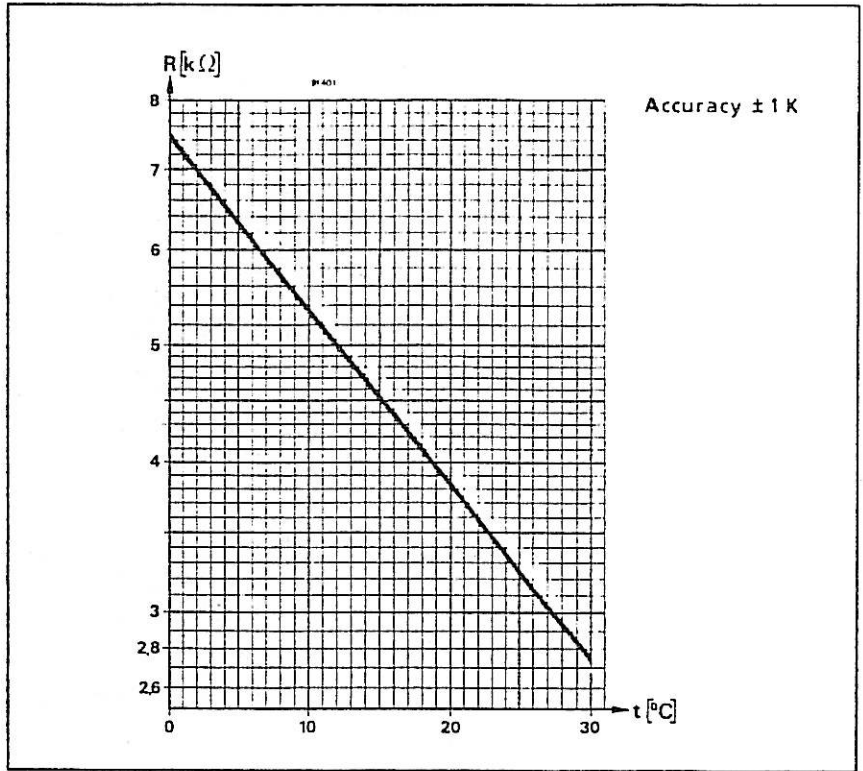
#### T38 measuring element

Measuring range	-32 ... 40 °C
Ambient temperature	-40 ... 50 °C
Destruction threshold at 60 %rH	-50 °C / 70 °C
Output signal	Change in resistance (see diagram)
Connection	2 wire, interchangeable max 20 ohm per core

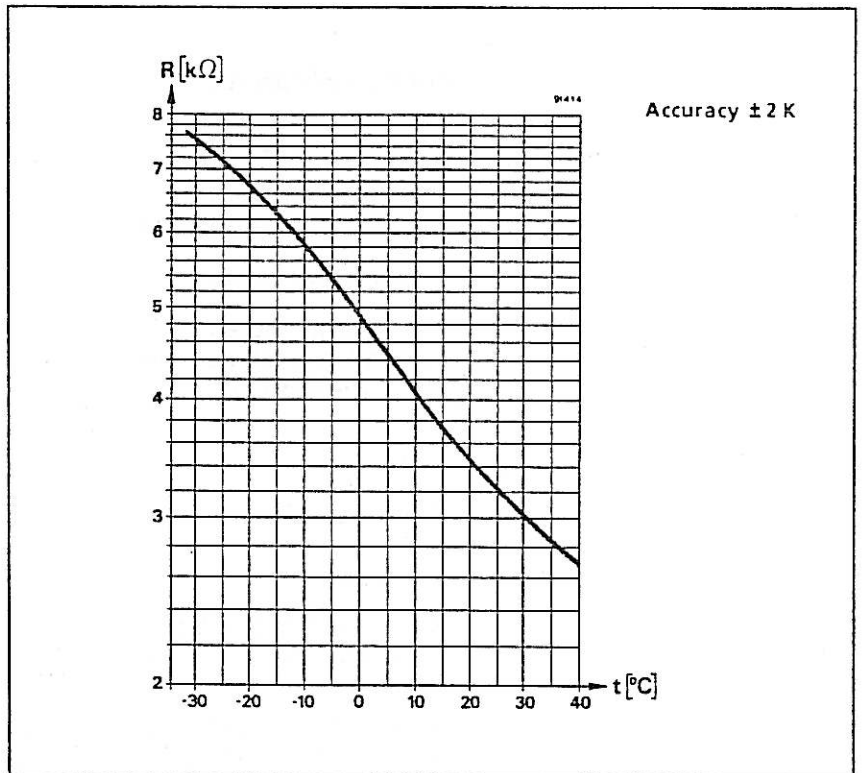
#### T105 measuring element

Measuring range	20 ... 105 °C
Ambient temperature	0 ... 120 °C
Destruction threshold at 60 %rH	-50 °C / 150 °C
Output signal	Change in resistance (see diagram)
Connection	2 wire interchangeable max 20 ohm per core

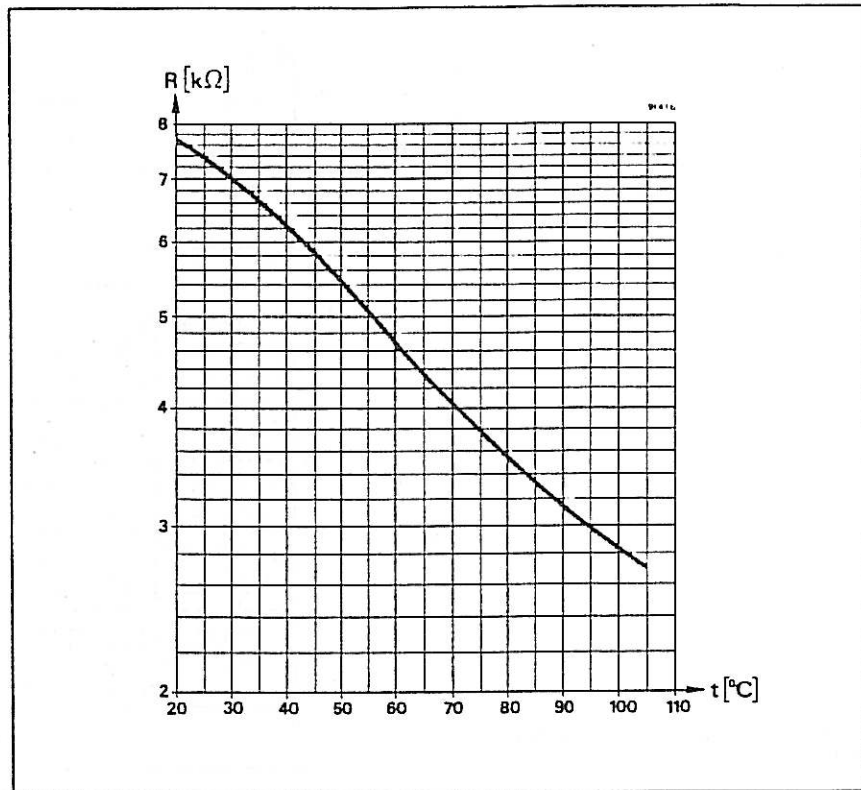
See S1-02.47 for technical data, dimensions and diagrams for humidity sensors.



Resistance curve of T30 temperature measuring element



Resistance curve of T38 temperature measuring element



Resistance curve of T105 temperature measuring element

### Principle of operation

#### Temperature sensors

An NTC measuring element alters its resistance as a function of temperature (resistance decreases as temperature increases).

#### Temperature sensors with built-in potentiometers

The value measured by the sensor is compared with the setpoint direct and a signal representing the difference between the two is passed to the controller.

### Construction

#### Room sensors

Room sensors consist of a baseplate and a snap-on plastic housing containing the appropriate measuring element for the type in question.

Room sensors with built-in setpoint potentiometers have additionally a differential amplifier. The setpoint is adjusted externally. To prevent unauthorised adjustments of the setpoint, the setpoint knob may be removed and replaced by the blank supplied.

#### Duct sensors

Duct sensors consist of a baseplate and a sensor housing with a duct probe which contains the appropriate measuring element for the type in question. The duct probe and sensor housing are rigidly connected.

### Mounting

#### Room sensors

Room sensors are preferably flush-mounted at a height of about 1.5 m. Surface mounting is, however, also possible. They should not be mounted where they will be exposed to undue influence from heat and moisture, i.e. near doors, windows, chimneys etc. Moreover, locations in corners, recesses etc. should be avoided because of the poor air circulation.

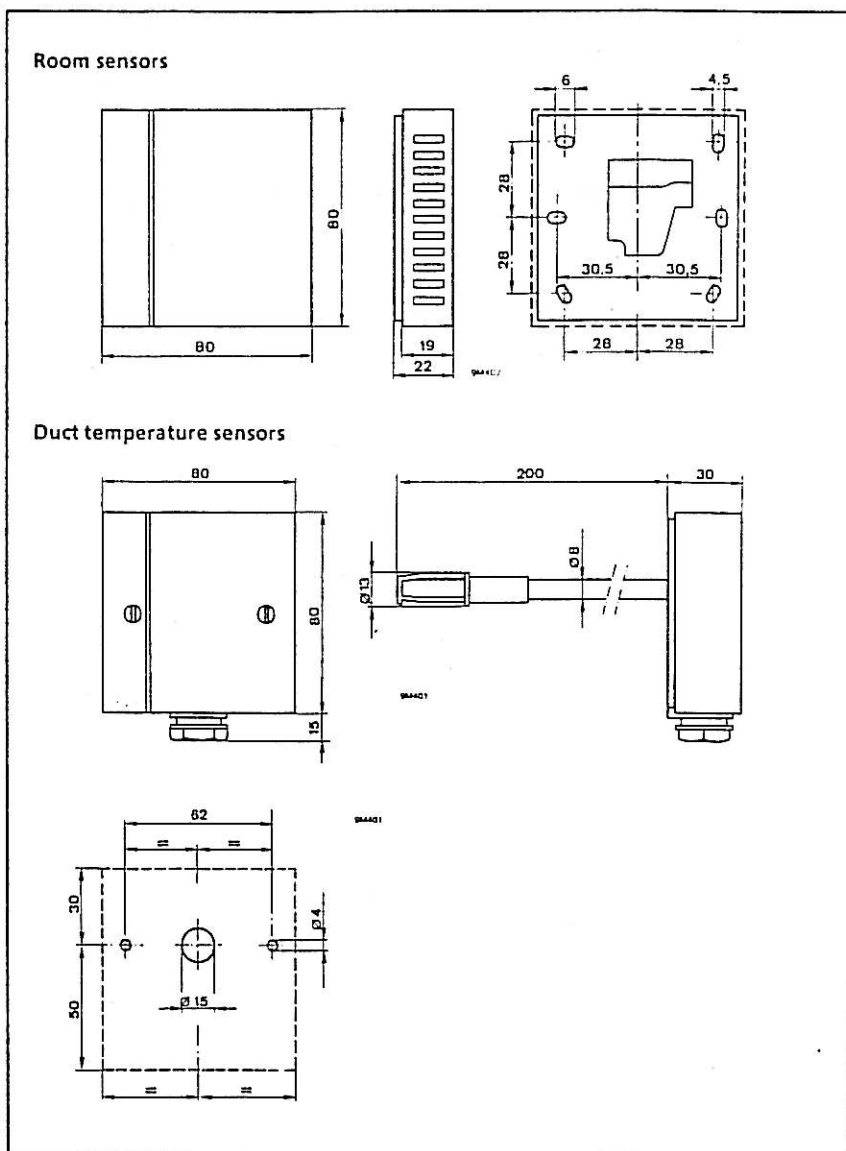
#### Duct sensors

Duct sensors are mounted in the middle of the duct wall. In the case of both room and duct sensors, the baseplate is mounted first, and the electrical connections are made. The sensor housing is then clipped onto the baseplate and secured mechanically.

In moisture laden conditions, the FK-T30S or FK-T30/H90 SI33 unit should be used.

#### Dust filter

In very dusty locations, the duct humidity sensor should be used. A Z124 dust filter is then pulled over the sensor tube.

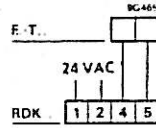


Dimensions [mm]

Temperature sensors

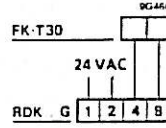
Control sensors

FR-T30, FK-T30, F-T38, F-T105

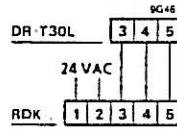


Limit sensor

FK-T30



Temperature sensor with built-in setpoint potentiometer  
DR-T30L



Connection diagrams

## APLICACION

El T87F proporciona un control de temperatura para 24 a 30 voltios, para un sistema de calefacción residencial. El termostato se monta sobre una placa de pared ya incluída.

El control está provisto por un interruptor de mercurio monopolar de doble polo, libre de polvo, que puede ser ajustado a cualquier nivel de temperatura. Los contactos se cierran al existir un descenso en la temperatura, a fin de accionar el sistema de calefacción.

Los modelos que incorporan desconexión positiva proporcionan un interruptor de encendido automático, a través del cual el sistema de calefacción de interruptor se libera a la posición **DESCONECTADO** (OFF).

## INSTALACION

**Precaución:** Desconectar la red de suministro eléctrico.

El T87F viene ajustado cuidadosamente de fábrica. **MANIPULESE CON CUIDADO** para evitar la pérdida de su precisión.

### ELECCION DEL EMPLAZAMIENTO

Colóquese el termostato por encima de 1-1/2 metros del suelo sobre una pared interior, en donde exista una buena circulación de aire fresco, y en donde la temperatura ambiente sea superior a la temperatura media de la sala, y donde no esté afectado por fuentes de calor radiante.

### DESMONTAJE DE LA TAPA (FIG. 1)

Tapa estándar - Tirarse hacia fuera del anillo con las puntas de los dedos, presionando ligeramente sobre el dial con los dedos pulgares.

Ilustración de la tapa - Aflojar los tres tornillos que fijan la tapa con la llave Allen suministrada. Quitar la tapa como en el caso del modelo estándar.

### ¡IMPORTANTE!

Este termostato se montó para un nivel exacto al ser calibrado en fábrica. La placa posterior deberá ser nivelada con precisión a fin de mantener la calibración. Un grado de error angular puede causar una discrepancia notable en el control.

### MONTAJE DE LA PLACA DE PARED

Móntese la placa de pared con los tornillos suministrados. La línea ARRIBA (UP) de la placa de pared DEBE estar exactamente vertical para obtener un funcionamiento preciso del termostato. Para nivelar la placa de pared se usará un nivel de alcohol, o bien una plomada, como en la Fig. 2.

### CABLEADO

Todo el cableado deberá satisfacer el reglamento de instalaciones eléctricas local.

El T87F es adaptable a la mayoría de los sistemas de calefacción a dos hilos de 24 a 30 voltios, y a la mayoría de los sistemas de calefacción a tres hilos de 24 a 30 voltios. Véase el diagrama de cableado de la serie de hilos de 24 a 30 voltios de la Fig. 3 y 5 muestran diagramas de cableado para aplicaciones típicas.

Para variaciones de estos sistemas, consúltense las instrucciones de instalación para el equipo controlado.

Contéñese el cable de baja tensión hasta el emplazamiento del termostato. Después del cableado, fíjese el agujero en la pared por detrás del termostato a fin de impedir corrientes que afecten al mismo.

### AJUSTE DE LA ESCALA DEL CALEFACTOR

El calefactor debe ser ajustado para que se adapte al régimen de control primario, el cual está normalmente indicado sobre la placa de características del control. Librese al indicador del calefactor hasta el número que corresponda con su régimen. El indicador puede ser movido con los dedos, con la punta de un lápiz, con clavija, o con un alfiler, en el agujero que se indica en la Fig. 6.

Después de reemplazar el termostato, no lire el usuario a la llave. Este dispositivo equilibra mercurio, una sustancia altamente contaminante. Por favor, devuelva el termostato usado a Honeywell a través de su instalador.

Si no estuviera indicado el régimen de la corriente, mídase como sigue a continuación:

1. Conectar un amperímetro de c.a. de una escala apropiada (de 0-2 amperios, por ejemplo entre los terminales de la placa de pared, o entre los polos K y M de la bobina del interruptor del sistema de subsistema de calefacción en la posición CALOR (HEAT)).

2. Dejese funcionar el sistema de calefacción durante un minuto antes de efectuar la lectura del amperímetro.

3. Utilizar una lectura de intensidad para seleccionar el ajuste adecuado del calefactor sobre el indicador del mismo.

En algunos sistemas puede ser deseable un ajuste ligeramente superior, para obtener potencias mayores de encendido del quemador (y por tanto, menos ciclos por hora), tal como en un sistema de vapor de agua. Por ejemplo: Si el período de encendido del quemador es demasiado corto con un ajuste de 0-4, se ajustará a 0-5 y se comprobará el funcionamiento del sistema; se ajustará a 0-3 y se volverá a comprobar, etc., hasta que se obtenga el tiempo deseado de encendido del quemador.

### MONTAJE DEL TERMOSTATO

Se colocará el termostato sobre la placa de pared y se apretarán los tornillos caseros de montaje. Estas tornillos completan también las conexiones eléctricas entre el termostato y la placa de pared.

### SELECCION DE TEMPERATURA

Para seleccionar el punto de control de la temperatura, gírese el dial transparente, hasta que el punto deseado situado sobre la escala de ajuste (parte superior) esté alineado con el índice de línea (Fig. 7).

En los modelos de tapa de bloque, la gama de las temperaturas puede estar limitada con topes en ambos extremos (véase la Fig. 7). El tope izquierdo es para el extremo inferior, y el tope derecho es para el extremo superior.

### CALIBRACION

El T87F está calibrado en fábrica, no debiendo ser necesaria su recalibración. En el caso de que parezca conveniente comprobar la calibración, asegúrese **PRIMERAMENTE** que el termostato está nivelado con precisión, y que no está sujeto a calor radiante.

Demuéstrase el anillo de recubrimiento del termostato, de tal forma que se pueda observar la acción del interruptor de mercurio. Después de un período de desconexión de cinco ó diez minutos (con el tope del termostato hacia el ajuste hasta que justamente haga contacto el interruptor. En el caso de que el indicador del termostato y el indicador de ajuste tengan la misma lectura en el instante en que se observe la comunicación del interruptor, no será necesaria una recalibración. En el caso de que ello fuera necesario, se procederá como sigue:

1. Gírese el dial algunos pocos grados por encima de la temperatura ambiente de la sala, y desmóntese la tapa.

2. Sitúese la llave de calibración (pieza No. 104994, disponible al solicitarla) sobre la tuerca hexagonal por debajo de la bobina bimetalica (ver la Fig. 7), y manteniéndola firmemente el dial, gírese la tuerca hexagonal en sentido de las agujas del reloj hasta que el mercurio abra el contacto.

3. Gírese el dial hasta un ajuste bajo, de tal forma que el termostato pierda el calor pasado procedente de las manos y de su propio funcionamiento. Espérese cinco minutos al menos.

4. Lentamente gírese el dial por la escala hasta que los indicadores indiquen la misma lectura.

5. Manténgase firmemente el dial para que no gire, y cuidadosamente hágase girar la tuerca hexagonal en sentido contrario a las agujas del reloj hasta que el mercurio se deslice hasta el extremo del contacto de calefacción del tubo.

6. Reacomodar la calibración, seleccionando la temperatura deseada, y véase: a montar la tapa.



1	Mounting holes	Trous de fixation	Ayufros de montaje	Wandmontage gaten	Locher	Befestigungsschrauben	Mégiche Locher in der Wand abdrücken	Anschlußschrauben
2	Be sure wall hole is plugged	S'assurer que le trou dans le mur a été bouché	Ayufros de que el agujero de la pared está tapado	Get in muer dichtmaken	Mégiche Locher in der Wand abdrieken			
3	Terminal screws	Vis de borne	Tornillos terminales	Aanluitklemmen				
4	Mounting holes	Trous de fixation	Ayufros de montaje	Wandmontage gaten	Locher	Befestigungsschrauben		
5	Plumb line	Fil à plomb	Línea de plomada	Schietlood	UF-Linie muß senkrecht stehen			
6	Spirit level	Niveau d'eau	Nivel de alcohol	Waterpas	Waterwaaze			

FIGURE 2

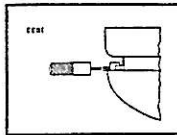
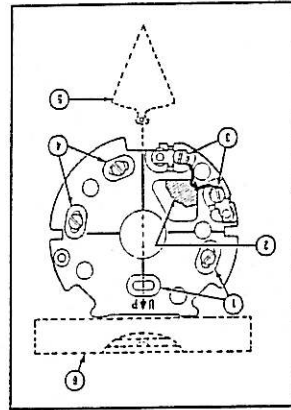


FIGURE 1

No. 104456B Wallplate for T87F with leveling method.  
 Plaque de fixation murale 104456B pour thermostat T87F, et méthodes de mise de niveau.  
 Montageplaat Nr. 104456B voor T87F met aanwijzingen voor vertikaal monteren.  
 Grundplatte Nr. 104456B für T87F, Nivelier anweisung.



1	Ignition	Allumage	Encendido	Ontsteking	Zündung
2	White	Blanc	Blanco	Wit	Weiß
3	Yellow	Jaune	Amarillo	Geel	Gelb
4	Orange	Orange	Naranja	Oranje	Orange
5	Black	Noir	Negro	Zwart	Schwarz
6	Protectorelay oil primary	Protectorelay du primaire du brûleur	Protectorelay de esoiil primario	Oliebrandrelais	Protectorelay Ölfeuerungsautomat
7	Combination fan and limit control	Commande combinée du ventilateur et du contact de température limite	Control limitador y ventilador	Combinatie ventilator-en maximaal thermostaat	Kombinierter Gebläse- und Grenzregler
8	Fan motor	Moteur du ventilateur	Motor del ventilador	Ventilatormotor	Gebläsemotor
9	Fan	Ventilateur	Ventilador	Ventilatorregelaar	Gebläse
10	Limit	Contact de température limite	Limitador	Maximaal thermostaat	Begrenzer
11	Burner motor	Moteur du brûleur	Motor del quemador	Brandermotor	Brennermotor
12	Hot	Fil sous tension	Activo	Fase	Phase
13	Power supply. Provide disconnect means and overload protection as required.	Secteur. Prévoir un dispositif de débranchement et de protection contre les surcharges, selon les besoins.	Red de suministro eléctrico. Proveer dispositivos de desconexión y protección de sobrecarga según lo deseado.	Netvoeding met hoofdschakelaar (zekeringswaarde aanpassen)	Stromversorgung mit entsprechendem Trennschalter und Überlastschutz.

11158

FIGURE 3

T87F in typical oil heating system.  
 Thermostat T87F monté sur un dispositif type de chauffage à mazout.  
 El T87F en un sistema típico de calefacción de gasoil.  
 Aansluiting T87F in met oliegestookt verwarmingssysteem.  
 Anschluß des T87F an ein Öl-Heizsystem.

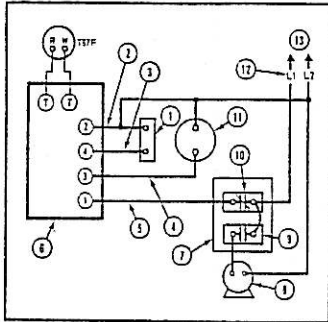
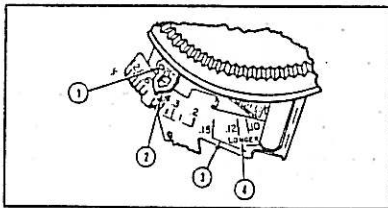


Fig. 3

1	Hole suitable for pencil point to move indicator.	Trous permettant d'engager la pointe d'un crayon pour déplacer l'index.	Agujero adecuado para la punta de un lápiz para mover el indicador.	Uitsparing voor puntig voorwerp	Durchbruch zum Ansetzen einer Bleistiftspitze zwecks Verstellung des Zeigers.
2	Heater indicator.	Index de la résistance chauffante.	Indicador de calefactor.	Instelhefboom warmte-versnellingselement	Zieger für Stromstärke.
3	Scale	Graduations	Escala	Schaalplaat	Skale
4	Longer	Cycle plus long	Mayor duración	Langer (brandtijd)	Längerer Brennerlauf

11278

FIGURE 6



1	Setting scale	Echelle de réglage	Escala de ajuste	Temperatuur-instelschaal	Einstellskala
2	Adjustable scale stops (not field addable)	Butees réglables de la gamme de fonctionnement (ne peuvent pas être ajoutées sur place)	Topes ajustables de escala (no añadibles en la instalación)	Schroeven voor begrenzing instelgebied (niet achteraf aan te brengen)	Einstellbare Anschläge
3	Calibration nut	Ecrou de réglage	Tuerca de calibración	Zeskantmoer voor kalibratie	Justiermutter
4	Room temperature scale	Echelle de températures ambiantes	Escala de temperatura ambiente de la sala	Thermometerschaal	Raumtemperatur-Skale
5	Heater indicator	Index de la résistance chauffante	Indicador del calefactor	Instelhefboom warmte-versnellingselement	Zeiger für Stromstärke
6	Mounting screw (3)	Vis de fixation (Nb. 3)	Tornillo de montaje (3)	Bevestigingschroef (3x)	Befestigungsschraube (3)

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FIGURE 7

Internal detail of T87F.  
 Détails de la construction intérieure du thermostat T87F.  
 Detalle interno del T87F.  
 T87F; voorzicht en doorsnede.  
 Einzelheit von T87F.

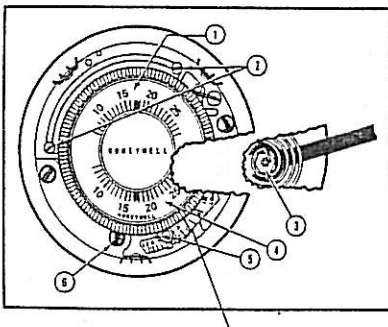


Fig. 7

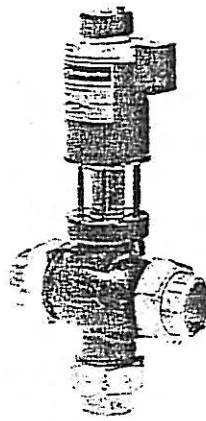
## M3P..G, M3P..F Modulating control valve for hot and chilled water

### Application

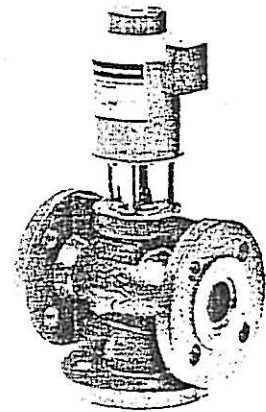
Three-way (or straight-through) valve with magnetic actuator for modulating control of LTHW and CHW systems.

#### Features:

- Robust, maintenance free
- Friction-free
- Short positioning time
- High resolution
- High rangeability
- Two-wire interchangeable connection



M3P..G



M3P..F

### Technical data

Control voltage	0 ... 20 VDC phase cut
Type of operation	Modulating
Positioning time	Approx. 1 s
Admissible ambient temperature	2 ... 50 °C
Protection standard	IP31
Valve body material	Cast iron
Seat/inner valve material	Chrome nickel steel
Nominal pressure	PN16
Operating pressure $p_{e,max}$	1 MPa (10 bar)
Leakage	
1 → 3	Max. 0.05 % $k_{vs}$
2 → 3	Approx. 2 % $k_{vs}$ (depending on application data)
Water temperature	2 ... 120 °C
Valve characteristic (stroke, $k_v$ )	Linear
Deenergised position	Closed 1 → 3
Mounting position	Upright or horizontal

### Types and operating data

Type	DN [mm]	$k_{vs}$ [m <sup>3</sup> /h]	$\Delta p_{v,max}$		$P_N$ [W]	$P_{med}$ [W]	$q$ [mm <sup>2</sup> ]		
			[kPa]	[bar]			1,5	2,5	4
M3P08..	08/15	0.6	500	5	13	3	60	100	170
M3P10..	10/15	1.5	500	5	13	3	60	100	170
M3P15..	15	3	500	5	13	3	60	100	170
M3P20..	20	5	300	3	13	3	60	100	170
M3P25..	25	8	300	3	16	4	50	85	135
M3P32..	32	12	300	3	20	5	40	65	110
M3P40..	40	20	300	3	26	6	30	50	80
M3P50..	50	30	300	3	40	10	20	30	50
M3P65F	65	50	300	3	40	10	20	30	50
M3P80F	80	80	300	3	80	20	10	15	25
M3P100F	100	130	200	2	120	30	6	10	18

$\Delta p_{v,max}$  = Max. admissible pressure differential

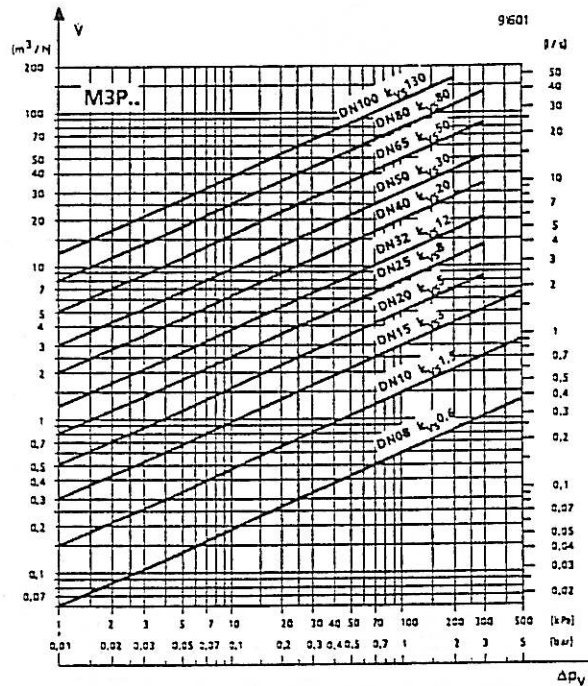
$P_N$  = Nominal power

$P_{med}$  = Mean operating power

L = Max. cable length between controller and valve

q = Cross-section of cable (Cu)

Water flow chart



Flow/pressure differential relationship:

$k_{vs}$  signifies the volume of water  $\dot{V}$  in  $m^3/h$  which flows through the open valve at a pressure differential  $\Delta p_v$  of 100 kPa (1 bar).

Principle of operation / Construction

The only moving part, the magnetic core, is free from friction and changes its position against a counterspring with each change in current.

Even the smallest movement is transferred directly to the inner valve so that proportional control down to extremely low rates of flows is possible.

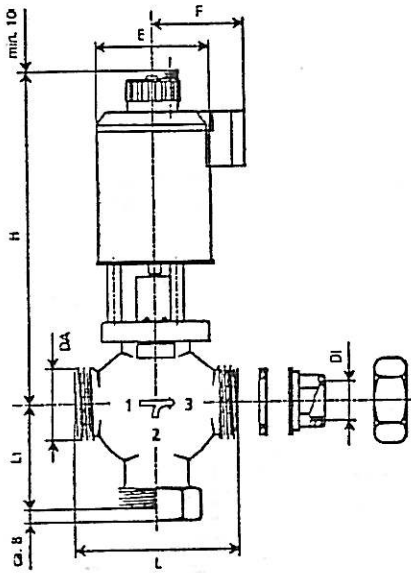
Staefa valves are pressure-balanced.

Because of its short positioning time, the valve can be used in cases where fast changes in load have to be corrected.

Manual adjustment

The valve can be opened and closed manually by turning the hand-wheel.

M3P..G



Dimensions [mm] and weights [kg]

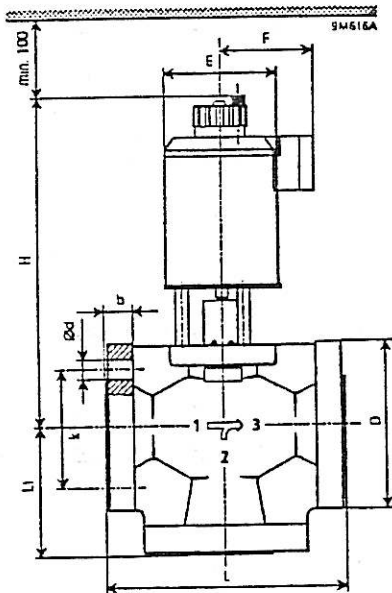
In the case of the screwed valves, screwed fittings are supplied.

Type	DI	DA	L	L <sub>1</sub>	H	E	F	**
	[inches]							
M3P08G	Rp 1/2	G 1	80	42.5	211	60	55	2.92
M3P10G	Rp 1/2	G 1	80	42.5	211	60	55	2.90
M3P15G	Rp 1/2	G 1	80	42.5	211	60	55	2.92
M3P20G	Rp 3/4	G 1 1/4	95	52.5	213	60	55	3.62
M3P25G	Rp 1	G 1 1/2	110	56.5	231	70	60	4.80
M3P32G	Rp 1 1/4	G 2	125	67.5	251	80	65	7.75
M3P40G	Rp 1 1/2	G 2 1/4	140	80.5	294	100	75	11.85
M3P50G	Rp 2	G 2 3/4	170	93.5	313	100	75	16.10

\*\* Weight incl. packaging

Internal thread G to ISO228/1  
External thread Rp to ISO7/1

M3P08F..M3P50F

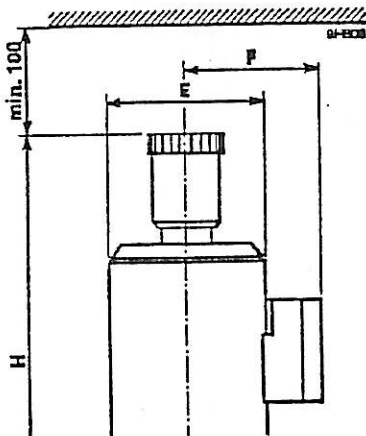


Flange dimensions according to DIN 2533, PN16

Type	L	L <sub>1</sub>	D	b	k	d	H	E	F	**
										[kg]
M3P08F	130	65	95	14	65	4x14	211	60	55	4.94
M3P10F	130	65	95	14	65	4x14	211	60	55	4.65
M3P15F	130	65	95	14	65	4x14	211	60	55	4.65
M3P20F	150	75	105	16	75	4x14	213	60	55	5.90
M3P25F	160	80	115	16	85	4x14	231	70	60	7.60
M3P32F	180	90	140	18	100	4x18	251	80	65	11.40
M3P40F	200	100	150	18	110	4x18	294	100	75	16.70
M3P50F	230	105	165	20	125	4x18	313	100	75	21.06
M3P65F	290	125	185	20	145	4x18	475	145	100	41.30
M3P80F	310	140	200	22	160	8x18	505	145	100	48.00
M3P100F	350	160	220	24	180	8x18	568	145	100	64.05

\*\* Weight incl. packaging

M3P65F...M3P100F



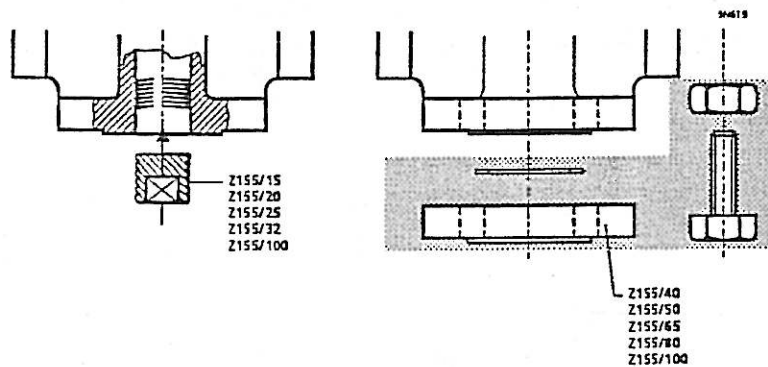
### Mounting

The three-way valve is used basically as a mixing valve. Only three-way valves are supplied. These may, however, be used as straight-through valves in the way described below.

### Flanged valves

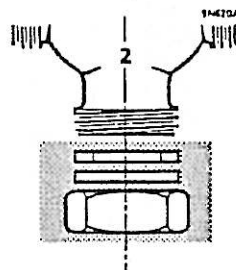
Connection "2" is sealed with accessory Z155/.. (screwed plug or blank flange). These are ordered separately where required. Blank flange incl. seal, screws, spring washer and nuts.

DN 15 ... 32 screwed plug (Z115/15 ... 32) or  
blank flange (Z155/15 F... 32 F)  
DN 40 ...100 blank flange (Z155/40 ...100)

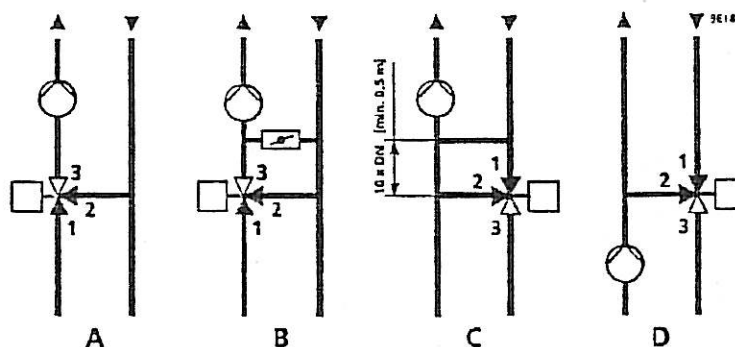


### Screwed valves

Connection "2" is sealed with the accessory supplied. (Nut, cover, spring washer)



### Hydraulic circuits



- A Mixing circuit
- B Underfloor heating mixing circuit with bypass
- C Injection circuit
- D Diverting circuit

To prevent solids and deposits from affecting the hydraulic system, it is recommended that the flushing instructions given in BSRIA Application Guide 1/89, "Flushing and Cleaning of Water Systems" should be followed.

Application

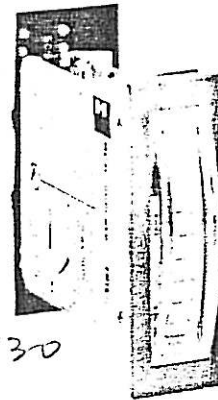
indicate is a remote measuring and indicating system which individually monitors temperature, humidity, pressure, valve and damper positions in air conditioning, refrigeration and heating installations. No additional sensors or equipment are required. All signals are taken electronically from the controller without affecting its operation in any way.

Types

Single point electronic analogue indicator

Type	for sensor	scale range
EM1A-T30	F.-T30	- 6 ... +35 °C
EM1A-T35	F.-T35	-32 ... +38 °C
EM1A-T120	F.-TH2	20 ... 110 °C
EM1A-H90	F.-H90	12 ... 98 % rH
EM1A-V1	FKE-V1	0 ... 15 m/s
EM1A-S100		0 ... 100 %
EM1A-P1	FKE-P1	0 ... 1 mbar
EM1A-P2	FKE-P2	0 ... 3 mbar
EM1A-P3	FKE-P3	0 ... 10 mbar

FR-T30 / FK-T30



EM1A-..

Technical data

Supply voltage	6V DC from controller
Current consumption	1 mA
Power consumption	
Input resistance	3 MΩ
Measuring current	
Number of measuring points	1
Ambient temperature	0...50 °C
Mounting position	indicator should be vertical

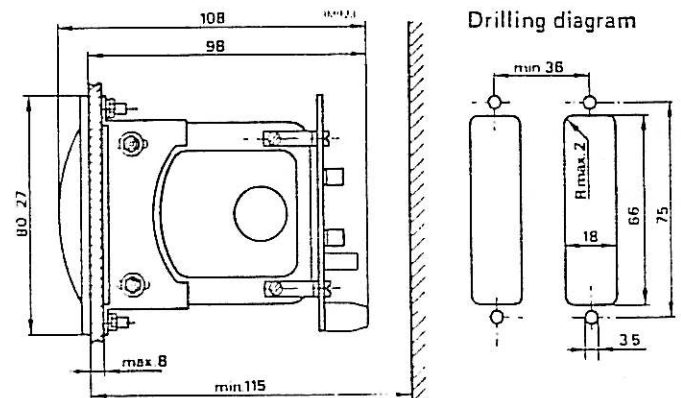
Principle of operation / construction

The analogue indicator comprises a moving coil instrument and attached amplifier. The electronic measuring device gets its supply from the controller and is suitable for individual indication or individual remote measurement. The voltage at the sensor is converted via the amplifier into a current of 0 ... 100 μA and is indicated by means of the moving coil instrument.

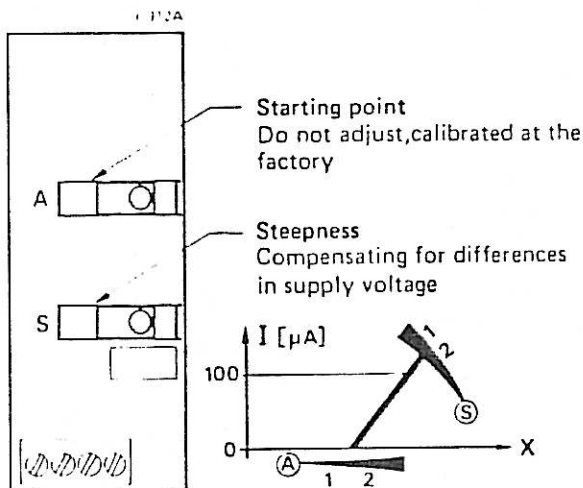
Mounting

The instrument is designed for mounting upright, flush in the face of a panel.

Dimensions [mm]



Adjustments

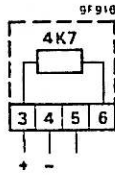


⊙ + ⊙	EM1A-T30, -H90, -V1 P1, -P2, -P3	position 1
	EM1A-T35, -T120	position 2
	EM1A-S100	Calibration according to application

Remote measuring instruments and indicators

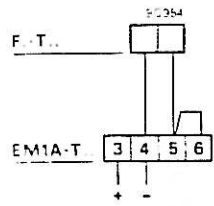
Connection diagrams

Terminal layout



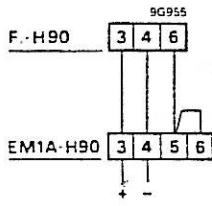
Remote indication without controller:

for temperature °C



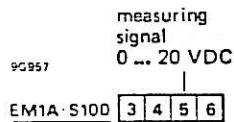
6V from any controller

for humidity % rH



6V from any controller

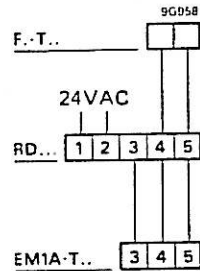
for position indication %



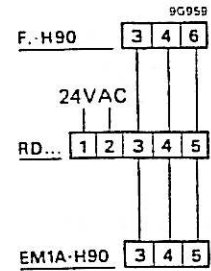
6V from any controller

Remote indication with controller:

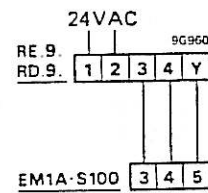
for temperature °C



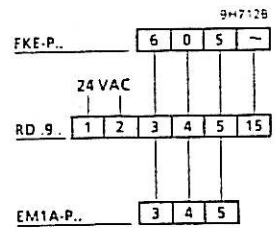
for humidity % rH



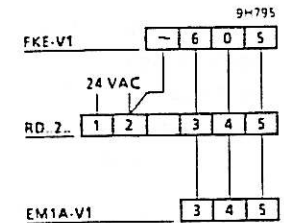
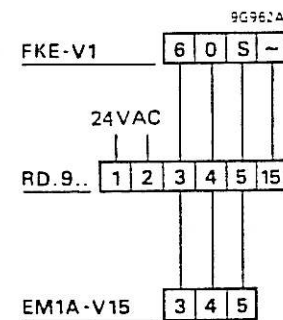
for position indication with phase cut (e.g. valve)



for pression sensors

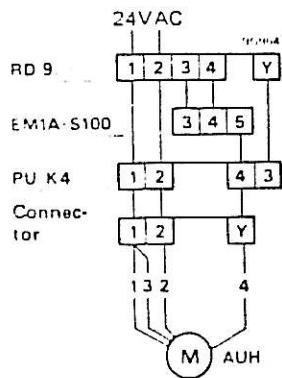


for air velocity m/s

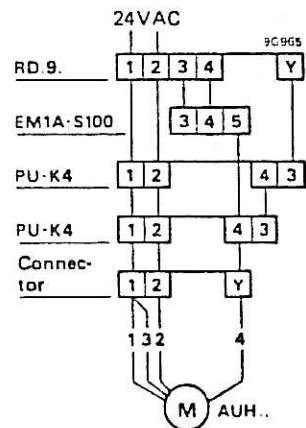


Position indication:

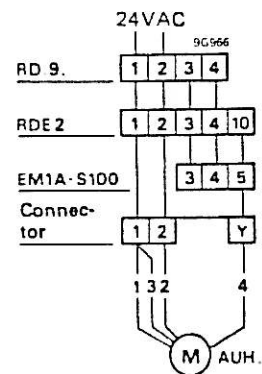
for damper actuator with minimum or maximum position



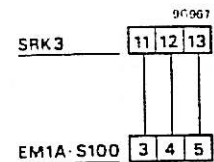
for damper actuator with minimum and maximum position



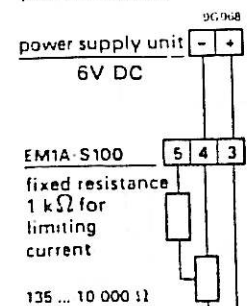
for damper actuator with energy recovery controller



for positioning relay SRK3 (only with feedback potentiometer)



for feedback potentiometer





**MONTERING**

**INSTALLATION**

**ASENNUS**

Kat. N 80

Fuktarblock ULAZ och fördelarblock ULBZ monteras i resp. fuktarsats enl. nedanstående figurer.

När kassetterna är monterade i fuktaren skall det avklippta hörnet vara placerat nedåt och mot luftriktningen.

OBS! Se till att tejpén på kassetternas insidor är intakt.

The ULAZ humidifier fills and ULBZ distributor fills should be fitted into the corresponding humidifier units as illustrated in the figures below.

When the cassettes are fitted into the humidifier, the cut corner should be located downwards and facing the direction of air flow.

N.B. Ensure that the tape on the insides of the cassettes is intact.

Kostutuskenno ULAZ ja jakokenno ULBZ asennetaan kostutinkasettiin allaolevien piirrosten mukaisesti.

Kun kasetit on asennettu kostuttimeen, tulee leikatun särmän olla suunnattuna alaspäin ja ilmavirran tulosuuntaa kohden.

HUOM! Tarkista, etteivät kasettien sisäpinoilla olevat teipit ole vaurioituneet.

**KDQA-KLQA**

**KDDU - VKBQ - VPBA**

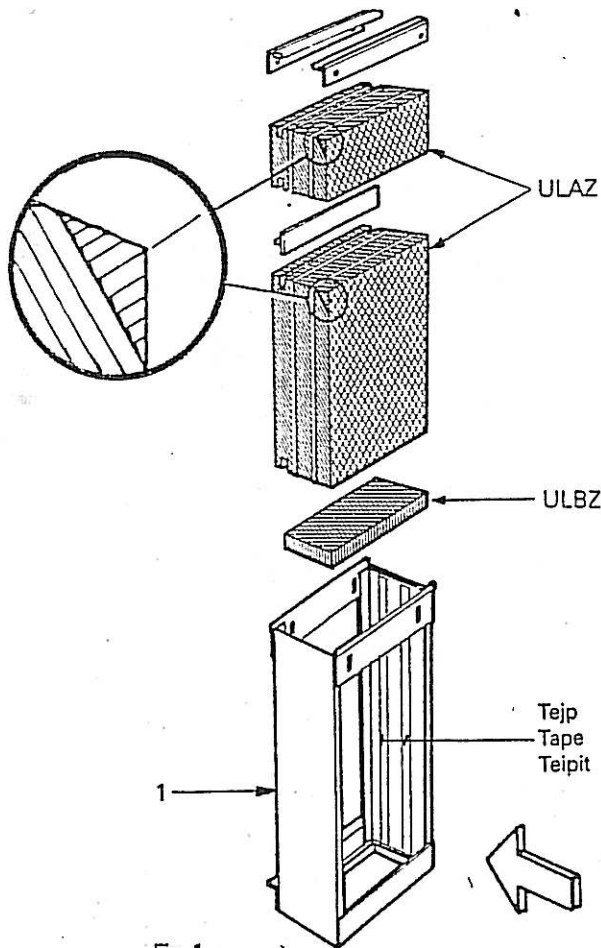


Fig. 1  
Kuva 1

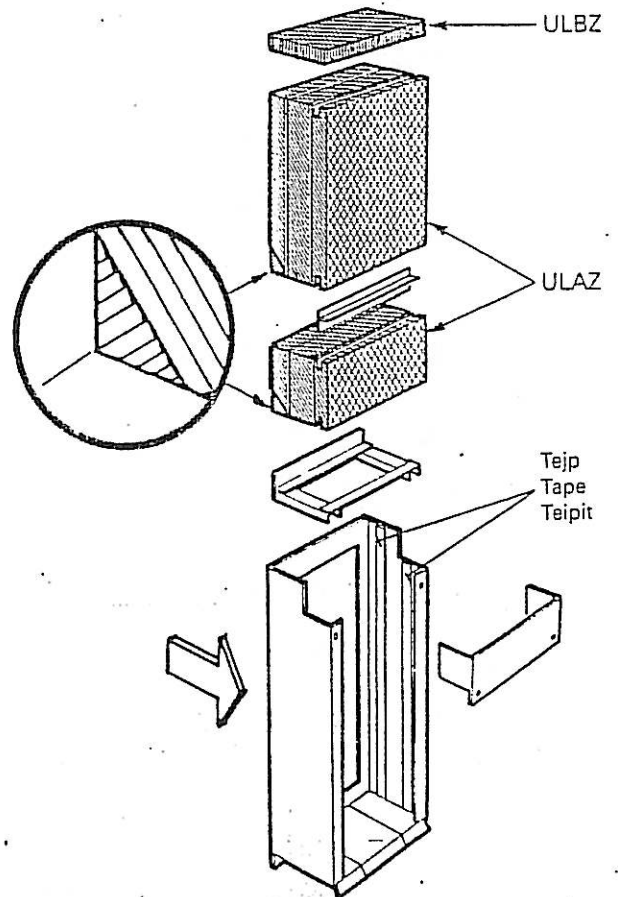


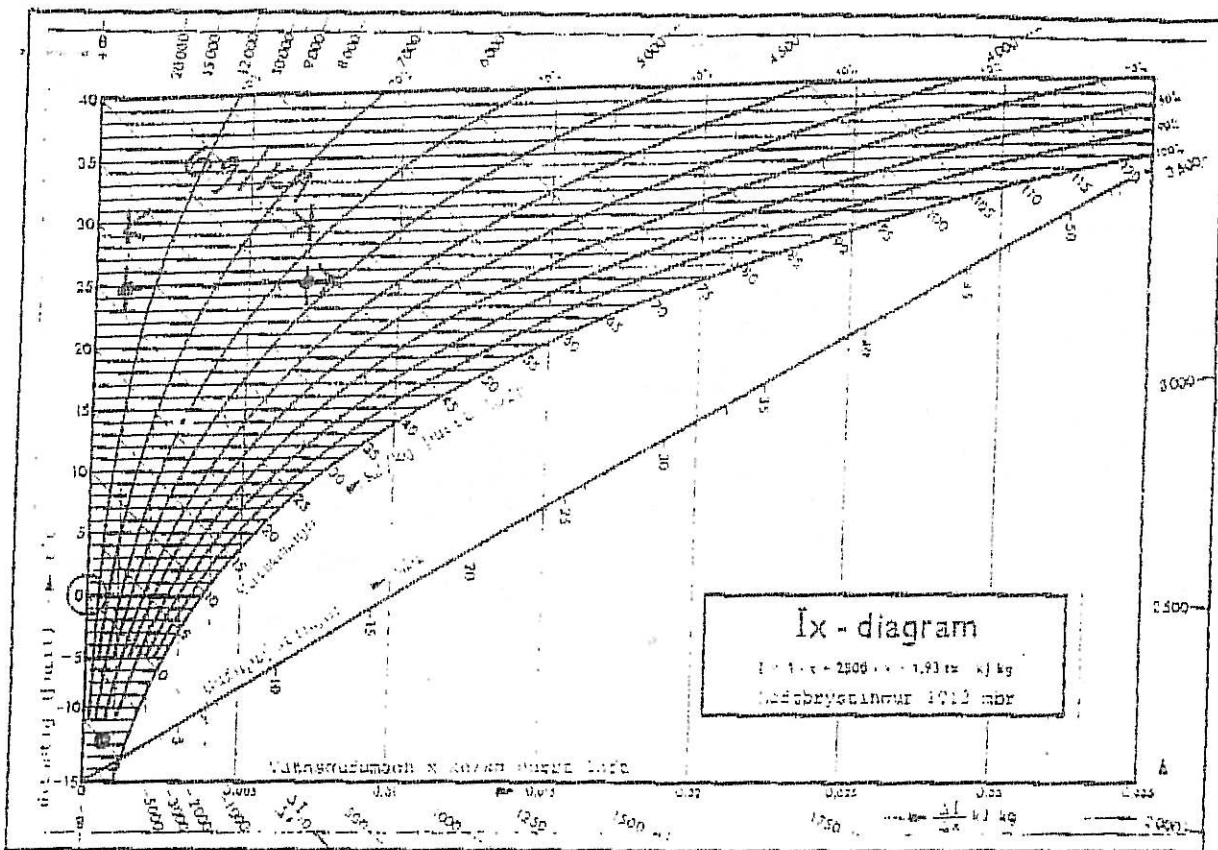
Fig. 2  
Kuva 2

1. Figuren visar kassetten upp och nedvänd.

1. The figure shows the cassette in the upside down position.

1. Kuva näyttää kasetin ylösalaisin.





Í spjökruksinu eru þóju kerfi  
 fyrir austurhlit  $0.300 \text{ m}^3/\text{klst}$ .  
 fyrir vesturhlit  $10.400 \text{ m}^3/\text{klst}$ .  
 fyrir skurðstofu  $4.600 \text{ m}^3/\text{klst}$ .

Itidat við  $-15^\circ\text{C}$  /  $90\%$  raka og  $25^\circ\text{C}$  /  $35\%$  raka,  
 þarf að bæta í loftit  $6 \text{ g/kg}$ ,  
 eða  $16 \text{ kg/klst}$ .

1 litri á 10 sek getur

360 litra á 3600 sek (1 klst).

eða fröfolt meira en þörf er á  
 vit vestu aðstæður.

Lívat við að meðalröðkun sé  
 $30\%$  af mestu útreiknuðu röðkun  
 nota raka tákun  $740 \text{ tonn}$  af  
 vatni á ári.