



Operation and Maintenance Manual – KA22SV-GL225 v1.0

10 – Performance Certificates NEF10109 – Ayalon WWTP

Project: NEF10109 Ayalon WWTP Our reference: LSC

Serial No.: 10109, 10110, 10111, 10112 Date: March 2020

Howden Turbo, Allégade 4, DK-3000 Helsingoer, Denmark.

Web: www.howden.com

Revolving Around You™

Compressor: KA22SV-GL225

Project: NEF10109 Ayalon WWTP

Date: March 2020



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Disclaimer of Liability: We have checked the contents of this manual with the equipment described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvements are welcomed.

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-

IGV:08 -----

IGV:06

Compressor type: KA22-SV-GL225

Build number: 10109

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A !LE5

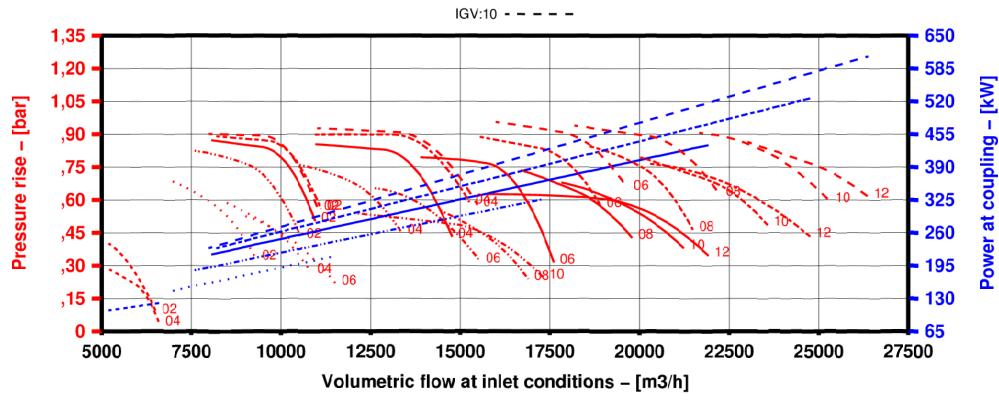
Serial number of test motor: ZNON LD1585716010003

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 0,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure:

1,01051 [bar]

Inlet Temperature: 22,06 [C]

Relative Humidity: 26,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Accepted by: NOACKCH

27-01-2020

Test day:

Compressor type: KA22–SV–GL225

Build number: 10109

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A !LE5

Serial number of test motor: ZNON LD1585716010003

IGV:10 - - - -

Explanation of line types

IGV:00 -----

IGV:02

IGV:04 ··-··-

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

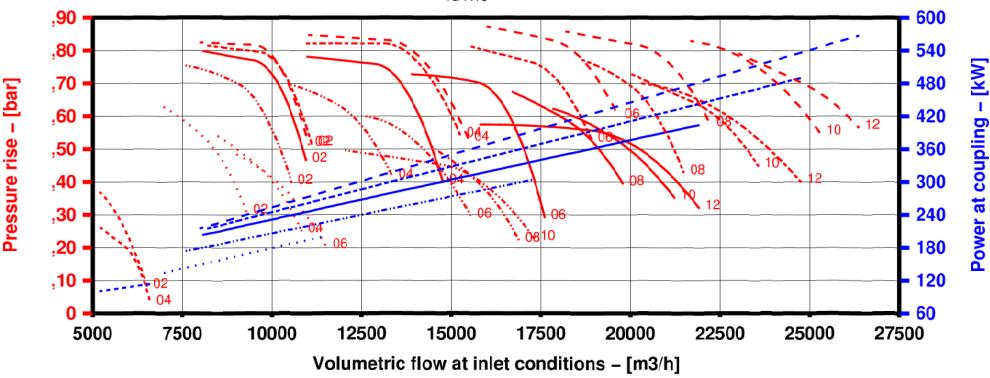
Inlet Temperature: 20,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]

Accepted by:

NOACKCH

27-01-2020



Average test condition

Inlet Pressure: 1,01051 [bar]

Inlet Temperature: 22,06 [C]

Relative Humidity: 26,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Test day:

Compressor type: KA22-SV-GL225

Build number: 10109

Order Number: 62010109 Order Name: Ayalon

Testmotor: Siemens

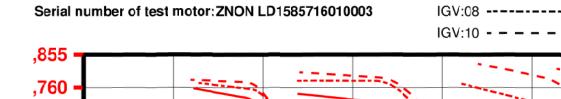
Type of test motor: 3~MOT.1CV3-403A !LE5

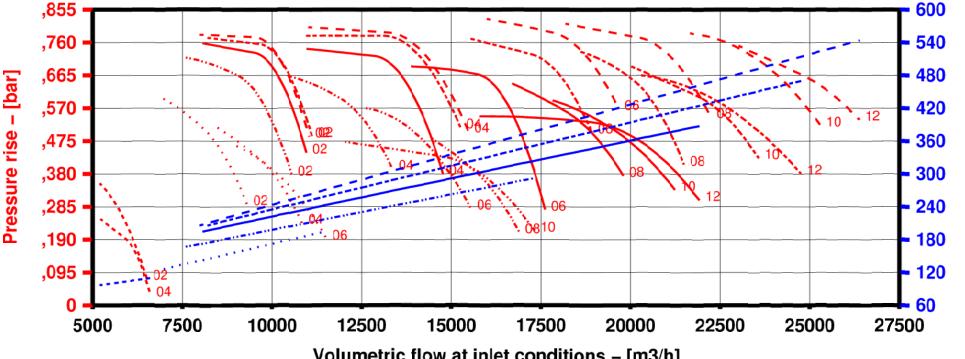
Curves valid for nominel conditions: Explanation of line types

Inlet Pressure: 0.99400 [bar]

Inlet Temperature: 30,00 [C] Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]





IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ..-..-

IGV:06

Volumetric flow at inlet conditions - [m3/h]

Average test condition

Inlet Pressure:

Inlet Temperature:

1,01051 [bar]

22,06 [C]

Relative Humidity: 26,8 [%]

Motor Speed: 2987, [1/min] Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd 1:1998(E)

Accepted by: NOACKCH

Test day: 27-01-2020 <u>₹</u>

Power at coupling -

Compressor type: KA22-SV-GL225

Build number: 10109

Order Number: 62010109 Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A !LE5

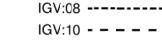
Serial number of test motor: ZNON LD1585716010003

Curves valid for nominel conditions: Explanation of line types

Inlet Pressure: 0.99400 [bar]

Inlet Temperature: 40,00 [C] Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]

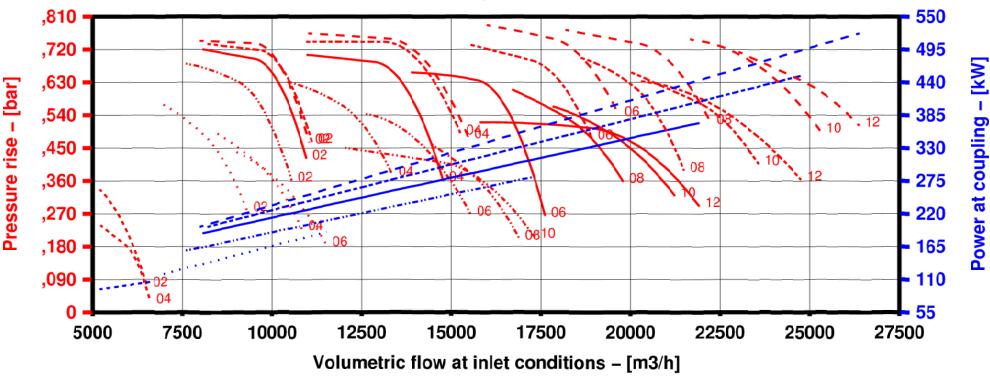


IGV:06

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ..-..-



Average test condition

1,01051 [bar] Inlet Pressure:

Inlet Temperature: 22,06 [C]

Relative Humidity: 26,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd 1:1998(E)

Accepted by: NOACKCH Test day: 27-01-2020

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · · ·

IGV:04 ··-··-

IGV:08 -----

IGV:06

Compressor type: KA22–SV–GL225

Build number: 10110

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~Mot.1CV3-403A

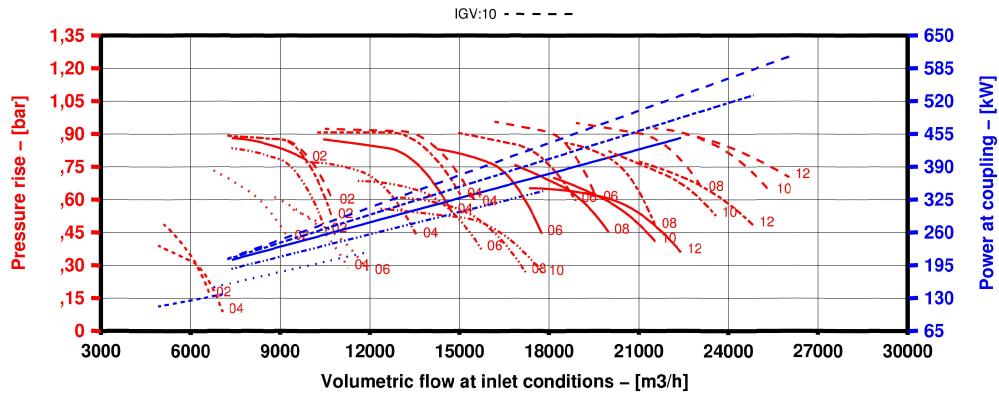
Serial number of test motor: ZNONLD1585716010001

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 0,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure: 1,02284 [bar]

Inlet Temperature: 20,77 [C]

Relative Humidity: 25,3 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Test day: 22-01-2020

Accepted by:

NOACKCH

Compressor type: KA22-SV-GL225

Build number: 10110

Order Number: 62010109 **Order Name:** Ayalon

Testmotor: Siemens

3~Mot.1CV3-403A Type of test motor:

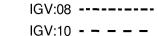
Serial number of test motor: ZNONLD1585716010001

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 20,00 [C] Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



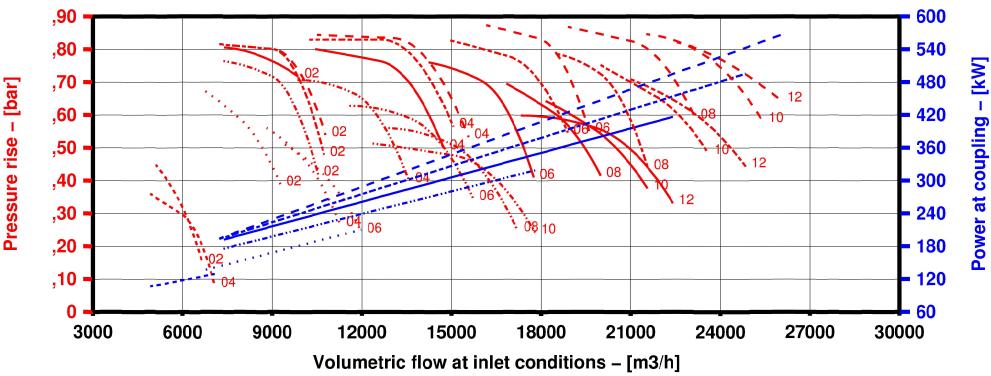
IGV:06

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-



Average test condition

Inlet Pressure: 1,02284 [bar]

Inlet Temperature: 20,77 [C]

Relative Humidity: 25,3 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Howden Turbo, KA

Accepted by: NOACKCH

Test day: 22-01-2020 **Explanation of line types**

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-

IGV:06

Compressor type: KA22-SV-GL225

Build number: 10110

Order Number: 62010109 **Order Name:** Ayalon

Testmotor: Siemens

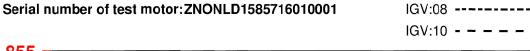
3~Mot.1CV3-403A Type of test motor:

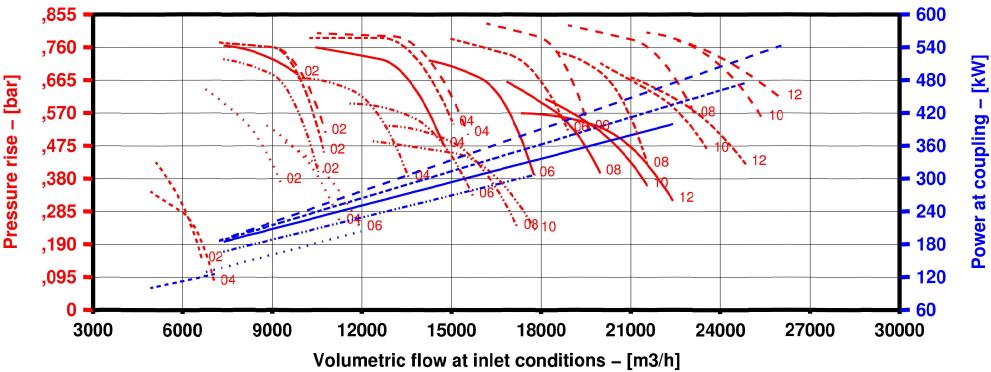
Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 30,00 [C] Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]





Average test condition

Inlet Pressure: 1,02284 [bar]

Inlet Temperature: 20,77 [C]

Relative Humidity: 25,3 [%] Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Howden Turbo, KA

Accepted by: **NOACKCH**

22-01-2020

Test day:

Compressor type: KA22–SV–GL225

Build number: 10110

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~Mot.1CV3-403A

Serial number of test motor: ZNONLD1585716010001

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 40,00 [C]
Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]

Accepted by:

NOACKCH

IGV:08 -----IGV:10 - - - - -

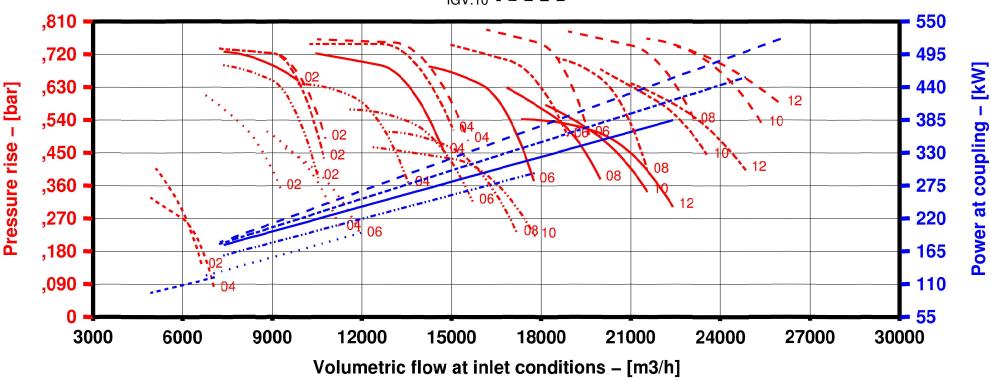
IGV:06

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-



Average test condition

Inlet Pressure: 1,02284 [bar]

Inlet Temperature: 20,77 [C]

Relative Humidity: 25,3 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Test day: 22–01–2020

Compressor type: KA22–SV–GL225

Build number: 10111

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemes

Type of test motor: 3~Mot.1CV3-403A

Serial number of test motor:1LE55334AA334AC3

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · · ·

IGV:04 ··-··-

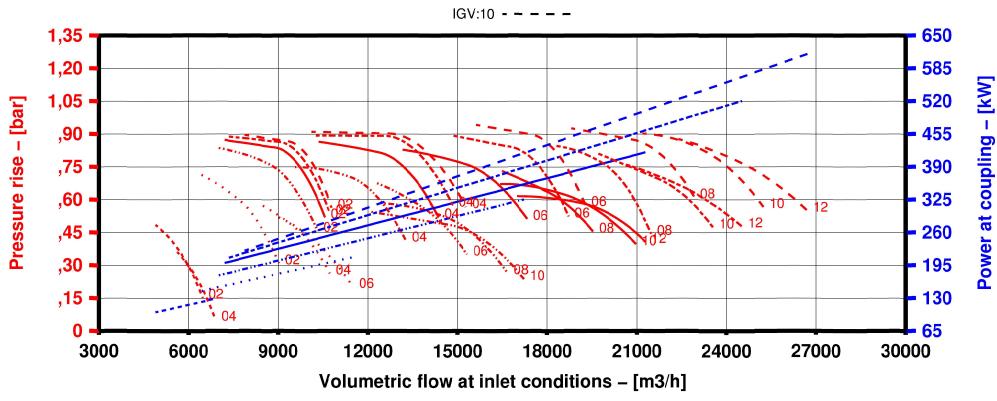
IGV:08 -----

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 0,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure: 1,00110 [bar]

Inlet Temperature: 25,58 [C]

Relative Humidity: 39,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Accepted by: NOACKCH
Test day: 31-01-2020

Compressor type: KA22–SV–GL225

Build number: 10111

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemes

Type of test motor: 3~Mot.1CV3-403A

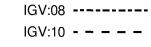
Serial number of test motor:1LE55334AA334AC3

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 20,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



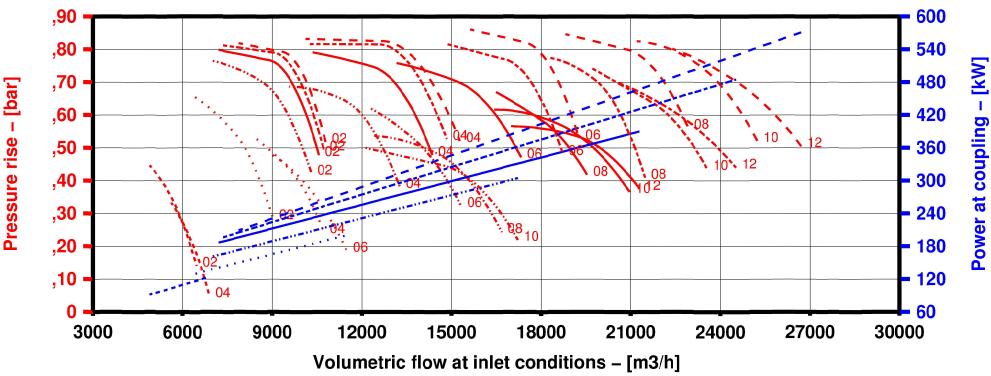
IGV:06

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-



Average test condition

Inlet Pressure: 1,00110 [bar]

Inlet Temperature: 25,58 [C]

Relative Humidity: 39,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Howden Turbo, KA

Accepted by: NOACKCH

31-01-2020

Test day:

Compressor type: KA22-SV-GL225

Build number: 10111

Order Number: 62010109 **Order Name:** Ayalon

Testmotor: Siemes

3~Mot.1CV3-403A Type of test motor:

Serial number of test motor: 1LE55334AA334AC3

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-IGV:06

IGV:08 -----

Motor Speed:

Inlet Pressure:

Inlet Temperature:

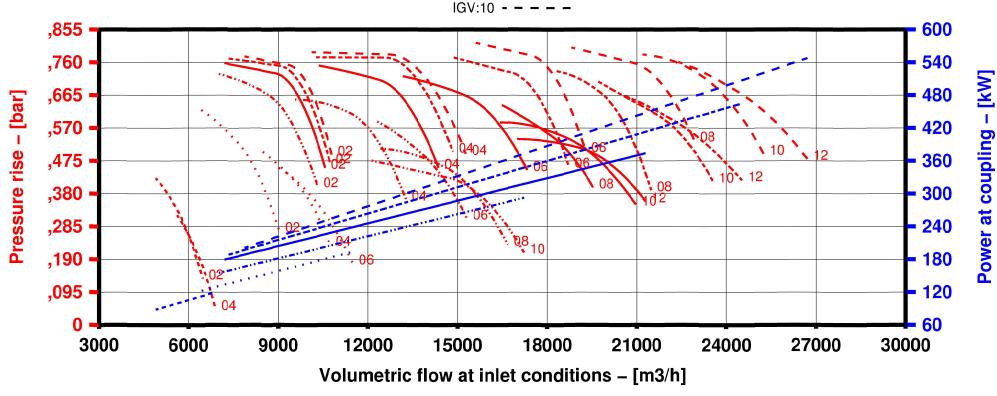
Relative Humidity:

0,99400 [bar] 30,00 [C]

80,0 [%]

2986, [1/min]

Curves valid for nominel conditions:



Average test condition

Inlet Pressure: 1,00110 [bar]

Inlet Temperature: 25,58 [C]

Relative Humidity: 39,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Accepted by: NOACKCH

Test day: 31-01-2020

Compressor type: KA22-SV-GL225

Build number: 10111

Order Number: 62010109 **Order Name:** Ayalon

Testmotor: Siemes

3~Mot.1CV3-403A Type of test motor:

Serial number of test motor: 1LE55334AA334AC3

Explanation of line types

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··-

IGV:06 IGV:08 -----

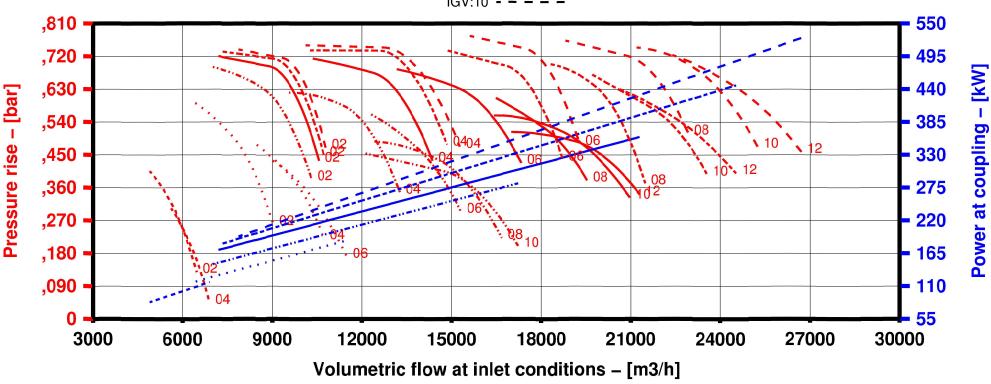
IGV:10 - - - -

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 40,00 [C] Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure: 1,00110 [bar]

Inlet Temperature: 25,58 [C]

Relative Humidity: 39,8 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Accepted by: NOACKCH Test day: 31-01-2020

Compressor type: KA22-SV-GL225

Build number: 10112

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A 1LE5

Serial number of test motor: Z NON LD 15857160 10

Explanation of line types Inle

IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ··-··

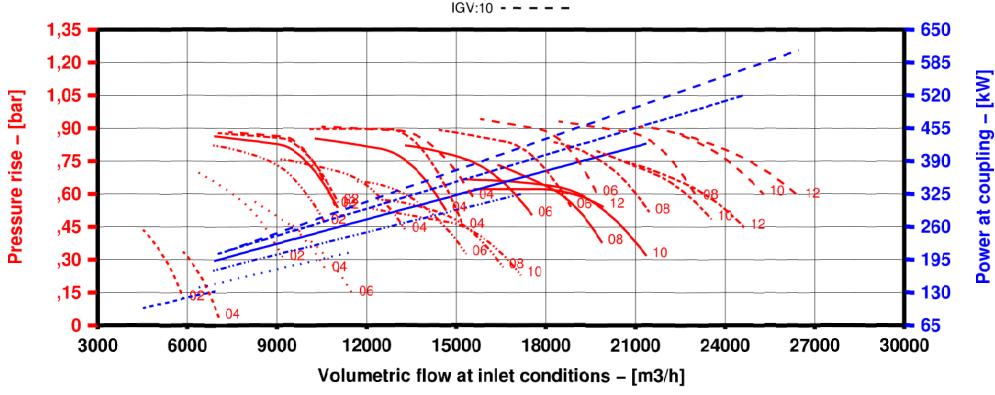
IGV:08 -----

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 0,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure: 0,98570 [bar]

Inlet Temperature: 24,00 [C]

Relative Humidity: 32,0 [%] Motor Speed: 2987, [1/min] Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Howden Turbo, KA

Accepted by: NOACKCH

Test day:

28-01-2020

Explanation of line types

IGV:00 -----

IGV:02

IGV:04 ··-··-

IGV:08 -----

IGV:06

Compressor type: KA22–SV–GL225

Build number: 10112

Order Number: 62010109
Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A 1LE5

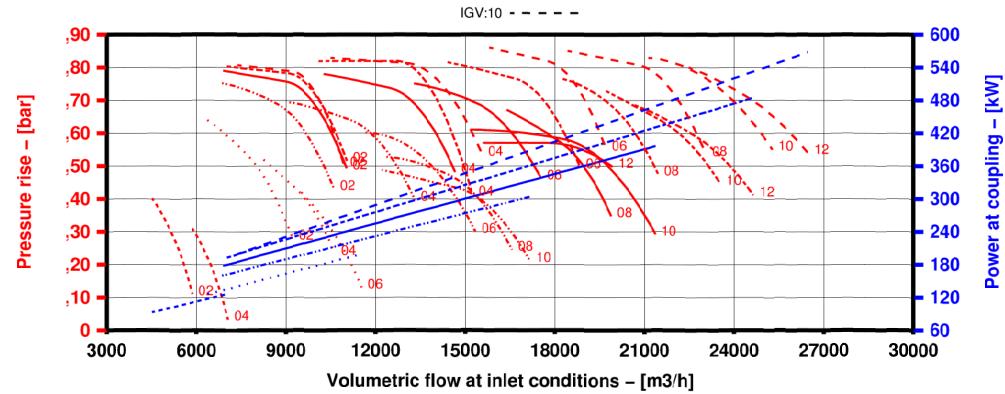
Serial number of test motor: Z NON LD 15857160 10

Curves valid for nominel conditions:

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 20,00 [C]
Relative Humidity: 36,0 [%]

Motor Speed: 2986, [1/min]



Average test condition

Inlet Pressure: 0,98570 [bar]

Inlet Temperature: 24,00 [C]

Relative Humidity: 32,0 [%]

Motor Speed: 2987, [1/min]

Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd.1:1998(E)

Accepted by: NOACKCH
Test day: 28-01-2020

Compressor type: KA22-SV-GL225

Build number: 10112

Order Number: 62010109 Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A 1LE5

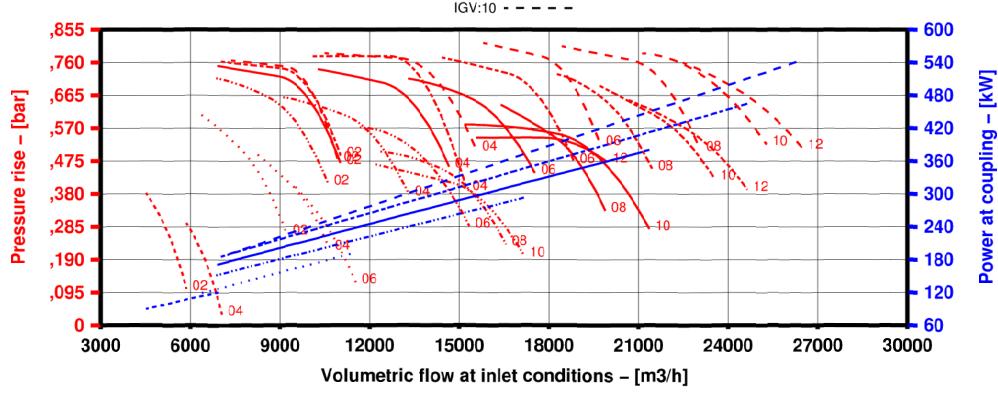
Serial number of test motor: Z NON LD 15857160 10

Curves valid for nominel conditions: Explanation of line types

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 30,00 [C] Relative Humidity: 80,0 [%]

Motor Speed: 2986, [1/min]



IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ..-..-

IGV:08 -----

IGV:06

Average test condition

0,98570 [bar] Inlet Pressure:

Inlet Temperature: 24,00 [C]

Relative Humidity: 32,0 [%] Motor Speed: 2987, [1/min] Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd 1:1998(E)

Accepted by: NOACKCH Test day: 28-01-2020

Compressor type: KA22-SV-GL225

Build number: 10112

Order Number: 62010109 Order Name: Ayalon

Testmotor: Siemens

Type of test motor: 3~MOT.1CV3-403A 1LE5

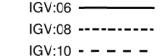
Serial number of test motor: Z NON LD 15857160 10

Curves valid for nominel conditions: Explanation of line types

Inlet Pressure: 0,99400 [bar]

Inlet Temperature: 40,00 [C] Relative Humidity: 80,0 [%]

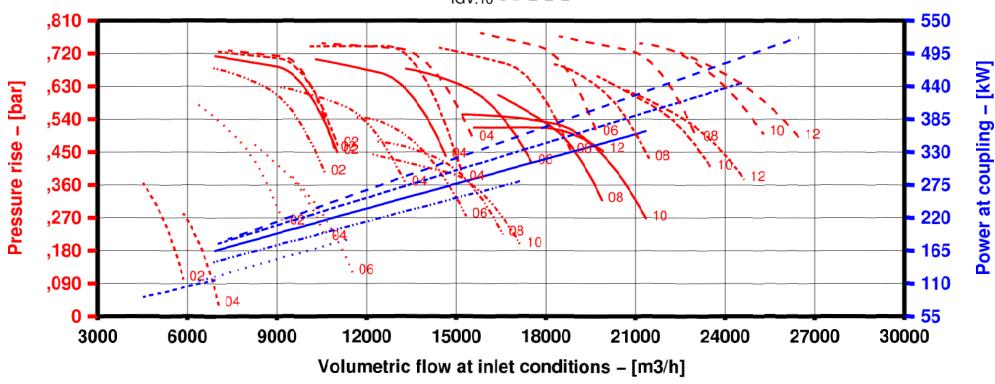
Motor Speed: 2986, [1/min]



IGV:00 -----

IGV:02 · · · · · · · ·

IGV:04 ..-..-



Average test condition

0,98570 [bar] Inlet Pressure:

Inlet Temperature: 24,00 [C]

Relative Humidity: 32,0 [%] Motor Speed: 2987, [1/min] Used evaluation standards for Compressor:

ISO5389/VDI2045

Used evaluation standards for Volumeflow:

ISO 5167-1:1991/Amd 1:1998(E)

Accepted by: NOACKCH Test day: 28-01-2020